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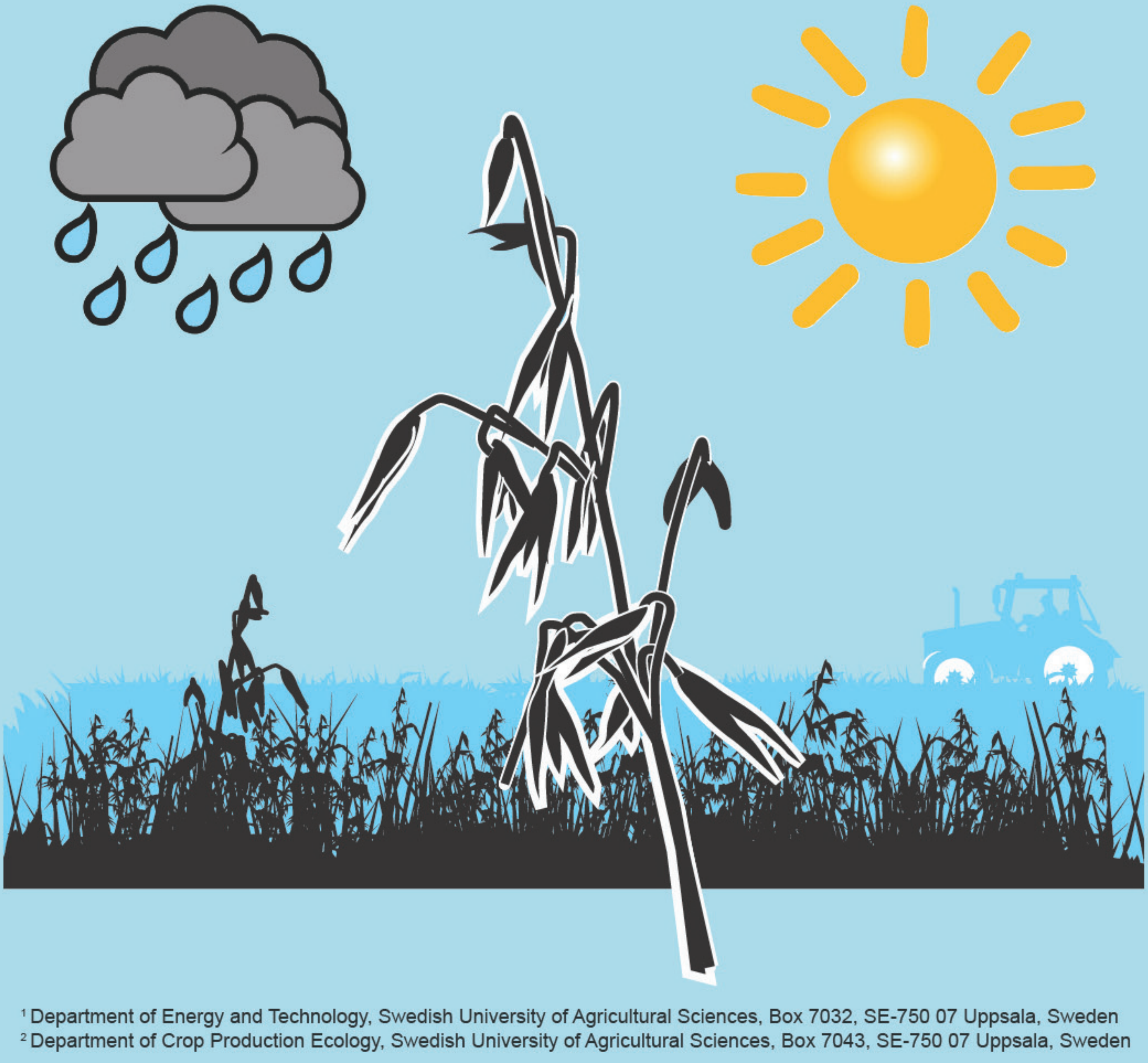

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ABSTRACT

Yield data for a series of years on the main crops grown in Sweden were collected and summarised in order to identify years with extremely low yield, determine their frequency and risk level and relate these to weather data in order to identify weather events leading to large yield reductions.

Annual yield data at county level for cereals, field beans, oilseed rape, potatoes and temporary grasses were taken from official statistics for the period 1965-2014. For the period 2005-2012, crop yield data on farm level were also available from official statistics. In addition, yield data for cereals and temporary grasses being studied in long-term experiments (more than 40 years) located in four different agro-ecological zones of Sweden were considered. Daily temperature and precipitation data for each of the 21 counties in Sweden during the period 1961-2012 were downloaded from the official Swedish weather data website.

In general, yield reductions were higher in northern than in southern counties and higher for spring cereals than winter cereals. Oats, spring rape and potatoes were the crops with the highest yield variation at county level. The frequency of a 30% yield reduction at county level was very low or close to zero in those counties with widespread cereal production, but large reductions occurred in individual years and certain counties (e.g. -80% in Norrbotten county in 1987).

Close agreement between annual area of non-harvested crops and a 30% yield reduction was observed for certain years, crops and counties. The northern counties had on average 4-11% non-harvested crop area, with Norrbotten county having the highest values. The non-harvested area of cereals in southern counties was on average 0-2%.

The risk of severe crop losses on farm level was around 10%, although in a few cases the risk was 25%, depending on the county. More specifically, the overall risk among the counties for individual farms of obtaining 30% lower yield for winter wheat was 5-20%, for spring wheat 5-20%, for rye 5-10% and for spring barley 5-25%. The corresponding risk of obtaining 50% lower yield for oats was 5-20%.

The yield data for individual farms showed large variations, even in years with ‘favourable’ weather conditions. In most years, yield on the lower 10th percentile of farms was less than half the average yield at county level. Winter wheat showed the lowest variation in southern counties and oats and spring rape the highest. Farm-level yield variations were also much higher in Norrbotten county than in southern counties. This large yield variation was confirmed by data from the long-term crop experiments, in which yield reductions exceeding 30% occurred in 5-18% of years (i.e. 2-8 years in the period 1965-2010).

Most years with the lowest yield were associated with a prolonged dry period (<20 mm precipitation over 40 days) and/or a high level of precipitation during the harvesting period (>100 mm during August). However, attempts to correlate county average yields with indices based only on daily temperature and precipitation gave poor and inconsistent results. Similar results were obtained using yield data from the long-term experiments and indices based solely on precipitation.

The large yield variations between individual farms, the heterogeneity of crop responses to Scandinavian weather conditions and the limitations of yield prediction models in terms of detailed input data and result accuracy indicate that yield reductions should be measured on farm level.

Within the study period, precipitation during summer months appeared to increase over time, particularly in 25% of years in southern Sweden. If this situation persists, it will have conflicting effects on crop production, by reducing the risk of drought periods and increasing the risk of rainy harvesting periods.

FOREWORD

This report is the result of a one-year project funded by the Swedish Farmers' Foundation for Agricultural Research in collaboration with Macklean Strategiutveckling AB at the Swedish Farmers' Federation (LRF). The overall objective of the project was to perform risk assessments of severe crop losses due to extreme weather conditions that could be used by insurance companies. From the project start in 2013, the authors held regular meetings with Martin Eriksson from Macklean Strategiutveckling AB, Anna Byback from LRF försäkring and Gunnar Roos from Försäkringsmatematik AB. We are grateful for their valuable contributions, especially during the process of data collection.

In this report, official yield data on county level available through the Swedish Board of Agriculture, official weather data from the Swedish Meteorological and Hydrological Institute (Luftweb), data from long-term experiments performed at the Swedish University of Agricultural Sciences and anonymised yield data at farm level made available for processing from Statistics Sweden (SCB) are compiled in order to study the risks of crop losses due to weather. In particular, we appreciate the positive attitude of Gerda Ländell and the support of the MONA system team at SCB.

We would also like to thank Gunnar Lundin from the Swedish Institute of Agricultural and Environmental Engineering and the late Johan Arvidsson from the Swedish University of Agricultural Sciences for useful comments and suggestions about the conclusions.

The authors are aware of the importance of mechanistic approaches in determining the relationships between extreme weather and crop yield. However, such approaches were beyond the scope of this study, as the data at hand and the resources available in a one-year project did not allow the issue to be fully tackled. Process-based analyses might add valuable information to that provided in the present report.

Uppsala
August 2015

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TABLE OF CONTENTS

1 INTRODUCTION

Crop yield is sensitive to changes in weather conditions, e.g. precipitation, temperature, solar radiation and wind. For stable annual crop production, it would be desirable for these factors to vary as little as possible from one year to the next. However, unfortunately there is great between-year variation, particularly for precipitation, as shown in Figure 1. Too little rain during the growing season leads to lower yield, while too much rain creates other problems, e.g. delayed field operations, fungus attack, poor nutrient use efficiency, flooding, increased risks of soil compaction, etc.

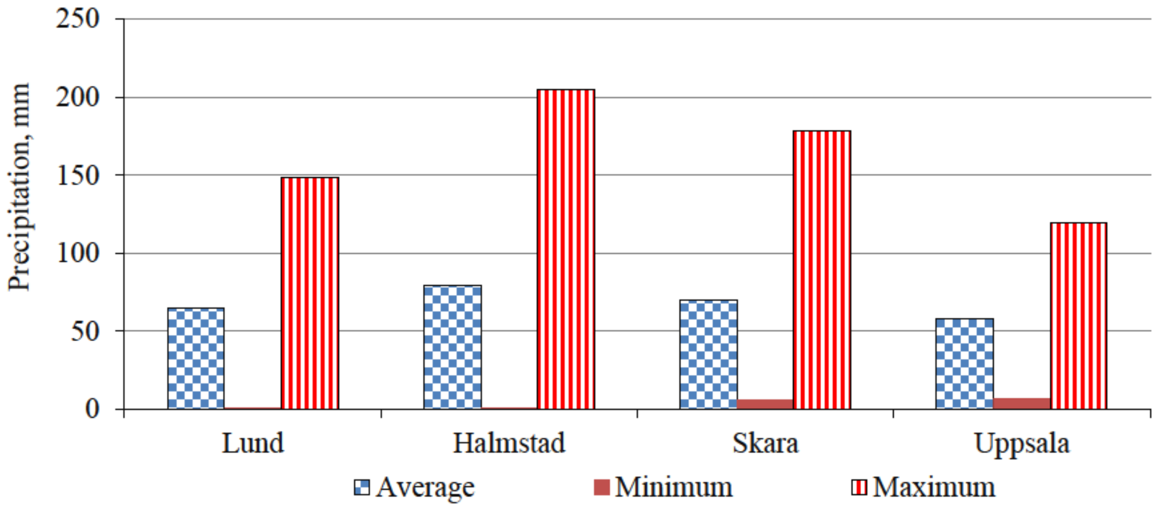

Figure 1. Average, minimum and maximum precipitation (mm) in June in Lund (Skåne county), Halmstad (Halland county), Skara (Västra Götaland county) and Uppsala (Uppsala county), 1961-2013 (Luftwebb, 2014).

Yield of wheat and oats in Skåne county in the period 1963-2011 is shown in Figure 2. In some years in that period yield was much lower than expected, with serious economic consequences. These years were characterised by exceptional weather conditions, particularly in terms of rainfall. For example, yield of winter wheat was significantly lower in 1980, 1987, 2006 and 2010, years which according to Figure 2 had higher precipitation during the harvesting period (150, 184, 251 and 188 mm of rainfall, respectively, for the period 15 July-31 August), leaving few available working days for harvesting.

As Figure 2 shows, oats yield was significantly lower than expected in 1975, 1992 and 2006, which is consistent with a rainy spring in 1975, a dry growing season in 1992 and a rainy harvesting period in 2006. The period 15 May to 10 July in 1992 was extremely dry, with less than 1 mm of rain, and in that year winter wheat and, in particular, oats had lower yield.

In general, it was not possible with the available data to demonstrate that precipitation was the causal factor for the lower yield, as many other factors are also involved. However, it has been reported that yield variations are in most cases related to weather factors (Van Oort, 2012).

The yield values shown in Figure 2 are average values based on observations for each entire county, which means that the most extreme values were levelled off. Moreover, the variation is almost certainly greater in small areas and much greater at farm level. Area of non-harvested crops, which results in substantial losses, can be large some years. One example is that non-harvested cereal area in Norrbotten county in 2011 and 2012 was approximately 45% (SCB, 2001-2013).

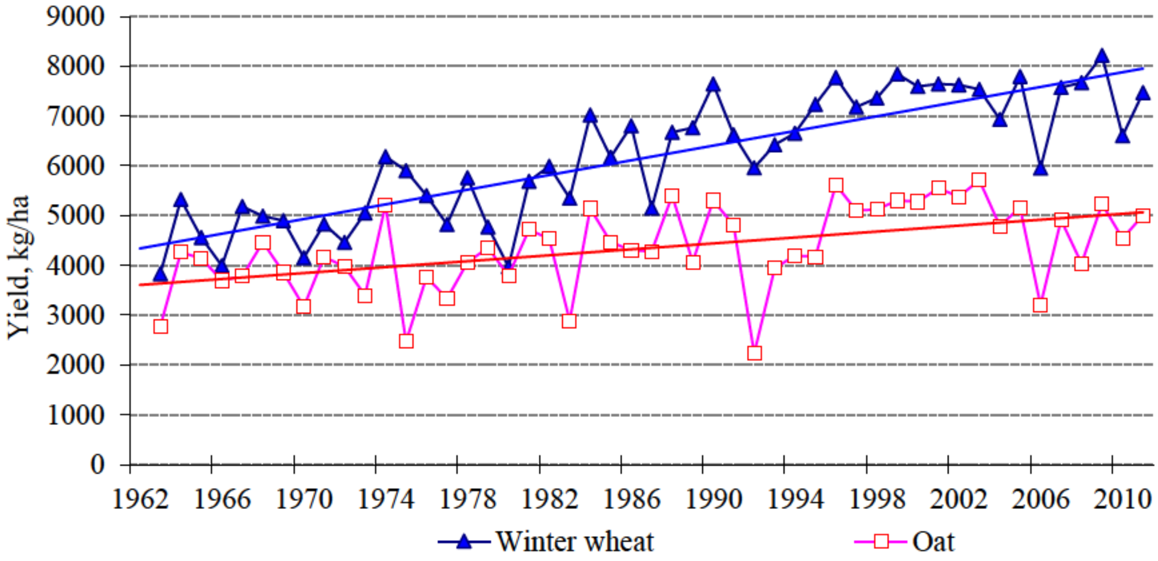

Figure 2. Yield of wheat and oats, and the 'trend line' for Skåne county 1963-2011 (Jordbruksverket, 2015).

There is some accepted knowledge on the negative effects that extreme weather can cause and the economic impact. However, the consequences of weather events have only been approximately quantified, mainly because:

- They are difficult to quantify because many factors simultaneously affect crop yields;
- The weather varies from year to year and extreme weather events are by definition rare;
- The effects vary from one region to another;
- Farms within a region can be affected differently;
- A particular type of weather may have differing effects in different years because of many other unobservable latent factors (often time-related).

There have been a few studies in Sweden on the effects of weather on agricultural production. Some of these examined sowing time, which can be related to weather in cereal grain production. For example, Andersson (1983) studied the effect of sowing time on yield of winter wheat, while Mattson (1990) investigated the influence of sowing time on spring crops in an extensive study based on experimental data and with data from the Objective Crop Yield Survey for the periods 1960-1970 and 1960-1980.

A more direct study of the impact of weather on crop yield in Sweden was carried out by Statistics Sweden (SCB) in 1985 and 1986, which also analysed yield variations in oats and barley using data from the Objective Crop Yield Survey of Värmland county (Danell et al., 1985a, 1985b, 1986). Gunnarsson et al. (2012) reported that rainy periods during the harvesting season occur much more often in Skåne county than in Uppsala county and proposed a preliminary method to quantify rainy periods. Wern (2012) reported in a climate study that extreme precipitation during summer time has increased by approximately 30% in the Götaland region during the past 10 years.

Internationally, several studies have highlighted the importance of extreme weather events. Extreme weather usually has a greater impact than the production trend (Katz & Brown, 1992; Jentsch et al., 2007; Knapp et al., 2008; Van Oort, 2012). In a German study with barley and oats, Chmielewski & Köhn (1999) reported that 60% of the annual yield variation was due to weather. Van Oort et al. (2012) quantified how extreme weather events affect potato production in the Netherlands and concluded that rainy periods during sowing and harvesting have a large impact.

Furthermore, for Swedish conditions there are unfortunately not enough detailed studies on the consequences of extreme weather events for assessing risks. Moreover, possible strategies to minimise the impact of extreme weather events are lacking, despite such events affecting a considerable number of farmers every year. Individual farmers have their own experiences and opinions on the risks to which they are exposed every growing season, but there is a lack of more general and scientific studies on the quantitative impacts, particularly economic, caused by extreme weather events in Sweden. Such information would provide an additional basis for choosing appropriate cropping systems and measures aimed at minimising the risks, which in turn would improve farm finances.

Weather impacts on yield can be measured fairly accurately on county level, but as noted above there is very little information available on how to estimate risks on farm level. From the farmer's perspective, the risk of low yield due to weather conditions is almost impossible to predict. However from a societal perspective the risk of a farm suffering low yield due to bad weather can be theoretically estimated. In principle, this is achieved by studying the risk of bad weather on county level and then taking into account the distribution of yield among farmers and how it changes with severe weather conditions. The problem is that there are insufficient data available to validate any type of conclusion.

In Sweden there is no national insurance system for crops since 1994 and knowledge about the effects of weather conditions at farm level is scarce. There is an urgent need for a system that gives producers effective protection against severe unexpected weather events, but creation of such a system requires the risks to be identified and quantified. In order to estimate the costs, the farm conditions for each production region should be identified in terms of crops and risks of extreme weather. Therefore it is important to create a theoretical model on the effects of weather on yield of different crops and to quantify the economic risk for individual producers. Using historical weather data, it is possible to predict future risks apart from any significant climate change, the effects of which were outside the scope of this study.

Finally, it should be noted that this report is mainly a survey of how often weather conditions will risk causing severe crop losses in different counties of Sweden.

1.1 Objectives

The overall aim of this study was to analyse how negative extreme weather events affect yield of the major crops under Swedish conditions. Specific objectives were to:

- Collect and summarise yield data at county level for a series of years in order to identify those years with extreme low yields and their frequency;
- Collect and summarise weather data at county level for a series of years in order to analyse those years with extreme weather conditions and their frequency;
- Compare years with extreme low crop yields against the weather conditions prevailing in those years and identify weather events leading to low yield;
- Calculate the risk of large deviations from 'normal yield' (-30 and -50% damage/reduction in yield volume);
- Propose measures for mitigating the effects of extreme weather.

2 METHOD

Data on yield for the period 1965-2014 and non-harvested crop area were gathered at county level with the help of official data obtained in national surveys. The relative frequency of low yield was determined for each county of Sweden. In addition, for each county daily precipitation and temperature data for the period 1961-2012 were downloaded from national websites and related to recorded yield in the period 1991-2012. For 2005-2012, there were official data available at individual farm level for each county. Moreover, annual yield data from long-term experiments at four research stations distributed throughout Sweden were included.

2.1 Weather data

Daily temperature and precipitation data series were obtained from the Air Webb of the Swedish Meteorological and Hydrological Institute (SMHI) for a 52-year period (1961-2012) for each county of Sweden (Luftwebb, 2014). These weather data are gridded with a resolution of 4 km x 4 km and are computed using weather models which interpolate measurements at existing meteorological stations. SMHI receives precipitation data for all of Sweden from approximately 700 stations, i.e. each one would represent some 625 km^2 if they were evenly distributed. Such data are easy to use as they do not need correction and the downloadable series of daily temperature and precipitation data are complete and available for any place in the country. A disadvantage is that the values are not ‘real’ measurements, but represent average ‘daily’ conditions, so that short extreme weather events may be smoothed out. Moreover, the density of weather stations is not the same in all regions.

For each of the counties in Sweden, four points at a distance of approximately 10-20 km from each other were selected in order to make the data more representative of the selected places. The daily averages of temperature and precipitation were aggregated into 5-day periods, which was considered to give sufficient resolution for data analysis. For each county several statistics were computed, such as frequency of dry (<20 mm) periods per month and occurrence of 30-day and 40-day dry periods (<20 mm rainfall).

The number of the annual available working days for harvesting winter and spring cereals was also estimated. In southern counties, e.g. in Skåne county, the harvesting period for winter cereals starts around July 25 and that for spring cereals in the middle of August. The corresponding periods become later on moving north, so that in Norrbotten county, where only spring crops are grown, harvesting is carried out in late August-early September. To estimate available number of working days, a method proposed by Witney (1995) was applied. A working day was defined as a day with a daily discounted sum of precipitation of less than 2.0 mm with a 20% assumed discount factor, e.g. if today’s precipitation is 1 mm and yesterday’s discounted precipitation sum was 4 mm, the discounted sum of today is 1.8 mm (1 mm + 4 mm x 0.2). The threshold of 2 mm is higher than the 1.3 mm proposed by Witney (1995), because modern harvesting machinery can handle higher water contents.

For the long-term experiments, weather indices were estimated. For winter wheat the indices were the precipitation sum from 1 May to 15 July and from 1 August to 15 August, whereas for spring cereals they were the precipitation sum from 1 June to 31 July and from 15 August to 5 September. Average temperatures from 1 June to 31 July were used for all crops.

2.2 Yield data

2.2.1 Crop yield data for each county

Annual data series on yield per hectare and county were obtained for the period 1965-2014 from the Swedish Board of Agriculture database (Jordbruksverket, 2015). These official data have been collected for many years in Sweden (approximately 200 years), naturally, it has only been carried out for those crops whose cultivation had certain importance for the considered county. The data gaps in the presented statistics are mainly related to lack of information and/or the data were too unreliable to be presented, e.g. no data were collected for temporary grasses during the period 1993-2001 (Jordbruksverket, 2015).

Collection methods have varied over time and are currently based on direct data sampling of farmers, as they can upload their own data onto special online pages at the Statistics Sweden (SCB) website or collected by telephone interviews. Farm samples now include farms with at least 5 ha arable land and at least 0.3 ha of the crop in question. The statistics on yield also include area left unharvested. For the year 2013, the yield statistics are based on 4371 holdings (SCB, 2014b). Moreover, it is worth noting that the samples do not include information on quality issues.

One problem which has recently arisen is that the statistics do not distinguish between yield from conventional and organic farming and therefore yield on conventional farms is underestimated. However, as organic cereal farming still represents a small fraction of total arable farming in Sweden (approximately 5% of annual cereal production), this underestimation is estimated to be only a few per cent (Jordbruksverket, 2014).

Annual data on standard yield per hectare and county were obtained from the Yearbook of Agricultural Statistics for the period 1991-2012, i.e. 22 years (Jordbruksverket, 2014). The results are based on a water content (wet basis) of 14%. The standard yield for a crop is defined as the normal yield that can be expected in a region. It is calculated through application of a linear regression model based on actual yield for the previous 10 or 15 years, depending on the crop. As these calculations are based on statistics on actual yield, where conventional and organic farming are not distinguished, they also underestimate the outcome of conventional farming (Jordbruksverket, 2014). However, in general the main sources of error are related to sampling, e.g. sample size (Jordbruksverket, 2014). Statistics on non-harvested crop area were obtained for the period 2001-2013 from SCB (2001-2013).

Actual and standard yield per hectare and county for the period 1991-2012 were summarised in tables for the major crops (cereals, oilseed rape, potatoes, peas and field beans) for those counties where their cultivation is relevant. Statistics on the frequency of 10%, 20% and 30% yield reductions were computed when there were at least 10 years with data available. In the risk assessment, for technical reasons, the year 2012 was not included.

A similar compilation of average non-harvested area was made in order to quantitatively evaluate the magnitude of such losses.

2.2.2 Crop yield data on farm level

Data on farm level were obtained for each county for the period 2005-2012. These data were from the national survey conducted by SCB cited above. Data for 2005-2012 were made available to the present study via SCB's MONA system (SCB, 2014a). The farms included in this study in principle did not constitute an ordinary sample, because each farm had an inclusion probability which is proportional to the size of the farm. Unfortunately it was not possible to follow individual farms from one year to the next because new samples were created each year. However, the data can be used to examine e.g. whether the yield variation between farms increases when severe weather occurs.

2.2.3 Data from long-term experiments

Data from the four long-term field trials were used as an indicator of weather-related variations on individual farms. The research stations are located in different agro-ecological zones in Sweden: Säby (59º49´N; 17º42´E) in Uppsala county, Stenstugu (57º36´N; 18º26´E) in Gotland county, Lanna (58º20´N; 13º07´E) in Västra Götaland county and Borgeby (55º44´N; 13º04´E) in Skåne county. The soil type is clay loam in Säby, silty loam topsoil and silty clay loam subsoil in Stenstugu, sandy loam in Lanna and loam-clay in Borgeby.

Barley, oats, winter wheat, spring wheat and leys have been grown in rotation trials since 1965. All experiments are arranged according to a split-plot design. Three crop sequences are tested in a six-year rotation and represent the main plot. Winter wheat is grown in three sequences, with: i) oats, under sown barley, grass/clover ley 1, grass/clover ley 2 and oilseeds; ii) oats, under sown barley, grass ley 1, grass ley 2 and oilseeds; or iii) oats, barley, spring wheat, fallow and oilseeds. For each crop sequence, sub-plots with four levels of fertilisation (sub-sub plots) are considered depending on the crop. In total, there are 72 plots per year and site. Grain is sampled once a year at maturity from subplots with a size of at least 24 m^2.

The yield data selected for the present analysis were those with the highest nitrogen fertilisation rate to exclude variations caused by fertilisation levels. Considering yield variations due to new cultivars and crop management techniques, expected yield over the years was computed using a linear regression model. The deviation of observed yield from expected yield for each year was assumed to be mainly associated with the weather in that specific year.

2.3 Risk analysis

The overall aim of this project was to estimate the risk of severe crop yield losses. In the risk analysis, severe crop losses were taken to mean 30% lower yield than expected for all crops except oats, where a 50% reduction was required. A 50% lower yield at county level is a very high figure, indicating e.g. that many farms had lost most of the crop. Weather factors seemed to have seriously harmed crop production in only a few years. Unfortunately this complicates risk assessment. Our intention was to study 50% losses for all crops, but there were only sufficient data available to perform such an analysis for oats.

Each crop was studied separately and the analysis was also carried out separately for each county. Moreover, it should be pointed out that some counties are large and therefore rather heterogeneous. However, there were insufficient data available for studying sub-regions within counties.

The proposed risk analysis consisted of two steps. The first step was connected to the national survey on crop yield with data aggregated at county level (see Section 2.2.1). For each year, recorded yield in 1991-2011 at county level was compared with the standard yield (expected yield). Years with a deviation of more than 10% from the expected level were identified for each crop and county. Thereafter, for each of the identified years and counties, the ambition was to explain the reasons for the low crop yield, e.g. dry sowing periods or/and rainy harvesting periods. In theory, a logistic regression analysis could have been performed where the independent variables summarised 'the weather' during different periods, i.e. before sowing and up to harvesting. However, due to lack of years with low yields, there were only a few counties where an explicit analysis could be performed (e.g. Uppsala county). Hence these results are not reported. Instead, the analysis was based solely on relative frequency, e.g. if in some county there was low yield relative to the expected value in three years out of 21, the relative frequency was 3/21, i.e. approximately 14%. Alternatively, Poisson regression analysis could have been used, but because of difficulties in performing model evaluation due to few observations, this was not done.

The next step in the proposed risk analysis was to understand how low yield on county level affected the risk of low yield on farm level. In order to quantify the risk on farm level, data for the years 2005-2011 were collected (see Section 2.2.2). Data from earlier years were not accessible for this study. The data came from sampled farms within a region. For some crops in some counties, there were very few observations available and they were therefore excluded from the analysis. The risk analysis was based on quantification of the risk of a severe reduction in crop yield (-30%, or for oats -50%), where in principle four scenarios were considered (see Figure 3c-e). For example, for each crop, the years 2005-2011 were studied, and for each year the distribution of crop yield was estimated via a kernel density method. The results were presented in histograms, as shown in Figure 3. Moreover, from yield analyses of the counties, i.e. deviations from standard crop yield, it was known which years gave low crop yield and thus the distribution of low crop yield could be compared with years where the distribution was based on normal or high yield. In particular, the scenarios which had to be identified when yield was deemed to be low are illustrated in Figure 3. In theory, different types of weather would generate different scenarios for crop yield, but in order to describe the scenarios appropriately many more observations are needed than those available in this study.

The three different types of low yield presented in Figure 3c-e were compared with the outcome from a 'normal year' (a) and a good year (b). In the first low yield case, i.e. (c), the whole population was affected, while in the second case, illustrated in (d), there were relatively many farms with severe crop losses. In (e), some farms in a county produced more than expected, whereas others produced less than expected, i.e. the county showed non-homogeneous behaviour. The case illustrated in (b) indicates a year with high crop yield.

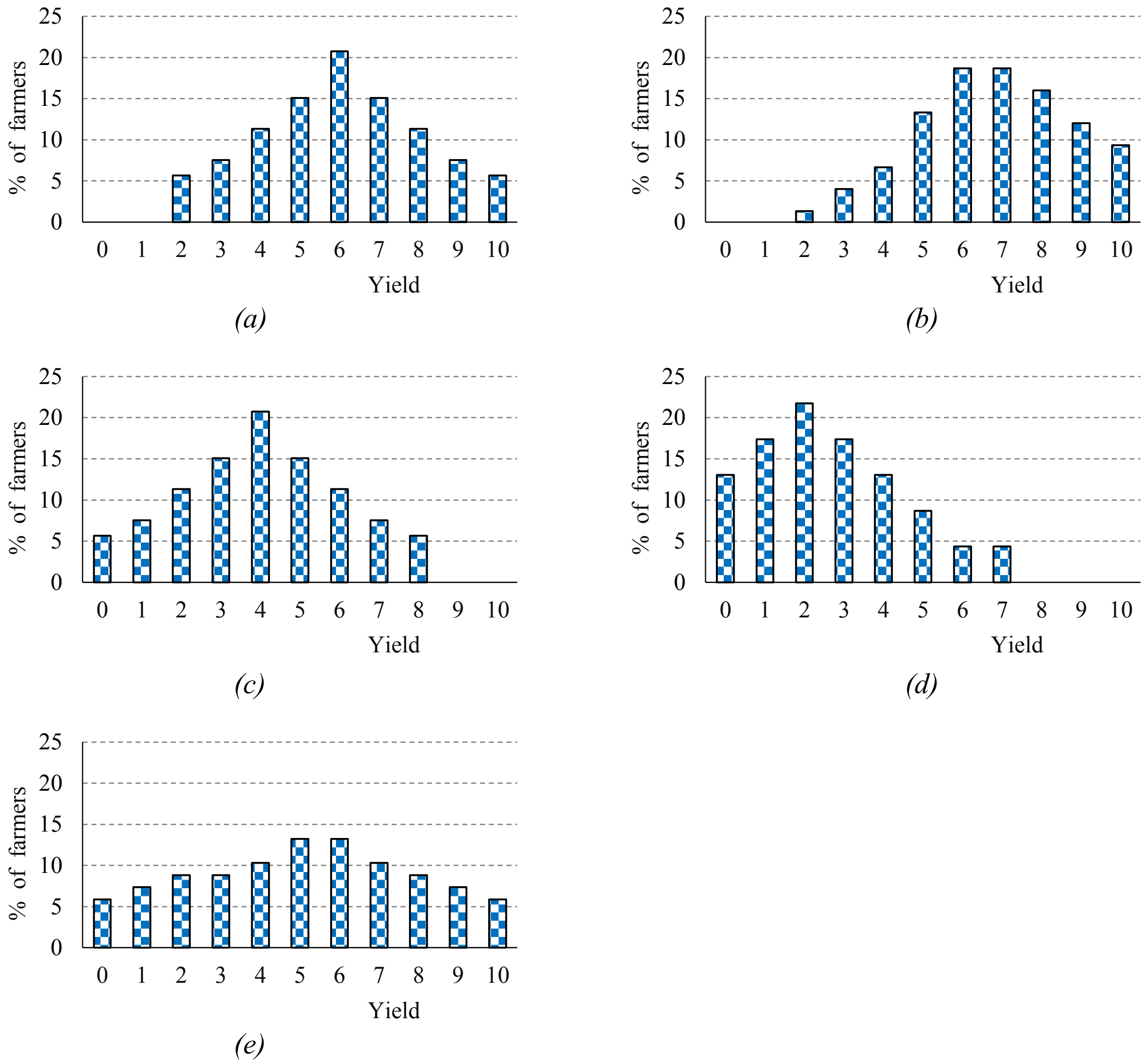

Figure 3. Five scenarios. (a) A normal year, (b) a good year with high yield, (c) a bad year where the whole population has shifted, (d) a bad year for most farmers and (e) a good year for some farms and a bad year for others.

One aim was to identify when severe losses in crop yield, e.g. 30% or 50% crop losses, had occurred. In Figure 3, the mean in (c) in relation to (a) could have been shifted by e.g. 2000 kg/ha. In that case, farms with high yield, e.g. 8000 kg/ha, would not have had severe crop losses according to the -50% criterion, whereas those with yield below 4000 kg/ha would more likely be classified as suffering severe yield losses. In the case shown in (d), most farms would have serious yield losses, whereas for scenario (e) it is difficult to perform any kind of quantification, although it can be stated that less than 50% of farms will have 50% crop losses. It should also be noted that in scenario (b), a few farms may have serious yield decreases, but our analysis was based on official statistics and it is not clear whether the low values depended on weather conditions, e.g. whether local weather conditions meant that it was impossible to harvest at a particular site before a certain date and it was continuously raining after that date, leading to harvesting being impossible.

To conclude the risk assessment discussion, the following formula for estimating the risk for severe yield losses of a specific crop in a specific county was developed:

$$Risk = fa + b,$$

where

f = the relative frequency of low yield in a specific county

a = the proportion of the population of farms affected within a county

b = the proportion of the population of farms affected when there was no indication of low yield in the county.

Concerning the determination of f in the risk formula, we attempted to determine the number of years within the 21-year period 1991-2011 in which crop yield deviated significantly from the standard yield. For example, if there were two years with 40% lower crop yield than expected, $f = 2/21 = 0.095$. Moreover, the main problem was to estimate a. Here, we attempted to determine whether any of the scenarios in Figure 3 had occurred. When this was not possible, any estimator of 'a' was relatively unreliable. However, depending on the average losses we were able to estimate how many farms may have had 30% (50%) crop losses. For example, for an estimated to be 0.40, the term fa in the risk function became 0.095 x 0.40. Finally, b had to be estimated. When there are years with no serious bad weather and crop yield seems to be high, according to the data for 2005-2011 from SCB there will still be a number of farms with low yield or no harvest at all. Throughout this report we assumed that this risk was 0.05. Then if f = 0.095 then the constant b equals 0.905 x 0.05 = 0.045. Therefore, the risk calculated using the values assumed is:

$$\text{Risk} = 0.095 \times 0.40 + 0.905 \times 0.05 = 8\%.$$

Finally, the estimated coefficient of variation, CV, which is defined as the ratio between the estimated standard deviation (std) and the estimated average (m), i.e.

$$CV = \frac{\text{std}}{\text{m}}$$

was considered to be an interesting measure. It appeared that for years when weather had a negative impact on yield m decreased but the variation among farms increased. Thus, for more 'problematic' years the CV will increase.

3 RESULTS

This results section is divided into four parts. The first part provides a quick overview of the relative frequency of lower yield at county level in Sweden. The results of the risk analysis are then presented briefly in Section 3.2 and the results for the long-term experiments in Section 3.3. In Section 3.4 four counties (Skåne, Västra Götaland, Uppsala and Norrbotten) are analysed in detail. Finally, additional statistics for these counties as well as crop production, yield and weather data for the other counties of Sweden are given in Appendix A1-A21.

3.1 Results for all counties

As expected, yield varied from year to year. The risk of obtaining 10% lower yield than the standard yield was relatively high for all counties, i.e. approximately 30%, and there were no large differences between the different cereal crops. In contrast, 30% lower yield than the standard level was less common and the differences between crops and counties were considerable (Table 1 and 2).

In some of the counties with widespread cereal production, such as Skåne, Västra Götaland and Östergötland, the frequency of 30% lower yield for winter wheat was close to zero, while in the northern counties the frequency of lower yield for cereals was much higher, particularly in Norrbotten county (Table 1). In general, the frequency of lower yield, e.g. -30% at county level, was much higher in the northern counties than in other parts of Sweden, and only a few crops could be grown (spring barley, oats, potatoes and ley).

Table 2 shows the frequency of lower yield for potatoes, sugar beet and oilseed rape. The data gaps in the table are mainly due to some of these crops being concentrated in a few production areas, e.g. starch potatoes and sugar beet are only cultivated in southern Sweden. Potatoes and spring rape displayed the highest yield variations from year to year at county level with a 6% and 12% relative frequencies, respectively, of at least 30% lower yield than the standard yield.

Average annual area of non-harvested cereals for all counties ranged from 0.7% to 3.2%, but the range for different counties was much larger, i.e. from 0% to 12% for cereal crops for the study period (see Table 3). In general, the non-harvested area was lower for winter cereals than for spring cereals and the area in northern counties was higher than in the rest of the country. Norrbotten county had the highest average annual non-harvested area, 11% for spring barley (there were insufficient data to determine this statistic for oats). The values for individual years were much higher, e.g. the non-harvested cereal area in 2011 and 2012 in this county was approximately 45% of total area for these crops and can be attributed to extreme precipitation during the harvesting period. However, this level of loss was rare at county level. The crops presented in Table 4 (peas, field beans and oilseeds) are cultivated to a lesser extent than cereals, as many Swedish counties do not have a suitable climate. The average non-harvested area for peas and potatoes was 4.3% and 3.0%, respectively, and the range for individual counties was 0-10%.

As the overall mean values for all counties in Table 1 to 4 were not weighted by the respective crop area, these statistics do not represent the potential yield losses for the whole country.

Crops at a higher risk of yield losses were naturally less frequently cultivated in regions with adverse climate conditions, such as winter rape in Uppsala county or Södermanland county, while they were grown to a higher extent in Skåne county, where the risk of yield losses is much lower (see Table 4).

Table 1. *Relative frequency (%) of three levels (-10%, -20% and -30%) of lower per-hectare yield for cereals than the standard yield. Values based on data for 1991-2012 at county level where at least 10 years were observed. The abbreviations Wi. wh., Sp. wh., Sp. bar. denote winter wheat, spring wheat and spring barley, respectively*.*

Lower yield than standard by:	Relative frequency -10%					-20%					-30%					Number of years with data				
County	Wi. wh.	Sp. wh.	Rye	Sp. bar	Oats	Wi. wh.	Sp. bar	Rye	Sp. wh.	Oats	Wi. wh.	Sp. wh.	Rye	Sp. bar	Oats	Wi. wh.	Sp. wh.	Ry.	Sp. bar	Oats
Stockholm	27	45	-	23	23	14	18	-	14	9	0	0	-	9	9	22	11	5	22	22
Uppsala	27	36	25	23	23	9	9	25	9	9	5	0	17	5	0	22	22	12	22	22
Södermanland	45	27	50	32	36	9	5	19	14	18	0	0	6	0	9	22	22	16	22	22
Östergötland	14	45	9	18	36	5	15	5	9	18	0	5	0	5	9	22	20	22	22	22
Jönköping	-	-	-	18	23	-	-	-	9	18	-	-	-	5	9	6	0	0	22	22
Kronoberg	-	-	-	20	15	-	-	-	15	15	-	-	-	5	15	1	0	0	20	20
Kalmar	36	50	36	36	36	18	25	14	18	18	5	8	7	14	14	22	12	14	22	22
Gotland	32	23	21	36	41	14	8	5	18	32	0	0	0	5	18	22	13	19	22	22
Blekinge	29	-	-	23	47	12	-	-	9	27	0	-	-	0	20	17	5	0	22	15
Skåne**	19	29	29	24	30	10	14	5	14	10	0	10	0	5	5	21	21	21	21	20
Halland	18	36	-	18	18	5	7	-	5	9	0	7	-	5	5	22	14	1	22	22
Västra Göta.**	14	37	25	32	23	0	16	5	14	9	0	5	0	5	5	22	19	20	22	22
Värmland	38	-	-	36	32	29	-	-	9	14	10	-	-	5	9	21	4	0	22	22
Örebro	36	41	15	32	27	23	9	8	14	14	0	0	0	0	5	22	22	13	22	22
Västmanland	45	29	-	27	27	9	10	-	9	14	0	5	-	9	5	22	21	1	22	22
Dalarna	30	-	-	41	36	10	-	-	23	23	10	-	-	0	5	10	1	0	22	22
Gävleborg	-	-	-	32	27	-	-	-	18	27	-	-	-	0	14	0	0	0	22	22
Västernorrland		-	-	25	-	-	-	-	20	-	-	-	-	5	-	0	0	0	20	0
Jämtland	-	-	-	27	-	-	-	-	14	-	-	-	-	9	-	0	0	0	22	0
Västerbotten	-	-	-	30	30	-	-	-	15	20	-	-	-	10	0	0	0	0	20	10
Norrbotten	-	-	-	42	-	-	-	-	37	-	-	-	-	21	-	0	0	0	19	1
Overall mean*	29	36	26	28	31	12	12	11	15	17	2	4	4	5	9					

*   Source: Jordbruksverket (2014). *Observation*: The overall mean is not weighted by county crop area or county yield.
** Yield data for Skåne county from Malmöhus county in the period 1991-1996, and for Västra Götaland county from Skaraborg county in the period 1991-1997.

Table 2. *Relative frequency (%) of three levels (-10%, -20% and -30%) of lower per-hectare yield than the standard yield for potatoes, sugar beet and oilseed rape. Values based on data for 1991-2012 at county level where at least 10 years were observed. The abbreviation Pot., Pot. star., Sug. beet, Wi.. rap, Spr. rap denote potatoes, potatoes for starch, sugar beet, winter rape and spring rape, respectively*.*

Lower yield than standard by:	Relative frequency, % -10%					-20%					-30%					Number of years with data				
County	Pot.	Pot. star.	Sug. beet	Wi. rap	Spr. rap	Pot.	Pot. star.	Sug. beet	Wi. rap	Spr. rap	Pot.	Pot. star.	Sug beet	Wi. rap	Spr. rap	Pot.	Pot. star	Sug beet	Wi. Rap	Spr. rap
Stockholm	-	-	-	-	25	-	-	-	-	6	-	-	-	-	6	0	0	0	3	16
Uppsala	-	-	-	-	38	-	-	-	-	19	-	-	-	-	6	7	0	0	3	16
Södermanland	-	-	-	-	25	-	-	-	-	13	-	-	-	-	13	0	0	0	9	16
Östergötland	24	-	-	29	47	14	-	-	12	24	0	-	-	6	12	21	1	0	17	17
Jönköping	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	0	2	2
Kronoberg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	2
Kalmar	47	-	18	13	-	20	-	6	7	-	13	-	0	0	-	15	8	17	15	2
Gotland	24	-	38	25	31	0	-	6	13	31	0	-	0	6	23	21	1	16	16	13
Blekinge	-	32	24	-	-	-	5	0	-	-	-	5	0	-	-	0	19	17	6	3
Skåne**	60	18	6	19	40	45	6	0	13	27	10	0	0	0	27	20	17	16	16	15
Halland	33	-	6	30	42	10	-	0	20	33	0	-	0	10	25	21	1	17	10	12
Västra Göt .**	48	-	-	40	44	24	-	-	20	19	0	-	-	0	6	21	1	0	15	16
Värmland	33	-	-	-	50	19	-	-	-	30	5	-	-	-	0	21	1	0	0	10
Örebro	25	-	-	-	47	15	-	-	-	20	5	-	-	-	7	20	1	0	1	15
Västmanland	-	-	-	-	27	-	-	-	-	13	-	-	-	-	7	0	0	0	0	15
Dalarna	43	-	-	-	-	10	-	-	-	-	5	-	-	-	-	21	1	0	0	0
Gävleborg	33	-	-	-	-	27	-	-	-	-	13	-	-	-	-	15	0	0	0	0
Västernorrland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	0	0	0	0
Jämtland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0
Västerbotten	33	-	-	-	-	27	-	-	-	-	20	-	-	-	-	15	0	0	0	0
Norrbotten	38	-	-	-	-	29	-	-	-	-	5	-	-	-	-	21	1	0	0	0
Overall mean*	37	25	18	26	38	20	6	2	14	21	6	3	0	4	12					

* Source: Based on data from Jordbruksverket (2014). *Observation*: The overall mean is not weighted by county crop area or county yield.
** Yield data for Skåne county from Malmöhus county in the period 1991-1996, and for Västra Götaland county from Skaraborg county in the period 1991-1997.

Table 3. *Area (%) of non-harvested cereal per county. Values based on data for 2001-2013 at county level where at least 6 years were observed. The abbreviations Win. whe., Spr. whe., Win. rye, Win. barl., Spr. barl., Mix. grain, Cer. total denote winter wheat, spring wheat, winter rye, winter barley, spring barley, mixed grains and cereals total, respectively*.*

County	Percentage area									Number of year with data								
	Win. whe.	Spr. whe	Win. rye	Win. barl.	Spr. barl.	Oats	Triti-cale	Mix. grain	Cer. total	Win whe.	Spr. whe	Win. rye	Win. barl.	Spr. barl.	Oats	Triti-cale	Mix. grain	Cer. total
Stockholm	0	2	0	-	1	4	3	-	1	13	9	6	0	13	13	6	0	13
Uppsala	0	1	0	-	1	1	-	2	1	13	13	10	0	13	13	4	7	13
Södermanland	0	1	3	-	1	2	1	3	1	13	13	11	0	13	13	13	9	13
Östergötland	0	1	0	-	2	1	0	4	1	13	13	12	4	13	13	13	13	13
Jönköping	-	-	-	-	3	2	1	2	2	5	1	0	0	13	13	9	10	13
Kronoberg	-	-	-	-	5	6	4	-	5	1	5	0	1	13	13	10	0	13
Kalmar	2	1	0	1	2	4	1	-	2	13	12	7	13	13	13	13	2	13
Gotland	0	1	0	2	1	1	1	-	1	13	13	8	11	13	13	13	0	13
Blekinge	3	0	-	-	1	4	1	-	2	13	6	1	1	13	10	10	0	13
Skåne	0	0	0	0	0	1	1	-	0	13	13	12	12	13	13	13	0	13
Halland	0	3	-	-	1	2	1	-	1	13	13	1	1	13	13	13	1	13
Västra Götaland	0	1	0	-	1	2	1	2	1	13	13	12	5	13	13	13	13	13
Värmland	1	-	-	-	2	5	3	-	3	12	5	0	0	13	13	8	0	13
Örebro	0	1	1	-	1	1	1	-	1	13	13	9	0	13	13	9	0	13
Västmanland	0	0	-	-	1	1	-	-	1	13	13	0	0	13	13	3	1	13
Dalarna	2	2	-	-	2	3	-	-	2	9	9	0	0	13	13	0	0	13
Gävleborg	-	2	-	-	4	7	-	-	5	0	6	0	0	13	13	0	0	13
Västernorrland	-	-	-	-	9	-	-	-	10	0	0	0	0	13	1	0	0	13
Jämtland	-	-	-	-	6	-	-	-	6	0	0	0	0	13	1	0	0	13
Västerbotten	-	-	-	-	7	11	-	-	8	0	0	0	0	13	8	0	0	13
Norrbotten	-	-	-	-	11	-	-	-	12	0	0	0	0	13	3	0	0	13
Overall mean*	0.7	1.2	0.6	0.9	2.9	3.2	1.5	2.4	3.2									

* *Observation*: The overall mean is not weighted by county crop area or county yield. Based on data from Jordbruksverket (2014) and SCB (2001-2013).

Table 4. *Area (%) of non-harvested peas,* field *beans, oilseed rape and potatoes per county. Values based on data for 2001-2013 at county level where at least 6 years were observed*.*

County	Percentage area							Number of years with data						
	Peas	Field beans	Winter rape	Spring rape	Winter turnip rape	Potatoes	Potatoes starch	Peas	Field beans	Winter rape	Spring rape	Winter turnip rape	Potatoes	Potatoes starch
Stockholm	1	-	-	2	-	-	-	9	0	5	13	0	1	0
Uppsala	4	-	4	1	-	-	-	13	0	6	13	1	2	0
Södermanland	5	-	3	2	-	-	-	13	3	8	13	0	1	0
Östergötland	3	2	1	2	-	2	-	13	6	13	13	1	11	0
Jönköping	-	-	-	-	-	-	-	0	0	0	0	0	3	0
Kronoberg	-	-	-	-	-	-	-	0	0	0	0	0	1	0
Kalmar	2	-	1	-	-	4	-	13	0	12	0	1	10	4
Gotland	3	-	1	2	-	2	-	13	0	12	12	1	11	1
Blekinge	-	-	-	-	-	-	2	2	0	5	1	0	1	12
Skåne	3	-	0	2	-	1	1	8	2	13	12	1	12	11
Halland	-	-	2	1	-	3	-	5	1	12	11	1	12	0
Västra	7	2	2	1	-	2	-	13	9	13	13	1	12	0
Värmland	10	-	-	2	-	3	-	7	0	0	9	1	12	0
Örebro	6	-	-	1	-	4	-	12	0	3	13	1	11	0
Västmanland	5	-	-	1	-	-	-	13	0	1	13	0	3	0
Dalarna	-	-	-	-	-	2	-	0	0	0	0	1	12	0
Gävleborg	-	-	-	-	-	4	-	0	0	0	0	1	12	0
Västernorrland	-	-	-	-	-	-	-	0	0	0	0	0	4	0
Jämtland	-	-	-	-	-	-	-	0	0	0	0	0	2	0
Västerbotten	-	-	-	-	-	3	-	0	0	0	0	1	12	0
Norrbotten	-	-	-	-	-	5	-	0	0	0	0	1	11	0
Overall mean*	4.3	2.0	1.8	1.5		3.0	1.7							

* *Observation*: The overall mean is not weighted by county crop area or county yield. Based on data from Jordbruksverket (2014) and SCB (2001-2013).

3.2 Risk assessment

The risk of severe crop losses is presented for each county of Sweden in Table 5. The general two-step method for assessing risks described in Section 2.3 was applied, but despite using this strategy to perform the risk assessment, each case listed in Table 5 had to be considered separately. In some cases it was easy to put a value on the risk, in other cases ocular inspection of the estimated distribution in the second step was required to determine the value.

As Table 5 shows, for winter wheat Kalmar county and Värmland county approached a 20% risk of 30% yield losses relative to the expected yield. For spring wheat, the highest risk of 30% crop losses was found for Östergötland county (20% risk), Skåne county (20%), Västmanland county (15%), Gävleborg county (20%), Västernorrland county (20%), Jämtland county (20%) and Norrbotten county (20%). For rye, the risk of 30% yield losses was ≤10% for all counties (Table 5). For spring barley, the risk of severe crop losses, i.e. -30% of the expected value, was highest in Kronoberg county (15%), Kalmar county (25%), Blekinge county (20%), Örebro county (15%) and Västmanland county (15%). For oats, the risk of 50% crop losses was highest in Södermanland county (15%), Östergötland county (20%), Kronoberg county (15%), Kalmar county (20%), Gotland county (15%) and Skåne county (15%).

Table 5. *Risk of at least 30% lower yield (oats 50% lower) than expected in different counties of Sweden according to the approach described in Section 2.3. The percentage classes assessed were less or equal to 5%, 10%, 15%, 20% and 25%.*

Crop	County									
	Stock-holm	Uppsala	Söder-manland	Öster-götland	Jönkö-ping	Krono-berg	Kalmar	Gotland	Blekinge	Skåne
Winter wheat	5%	10%	10%	5%	--	--	20%	5%	10%	10%
Spring wheat	5%	10%	10%	20%	--	--	--	5%	--	20%
Rye	10%	10%	10%	5%	--	--	--	5%	--	10%
Spring barley	10%	10%	15%	10%	10%	15%	25%	10%	20%	15%
Oats	5%**	5%**	15%**	20%**	10%**	15%**	20%**	15%**	10%**	15%**

	County										
Crop	Halland	Västra Götaland	Värmlan d	Örebro	Väst-manland	Dalarna	Gävle-borg	Väster-Norland	Jämtland	Väster-botten	Norr-botten
Winter wheat	5%	10%	20%	10%	10%	--	--	--	--	--	--
Spring wheat	5%	5%	--	10%	15%	--	--	--	--	--	--
Rye	5%	10%	--	5%	--	--	--	--	--	--	--
Spring barley	10%	5%	10%	15%	15%	10%	20%	20%	20%	10%	20%
Oats	10%**	10%**	10%**	10%**	10%**	10%**	20%**	--	--	5%**	5%**

--: Insufficient data to estimate the risk.

** For oats at least 50% lower yield than expected.

3.3 Results from the long-term experiments

Yield reductions exceeding 70% of the expected yield were observed very seldom in the long-term experiments. Yield reductions of between 30% and 50% of expected yield depended on crop and location (Table 6). In all cases, winter wheat showed lower yield reductions compared with other cereals. The occurrence of yield below 70% of the expected was around 15%, 14%, 12% and 8% for barley, spring wheat, oats and winter wheat, respectively. For spring cereals, the mean frequency of yield below 50% of the expected level was around 3-4% (i.e. one year in the period 1965-2010).

Table 6. *Occurrence (%) of yield reductions of more than 30%, 50% and 70% of the expected yield for five crops at Lanna, Säby and Stenstugu and two crops at Borgeby. Yield data cover the period 1965-2002 at Lanna, 1969-2010 at Säby, 1968-2010 at Stenstugu and 1961-2002 at Borgeby.*

Location	Yield reduction (%)	Barley	Oats	Winter wheat	Spring. wheat	Ley 1	Ley 2
Lanna	≥ 30	13%	11%	5%	18%	16%	6%
	≥ 50	5%	3%	0	8%	3%	0
	≥ 70	0	0	0	0	3%	0
Säby	≥ 30	17%	19%	10%	10%	14%	7%
	≥ 50	6%	6%	3%	2%	7%	2%
	≥ 70	0	0	2%	0	2%	2%
Stenstugu	≥ 30	14%	8%	8%	13%	15%	22%
	≥ 50	11%	3%	0	3%	7%	2%
	≥ 70	0	0	0	0	0	0
Borgeby	≥ 30	7%	2%				
	> 50	0	2%				
	≥ 70	0	0				

Temperature did not vary greatly between summers, with a standard deviation of about 1 °C (data not shown). However, precipitation varied significantly, with coefficient of variation ranging from 31% to 79%. Years with yield reductions that exceeded 30% and the corresponding precipitation deviations (%) from their respective averages are shown in Table 7. Significant deviations (> ±30%) in precipitation for at least one of the periods were observed for 87%, 76% and 87% of years at Lanna, Säby and Stenstugu, respectively (for period definitions, see Section 2.1 last paragraph or footnotes in Table 7). However, of the 46 experimental years covered, significant deviations in precipitation were observed for 22, 18 and 19 years for spring cereals at Lanna, Säby and Stenstugu, respectively. For winter wheat, the corresponding number of years with significant deviations in precipitation was 19, 19 and 22 at Lanna, Säby and Stenstugu, respectively (Table 7).

Table 7. *Years with yield reductions larger than 30% compared with the standard yield and the precipitation deviation (%) from average in the early period (P1*) and harvest period (P2*) of the corresponding year.*

Crop	Lanna				Säby				Stenstugu			
	Year	Dev. Yield (%)	Dev. P1(%)	Dev. P2(%)	Year	Yield (%)	Dev. P1(%)	Dev. P2(%)	Year	Yield (%)	Dev. P1(%)	Dev. P2(%)
Barley	1966	-58	-31	-57	1969	-33	-66	64	1970	-57	22	-67
	1975	-34	-49	-49	1983	-57	2	-57	1979	-41	14	14
	1988	-58	39	115	1998	-41	51	-10	1987	-64	25	-70
	1992	-30	-50	80	1999	-35	-56	-53	1992	-59	-16	52
	2001	-47	-18	0	2000	-32	66	-58				
					2005	-57	48	-45				
Oats	1966	-50	-31	-57	1973	-44	14	-65	1992	-61	-16	52
	1969	-48	-60	3	1976	-35	-39	-71	1995	-39	24	50
	1975	-31	-49	-49	1978	-55	14	129	1999	-32	-20	-37
	1998	-37	39	-9	1980	-30	23	14				
					1999	-46	-56	-53				
					2000	-47	66	-58				
					2001	-51	-24	78				
Spring wheat	1965	-45	51	62	1973	-33	14	-65	1969	-51	-60	139
	1969	-67	-60	3	2000	-42	66	-58	1973	-34	-7	-78
	1971	-36	12	-30	2003	-68	-22	-22	1979	-39	14	14
	1978	-58	-24	50	2008	-47	-21	-3	1992	-44	-16	52
	1990	-51	-1	38					2006	-38	-59	50
	2000	-34	12	-17								
Winter wheat	1965	-47	5	-42	1979	-36	26,9	-36	1970	-45	-16	43
					1999	-35	-47	-26	2003	-47	28	-52
					2001	-32	-20	10	2006	-49	-34	24
					2003	-72	19	23				

* For winter wheat period *P1:* 1 May-15 July and *P2:* 1-15 August (for period definitions, (see also Section 2.1)
For spring cereals period *P1:*1 June-31 July and *P2:* 15 August-5 September

3.4 Detailed crop loss analysis for the counties of Skåne, Västra Götaland, Uppsala and Norrbotten

This section is organised in the following way: for each county, a first subsection presents statistics on production for the major crops and their variation which are depicted in tables and figures. In a second subsection precipitation and temperature data from the period 1961-2012 during the growing season are examined and related to county yields, exploring if weather observations could explain years with low yields. In a third subsection the variation on farm level is described, while in a fourth and final subsection a risk assessment on yield losses is performed.

3.4.1 Skåne county

3.4.1.1 Crop production and yield at county level

Annual production in the years 2010-2014 and average of the major crops is presented in Table 8. Skåne is the leading producing county for most of the crops in the country (additional information is found in Appendix A10).

Table 8. *Yearly production (metric ton) in 2010-2014 for the major crops in Skåne county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Sugar beet	1 882 100	2 377 300	2 209 100	2 213 600		2 170 525
Winter wheat	660 500	737 600	711 800	638 100	836 600	716 920
Temporary grasses	479 700	551 200	551 900	514 000	563 300	532 020
Spring barley	357 800	439 200	550 100	494 000	425 900	453 400
Potatoes	206 800	226 600	228 800	214 000	214 900	218 220
Potatoes for starch	164 700	169 700	152 000	151 500	161 300	159 840
Winter rape	139 200	110 000	123 400	159 400	175 300	141 460
Rye	67 400	73 600	87 100	94 900	97 200	84 040
Spring wheat	46 100	38 800	57 400	61 300	39 200	48 560
Oats	33 400	42 800	56 500	60 200	35 400	45 660
Winter barley	34 300	28 600	23 900	32 500	32 400	30 340
Triticale	23 000	19 600	24 700	24 300	39 900	26 300

* Data from Jordbruksverket (2015)

Annual yield of winter and spring wheat, spring barley and oats in Skåne county is shown in Figure 4. In general, yield increased until the 1990s and since then has more or less stagnated. Winter wheat was the cereal with the highest yield (7000-8000 kg/ha in last 15 years), and yield of spring cereals was 5000-6000 kg/ha in most years. However, yield varied from year to year, as shown in Figure 4. Sugar beet and winter wheat showed the lowest relative difference, with a coefficient of variation of 6%. Oats had the highest variation (CV = 11%) (Table 9).

Table 9. *Average yield for important crops in Skåne county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Sugar beet	46 873	2 722	6
Winter wheat	6 351	395	6
Spring barley	4 727	378	8
Potatoes	34 155	2 847	8
Potatoes for starch	34 892	3 132	9
Winter rape	2 952	235	8
Rye	4 934	332	7
Oats	4 448	471	11

* Coefficient of variation = Standard deviation / Average

The years with the lowest yield at county level are presented in Table 10, together with some explanatory weather notes. Yield losses of more than 30% occurred more frequently in oats than in other cereals. Lower yield was mainly related to dry periods or/and rainy conditions during harvesting. Oats appeared to be more sensitive to dry periods. Yield in 1992 and 2006 was particularly low for spring crops. The year 1992 was extremely dry and 2006 had a dry summer followed by an exceptionally rainy harvesting period (244 mm precipitation in August).

Table 10. *Years in Skåne county with at least 25% lower cereal yield compared with the trend curve (Figure 4) for the period 1965-1990 and compared with the standard yield for the period 1991-2012*.*

Year	Winter wheat, %	Spring wheat, %	Spring barley, %	Oats, %	Notes
1975				-38	Dry period (10 June-10 July: 11 mm
1980	-31				Wet period (1 June-30 July: 234 mm
1983				-32	Wet late spring and dry summer
1992		-46	-42	-52	Very dry period (15 May-10 July: 2 mm)
2006	-25	-41	-26	-43	Dry period (5 June-25 July: 33 mm + high temperature); very wet August (1 August-5 September: 261 mm)
2008				-29	Dry periods in May and June, rainy harvesting period (1 August-5 September: 163 mm)

* Based on data from Luftwebb (2014) and Jordbruksverket (2014, 2015).

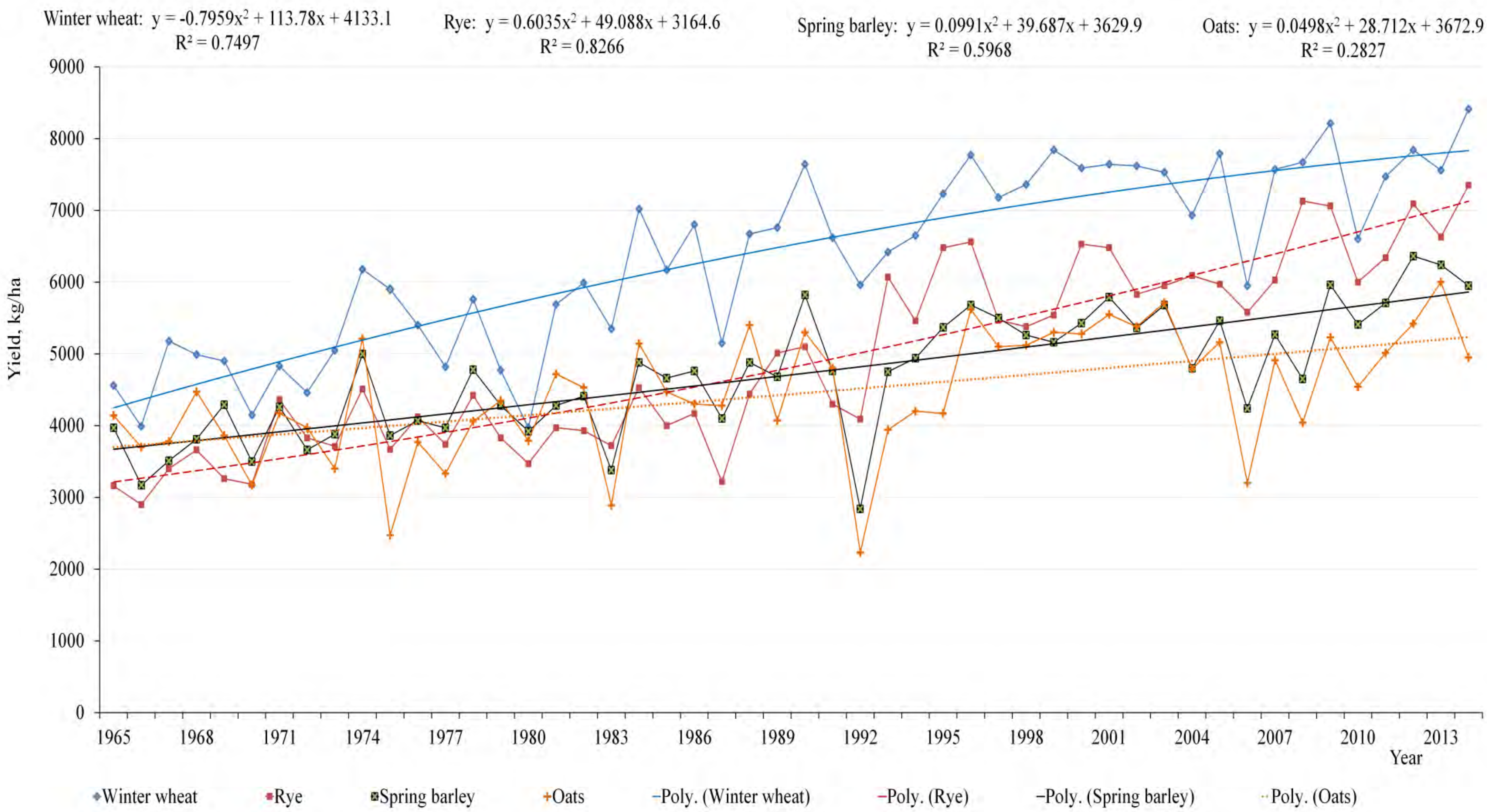

Figure 4. Average yield (kg/ha) per year of winter wheat, spring wheat, barley and oats in Skåne county for the period 1965-2014, and their trend lines with respective equations. Yield data in the period 1965-1996 from Malmöhus county and 1997-2014 from Skåne county (Jordbruksverket, 2015). The variable x in the trend line equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50.

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3.4.1.2 Precipitation, temperature and yield analysis

Figure 5 shows the relative frequency of dry periods (<20 mm precipitation for 30 and 40 days) during the growing season. The occurrence of a 30-day dry period within May to September was just above 10% for the study period, with higher relative frequency in March and April (approximately 30%). It can be assumed that crops, particularly spring crops, are affected by these dry periods. The frequency of a 40-day dry period starting in April was less than 10%, lower in May and zero in June and July. Long dry periods, particularly from April to mid-July influenced yield negatively.

Dry periods with less than 20 mm during 30 days within 15 April to 31 July occurred almost every second year (Figure 6) but 40-day periods were much rarer (Figure 7), i.e. one every ten years. Such 40-day dry periods showed a clear negative impact on cereal yield, which was approximately 40% lower in 1992 and 20% lower in 1989.

The estimated number of available working days for harvesting operations is presented in Figures 8 and 9. Assuming that approximately six working days are needed for harvesting winter cereals and six more for spring cereals (Gunnarsson et al., 2012), it can be concluded that the weather conditions for harvesting were favourable in most years. The estimated number of working days was less than 6 days only in 1993 for winter cereals, but in several years for spring cereals. August 2006 was extremely wet, with only two estimated working days for spring crops (Figure 9), resulting in a yield reduction from 25% to 40% for spring cereals (Figures 11-13). A similar number of working days occurred in 1963 (Figure 9), which coincided with a dry period lasting 40 days (Figure 7), which negatively influenced yield (-25%).

Figure 10 shows the yield per year for winter wheat and precipitation for the periods 1 May-15 July (76 days) and 20 July-5 August. In most years the precipitation level was around 175 mm for the period 1 May-15 July, giving an average daily precipitation of approximately 2.3 mm. The lower quartile precipitation was 118 mm, which means that in 75% of years average precipitation was at least 1.6 mm per day. Considering potential evapotranspiration of around 3.4 mm per day during this period (Wallén, 1966), it can be concluded that the precipitation conditions were favourable in most years. Only in 1992 was the precipitation during this period less than 1 mm per day and it was accompanied by very low yield at county level in that year.

Yield of spring wheat and oats and precipitation in the period 15 May-15 July are presented in Figures 11 and 13. The low level of precipitation in 1992 strongly affected spring cereals, with a yield reduction of approximately 45%. Figure 12 shows spring barley yield and temperature, between which there appeared to be an inverse relationship. The years with the highest temperature for the period (1992 and 2006) were the years with the lowest yield. However, in 1992 there was also a 40-day dry period (Figure 7) and in 2006 a 30-day dry period (Figure 6) and very few available working days for harvesting (Figure 9).

The data shown in Figures 10-13 confirm that a single weather variable such as precipitation or temperature in Skåne county is insufficient to explain yield variations. Consequently, other weather factors or combinations of these are important in explaining actual yield.

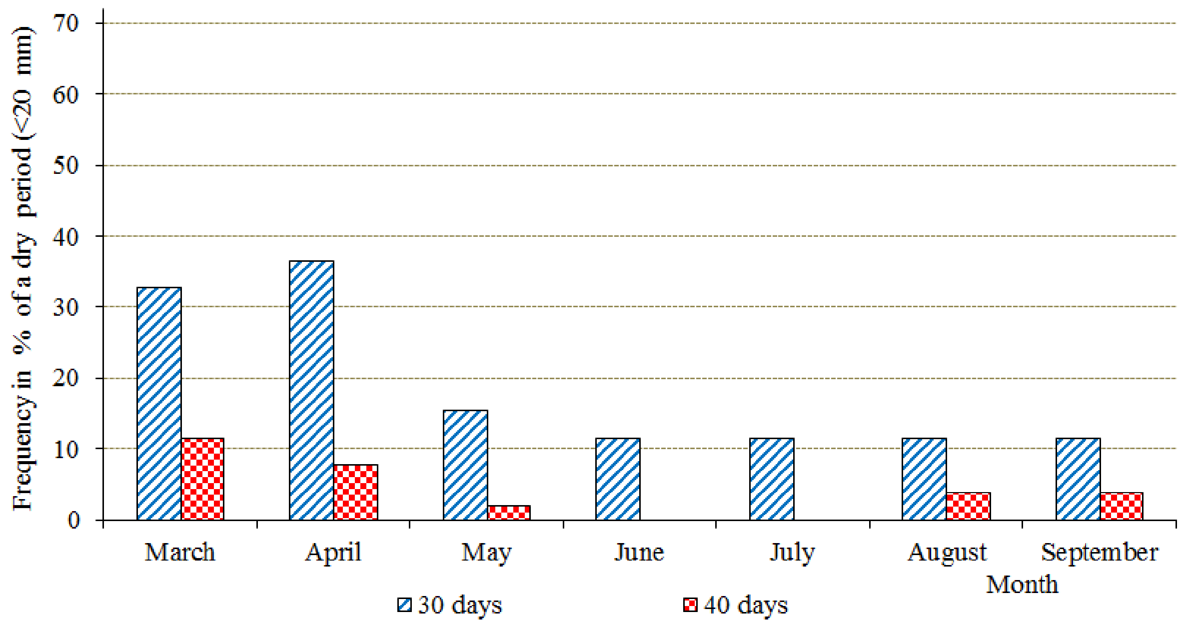

Figure 5. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Skåne county*.

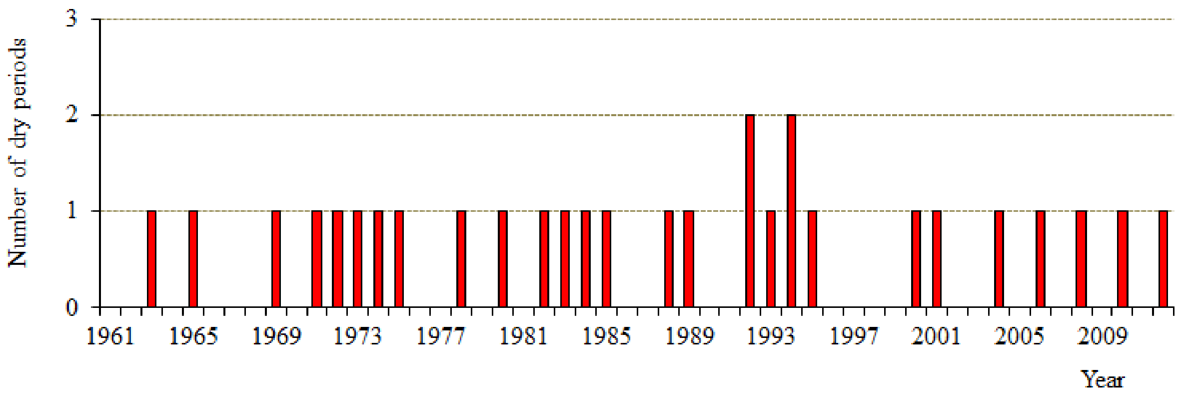

Figure 6. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 April to 31 July in Skåne county*.

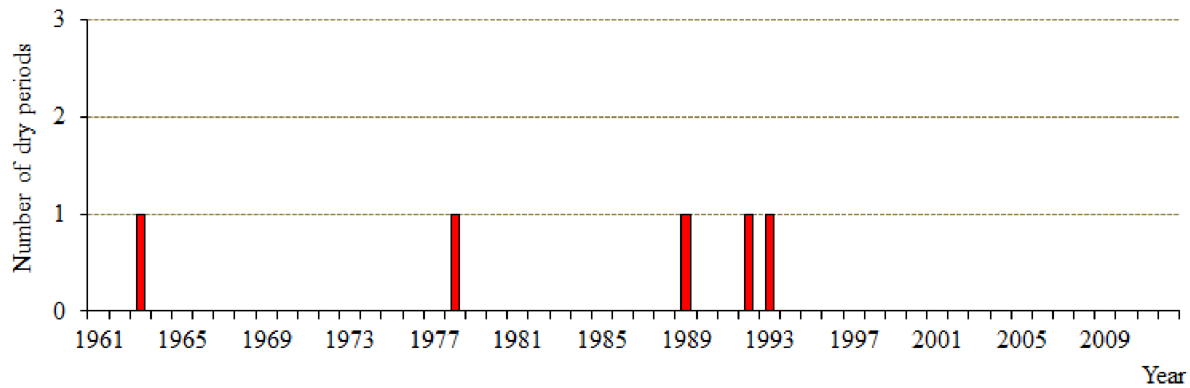

Figure 7. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 April to 31 July in Skåne county*.

* The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

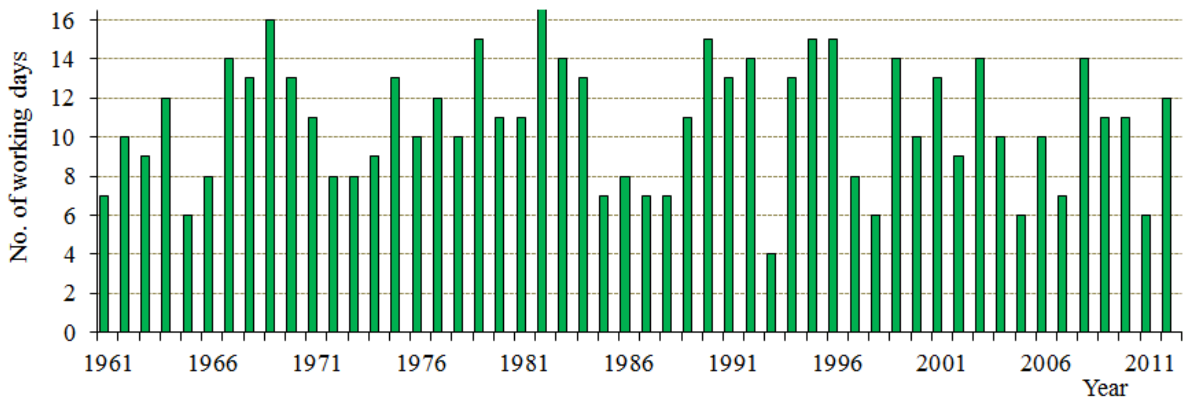

Figure 8. Estimated number of working days available for harvesting during the period 22 July-7 August in Skåne county (for definition of a working day, see Section 2.1)*.

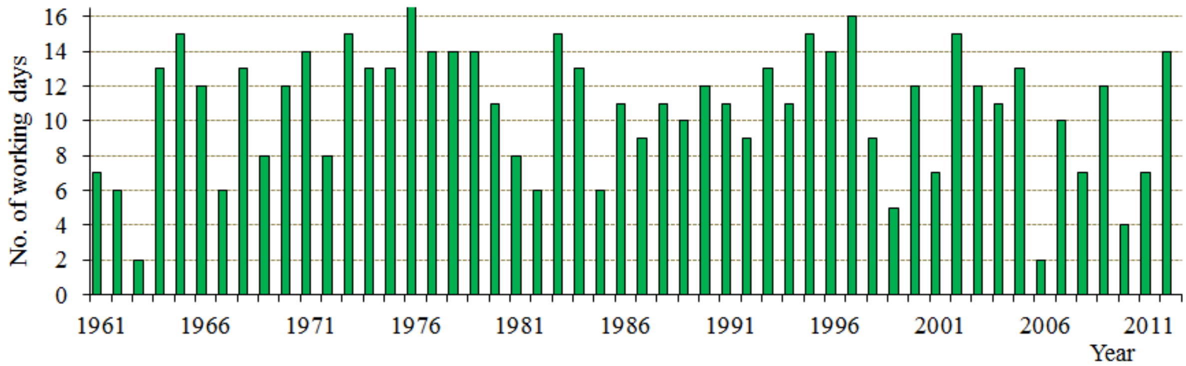

Figure 9. Estimated number of working days available for harvesting during the period 8-24 August in Skåne county (for definition of a working day, see Section 2.1)*.

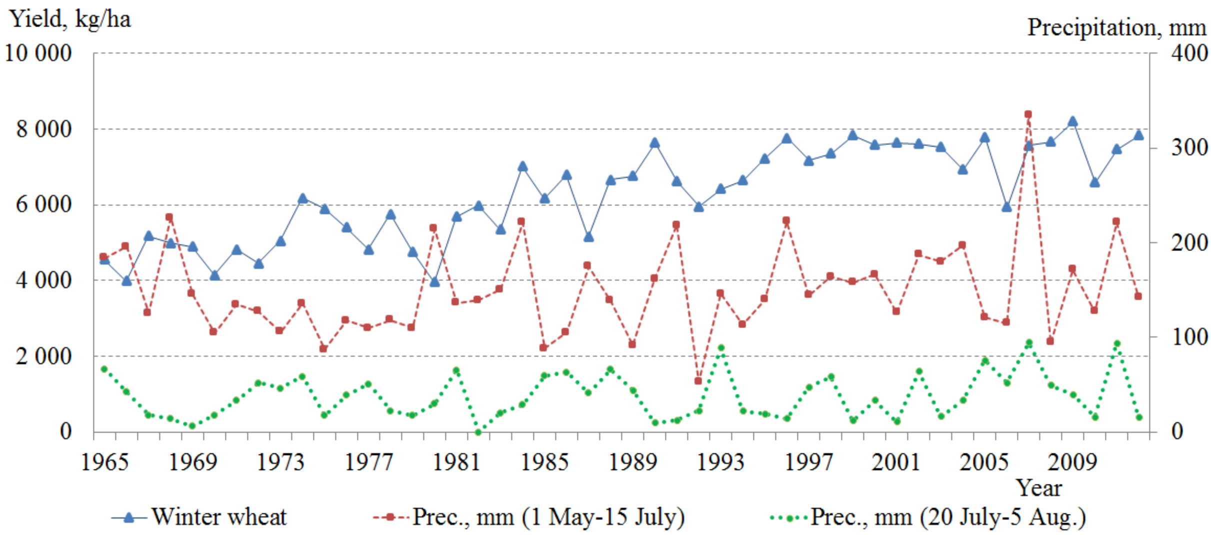

Figure 10. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 20 July-5 August in Skåne county, 1965-2012*.

* Precipitation from Luftwebb (2014) Yield data in the period 1965-1996 from Malmöhus county and 1997-2012 from Skåne county (Jordbruksverket, 2015).

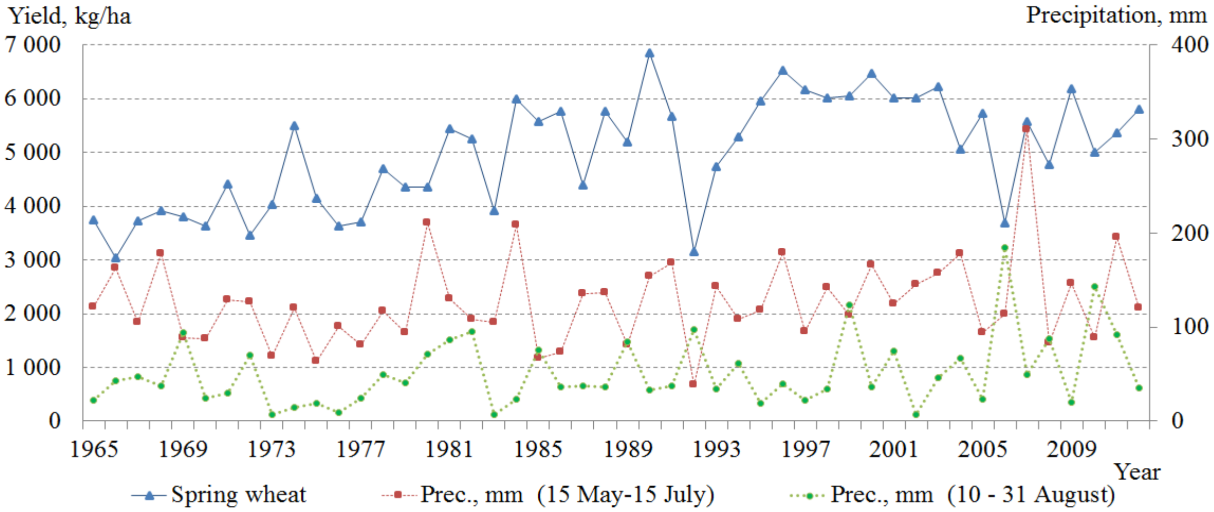

Figure 11. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 15 May-15 July and 10-31 August in Skåne county, 1965-2012*.

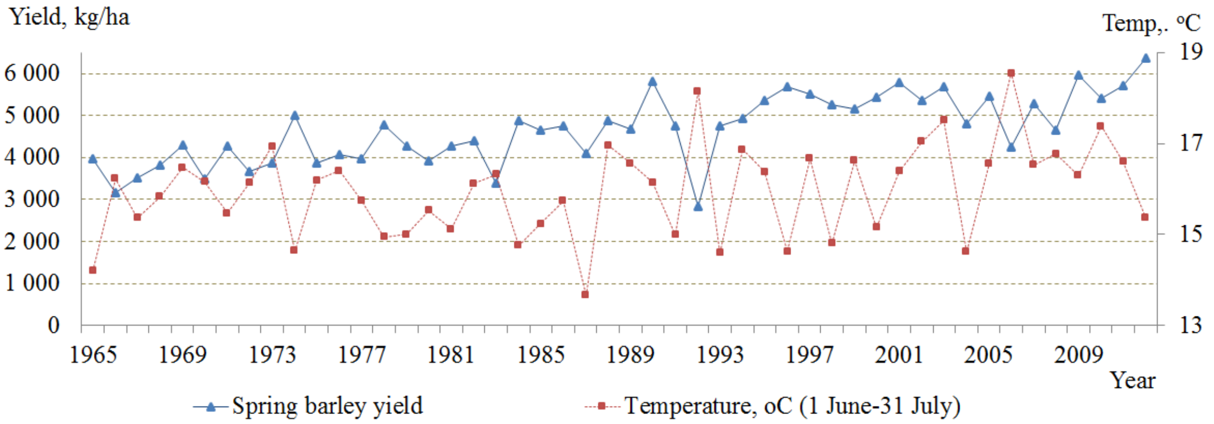

Figure 12. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-15 July in Skåne county, 1965-2012*.

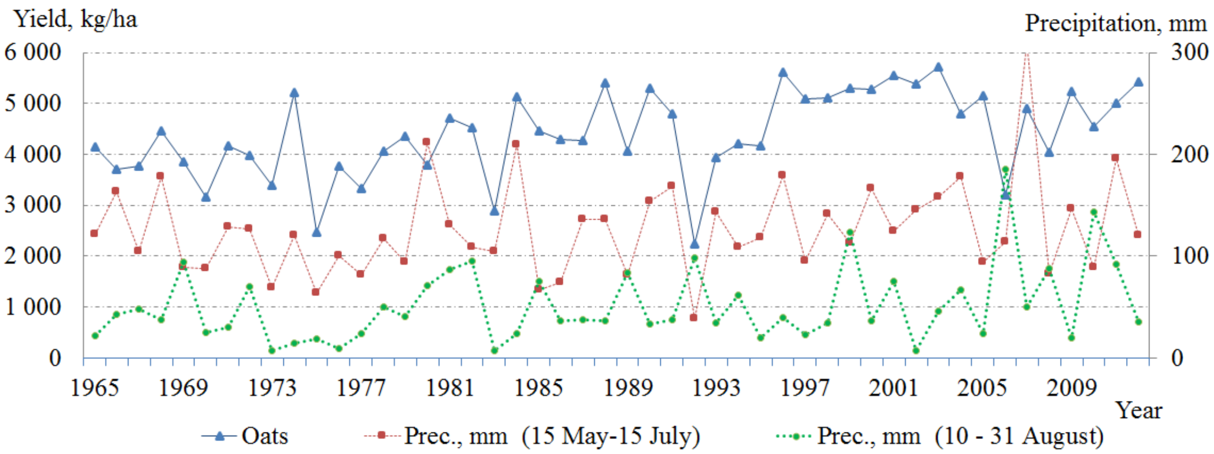

Figure 13. Annual oat yield (kg/ha) and precipitation (mm) in the period 15 May-15 July and 10-31 August in Skåne county, 1991-2011*.

∗ Precipitation and temperature from Luftwebb (2014) and yields data in the period 1965-1996 from Malmöhus county and 1997-2012 from Skåne county (Jordbruksverket, 2015).

3.4.1.3 Yield on farms

The yield percentiles for winter wheat and oats at farm level in Skåne county in the years 2005-2012 are shown in Figures 14 and 15. Corresponding diagrams are provided in Appendix A10 for barley, spring wheat, rye, spring and winter rape, potatoes and temporary grasses. As expected, average yield varied from year to year and with crop species. It was particularly low in 2006, a year with a dry June and July, and a very rainy August.

Large yield differences between farms occurred frequently, including in years with high average yield, e.g. 2009. Yield for the upper quartile of farms was at least 30% higher than that for the lower quartile for most years and crops. The differences were even larger in years with unfavourable weather conditions, for example 2006. The number of farms in the samples ('N values' in diagrams) was relatively large, approximately 450 farms for winter wheat and spring barley, which gives confidence in the results.

Figures 14 and 15, among others, illustrate that a large number of farms obtained much lower yield than the average level (see 5th and 10th percentiles). The average yield for the 10th percentile was approximately 65-75% of the average in most years and for individual years the difference was even greater. For example, in 2006 yield of spring crops was very low on many farms and yield of oats, spring wheat and spring rape on the lower quartile (i.e. 25%) of farms was less than half the level which could be expected in a 'normal' year. This low yield would have had negative economic consequences for the farms concerned.

The yield variation over the years is also illustrated in Table 11 with the coefficient of variation. In most years this measure of variation oscillated between 20% and 30% for different crops with the exception of temporary grasses which is much higher, but in 2006 the relative yield differences were larger, particularly for oats and spring rape, while yield of winter wheat and winter rape appeared more stable. The higher yield instability for oats and spring rape leads to higher risk in growing these crops.

Table 11. *Coefficient of variation of farm-level yield for some important crops in Skåne county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Winter wheat	17	30	17	19	18	19	17	20	20
Temporary grasses		52	52	73	53	47	67	57	57
Spring barley	22	29	23	24	21	23	19	21	23
Potatoes		28	32	23	21	24	25	23	25
Winter rape	21	16	26	23	18	20	25	19	21
Rye	29	27	22	25	24	-	26	23	25
Spring wheat	24	32	26	29	20	19	25	22	24
Oats	25	40	22	27	20	26	22	25	26
Spring rape	28	38	32	25	30	43	32	24	31
Average	24	32	28	30	25	28	29	26	

* Based on farm-level yield data from SCB (2014a).

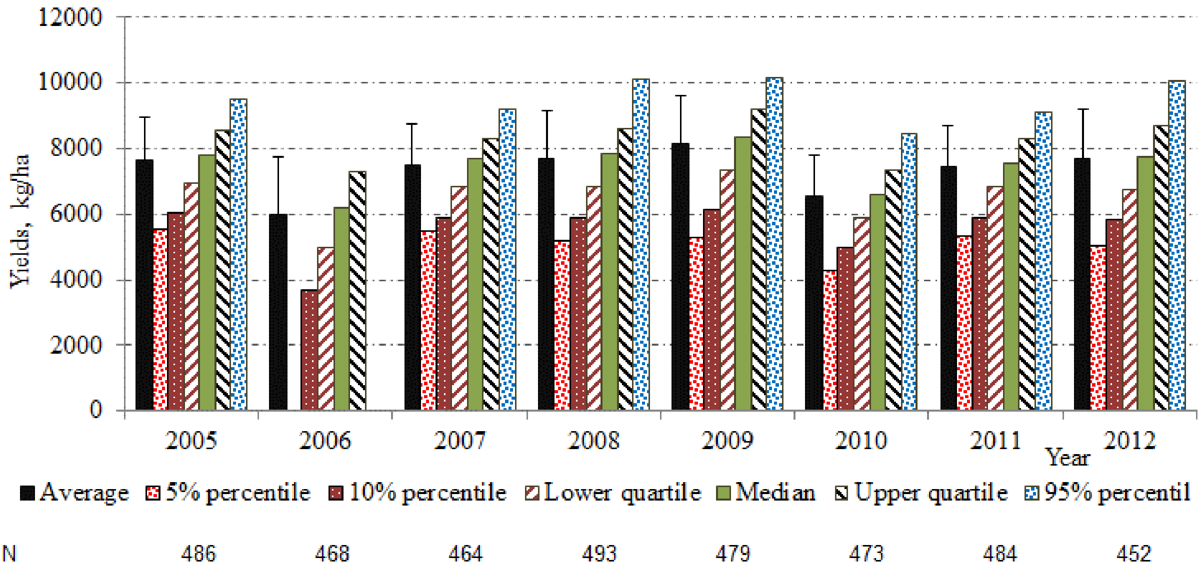

Figure 14. Average and estimated percentiles of winter wheat farm-level yield in Skåne county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

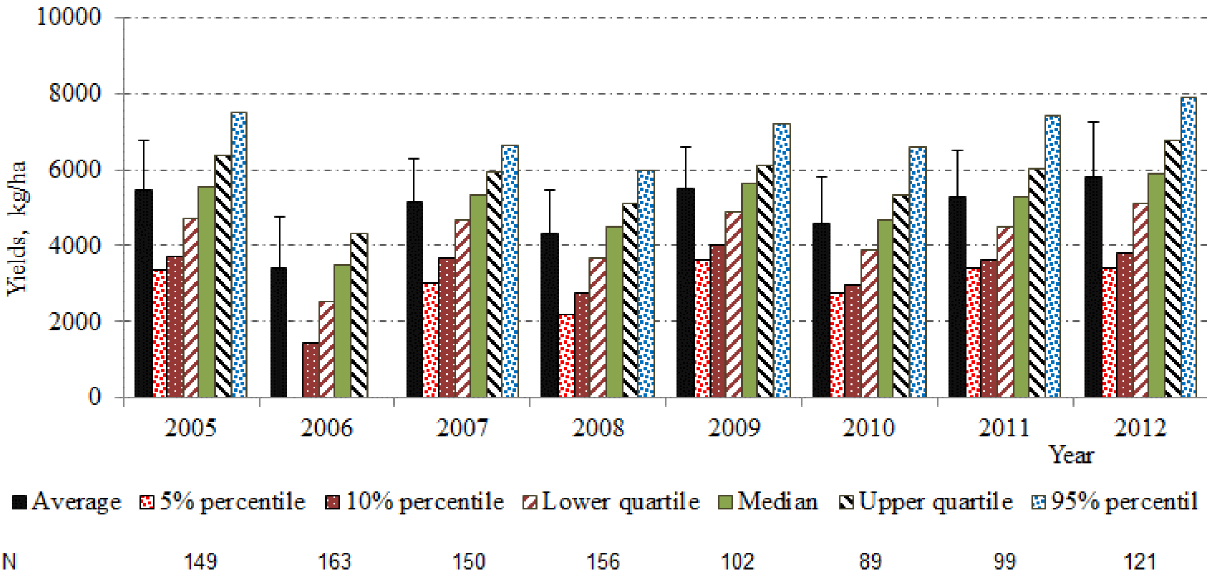

Figure 15. Average and estimated percentiles of oat farm-level yield in Skåne county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

3.4.1.4 Risk assessment, Skåne county (1991-2011)

For winter wheat, there were substantially lower yields (10% lower than expected) in 1992, 2004, 2006 and 2010. The greatest loss (25% lower than expected) was seen in 2006. Within that year, many farmers may have had 30% lower winter wheat yield than in a normal year, but it is impossible to say how many farmers were actually affected by 30% losses. Generally speaking, in 2006 a farm produced on average around 2000 kg/ha less than the expected yield. This means that for the majority of farms, which produced more than 6000 kg/ha, the drop of 2000 kg/ha meant losses of less than 30% of expected yield. In a normal year, average yield is more than 7000 kg/ha.

In order to demonstrate how risk assessment was performed, the yield distribution for 2006 is compared in Table 12 with the yield distribution for 2007 via comparison of percentiles.

Table 12. *Distribution of winter wheat yield (kg/ha) in 2006 (year with low yield) and 2007 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2006	8 000	7 300	6 200	5 000	3 700
2007	8 900	8 300	7 700	6 800	5 900
Difference	900	1 000	1 500	1 800	2 200

As Table 12 shows, the distribution of yield in 2006 was more heavy tailed (lower tail) than in 2007. This corresponds to the scenario in Figure 3d. From the above discussion, it follows that in the lower tail of the distribution, less than 25% of the farms can have had 30% losses. Since there can be a few farms among the other farms which also had severe losses, we can say that approximately 30% of farms had 30% lower yield than the expected level.

There were four years (1992, 2004, 2006 and 2010) with low yield, but in our opinion probably only two of these (1992, 2006) had severe crop losses. Moreover as Figure 14 shows, in most good years the 5th percentile was above 5000 kg/ha. This means that 5% of farms had 30% losses, which is slightly too high, but was still used in the risk assessment.

Thus, in 2/21=9.5% of years there will be a severe negative weather impact on winter wheat yield and on average less than 30% of farms will have 30% losses. Therefore the risk that an individual farm will have 30% losses is:

$$\text{Risk} = 0.095 \times 0.30 + 0.905 \times 0.05 = 7\%.$$

The last term (0.905 x 0.05) appears because in 19/21 = 90.5% of years, there was no major impact on low yield production. The risk probabilities of 5% and 30% are slightly too high. A final remark is that Skåne is a complicated county to analyse, since it is rather heterogeneous with respect to the occurrence of different weather types.

For spring wheat, the years 1992, 1993, 2004, 2006, 2008 and 2010 deviated by more than -10% from expected yield. In particular, 1992 (-46%) and 2006 (-41%) were years in which weather had a strongly negative influence. In 2006, yield was around 2000 kg/ha below the expected level, which means that a huge proportion of farms (just below 80%) obtained at least 30% less spring wheat than in a normal year. The situation for 2006, with a shift in the population, is illustrated in Figure 3c and Table 13. It was assumed here that 1992 was similar to 2006. For the other four years, i.e. 1993, 2004, 2008 and 2010, it was estimated that at most 30% of farms had obtained 30% lower yield than in a normal year.

Table 13. *Distribution of winter wheat yield (kg/ha) in 2006, 2008, 2010 (years with low yield) and 2007 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2006	5 200	4 500	3 800	3 000	2 200
2007	6 900	6 400	5 800	4 800	3 200
2008	6 800	5 900	5 000	4 200	3 000
2010	6 200	5 700	5 100	4 400	3 800

Finally 5% risk was added for the years where no negative weather impact was observed. Thus, the risk of obtaining 30% losses in spring wheat production is:

Risk = 0.096 x 0.80+ 0.192 x 0.30 + 0.712 x 0.05= 17%.

Note that one reason why spring wheat has a higher risk of severe yield losses than winter wheat is that the yield of spring wheat is much lower than that of winter wheat.

For rye, in Skåne county only the years 2006 and 2010 showed low rye yield. In 2006, an 18% decrease from the expected yield was observed on county level. From Table 14 it can be seen that those farms which were expected to have high yield in 2006 produced relatively less than farms with low yield. However, in general, few farms would have had 30% losses. Figure 3d shows a similar distribution as observed for rye yield in 2006.

Table 14. *Distribution of rye yield (kg/ha) in 2006 (year with low yield) and 2008 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2006	7 400	6 700	5 900	4 600	3 500
2008	9 000	8 100	7 300	5 900	4 500
Difference	1 600	1 400	1 400	1 300	1 000

We estimated that less than 20% of farms had crop losses of 30% in 2006 and that in 2010, there was no real increase in the number of farms with 30% losses. If as a default value 5% of farms had 30% crop losses in good years, the estimated risk of 30% crop losses is:

Risk = 0.048 x 0.20 + 0.952 x 0.05=6%.

It can be noted that the number of farms reporting rye production during 2006 was much lower than in previous years, i.e. there may have been some kind of selection process, which may have affected the result.

For spring barley, the years 1992, 2004, 2006 and 2008 produced less (-10%) than expected crop yield. Yield was lowest in 1992, 42% below the expected yield level.

Table 15. *Distribution of spring barley yield (kg/ha) in 2006 and 2008 (years with low yield) and in 2010 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2006	5 900	5 100	4 300	3 500	2 700
2008	6 000	5 300	4 800	4 000	3 200
2010	7 000	6 300	5 500	4 700	3 900

The year 2006 had crop losses of 26% in relation to standard yield at county level. From Table 15 it can be seen that the individual farm produced 1200 kg/ha less than expected, which is in agreement with the statistics on county level. It appeared that the whole population had shifted by -1200 kg/ha, as indicated in Figure 3c. This implies that those farms which produce around 4000 kg/ha would have obtained 30% yield losses, which was less than 25% of the population. In 2008, the losses were generally not close to 30%. However, the year 1992 seemed to have had a serious impact on rye yield, one could expect that most farms (say 95%) had at least 30% lower yield than expected in that year. Moreover, we assumed that 5% of the farms had low yield even if the weather conditions seemed to be good or normal. Thus, the risk of 30% crop losses is:

Risk = 0.048 x 0.95 + 0.048 x 0.25 + 0.905 x 0.05 =10%.

Finally, oats production in Skåne county in the years 1992, 1993, 2004, 2006, 2008 and 2010 showed 10% losses relative to the expected yield. The greatest losses were in 1992 (52%) and 2006 (43%). We attempted to estimate how many farms had oats yield losses of 50% or more. Table 16 shows the distribution for three years with low yield and one normal year.

Table 16. *Distribution of oats yield (kg/ha) in 2006, 2008 and 2010 (years with low yield) and in 2007 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2006	5 000	4 300	3 500	2 600	1 400
2007	6 500	6 000	5 300	4 600	3 700
2008	5 700	5 100	4 500	3 700	2 700
2010	6 100	5 300	4 700	3 900	3 000

The year 2006 had on average approximately 2000 kg/ha lower yield. This means that many farmers were not severely affected (i.e. suffered 50% losses). The shape of the distribution follows that presented in Figure 3d. For 2006, we assumed that at most 50% of farms lost 50% of the expected oats yield, while in 1992 more farms, say 60%, had 50% losses. For the other four years with low yield (1993, 2004, 2008 and 2010), based on Table 16 we assumed that only a few, say 10%, of farms had 50% losses. Moreover, we assumed that the good years also included some farms with low production, say 5%. Hence, the risk of obtaining 50% losses is:

Risk = 0.048 x 0.60 + 0.048 x 0.50 + 0.192 x 0.10 + 0.714 x 0.05 = 11%.

3.4.2 Västra Götaland county

3.4.2.1 Crop production and yield at county level

Annual production in the years 2010-2014 and average for the major crops in the county is presented in Table 17. Västra Götaland is the largest temporary grasses producing county in the country and one of the main county in cereal production (additional information is found in Appendix A12).

Table 17. *Yearly production (metric ton) in 2010-2014 for the major crops in Västra Götaland county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	779 700	796 800	782 800	745 900	932 400	807 520
Winter wheat	353 300	325 200	161 800	174 500	476 800	298 320
Oats	252 200	277 500	297 500	339 600	267 100	286 780
Spring barley	152 000	174 700	267 800	292 500	206 100	218 620
Potatoes	81 200	80 000	77 600	77 400	72 000	77 640
Spring wheat	30 800	32 900	72 600	95 000	48 400	55 940
Field beans	16 000	23 800	24 700	27 900	29 900	24 460
Mixed grains	30 100	26 600	19 800	30 100	15 300	24 380
Triticale	35 400	18 800	14 500	14 000	37 200	23 980
Winter rape	24 300	11 000	15 300	12 000	27 100	17 940
Rye	17 200	15 700	10 700	16 200	29 200	17 800
Spring rape	8 800	11 900	16 300	15 100	5 500	11 520

* Data from Jordbruksverket (2015)

Average yield of winter and spring wheat, spring barley and oats at county level for Västra Götaland county is shown in Table 18 and annual yields in Figure 16. In general, yield increased from 1965, but at a lower rate during the last 15 years, particularly for spring cereals. Winter wheat gave higher yield (5700 kg/ha on average for the last 15 years) than spring cereals (approximately 4000 kg/ha). As in Skåne county, the yield varied a great deal from year to year, as reflected by the coefficient of variation (Table 18) or as it is depicted in Figure 16. Winter wheat showed the most stable annual yield (CV = 6%). Winter rape showed the highest variation in relative terms (CV = 12%).

Table 18. *Average yield of cereals, potatoes and winter rape in Västra Götaland county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Winter wheat	5 192	331	6
Oats	3 687	320	9
Spring barley	3 838	293	8
Potatoes	29 053	2 490	9
Spring wheat	3 750	324	9
Winter rape	2 320	269	12

* Coefficient of variation = Standard deviation / Average

Winter wheat yield at county level was exceptionally low in 1965, which can be associated with a rainy summer and harvesting period (Table 19). Spring cereal yield was particularly low in 1972 and 1992, which can be related to a rainy growing season in 1972 and a very dry May and June in 1992 combined with a rainy harvesting period for spring cereals.

Table 19. *Years in Västra Götaland county with at least 25% lower cereal yield compared with the trend curve (Figure 16) for the period 1965-1990 and compared with the standard yield for the period 1991-2012*.*

Year	Winter wheat, %	Spring wheat, %	Spring barley, %	Oats, %	Observations
1965	-26				Wet period (5 June-5 August: 226 mm
1972		-39	-32		Rainy growing season (15 May-20 August: 271 mm)
1983			-26		Dry period (15 June-10 August: 35 mm)
1987	-26	-30			Rainy summer and harvesting period (August: 141 mm)
1989				-28	Rainy July and August (August: 89 mm)
1992		No data	-40	-62	Dry period (15 May-30 June: 7 mm) and rainy last 2 weeks of August (63 mm)

* Based on data from Luftwebb (2014) and Jordbruksverket (2014, 2015)

3.4.2.2 Precipitation, temperature and yield analysis

Figure 17 shows the frequency of dry periods (<20 mm precipitation for 30 and 40 days) from spring to autumn. The occurrence of a 30-day dry period within May to September was approximately 10%, but much higher in March and April (around 35%). Longer dry periods (40 days) occurred starting in May at a frequency close to 10% and approximately 5% in June and July. Such longer droughts usually reduce yields.

Dry periods with less than 20 mm during 30 days during the growing season occurred nearly once every four years (Figure 18) but >40-day dry periods were much rarer, once every nine years (Figure 19).

The estimated number of available working days for harvesting in 1961-2012 is shown in Figures 20 and 21. It can be assumed that around six working days are needed for winter cereals and six more for spring cereals (Gunnarsson et al., 2012). Six working days or less occurred in 1963, 1993, 2008 and 2011 for winter cereals, while for spring cereals in 1992 there were two estimated working days. In 1992 there was also a dry period of 40 days (Figure 19), resulting in a yield reduction of 40-60% compared with standard yield for spring cereals.

Figure 22 shows the annual yield of winter wheat and precipitation for the periods 1 May-15 July (76 days) and 1-15 August. In most years the precipitation level in the period 1 May-15 July was around 190 mm, which gives average daily precipitation of approximately 2.5 mm. The lower quartile precipitation was 114 mm during the period, which means that in 75% of years the average daily precipitation was at least 1.5 mm. Considering potential evapotranspiration of around 3.7 mm per day during these months (Wallén, 1966), it can be concluded that the average precipitation conditions were more or less favourable in most years, without considering how it was distributed during the period. The year with the lowest precipitation was 1992, with a daily average lower than 1 mm (66 mm from 1 May to 15 July), which can explain the lower yield at county level in that year, particularly for spring crops (Figure 16).

A similar pattern is presented in Figures 23 and 25 for spring wheat and oat yield and precipitation for the periods 1 June-31 July and 15 August-5 September. Precipitation was particularly low in 1969, 1982, 1983, 1992 and 1994 (less than 75 mm period 1 June-31 July), yields were particularly low only in 1969, 1983 and 1992 for spring crops (Figure 16). For Västra Götaland it can be concluded that years with these low levels of precipitation may affect yields but it is not always the case.

Figure 24 shows spring barley yield and average temperature in each year of the study period. There appeared to be a relationship between these two variables. The years with the highest average temperature (1992 and 2006) were those with the lowest yield. However, 1992 was also associated with a dry period of 40 days (Figure 19).

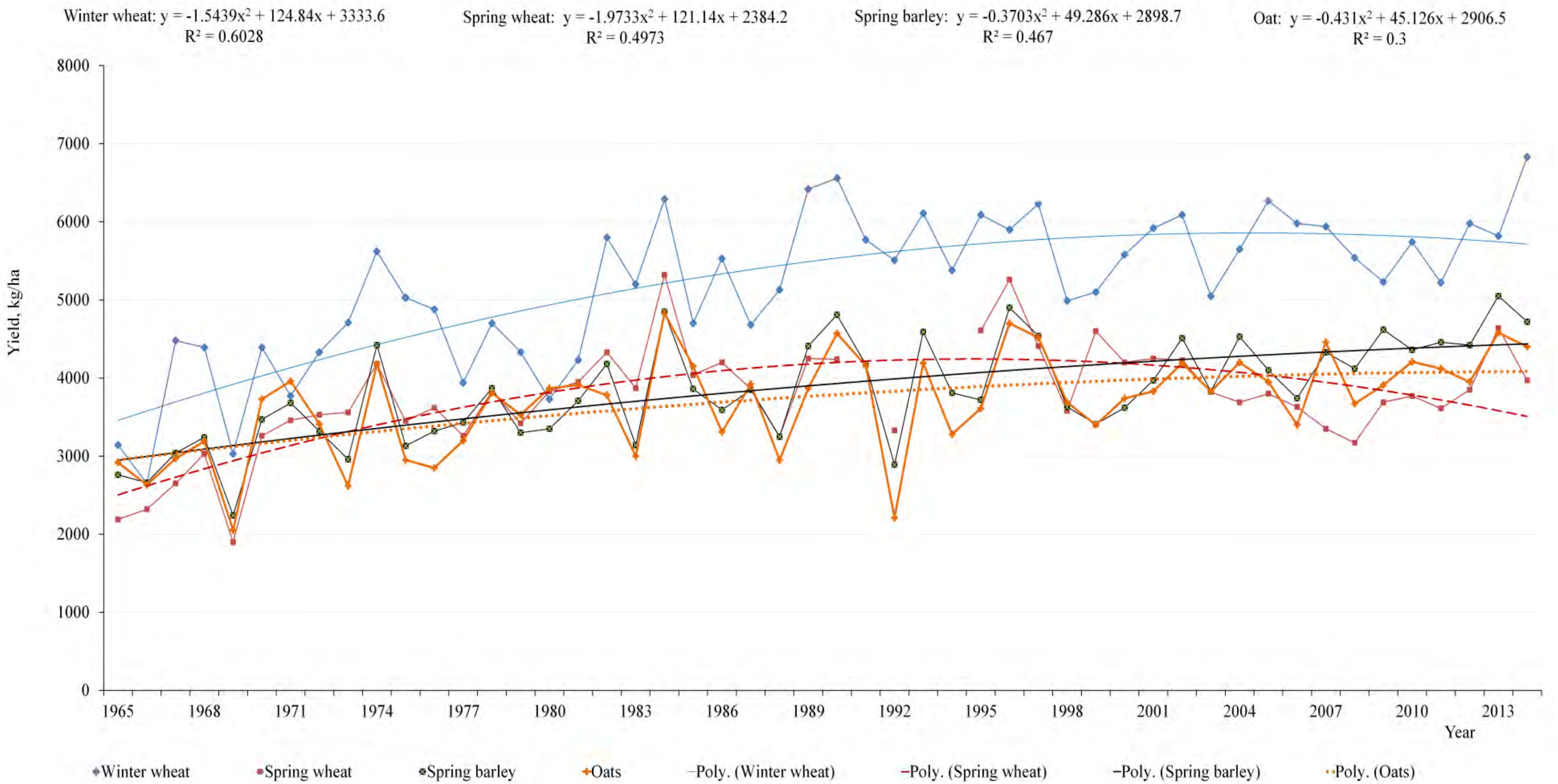

Figure 16. Mean yield (kg/ha) in Västra Götaland county of winter wheat, spring wheat, barley and oats for the period 1965-2013, and their trend lines with respective equations. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

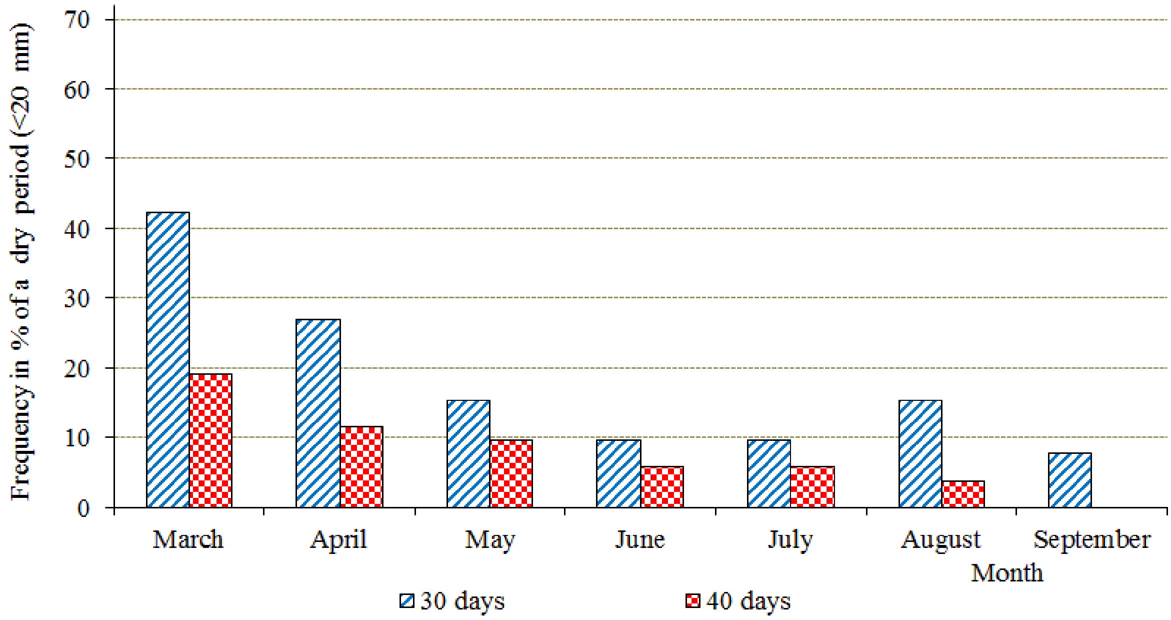

Figure 17. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Västra Götaland county*.

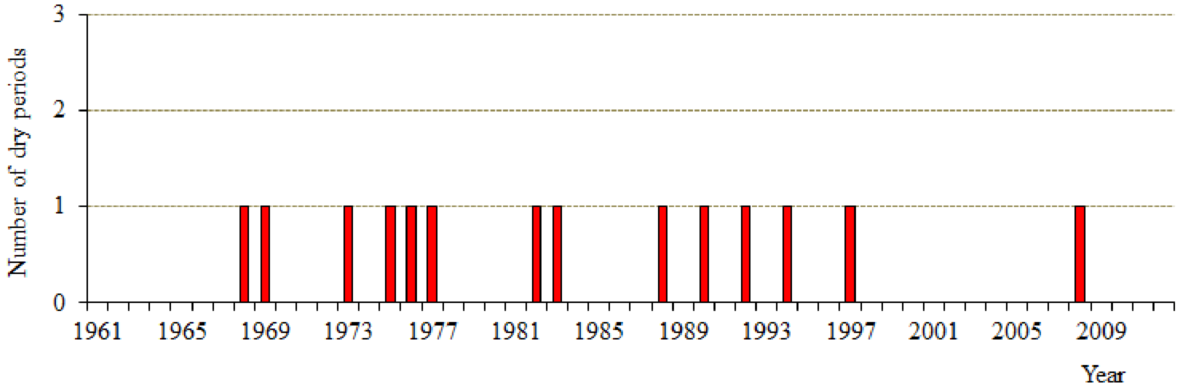

Figure 18. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 May to 31 July in Västra Götaland county*.

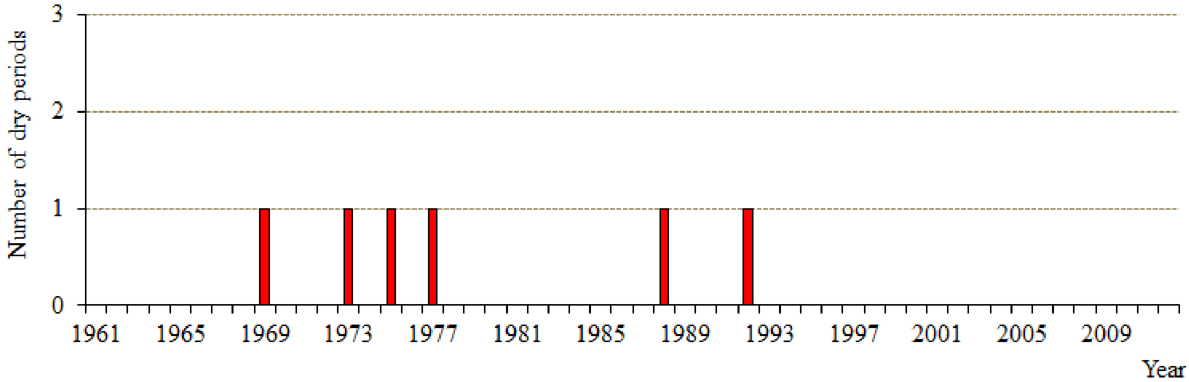

Figure 19. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 May to 31 July in Västra Götaland county*.

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* The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

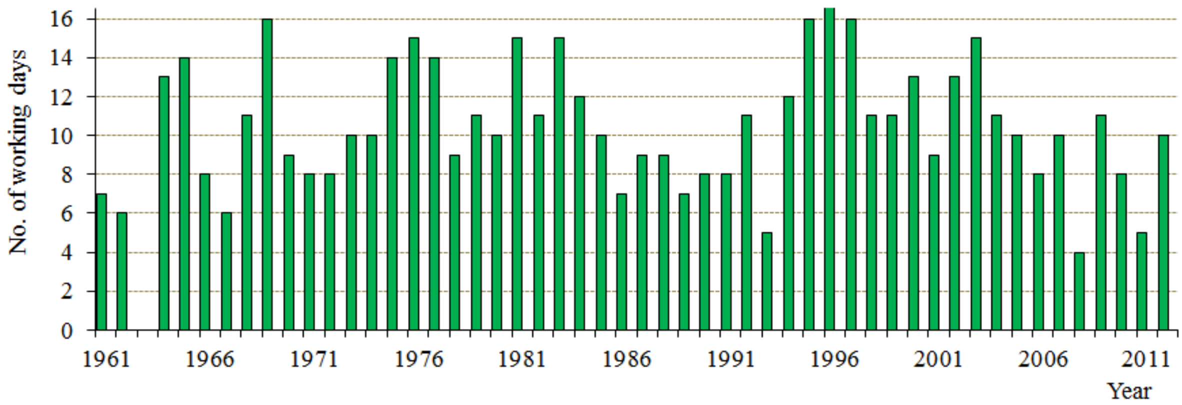

Figure 20. Estimated number of working days available for harvesting during the period 3-19 August in Västra Götaland county (for definition of a working day, see Section 2.1)*.

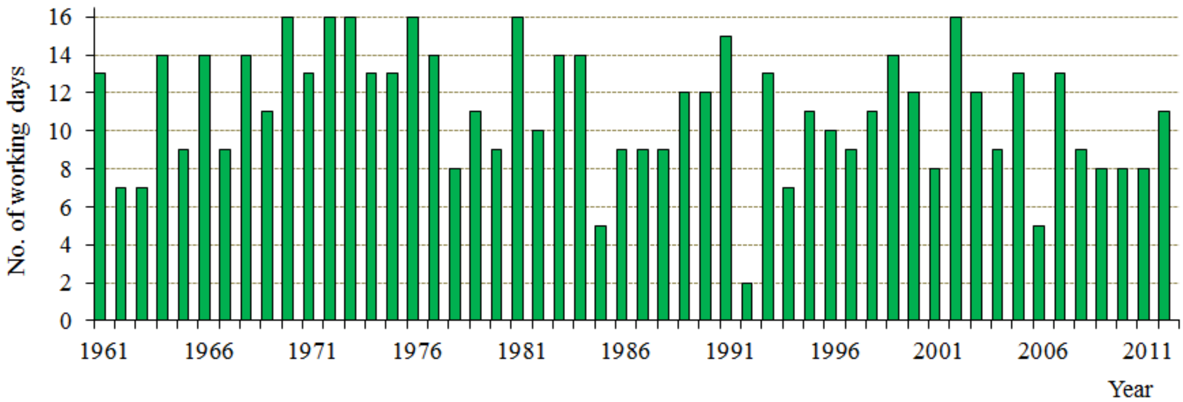

Figure 21. Estimated number of working days available for harvesting during the period 20 August- 5 September in Västra Götaland county (for definition of a working day, see Section 2.1)*.

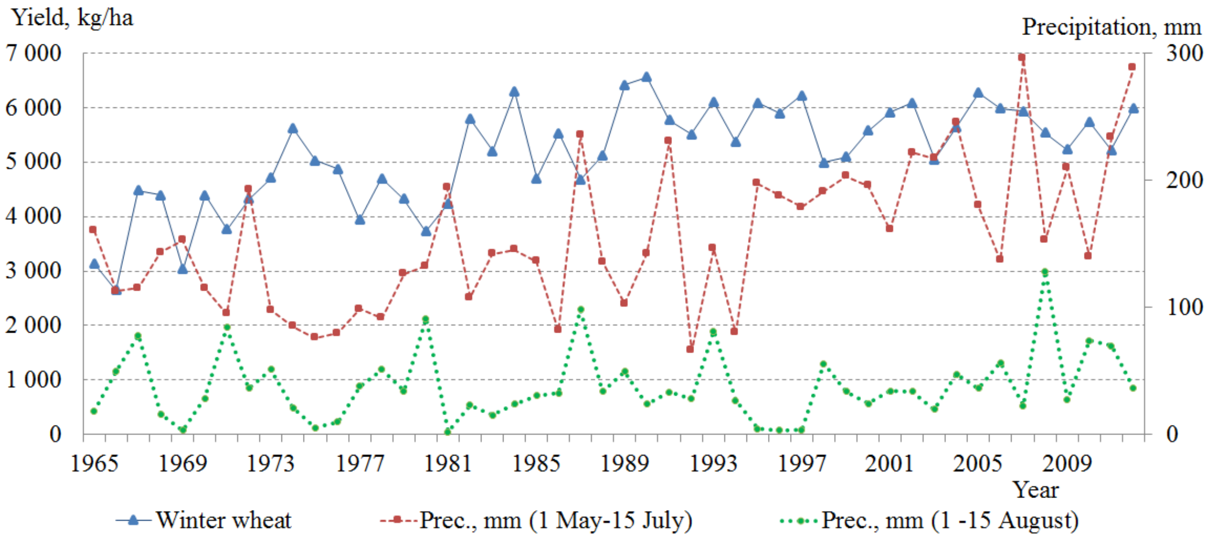

Figure 22. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 1-15 August in Västra Götaland county, 1965-2012*.

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* Precipitation from Luftwebb (2014). Yield data in the period 1965-1997 from Skaraborg county and 1998-2012 from Västra Götaland county (Jordbruksverket, 2015).

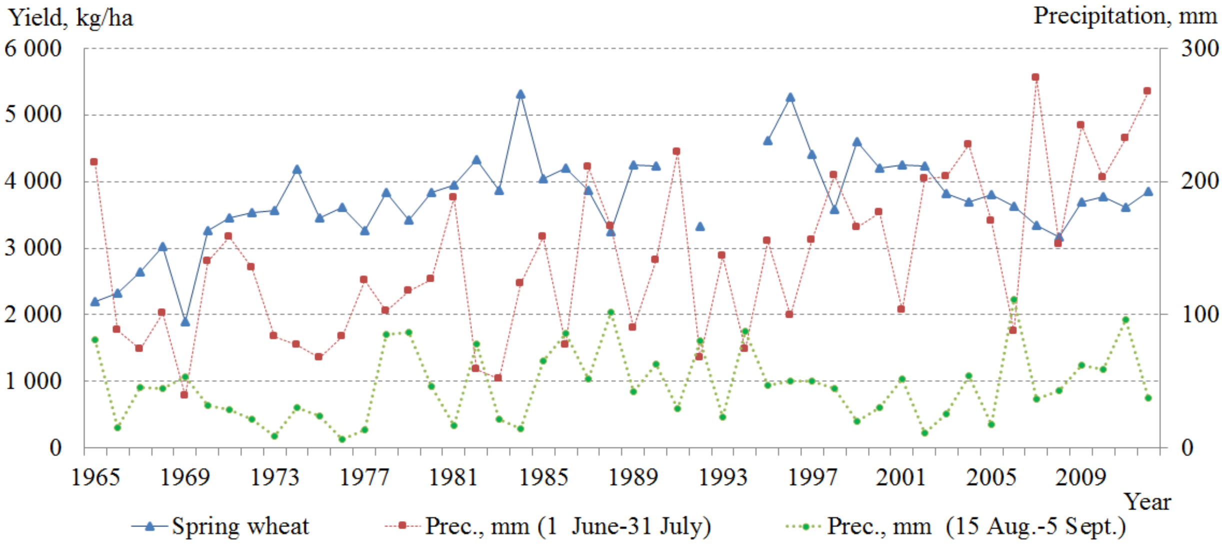

Figure 23. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Västra Götaland county, 1965-2012*.

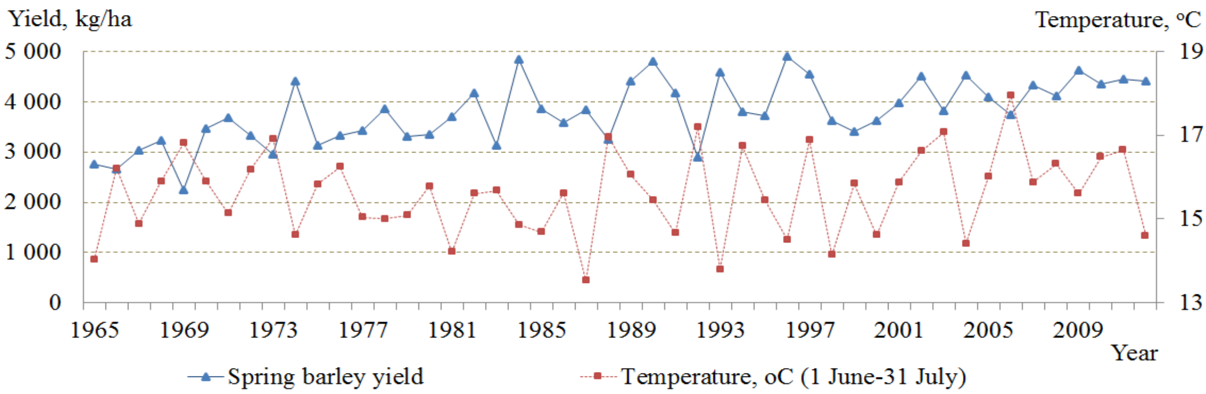

Figure 24. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Västra Götaland county, 1965-2012*.

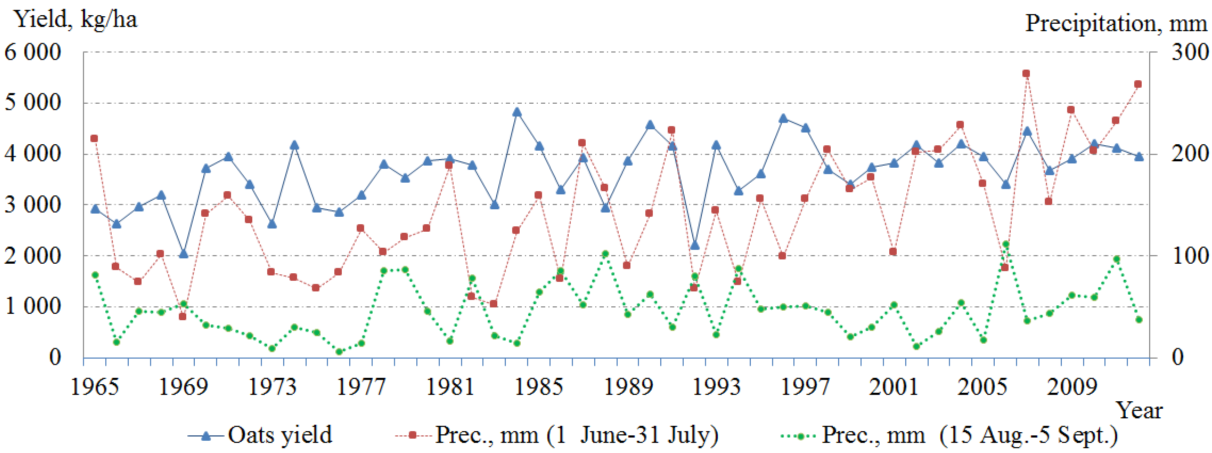

Figure 25. Annual oat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Västra Götaland county, 1991-2012*.

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* Precipitation and temperature from Luftwebb (2014). Yield data in the period 1965-1997 from Skaraborg county and 1998-2012 from Västra Götaland county (Jordbruksverket, 2015).

3.4.2.3 *Yield on farms*

The winter wheat and oats yield distribution percentiles on farms in Västra Götaland county for the years 2005-2012 are shown in Figures 26 and 27. Those for spring wheat, barley, rye, spring and winter rape, potatoes and temporary grasses are shown in Appendix A12. As in Skåne county, yield varied a great deal from year to year and between crops. The variation between farms was larger than in Skåne county, as can be seen on comparing Table 11 for Skåne county with Table 20 for Västra Götaland county.

Considerably high yield variations appeared across years and crops. Temporary grasses showed the highest yield variation (CV=55%), about 20% higher than grain crops (Table 20). Winter wheat showed the smallest differences over years and spring wheat and winter rape the largest differences for grain crops. Average yield, taken over eight years, for the upper quartile for winter wheat was 34% higher than for the lower quartile. For spring wheat it was 84% higher. There was no year with particularly low average yield, but the differences between farms were rather large. More than 300 farms are included in the material, so the results can be considered reliable, although Västra Götaland is a large county and rather heterogeneous.

The yield for the 5th and 10th percentiles, i.e. the 5% or 10% of farms with the lowest yield, was approximately 50% and 60% of the average yield, respectively. The winter wheat yield for these groups of farms was slightly higher, around 51% and 64% of the county average, respectively. Moreover, spring rape yield for the 5th and 10th percentiles was approximately 31% and 48% of the county average, respectively. Differences for some individual years appeared to be even larger.

Annual yield variation of farm yields is shown in Table 20 as coefficient of variation. In most years the CV for grains varied between 25% and 35%, but in some cases, as for spring wheat, it was around 40% for most years. The most extreme value for grain crops, 53%, was found for rye in 2010. At farm level, winter wheat and spring barley were the most stable crops, as in Skåne county, whereas spring wheat and winter rape yield showed the highest variation.

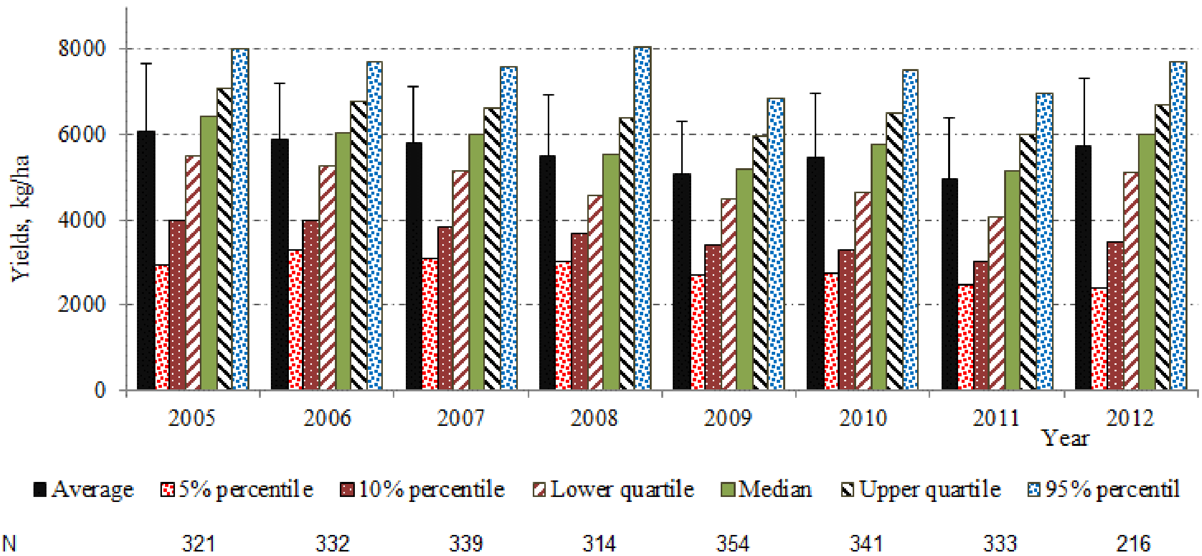

Figure 26. Average and estimated percentiles of winter wheat farm-level yield in Västra Götaland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

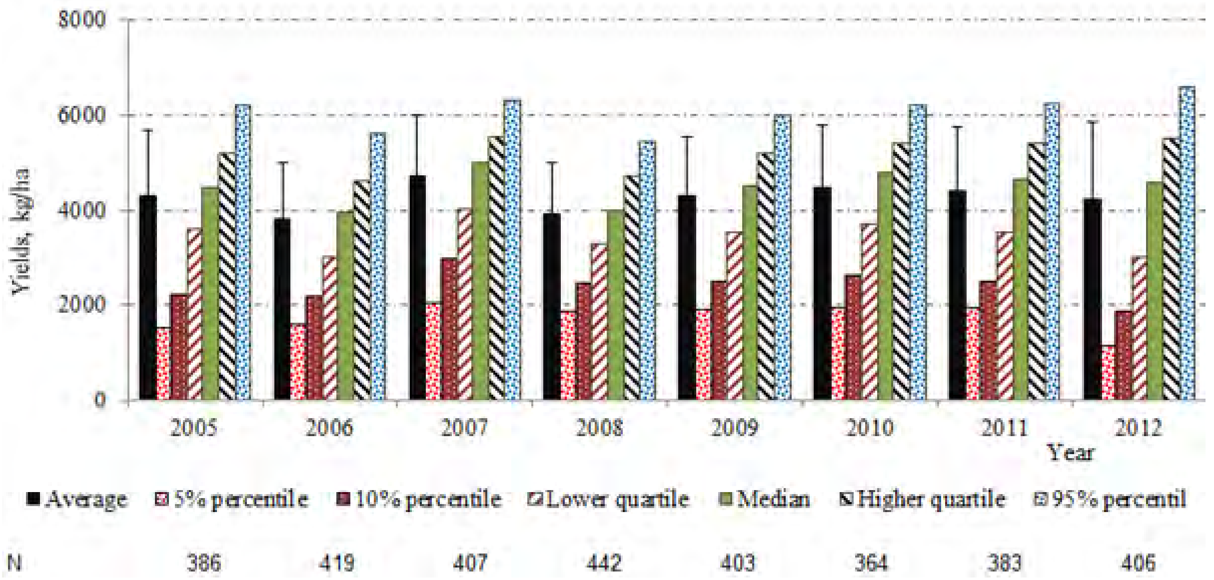

Figure 27. Average and estimated percentiles of oat farm-level yield in Västra Götaland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

Table 20. *Coefficient of variation of farm-level yield for important crops in Västra Götaland county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Temporary grasses		48	53	59	56	53	61	56	55
Winter wheat	26	22	23	26	24	27	29	28	26
Oat	32	31	27	28	29	29	31	39	31
Spring barley	30	26	27	25	24	28	29	35	28
Potatoes		29	28	19	21	25	31	32	26
Spring wheat	46	41	42	39	33	34	37	39	39
Winter rape	37	33	32	37	43	32	44	39	37
Rye	30	33	26	35	35	53	41	29	35
Spring rape	34	36	35	26	30	40	35	36	34
Average	34	33	33	33	33	36	38	37	

* Based on farm-level yield data from SCB (2014a).

3.4.2.4 Risk assessment, Västra Götaland county (1991-2011)

For winter wheat, the years 1992 and 1999 deviated by more than -10% from expected crop production and 1999, with -19% deviance from expected yield, was the worst year. However, even in 1999 there were probably very few farms with a 30% loss and therefore together with the fact that some farms (5%) may have crop losses even in years without any observed negative weather effects, the risk of obtaining 30% crop losses is:

Risk = 5%.

For spring wheat, the years 2007 and 2008 were harmful. In both years, yield was 21% lower than the expected yield. The distribution of spring wheat yield in 2007 and 2008 is compared with the yield distribution in a normal year, i.e. 2009, in Table 21.

Table 21. *Distribution of spring wheat yield (kg/ha) in 2007 and 2008 (years with low yield) and in 2009 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2007	5 500	4 700	3 400	2 500	1 400
2008	5 200	4 300	3 300	2 300	1 800
2009	5 600	4 500	3 800	3 000	2 000

As Table 21 shows, the differences between 2007, 2008 and 2009 were not large. The difference was on average around 500 kg/ha, whereas to have a 30% loss a farm which normally produces 2000 kg/ha would need to suffer a loss of around 600 kg/ha. This might have happened in 2007 and it was assumed that 10% of farms had -30% losses in that year:

$$\text{Risk} = 0.48 \text{ x } 0.10 + 0.952 \text{ x } 0.05 = 5\%.$$

For rye, 2007 and 2011 were the most negative years and the worst loss (-19%) was observed in 2011. Table 22 compares yield in these years with that in 2009, a normal year.

Table 22. *Distribution of rye yield (kg/ha) in 2007 and 2011 (years with low yield) and in 2009 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2007	6 200	5 800	4 800	4 000	3 200
2009	7 200	6 000	5 000	3 800	2 600
2011	6 500	5 700	4 400	3 000	2 000

The year 2007 was very similar to a normal year. The sample size (N=62) was not large and, since the variation was large, it was difficult to distinguish 2007 from a normal year. In 2011 the average yield difference from a 'normal year' was approximately 600 kg/ha, which was too small to give many farms 30% crop losses, which for a 'normal year' was assumed to be 5%. Thus, the estimated risk is:

$$\text{Risk} = 5\%.$$

Spring barley had lower than expected yield in 1992, 1999 and 2006, where the worst year was 1992 with a -40% deviation from the expected value. For 1992 we had no specific information on farm level, but many farms, say 60%, would have had 30% crop losses. For 1999 and 2006, with less than 19% crop losses, we assumed there was no great difference from a normal year. Table 23 compares the distribution for spring barley yield in 2006 with that in 2009.

Table 23. *Distribution of spring barley yield (kg/ha) in 2006 (year with low yield) and 2009 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2006	5 100	4 700	4 000	3 200	2 500
2009	6 000	5 500	4 900	4 100	3 100
Difference	900	800	900	900	600

As Table 23 shows, the difference between 2006 and 2009 was around 900 kg/ha. Moreover, the whole distribution shifted similarly to the scenario illustrated in Figure 3c. However, since 30% of 3000 kg/ha is 900 kg/ha, very few farms would have had 30% losses.

Thus, the risk of 30% crop losses can be stated to be:

Risk = 0.048 x 0.60 + 0.952 x 0.05 = 8%.

For oats, the years 1992, 2000, 2001 and 2006 gave low yield. In particular, in 1992 there were 62% losses in relation to expected yield. In 2001, 28% losses were recorded. Thus, almost the whole population of farms, say 95%, was hit in 1992 and perhaps 60% had 50% losses. The year 2001 is more difficult to evaluate but we estimate that no more than 20% of farms can have had a -50% deviance from expected yield. For 2006, more detailed information was available and Table 24 compares that year with the 'normal year' 2009.

Table 24. *Distribution of oats yield (kg/ha) in 2010 (year with low yield) and 2009 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2006	5 100	4 600	4 000	3 000	2 200
2009	5 800	5 200	4 500	3 500	2 500
Difference	700	600	500	500	300

From Table 24, it can be seen that there were no major differences between the yield levels in 2006 and 2009.

Therefore, the risk of obtaining 50% crop losses is:

Risk = 0.048 x 0.60 + 0.048 x 0.20 + 0.904 x 0.05 = 8%.

3.4.3 Uppsala county

3.4.3.1 Crop production and yield at county level

Annual production in the years 2010-2014 and average of the major crops in the county is presented in Table 25. Temporary grasses and cereals are the most important crops in the county (further information is found in Appendix A2).

Table 25. Yearly *production (metric ton) in 2010-2014 for the major crops in Uppsala county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	199 300	142 400	232 000	178 600	244 900	199 440
Winter wheat	128 500	118 700	180 000	26 200	240 000	138 680
Spring barley	112 800	111 000	126 200	176 500	155 100	136 320
Spring wheat	44 300	32 400	33 700	70 500	50 000	46 180
Oats	22 700	27 700	33 600	38 300	31 900	30 840
Spring rape	14 300	15 600	19 500	19 900	4 000	14 660
Peas	8 400	5 700	5 000	6 700	8 600	6 880

* Data from Jordbruksverket (2015)

The average yield of the most common cereals grown in the county are shown in Table 26 as well as some statistics on variation. Yield increased considerably until the 1990s, but thereafter seems to have stagnated (Figure 28). Winter wheat had the highest yield (5200 kg/ha on average taken over the last 15 years), while spring cereal yield was approximately 4000 kg/ha. As expected, yield varied a great deal from one year to another. The deviations from the trend line were largest for winter wheat in both absolute and relative terms (Figure 28). The coefficient of variation was 11% for winter wheat, 10% for spring rape in the period 1965-2012 (see Table 26).

Table 26. *Average cereal and spring rape yield in Uppsala county in the period 1965-2014, standard deviation of the differences from the calculated trend and coefficient of variation, based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Winter wheat	4 866	556	11
Spring barley	3 902	264	7
Spring wheat	4 085	301	7
Oats	3 684	295	8
Spring rape	1 796	183	10

* Coefficient of variation = Standard deviation / Average

Winter wheat yield at county level was exceptionally low in 1966, 1970, 1984, 2011 and 2013 (Table 27 or Figure 28). May and June in 1966 were dry and the first five days of August were very wet (76 mm precipitation). Similar precipitation occurred during May and June of 1970 (34 mm), while summer 2011 was dry (25 June-5 August: 27 mm) and the harvesting period was rainy. Spring crops were particularly affected by dry periods in 1966, 1973 and 1992.

Table 27. *Years in Uppsala county with at least 25% lower cereal yield compared with the trend curve (Figure 28) for the period 1965-1990 and compared with the standard yield for the period 1991-2012*.*

Year	Winter wheat, %	Spring wheat, %	Spring barley, %	Oats, %	Notes
1966	-37	-35	-30	-29	Dry May and June (28 mm) and rainy first 5 days of August (76 mm)
1970	-29				Dry May and June (34 mm)
1973				-34	A dry period from 15 May to 25 June (28 mm)
1984	-58				A dry period from 10 April to 10 June (26 mm)
1994				-25	A dry July (15 mm) combined with higher than average temperature (3-4 °C above normal)
2011	-32	-28			Dry period (25 June-5 August: 27 mm) combined with higher temperature (2 °C above normal). Rainy harvesting period (5 August-10 September: 154 mm)
2013	-40				Yield of spring crops was not low

* Based on data from Luftwebb (2014) and Jordbruksverket (2014, 2015)

3.4.3.2 *Precipitation, temperature and yield analysis*

Figure 29 shows the frequency of dry periods (<20 mm precipitation during 30 or 40 days). The occurrence of a 30-day dry period decreased from approximately 23% in May to 8% in July and increased in August. It can be assumed that crops, particularly spring crops, are affected by these dry periods at the beginning of the growing season. The frequency of a 40-day dry period starting in May was less than 5% and in June around 2%.

Dry periods with less than 20 mm over 30 days occurred in one year out of four during the growing season (Figure 30), but a dry period of 40 days was rare (Figure 31). These long dry periods usually have a negative impact on yield, which was the case in 1969 when cereal yield was approximately 30% lower.

Years with a low available number of working days for harvesting are shown in Figures 32 and 33. The estimated number of years with six or less working days for winter cereals in the period 1961-2012 was four (i.e. in 8% of years) and a similar number applied for spring cereals. The estimated number of working days for spring cereals was very low in 1962 (2 days) and in 1986 (3 days) (Figure 33), but yield was not particularly low in these years at county level.

Figure 34 shows the yield of winter wheat and precipitation in the periods 1 May-15 July (76 days) and 1-15 August from 1965 to 2012. There was no clear link between precipitation quantity and yield. Precipitation varied greatly from year to year (median value 115 mm), giving average daily precipitation of 1.5 mm during the period 1 May-15 July. The lower quartile for precipitation was 96 mm, which means that precipitation in the period 1 May-15 July was above 1.3 mm in 75% of years. Considering average potential evapotranspiration of around 3.5 mm per day during these months (Wallén, 1966), the precipitation conditions were favourable, but again these conclusions are based on average figures for the period, which say very little about the precipitation distribution.

A similar pattern is presented in Figures 35 and 37 for spring wheat and oats for the period 1 June-31 July. There was again no clear link between low precipitation and low yield for spring wheat and oats. The years 1967, 1969, 1975, 1989 and 1999 were dry years during the observation period (less than 75 mm), but yield was not exceptionally low.

Figure 36 shows spring barley yield and temperature. Some of the years with higher temperatures were associated with lower yield, but the relationship was not consistent.

As with Skåne county and Västra Götaland county, it can be concluded from Figures 34-37 that a single weather variable such as precipitation or temperature gives a poor relationship with crop yield, as other factors also influence yield.

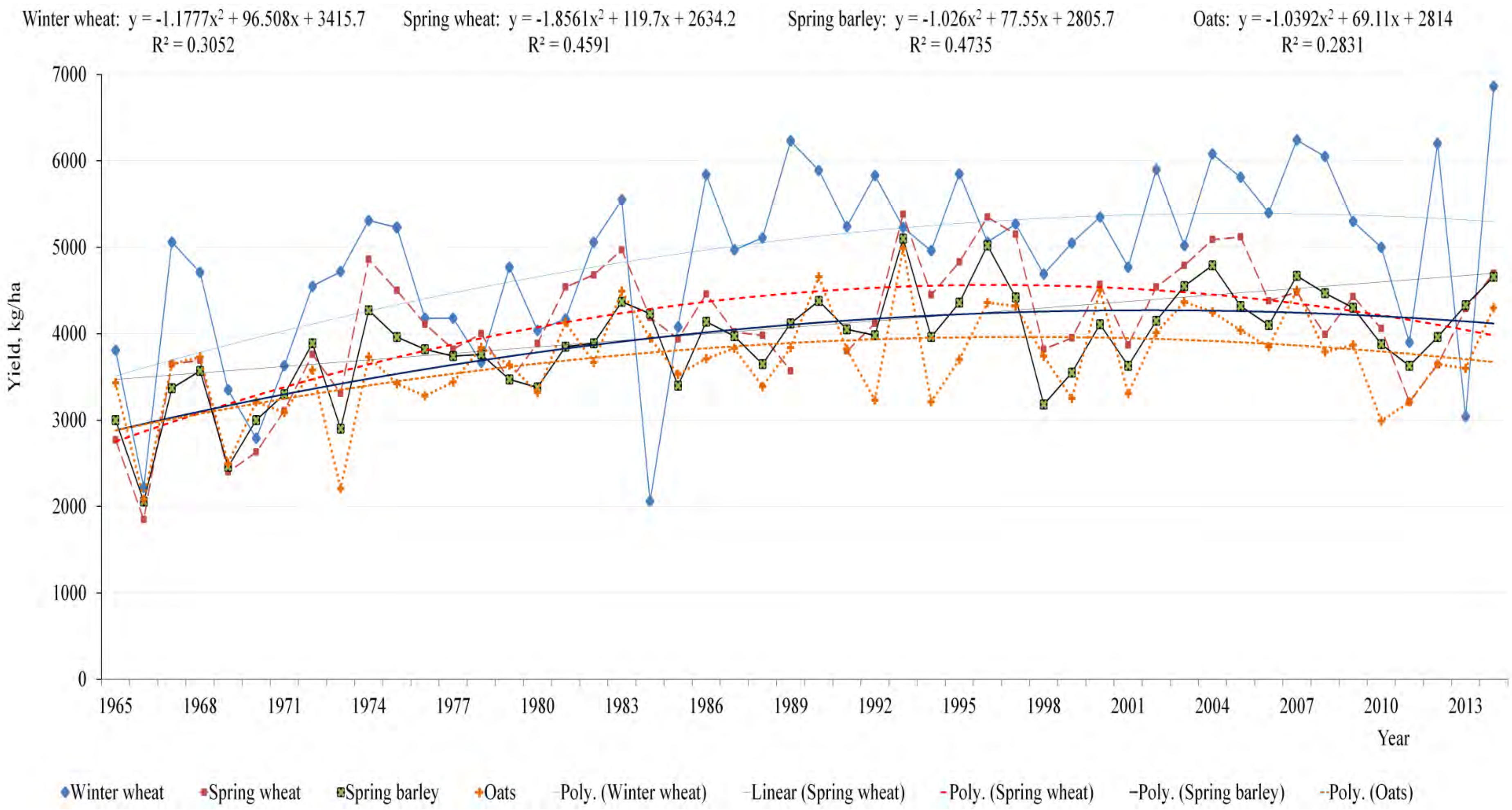

Figure 28. Average yield (kg/ha) per year of winter wheat, spring wheat, barley and oats in Uppsala county for the period 1965-2014, and their trend lines with respective equations. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

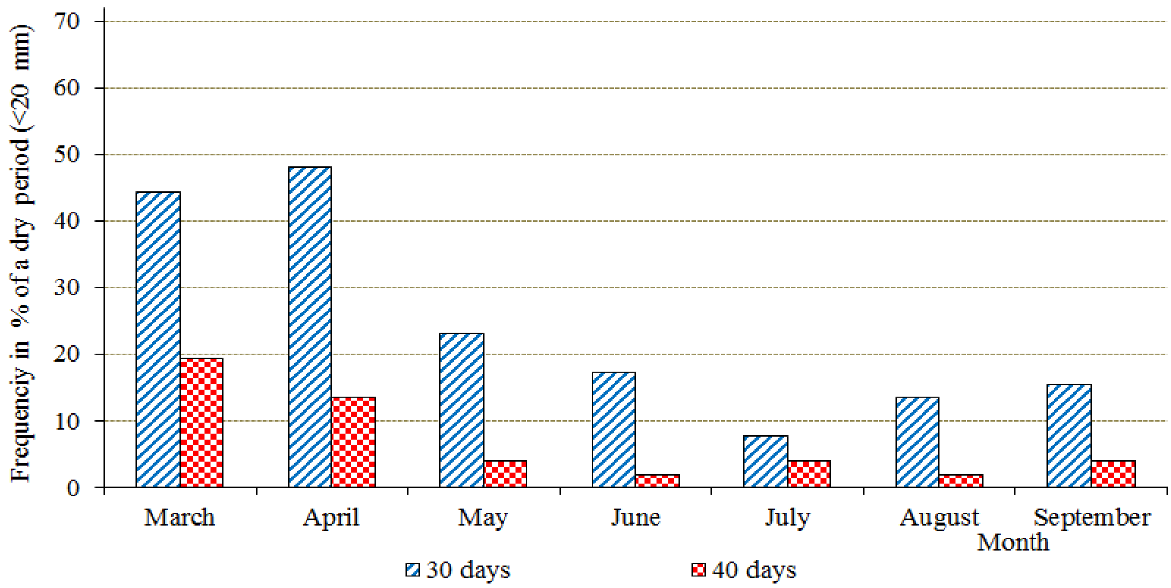

Figure 29. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Uppsala county*.

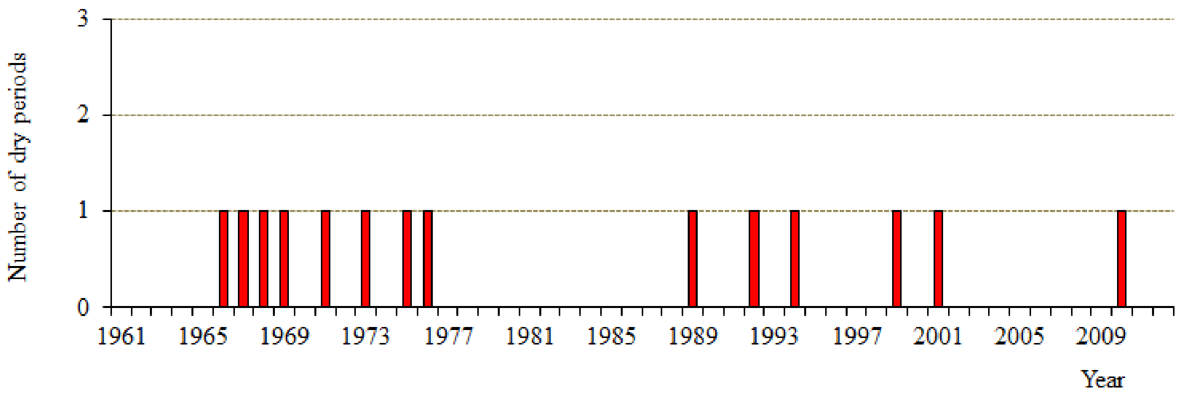

Figure 30. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 May to 31 July in Uppsala county*.

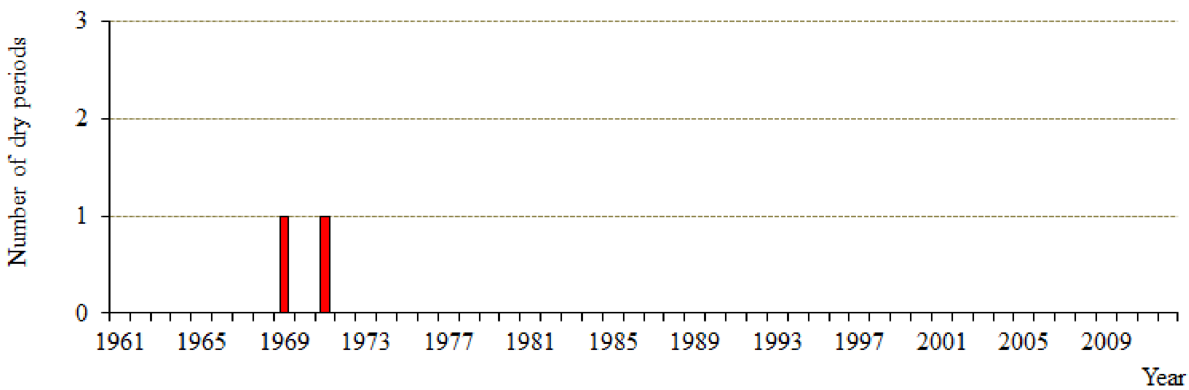

Figure 31. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 May to 31 July in Uppsala county*.

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* The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

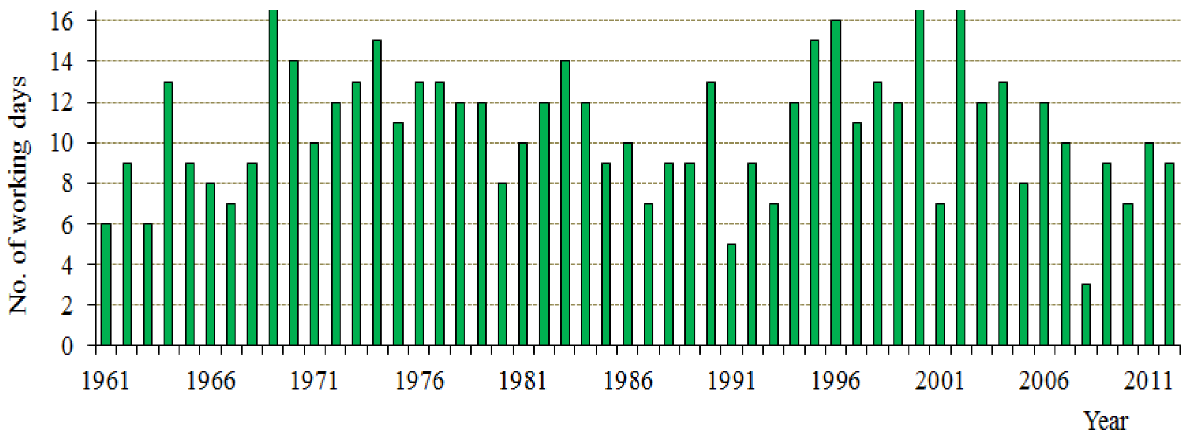

Figure 32. Estimated number of working days available for harvesting during the period 3 August-19 August in Uppsala county (for definition of a working day, see Section 2.1)*.

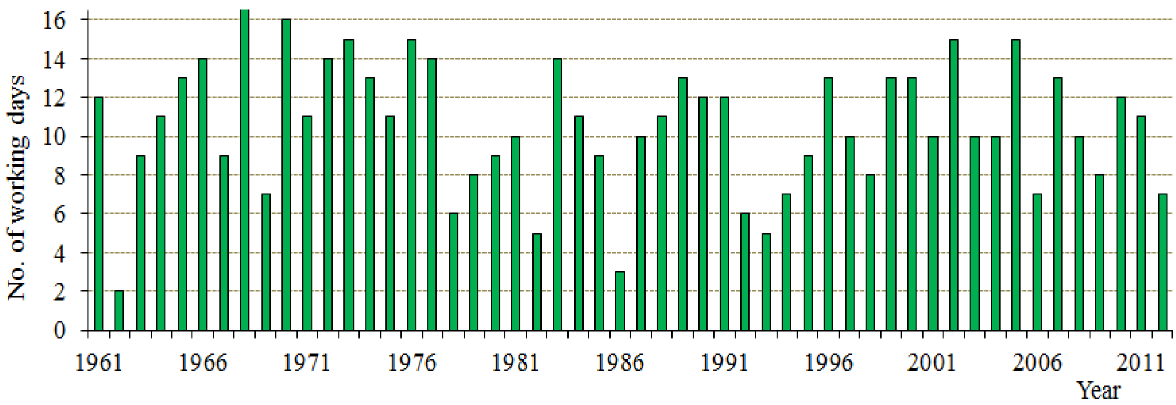

Figure 33. Estimated number of working days available for harvesting during the period 20 August-5 September in Uppsala county (for definition of a working day, see Section 2.1)*.

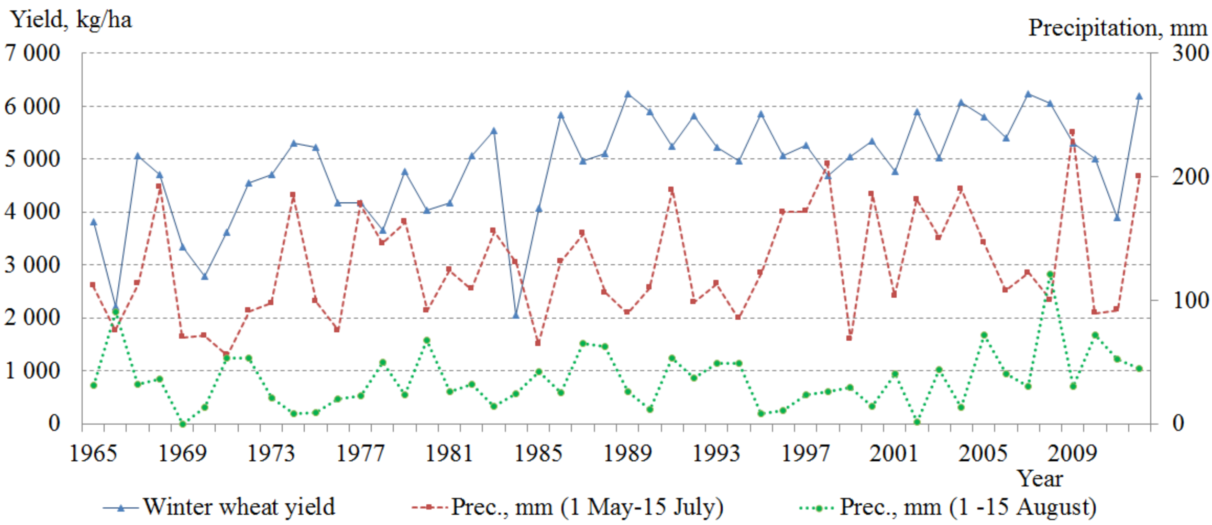

Figure 34. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 1-15 August in Uppsala county, 1965-2012*.

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* Precipitation data from Luftwebb (2014) and yields from Jordbruksverket (2015).

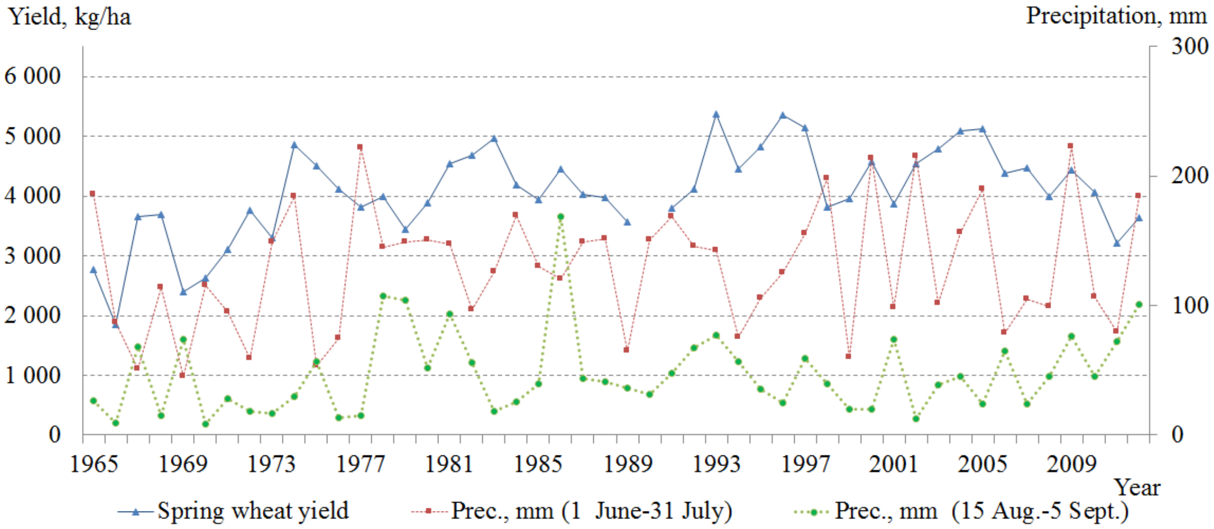


Figure 35. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Uppsala county, 1965-2012*.

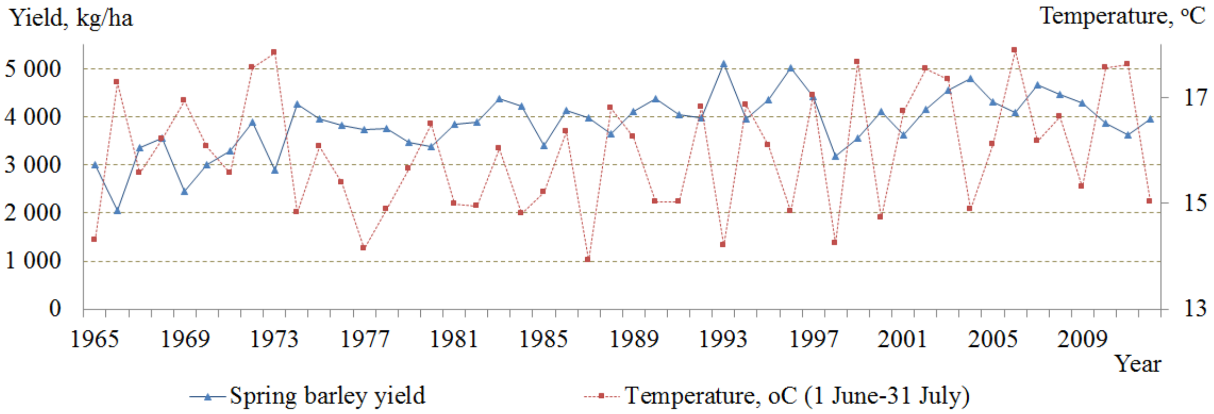


Figure 36. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Uppsala county, 1965-2012*.

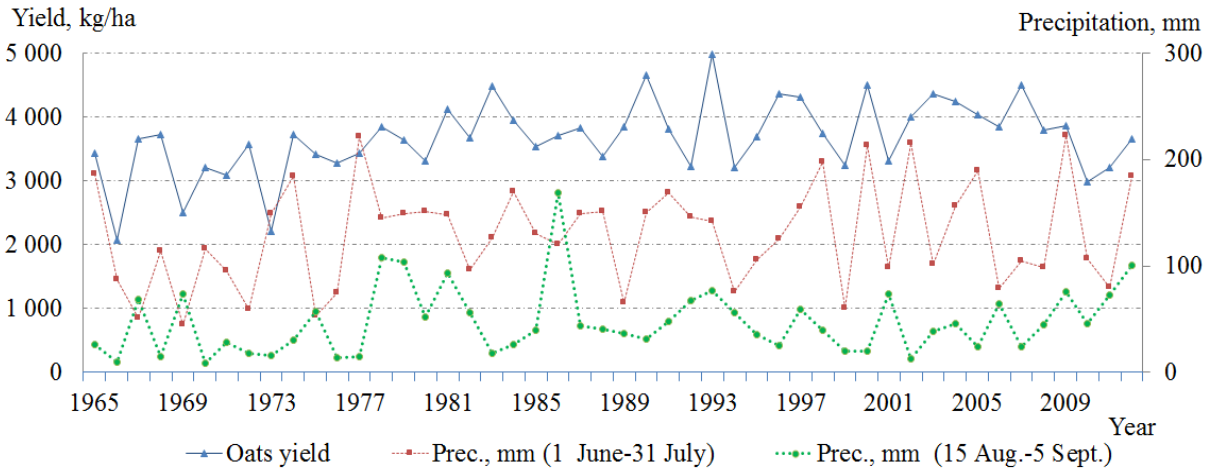


Figure 37. Annual oat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Uppsala county, 1991-2011*.

* Precipitation and temperature data from Luftwebb (2014) and yields from Jordbruksverket (2015).

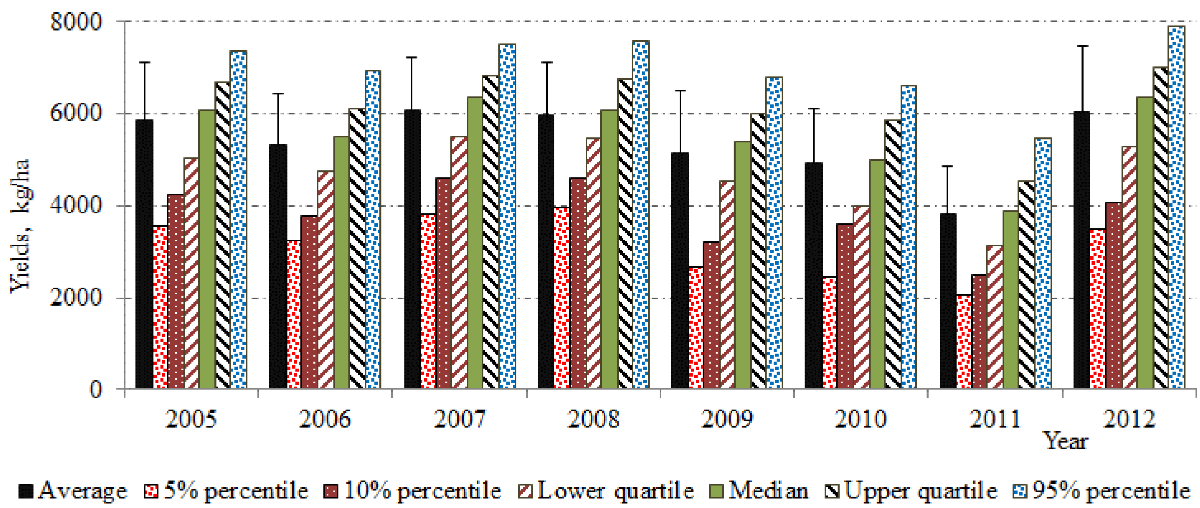
3.4.3.3 Yield on farms

The distribution percentiles for winter wheat and oat yields on individual farms in Uppsala county 2005-2012 are shown in Figures 38 and 39. Corresponding diagrams for spring wheat, barley, spring rape and temporary grasses can be found in Appendix A2. As in the other counties in Sweden, yield on individual farms varied rather widely over the years and among crops, which means that a considerable number of farms obtained much lower yields than the average, which would have had economic consequences.

Winter wheat showed the smallest differences in yield between farms and temporary grasses and oats the greatest differences. The average winter wheat yield for the upper quartile was 32% higher than that for the lower quartile. The corresponding value for oats yield was 54%.

The yield for the 5th and 10th percentiles, i.e. the farms with the 5% or 10% lowest yields, was approximately 50% to 60% of the average yield for most crops with the exception of winter wheat, for which the variation was lower (approximately 59% and 71% of mean yield for the 5th and 10th percentiles, respectively). On the other extreme, oats yield showed the largest differences, and average yield for the 5th and 10th percentiles was 44% and 57% of the county average, respectively. The differences between individual years were still large, particularly for oats and spring wheat in 2012 (Figure 39 and figure A2-2 in Appendix A2, respectively).

The annual yield variations at farm level are also shown in Table 28 as coefficient of variation. In most years CV varied between 20% and 30% for grain crops but for oats it was around 40% in 2010, 2011 and 2012, as also shown in Figures 38 and 39 by the low yields including a significant number of farms. As in Skåne county and Västra Götaland county farm-level yield of temporary grasses showed a much higher variation, winter wheat yield was the most stable and oats showed the highest variation among grain crops. In general, the variation of grain crops at farm level in Uppsala county was lower than that in Västra Götaland county in the study period.



N	177	179	181	190	176	181	204	184

Figure 38. Average and estimated percentiles of winter wheat farm-level yield in Uppsala county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Farm-level yield data from SCB (2014a).

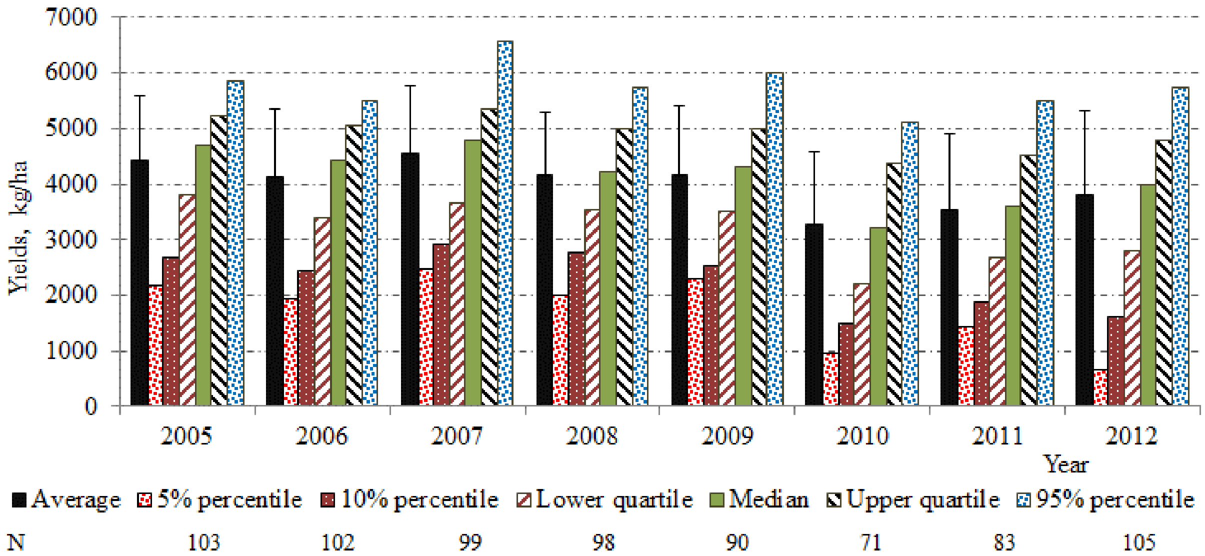


Figure 39. Average and estimated percentiles of oat farm-level yield in Uppsala county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

Table 28. *Coefficient of variation of farm-level yield for temporary grasses, cereals and spring rape in Uppsala county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Temp. grasses		52	44	72	46	37	48	77	54
Winter wheat	21	21	19	19	26	24	27	24	23
Spring barley	24	25	18	23	27	28	29	35	26
Spring wheat	23	24	23	29	32	24	33	41	29
Oats	26	30	27	27	29	40	38	40	32
Spring rape	22	26	27	27	22	28	20	27	25
Average	23	30	26	33	30	30	33	41	

* Based on yield data from SCB (2014a).

3.4.3.4 Risk assessment, Uppsala county (1991-2011)

For winter wheat, the years 1998, 1999, 2001, 2010, 2011 all gave low yield, i.e. at least 10% less than the expected yield. The worst year was 2011, where -32% deviation from expected yield was observed. Based on the crop yield data on farm level comprising the years 2005-2011, as described in Section 2.3, there was no major increase in variation for 2011, meaning that the whole county was affected (see Figure 3c). For details concerning the years 2010 and 2011 and the 'normal' year 2009, see Table 29.

Table 29. *Distribution of winter wheat yield in 2010 and 2011 (years with low yield) and in 2009 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2009	6 500	6 000	5 400	4 500	3 200
2010	6 400	5 900	5 000	4 000	3 600
2011	5 000	4 500	3 900	3 100	2 500

As Table 29 indicates, there were no severe losses in 2010. In 2011 the losses were around 1500 kg/ha, so many farms would not have had 30% losses. We estimated that at most around 30% of farms had 30% losses. Moreover, in the other four years where lower yields were observed there was no increase in farms with a 30% yield reduction in relation to the standard yield. Thus, the risk of having crop yield 30% lower than expected is:

$$\text{Risk} = 0.048 \times 0.30 + 0.952 \times 0.05 = 6\%,$$

Again, as discussed in Section 2.3, a 5% risk of low harvest was assumed even if the year seemed to have yield equal or above the expected yield. For a detailed explanation of the risk formula, see Section 2.3.

For spring wheat, the same years as for winter wheat, i.e. 1998, 1999, 2001, 2010, 2011, all gave low yield and, as for winter wheat, 2011 had the lowest yield, which deviated by -28% from the expected level. A comparison of 2010 and 2011 with the 'normal' year 2000 is presented in Table 30

Table 30. *Distribution of spring wheat yield (kg/ha) in 2010 and 2011 (years with low yield) and in 2009 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2009	6 100	5 500	4 700	3 600	2 800
2010	5 300	4 800	4 200	3 700	2 800
2011	4 600	4 000	34 00	2 500	1 900

It follows that all results concerning winter wheat were very similar to those for spring wheat. The risk of obtaining 30% lower than expected yield is:

$$\text{Risk}=0.048 \times 0.30 + 0.952 \times 0.05 = 6\%.$$

For rye, the years 2001 and 2011 gave low yield, -31% and -33% deviance from the standard yield, respectively.

Table 31. *Distribution of rye yield (kg/ha) in 2011 (year with low yield) and 2009 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2009	6 700	5 700	5 100	4 300	3 500
2011	5 500	4 600	3 700	2 700	1 400
Difference	1 200	1 100	1 400	1 600	2 100

According to Table 31 the year 2011 seemed to some extent to follow the scenario in Figure 3d. For both 2001 and 2011, it was assumed that around 40% of farms obtained yield which was 30% lower than the expected yield. Hence the estimated risk of -30% yield is:

$$\text{Risk} = 0.096 \times 0.40 + 0.904 \times 0.05 = 8\%.$$

For spring barley, the years 1994, 1998, 1999, 2001 and 2011 gave yields 10% lower than the expected level. The lowest values were obtained in 1998 (-31%) and 1999 (-22%). Table 32 compares 2011 with the 'normal' year 2009.

Table 32. *Distribution of spring barley yield (kg/ha) in 2011 (year with low yield) and 2009 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2009	6 000	5 500	4 600	3 800	2 800
2011	4 900	4 500	3 800	3 100	2 200
Difference	1 100	1 000	1 200	700	600

From Table 32 it can be seen that there was no real increase in farms with severe crop losses, i.e. -30% of expected yield. For the year 1998, several farms, say 30%, could be expected to have 30% lower yield than the expected value, while for 1999 20% of farms could have had 30% lower yield than expected. For all the other years it was assumed, as above, that about 5% had unusually low crop yield. Thus the risk of obtaining 30% less than the expected yield is:

$$\text{Risk} = 0.048 \times 0.30 + 0.048 \times 0.20 + 0.904 \times 0.05 = 7\%.$$

For oats, the years 1994, 1998, 1999, 2001, 2010, 2011 all gave at least 10% lower yield than expected. The lowest yield was observed in 2010, with -27% deviances from the standard yield.

Table 33. *Distribution of oats yield (kg/ha) in 2010 and 2011 (years with low yield) and in 2009 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2009	5 700	5 000	4 300	3 500	2 500
2010	4 700	4 400	3 200	2 200	1 500
2011	5 200	4 500	3 600	2 700	1 900

In Table 33 are given the percentiles during years with low and high yield. It follows that for 2010 the difference with 2009 is between 600 - 1300 kg between 2009 and 2010. In fact there was an increase in the risk of 20-30% losses, but it is very unlikely that losses would exceed 50% of the expected yield. Therefore, according to our default value, we set a risk of 5% of yield being 50% lower than the expected level, i.e.

$$\text{Risk} = 5\%.$$

3.4.4 Norrbotten county

3.4.4.1 Crop production and yield at county level

Annual production in the years 2010-2014 and average of the most important crops in the county is presented in Table 34. Temporary grasses and to some extent potatoes and spring barley are the major crops.

Table 34. Yearly *production (metric ton) in 2010-2014 for the major crops in Norrbotten county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses			87 900		94 800	91 350
Potatoes	9 500	7 600	6 900	10 500	8 700	8 640
Spring barley	9 600	4 200	4 700	10 600	10 500	7 920

* Data from Jordbruksverket (2015)

Average yield of spring barley in the period 1965-2013 is shown in Table 35, and annual yields of potatoes, spring barley and temporary grasses in a few years within that period are presented in Figure 40. For spring barley, the average yield was approximately 2200 kg/ha for the last 15 years, a much lower level than in southern counties of Sweden. Yield increased over time, but at a lower rate than in southern counties. Moreover, it varied widely from year to year, as shown in Figure 40. The coefficient of variation was 16% (Table 35), which is higher than those obtained in southern counties.

Table 35. *Average spring barley and potato yield in Norrbotten county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Potatoes	15 740	2 239	14
Spring barley	2 122	346	16

* Coefficient of variation = Standard deviation / Average

The years with lower yield at county level are presented in Table 36 together with some weather observations. Yield 25% lower than the expected level occurred frequently, in approximately 20% of years for barley, and was mainly related to rainy periods during the growing season and the harvesting period. Yield in 1977, 1987 and 2011 was exceptionally low, i.e. less than 50% of the expected level. Considering that these figures are county averages, the loss level for a considerable number of farms must have been close to 100%.

Table 36. *Years in Norrbotten county with at least 30% lower barley yield compared with the trend curve (Figure 40) for the period 1965-1990 and compared with the standard yield for the period 1991-2012*.*

Year	Spring barley, %	Observations
1966	-32	This lower yield was not clearly associated with a temperature or precipitation pattern
1971	-32	No clear association with a temperature or precipitation pattern
1977	-57	Rainy harvesting period (25 August-5 September: 50 mm).
1987	-84	Rainy growing season (1 June-31 August: 251 mm) and rainy harvesting period
1998	-44	Rainy growing season (1 June-31 August: 314 mm). Rainy harvesting period
2001	-31	Rainy sowing period (15-31 May) and rainy August
2011	-53	Rainy sowing period (20 May to 10 June: 61 mm) and a rainy harvesting period (25 August-10 September: 74 mm)
2012	-34	Very rainy harvesting period (25 August-5 September: 92 mm).

* Based on data from Luftwebb (2014) and Jordbruksverket (2014, 2015)

3.4.4.2 Precipitation, temperature and yield analysis

The occurrence of a 30-day dry period starting decreased from around 27% in May to 6% in August, then increased in September (Figure 41). The frequency of a 40-day dry period starting in May was less than 10% and in June to August it was very low.

Moreover, dry periods with less than 20 mm during 30 days occurred in one out of six years during the growing season (Figure 42). Dry periods of 40 days did not occur in the period 1961-2012.

Years with a low number of available working days for harvesting are shown in Figure 43. An estimated number of less than six working days during the harvesting period occurred 11 times during the period 1961-2012, i.e. close to 20%. The estimated number of available working days was particularly low in 1982 (3 days), 1985 (0 day), 1992 (0 day), 2005 (2 days) and 2012 (2 days), but yield was only particularly low in 2012.

Figure 44 shows annual yield of barley and precipitation for the periods 1 June-31 July (61 days) and 20 August-10 September, 1991-2012. There was no clear relationship between low yield and precipitation, but yield appeared to be higher in those years with low precipitation in the period 1 June-31 July, with the exception of 2011. An important reason for the lower yield in that year was a rainy period in mid-August, i.e. a rainy harvesting time (63 mm in 8 days and 119 mm from 15 August-10 September) which resulted in 47% of the cereal area at county level not being harvested. A similar situation happened in 2012. The procedure for estimating available working days for harvesting partially captured the rainy condition of 2011 (six days) but the situation in 2012 is well reflected (2 days).

Figure 45 shows annual yield of spring barley and temperature. It is difficult to discern a close relationship between these two variables.

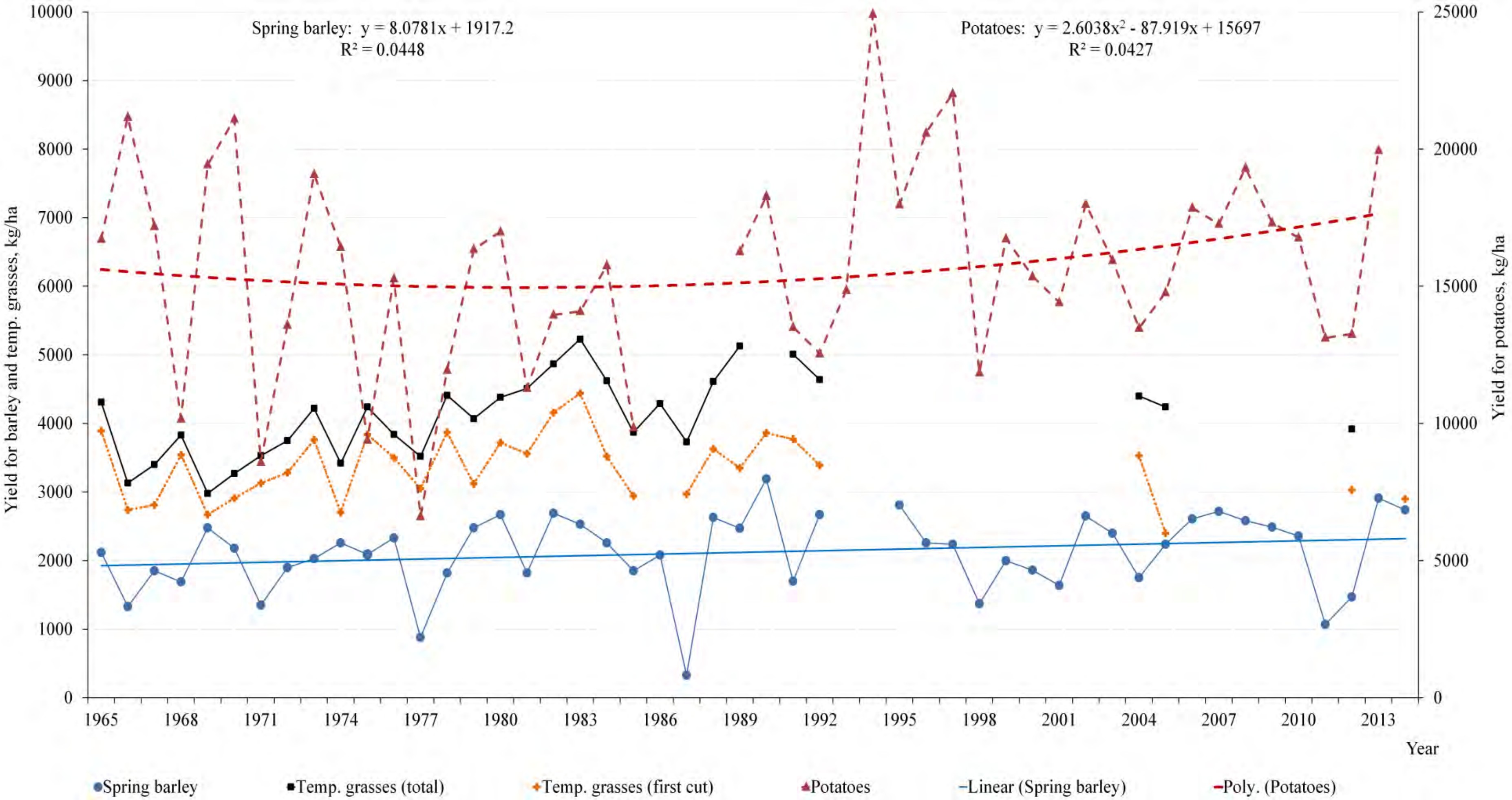


Figure 40. Average yield (kg/ha) per year of spring barley, temporary grasses (total and first cut) and potatoes in Norrbotten county for the period 1965-2014, and the trend line with respective equation for barley and potatoes. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1,2, ..., 50. Yield data from Jordbruksverket (2015).

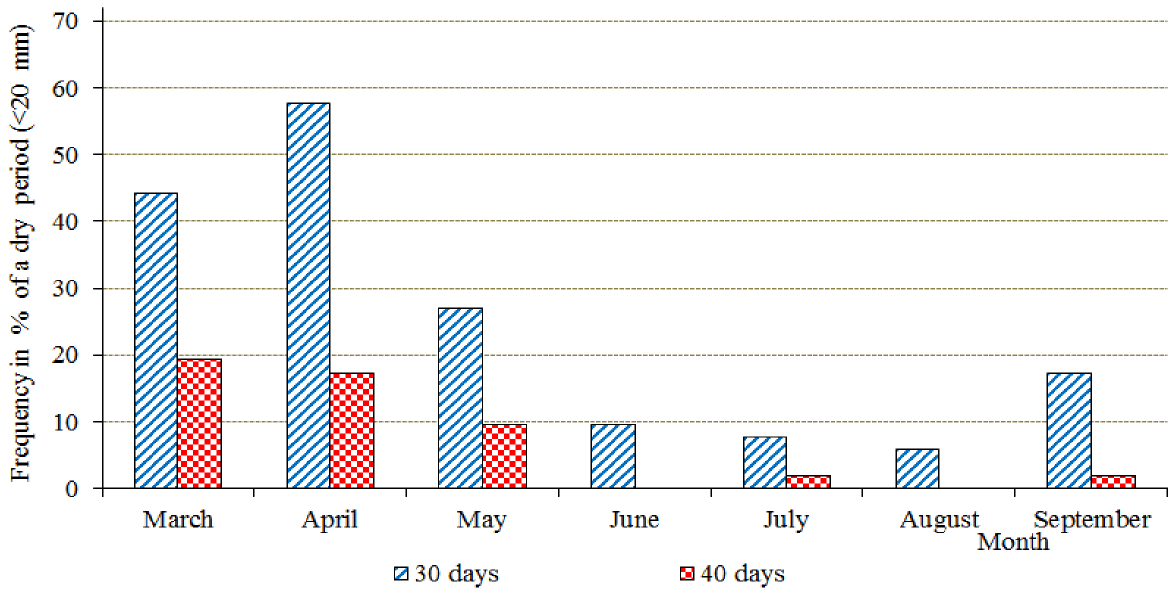


Figure 41. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Norrbotten county*.

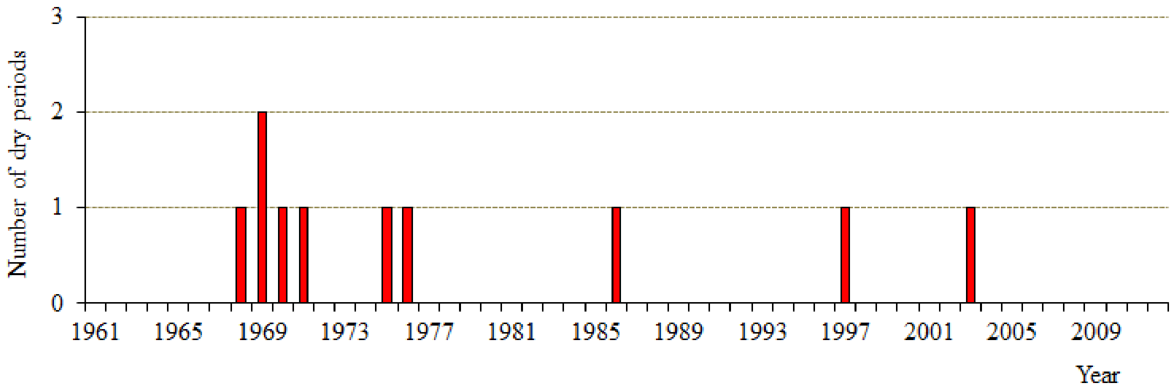


Figure 42. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 1 June-10 August in Norrbotten county*.

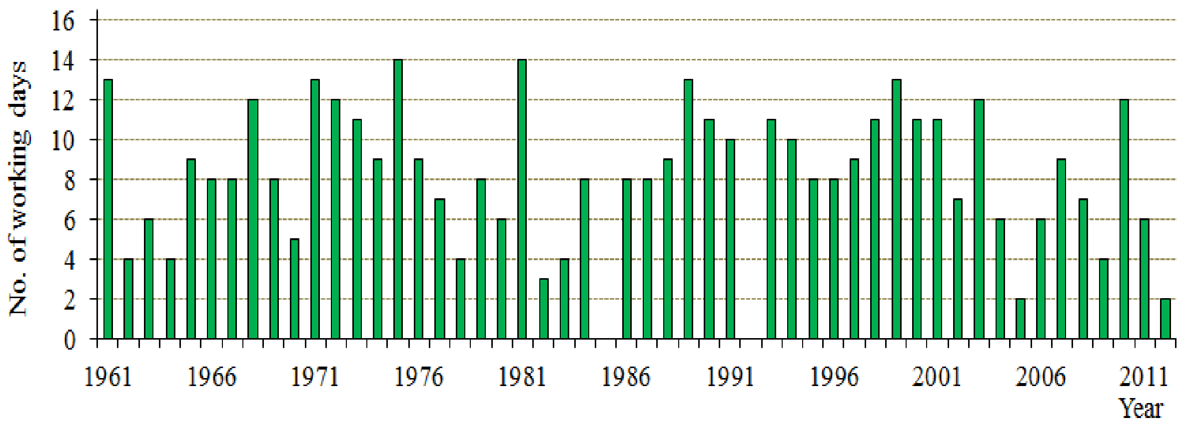


Figure 43. Estimated number of working days available for harvesting during the period 25 August-8 September in Norrbotten county (for definition of a working day, see Section 2.1)*.

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* The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

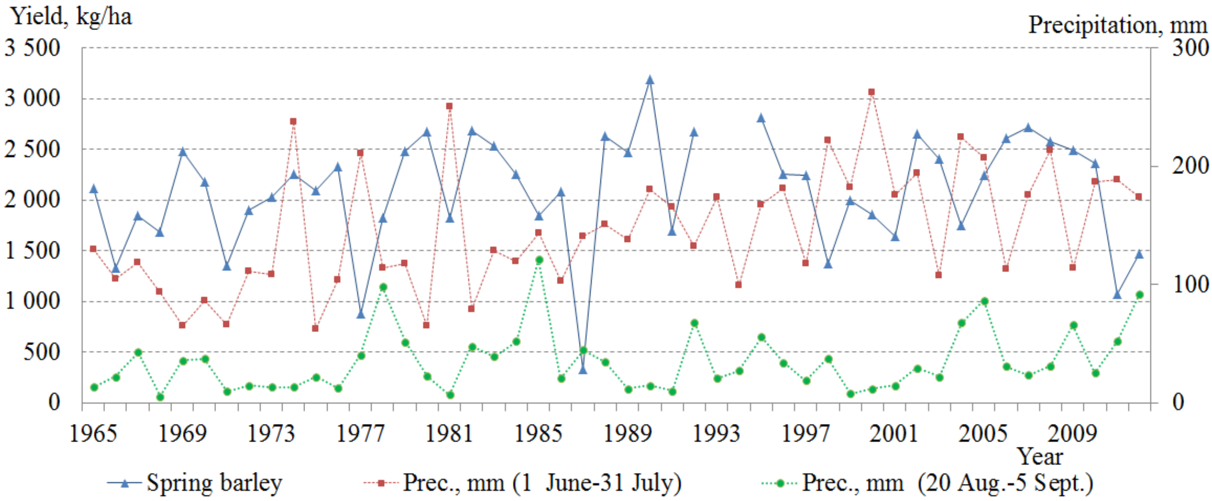

Figure 44. Annual spring barley yield (kg/ha) and precipitation (mm) in the periods 1 June-31 July and 20 August–5 September in Norrbotten county, 1965-2012*.

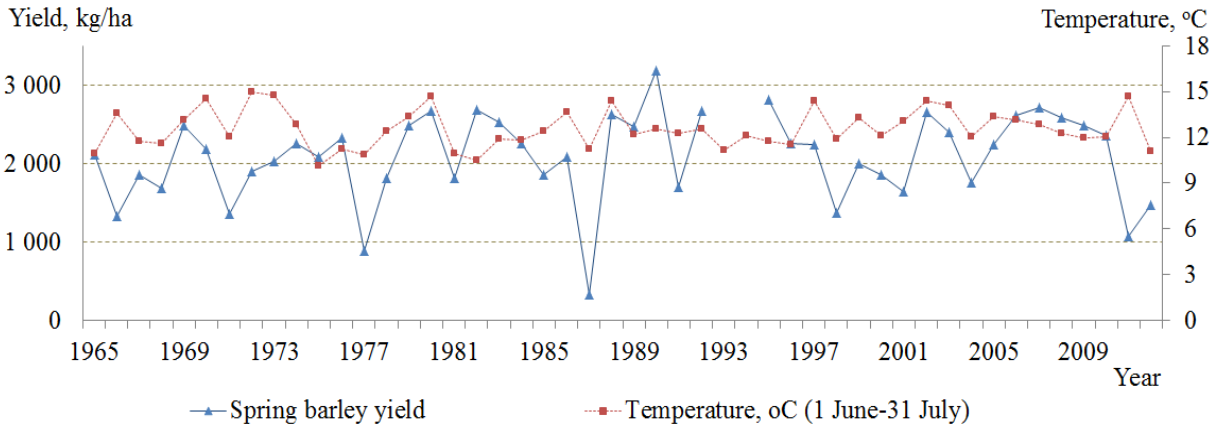

Figure 45. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Norrbotten county, 1965-2012*.

3.4.4.3 Yield on farms, Norrbotten county

Figure 46 shows the distribution, i.e. yield percentiles for spring barley, based on individual farm data for Norrbotten county, 2005-2012. As in the other counties analysed, yield on farms varied from year to year but to a much larger extent than in southern counties. Oats were also grown but the sample size was too low (6-13) to permit reliable analysis.

There were large annual differences in the percentiles for spring barley, including those years when yield was relatively high, e.g. 2006. The differences were even larger in years with unfavourable conditions, such as 2011 and 2012, when more than half of farms achieved very low yield and there was 47% non-harvested area in 2012. The low yield obtained on many farms is clearly depicted by the median values and lower percentiles in Figure 46. A similar pattern occurred with farm yield for potatoes but yield variation was still larger, particularly the year with difficult weather (2011) (Table A21-1 in Appendix A21).

The average yield for the 5th and 10th percentiles for the years analysed, i.e. the 5% or 10% farms with lowest yield, was 43% and 54% of the average county yield, respectively. The average county yield in 2011 and 2012 was very low, around 1000-1500 kg/ha.

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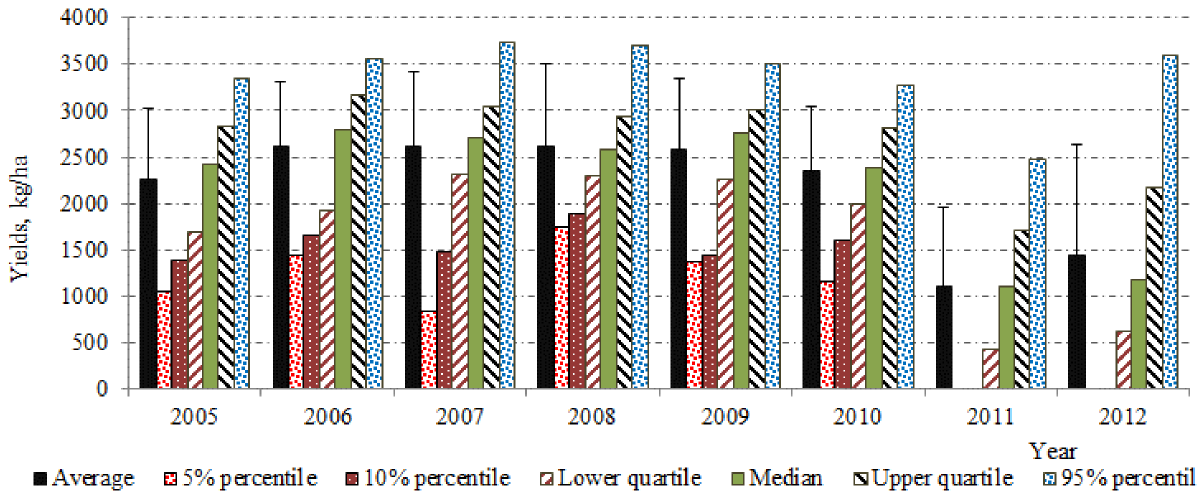
* Precipitation and temperature from Luftwebb (2014). Yield data from from Jordbruksverket (2015).

The annual yield variations are also presented as the coefficient of variation in Table 37. In most years CV varied around 30% for spring barley, but in 2011 and 2012 it was approximately 80%, reflecting large differences between-farm yield. As in the southern counties on farm yield of temporary grasses and potatoes shows high variation most of the year.

The statistics presented above indicate that farm yield in Norrbotten county varied greatly in some years (e.g. 2011 and 2012), leading to the conclusion that cereal cultivation (and agriculture) operates under much higher risks at these latitudes than in more southerly regions of Sweden.



N 31 34 37 48 42 43 49 44

Figure 46. Average and estimated percentiles of spring barley farm-level yield in Norrbotten county, 2005-2012. The error bars on the averages represent one standard deviation and ‘N’ denotes the sample size. Yield data from SCB (2014a).

Table 37. *Coefficient of variation for the main crops in Norrbotten county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Temporary grasses		39	54	36	58	60	51	49	50
Potatoes		39	44	44	36	35	68	52	45
Spring barley	33	27	31	34	30	30	79	83	43
Average	33	35	43	38	41	42	66	61	

* Based on farm-level yield data from SCB (2014a).

3.4.4.4 Risk assessment, Norrbotten county (1991-2011)

It is only of interest to study spring barley in Norrbotten county. Other crops are either not grown in Norrbotten county or there are too few observations available to draw reliable conclusions.

For spring barley, in 1991, 1998, 2000, 2001, 2004, 2011 yield was at least 10% lower than expected. In particular in 2011 it was 53% lower than expected yield and 1998 44% lower. Table 38 compares 2011 with the 'normal' year 2009.

Table 38. *Distribution of spring barley yield (kg/ha) in 2011 (year with low yield) and 2009 ('normal year').*

Year	Percentile				
	90%	75%	50%	25%	10%
2009	3 300	3 000	2 800	2 300	1 400
2011	2 300	1 700	1 100	400	0
Difference	1 000	1 300	1 700	1 900	1 400

For each of those years, all farms were probably affected. This means that a large proportion of farms, say 90%, would have had 30% less than the expected yield. The risk of obtaining -30% losses is:

$$\text{Risk} = 0.096 \text{ x } 0.90 + 0.192 \text{ x } 0.40 + 0.712 \text{ x } 0.05 = 20\%.$$

4 DISCUSSION

This chapter provides a brief summarising discussion of the results. Several interesting facts emerged and it is likely that the results in this study can serve as a basis for future work. It is also one of very few studies to relate weather to real crop production in the whole of Sweden. The official statistics estimates crop yield relatively accurately on county level, i.e. an estimated total is produced together with an estimate of uncertainty. However, some counties are rather heterogeneous geographical regions with different weather and soil characteristics. Thus, when presenting the risks of yield losses on farm level there is a real small area estimation (SAE) problem.

In recent years much attention has been paid to SAE issues, but very little theory has been developed for analysing time-repeated surveys, which would have been useful for this project. The EURAREA Consortium (2004), an EU-funded research team that includes 12 national statistics institutes, particularly from the Nordic countries, considered in-depth repeated or semi-repeated surveys, since most of the official statistics on crop production are obtained by repeated surveys. In particular, the EURAREA Consortium (2004) considered SAE when estimating strength over space and time. An interesting publication in this regard is a thesis by Nissinen (2009), who applied linear mixed models and discussed in detail one of the designs formulated by the EURAREA Consortium (2004), namely a rotating panel data survey. However, little theory has been developed for applying time-dependent multivariate models in survey studies and SAE problems. General references on SAE include Pfeffermann (2002), Rao (2003) and Chambers & Clark (2012).

In this report we avoided the SAE modelling part and instead focused on weather and yield-related descriptive statistics, with the main aim of determining the impact of weather on yield and calculating the risk of severe crop losses. However, future studies utilising SAE ideas could probably achieve more accurate risk estimates, although they would also require background information on either farm level or for small regions. In this report, an attempt was made to account for weather-related yield reductions by using data from long-term experiments.

4.1 Risk analysis

The method used for risk assessment in this report was chosen based on lack of relevant background information and the fact that during the 20-year study period, there were only a few years with large crop losses. Using official statistics, we identified years in which weather may have had a severe impact. Based on SCB data for 2005-2011 (SCB, 2014a), this study has tried to identify the impact of weather on crop production at farm level.

In this report, risk was defined as the risk on farm level. In the beginning, the plan was to study crop losses of at least 50% of the expected value. However, apart from the case of oats, there were not enough extreme events to allow any firm conclusion about 50% yield reductions to be drawn. Therefore, the focus was shifted to 30% crop losses. In general, the risk of obtaining 30% losses was less than 10%, which implies that extreme events in Sweden are fairly rare. On extrapolating results from county level to farm level, however, there was relatively little information to help us to carry out an appropriate risk assessment. The main source of farm level information was the material from SCB for 2005-2011 (SCB, 2014a). These data do not constitute a random sample, since they are weighted according to the size of the farm. Despite this, there are still many farms with 0 kg/ha yield. However, in the risk analysis only farms with an arable area of more than 5 ha were included and it was decided to base the analysis on the 10^{th} and 90^{th} percentiles. Therefore the 10^{th} and 90^{th} percentiles, as well as the difference between these percentiles, were studied. Reasons for low yield levels may be: The crop was intended for use as animal feed, e.g. in pig production; the crop was mixed with previous years' harvest; different crops were mixed; the entire harvest in a field was sold to neighbouring farm; crop damage occurred due to hail or wild boars; the crop was grown in an extensive, low-input system, etc.

It is important to note that, according to the long-term experimental data, the occurrence of yield reductions exceeding 30% of the expected level proved to be higher than indicated in the SCB data at the regional level. While the latter rarely showed occurrences or risks above 10%, the long-term experimental data showed that the frequency of yield reductions of 30% or more could approach 20%, especially for spring cereals. A possible explanation for such a high frequency of yield reductions is that experiments are often harvested despite the level of profitability, whereas a normal farmer might leave a poor crop unharvested. Farmers often decide not to harvest if they judge this to be a waste of resources and these data are included in the official statistics as non-harvested area.

4.2 Weather data

The weather data used in this report were based on a grid and obtained via models utilising neighbouring observations (Luftwebb, 2014). The benefit of this approach was that data were available through the internet for any place in the country and complete daily temperature and precipitation series were obtained from 1961. Daily data on radiation were also available from 1999 (SMHI, 2014). These kinds of data may smooth short extreme events towards daily averages, but short extreme weather events are also important, e.g. short rain or hail storms can lead to considerable crop damage. Crop yield is also influenced by other weather factors such as wind, hail, cloudiness and relative humidity. In this report, several weather parameters and effects were not analysed in detail.

Most of the official crop statistics are compiled at county level. Therefore, collected weather data have to be correspondingly related. In this report, daily temperature and precipitation data for each county were the average for four sites close to each other and these averages were considered to be the ‘true’ values for the whole county. This simplification is less accurate than weather data from nearby meteorological stations. Furthermore, as most of the Swedish counties are rather large, particularly the northern counties, daily precipitation differences can be substantial between locations, particularly during summer time.

Daily weather data were integrated into 5-day periods for further analysis. This allowed for an acceptable level of detail, while at the same time making data handling easier. The precipitation and temperature compilations for 52 years and radiation for 14 years in tables give a good overview of their dimensions and variations for each county, as their magnitudes are illustrated through colour intensity (e.g. see Figure A1-17 or A1-18 in Appendix A1).

4.3 Yield data

The statistics on crop yield were obtained from official statistics at county level and were available from 1965 to 2014. They give a good general picture of annual yield and its annual variations at county level, which varied considerable from year to year and are well depicted in Figures 4, 16, 28 and 40 for the counties of Skåne, Västra Götaland, Uppsala and Norrbotten, respectively. For the risk assessment, data for the period 1991-2011 were used. This was partly because earlier data were not available in the starting of this project, but also because it was unclear how comparable the data from the beginning of the observation period actually were with the present data. Indeed, because crop production has changed over the period, a great deal of bias could have been introduced.

However, the averages for the counties do not give any information on yield differences between farms. Fortunately, some detailed sample yields at farm level were available for the years 2005 to 2012 from the official statistics for each county. The number of farms in the county samples varied significantly, from a few farms to more than 500 farms. This report only includes compilations where the sample size was at least 30 farms most of the years.

4.4 Detailed discussion for the counties of Skåne, Västra Götaland, Uppsala and Norrbotten

4.4.1 Skåne county

Yield of spring cereals in 1992 and 2006 was extremely low in Skåne county (Figure 4). The low yield in 1992 can be attributed to a very dry period from mid-May to 10 July, with 2 mm precipitation during 57 days. This drought occurred at a critical period for spring cereals, resulting in yield being approximately 40-50% lower than the expected level. The reduction was only approximately 10% for winter wheat. It can be assumed that when the drought occurred, the winter wheat was already well rooted, whereas the spring cereals were just in the establishment stage. The summer of 2006 was dry and warm and the August (harvesting period for late winter crops and spring crops) was extremely rainy (around 245 mm precipitation) and many fields flooded, causing yield reductions of 25-40% at county level, depending on the crop.

A 40-day dry period (<20 mm precipitation) occurred in one out of ten years in Skåne county. Such periods mainly affected spring cereal yield, but not in all years (Figures 7, 10-13).

The yield differences between individual farms were large. Winter wheat showed the lowest variation and spring rape the highest (Table 11, Figures 14, 15 and Appendix A10, Figures A10-3 - A10-9). Differences in farm-level yield of approximately 30% between the lower and upper quartiles occurred in most years. The differences were still larger for the group of farms with low yield. The real causes of this large between-farm variation are unclear, as yield may depend on many factors, for example differences in soil conditions, management practices, fertilisation strategies, crop varieties, etc. but also local weather, in particular local precipitation. Among the former mentioned reasons management, timing and god soil status were found as the main causes when farms with 1000 kg/ha higher yield were compared with 'normal' yielding ones by Elmquist et al. (2014), in a study on winter wheat yield on farms with similar growing conditions in terms of soil and climate. The term *management* included enough machinery and labour capacity in order to carry out field operations on time, including the capacity to perform parallely the harvesting and sowing operations, particularly in the northern cultivation zones of winter wheat. Soil compaction was pointed out as an important problem by those farms with lower yields.

Comparing the yields for the 95th percentile and the 5th percentile showed that the former group of farms obtained approximately 1.8-fold and 2.3-fold higher yield for winter wheat and oats, respectively, in most years. In 2006, the yield differences were even larger than in a 'normal' year, particularly for spring crops (Table 11). In that year, winter wheat and oats yield for the 95th percentile was 3-fold and 5-fold higher, respectively, than that for the 5th percentile. Difficult weather conditions did not affect all farms to the same extent, as well depicted in Figures 14 and 15.

The non-harvested cereal area in Skåne county was low compared with that in other counties (Table 3), on average close to 0% for the period 2001-2013. The non-harvested area was only slightly significant in 2001, 2006 and 2011 (0.8%, 2.3% and 0.5% of crop area, respectively). The harvesting period in those years was rainy, in particular in 2006.

Considering the non-cereal crops, the largest proportion of non-harvested area was for peas, 3% on average for the period 2001-2013 (Table 4), and the worst year was 2006, with 10% total non-harvested area. Potatoes and starch potatoes were other crops with a considerable non-harvested area, 1.5% and 1.3% on average, respectively (range 0-8% for the study period). Considering the high production costs of potatoes, it can be assumed that many potato growers suffered considerable financial losses in years when a substantial area of the potato crop was not harvested.

The amount of precipitation during the growing season (April to August) for the period 2000-2013 was 16% higher than in the period 1961-1999, but the annual rainfall increase was only 5% higher, which means that the increase in precipitation was not uniformly distributed over the year. The average precipitation increased in June, July and August and decreased in April and September (Figure 47). The large increase recorded for August (+46%) was largely influenced by the rainfall in August 2006 (248 mm) and when that year was excluded the increase was only 29%.

Standard deviation also showed a considerable increase in rainfall variation in July and August, which coincided with the maturation period for winter crops and spring crops, respectively. The median values for the periods 2000-2013 and 1961-1999 were similar, meaning that the precipitation level was similar for both periods in 50% of years. However, the upper quartile for 2000-2013 was much higher, meaning that the precipitation increase was mainly caused by 25% of years (Figure 47). The high level of precipitation in August (150 mm or higher) that occurred in 25% of years during the last 14 years made harvesting operations more difficult, with fewer working days, particularly for spring cereals (Figure 9).

In general, the increase in rainfall during the summer months did not have a detrimental effect on cereal yield. However, if the higher precipitation level in August persists for a considerable proportion of years, the risk of less available working days for harvesting will increase, particularly for spring crops.

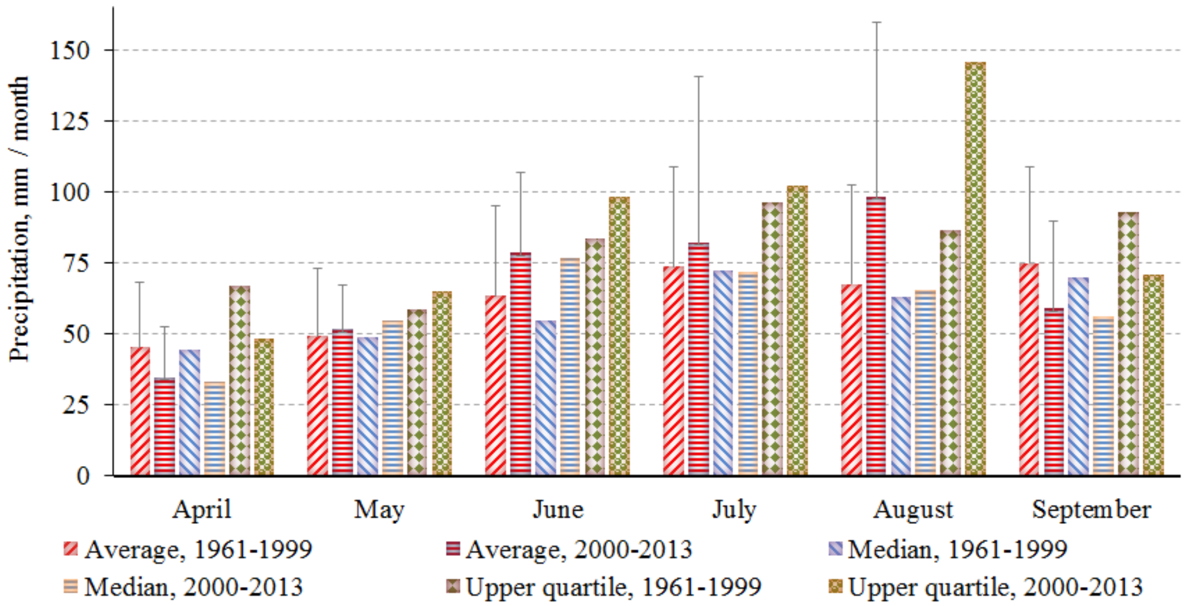


Figure 47. Monthly average, median and upper quartile precipitation (mm) from April to September in Skåne county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1338046-6179375 (close to Lund).

4.4.2 Västra Götaland county

The most widely cultivated cereals in Västra Götaland county are winter wheat, oats and spring barley with standard yield of about 5600 kg/ha for winter wheat and 4000 kg/ha for spring cereals in recent years. These values are approximately 25% lower than the corresponding values for Skåne county. Yield in the county increased to some degree in the 2000s compared with the 1990s (Figure 16). Winter wheat was the cereal with the most stable yield from one year to another and oats showed the highest variation (Table 18 and Figure 16). The coefficient of variation was 6% and 9%, respectively, which was similar to that in Skåne county (Table 9).

Most of the years with low yields were associated with rainy periods (Table 19). The exception was 1992, when a drought occurred from the middle of May to the end of June (a critical period for spring cereals) in addition to a rainy harvesting period. The consequences were yield reductions of 40% and 62% for barley and oats, respectively. In general, oats are more sensitive to drought than barley and need more water than other cereals (Peltonen, 1990; Chmielewski & Köhn, 1999).

The non-harvested area of cereals during the period 2001-2013 was low, on average close to zero for winter wheat and approximately 2% for oats. The worst year was 2011, with a non-harvested area of 5% for oats, which can be attributed to a very rainy harvesting period.

The crops shown in Table 4 (peas, field beans, oilseed rape and potatoes) are cultivated to lower extent than cereals. The average non-harvested area for peas over the period 2001-2013 was 7%. Within the period, 2011 was the worst year, with 22% of the cropped area not being harvested at county level, mainly due to a rainy harvesting period at the end of August.

As in other counties with large areas of arable production, such as Skåne and Östergötland, the low proportion of non-harvested area for cereals indicates that cereal production is associated with low risks.

There were no very large differences in average yield of cereals and rape at county level in the period 2005-2012, but the yield variation on individual farms was substantial (Figures 26 and 27). Differences were particularly large for spring wheat, rape and rye as shown by the coefficients of variation in Table 20 and larger than those for Skåne county (Table 11). The 5th and 10th percentile farms obtained yields that were approximately 50-60% of the average yield for most of the study years. Such lower yields for this group of farms make it difficult to achieve economic success.

Unfortunately with the available data on farm yield, it was not possible to follow the same farms year after year in order to see how yield varied on each farm. However, most of the farms with the lowest yield were presumably the same farms, considering that soil conditions, available resources and management are more or less farm-specific and can vary a great deal as it was reported by Elmquist (2014). It can be expected that weather differences in particular years are not very large within a county, perhaps with the exception of the very large counties such as Norrbotten.

The level of precipitation for the growing season (May to August) during the period 2000-2013 increased by approximately 40% compared with the period 1961-1999, but the rise was not evenly distributed (Figure 48 and partially depicted in Figures 22, 23 and 25). The increase mainly occurred in June and July, and partly in August. The limited rise in April and perhaps in the two first weeks of May meant that the sowing conditions were not affected. The lower standard deviation of precipitation in May and June would lead to lower drought risks if this situation persists in the future. The minimum precipitation per month in May, June and July was at least 20 mm in the period 2000-2013, but in the period 1961-1999 it was less than 20 mm in approximately 10% of these months. This indicates a decrease in the drought risk during the growing season if this precipitation trend continues.

However, the higher level of precipitation in August would make harvesting conditions more difficult in some years. The median precipitation level in August in the period 2000-2013 did not increase, but that for the upper quartile was much larger, over 125 mm. This means that 25% of years had at least 125 mm rainfall, which is twice the median precipitation for the period 1961-1999 and approximately 30% more than the upper quartile for the same period. As in Skåne county, the much higher levels of precipitation, i.e. in one year out of four, are like to increase the harvesting risks and actions will have to be taken to counteract their effects if this precipitation pattern persists in the future.

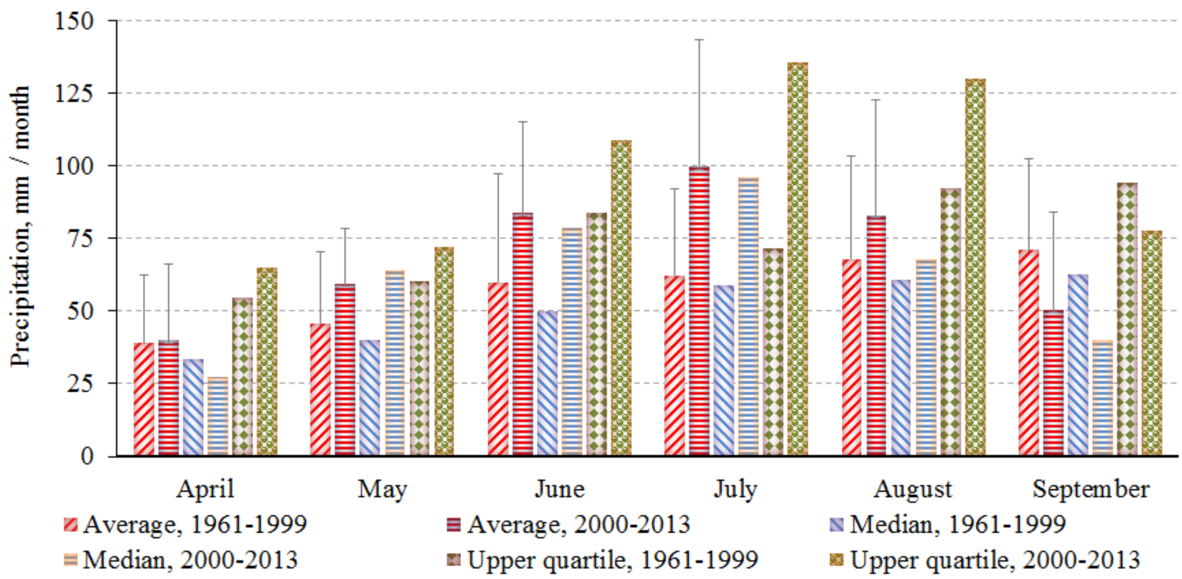


Figure 48. Monthly average, median and upper quartile precipitation (mm) from April to September in Västra Götaland county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1346371-6490351 (close to Lidköping).

As far as we could determine, the increasing precipitation during the growing season had no negative effects on the average yield at county level despite the increase being large, particularly for July (Figure 48). The question that remains is whether this precipitation increase is permanent or a temporary phenomenon.

4.4.3 *Uppsala county*

Cereal yield for the last 15 years in Uppsala county was similar to that in Västra Götaland, i.e. approximately 5200 kg/ha for winter wheat and 4200 kg/ha for spring cereals, with the exception that spring wheat yield was up to 400 kg higher in Uppsala. Winter wheat yield varied greatly from year to year at county level, with a coefficient of variation of 11%, which is much larger than the value of 6% estimated for Skåne county and Västra Götaland county (Tables 9, 18 and 26). The years with lower yield were associated with dry periods in May and June or heavy rain at the beginning of August, the harvesting period for this cereal. The period from the middle of April to the end of May is critical for winter wheat, which has to recover and develop after winter. Uppsala county is at a latitude (60°N) which is the northern limit for growing winter crops in Sweden.

The yield differences at farm level in Uppsala county were lowest for winter wheat (Table 28). They were comparable to those in Skåne county (Table 11) and much lower than in Västra Götaland county (Table 20), but there was still a considerable number of farms that obtained much lower yields than the median values, particularly in those years with low county averages (see the 5th and 10th percentiles in Figure 38). For oats, the grain crop with highest variation at farm level, yield for the 10th percentile of farms was less than half the average yield (2010-2012, Figure 39 and Table 28).

The non-harvested cereal area for the period 2001-2013 was in the order of 1% of the cereal area, a similar figure as in the other counties with widespread cereal production. The non-harvested area for winter rape was 4% (Table 4), but this crop was cultivated to a much lower extent than spring rape, despite the expected yield being higher for winter rape than spring rape. The lower cultivation rate of winter rape in this county was probably related to its higher risks. From 2014 the cultivation area of spring rape considerably decreased in the country and in this county due to the forbidden use of neonicotinoid insecticides (Table 24).

Precipitation clearly increased, by 16% and 40% for the period May-August in Skåne county and Västra Götaland county, respectively, in 2000-2013 compared with 1961-1999. A similar precipitation increase in the 2000s has been observed in Finland for the months of May, June and July (Peltonen-Sainio et al., 2009). However, this increase was not as clear in Uppsala county (Figure 49). Within the growing season, some months showed a precipitation increase and others a decrease, which can be considered normal variation. The period 2000-2013 is too short to draw any firm conclusion.

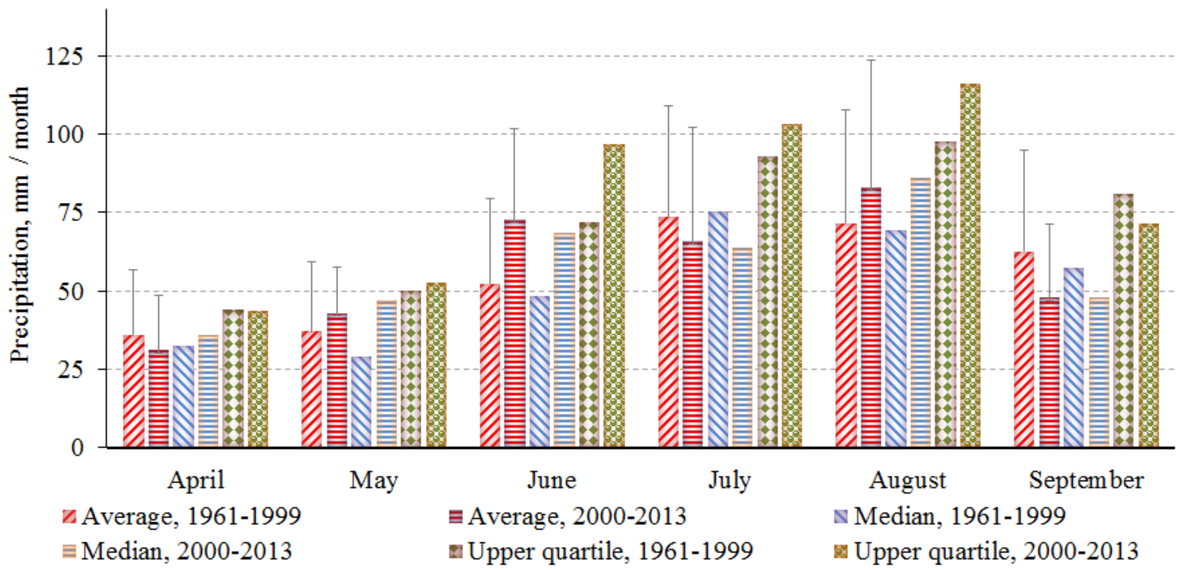


Figure 49. Monthly average, median and upper quartile precipitation (mm) from April to September in Uppsala county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1606324-6640376 (close to the city of Uppsala).

4.4.4 Norrbotten county

Norrbotten is the northernmost county, covering almost one-quarter of Sweden, but the cultivated area is small, e.g. in 2013 about 3960, 414 and 524 hectares of barley, oats and potatoes, respectively, were grown (Jordbruksverket, 2014). The yield of barley was around 2200 kg/ha in the last 15 years (Figure 40) and that of potatoes 17,000 kg/ha, i.e. much lower than in southern counties. Pasture and temporary grasses were grown to a much larger extent. In 2012 there were about 22,000 ha of ley, with yield of approximately 4000 kg/ha (Jordbruksverket, 2014).

Yield variation for barley was large in this county (Figure 40). The coefficient of variation was 16% for the period 1965-2013, almost twice that in southern counties. In one out of five years, yield was 30% lower than the expected one (trend line). The years with the lowest yield were associated with high precipitation during the harvesting periods and/or a rainy growing season (Table 36). The risk of drought was much lower than in southern counties. In addition, the average temperature during the growing season was approximately 3 ^{o}C lower than in southern counties (Figures 12, 24, 36 and 45). Lower temperature mitigates the detrimental effects caused by possible droughts.

The years with the lowest average yield of barley were 1987, 2011 and 2012. These years were characterised as having a rainy growing or harvesting period. The weather conditions can be compared those in Skåne county in 2006, when the lower yield of spring crops was mainly caused by a rainy harvesting period.

Yield differences in barley between individual farms were considerable and higher than in southern counties. The coefficient of variation was approximately 30% in most years for the period 2005-2010 (Table 37). During extreme years such as 2011 and 2012, the coefficient of variation was approximately 80%. In these years about 45% of the crop area was not harvested and 25% of farms obtained yield lower than 1000 kg/ha. However, during these two years (2011, 2012) there was a small group of farms that managed to obtain reasonable yields, as shown by the upper quartiles and 95th percentiles in Figure 46. Pietola et al. (2011) observed the same pattern in Finland, concluding that ‘growing conditions causing crop damage are likely to have heterogeneous implications’.

The level of farm-yield variation of temporary grasses in Norrbotten county was similar to the ones estimated for the southern counties, i.e. a coefficient of variation of over 50% (Tables 11, 20, 28 and 37), which means a much higher yield difference between individual farms than the dispersion in grain production.

The precipitation amount for the years 2000-2013 showed an increase of 52% in May, 34% in June and 24% in July compared with the average amount for the period 1961-1999 (Figure 50), but the annual increase was 16%. If this higher level of precipitation during summer months persists in the future, growing conditions will probably become more difficult, as excessive rain is associated with less solar radiation, lower temperature, nutrient leaching, problems with sowing and harvesting, etc.

The fact that Norrbotten county had much lower yield compared with southern counties and much higher inter-annual yield variations and non-harvested areas, in addition to a persistent risk of higher precipitation during the growing season, leads to the conclusion that agricultural production is an economic activity associated with much higher risk there than in southern counties.

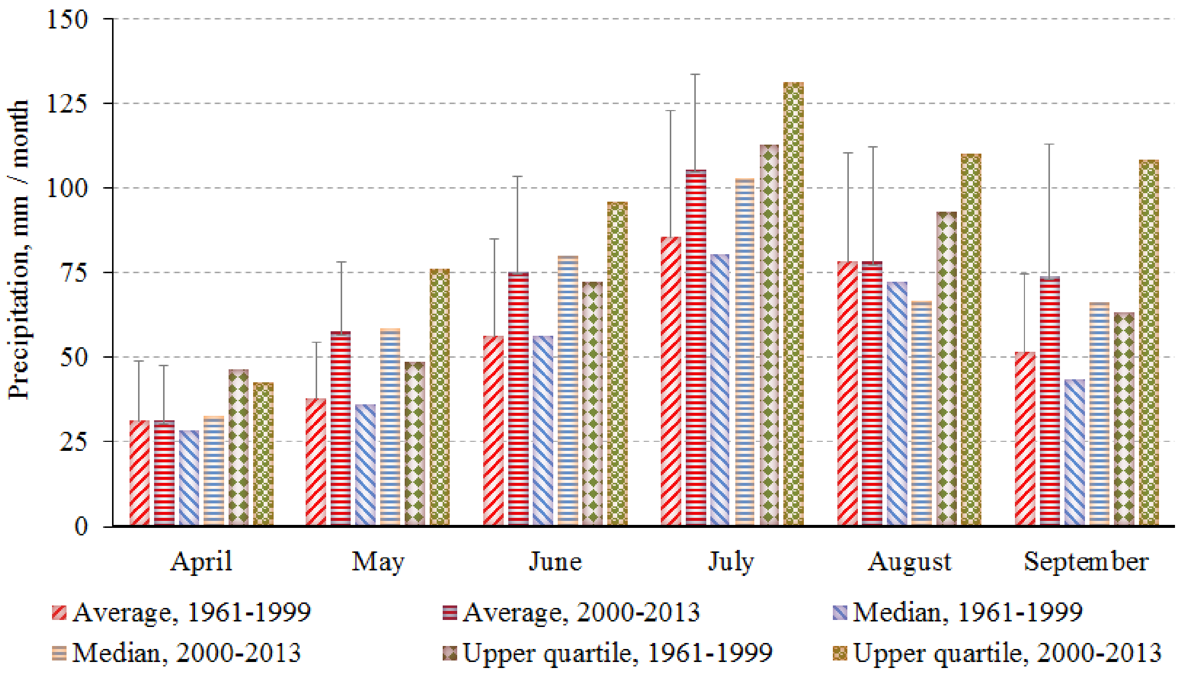


Figure 50. Monthly average, median and upper quartile precipitation (mm) from April to September in Norrbotten county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1711776-7456772 (close to the town of Gällivari).

4.5 Rainy harvesting period

In general high precipitation events (> 40 mm/day) are rare in Sweden. During the period 1961-2011, they occurred in one out of 2-5 years in the regions of Götaland and Svealand (depending on the site) and in one out of 5-10 years in Norrland, mainly during the summer (Wern, 2012). However, some locations occasionally received much higher precipitation. Events with 130 mm/day or more were recorded at 30 weather stations in Sweden during the study period. Seven of these occurred in August in the region of Svealand. Cases of more extreme persistent precipitation (>235 mm during 14 days) were much more common in Norrland (21 occasions out of 30) than in southern Sweden and 19 of these occurred during summer time (Wern, 2012). In the region of Götaland, the number of high precipitation events (more than 80 mm in 14 days) during the summer months substantially increased during the last 10 years compared with the previous 100 years; the same pattern is valid for the region of Svealand but to a lower extent (Wern, 2012).

The probability of extreme events with high and persistent precipitation during the harvesting period is not very high, but not negligible. According to Wern (2012) the probability of 100 mm precipitation falling during 14 days is at least 10% for most places in Sweden. Assuming that 70% of these events occur during summer time, the probability of such an event happening during the harvesting period (1 month) is about 2%. Such high precipitation events occurred in Skåne in 2006 and 2010, and in Norrbotten in 2012. As expected, the probability of less extreme rainy periods (at least 80 mm precipitation in 14 days) in August increases to approximately 20% of years for nearly all locations of Sweden, and the probability of at least 100 mm in a similar period is 20% for about half of Sweden (Wern, 2012).

The above analysis based on meteorological data is in line with the figures on non-harvested area (Table 3 and 4), which was mainly caused by high levels of precipitation during the harvesting period (e.g. Figures 8, 9, 20, 21, 32, 33 and 43) and the number of years with difficult harvesting periods. It can be concluded that weather events causing severe crop damage are rare in Sweden, but difficult growing conditions are much more common, occurring in one out of four-five years in general.

4.6 Relating weather and yield

Attempts were made to relate cereal yield to indices based on temperature and rainfall in correlation models for the main growing stages (sowing, establishment, growing months, harvesting). Yield data at county level for the period 1991-2012 were correlated to combined indices of temperature and precipitation, with negative values if they were much higher or lower than the 22-year average (1991-2012) for the main growing stages. Little or no rain is desirable during sowing and harvesting periods, for which the indices were based on 5-day periods. It was possible to obtain correlation values higher than 80% when the temperature and precipitation parameters were fitted to the data for individual counties. However, when these models were applied to neighbouring counties the correlation values were low, reflecting the fact that the model results were the output of calibration to the county data (overfitting) and that their general validity was very limited.

Lalić et al. (2014) arrived at the following conclusion regarding production of winter wheat under Nordic conditions: 'the apparent absence of a correlation between yield and number of days with drought in Sweden is in agreement with other studies, which have seldom found clear relationships between the precipitation in specific months from March through June and winter wheat yield in Sweden, Denmark and Finland. This lack of clear relationships may be due to prevailing frequent irregular precipitation and the ability of the soils to buffer short-term water shortage'. In a summary of studies on the relationships between simple weather indices and winter wheat yield in Sweden, Eckersten et al. (2014) concluded that these simple models give an unclear picture of the influence of weather on winter wheat yields in Sweden's most productive farming areas, whereas in areas with stronger weather limitations, indices related to winter conditions and drought might be useful prediction tools. However, the predictive capacity of these indices varies over time.

In a study on predicting spring wheat yield in Finland based on the joint effects of precipitation and temperature, with weather parameters and yield measured at the same site, the statistically derived model was able to explain 39% of the yield variation, with rainfall explaining 23% and temperature 16% (Pietola et al., 2011).

Researchers in Germany found stronger relationships between weather variables and spring barley and oat yield and attributed approximately 60% of yield variability to the weather (Chmielewski & Köhn, 1999). Their weather and yield data were also from the same location, namely the agrometeorological long-term experimental station at Berlin-Dahlem. Sufficient precipitation in May favoured high yield, while high maximum temperature and sunshine duration combined with high values of potential evapotranspiration in May and June led to lower yield.

As rainfall variation is a major problem for crop farmers in Germany, precipitation-based weather models can be expected to show better results in 'hedging yield risk than temperature-based weather derivatives' (Kellner & Musshoff (2011), based on a study by Berg & Schmitz (2008)). Following this line, Kellner & Musshoff (2011) found that insurance using soil water-holding capacity index as an underlying metric could hedge risks caused by drought much better than an insurance index based only on precipitation. However, water-holding capacity can vary widely within fields and even more widely between farms, even in locations considered to have homogeneous soils. In a study in Finland, Hakojärvi et al. (2014) reported difficulties in correlating spring cereal yield with soil properties.

A study in Australia found that 90% of the variation in wheat yield was explained by variations in rainfall, with a clear relationship between precipitation level and yield (Anonymous, 2010).

Leblois & Quirion (2010) summarised the issue in the following way: 'the relationship between weather and yield is complex and depends on field-specific features such as the slope, the soil quality, and the availability of alternative water sources. Moreover, many hazards independent of the weather, such as pests, do impact yields'. 'Finally, a high spatial variability of the weather also contributes to the risk for crop losses. The variation in magnitude and frequency of local precipitation results in differences in nutrient uptake, nitrogen leaching and weed and crop development, in addition to other causes such as animal damage (e.g. wild boars, geese) etc., the consequences of which contribute to yield differences at farm and county level.

In this study, rainy harvesting periods in some years caused clear yield reductions at county level, while in other years similar precipitation levels had limited negative effects on yield. Pietola et al. (2011)

arrived at a similar conclusion regarding the 'heterogeneity of the weather effects', stating that 'yield volatility is increased when adverse weather shocks are realized'. These findings under Nordic conditions were confirmed in this study by the high yield variations for cereal and temporary grasses observed at farm level, particularly in years with severe weather conditions.

The yield data from the long-term experiments at four locations in Sweden confirmed the above statements, as the frequency of a yield reduction exceeding 30% ranged from 5 to 18% (i.e. 2 to 8 years out of 46 during 1965-2010). These values were higher than those found at county level. The analyses of yield and weather relationships indicated that 76-87% of the years with a 30% yield reduction had at least one deviating precipitation event, either at sowing or at harvesting. However, once the other years were included in the analysis the relationship was weaker (for further details see Section 3.3 or Nkurunziza et al., 2015).

A better relationship with yield can apparently be achieved with models that are able to relate soil water content to yield, instead of only weather variables such as temperature and precipitation. However, determination of soil water content during the growing season demands detailed site data on soil parameters, crop status and weather variables such as precipitation, wind speed, relative humidity, cloudiness, radiation and temperature.

Eco-physiological process-based crop models (e.g. Hay and Porter, 2006) are among the model types that are highly dependent on input data for a specific site and crop, making it difficult to apply them to many specific locations over a larger region or county. Nevertheless, Eckersten et al. (2014) suggested that models that do not explicitly simulate eco-physiological processes and the interactions between these processes can scarcely predict the impact of weather on winter wheat yield for the major wheat cultivation areas in Sweden. This type of argument might be one reason why process-based crop models are commonly used for strategic decision support, for instance when evaluating management options to reduce nutrient leaching under climate change (e.g. Blombäck et al., 2014). However, for tactical management of a specific field or farm, the prospects of being able to predict yield from weather data are still limited, as 'the effects of adverse weather events on crops and agricultural crop production are still poorly understood and their prediction with crop models is currently very difficult', particularly (a) the time and magnitude of the effects and (b) crop vulnerability at the time of the negative event (Lalić et al., 2014). Recently, substantial efforts have been made to model effects of adverse weather events on eco-physiological processes, see for instance the study by Stratonovitch & Semenov (2015) on heat stress.

In conclusion, the varying effects of weather on crop yield, the requirement of yield prediction models for detailed and specific input data for a particular study site and their limited accuracy for individual fields or sites indicate that yield losses have to be measured on farm level.

4.7 Measures to mitigate the effects of extreme weather

The cultivation systems applied in Sweden are the result of developments and adjustments over a long time, for which physical, climate and soil aspects, as well as available finance and technological resources, have been important. In one way or another, farmers have more or less 'optimised' their farming systems and resource utilisation to their situation. Against this background, the measures proposed here to deal with 'extreme weather events' consist of adjustments rather than major changes.

Two distinct situations led to extreme low yields during the past 50 years at county level in Sweden, namely severe drought and a rainy harvesting period:

- The drought in 1992 (May-June) in southern counties mainly affected spring crops, particularly oats and spring rape, while the yield reduction for winter crops was much less severe. In intensive farming, even mild drought stress can cause great spatial variability, but its importance may vary between years under temperate weather conditions (Johnen et al., 2014). Irrigation is not economically feasible for most cereal producers, based on the current relationship between costs and revenue.
- Extremely rainy harvesting periods, such as those that occurred in Skåne in 2006 or in Norrbotten in 2011 or 2012, lowered crop yield. Precipitation in August increased in one year

out of four after 2000 compared with the period 1961-1999. If this situation persists, more than 100 mm of rainfall during August (harvesting period for cereals) can be expected to occur in 25% of years in nearly all of Sweden (for further information, see quartile precipitation figures for the different counties of Sweden in the main report or appendices). In extreme years the amount may exceed 200 mm, although these events are rare.

The above observations were confirmed by Olesen et al. (2011) in a study on the effects of climate change. They concluded that precipitation during sowing and harvesting periods and crop damage during winter are the major problems for winter wheat and spring barley production in the nemoral environmental zone (most of Götaland and Svealand).

Several of the suggestions below are already known and the proposed actions are ratifications of practices already applied. The measures focus particularly on mitigating the effects of weather events caused by droughts and rainy harvesting periods.

- As far as possible, those crops with low annual yield variation should be grown (for further details see tables showing coefficients of variation for the different countries of Sweden). In southern counties winter wheat was the most stable crop, while spring oats and spring rape showed the highest negative variations (winter wheat is already the cereal with the largest total production by volume in Sweden). However, the northern cultivation limit for winter wheat seems to be around latitude 60ºN in Sweden in term of risks and yield.
- In intensive rainfed farming areas such as Sweden, efforts should be made to increase soil water-holding capacity (e.g. with measures to increase organic matter and/or to improve soil structure). This would also help to improve water infiltration, reducing the severity of flooding and drought. As it is well known that such soil improvements are long-term tasks, it may take years before the effects can be realised.
- Good soil structure should be maintained or improved with a combination of measures, such as keeping soil covered with a crop most of the year, good drainage, actions to reduce soil compaction such as minimising the number of passes with heavy machines, use of low-pressure tyres and carrying out field operations under as dry soil conditions as possible or implementing controlled traffic farming. Crops with a strong root system able to penetrate the subsoil also have a positive effect on yield (Arvidsson, 2014).
- Making subsoil water available to the crop is also important to decrease the negative effects of drought periods. Reducing barriers (such as hard pans or compacted soil layers) allows roots to extend into deeper horizons, increasing the soil volume from which roots can extract water and facilitating water movement.
- Excess water accumulation (improved drainage and/or water diversion) in fields running a higher risk of flooding or superficial water accumulation should be reduced to a minimum.
- Crop diversification could help reduce the effects of rainy periods during harvesting, as could high daily harvesting capacity, e.g. 6-8% of the cropped area, and starting to harvest when cereal grain reaches a water content of 22-24% (w.b.). The drying capacity must be increased correspondingly, to about 110 kg water per hour and metre cutting width of the harvester (Gunnarsson et al., 2012). This proposal is based on a balance between machinery costs and timeliness and labour costs.
- Modern harvesters equipped with an automatic flow-rate control and/or with active grain separation systems, e.g. combines with axial rotors or with several cylinders, can be of help in rainy situations, as they are able to operate under wetter conditions. In order to reduce soil compaction risks, they should be equipped with low pressure tyres or tracks.
- Management measures in terms of labour and machines should be taken into account in order to harvest as much as much as possible on days with favourable weather conditions, particularly in view of the fact that the harvesting period has been rainy in one year out of four or five in the past 15 years.

- Crops and cultivars that are more resilient to rainy harvesting periods should be selected. However, this is a trade-off between crops and varieties with a higher yield level or/and economic return. If the higher level of precipitation during summer months in one year out of four or five persists in the future in southern Sweden, this is a measure to be considered.
- Early sowing helps to avoid hot, dry periods in early summer and allows as much as possible of winter precipitation to be used (Olesen et al., 2011).

5 CONCLUSIONS

- The relative frequency of obtaining 30% lower cereal yield than the standard yield at county level varied from 0 to 20% depending on county, cereal and year. Winter wheat had the lowest frequency, close to 0% in most counties, while oats and spring rape had the highest frequency.
- A comparable pattern was observed for potatoes, sugar beet and rape. The relative frequency of 30% yield reductions at county level varied from 0 to 27%. In those counties with a large crop acreage, the risk of 30% lower yield was low, 1-2% at county level for these crops, with the exception of potatoes in Skåne, for which the relative frequency of a 30% yield reduction was 10%.
- There was close agreement between area of non-harvested crops and relative frequency of 30% lower yield for crops and counties. Northern counties had on average 2-11% non-harvested area, with Norrbotten having the highest losses, while the non-harvested area for cereals was between 0 and 2% in southern counties.
- It was shown that for most crops and counties, the risk of severe crop losses on farm level is around 10%, although in a few cases the risk is 25%. More specifically, the overall risk among the counties for individual farms of obtaining 30% lower yield for winter wheat was 5-20%, for spring wheat 5-20%, for rye 5-10% and for spring barley 5-25%. The corresponding risk of obtaining 50% lower yield for oats was 5-20%.
- In general, yield reductions were higher in northern counties than in the south and higher for spring cereals than winter cereals. The frequency of 30% yield reductions was very low or close to 0 in those counties with widespread cereal production. However, the yield reductions in certain years and counties were much higher, e.g. up to 80% in Norrbotten county in 1987.
- There was large variation in yield at farm level, including years with 'favourable' weather conditions. In years with 'unfavourable' weather the yield variation was much higher, leading to the conclusion that difficult weather does not affect all farms to the same extent.
- In most years, yield for the 10th percentile of farms was less than half the average yield at county level. Winter wheat showed the lowest variation in southern counties, and oats and spring rape the highest. Between-farm yield variation was also much higher in Norrbotten county than in southern counties. There is a need to study individual farms over a series of years to clarify the causes of these large yield variations. There are indications that some farms tend to have lower yield in all cases.
- The large yield variations on individual farms were confirmed by data from the long-term field experiments (more than 30 years) at four research stations located in different agro-ecological zones of Sweden. Yield reductions of 30% or more occurred in approximately 10% of the years, with a range of 2-18% for cereals, depending on the crop and station. Yield reductions in the order of 50% occurred in 2-8% of the years, but reductions of over 70% were rare. Winter wheat was the most stable cereal and barley showed higher variation among the cereals. Precipitation varied a great deal but inconsistent relationships were found between yield and precipitation deviations during the growing and harvesting periods.
- Most years with lower yield were associated with dry periods (<20 mm precipitation during 40 days) and/or high level of precipitation during the harvesting period (>100 mm during August). Yield was very low in southern counties in 1992, when a drought period occurred from May to July, which mainly affected spring crops. Spring crops are more sensitive to dry periods from the middle of May to the end of June. However, 40-day dry periods (<20 precipitation) occurred rarely from May to July, although the risk was higher in southern counties. The attempts to correlate county average yields with indices based only on daily temperature and precipitation gave poor and inconsistent results.
- The large yield variations on individual farms, the heterogeneity of crop responses to weather under Scandinavian conditions and the limitation of yield prediction models in terms of detailed input data and result accuracy indicate that yield reductions have to be measured on farm level.

- Precipitation during the summer months appeared to increase over time during the past 15 years, in particular in 25% of years in southern Sweden. If this trend persists, it will have effects on crop production by lowering the risk of drought periods and increasing the risk of rainy harvesting periods.

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APPENDICES

In Section 3.4 different statistics on crop production and weather conditions are presented for the counties of Skåne, Västra Götaland, Uppsala and Norrbotten. The counties were selected because they represent zones of Sweden with different conditions for crop production. In the appendices corresponding data for the remaining 17 counties are reported. The county organization of the Appendices follows the official labelling of the Swedish counties, starting with Stockholm and ending with Norrbotten. In the appendices there is no discussion or comments on the tables and figures, instead one should look upon the material to be encyclopaedic. Finally it is mentioned that additional material on yield and weather for the counties of Skåne (Appendix A10), Västra Götaland (Appendix A12), Uppsala (Appendix A2) and Norrbotten (Appendix A21) are presented.

The presented tables and figures on yield statistics for the period 1965- 2013 have gaps due to no official data were available for all the years depending on crop and county. The material is based on official data collected by the Swedish Board of Agriculture. As mentioned in Section 2.2.2 the Board only presents statistics when there are enough reliable data for the major crops in the county, and not all the years data were collected for all the main crops (e.g. no data were collected for temporary grasses during the period 1993-2001). The county yield series are more or less complete for main cereals, and to a lower extent for oilseed crops, potatoes and temporary grasses. For minor crops as peas and field beans there is only available official information for a few years.

The literature references in the Appendices are found in the Reference section of the main text.

APPENDIX A1 STOCKHOLM COUNTY♣

A1.1 Crop production and yield

Table A1-1. *Yearly production (metric ton) in 2010-2014 for the major crops in Stockholm county and their average*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses		87 400		105 100		96 250
Winter wheat	50 900	51 500	82 300	19 900	95 300	59 980
Spring barley	26 100	30 200	36 800	46 700	40 000	35 960
Oats	11 300	12 700	14 300	18 700	15 500	14 500
Spring wheat	5 800	5 200	4 800	15 400	7 500	7 740
Spring rape	4 600	5 400	6 100	6 400	1 600	4 820
Winter rape	2 200		4 400		3 700	3 433

* Data from Jordbruksverket (2015)

Table A1-2. *Average cereal and spring rape yield in Stockholm county in the period 1965-2014, standard deviation of the differences from the calculated trend and coefficient of variation, based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Winter wheat	4 700	446	9
Spring barley	3 579	224	6
Oats	3 257	301	9
Spring wheat	3 468	238	7
Spring rape	1579	132	8

* Coefficient of variation = Standard deviation / Average

Table A1-3. *Coefficient of variation of farm-level yield for cereals and spring rape in Stockholm county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Winter wheat	20	23	17	24	27	27	28	29	24
Spring barley	25	33	31	31	27	29	33	35	30
Oats	26	34	32	35	32	38	30	47	34
Spring rape	25	29	33	45	30	35	32	31	32
Average	24	30	28	34	29	32	31	36	

* Based on farm-level yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

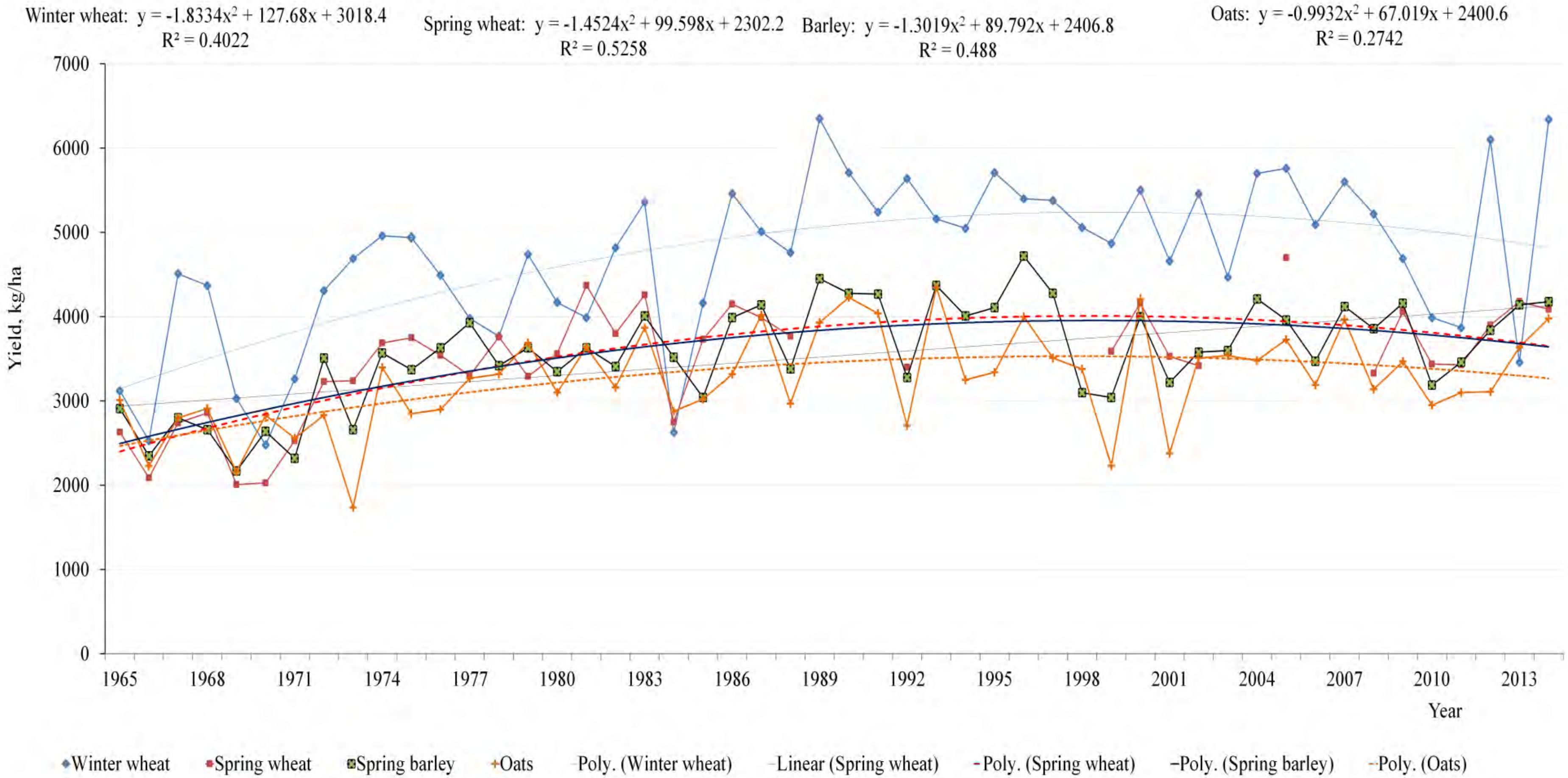


Figure A1-1. Average yield (kg/ha) per year of winter wheat, spring wheat, barley and oats in Stockholm county for the period 1965-2014, and their trend lines with respective equations. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

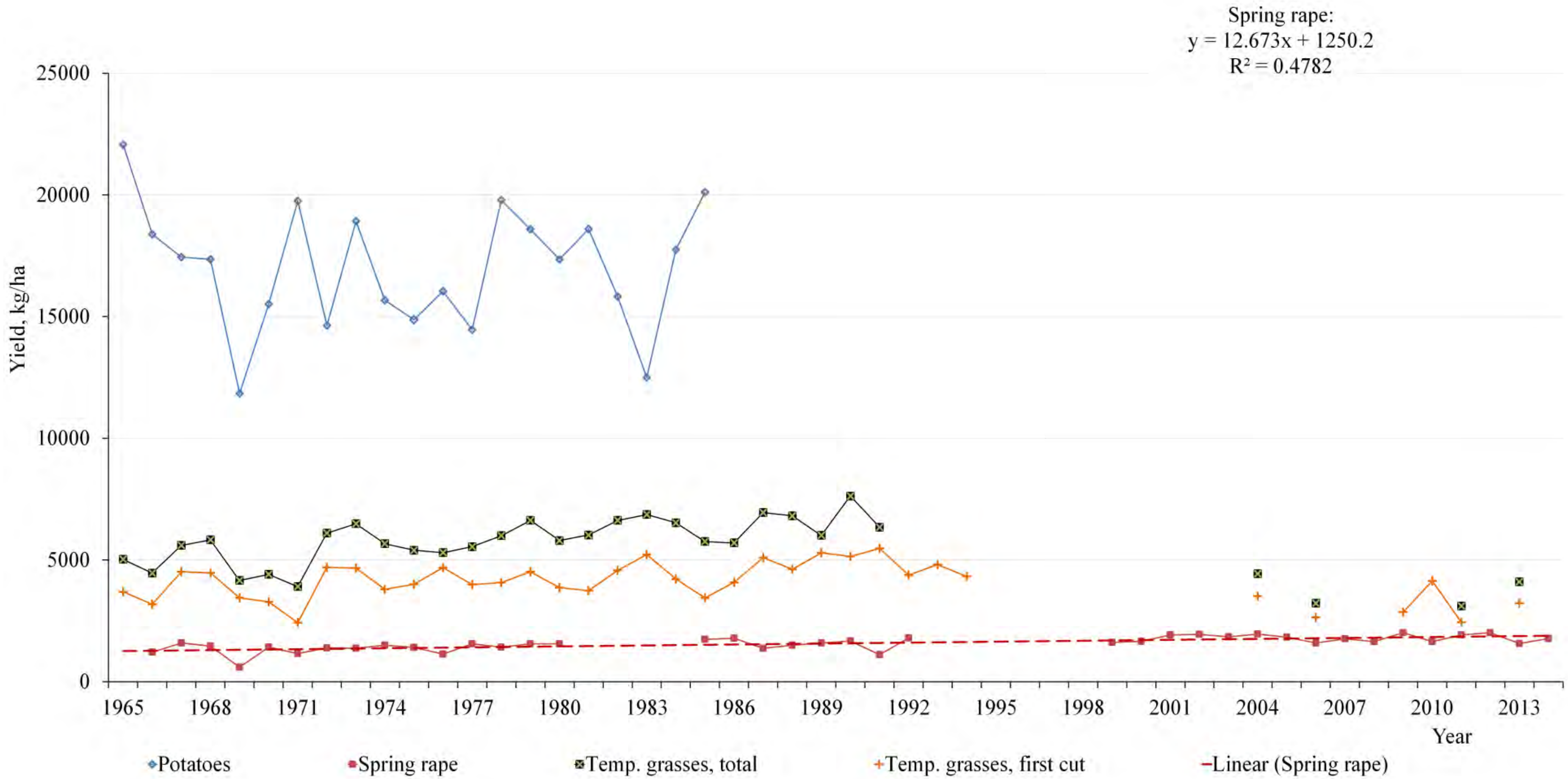


Figure A1-2. Average yield (kg/ha) per year of potatoes, spring rape, temporary grasses (total and first cut) in Stockholm county for the period 1965-2014, and the trend line with its respective equation for spring rape. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

A1.2 Precipitation, temperature and cereal yield

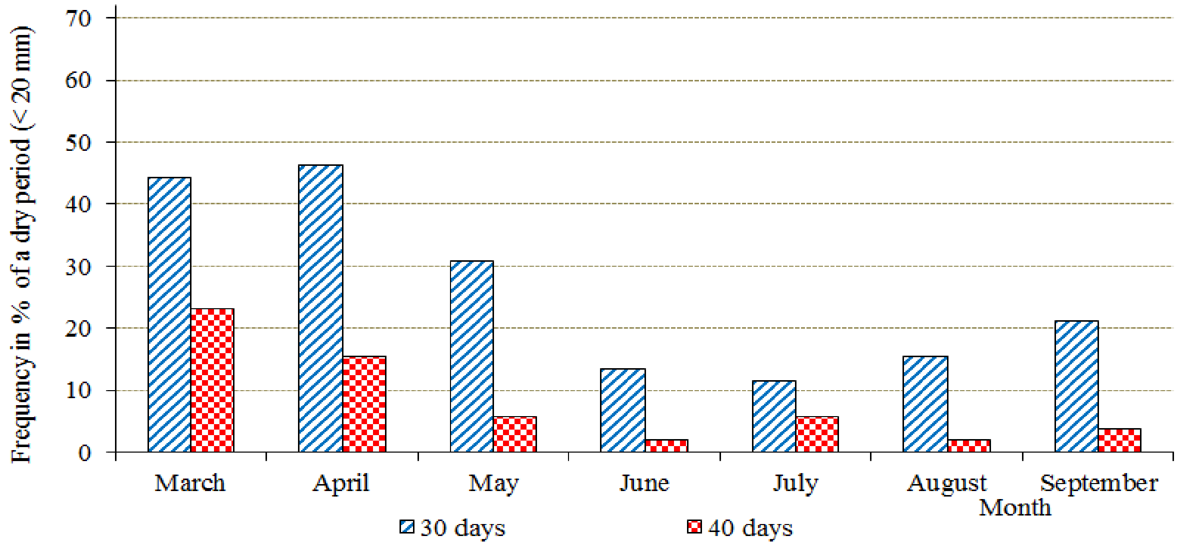


Figure A1-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Stockholm county∗.

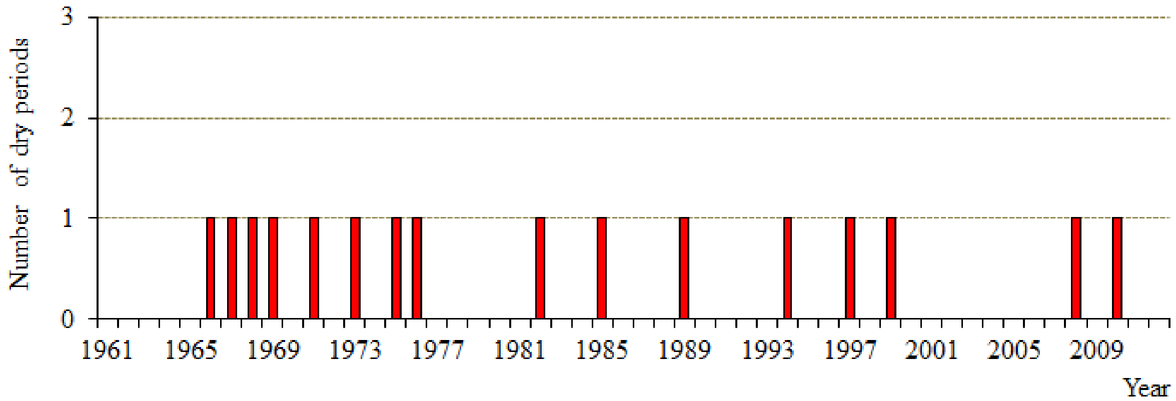


Figure A1-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 May to 31 July in Stockholm county*.

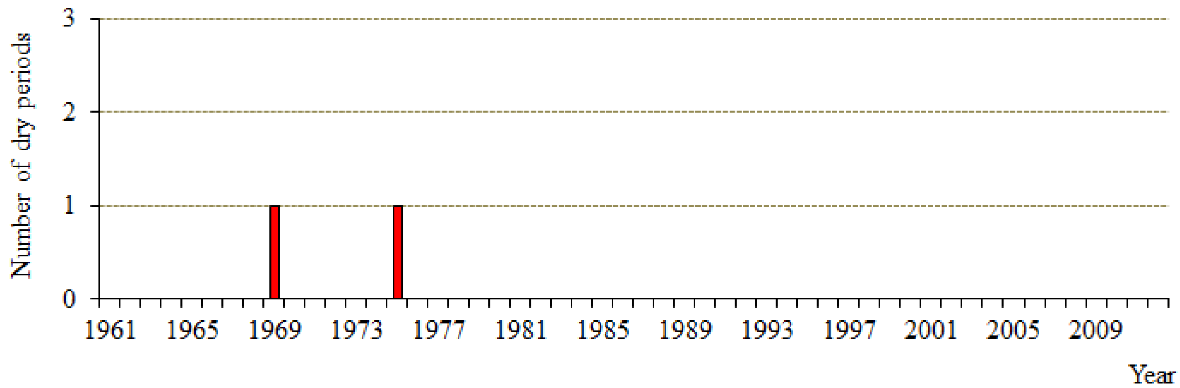


Figure A1-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 May to 31 July in Stockholm county∗.

∗ The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

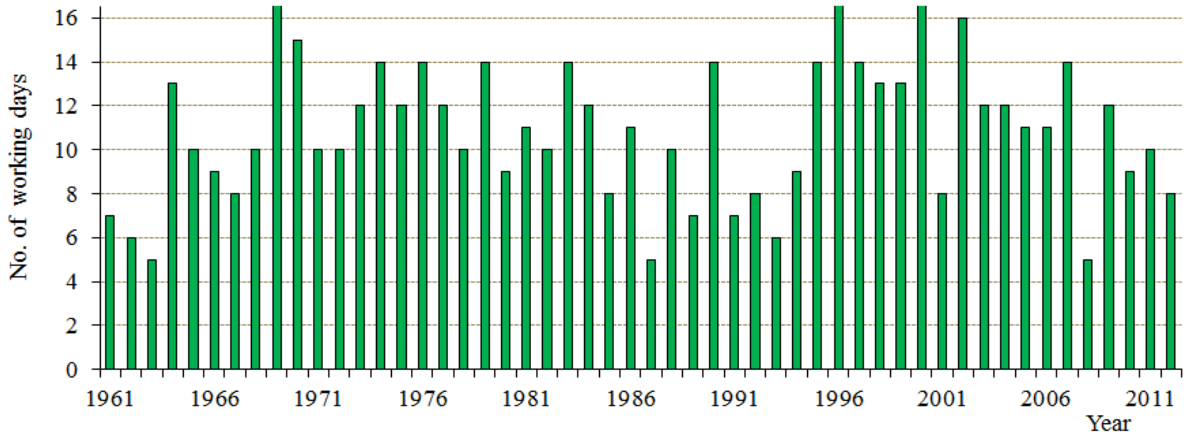


Figure A1-6. Estimated number of working days available for harvesting during the period 3 August-19 August in Stockholm county (for definition of a working day, see Section 2.1)*.

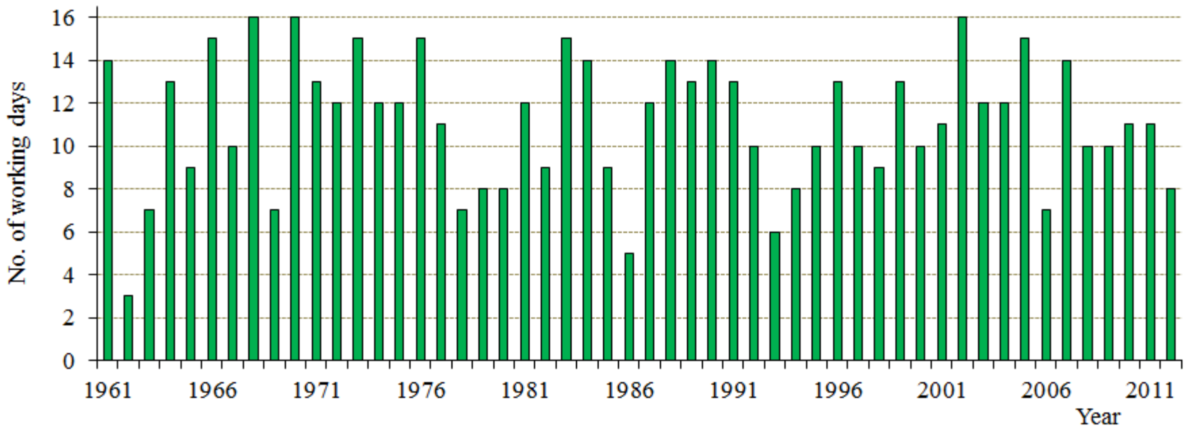


Figure A1-7. Estimated number of working days available for harvesting during the period 20 August-5 September in Stockholm county (for definition of a working day, see Section 2.1)*.

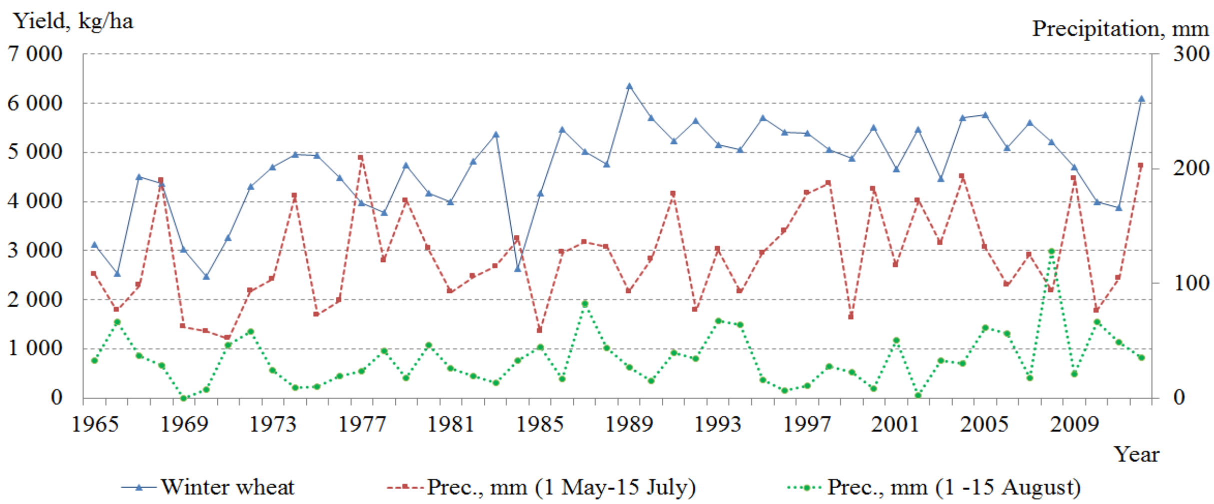


Figure A1-8. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 1-15 August in Stockholm county, 1965-2012*.

* Precipitation data from Luftwebb (2014) and yields from Jordbruksverket (2015).

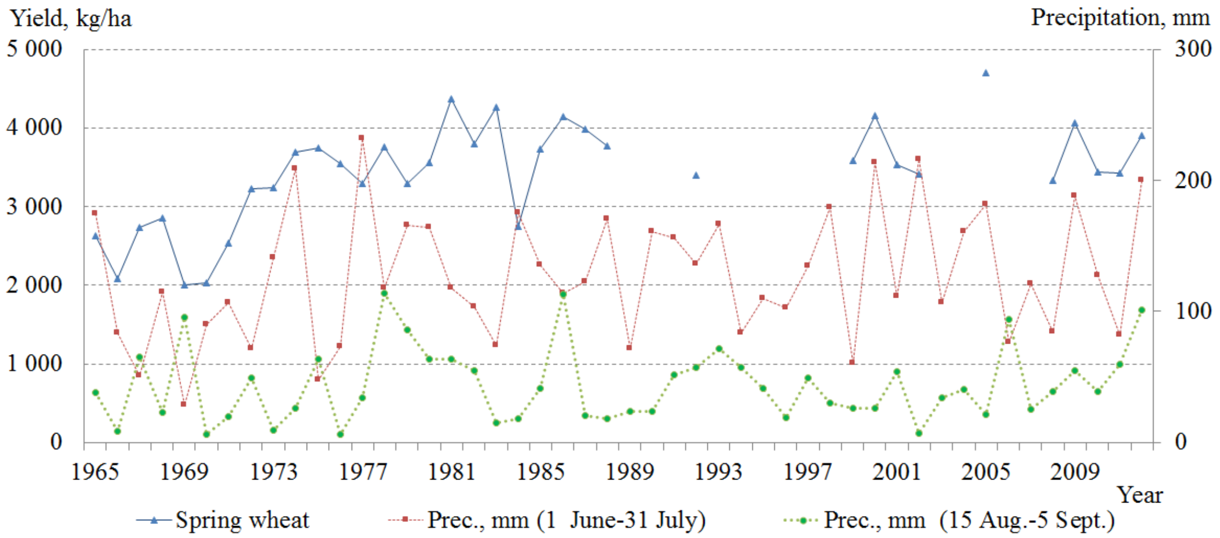


Figure A1-9. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Stockholm county, 1965-2012*.

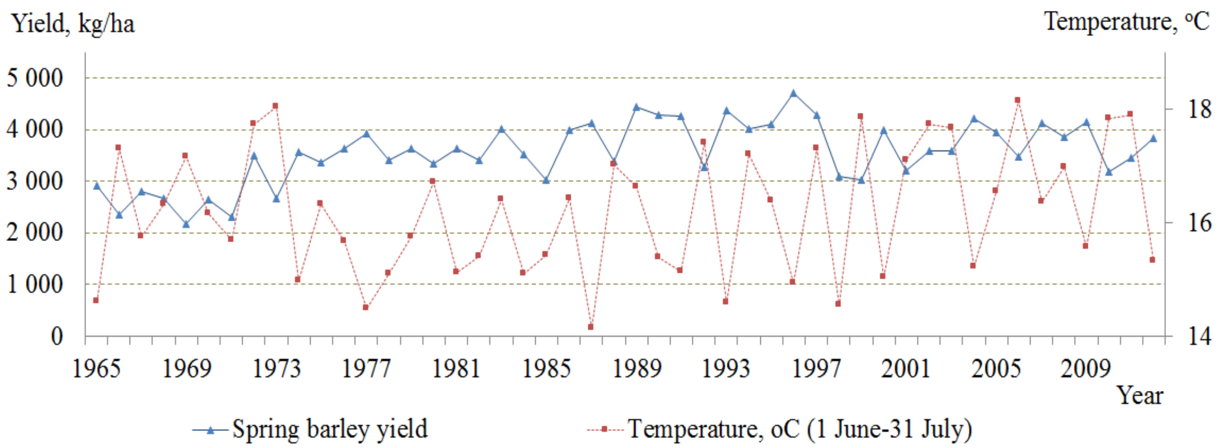


Figure A1-10. Annual spring barley yield (kg/ha) and average temperature (ºC) in the period 1 June-31 July in Stockholm county, 1965-2012*.

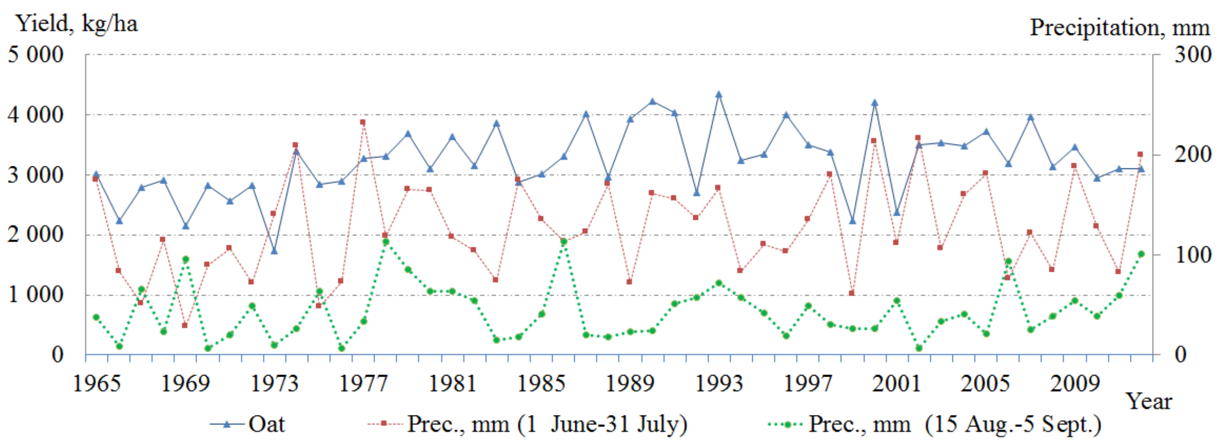
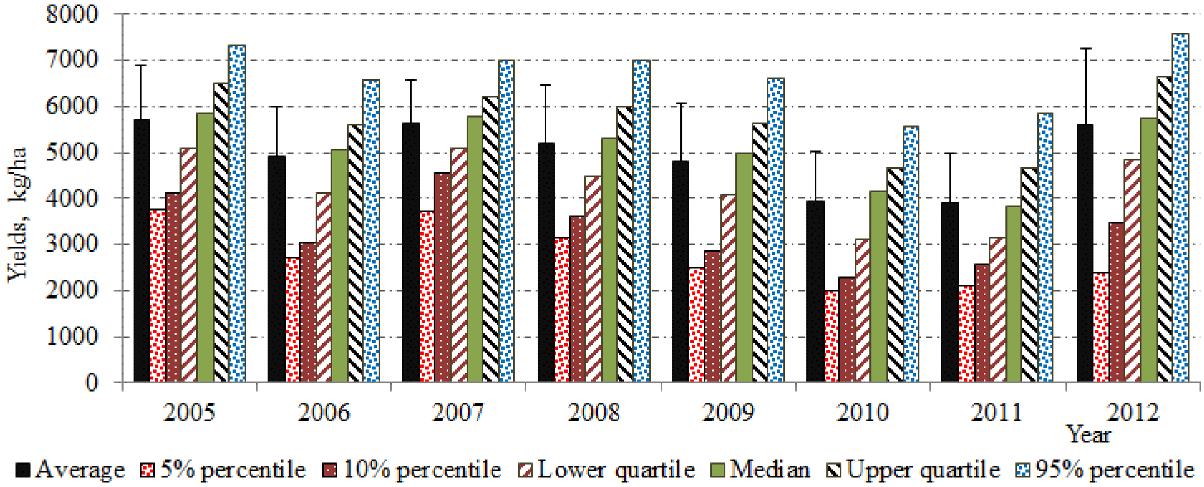


Figure A1-11. Annual oat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Stockholm county, 1991-2011*.

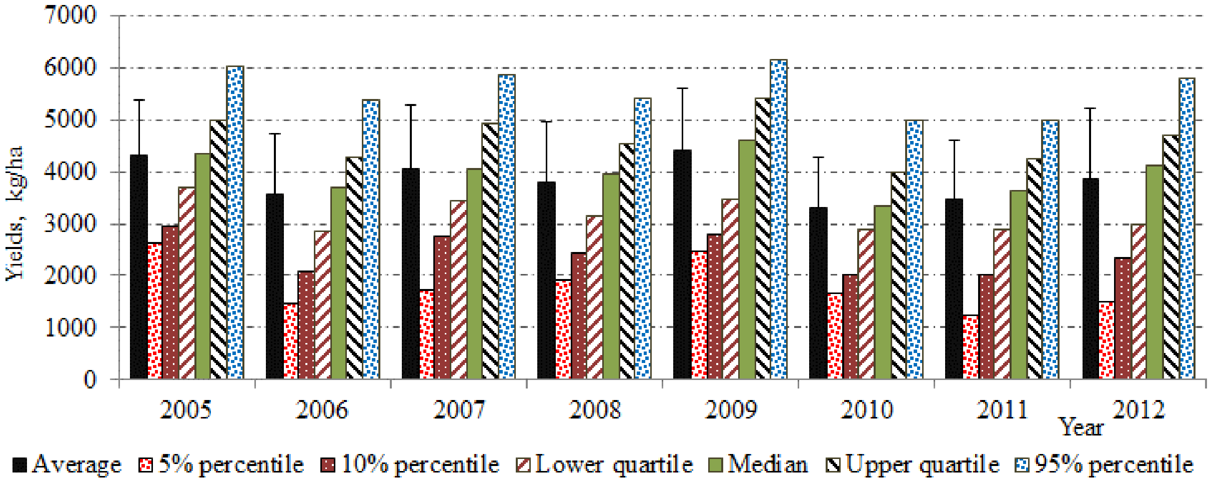
* Precipitation and temperature data from Luftwebb (2014) and yields from Jordbruksverket (2015).

A1.3 Yield on farms



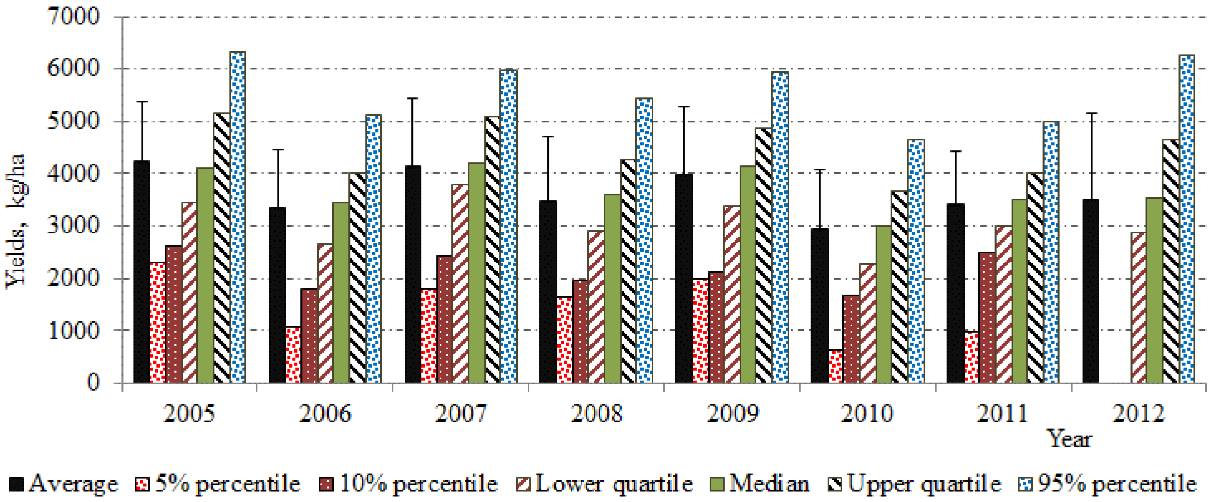
N	98	98	97	101	85	85	89	89

Figure A1-12. Average and estimated percentiles of winter wheat farm-level yield in Stockholm county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



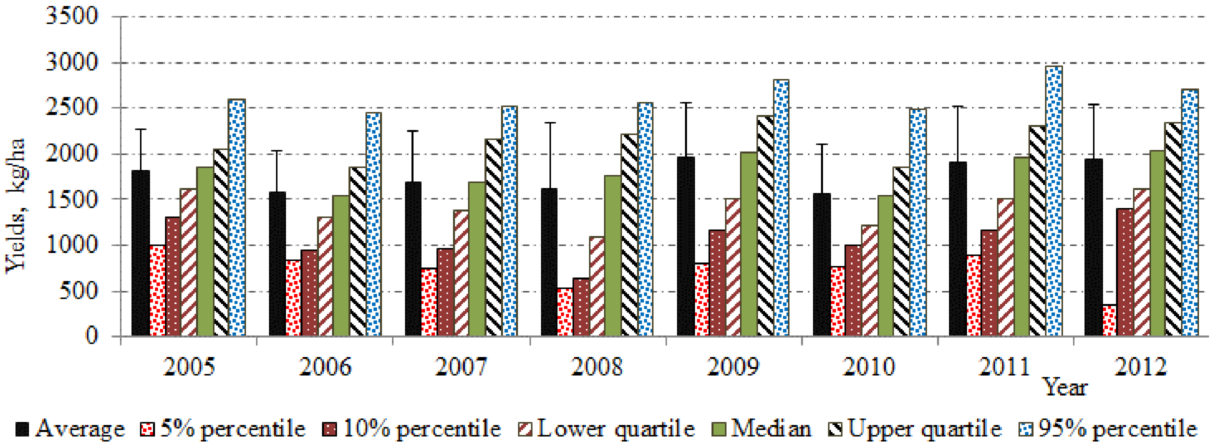
N	80	66	71	77	78	71	74	79

Figure A1-13. Average and estimated percentiles of spring barley farm-level yield in Stockholm county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N 57 72 66 63 48 60 53 59

Figure A1-14. Average and estimated percentiles of oat farm-level yield in Stockholm county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N 57 53 49 48 44 51 58 51

Figure A1-15. Average and estimated percentiles of spring rape farm-level yield in Stockholm county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A1.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

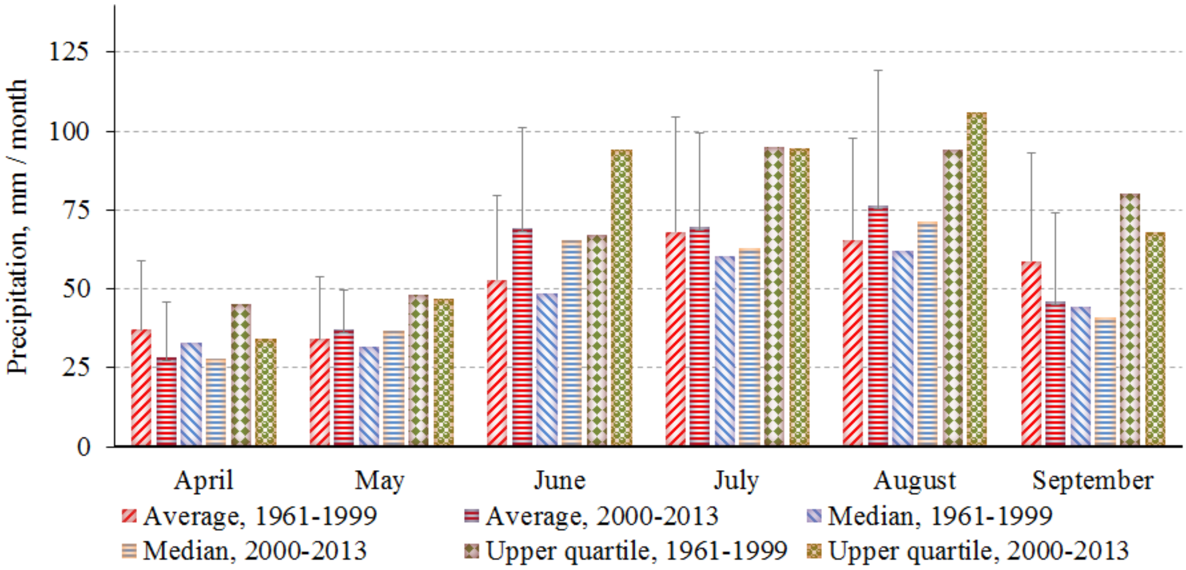


Figure A1-16. Monthly average, median and upper quartile precipitation (mm) from April to September in Stockholm county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1628401-6580197 (Stockholm city).

County: **Stockholm**
Location: **Stockholm**

Average temperature (°C) for 5 or 6 day periods

Coordinates for the places (RT90): 1635783-6592663 1610438-6595331 1611772-6577990 1631781-6576656

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31
1961	1	-3	-2	-4	-8	-1	-2	-1	2	3	1	3	4	6	4	2	2	2
1962	-2	0	0	1	-2	-8	-1	1	-3	-3	-4	-5	-6	-6	-8	-5	-4	-1
1963	-8	-13	-10	-9	-6	-5	-7	-10	-5	-13	-8	-4	-2	-3	-6	-5	-4	-5
1964	1	-3	-4	-4	1	-2	-1	-2	-9	-9	-2	-1	-2	0	-3	-4	-2	-1
1965	-2	-8	1	2	0	-3	-3	-1	-3	-4	-6	-12	-9	-4	0	2	0	2
1966	-11	-4	-7	-13	-7	-3	-16	-16	-16	-12	-1	0	0	2	-7	1	0	0
1967	0	-8	-6	0	-9	-10	-3	-1	-3	-1	1	0	2	4	4	2	3	4
1968	-12	-15	-11	-4	0	-3	1	-1	-4	-11	-9	0	-2	-1	-4	0	5	7
1969	-6	-5	-4	-1	-3	1	-3	-2	-14	-7	-4	-6	-7	-3	-7	-6	-5	-1
1970	-10	-12	-4	-10	-5	-6	-7	-8	-14	-17	-11	-11	-2	0	-2	1	-1	-2
1971	-6	-1	0	0	3	-2	-1	-2	2	0	-3	-8	-10	-2	-2	1	-1	0
1972	-3	-6	-5	-4	0	-6	-2	-2	0	0	-1	-1	-1	-2	-1	2	4	1
1973	1	3	0	0	1	1	2	-1	1	1	-4	-5	1	1	3	3	7	5
1974	0	0	0	1	0	2	2	-2	3	0	2	1	0	-1	-1	1	1	4
1975	2	-2	3	3	2	2	1	0	-5	-1	1	0	3	3	1	-2	1	0
1976	-4	-2	-6	-3	-5	-9	-5	-5	-3	-1	0	3	0	-3	-7	-6	-5	3
1977	0	-3	0	-2	-4	-2	-3	-3	-7	-5	-4	-7	-2	1	3	3	2	-1
1978	-3	2	-2	1	-2	-2	-2	-6	-9	-11	-6	1	1	1	0	-8	-5	4
1979	-12	-4	-3	-5	-7	-10	-7	-7	-13	-9	-2	1	2	1	-1	-7	0	2
1980	-4	-2	-2	-2	-4	-12	-11	-12	-3	-2	-5	-4	-4	0	-2	-6	-6	-1
1981	-6	-6	-2	-8	-1	1	2	-1	-3	-3	-4	-4	-4	0	-6	-3	2	1
1982	-9	-14	-5	-4	-6	-6	-7	-3	0	-5	-6	-2	1	-1	1	2	2	4
1983	2	4	2	-4	1	1	-6	-5	-5	-2	-2	-3	-2	-1	0	2	0	1
1984	1	-3	1	-4	-8	-3	1	-2	-1	-4	-2	0	0	0	-1	-4	-4	0
1985	-9	-13	-8	-7	-6	-9	-10	-14	-12	-17	-11	-2	-4	-2	1	-2	1	0
1986	-6	-9	-1	-11	0	-2	-6	-10	-6	-10	-12	-6	-3	1	0	1	1	3
1987	-12	-19	-16	-10	-6	-10	-1	-5	0	-6	-5	-8	-13	-8	-5	-2	0	3
1988	4	-1	2	1	1	-2	2	2	2	-2	-3	-2	-3	-1	-4	-4	0	2
1989	2	1	3	4	3	4	5	4	2	1	1	4	2	2	4	3	4	4
1990	-3	1	2	2	2	1	4	5	2	2	8	2	1	3	1	10	7	6
1991	1	2	-4	-1	1	-1	-3	-4	-5	-5	4	-1	0	1	2	3	3	3
1992	4	0	3	-3	-2	2	-1	0	1	-3	2	3	4	5	1	4	3	0
1993	-2	2	3	3	1	-5	4	1	0	-1	-4	-1	-2	0	2	5	5	1
1994	-2	0	2	-6	1	-4	-8	-5	-9	-7	-6	-7	-5	3	2	0	1	2
1995	-3	-2	-1	2	-1	-7	1	-2	0	2	2	0	3	2	1	2	4	1
1996	-12	-1	1	-1	-4	-5	-7	-13	-7	-8	-8	1	-1	-2	-2	-1	-2	0
1997	-8	-6	0	0	-2	1	-1	2	-3	-4	4	2	5	4	3	-3	-3	5
1998	3	0	4	2	-2	-5	-4	2	1	3	4	4	-2	-4	-3	2	1	4
1999	1	-4	-6	3	3	-9	2	-9	-1	-1	-2	-1	1	0	-2	1	2	5
2000	0	3	2	0	-9	-1	-1	2	2	-3	-3	2	0	1	1	2	3	2
2001	2	2	-3	-3	0	0	-12	-1	3	1	-7	-10	-6	2	3	-3	-3	1
2002	-7	-1	3	2	0	-2	4	4	1	2	-2	-1	-1	2	2	3	1	6
2003	-14	-9	-1	3	1	-4	-4	-7	-2	-4	-3	-5	-3	1	4	4	4	5
2004	-6	-1	0	-3	-7	-4	1	-3	-3	-1	-2	-3	-3	-1	1	5	0	4
2005	1	5	3	2	-2	-3	1	0	-1	-2	-5	-8	-10	-3	-6	-3	3	3
2006	-6	-3	1	-4	-6	0	-4	-3	-4	-2	-2	-5	-5	-10	-6	-2	-5	1
2007	3	5	2	1	-6	-4	1	-7	-3	-2	-6	-1	1	3	7	4	2	7
2008	-1	2	4	4	1	2	2	3	0	1	5	4	0	4	3	0	-3	3
2009	-8	-2	2	-2	1	-1	-3	-1	-4	-5	-2	-1	0	1	1	2	-1	2
2010	-10	-12	-8	-2	-5	-10	-3	-5	-7	-8	-12	1	-5	-4	-2	1	0	3
2011	-5	0	-5	1	-2	-3	2	-1	-10	-11	-10	-2	-1	0	1	-1	4	0
2012	2	-4	0	0	-2	-4	-12	-8	-3	-2	3	1	0	1	5	4	8	5
Average	-3	-3	-2	-2	-2	-3	-3	-3	-3	-4	-3	-2	-2	0	-1	0	1	2
By quartile																		
Min. value	-14	-19	-16	-13	-9	-12	-16	-16	-16	-17	-12	-12	-13	-10	-8	-8	-6	-5
Lower	-7	-6	-4	-4	-5	-5	-6	-6	-6	-7	-6	-5	-3	-2	-2	-3	-1	0
Median	-3	-2	0	-1	-2	-3	-2	-2	-3	-3	-3	-1	-1	0	0	1	1	2
Upper	1	0	2	1	1	-1	1	0	0	-1	0	1	1	2	2	2	3	4
Max. value	4	5	4	4	3	4	5	5	3	3	8	4	5	6	7	10	8	7
Range	18	25	21	17	12	16	21	21	18	20	20	16	18	16	15	18	13	12

Month	April						May						June					
Year / Day	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	0	3	6	7	8	8	8	8	8	9	11	12	18	19	16	14	14	16
1962	3	2	3	6	8	4	4	7	9	10	10	9	9	14	12	16	15	13
1963	-1	2	4	4	3	8	7	10	12	11	13	16	14	16	13	15	14	15
1964	1	1	6	10	6	8	7	10	11	10	14	14	10	14	17	15	15	16
1965	3	1	3	5	6	7	6	8	8	7	8	11	13	14	15	16	16	15
1966	3	0	-5	-3	3	8	10	6	10	14	11	10	13	15	18	21	19	17
1967	2	4	6	5	3	8	3	6	11	8	11	13	15	12	12	17	14	16
1968	4	1	5	8	11	10	8	8	9	4	7	12	17	14	18	20	17	15
1969	2	6	3	1	5	7	4	10	10	8	9	13	8	15	18	19	18	20
1970	-2	1	2	3	4	4	6	9	11	11	10	12	14	19	14	19	17	18
1971	2	3	3	7	3	2	8	13	13	14	5	14	17	12	13	12	15	16
1972	1	3	5	4	3	4	12	7	7	9	11	11	13	17	16	16	14	21
1973	3	3	3	4	5	4	8	10	9	7	12	14	15	16	13	14	21	21
1974	5	8	2	5	5	7	6	6	8	13	10	10	12	12	15	18	16	15
1975	0	2	2	4	7	9	8	12	12	15	10	9	9	15	15	16	17	13
1976	2	3	6	7	4	1	4	10	11	15	13	8	11	12	13	13	16	20
1977	1	-2	2	3	5	8	10	10	10	9	11	8	11	13	20	16	14	14
1978	2	4	3	3	4	1	6	6	4	9	14	17	18	17	12	13	16	14
1979	1	2	4	2	4	6	4	6	11	14	12	15	17	17	16	16	19	15
1980	2	5	7	5	5	6	6	8	8	11	6	11	17	20	16	16	14	14
1981	4	7	7	4	0	3	3	10	12	13	16	14	15	15	11	12	14	14
1982	5	2	2	5	6	6	6	8	10	9	10	16	21	10	9	13	13	13
1983	2	3	2	6	8	6	6	10	10	13	13	12	12	13	16	16	15	14
1984	1	5	6	6	8	8	11	6	9	14	14	14	18	13	12	16	14	13
1985	2	-1	1	5	3	3	3	8	11	11	8	16	14	10	11	15	19	16
1986	2	1	-1	2	4	9	12	13	10	12	13	13	13	13	16	19	15	19
1987	2	1	4	4	6	10	9	8	6	9	11	8	10	13	11	10	14	14
1988	5	4	2	5	1	5	10	10	12	11	10	17	11	15	14	16	18	22
1989	-1	4	9	5	6	9	11	10	10	14	16	12	11	13	15	17	19	18
1990	5	3	6	7	10	10	17	15	10	8	10	10	15	13	14	13	17	17
1991	7	7	8	0	3	5	5	7	10	7	9	11	9	11	13	13	14	13
1992	2	3	4	2	2	8	10	9	11	15	16	18	18	18	17	17	15	20
1993	3	2	2	4	10	13	11	13	14	15	15	10	12	14	11	13	12	15
1994	5	4	5	4	9	11	7	12	11	8	10	9	13	13	15	11	14	18
1995	3	1	5	3	8	3	9	6	4	8	9	16	17	15	14	15	16	16
1996	1	5	2	9	8	6	7	6	11	5	10	11	14	16	15	13	14	15
1997	5	2	2	3	3	6	7	7	12	10	8	9	14	18	18	13	15	17
1998	-2	1	2	4	7	11	8	12	11	13	7	11	11	14	14	12	12	15
1999	6	9	5	5	7	9	6	6	6	12	14	14	16	14	18	18	15	18
2000	2	3	4	8	10	11	9	12	12	13	13	12	12	13	15	14	17	14
2001	6	6	2	4	6	9	10	12	11	10	11	10	12	13	14	15	17	19
2002	4	3	7	5	12	8	9	11	14	11	13	14	18	19	16	19	15	15
2003	1	0	4	7	7	5	6	11	11	11	13	15	17	17	14	14	15	17
2004	2	5	6	9	6	8	11	14	8	11	7	11	16	13	14	12	14	15
2005	7	5	8	4	4	8	8	8	11	9	13	12	11	12	14	18	18	14
2006	1	3	4	6	7	8	10	14	11	8	11	10	13	14	19	19	17	16
2007	6	2	10	8	8	10	8	10	9	12	14	13	14	21	16	14	16	16
2008	6	3	4	6	9	12	12	13	10	7	11	15	17	19	12	15	15	16
2009	7	6	8	5	8	11	10	10	9	10	13	15	11	10	11	13	16	21
2010	3	5	6	5	4	10	7	6	11	16	13	12	14	14	13	14	16	19
2011	5	7	7	10	12	10	4	12	13	12	13	13	17	20	17	14	15	19
2012	1	2	4	4	6	10	9	10	11	12	16	12	8	13	14	15	14	15
Average	3	3	4	5	6	7	8	9	10	11	11	12	14	15	15	15	16	16
By quartile																		
Min. value	-2	-2	-5	-3	0	1	3	6	4	4	5	8	8	10	9	10	12	13
Lower	1	2	2	4	4	6	6	7	9	9	10	10	11	13	13	13	14	15
Median	2	3	4	5	6	8	8	10	11	11	11	12	14	14	14	15	15	16
Upper	5	5	6	6	8	9	10	11	11	13	13	14	17	16	16	16	17	18
Max. value	7	9	10	10	12	13	17	15	14	16	16	18	21	21	20	21	21	22
Range	9	11	15	13	11	12	14	9	10	11	11	10	12	11	11	11	9	9

Month	July						August						September					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30
1961	17	14	16	17	15	15	15	15	15	13	13	15	14	12	13	14	11	11
1962	14	15	13	16	16	14	14	14	14	13	13	13	12	12	10	9	9	10
1963	18	16	15	17	18	16	19	17	15	15	15	14	16	14	12	12	12	9
1964	14	13	17	20	17	16	13	17	15	15	14	14	13	12	10	11	10	11
1965	13	13	14	16	17	14	13	14	12	15	16	14	14	14	10	12	13	13
1966	17	17	16	17	21	16	16	16	15	16	13	13	14	12	12	10	9	6
1967	16	18	16	18	17	18	20	14	17	15	14	15	15	14	12	13	11	9
1968	20	14	13	15	14	18	17	19	15	14	18	17	19	18	10	9	9	8
1969	16	16	16	18	21	20	20	20	19	18	16	15	13	15	16	9	10	9
1970	15	18	15	14	15	16	17	16	15	16	15	16	15	12	13	14	8	7
1971	19	20	16	14	16	19	19	17	15	16	15	14	13	12	8	10	12	8
1972	20	19	19	21	20	18	18	19	17	16	14	13	12	14	11	11	10	5
1973	22	22	19	18	17	19	19	15	18	18	11	14	14	13	9	9	8	7
1974	16	14	15	16	16	14	15	15	15	16	16	16	16	15	12	13	11	10
1975	17	19	18	19	19	19	21	25	18	16	17	16	17	13	14	14	13	11
1976	16	15	17	20	19	15	14	17	17	17	16	17	11	12	13	9	8	6
1977	14	16	13	12	14	16	18	16	15	13	12	15	15	11	7	8	8	9
1978	15	14	14	12	16	20	20	15	13	17	15	11	12	12	11	10	7	7
1979	13	15	16	15	15	16	15	15	16	18	15	14	14	14	11	11	9	9
1980	16	16	17	16	18	21	20	14	16	15	13	12	14	15	13	12	12	10
1981	15	18	18	15	17	17	17	17	19	14	13	11	13	14	10	8	12	13
1982	13	17	19	21	19	18	22	21	16	15	14	14	11	11	13	14	12	11
1983	16	22	21	16	17	18	18	21	16	17	17	17	17	11	14	14	10	9
1984	13	17	18	16	15	16	19	18	16	15	17	14	11	12	11	10	11	9
1985	16	18	19	16	14	16	16	16	17	17	15	15	14	11	11	11	8	7
1986	19	15	14	18	17	18	18	16	14	13	11	11	11	9	9	9	8	7
1987	16	17	15	16	19	14	13	12	13	14	14	13	13	13	11	8	10	8
1988	20	18	18	18	18	16	14	17	16	15	15	15	15	15	12	13	12	11
1989	18	20	16	14	19	19	15	18	17	17	16	12	13	13	12	13	14	10
1990	16	16	15	15	16	18	20	15	18	17	15	16	13	12	11	11	8	8
1991	18	21	17	16	17	19	21	18	16	16	17	16	17	9	11	12	12	10
1992	15	18	17	17	21	17	18	18	16	16	15	15	13	11	13	11	13	10
1993	17	16	16	18	16	15	16	16	15	14	12	12	11	10	9	7	10	7
1994	17	19	24	19	20	23	22	18	17	15	15	14	14	13	13	12	12	9
1995	14	16	19	17	17	20	19	17	19	20	20	12	14	14	12	10	12	9
1996	13	14	16	14	18	17	17	17	19	20	20	19	15	10	9	9	7	9
1997	21	18	16	18	21	18	20	21	19	20	21	22	19	14	12	11	11	9
1998	15	16	16	15	17	16	16	15	15	15	13	12	11	15	15	12	12	10
1999	18	19	23	19	18	19	22	16	15	15	14	16	18	18	14	15	14	13
2000	17	15	15	16	16	16	17	16	17	16	14	15	12	14	10	9	9	12
2001	21	22	17	16	19	20	17	16	16	18	17	16	15	13	13	15	11	7
2002	15	18	20	21	18	20	20	19	22	20	20	20	18	18	14	10	7	9
2003	16	18	20	23	21	22	21	19	18	18	17	12	12	15	14	14	12	9
2004	15	16	15	17	18	18	20	22	18	18	15	15	16	13	15	12	11	10
2005	18	21	21	18	16	17	16	16	17	17	17	15	15	16	11	11	13	12
2006	21	22	18	18	21	20	19	21	19	18	18	17	16	13	15	13	16	15
2007	17	15	16	18	17	16	18	20	20	17	19	11	12	13	11	11	13	11
2008	18	15	18	17	19	21	17	15	18	16	15	14	15	12	9	9	11	10
2009	19	15	17	19	18	17	18	20	16	16	16	16	16	16	13	12	13	11
2010	20	21	24	22	19	18	17	18	20	17	17	12	11	13	14	11	12	8
2011	19	20	17	18	19	21	19	17	16	16	16	16	15	14	14	12	12	14
2012	18	19	16	15	18	18	18	16	17	18	16	14	15	12	13	12	9	11
Average	17	17	17	17	18	18	18	17	17	16	15	15	14	13	12	11	11	10
By quartile																		
Min. value	13	13	13	12	14	14	13	12	12	13	11	11	11	9	7	7	7	5
Lower	15	15	16	16	16	16	16	16	15	15	14	13	12	12	11	10	9	8
Median	16	17	17	17	17	18	18	17	16	16	15	15	14	13	12	11	11	9
Upper	18	19	18	18	19	19	20	18	18	17	17	16	15	14	13	12	12	11
Max. value	22	22	24	23	21	23	22	25	22	20	21	22	19	18	16	15	16	15
Range	9	10	12	11	7	10	9	13	10	7	9	11	8	9	8	7	9	10

Month	October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	11	12	12	11	11	8	5	5	3	1	3	1	-1	-2	-6	-1	-7	-5
1962	12	10	5	7	8	6	6	4	3	-1	-1	0	0	2	-2	-8	-5	-8
1963	8	8	6	7	8	6	4	5	4	1	-2	3	1	-1	-4	-6	-6	3
1964	7	10	8	7	7	3	4	1	4	2	2	0	0	3	3	-1	-2	-7
1965	9	8	7	6	5	9	6	2	-5	-6	-8	-1	-1	-3	-8	-4	-3	-6
1966	10	6	5	9	7	0	3	6	2	1	1	2	4	2	-2	-2	-2	-1
1967	12	9	11	4	7	9	7	6	4	3	4	2	4	-6	-4	-9	-6	-7
1968	9	3	8	4	5	4	0	0	-2	-2	4	3	-1	-3	-3	0	1	-3
1969	7	10	8	10	6	5	2	4	5	4	-3	-5	-6	-7	-1	-4	-5	-3
1970	9	11	7	9	4	2	0	-3	1	2	5	-1	0	3	2	2	-4	-6
1971	8	10	6	8	6	6	7	-2	2	-4	-2	4	1	0	-1	3	3	0
1972	8	10	8	5	3	7	6	6	4	-1	1	4	6	5	4	4	1	2
1973	11	7	2	1	2	4	4	4	-2	-2	-1	-8	-5	-7	-1	-5	0	3
1974	8	8	4	5	6	5	3	2	6	6	2	3	0	2	1	1	6	-2
1975	12	7	6	5	6	8	8	4	5	3	-2	3	3	0	1	-3	2	3
1976	7	9	6	4	6	4	3	7	4	0	-2	3	2	2	-1	-4	-6	-8
1977	6	8	7	7	10	9	8	7	6	-1	2	-1	-2	0	2	2	0	-2
1978	7	9	9	7	3	4	8	8	6	6	3	-2	-4	-5	-3	-6	-6	-13
1979	4	7	10	8	4	1	2	2	2	4	4	3	6	-2	-8	-7	-1	1
1980	9	9	7	7	2	0	-1	0	-1	3	4	-6	-4	-4	2	-1	1	2
1981	12	9	6	4	4	4	3	0	1	3	2	-1	0	-5	-10	-10	-4	-5
1982	11	9	7	4	8	7	5	4	6	4	5	4	1	1	-1	0	2	1
1983	9	6	9	9	5	8	6	6	-1	1	-2	-2	0	-2	-4	-1	0	2
1984	13	11	7	9	7	8	8	5	4	1	3	4	4	4	0	0	2	-2
1985	14	10	7	7	5	4	3	4	0	-1	-1	-2	-1	-11	-4	-7	3	-9
1986	9	7	8	7	4	7	2	5	5	5	5	7	5	2	0	-2	-5	-5
1987	8	11	10	10	8	6	5	0	3	4	3	1	-1	-2	-2	-3	-1	1
1988	10	9	7	7	2	2	0	0	3	-2	-2	-5	-7	-2	-4	-3	-1	2
1989	8	8	6	7	11	8	7	7	6	1	-4	-3	0	-4	-11	-1	1	0
1990	9	8	9	8	3	6	2	4	3	2	-1	-1	2	2	-1	0	-1	2
1991	10	10	9	7	3	6	6	3	4	-1	5	5	2	0	3	2	-1	0
1992	7	7	3	4	3	-1	4	2	3	2	-1	3	5	1	2	3	-3	0
1993	9	11	6	4	3	4	2	3	3	0	-1	-1	2	1	-3	2	-1	-1
1994	5	9	9	1	7	7	5	4	0	1	6	2	3	4	-1	1	2	2
1995	10	13	9	11	7	6	-1	1	1	-3	3	-1	-3	-1	-1	-5	-11	-11
1996	10	11	8	9	6	6	9	3	1	5	2	0	3	3	-5	-8	-8	-4
1997	7	9	4	6	0	2	1	5	6	2	1	-2	-2	2	1	-2	-1	0
1998	6	6	8	6	8	5	2	-2	1	-3	-1	1	0	-3	-1	3	-3	2
1999	12	8	8	5	6	8	9	6	5	1	0	5	-1	1	-3	-3	0	-3
2000	13	12	10	11	10	6	8	8	7	5	7	6	6	7	6	0	-2	-1
2001	12	12	11	9	5	9	5	1	3	3	2	3	3	3	2	-1	-8	-8
2002	7	4	4	0	4	4	0	1	-1	2	1	1	0	-4	-2	-2	-8	-7
2003	10	6	6	2	-1	4	7	4	3	3	1	5	5	1	1	2	-2	0
2004	9	8	5	8	8	6	5	4	5	-3	-3	-2	3	4	2	1	-1	-1
2005	11	11	10	5	5	7	9	8	8	-1	2	-1	0	1	2	-5	0	-2
2006	12	12	9	9	10	5	-1	4	3	6	6	8	7	7	6	1	3	3
2007	10	8	5	7	5	7	4	3	0	2	2	0	3	5	-1	-3	0	4
2008	8	8	10	8	9	5	2	6	6	1	-2	4	3	2	2	3	-1	-3
2009	6	6	4	4	6	5	5	5	3	7	7	5	1	3	0	-6	-4	-6
2010	9	9	5	4	1	6	6	0	3	0	-1	-8	-8	-6	-6	-4	-13	-6
2011	13	9	5	6	7	8	9	6	3	3	6	6	3	1	2	1	2	3
2012	10	7	6	10	5	1	5	2	6	5	5	1	-8	-5	-5	-1	-3	0
Average	9	9	7	7	6	5	4	4	3	1	1	1	1	0	-1	-2	-2	-2
By quartile																		
Min. value	4	3	2	0	-1	-1	-1	-3	-5	-6	-8	-8	-8	-11	-11	-10	-13	-13
Lower	8	7	6	5	4	4	2	2	1	-1	-1	-1	-1	-3	-3	-4	-4	-6
Median	9	9	7	7	6	6	5	4	3	2	2	1	1	1	-1	-1	-1	-1
Upper	11	10	9	9	7	7	6	5	5	3	4	3	3	2	2	1	0	1
Max. value	14	13	12	11	11	9	9	8	8	7	7	8	7	7	6	4	6	4
Range	10	11	9	11	11	10	11	11	12	13	15	16	15	18	18	14	18	17

Figure A1-17. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Stockholm county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Stockholm** | **Precipitation , mm / 5 or 6 day periods** | Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Stockholm** | Coordinates for the places (RT90): 1635783-6592663 1610438-6595331 1611772-6577990 1631781-6576656

Scale for the color intensity: 0 mm | 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	19	8	5	0	1	4	14	4	0	0	0	2	1	0	5	5	1	13	8	10	7	0	0	0	18	13	4	10	2	23	1	8	18	15	7	20
1962	4	7	11	7	19	8	11	7	19	12	0	0	4	7	1	2	1	9	18	7	6	0	5	4	0	12	0	10	7	14	1	2	14	11	5	24
1963	11	1	11	2	1	8	16	0	6	1	1	0	0	1	3	0	9	0	1	0	11	9	3	2	4	2	1	1	3	0	11	4	4	7	13	43
1964	2	0	1	0	0	5	8	9	9	1	0	0	0	0	0	0	0	0	0	1	6	0	0	4	9	3	10	0	0	5	19	7	1	12	9	3
1965	8	7	10	10	15	11	5	3	10	4	6	0	0	2	0	1	2	1	2	0	2	7	12	6	0	0	1	6	0	0	1	20	0	12	5	15
1966	11	1	8	1	7	23	9	8	5	3	14	9	2	6	7	0	6	22	7	2	1	7	17	0	2	4	0	0	10	6	11	2	0	0	1	9
1967	12	5	8	1	1	17	19	0	0	8	15	13	2	3	2	5	5	7	0	7	0	14	8	10	11	4	8	27	8	2	3	16	0	0	4	2
1968	0	4	8	7	13	11	7	4	2	1	1	0	4	5	1	5	6	0	13	3	0	0	20	0	18	23	5	36	2	6	1	5	0	4	9	12
1969	2	1	14	8	4	8	3	18	9	14	5	1	1	6	0	0	0	6	2	1	15	30	0	2	0	1	27	9	0	1	3	0	0	0	0	3
1970	14	0	16	0	1	10	3	3	2	0	3	0	16	13	0	9	0	11	36	10	2	11	25	2	1	0	0	2	3	4	2	0	15	0	6	1
1971	3	1	0	4	11	4	4	1	5	4	14	7	8	0	2	11	5	3	1	18	0	4	4	1	1	0	1	1	5	2	1	1	0	5	12	1
1972	2	2	1	7	0	15	8	13	8	10	1	1	2	1	0	0	0	27	12	6	7	4	3	3	0	0	0	14	11	18	2	1	19	3	5	1
1973	5	0	2	9	6	12	1	6	30	13	2	1	3	0	0	2	0	2	8	1	3	6	1	13	13	9	1	4	1	0	11	5	3	0	0	25
1974	1	1	25	2	4	8	7	26	6	1	0	0	0	0	0	10	23	0	0	0	7	2	0	0	0	0	0	0	2	24	11	14	0	4	15	13
1975	1	5	3	16	7	2	6	0	2	2	0	0	0	2	13	1	2	20	9	14	3	0	4	2	5	2	23	6	11	6	6	0	5	0	0	4
1976	11	9	4	11	1	0	1	4	5	0	3	1	1	10	2	1	4	6	6	4	1	0	4	17	16	0	11	1	0	13	1	7	18	10	4	0
1977	4	12	18	5	6	24	3	7	2	18	6	1	4	0	6	13	3	1	8	19	7	8	5	7	0	6	12	0	0	11	10	5	6	6	0	61
1978	8	3	1	0	5	15	7	4	11	0	3	0	14	14	14	15	6	17	0	1	7	0	5	0	0	0	11	4	0	1	2	15	14	0	14	14
1979	7	9	20	0	11	17	6	1	0	0	0	0	2	4	2	1	5	17	8	0	9	6	12	12	9	25	0	1	15	2	0	47	1	1	3	6
1980	5	2	0	1	12	2	0	1	2	0	0	1	1	3	1	0	0	15	0	1	0	10	19	16	0	1	0	0	8	6	32	0	6	4	47	12
1981	1	3	15	3	6	0	2	10	2	7	3	1	6	17	5	7	12	0	0	0	1	1	2	16	7	0	0	0	5	4	13	15	16	6	4	13
1982	12	1	0	0	9	16	0	19	3	0	0	1	11	1	12	10	0	0	3	20	1	0	0	13	7	7	0	2	7	0	4	1	1	4	3	34
1983	15	1	3	16	4	10	14	0	1	0	0	0	0	18	8	6	17	11	19	3	0	0	1	8	0	2	8	30	0	7	11	14	0	2	6	13
1984	10	17	16	12	7	17	13	7	0	1	2	0	4	2	0	0	1	7	11	0	2	3	1	0	7	1	1	1	4	2	2	3	16	9	34	21
1985	7	2	1	10	28	15	12	6	2	1	2	2	9	12	0	1	2	6	4	7	4	18	4	14	7	3	0	0	2	0	2	13	14	4	0	4
1986	19	4	6	4	9	9	2	1	1	2	8	0	4	0	1	0	30	15	3	0	9	22	16	1	0	1	23	4	17	2	4	23	5	4	0	3
1987	9	7	1	3	4	4	0	10	5	1	1	0	0	0	0	17	3	8	0	0	5	1	1	0	7	12	8	20	0	1	20	8	12	16	5	9
1988	9	7	12	3	9	21	12	17	2	4	11	19	7	10	1	0	5	4	9	3	1	13	4	0	8	0	0	9	2	19	23	14	0	6	5	11
1989	0	1	4	0	1	0	1	2	4	7	8	8	3	8	14	4	15	4	2	7	0	11	5	6	2	4	8	0	0	19	12	25	0	3	0	1
1990	0	6	13	9	18	18	8	13	10	8	13	23	12	7	10	0	7	0	8	4	1	2	0	5	0	0	4	6	12	5	1	0	2	5	10	13
1991	17	18	1	7	0	3	1	1	17	3	9	1	4	0	9	7	7	3	1	2	0	3	1	8	26	0	12	22	7	0	18	17	12	29	6	26
1992	6	14	0	1	1	0	8	2	18	1	6	0	8	0	11	5	3	3	19	2	18	16	10	22	0	6	5	0	5	0	0	0	18	0	3	1
1993	1	6	12	1	12	0	8	0	0	19	2	1	5	0	0	5	5	3	5	12	0	5	3	0	1	0	0	1	12	4	6	10	31	17	20	10
1994	5	5	17	3	8	13	2	1	1	0	2	0	4	6	13	1	14	10	11	3	15	2	2	9	0	0	0	1	4	20	19	7	2	21	15	1
1995	1	23	4	1	25	12	4	10	24	6	4	0	2	4	4	26	1	8	1	17	0	40	0	40	1	11	32	8	4	0	3	4	39	9	8	2
1996	0	4	1	2	2	0	2	0	5	3	0	6	0	0	2	0	0	27	0	0	0	0	8	1	25	3	5	0	11	6	0	0	5	11	10	4
1997	0	0	5	0	5	0	1	18	3	11	14	0	1	2	0	0	3	14	0	14	3	1	4	12	12	36	2	1	6	15	0	0	28	46	23	8
1998	24	5	3	12	10	12	16	4	9	4	4	3	6	10	2	8	0	5	8	0	2	19	6	6	15	5	4	5	6	2	21	17	13	24	3	6
1999	14	14	5	3	21	1	9	2	1	8	12	7	19	12	3	4	14	5	3	13	22	37	3	6	6	12	0	0	2	1	6	9	1	0	24	4
2000	4	0	6	1	4	9	1	3	2	0	8	0	20	6	5	0	0	0	8	1	13	4	1	0	2	2	0	9	17	10	11	20	4	3	5	36
2001	13	12	0	1	15	3	6	16	5	3	3	1	7	3	6	2	0	7	4	7	2	8	9	2	3	1	4	15	1	3	2	3	4	13	4	3
2002	6	0	0	10	36	17	8	8	11	4	12	11	5	18	0	4	6	0	0	0	0	0	1	10	29	0	0	8	0	1	0	2	37	14	35	18
2003	1	1	4	5	8	3	27	1	0	0	0	0	0	1	1	0	0	2	10	13	4	0	0	26	26	8	2	1	16	9	0	13	9	14	16	1
2004	1	5	8	8	0	26	3	14	0	1	10	1	1	1	10	13	4	0	2	3	0	1	11	0	4	0	6	13	16	7	0	39	16	9	20	5
2005	9	19	2	11	2	2	0	6	20	3	5	8	0	0	8	10	0	0	0	5	6	0	1	0	23	7	0	3	3	19	18	18	16	1	14	6
2006	1	2	0	6	4	1	4	16	1	5	5	3	16	1	1	0	0	14	10	5	2	14	0	8	1	0	0	15	17	20	0	1	4	2	11	16
2007	8	21	26	24	5	2	6	0	3	6	3	10	4	6	0	12	2	0	0	3	0	17	3	0	0	3	4	2	5	11	0	1	12	18	7	30
2008	12	13	3	19	11	13	8	4	0	0	2	14	18	7	11	10	6	1	3	19	11	0	0	2	0	0	6	12	0	0	0	2	12	4	21	12
2009	1	2	0	9	13	3	3	7	0	0	14	2	5	17	2	3	4	9	1	6	0	0	0	0	6	9	1	3	5	8	16	6	64	10	1	0
2010	1	2	0	5	0	21	10	1	3	20	4	6	13	0	0	1	9	7	7	4	1	3	8	6	0	8	7	0	17	8	1	8	19	6	0	2
2011	9	12	11	5	3	0	3	32	4	1	1	0	1	3	0	4	0	6	5	6	0	0	0	0	6	0	6	9	7	9	0	1	4	27	28	1
2012	26	1	13	6	7	1	5	2	8	15	18	5	0	2	0	1	0	15	6	9	30	15	7	4	0	10	6	3	1	11	44	8	5	44	30	9
Average	7	6	7	6	8	9	6	7	6	5	5	3	5	5	4	5	5	7	6	6	5	7	5	6	6	5	5	6	6	7	7	9	10	9	10	11
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	1	1	2	2	2	1	1	1	1	0	1	0	0	0	0	1	1	1	0	0	1	0	0	0	0	1	1	1	1	1	1	2	3	2
Median	6	4	5	5	6	8	6	4	3	3	3	1	4	3	2	3	3	6	4	3	2	4	3	4	4	2	3	3	4	5	3	6	5	6	6	8
Upper	11	8	12	9	11	15	9	10	8	7	8	5	7	7	6	7	6	11	8	8	7	11	7	9	9	7	7	9	9	11	11	14	16	12	14	14
Max. value	26	23	26	24	36	26	27	32	30	20	18	23	20	18	14	26	30	27	36	20	30	40	25	40	29	36	32	36	17	24	44	47	64	46	47	61

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	25	39	5	2	48	13	5	5	18	27	18	0	3	2	29	0	0	3	0	3	0	28	8	7	14	8	6	0	0	9	13	1	0	2	7	24
1962	19	6	12	5	18	3	11	48	3	14	30	27	31	18	28	2	0	0	2	0	0	5	2	24	2	0	6	6	13	0	0	0	12	2	2	10
1963	0	44	8	10	1	3	5	9	20	39	5	15	10	28	0	0	7	5	18	5	30	2	1	0	5	6	13	17	8	10	0	1	2	21	1	2
1964	6	20	1	2	7	6	12	1	0	17	11	6	0	1	10	21	3	2	0	6	29	20	11	0	0	0	8	4	18	21	16	10	22	1	0	10
1965	5	16	26	0	23	51	12	13	7	2	9	20	6	33	2	12	1	38	2	0	0	2	0	18	12	0	8	1	2	24	17	28	11	10	9	5
1966	4	18	9	9	4	16	52	7	8	0	0	0	9	3	16	1	2	0	9	7	6	12	6	0	13	18	8	10	1	20	12	37	28	23	10	20
1967	2	4	7	5	4	3	14	9	14	29	2	23	12	18	0	21	37	16	6	29	7	32	16	4	18	11	20	7	0	4	15	7	1	5	13	8
1968	0	60	9	5	10	1	0	1	28	19	0	3	1	9	3	5	19	4	21	1	15	16	4	69	17	6	1	2	10	11	0	0	0	14	5	23
1969	12	5	1	4	1	0	0	0	0	4	32	57	3	2	7	5	18	17	8	0	0	0	4	7	11	28	6	13	21	7	6	2	5	2	0	4
1970	11	8	7	6	18	16	1	5	2	2	1	0	3	11	20	8	4	0	16	2	0	17	2	14	13	9	9	26	15	10	2	5	3	8	2	9
1971	2	1	20	49	9	7	0	5	40	1	0	13	5	5	1	8	10	1	15	6	1	7	12	5	13	27	6	13	11	2	1	7	9	8	0	6
1972	2	16	0	1	0	20	41	1	16	15	34	0	0	8	3	14	9	4	2	0	10	3	15	8	19	6	5	4	9	4	3	6	6	0	0	0
1973	0	21	11	36	22	7	2	19	4	4	0	0	5	3	0	7	6	11	0	13	2	10	0	10	4	1	13	24	23	1	4	9	14	14	13	1
1974	19	53	20	22	15	22	5	0	3	2	0	14	9	14	0	1	8	7	54	23	1	16	15	39	16	14	14	25	8	25	8	3	22	21	3	13
1975	1	0	6	7	13	7	0	0	9	36	15	11	3	13	25	1	12	12	1	3	0	3	0	4	2	1	2	7	4	16	16	8	2	7	9	2
1976	1	3	0	4	3	22	12	8	0	1	0	4	2	22	26	0	1	0	4	7	2	0	1	13	12	25	5	1	4	11	43	24	23	10	13	14
1977	27	12	53	29	19	5	11	10	3	2	6	21	5	4	20	2	0	15	26	11	2	0	5	1	18	10	17	11	23	5	2	12	8	0	12	5
1978	14	28	4	9	5	0	19	3	19	1	18	44	51	9	16	1	13	12	0	0	0	11	3	3	6	1	2	8	4	18	4	0	1	2	8	7
1979	15	26	21	28	9	9	5	12	0	6	12	39	29	2	3	7	1	3	0	0	6	16	0	4	9	7	3	43	19	21	1	0	1	7	8	11
1980	10	4	0	47	2	0	5	34	7	10	16	34	4	8	15	9	6	4	7	24	55	4	35	19	0	0	27	34	5	9	7	3	16	11	12	12
1981	8	0	3	15	10	16	0	17	9	29	28	7	0	0	0	8	8	3	20	28	2	29	6	34	20	10	5	29	15	29	5	18	4	8	23	16
1982	29	7	0	4	3	13	1	13	6	10	9	20	16	7	0	2	1	4	0	4	10	19	3	5	3	1	2	11	16	17	2	11	26	10	3	2
1983	7	1	13	2	0	5	3	0	10	3	0	1	12	19	36	38	29	1	11	16	7	9	3	0	2	1	10	2	2	0	9	8	1	17	10	13
1984	15	0	22	26	10	17	3	22	8	6	1	7	5	13	15	15	39	16	13	23	9	16	32	8	0	8	0	4	12	2	0	12	0	26	4	8
1985	2	2	5	36	33	20	26	13	6	8	9	2	22	25	5	2	3	4	0	13	9	3	0	0	14	15	3	2	1	34	23	15	3	5	12	7
1986	8	20	12	1	29	4	6	8	2	33	18	54	8	8	18	2	5	6	0	4	0	4	4	9	12	3	5	16	11	0	20	1	8	12	12	22
1987	1	15	2	0	5	28	22	39	22	0	7	13	0	18	25	6	5	4	0	1	9	7	11	0	0	3	17	22	17	16	0	5	2	2	4	14
1988	10	12	14	25	33	18	24	0	19	6	7	3	3	0	2	1	15	10	0	19	1	0	0	28	17	0	0	9	1	9	11	10	1	11	3	17
1989	0	11	8	3	0	8	15	0	11	9	10	1	4	4	4	9	0	0	6	5	8	6	16	20	21	12	7	1	12	8	0	8	4	10	9	2
1990	42	17	4	29	22	16	0	8	7	9	7	0	8	53	6	18	56	4	23	12	0	2	0	30	5	0	14	14	19	2	0	13	5	5	3	11
1991	0	1	4	43	2	0	2	31	7	32	6	12	1	4	2	2	15	32	7	0	8	15	1	3	15	6	13	10	3	0	1	1	6	15	10	9
1992	14	2	21	12	0	65	5	9	21	5	6	21	25	0	5	5	0	2	0	6	28	17	17	15	22	5	24	9	13	8	9	1	2	3	0	0
1993	5	9	4	5	23	27	8	47	11	18	32	16	6	0	22	10	1	0	6	16	19	10	3	0	0	6	8	2	9	5	14	5	12	23	16	8
1994	0	0	2	16	0	1	4	22	39	2	5	18	32	31	32	41	0	29	22	10	1	0	7	12	5	1	11	1	0	0	2	31	0	7	0	17
1995	5	0	0	40	0	0	1	4	11	0	5	13	24	4	1	0	1	52	6	2	4	8	3	7	6	1	14	12	6	3	2	3	2	0	2	1
1996	20	43	2	4	1	2	5	0	1	0	3	14	2	3	21	0	0	16	1	0	2	4	0	17	25	14	21	22	1	13	10	9	4	0	4	6
1997	2	0	0	1	5	24	6	2	3	6	25	0	19	12	16	7	0	13	24	10	6	7	2	0	3	16	12	0	13	6	15	1	4	2	7	19
1998	11	29	26	4	9	15	3	7	17	5	10	16	0	13	18	9	1	3	0	4	9	19	10	20	13	4	3	1	4	4	21	10	6	0	10	15
1999	2	0	3	3	9	0	2	19	2	15	0	11	0	0	0	0	45	34	6	10	1	1	3	7	0	2	1	8	7	1	20	28	28	16	24	12
2000	5	9	49	18	31	22	5	1	3	4	3	10	9	3	0	0	0	1	16	11	23	0	10	39	18	22	11	14	35	22	3	9	23	1	0	29
2001	2	37	21	23	1	0	13	28	10	6	0	38	10	42	47	9	0	3	10	25	3	2	0	40	7	9	2	1	7	4	4	4	0	15	19	13
2002	18	4	6	27	52	3	0	0	2	0	0	3	4	0	3	16	0	2	4	2	16	1	16	15	1	2	19	9	7	7	4	0	0	1	0	8
2003	10	2	8	1	25	8	1	0	32	4	8	21	0	1	1	12	1	7	21	2	0	1	1	12	6	0	1	10	21	16	5	1	18	3	28	24
2004	27	7	23	5	3	5	15	0	15	10	13	13	4	0	16	12	10	4	5	3	0	17	14	5	1	3	8	21	20	4	8	0	3	6	22	1
2005	0	1	2	26	65	15	10	43	8	0	18	3	0	2	5	0	0	4	0	0	0	1	34	1	12	3	5	2	6	20	9	12	4	1	8	25
2006	0	11	0	1	5	25	9	0	46	12	52	15	15	9	0	0	0	6	13	7	0	17	32	39	10	0	13	12	22	0	13	11	7	1	0	7
2007	7	12	12	5	9	9	2	13	3	1	0	2	22	21	4	15	5	9	2	0	15	0	0	17	15	14	11	1	11	11	24	24	0	0	1	12
2008	2	17	6	5	3	2	74	44	9	10	11	13	6	19	0	0	0	3	30	2	4	10	4	22	0	19	17	13	18	4	19	13	21	6	3	0
2009	10	51	3	8	17	4	2	1	18	7	16	14	17	0	4	3	4	12	12	21	11	16	6	4	16	3	10	26	9	3	4	6	13	18	12	9
2010	0	1	0	1	51	39	31	35	0	15	15	4	4	0	27	26	4	0	0	10	1	9	19	4	8	18	18	6	16	5	10	2	1	24	5	13
2011	2	1	4	4	10	0	0	45	3	38	5	6	10	20	26	15	6	1	8	15	0	17	1	7	0	0	0	4	4	6	7	24	8	34	5	2
2012	0	12	19	17	0	11	3	30	2	12	21	62	8	2	7	9	22	18	9	2	26	22	1	15	9	5	3	0	4	48	23	5	21	10	14	10
Average	8	14	10	13	13	12	10	13	11	10	11	15	9	11	11	8	8	9	9	8	8	10	8	13	9	7	9	11	10	10	9	9	8	9	8	10
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	2	4	3	3	2	1	3	2	2	3	3	2	2	1	0	2	0	2	0	2	1	4	3	1	3	2	4	4	2	2	2	2	2	5
Median	5	9	6	6	9	8	5	8	8	6	8	13	5	7	6	6	4	4	6	5	3	8	4	8	9	5	8	9	9	8	7	7	5	7	7	9
Upper	12	19	13	23	20	17	12	19	16	15	16	20	12	18	20	12	10	12	14	13	9	16	11	18	15	11	13	14	16	16	14	12	13	14	12	14
Max. value	42	60	53	49	65	65	74	48	46	39	52	62	51	53	47	41	56	52	54	29	55	32	35	69	25	28	27	43	35	48	43	37	28	34	28	29

Figure A1-18. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Stockholm county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A2 UPPSALA COUNTY♣

In this appendix some additional figures of yield at county and farm-level are presented for some of the major crops in Uppsala county which are not in the main text (Section 3.4.3) as well as temperature and precipitation data for the period 1961-2012.

♣ For literature references in this Appendix see the *References* section of the main text.

A2.1 Crop yield

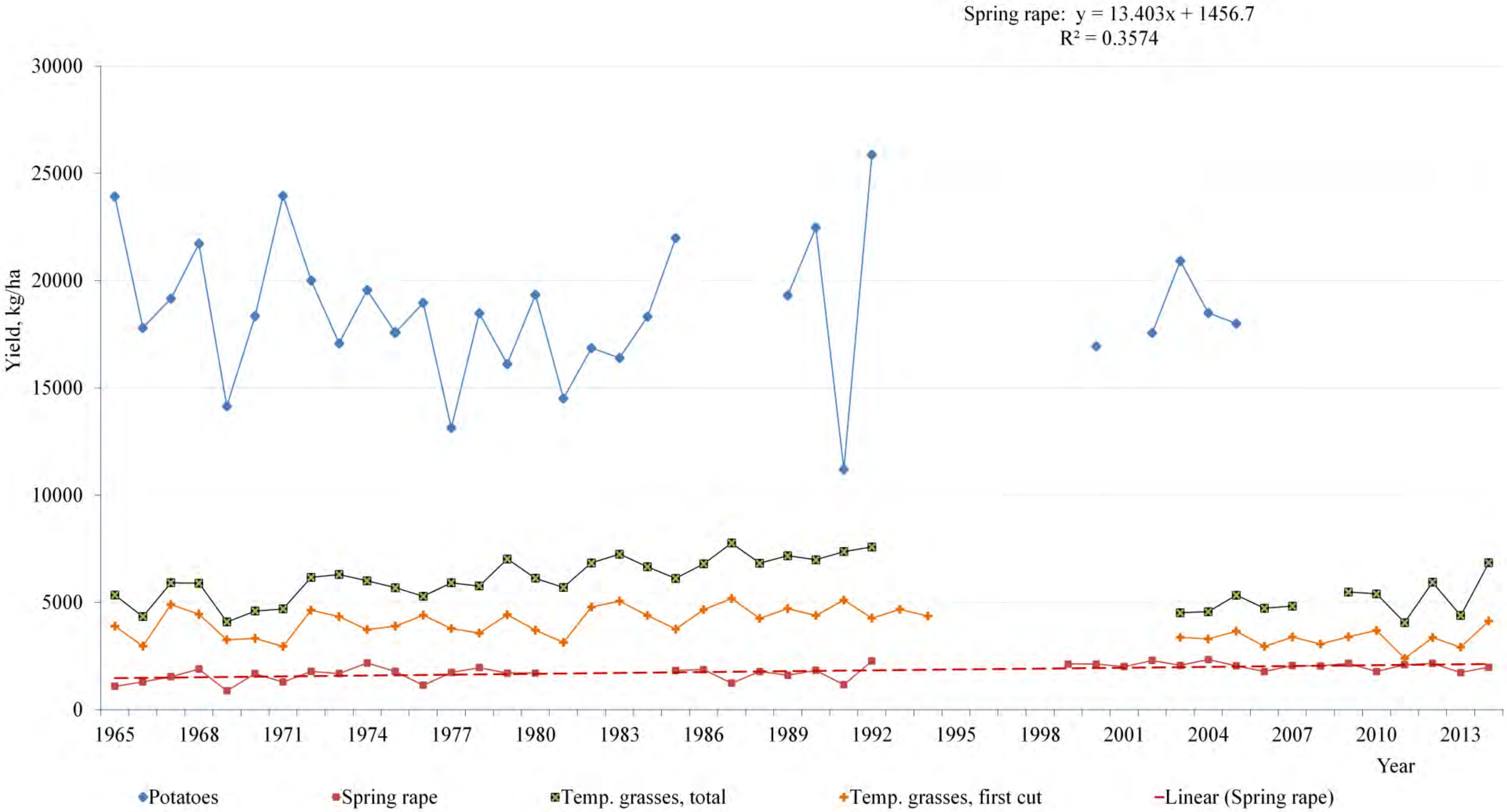


Figure A2-1. Average yield (kg/ha) per year of potatoes, spring rape, temporary grasses (total and first cut) in Uppsala county for the period 1965-2014, and the trend line with its respective equation for spring rape. The variable x in the trend line equation is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

A2.2 Yield on farms

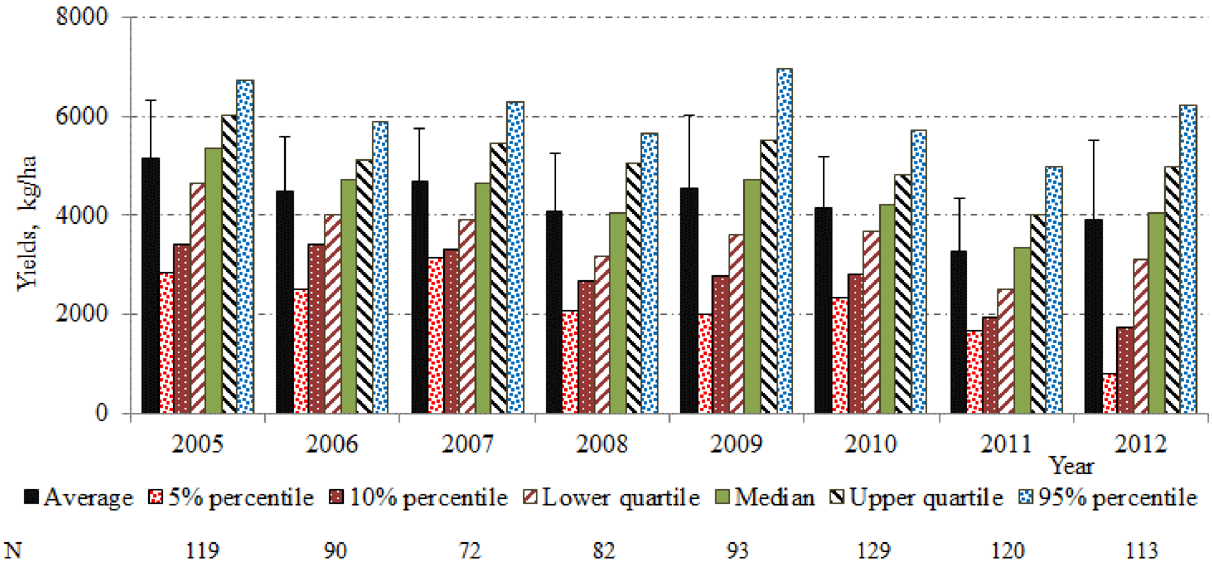


Figure A2-2. Average and estimated percentiles of spring wheat farm-level yield in Uppsala county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

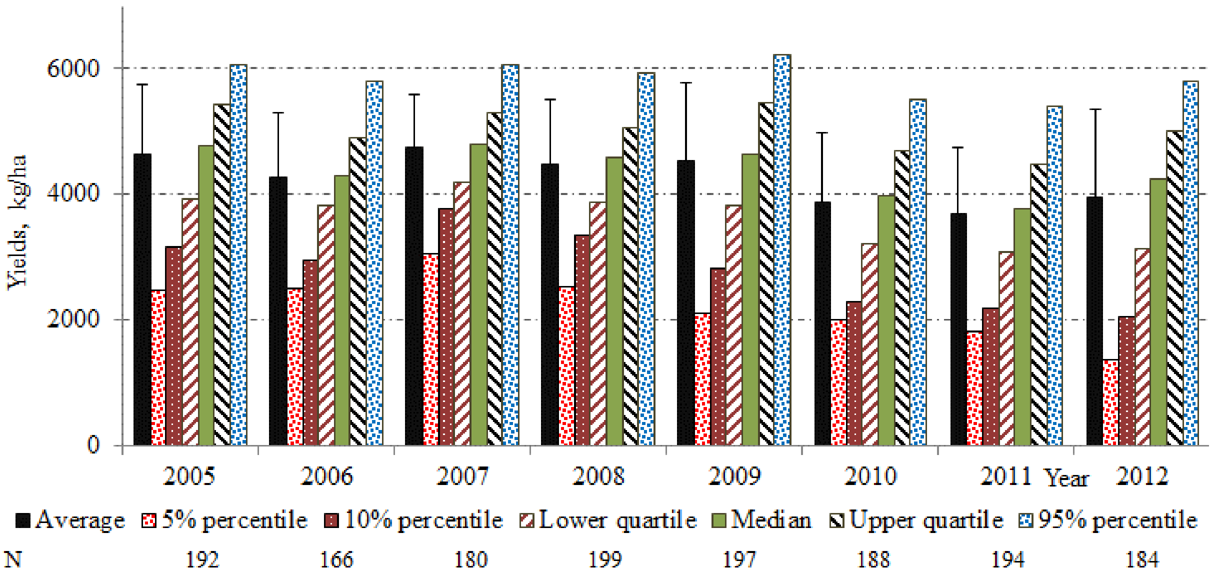


Figure A2-3. Average and estimated percentiles of spring barley farm-level yield in Uppsala county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

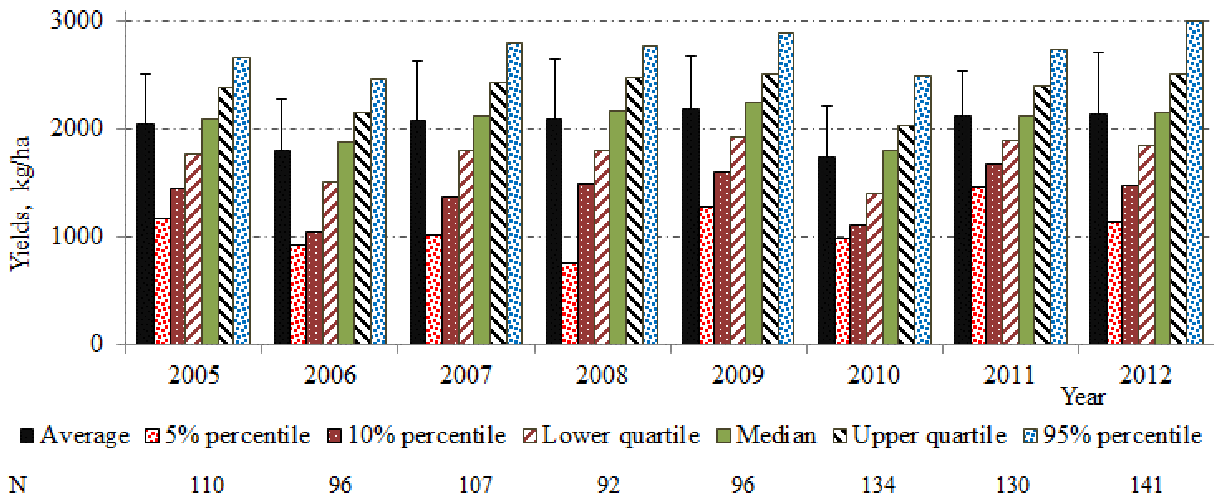


Figure A2-4. Average and estimated percentiles of spring rape farm-level yield in Uppsala county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

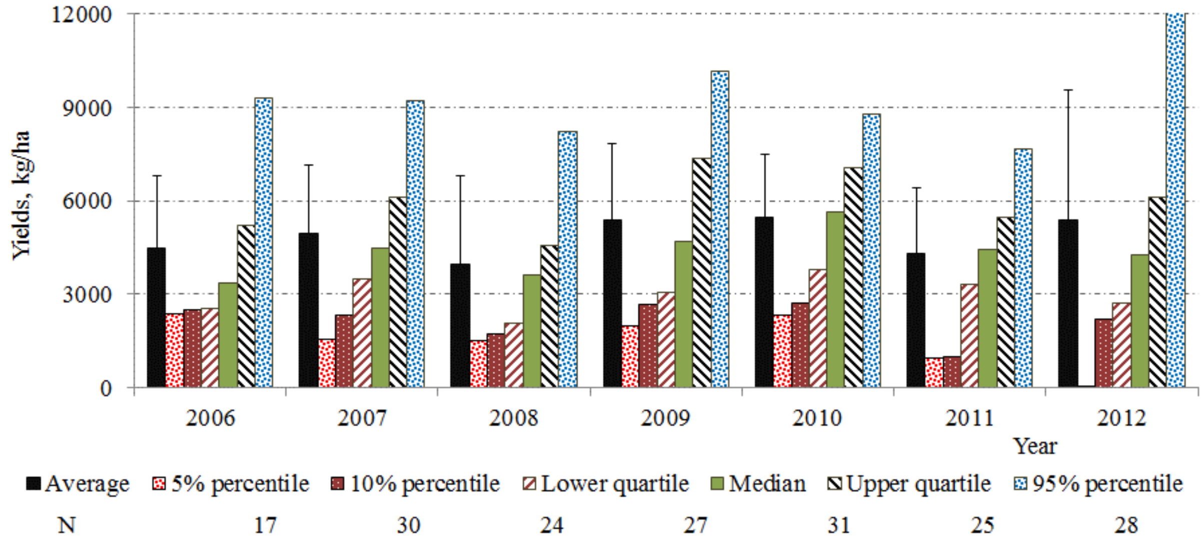


Figure A2-5. Average and estimated percentiles of temporary grasses farm-level yield in Uppsala county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A2.3 Temperature and precipitation, 1961-2012

In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

County: **Uppsala**
Location: **Uppsala**

Average temperature (°C) for 5 or 6 day periods

Coordinates for the places (RT90): 1595764-6622011 1625111-6622011 1606324-6640376 1629113-6648690

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Scale for color intensity: -30 °C 0 °C 30 °C

Month	January						February						March					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31
1961	0	-5	-3	-5	-8	-2	-3	-2	1	3	1	3	4	6	4	1	2	1
1962	-2	0	0	0	-3	-9	-2	0	-4	-3	-5	-6	-7	-7	-9	-6	-4	-2
1963	-9	-14	-10	-9	-6	-6	-7	-11	-5	-15	-9	-4	-2	-3	-7	-6	-5	-6
1964	0	-4	-5	-4	1	-2	-1	-2	-10	-9	-3	-1	-2	0	-4	-4	-4	-2
1965	-3	-9	1	2	-1	-4	-4	-2	-3	-4	-6	-13	-10	-5	-1	2	-1	2
1966	-13	-5	-7	-14	-9	-4	-18	-17	-17	-13	-3	-1	-1	1	-9	0	-1	-1
1967	-1	-9	-7	-1	-12	-12	-4	-2	-4	-1	1	0	1	4	3	2	2	4
1968	-14	-16	-12	-5	-1	-4	-1	-2	-6	-13	-10	0	-2	-2	-4	-1	5	7
1969	-7	-7	-4	-1	-4	0	-5	-2	-15	-8	-6	-9	-8	-4	-8	-7	-5	-1
1970	-12	-13	-5	-11	-6	-7	-8	-9	-15	-19	-12	-13	-3	0	-2	0	-2	-2
1971	-7	-2	-1	-1	2	-3	-2	-3	2	0	-3	-9	-11	-3	-3	1	-2	-1
1972	-4	-9	-7	-5	0	-7	-3	-3	0	-1	-2	-2	-2	-3	-1	1	3	1
1973	1	3	-1	-1	1	0	2	-2	0	1	-5	-7	1	0	2	2	6	4
1974	0	0	0	0	-1	1	2	-2	2	0	2	1	0	-1	-2	1	0	4
1975	1	-3	2	2	2	1	0	-1	-6	-2	1	-1	2	3	0	-3	1	0
1976	-6	-4	-7	-4	-6	-10	-6	-6	-3	-2	0	3	-1	-4	-8	-7	-5	3
1977	0	-4	-1	-3	-5	-4	-4	-3	-9	-6	-5	-7	-3	0	2	3	2	-2
1978	-5	1	-3	0	-3	-3	-2	-7	-11	-12	-7	1	1	0	0	-9	-6	4
1979	-12	-6	-4	-6	-8	-11	-9	-10	-14	-10	-3	1	2	1	-1	-7	0	2
1980	-5	-3	-3	-3	-4	-14	-14	-13	-5	-2	-5	-4	-4	-1	-2	-7	-6	-1
1981	-7	-7	-3	-9	-1	0	1	-2	-4	-4	-6	-5	-5	-1	-7	-4	2	1
1982	-10	-15	-6	-5	-7	-7	-7	-4	0	-7	-6	-3	0	-2	1	1	2	4
1983	1	3	2	-6	1	0	-7	-7	-5	-3	-3	-4	-3	-2	-1	2	0	1
1984	0	-4	0	-5	-9	-5	1	-3	-2	-5	-3	-1	-1	-1	-3	-5	-5	-1
1985	-10	-14	-9	-8	-7	-11	-11	-16	-14	-19	-12	-2	-5	-2	1	-3	1	-1
1986	-7	-9	-1	-12	-2	-3	-8	-11	-7	-12	-13	-6	-3	1	0	1	1	3
1987	-13	-21	-18	-10	-7	-11	-1	-6	-1	-7	-6	-9	-14	-9	-7	-2	0	2
1988	3	-1	1	0	1	-2	1	1	2	-3	-4	-3	-4	-2	-5	-5	0	2
1989	1	0	3	4	2	4	5	3	2	0	1	3	2	2	3	3	3	4
1990	-4	0	1	1	1	0	4	4	2	1	7	1	1	2	0	9	6	5
1991	0	1	-5	-2	0	-1	-4	-5	-6	-6	3	-2	0	1	2	2	2	3
1992	3	-1	3	-4	-3	2	-2	-1	0	-4	2	3	4	5	1	4	3	0
1993	-2	1	2	3	0	-5	3	1	0	-2	-5	-2	-3	0	1	5	4	0
1994	-4	-1	1	-7	0	-5	-9	-7	-11	-8	-7	-9	-6	3	2	-1	0	1
1995	-4	-3	-2	1	-2	-8	1	-3	0	2	1	0	2	1	1	1	4	0
1996	-14	-2	0	-2	-5	-6	-8	-14	-8	-10	-10	1	-1	-1	-2	-2	-2	0
1997	-8	-7	-1	0	-2	1	-2	2	-3	-5	4	2	5	4	2	-3	-3	4
1998	2	-1	4	1	-3	-6	-6	1	1	2	3	4	-3	-6	-4	2	1	4
1999	1	-5	-8	3	3	-10	2	-10	-2	-2	-2	-3	0	-1	-3	1	1	5
2000	0	3	1	0	-10	-2	-2	2	2	-4	-5	2	-1	1	0	2	3	2
2001	1	1	-4	-5	0	-1	-13	-2	2	1	-8	-12	-6	1	3	-4	-4	1
2002	-8	-3	2	2	-2	-4	4	3	0	1	-3	-2	-2	1	1	3	1	5
2003	-15	-9	-2	3	1	-4	-5	-7	-3	-5	-4	-6	-4	1	4	4	3	5
2004	-8	-2	0	-4	-8	-5	0	-3	-3	-1	-2	-4	-3	-2	0	4	0	3
2005	1	5	3	2	-2	-4	1	-1	-2	-2	-6	-8	-12	-4	-7	-4	2	2
2006	-8	-4	1	-5	-6	0	-4	-4	-5	-2	-2	-6	-6	-10	-6	-3	-6	0
2007	2	4	1	0	-8	-5	0	-9	-4	-2	-8	-2	0	3	6	3	1	7
2008	-1	1	3	4	0	1	1	3	-1	1	5	3	0	4	3	0	-4	3
2009	-9	-3	2	-4	0	-1	-4	-2	-5	-6	-3	-2	-1	0	0	1	-2	2
2010	-11	-15	-10	-3	-6	-10	-4	-6	-7	-9	-14	0	-6	-4	-3	0	-1	2
2011	-6	-1	-6	0	-3	-4	1	-2	-11	-12	-11	-2	-2	0	0	-1	4	0
2012	1	-5	-1	-1	-4	-5	-13	-9	-4	-3	2	0	0	0	4	3	7	5
Average	-4	-4	-2	-3	-3	-4	-3	-4	-4	-5	-4	-3	-2	-1	-1	-1	0	2
By quartile																		
Min. value	-15	-21	-18	-14	-12	-14	-18	-17	-17	-19	-14	-13	-14	-10	-9	-9	-6	-6
Lower	-8	-7	-5	-5	-6	-6	-7	-7	-7	-8	-6	-6	-4	-2	-3	-4	-2	0
Median	-4	-3	-1	-2	-3	-4	-3	-3	-4	-3	-4	-2	-2	0	0	1	1	2
Upper	0	0	1	0	0	-1	1	-1	0	-1	0	0	0	1	1	2	2	4
Max. value	3	5	4	4	3	4	5	4	2	3	7	4	5	6	6	9	7	7
Range	19	26	22	18	15	18	23	22	20	21	21	17	19	16	15	18	14	12

Month	April						May						June					
Year / Day	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	0	2	5	7	8	8	9	8	8	9	11	11	18	20	16	14	13	15
1962	3	2	3	6	8	4	3	7	9	10	10	9	9	14	12	16	15	13
1963	-1	2	4	5	3	8	8	11	13	11	12	16	14	16	13	16	14	15
1964	0	1	5	11	6	8	7	10	11	10	14	14	10	13	17	15	15	16
1965	3	0	3	5	6	7	6	8	8	6	8	11	12	14	14	16	15	15
1966	3	0	-6	-4	3	8	10	5	10	15	11	10	13	15	19	21	19	17
1967	2	4	6	5	3	8	2	7	11	8	12	13	15	11	12	17	14	15
1968	4	0	5	8	11	10	7	8	9	4	7	12	17	14	18	20	17	15
1969	2	6	3	1	5	7	4	10	10	8	9	13	8	15	17	20	18	20
1970	-2	1	1	3	4	4	5	9	10	11	10	12	13	19	14	19	17	19
1971	1	2	3	7	2	1	8	14	13	14	5	14	17	12	13	12	15	16
1972	0	3	5	4	3	4	12	6	6	9	11	11	13	17	16	16	14	21
1973	3	2	3	4	4	4	8	9	9	7	12	15	15	16	13	14	21	20
1974	5	7	2	5	5	7	6	6	8	13	11	9	12	12	15	18	16	15
1975	-1	2	2	5	7	9	8	13	12	15	9	8	8	15	15	16	17	13
1976	2	2	6	7	4	1	4	11	12	15	14	8	11	11	14	12	16	20
1977	1	-3	2	2	5	8	10	9	10	9	11	9	11	13	20	16	14	13
1978	1	4	3	2	3	1	5	6	4	9	14	18	19	17	11	13	17	14
1979	1	2	3	2	4	6	5	5	11	15	13	15	17	17	16	16	20	14
1980	2	4	7	5	5	5	6	8	8	11	6	12	17	20	16	17	14	14
1981	4	6	7	4	0	3	3	11	12	14	17	13	15	15	11	12	14	14
1982	5	2	1	5	7	6	6	9	9	8	10	16	21	10	8	12	12	13
1983	1	3	1	7	7	5	6	10	11	13	13	12	11	14	16	16	15	14
1984	1	4	6	5	8	8	11	6	9	15	14	14	18	12	12	16	13	13
1985	2	-1	1	4	2	3	3	8	11	11	8	17	14	10	11	15	19	16
1986	2	0	-1	1	4	8	13	14	11	12	13	13	14	13	17	19	15	19
1987	2	1	3	4	6	10	9	8	6	8	10	7	10	13	10	10	14	14
1988	4	3	2	6	0	6	10	9	12	11	10	17	10	14	14	16	18	22
1989	-1	4	10	4	5	9	11	10	10	14	16	12	11	13	14	16	18	18
1990	4	2	6	7	10	10	17	14	10	8	9	10	15	12	14	13	17	17
1991	8	7	9	0	3	5	5	7	10	7	9	11	8	11	13	13	14	13
1992	2	2	3	1	1	8	10	9	11	16	16	18	18	18	17	16	14	19
1993	2	1	2	4	10	13	12	13	14	16	15	10	11	13	10	12	11	14
1994	5	4	5	4	9	11	7	12	11	8	10	9	12	13	14	11	13	18
1995	3	1	5	3	7	2	9	6	4	8	9	16	16	16	14	15	16	16
1996	1	5	2	9	8	6	6	5	10	5	11	11	14	16	15	13	13	15
1997	5	2	1	3	3	6	7	7	12	10	7	9	13	18	19	13	15	17
1998	-2	1	2	3	7	12	7	12	11	14	6	11	10	14	14	12	11	15
1999	6	9	5	4	7	8	5	5	6	12	14	14	16	15	18	18	14	18
2000	1	2	4	8	10	11	9	13	12	13	12	12	12	13	15	13	17	13
2001	6	6	1	4	6	9	10	12	11	10	11	10	12	13	13	14	16	19
2002	4	3	6	4	12	9	9	11	14	11	13	13	18	18	16	19	14	14
2003	1	0	4	7	6	5	5	11	11	11	13	14	17	16	13	13	15	16
2004	2	5	6	10	6	8	12	14	8	11	7	10	15	12	13	12	14	15
2005	7	5	8	4	4	8	8	8	11	9	13	12	11	12	14	17	18	13
2006	0	3	4	6	7	8	10	14	11	8	11	9	13	14	19	20	17	16
2007	5	2	10	7	8	10	8	10	9	12	13	12	14	20	15	14	16	15
2008	6	3	3	5	9	13	12	13	9	6	10	15	17	20	12	15	15	15
2009	6	6	8	5	8	12	10	10	9	10	13	15	10	10	11	12	17	21
2010	2	5	6	5	4	10	7	7	12	15	13	11	14	14	12	14	16	18
2011	5	7	7	10	12	9	4	12	12	12	14	14	16	20	16	13	15	19
2012	1	1	4	4	6	10	9	9	11	12	16	12	8	13	14	14	14	15
Average	3	3	4	5	6	7	8	9	10	11	11	12	14	15	14	15	15	16
By quartile																		
Min. value	-2	-3	-6	-4	0	1	2	5	4	4	5	7	8	10	8	10	11	13
Lower	1	1	2	4	4	5	6	7	9	8	10	10	11	13	13	13	14	14
Median	2	2	4	5	6	8	8	9	10	11	11	12	14	14	14	15	15	15
Upper	4	4	6	6	8	9	10	11	11	13	13	14	16	16	16	16	17	18
Max. value	8	9	10	11	12	13	17	14	14	16	17	18	21	20	20	21	21	22
Range	10	11	16	14	12	13	15	9	11	12	12	10	13	11	12	11	10	9

Month	July						August						September					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30
1961	16	14	16	17	15	15	15	15	14	13	12	15	13	11	13	14	11	11
1962	14	15	12	15	16	14	14	14	14	13	13	12	11	12	9	9	9	10
1963	18	15	15	17	18	15	19	17	15	15	14	14	16	13	12	11	12	9
1964	13	13	17	19	16	16	13	16	14	15	13	13	13	12	9	10	10	10
1965	12	12	14	16	17	14	13	14	12	15	16	13	13	13	10	12	13	13
1966	17	16	16	18	21	16	15	16	14	16	13	13	14	11	12	10	9	5
1967	15	18	16	19	17	18	20	14	17	15	14	14	15	13	12	12	11	8
1968	20	14	13	15	14	17	17	19	14	13	17	16	18	18	9	9	8	8
1969	15	16	16	18	20	20	20	19	19	18	15	15	12	14	15	9	9	9
1970	15	18	15	14	14	16	17	16	15	15	15	15	14	11	13	13	7	6
1971	19	20	15	13	16	19	19	16	14	15	14	13	12	11	7	10	11	7
1972	19	19	19	21	20	17	17	18	16	16	13	12	12	14	11	10	9	5
1973	22	21	18	18	16	18	18	15	17	17	11	13	13	12	8	9	7	7
1974	16	14	15	16	16	13	15	14	15	16	16	16	15	14	11	12	11	10
1975	17	18	17	18	19	19	21	24	17	15	16	15	16	12	14	14	12	11
1976	16	14	17	20	18	14	14	16	17	17	15	16	10	11	12	8	7	4
1977	14	16	12	11	14	15	17	15	14	13	12	14	15	10	6	8	7	8
1978	15	14	13	12	15	19	20	14	12	16	15	10	12	11	10	10	6	6
1979	13	15	16	15	15	16	14	15	16	18	14	14	14	14	10	11	9	8
1980	15	16	16	15	18	20	19	13	16	15	13	12	14	15	12	11	11	10
1981	15	18	18	15	17	17	17	17	19	13	12	10	12	14	9	7	12	13
1982	14	16	19	20	18	17	22	20	16	15	13	14	11	10	12	13	11	11
1983	15	22	20	16	16	17	17	20	15	16	16	16	17	11	13	14	9	8
1984	13	17	17	16	15	16	19	17	15	15	16	13	10	12	11	10	11	8
1985	16	17	19	16	14	16	15	16	16	16	15	15	13	11	11	10	7	6
1986	19	15	14	17	16	18	18	16	13	13	11	10	11	9	8	8	7	6
1987	15	17	15	16	19	13	13	11	12	14	13	12	12	13	11	7	9	7
1988	20	18	18	19	18	16	14	16	15	15	14	14	15	14	12	12	11	11
1989	18	20	16	13	19	19	15	17	17	17	15	11	13	13	11	13	15	10
1990	15	16	15	14	15	18	20	15	17	17	14	15	13	11	10	10	7	7
1991	19	21	17	16	16	19	21	18	16	16	17	15	16	9	10	11	11	9
1992	13	17	17	17	20	17	17	17	16	15	14	15	12	11	12	10	12	9
1993	16	15	16	18	16	15	16	16	14	14	11	11	10	9	8	6	10	6
1994	16	20	24	18	20	23	22	17	16	14	14	13	13	12	12	11	11	8
1995	14	16	18	16	17	20	19	16	18	19	18	11	14	14	12	9	11	8
1996	13	14	16	13	18	16	16	16	19	20	20	18	14	9	8	9	7	9
1997	21	18	16	18	20	18	19	21	18	20	20	21	18	14	12	10	10	8
1998	15	16	16	15	17	16	16	15	15	14	13	11	11	14	15	11	11	9
1999	17	19	23	19	18	18	21	15	13	15	13	15	18	17	13	14	13	12
2000	16	15	15	16	16	15	16	15	16	15	13	15	11	13	9	8	8	12
2001	21	22	17	16	19	19	16	15	16	18	17	15	14	13	13	14	10	7
2002	15	18	19	20	18	20	19	19	21	20	19	19	18	17	13	10	6	8
2003	16	17	19	23	21	21	21	18	17	17	16	11	12	15	14	13	12	8
2004	15	15	15	16	18	17	20	22	17	17	14	15	16	13	14	11	10	10
2005	17	21	21	17	16	17	16	16	16	17	16	14	14	15	11	10	13	12
2006	21	22	18	17	20	20	19	20	18	18	17	17	16	13	15	12	15	15
2007	18	15	16	18	16	16	18	20	20	17	19	10	11	12	11	10	13	11
2008	17	14	18	17	19	21	16	15	17	16	14	13	14	12	9	9	10	9
2009	19	15	17	19	17	17	18	20	15	15	16	16	16	15	12	12	12	10
2010	20	20	24	21	18	18	17	18	20	17	16	11	10	12	14	10	12	8
2011	18	20	16	18	19	20	19	17	15	16	16	16	15	13	14	11	12	14
2012	17	18	16	15	17	18	18	15	16	17	15	14	15	12	13	12	9	10
Average	16	17	17	17	17	17	17	17	16	16	15	14	14	13	11	11	10	9
By quartile																		
Min. value	12	12	12	11	14	13	13	11	12	13	11	10	10	9	6	6	6	4
Lower	15	15	15	15	16	16	16	15	15	15	13	12	12	11	10	9	9	7
Median	16	17	16	17	17	17	17	16	16	16	15	14	14	13	12	10	10	9
Upper	18	18	18	18	19	19	19	18	17	17	16	15	15	14	13	12	12	10
Max. value	22	22	24	23	21	23	22	24	21	20	20	21	18	18	15	14	15	15
Range	10	10	12	11	7	10	9	13	9	7	9	12	9	9	8	8	10	10

Month	October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	11	12	11	10	10	8	5	5	3	1	2	0	-2	-4	-8	-2	-8	-6
1962	11	9	4	6	8	5	6	4	2	-2	-3	-1	-1	1	-3	-10	-6	-9
1963	7	7	5	7	8	5	3	4	3	0	-3	2	0	-1	-4	-7	-7	2
1964	6	9	8	7	6	2	3	0	3	1	1	-1	-1	3	2	-2	-3	-9
1965	8	8	6	6	4	8	5	1	-7	-7	-10	-2	-2	-5	-9	-5	-5	-7
1966	9	6	4	9	7	-1	2	6	1	0	0	2	3	1	-2	-3	-4	-2
1967	12	8	10	3	7	8	6	5	3	2	4	1	3	-7	-6	-10	-7	-9
1968	8	2	6	3	5	3	-1	-1	-4	-4	2	2	-3	-5	-5	-1	0	-4
1969	6	9	8	10	5	4	0	3	4	3	-5	-6	-7	-9	-2	-5	-7	-4
1970	8	11	7	8	3	0	-2	-4	0	2	4	-3	-1	2	1	1	-5	-7
1971	7	9	5	7	5	5	6	-3	1	-5	-3	3	1	-1	-2	2	2	-1
1972	8	10	8	4	2	6	5	5	3	-3	1	2	5	4	4	3	1	1
1973	10	7	1	-1	0	4	3	4	-4	-4	-3	-9	-6	-8	-2	-7	-1	2
1974	8	7	4	4	5	4	3	1	6	5	1	2	-1	1	0	0	5	-3
1975	11	6	5	5	5	8	7	3	5	2	-3	2	2	-1	0	-4	1	2
1976	6	8	5	4	5	3	1	6	3	0	-3	2	1	2	-1	-5	-7	-10
1977	5	7	7	7	10	8	7	6	5	-3	1	-2	-3	-1	1	1	-1	-3
1978	6	8	8	7	3	3	7	7	5	5	2	-3	-5	-7	-5	-8	-7	-16
1979	3	6	9	7	3	0	2	1	1	3	4	2	5	-3	-10	-9	-2	1
1980	8	9	7	7	1	-1	-2	-1	-3	1	3	-8	-5	-6	1	-2	0	1
1981	12	9	6	3	3	4	2	0	0	2	1	-2	-1	-7	-12	-12	-5	-5
1982	11	8	6	3	7	6	4	3	6	3	4	3	1	-1	-2	-1	1	0
1983	9	5	8	9	5	7	6	6	-1	0	-3	-3	-1	-3	-5	-2	-1	1
1984	12	10	6	8	6	7	8	4	3	0	2	3	4	3	-2	-2	1	-3
1985	14	10	6	6	5	3	2	4	0	-2	-2	-3	-3	-13	-5	-9	2	-11
1986	8	6	8	7	3	7	2	4	4	4	4	7	4	1	-1	-3	-5	-7
1987	7	10	10	9	7	5	4	-1	2	3	2	0	-2	-3	-3	-4	-2	0
1988	9	9	6	6	1	0	-1	-1	2	-3	-2	-6	-9	-3	-5	-4	-2	1
1989	7	6	5	7	10	7	6	6	5	0	-5	-4	-1	-5	-13	-2	0	-1
1990	9	7	8	8	2	5	2	4	2	1	-2	-2	1	1	-2	0	-2	1
1991	9	9	8	6	3	5	6	2	3	-2	4	5	1	-1	2	1	-3	-1
1992	7	7	2	3	2	-2	3	1	2	1	-2	2	5	0	1	3	-4	-1
1993	8	10	5	3	1	4	0	2	2	-1	-2	-3	1	0	-4	1	-2	-2
1994	4	8	8	0	7	6	4	3	-1	-1	4	1	2	4	-2	0	1	2
1995	9	13	8	10	7	5	-3	-1	-1	-4	3	-2	-6	-2	-2	-6	-14	-14
1996	9	11	7	8	5	6	8	2	0	5	1	-1	2	3	-6	-10	-9	-5
1997	7	8	4	5	0	1	0	4	5	1	0	-4	-3	1	1	-2	-2	-1
1998	5	5	7	4	8	4	1	-2	-1	-4	-1	0	0	-3	-2	2	-4	1
1999	11	8	8	4	6	7	8	6	4	0	-1	5	-2	-1	-4	-5	-1	-4
2000	13	12	10	11	10	5	7	7	6	4	6	5	6	7	5	0	-3	-3
2001	12	12	10	8	4	8	5	-1	2	2	1	2	2	2	1	-2	-10	-9
2002	5	3	3	-1	3	3	-2	0	-3	1	0	0	-1	-5	-2	-3	-10	-7
2003	9	6	5	1	-2	3	6	4	2	2	0	4	5	1	-1	1	-4	-2
2004	9	7	4	7	8	5	4	4	5	-4	-4	-3	2	3	1	0	-2	-2
2005	11	11	10	4	4	6	8	8	7	-2	2	-2	0	0	2	-6	-1	-3
2006	12	11	9	8	9	4	-1	2	2	6	6	8	7	7	6	0	2	2
2007	9	7	5	6	5	7	4	2	0	1	1	-1	3	4	-3	-4	-1	3
2008	7	7	10	7	9	4	1	4	5	0	-3	3	2	1	1	3	-1	-5
2009	5	5	3	3	6	5	4	4	2	7	6	5	0	3	-1	-8	-6	-7
2010	8	9	4	4	0	6	5	-1	2	-1	-2	-10	-9	-7	-7	-5	-14	-7
2011	12	8	5	6	6	8	9	6	2	2	5	5	2	0	2	1	1	2
2012	10	7	5	9	4	0	5	1	5	5	5	0	-10	-7	-6	-2	-4	0
Average	9	8	6	6	5	4	4	3	2	0	0	0	0	-1	-2	-3	-3	-3
By quartile																		
Min. value	3	2	1	-1	-2	-2	-3	-4	-7	-7	-10	-10	-10	-13	-13	-12	-14	-16
Lower	7	7	5	4	3	3	2	1	0	-2	-2	-2	-2	-4	-5	-5	-6	-7
Median	8	8	6	6	5	5	4	3	2	1	1	0	0	-1	-2	-2	-2	-2
Upper	11	10	8	8	7	7	6	4	4	2	3	2	2	1	1	0	0	1
Max. value	14	13	11	11	10	8	9	8	7	7	6	8	7	7	6	3	5	3
Range	11	11	10	12	12	10	12	12	14	14	17	18	16	20	19	15	19	20

Figure A2-6. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Uppsala county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Uppsala**

Location: **Uppsala**

Total precipitation , mm / 5 or 6 day periods

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Coordinates for the places (RT90): 1595764-6622011 1625111-6622011 1606324-6640376 1629113-6648690

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March						April						May					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	16	9	6	0	2	6	14	6	0	0	0	1	0	0	8	5	2	12	5	11	9	0	0	0	21	19	2	24	3	25
1962	6	6	13	7	17	11	12	7	20	15	0	0	3	6	2	1	1	7	16	13	8	2	2	3	1	7	0	9	7	5
1963	10	2	12	2	1	7	13	0	4	0	3	0	1	1	2	0	8	1	1	0	12	5	4	3	6	3	1	1	3	0
1964	0	0	1	0	0	3	8	12	8	2	0	2	0	0	0	0	0	0	0	0	4	0	0	5	5	4	16	0	0	1
1965	6	6	13	8	16	9	6	3	12	4	9	1	0	1	0	3	2	0	2	0	3	5	8	11	0	0	1	7	0	0
1966	6	1	9	2	4	26	9	7	2	4	17	6	2	6	6	0	9	16	8	4	2	3	13	0	0	3	0	0	13	1
1967	13	5	8	1	0	16	17	0	0	6	15	11	1	3	3	6	4	9	0	4	0	9	6	9	10	4	13	27	15	5
1968	0	5	6	5	15	13	7	5	1	0	2	0	3	8	2	8	7	1	13	3	0	0	18	0	19	22	3	36	5	5
1969	2	1	20	7	4	6	0	14	6	10	9	0	2	6	0	0	0	7	1	2	13	27	0	3	0	4	22	13	0	2
1970	18	0	12	0	1	11	3	7	2	0	3	0	10	14	0	9	0	11	31	5	2	13	20	4	1	0	0	2	4	2
1971	8	1	0	3	11	8	5	2	4	3	17	7	3	0	2	15	6	4	1	11	0	3	1	1	0	0	2	2	7	3
1972	2	1	1	6	1	7	7	13	9	6	4	1	1	0	0	0	0	24	11	3	7	3	4	4	0	0	0	10	12	20
1973	3	0	1	10	6	16	2	9	32	19	3	0	2	0	0	3	0	4	12	2	2	12	1	9	10	9	0	9	0	0
1974	1	1	23	1	4	7	10	21	6	0	0	0	0	0	0	7	25	0	0	2	5	2	1	0	0	0	0	0	3	32
1975	2	7	3	16	8	2	4	0	4	2	0	0	2	2	13	2	1	16	14	17	1	0	4	1	7	1	21	16	10	8
1976	8	9	6	12	1	1	1	6	4	0	3	1	2	7	3	1	4	8	8	7	0	0	2	14	14	0	8	0	0	8
1977	3	8	14	3	4	25	2	5	1	14	6	2	4	0	6	21	6	0	8	16	6	8	3	7	1	3	14	0	0	3
1978	10	2	1	0	5	14	7	5	8	0	2	0	14	13	8	13	3	12	0	3	9	1	5	0	0	0	12	6	0	4
1979	10	4	15	0	11	14	10	0	0	0	0	0	1	3	3	1	4	14	9	0	5	5	12	18	8	21	0	1	25	4
1980	6	2	0	0	13	3	0	1	2	0	0	1	2	4	1	1	0	16	0	1	0	11	18	16	0	0	0	0	3	6
1981	3	7	15	4	6	0	3	11	2	5	3	1	6	18	7	7	13	0	0	0	1	1	2	16	12	0	0	0	7	3
1982	15	1	0	0	9	10	0	22	2	0	0	2	12	0	12	11	0	0	1	22	2	0	0	15	9	8	0	6	11	3
1983	20	1	8	24	4	8	10	0	1	0	0	0	0	17	17	3	18	7	18	4	0	0	3	10	0	1	9	20	0	10
1984	15	17	11	8	5	17	14	6	0	0	2	0	8	3	0	0	1	9	10	0	1	3	1	0	7	1	1	3	4	4
1985	9	3	1	12	31	16	15	8	2	2	1	3	9	11	0	0	1	11	7	6	4	21	4	9	15	2	0	0	1	0
1986	16	5	4	6	10	7	2	1	1	1	7	0	4	0	0	0	29	18	5	0	3	21	14	2	0	1	32	7	11	2
1987	7	5	1	3	6	5	2	11	8	0	1	0	0	0	0	13	1	7	0	0	2	1	1	0	6	16	10	19	0	1
1988	11	3	11	4	10	21	10	12	5	3	7	19	10	15	2	1	6	2	7	3	0	18	4	0	4	0	0	10	2	17
1989	1	1	5	0	2	0	2	2	5	5	7	7	3	7	11	5	19	3	2	9	0	15	7	9	2	5	11	0	0	16
1990	1	7	15	6	15	20	6	8	9	6	16	23	11	10	12	0	7	0	20	8	0	3	0	4	0	0	6	4	16	4
1991	17	23	2	3	0	3	1	1	14	3	8	1	5	0	12	8	8	3	1	1	0	4	1	12	24	0	20	17	6	0
1992	1	11	0	1	1	1	9	3	12	2	9	0	11	1	10	5	3	3	24	2	17	13	11	17	1	3	6	0	9	0
1993	1	7	11	2	6	1	0	0	0	15	5	1	7	0	0	5	4	3	5	16	0	4	2	0	2	0	0	1	12	9
1994	3	6	19	3	6	14	2	1	0	0	1	0	4	8	10	0	17	9	10	3	12	1	3	9	0	0	0	2	2	19
1995	4	17	6	2	19	11	4	7	22	7	4	0	2	4	3	18	3	16	0	13	0	40	0	42	2	9	26	7	7	1
1996	0	4	2	2	1	0	4	1	3	2	0	6	0	0	2	0	0	24	0	0	0	0	13	1	25	2	17	0	9	6
1997	1	0	8	0	5	0	1	17	6	7	18	2	2	2	0	1	3	12	1	6	5	1	1	11	7	37	3	5	7	6
1998	17	4	4	23	9	15	14	4	7	3	7	2	5	9	2	10	1	6	3	0	0	20	2	11	15	12	0	4	9	5
1999	10	14	5	3	20	2	10	3	1	8	13	9	18	13	4	5	14	6	1	12	24	39	3	5	6	9	0	0	4	1
2000	6	0	2	3	4	11	2	2	2	0	8	0	21	3	2	0	1	0	6	1	7	5	4	0	1	2	0	13	19	16
2001	13	12	0	1	14	4	11	21	5	2	7	1	4	4	8	2	1	8	3	7	5	10	12	3	5	0	3	19	0	4
2002	5	0	0	8	35	17	7	14	9	4	14	10	13	22	0	5	9	0	0	0	0	0	1	7	29	0	0	12	1	1
2003	3	2	4	6	9	3	22	0	0	0	0	0	0	0	0	0	0	4	10	9	5	0	0	29	30	9	3	0	18	9
2004	2	5	7	8	1	17	2	11	1	2	11	1	2	1	9	12	4	0	2	2	0	1	13	0	4	0	8	17	19	4
2005	10	22	3	8	5	3	1	5	15	4	3	17	0	1	6	9	0	0	0	6	2	0	0	0	22	10	0	4	5	13
2006	0	1	0	5	4	1	5	16	1	5	7	7	19	2	2	0	0	19	12	4	2	11	0	9	1	0	3	10	25	16
2007	10	19	27	20	5	2	6	0	3	9	4	5	3	11	0	12	1	0	0	1	0	27	5	0	0	4	6	1	5	24
2008	7	11	5	21	12	15	13	5	1	0	2	13	13	13	13	12	3	0	2	24	15	0	0	1	0	0	2	15	1	0
2009	2	1	1	11	14	2	2	11	0	0	11	2	7	15	4	1	2	3	0	5	0	0	0	0	9	10	1	3	7	12
2010	4	1	0	5	0	23	8	1	0	20	4	7	16	0	1	0	17	9	5	5	2	6	14	3	1	5	11	0	18	14
2011	9	12	12	5	4	0	4	27	2	0	1	0	0	6	1	5	0	6	5	6	0	0	0	0	2	0	9	5	4	9
2012	25	2	12	5	5	1	3	1	11	15	20	5	0	1	0	2	0	15	7	7	23	16	8	5	1	18	12	4	2	9
Average	7	6	7	6	8	9	6	7	5	4	6	3	5	5	4	5	5	7	6	6	4	8	5	7	7	5	6	7	7	7
By quartile																														
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	1	1	2	3	2	2	1	1	0	1	0	1	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	2
Median	6	4	6	4	5	7	5	5	3	2	4	1	3	3	2	3	3	6	4	4	2	3	3	4	3	2	3	4	5	5
Upper	10	7	12	8	11	14	10	11	8	6	9	5	8	8	7	8	7	11	9	8	6	11	7	9	9	8	11	11	10	9
Max. value	25	23	27	24	35	26	22	27	32	20	20	23	21	22	17	21	29	24	31	24	24	40	20	42	30	37	32	36	25	32

Month	June						July						August						September						October						November						December					
Year / Day	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	2	7	21	24	22	16	26	31	5	7	53	13	8	8	16	30	14	1	8	2	26	0	0	4	0	3	0	26	8	8	12	9	1	1	1	7	17	1	0	3	7	16
1962	1	7	15	9	7	17	18	8	7	16	13	4	10	36	2	9	20	19	31	14	16	2	0	0	5	0	1	6	0	22	2	0	6	8	5	0	0	1	11	1	1	3
1963	7	1	8	3	15	28	2	35	15	8	1	2	2	15	19	22	10	12	8	24	0	0	8	6	18	6	29	2	1	0	5	8	12	14	5	10	0	1	2	27	0	1
1964	17	8	4	7	10	4	9	22	2	2	8	6	11	0	0	23	12	10	0	1	9	30	7	11	0	5	31	17	8	0	0	0	5	6	17	9	12	7	22	1	0	10
1965	3	11	3	12	7	10	8	14	36	0	23	60	14	11	6	2	7	13	5	45	1	15	3	50	2	2	0	2	0	16	18	1	2	3	3	19	14	27	6	11	8	6
1966	5	1	0	0	1	4	8	28	11	9	3	16	76	3	12	0	0	0	10	9	12	0	1	1	12	7	8	13	4	0	17	13	5	8	5	19	11	27	22	29	7	21
1967	4	15	0	0	5	3	3	4	6	8	4	1	12	7	13	23	3	32	11	26	0	9	37	9	9	36	13	32	12	7	18	11	25	3	1	3	17	8	1	2	8	7
1968	1	3	0	0	11	13	0	61	12	3	5	3	0	7	29	12	0	2	1	4	7	4	18	3	13	1	18	14	7	64	27	4	1	2	9	10	0	0	0	14	7	21
1969	4	0	0	0	0	3	15	6	0	5	12	0	0	0	0	0	27	43	4	2	14	8	23	21	11	0	0	0	5	6	19	24	10	9	19	5	9	2	4	5	0	3
1970	5	0	13	0	7	0	19	11	7	19	21	13	1	8	5	1	1	1	6	9	21	13	9	0	15	6	0	19	2	11	10	13	8	20	19	6	3	4	4	10	5	14
1971	1	2	0	11	3	1	1	1	24	34	15	4	0	14	39	4	0	19	5	5	3	9	7	2	15	10	3	5	11	5	6	22	7	11	9	3	1	12	9	6	1	3
1972	3	1	10	0	6	4	6	15	5	0	0	8	43	1	10	11	7	0	0	6	4	15	14	7	2	0	9	4	13	6	18	7	4	4	6	3	6	9	3	0	0	0
1973	7	6	4	0	0	30	0	13	9	38	33	8	2	14	5	7	1	0	9	8	0	4	4	15	0	9	2	4	2	11	5	1	12	33	25	7	3	7	13	16	9	0
1974	14	20	0	2	10	17	11	50	27	15	5	14	4	1	4	4	0	17	10	18	0	1	15	10	35	21	3	14	14	29	16	16	20	15	7	17	7	3	17	18	3	10
1975	7	0	6	0	0	6	3	0	13	5	12	0	0	1	8	25	8	18	7	18	26	0	9	13	1	8	0	1	1	6	2	2	2	9	3	14	19	4	3	4	4	4
1976	3	7	14	8	4	0	2	4	3	4	1	24	14	6	0	0	1	7	6	20	49	0	1	0	2	8	2	0	1	11	14	27	6	1	6	6	40	23	18	4	6	5
1977	11	5	2	4	0	37	34	3	61	28	27	10	11	9	3	1	5	8	2	4	13	4	0	24	33	13	2	0	5	1	17	11	16	8	22	6	2	8	6	0	18	4
1978	0	14	8	0	24	24	14	37	4	9	11	1	37	6	7	2	33	27	46	9	15	1	13	3	0	0	0	8	3	2	6	1	5	9	3	15	6	1	2	1	3	5
1979	0	38	4	1	2	7	13	22	18	22	13	10	7	16	0	11	10	51	31	2	6	10	1	5	1	1	8	21	0	3	10	6	4	34	21	28	0	0	2	6	9	21
1980	17	0	5	4	40	12	2	2	1	67	1	1	16	49	3	16	10	21	5	17	24	12	10	5	5	24	47	4	35	22	0	2	16	50	5	13	12	7	22	13	11	16
1981	4	9	35	4	7	24	10	0	8	16	12	19	0	20	6	41	40	12	0	0	0	8	5	4	12	20	1	29	9	40	14	15	9	34	24	29	5	21	5	8	18	18
1982	7	1	4	5	2	23	28	2	0	6	10	8	3	13	16	9	14	18	14	9	1	12	1	5	0	2	7	21	5	4	2	2	2	11	22	17	3	9	22	8	2	1
1983	27	19	0	1	11	23	11	1	21	2	1	9	3	0	12	3	2	0	13	23	43	34	28	1	11	15	6	11	3	0	6	3	13	1	4	2	9	8	1	20	14	16
1984	2	1	19	5	34	22	9	0	19	27	20	12	3	16	6	3	2	14	7	9	21	28	48	15	11	20	9	12	38	15	0	16	0	8	13	3	1	12	1	26	5	3
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1986	2	26	4	3	0	3	6	18	16	6	25	10	11	11	4	36	28	94	10	9	15	1	10	8	0	5	1	7	3	15	12	5	6	14	10	1	23	0	8	11	17	22
1987	18	8	10	18	10	11	7	21	0	0	11	35	25	29	11	2	25	16	1	19	18	11	7	7	0	1	8	6	9	0	0	3	12	21	9	14	0	7	2	1	4	9
1988	18	9	0	5	2	7	8	6	18	27	34	17	43	0	20	16	22	2	1	0	1	2	11	13	0	12	1	0	2	43	18	0	0	6	0	10	12	14	0	11	2	18
1989	9	23	0	5	1	0	0	5	12	4	0	6	17	1	8	13	18	2	3	2	4	13	0	1	8	3	5	6	21	21	20	8	8	1	21	9	0	13	6	13	9	1
1990	0	0	0	9	7	10	37	11	6	30	9	31	0	3	8	8	16	0	7	45	8	20	57	6	22	15	0	5	0	27	4	0	16	19	14	2	0	11	5	5	5	13
1991	18	16	15	29	9	27	1	2	6	42	3	1	10	40	3	25	12	10	1	9	5	4	16	27	7	1	7	15	1	3	16	4	14	3	4	0	1	2	8	10	10	8
1992	0	0	16	1	3	0	29	7	23	9	0	58	6	11	20	4	9	23	31	1	6	7	1	4	0	7	30	16	16	12	23	6	21	10	14	6	10	0	1	3	0	0
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1994	16	6	4	15	13	7	0	0	1	8	0	6	10	24	15	2	7	20	27	23	34	17	0	25	19	7	2	0	6	13	8	1	12	2	0	0	3	25	0	8	0	15
1995	6	5	30	9	14	1	6	0	0	33	2	0	1	3	4	0	12	6	18	6	0	1	0	54	4	3	2	11	2	5	13	4	6	7	8	5	2	4	1	2	3	1
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1997	0	1	31	42	20	6	6	0	0	0	9	40	13	4	6	26	15	4	15	9	18	9	1	11	26	11	16	7	4	0	3	18	17	0	13	6	14	1	2	2	6	21
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2002	0	2	35	15	31	30	22	1	3	44	30	2	1	0	1	0	0	3	9	0	4	18	1	4	3	3	9	1	14	12	2	5	21	22	12	8	3	0	0	1	0	9
2003	0	22	20	16	14	1	3	1	5	0	15	4	3	0	42	5	12	21	1	0	1	12	1	16	26	1	0	1	10	12	6	1	0	14	26	11	9	2	20	3	34	29
2004	0	31	12	12	15	12	24	7	24	8	4	9	6	0	8	13	7	21	4	0	24	13	12	5	4	12	0	15	15	2	2	5	10	27	13	3	6	1	3	3	17	1
2005	24	19	17	3	22	6	0	1	3	33	48	16	9	53	10	0	21	3	0	3	5	0	0	5	0	1	0	1	37	2	12	4	8	2	4	18	9	7	1	5	12	17
2006	3	1	2	3	19	17	2	8	0	0	8	17	1	0	39	14	25	6	19	12	0	0	0	10	19	7	0	16	35	39	10	1	15	18	20	0	12	12	4	2	0	7
2007	0	0	10	13	15	15	6	15	9	4	5	12	5	16	10	5	0	4	16	24	6	16	7	7	3	0	18	2	2	11	13	14	7	1	13	13	22	22	0	0	2	11
2008	0	1	15	7	8	26	1	12	12	2	8	7	55	51	15	15	10	15	6	14	0	0	0	2	32	3	5	9	4	29	0	18	20	15	41	5	19	14	21	5	3	0
2009	22	6	74	10	2	0	7	67	6	8	17	3	3	3	25	28	21	11	16	1	5	7	2	8	11	15	10	22	3	3	11	2	10	23	13	5	3	4	11	10	7	11
2010	0	5	22	8	0	4	0	0	1	1	49	15	32	41	0	22	14	6	4	0	18	26	8	0	0	12	1	10	8	7	11	20	21	5	15	8	7	2	1	18	9	16
2011	1	0	11	18	24	1	3	0	6	5	9	2	0	49	3	45	9	7	12	29	24	14	3	1	20	14	0	18	2	9	0	0	0	8	4	16	8	19	8	35	1	5
2012	42	8	7	26	24	11	0	17	19	20	2	7	4	39	1	12	24	54	11	2	7	12	22	27	9	5	22	19	1	15	5	3	8	0	4	32	27	4	17	8	12	15
Average	7	8	11	9	11	11	9	13	11	14	14	12	12	14	10	12	12	15	9	11	11	9	9	10	9	9	8	10	8	13	10	8	9	11	11	10	9	9	8	9	7	10
By quartile																																										
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	2	1	3	3	2	1	3	4	3	3	2	2	3	3	2	4	3	2	1	1	0	3	1	2	1	2	2	3	2	2	4	2	4	3	2	2	1	2	2	3
Median	4	6	7	6	8	7	6	7	7	8	10	8	8	9	7	9	10	12	7	8	7	8	4	6	7	7	4	7	4	10	10	5	8	8	9	7	7	7	4	6	6	8
Upper	10	12	15	12	15	17	14	19	18	26	20	16	13	19	15	16	17	19	12	18	18	13	11	13	13	12	10	15	11	17	16	14	14	16	15	14	14	12	11	13	10	16
Max. value	42	38	74	42	40	37	37	67	61	67	53	60	76	53	42	45	42	94	46	45	49	34	57	54	35	36	47	32	38	64	27	27	26	50	41	32	40	27	28	35	34	29

Figure A2-7. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Uppsala county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A3 SÖDERMANLAND♣

A3.1 Crop production and yield

Table A3-1. *Annual production (metric ton) in 2010-2014 for the major crops in Södermanland county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	164 900	169 600	176 800	165 100	220 500	179 380
Winter wheat	103 400	113 300	133 700	41 000	186 400	115 560
Spring barley	34 300	49 000	54 200	83 100	63 100	56 740
Oats	21 900	40 000	40 000	47 000	32 100	36 200
Spring wheat	16 400	16 900	17 600	39 800	21 000	22 340
Triticale	9 600	6 900	11 300	4 100	18 000	9 980
Spring rape	5 100	8 700	7 600	10 000	2 200	6 720
Winter rape	4 700	5 000	7 500	2 200	6 400	5 160

* Data from Jordbruksverket (2015)

Table A3-2. *Average cereal yield and spring rape in Södermanland county in the period 1965-2014, standard deviation of the differences from the calculated trend and coefficient of variation, based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Winter wheat	4 776	382	8
Spring barley	3 716	290	8
Oats	3 479	313	9
Spring wheat	3 801	266	7
Spring rape	1 538	270	18

* Coefficient of variation = Standard deviation / Average

Table A3-3. *Coefficient of variation of farm-level yield for the major crops in Södermanland county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Temporary grasses		56	63	66	59	61	78	46	60
Winter wheat	23	26	23	23	24	30	27	24	25
Spring barley	24	27	24	23	24	41	26	32	28
Oats	34	33	26	30	30	45	33	36	33
Spring wheat	31	33	36	32	37	33	32	32	33
Spring rape	32	23	24	31	37	42	22	29	30
Average	29	33	33	34	35	42	36	33	

* Based on farm-level yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

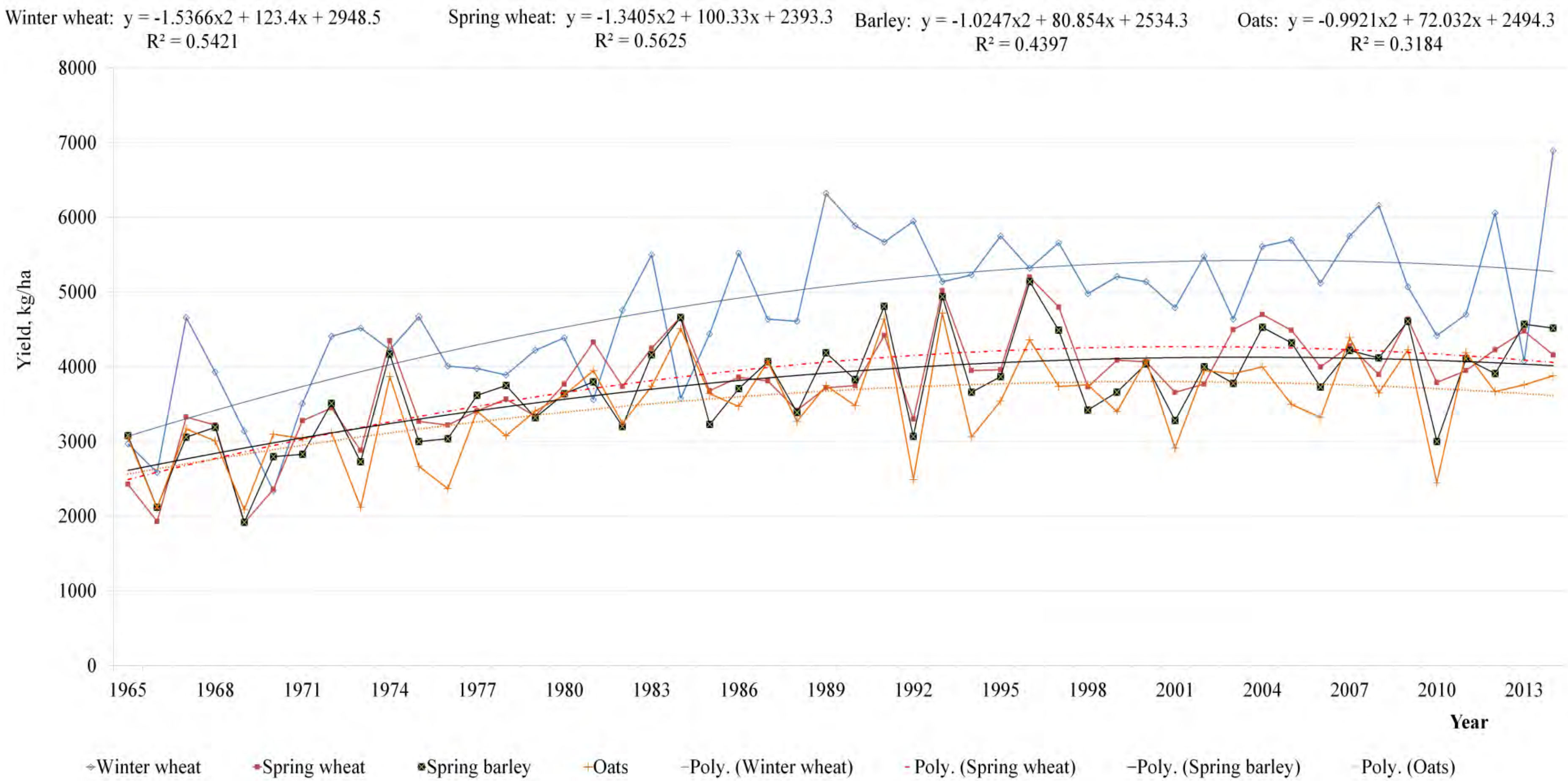

Figure A3-1. Average yield (kg/ha) per year of winter wheat, spring wheat, barley and oats in Södermanland county for the period 1965-2014, and their trend lines with respective equations. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

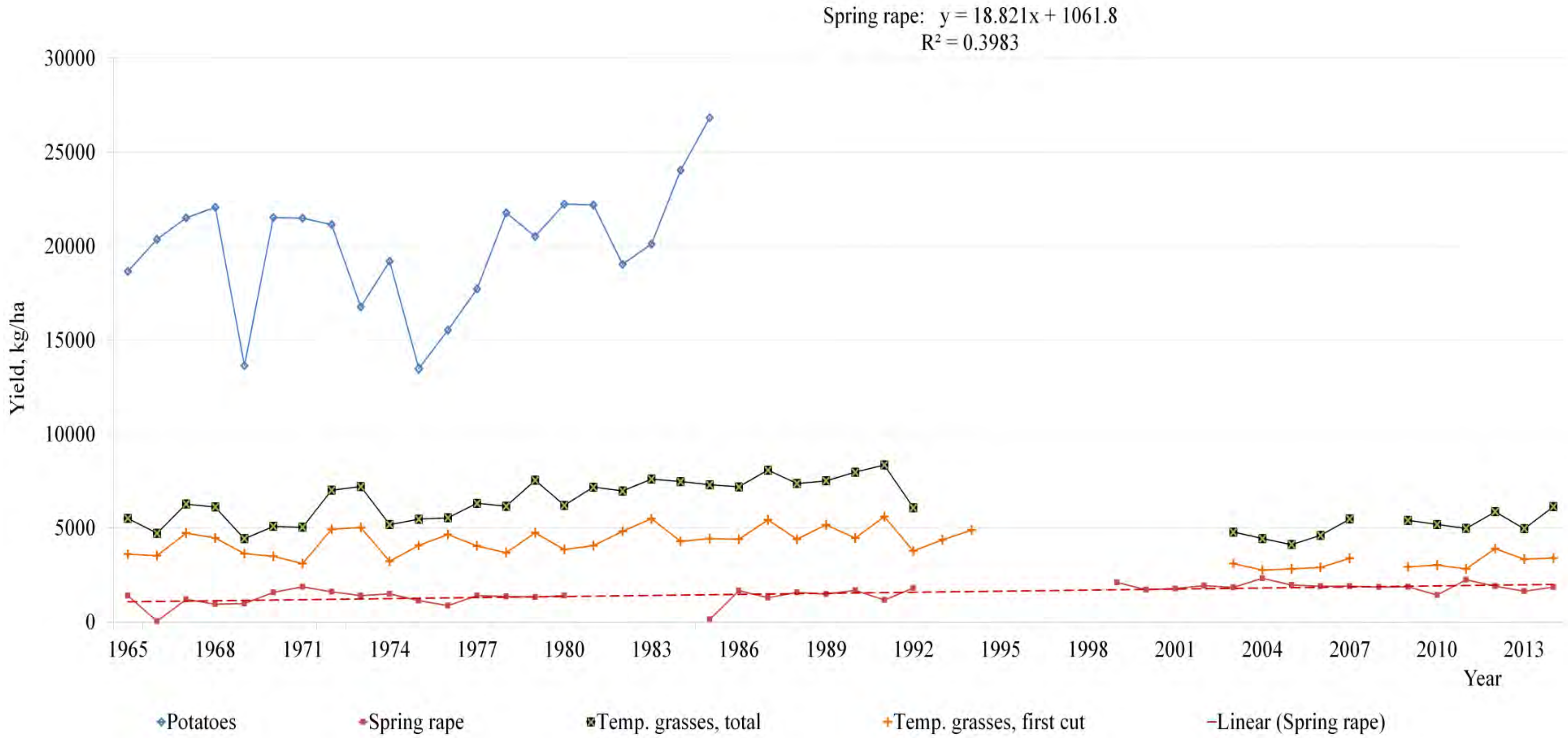

Figure A3-2. Average yield (kg/ha) per year of potatoes, spring rape, temporary grasses (total and first cut) in Södermanland county for the period 1965-2014, and the trend line with its respective equation for spring rape. The variable x in the equation is defined as x=year -1964, i.e. x takes the values x=1, 2, ...,50 Data from Jordbruksverket (2015).

A3.2 Precipitation, temperature and cereal yield

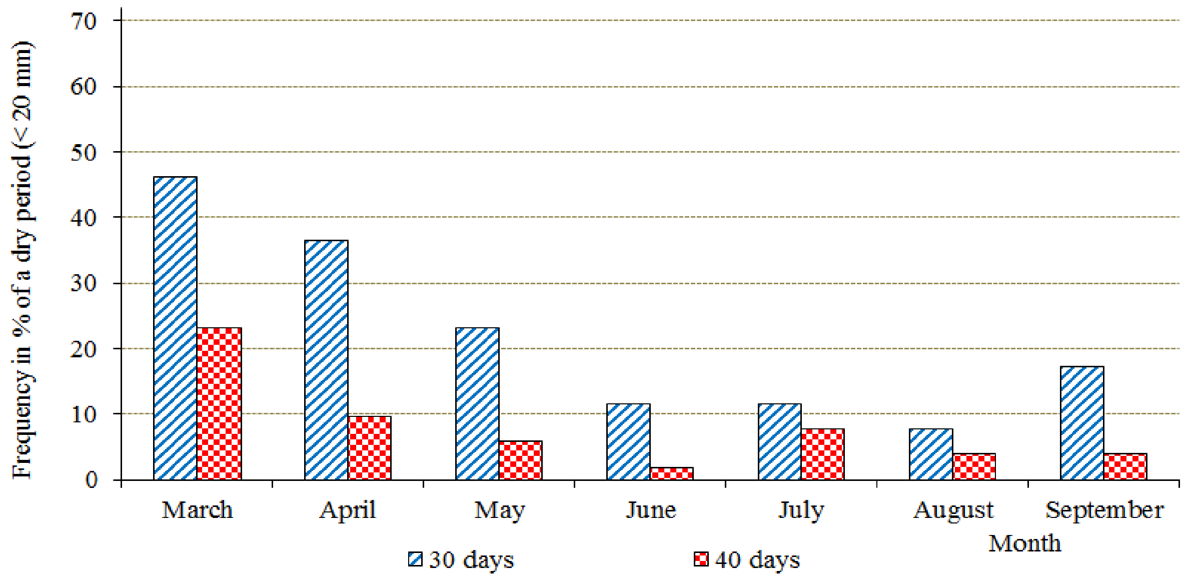

Figure A3-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Södermanland county*.

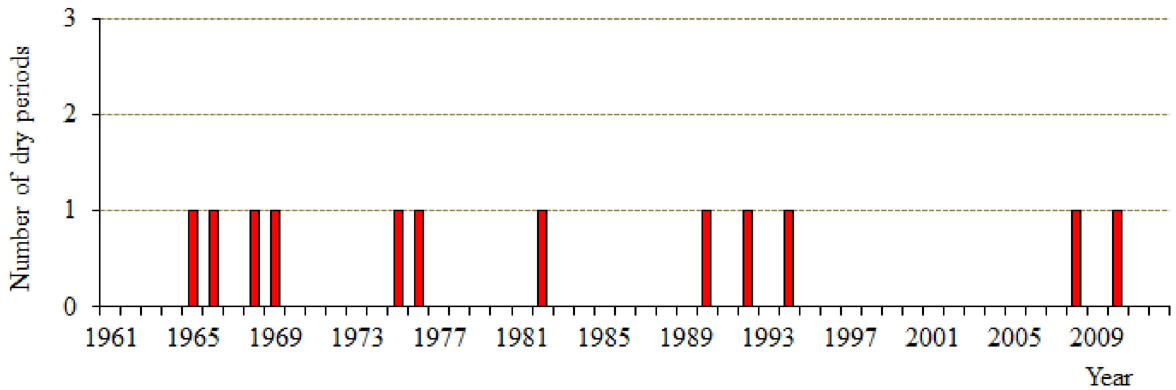

Figure A3-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 May to 31 July in Södermanland county*.

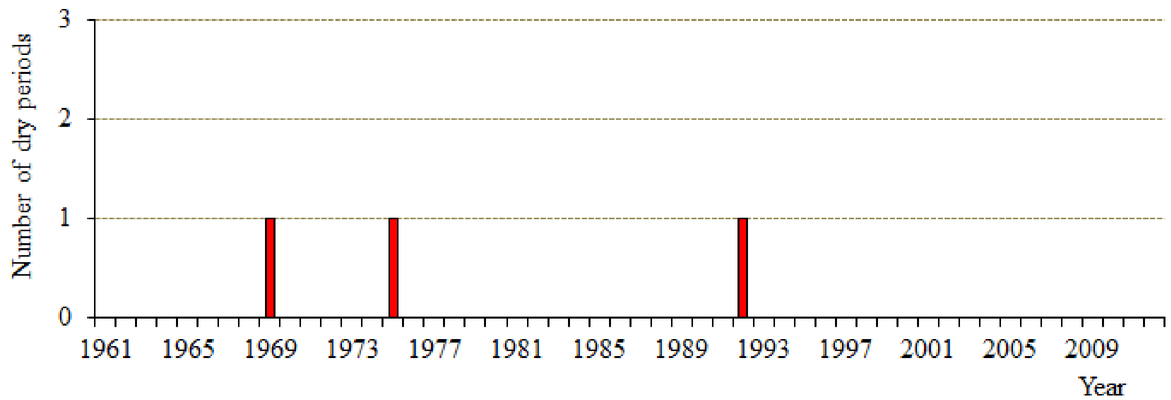

Figure A3-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 May to 31 July in Södermanland county*.

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* The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

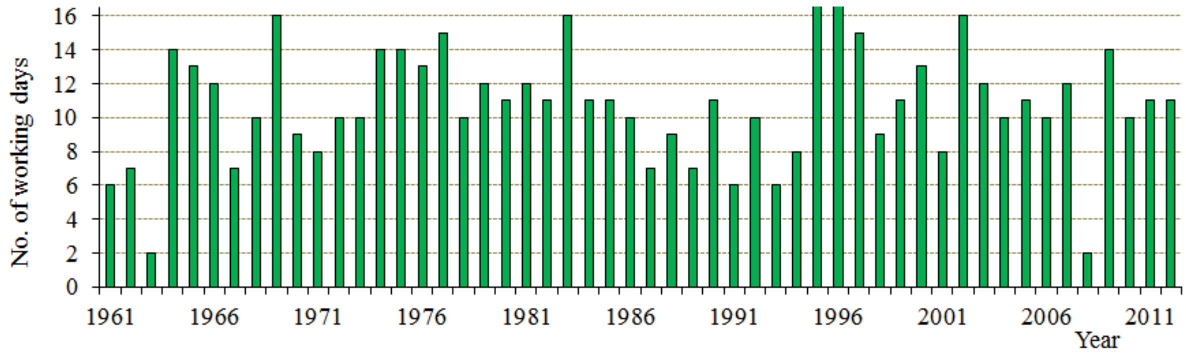

Figure A3-6. Estimated number of working days available for harvesting during the period 3-19 August in Södermanland county (for definition of a working day, see Section 2.1)*.

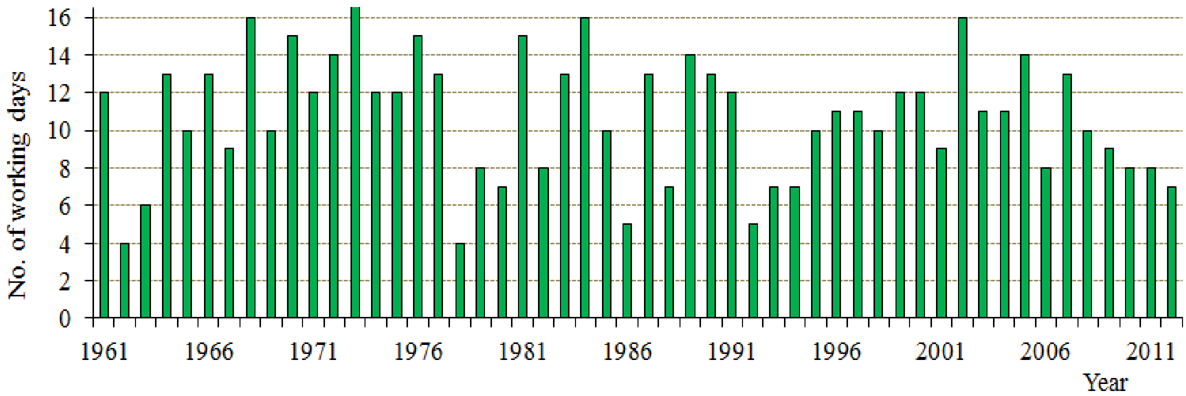

Figure A3-7. Estimated number of working days available for harvesting during the period 20 August-5 September in Södermanland county (for definition of a working day, see Section 2.1)*.

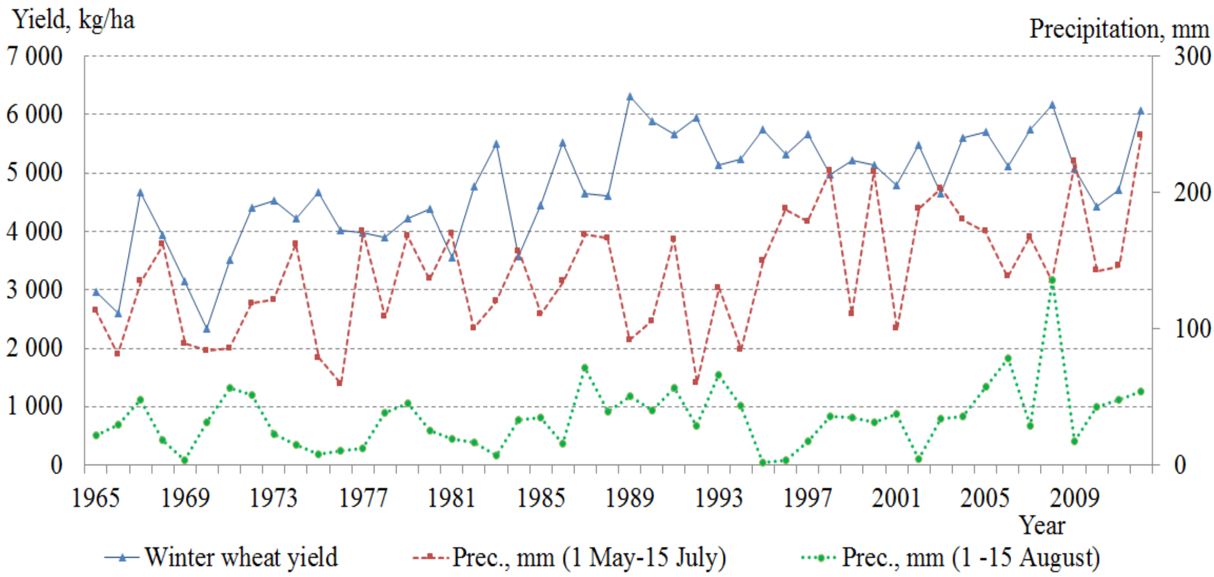

Figure A3-8. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 1-15 August in Södermanland county, 1965-2012*.

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* Precipitation data from Luftwebb (2014) and yields from Jordbruksverket (2015).

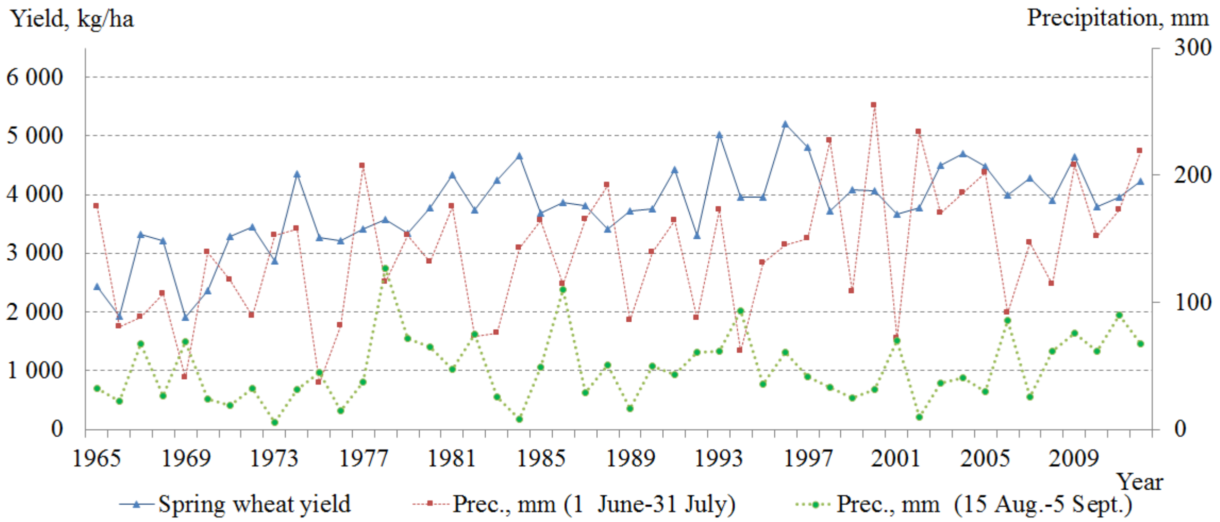

Figure A3-9. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Södermanland county, 1965-2012*.

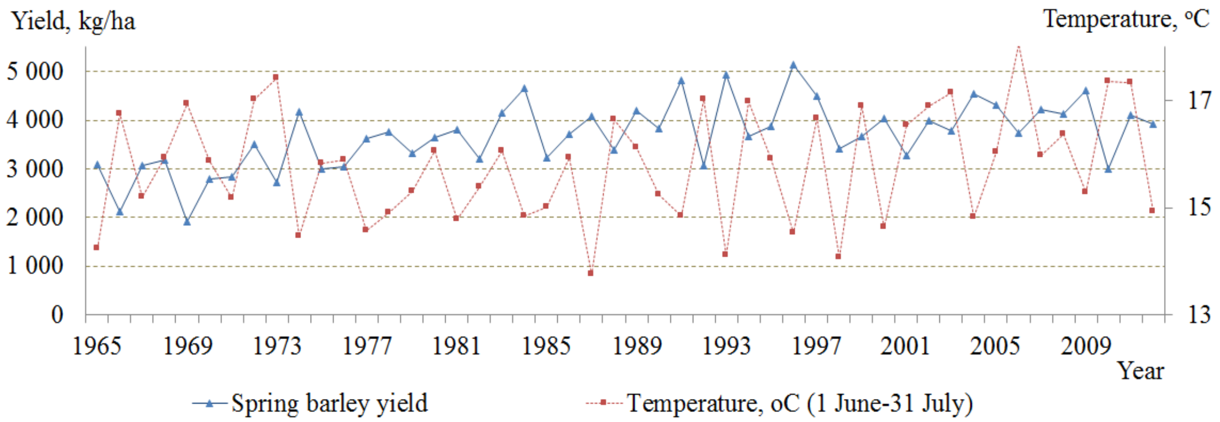

Figure A3-10. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Södermanland county, 1965-2012*.

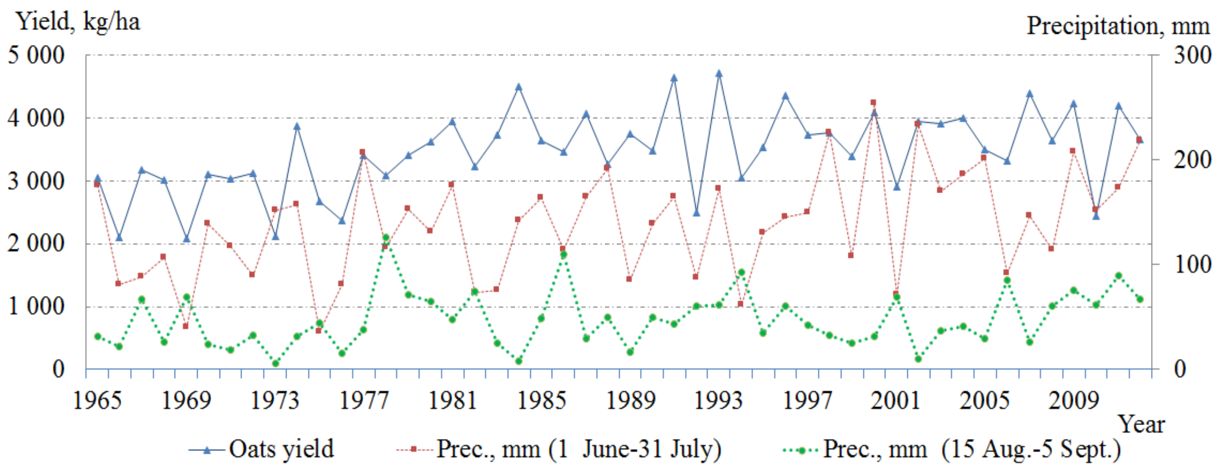

Figure A3-11. Annual oat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Södermanland county, 1991-2011*.

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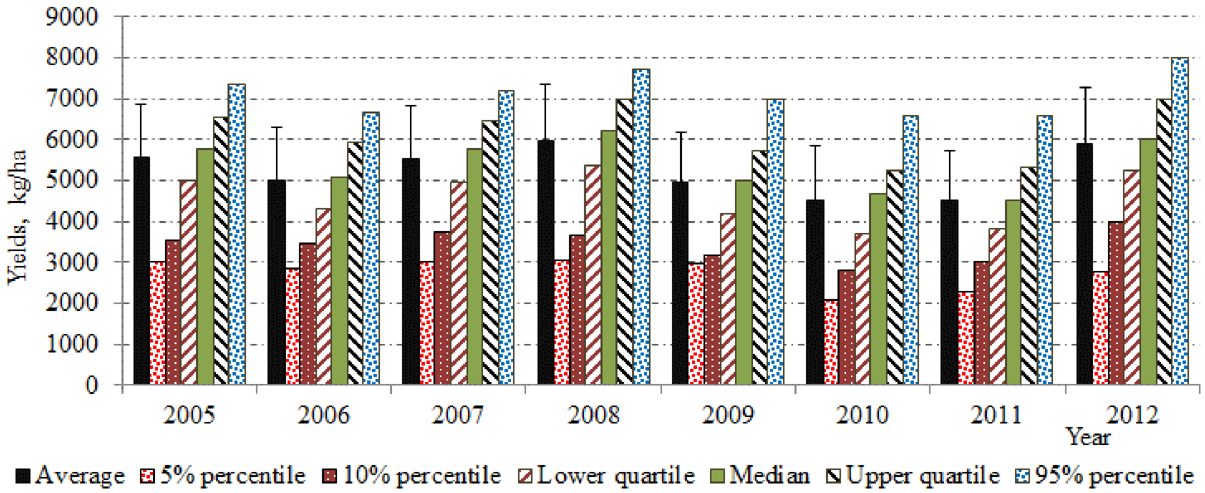
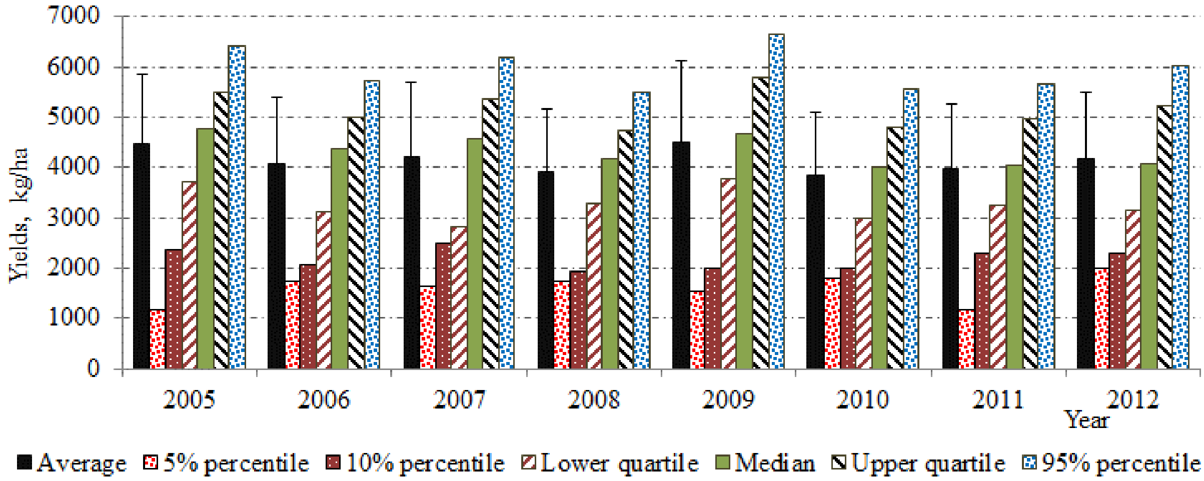
* Precipitation and temperature data from Luftwebb (2014) and yields from Jordbruksverket (2015).

A3.3 Yield on farms



N	159	154	160	147	157	159	159	157

Figure A3-12. Average and estimated percentiles of winter wheat farm-level yield in Södermanland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	58	53	43	48	49	78	77	61

Figure A3-13. Average and estimated percentiles of spring wheat farm-level yield in Södermanland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

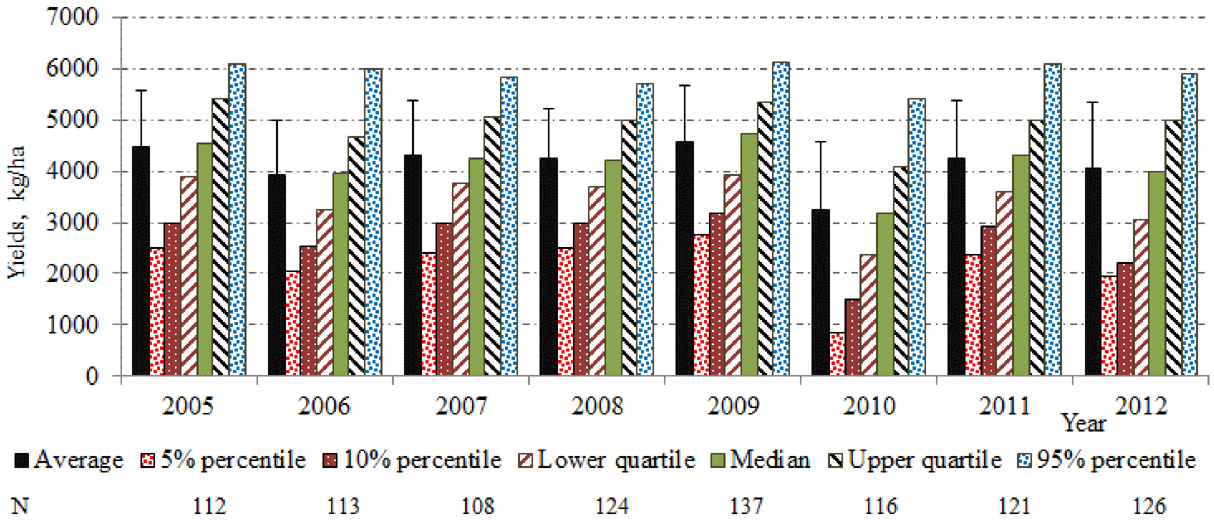


Figure A3-14. Average and estimated percentiles of spring barley farm-level yield in Södermanland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

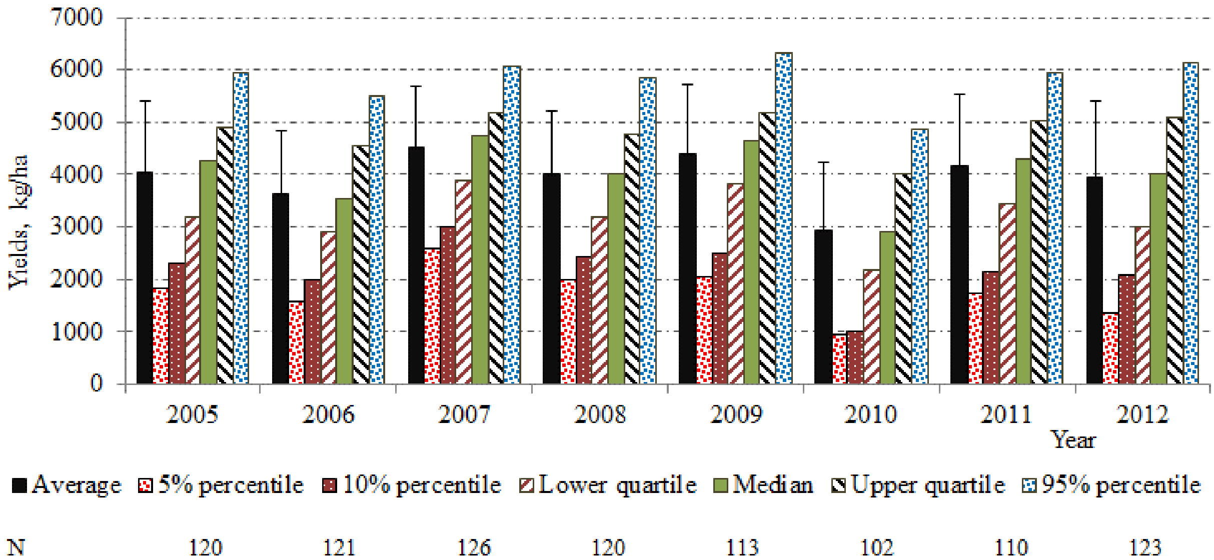
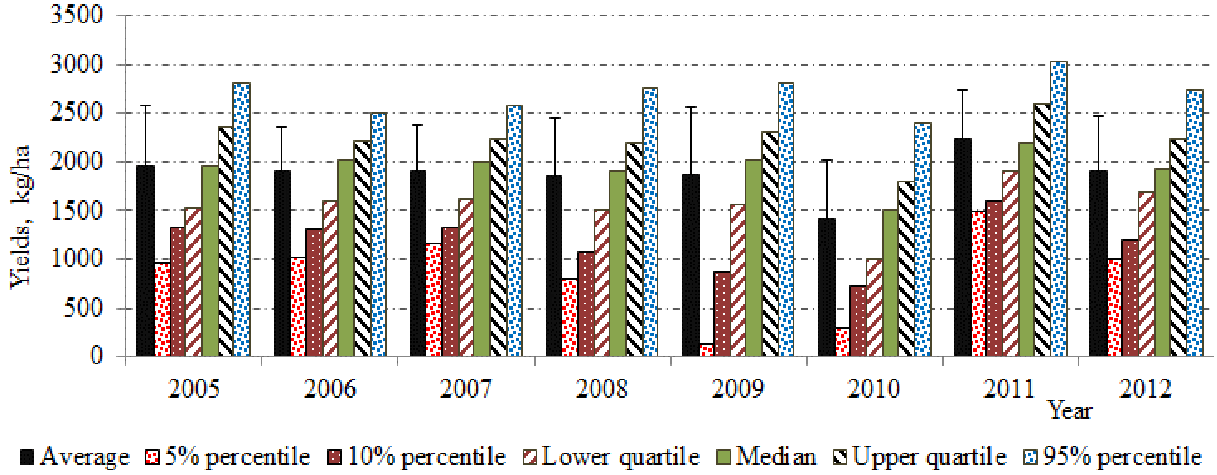
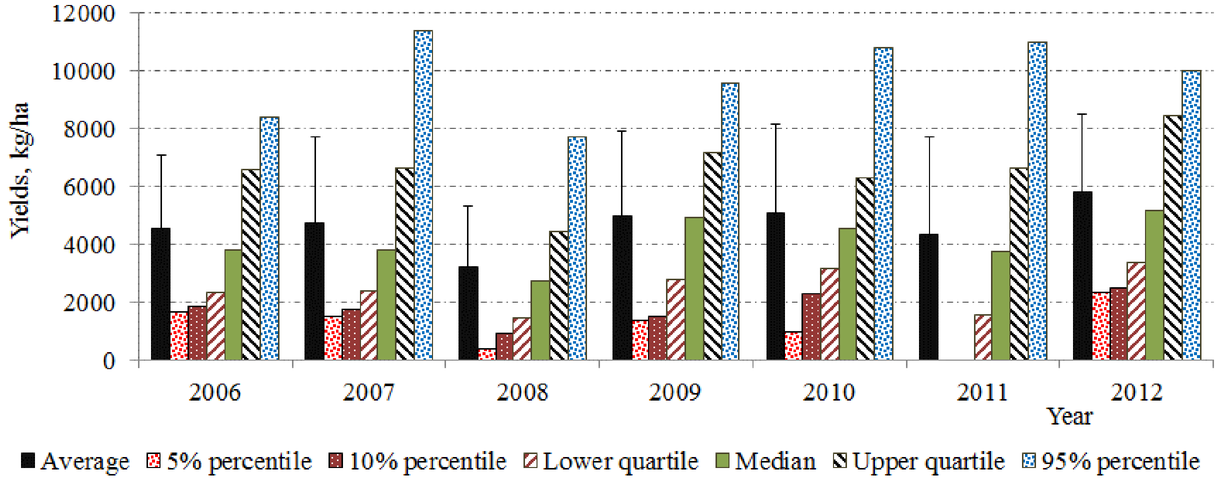


Figure A3-15. Average and estimated percentiles of oat farm-level yield in Södermanland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N 85 74 83 63 78 80 77 86

Figure A3-16. Average and estimated percentiles of spring rape farm-level yield in Södermanland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N 26 32 13 28 26 34 26

Figure A3-17. Average and estimated percentiles of temporary grasses farm-level yield in Södermanland county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A3.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

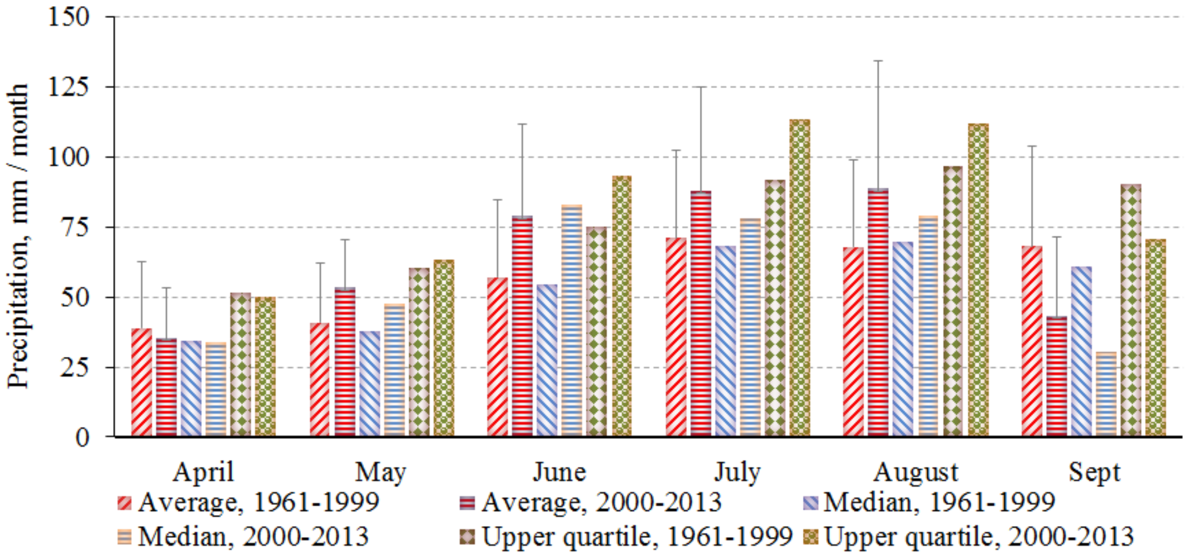


Figure A3-18. Monthly average, median and upper quartile precipitation (mm) from April to September in Södermanland county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1521951-6542351 (close to Katrineholm).

County: **Södermanland** **Mean temperature (°C) for 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Katrineholm (Vär** Place coordinates (RT90): 1521951-6542351 1543739-6544641 Koo 1526397-6533969 1549075-6539305

Scale for color intensity: -30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	0	-2	-2	-5	-9	-1	-3	-1	2	4	0	4	4	7	5	3	3	2	0	3	7	7	8	8	8	8	8	10	12	12	18	18	16	14	14	16
1962	-3	0	0	1	-1	-9	-2	1	-3	-1	-4	-5	-6	-7	-9	-5	-4	-1	3	2	4	6	8	5	4	7	8	10	10	9	9	15	13	16	14	13
1963	-9	-14	-12	-10	-7	-6	-8	-9	-5	-15	-7	-4	-3	-2	-6	-5	-3	-3	0	3	4	4	4	8	7	10	12	10	13	17	14	17	14	15	14	15
1964	1	-3	-4	-4	2	-2	-1	-1	-9	-9	-3	-1	-2	0	-3	-4	-2	-1	1	2	6	10	7	8	8	10	11	10	15	14	10	14	17	14	14	16
1965	-2	-8	2	2	-1	-4	-3	-1	-2	-4	-6	-13	-10	-5	0	2	0	3	4	1	3	5	7	7	6	8	9	7	8	11	13	14	15	16	16	14
1966	-13	-4	-7	-14	-8	-3	-14	-16	-17	-13	-1	1	1	2	-7	1	0	0	3	0	-5	-3	3	8	11	6	10	14	11	10	13	15	18	21	17	17
1967	-1	-9	-6	0	-8	-10	-2	-1	-4	-1	1	0	2	5	4	2	3	4	2	4	6	5	3	8	3	7	12	9	11	13	15	11	13	17	14	15
1968	-13	-17	-13	-3	0	-3	0	-1	-4	-12	-11	-2	-3	-1	-3	0	5	8	3	1	6	9	11	10	8	8	9	4	7	12	17	14	18	20	16	15
1969	-8	-5	-4	0	-5	0	-4	-2	-17	-8	-5	-7	-8	-3	-8	-6	-6	-1	2	6	3	1	5	7	5	10	10	8	10	13	9	15	18	19	18	18
1970	-12	-13	-5	-12	-5	-6	-8	-8	-15	-18	-10	-11	-3	-1	-2	1	-1	-2	-2	0	1	4	5	5	6	9	12	11	10	12	14	18	14	20	17	18
1971	-7	-1	-1	0	3	-3	-1	-2	2	0	-2	-9	-10	-3	-2	1	0	0	2	3	4	7	3	2	8	13	13	14	6	14	17	13	13	11	14	15
1972	-4	-7	-8	-6	0	-6	-3	-1	0	0	-2	-2	-1	-2	-1	1	3	2	1	4	6	5	4	4	12	8	7	8	11	10	13	16	15	15	13	20
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1974	0	0	0	0	0	2	2	-2	3	-1	1	1	0	-1	-2	1	1	3	5	8	2	6	6	6	7	7	8	13	11	10	12	12	15	16	16	14
1975	2	-2	3	3	2	1	1	-1	-6	-1	1	0	2	3	0	-3	0	0	-1	2	2	4	7	9	8	13	12	15	10	9	8	15	15	15	17	13
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1977	0	-4	-1	-3	-5	-4	-4	-4	-8	-6	-5	-9	-2	1	3	3	1	-2	1	-3	2	3	6	7	10	10	10	10	12	9	12	12	20	17	15	14
1978	-3	2	-2	0	-2	-3	-2	-7	-10	-11	-6	1	1	1	1	-9	-5	4	2	5	3	3	5	2	6	6	4	9	15	18	19	16	12	14	15	14
1979	-13	-5	-3	-6	-8	-12	-8	-9	-13	-10	-4	1	2	2	-2	-7	0	2	2	2	4	3	5	6	4	5	11	14	12	15	17	16	15	16	19	14
1980	-5	-3	-2	-1	-4	-12	-13	-12	-3	-3	-6	-5	-4	0	-2	-7	-7	-1	2	4	7	5	5	7	7	8	9	12	7	11	17	19	16	16	13	14
1981	-6	-6	-3	-9	-1	1	2	-1	-3	-4	-4	-4	-4	0	-6	-4	3	1	4	7	8	4	0	3	3	10	13	14	16	13	15	14	11	12	13	14
1982	-11	-15	-5	-7	-6	-6	-8	-3	0	-5	-6	-2	1	-2	1	2	3	4	5	3	2	6	7	6	6	8	10	10	10	16	20	11	9	13	12	13
1983	2	4	3	-4	3	2	-5	-6	-5	-3	-3	-3	-1	0	1	3	0	1	1	3	2	7	7	7	7	10	10	13	13	11	12	14	15	17	15	14
1984	1	-4	1	-5	-10	-4	1	-3	0	-7	-2	-1	0	0	-2	-4	-5	0	1	4	6	6	9	8	11	6	9	14	14	14	17	13	12	17	13	12
1985	-10	-14	-9	-7	-6	-9	-10	-17	-13	-18	-9	-2	-4	-2	1	-2	1	-1	2	-1	1	5	3	2	3	8	11	11	9	17	15	10	11	15	18	15
1986	-7	-11	-1	-11	0	-3	-7	-11	-6	-11	-12	-7	-3	2	0	0	2	3	2	0	-1	2	4	8	12	12	11	12	12	12	13	12	16	18	15	19
1987	-12	-20	-17	-9	-5	-10	-1	-4	0	-6	5	-7	-14	-8	-6	-2	-1	3	2	1	3	5	6	10	10	8	6	9	12	8	10	13	11	10	14	14
1988	3	-1	1	1	1	-1	2	1	2	-3	-4	-3	-4	-2	-5	-4	0	2	4	3	2	6	1	6	10	10	12	11	10	16	11	15	14	17	19	21
1989	3	2	4	5	4	4	6	5	3	1	1	3	2	3	4	4	4	5	-1	4	10	4	6	9	11	9	9	14	16	12	10	12	14	17	19	17
1990	-2	2	3	3	2	2	4	5	2	3	8	2	2	3	3	10	7	5	6	3	6	7	10	10	17	15	11	9	10	10	15	13	15	13	16	17
1991	2	2	-3	-1	1	-1	-5	-4	-6	-5	4	-2	0	1	3	3	3	4	8	6	9	0	4	5	5	8	10	8	9	12	9	11	12	12	14	13
1992	4	1	3	-2	-2	2	-1	1	2	-4	2	3	4	5	1	4	3	0	2	3	4	2	3	8	10	9	11	16	16	17	18	18	16	16	15	19
1993	-4	2	2	4	1	-7	4	1	0	-1	-6	-1	-3	0	2	6	4	0	2	1	2	5	10	13	11	12	14	14	16	11	12	15	11	12	12	15
1994	-3	0	1	-6	1	-4	-7	-4	-11	-9	-6	-8	-5	4	2	-1	1	2	4	4	5	4	9	11	7	11	11	9	11	9	13	12	15	11	14	18
1995	-5	-3	-2	1	-1	-8	2	-2	1	2	2	0	2	1	1	2	4	0	3	1	5	3	8	3	10	7	4	7	8	17	16	14	13	14	16	17
1996	-13	-1	1	-2	-4	-7	-7	-13	-7	-9	-8	1	-1	-1	-2	-1	-2	0	1	5	2	9	9	6	6	5	11	5	11	10	13	16	15	14	13	15
1997	-10	-7	-1	0	-2	1	-1	3	-3	-5	4	2	6	4	3	-3	-3	5	5	2	2	3	3	6	8	7	11	10	8	9	14	17	18	13	14	16
1998	3	-1	4	1	-3	-6	-5	2	2	4	5	4	-2	-5	-3	2	0	5	-2	1	2	3	7	11	9	12	11	13	7	11	11	14	14	12	12	15
1999	1	-5	-7	3	3	-10	1	-10	-1	-2	-2	0	1	0	-2	1	2	6	7	9	5	4	8	10	6	6	5	13	13	14	15	14	16	18	14	17
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2001	0	1	-3	-4	0	-1	-14	-1	2	1	-6	-12	-6	2	3	-4	-3	0	6	6	1	3	6	8	10	12	12	10	11	11	12	12	13	14	16	19
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2005	2	6	3	2	-3	-3	1	-2	-1	-2	-5	-8	-10	-2	-6	-3	2	3	7	5	7	5	4	8	9	8	11	9	12	13	11	12	13	17	18	14
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2008	-1	1	3	4	1	2	1	3	0	2	5	4	1	5	3	0	-4	3	6	3	4	6	9	12	11	14	11	7	11	16	17	19	12	14	14	15
2009	-9	-2	2	-2	0	-1	-3	-1	-5	-6	-2	-1	0	0	0	2	-1	2	6	7	8	6	8	12	10	10	9	10	13	14	11	9	12	13	17	20
2010	-10	-15	-9	-2	-6	-11	-4	-6	-7	-8	-12	1	-6	-4	-2	2	0	3	3	5	6	5	4	10	7	7	11	15	14	11	15	13	13	14	16	19
2011	-6	-1	-5	0	-3	-4	2	-1	-11	-11	-10	-2	-2	0	1	-1	5	0	6	8	7	10	12	10	4	11	13	12	13	13	17	19	15	14	15	19
2012	1	-4	0	-1	-3	-4	-12	-8	-3	-3	3	1	0	1	5	4	8	6	1	1	5	4	6	10	9	9	11	11	17	13	8	12	14	14	14	15
Average	-4	-4	-2	-2	-3	-4	-3	-3	-4	-4	-3	-2	-2	0	-1	0	1	2	3	3	4	5	6	7	8	9	10	11	11	12	14	14	14	15	15	16
By quartile																																				
Min. value	-14	-20	-17	-14	-10	-12	-14	-17	-17	-18	-12	-13	-14	-9	-9	-9	-7	-3	-2	-3	-5	-3	0	1	3	5	4	4	6	8	8	9	9	10	12	12
Lower	-8	-6	-4	-5	-6	-6	-6	-6	-6	-8	-6	-5	-4	-2	-2	-3	-1	0	1	2	2	4	4	6	6	8	9	9	10	10	12	12	13	13	14	14
Median	-4	-2	-1	-1	-2	-3	-2	-2	-3	-3	-3	-1	-1	0	0	1	1	2	2	3	4	5	6	8	8	9	11	11	12	12	13	14	14	14	15	15
Upper	1	1	2	1	1	-1	1	-1	0	-1	0	1	1	2	2	2	3	4	4	4	6	6	8	10	10	11	11	13	13	14	17	16	15	17	16	17
Max. value	4	6	4	5	4	4	6	5	3	4	8	4	6	7	7	10	8	8	8	9	10	10	12	13	17	15	14	16	17	18	20	20	20	21	20	21
Range	18	26	22	19	14	16	20	22	19	21	21	17	19	17	16	19	16	11	10	12	15	14	11	11	15	10	10	12	11	10	12	11	11	11	8	9

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	17	14	16	17	15	15	15	15	14	13	13	16	14	11	13	14	10	11	12	12	12	10	10	8	5	5	3	1	2	0	-1	-3	-7	-1	-7	-6
1962	13	14	12	16	16	14	14	13	14	13	13	12	12	12	9	9	9	9	12	10	5	7	7	5	5	5	2	-1	-3	-1	0	1	-2	-9	-6	-9
1963	20	16	14	16	18	16	19	17	15	14	14	14	15	13	12	11	11	9	8	7	6	8	8	6	4	5	4	1	-3	2	0	-2	-4	-7	-6	3
1964	13	13	16	19	16	16	13	16	14	15	13	14	12	12	9	10	10	10	7	9	8	7	7	1	3	2	4	2	2	0	-1	3	2	-2	-2	-8
1965	12	12	14	15	17	14	13	14	12	16	16	13	13	13	10	12	13	12	9	8	7	6	5	9	5	1	-5	-6	-9	-2	-2	-3	-11	-6	-4	-7
1966	17	17	15	17	20	15	15	15	15	16	13	13	14	12	13	10	9	5	9	6	5	9	7	-1	2	5	1	1	0	2	3	1	-2	-2	-5	-3
1967	15	18	15	18	16	17	19	15	16	15	15	15	14	12	11	12	10	10	12	9	10	4	8	8	7	5	3	2	3	1	4	-8	-4	-9	-6	-10
1968	19	14	12	14	14	18	17	19	15	14	17	16	18	18	9	8	8	8	8	2	7	3	5	5	0	-1	-2	-3	3	3	-1	-4	-4	-1	0	-4
1969	16	15	16	18	20	20	19	19	18	17	14	15	13	15	16	9	9	9	6	10	7	10	6	5	1	3	5	3	-5	-8	-9	-9	-2	-6	-8	-3
1970	14	18	14	14	14	16	17	16	15	15	15	15	13	11	12	14	7	6	9	11	7	9	3	1	-1	-4	-1	2	4	-1	-1	3	1	2	-5	-7
1971	19	20	15	13	15	18	18	16	14	15	14	13	13	11	7	9	12	8	8	10	5	7	6	5	7	-2	1	-4	-3	3	1	-1	-1	4	4	-1
1972	18	18	18	21	20	18	16	18	16	15	13	13	11	14	9	10	9	5	8	10	7	4	2	7	6	6	3	-2	1	4	5	5	4	4	0	0
1973	21	21	18	18	16	18	17	15	17	17	11	14	14	13	9	9	8	7	10	7	1	-1	1	4	3	4	-2	-3	-2	-10	-6	-8	-2	-5	0	3
1974	15	14	14	16	15	14	14	14	14	16	15	15	15	14	12	12	10	9	7	6	3	4	5	4	3	2	6	5	1	2	1	2	0	0	6	-3
1975	17	18	17	18	18	19	21	25	19	16	16	16	16	12	13	14	12	10	11	6	5	5	6	9	7	3	5	2	-3	2	2	1	1	-4	2	4
1976	17	15	17	20	18	15	13	16	17	17	16	15	10	11	12	8	7	5	6	9	6	4	6	3	2	6	4	0	-3	3	1	1	-2	-5	-7	-10
1977	15	16	13	12	14	15	17	15	14	13	11	15	15	10	7	8	8	8	6	8	7	7	10	9	7	7	6	-2	1	-3	-3	-1	1	1	0	-2
1978	15	14	14	12	15	19	19	15	14	16	15	10	11	11	10	10	7	7	6	10	9	7	3	5	8	9	6	7	3	-3	-4	-6	-4	-8	-7	-14
1979	13	15	16	14	14	15	14	14	15	17	14	13	14	14	10	11	9	9	3	5	10	7	2	0	2	2	1	3	4	3	6	-3	-10	-8	-1	1
1980	15	16	16	15	18	20	19	14	16	15	13	12	14	14	12	11	12	10	8	9	6	6	1	0	-3	-1	-2	2	4	-7	-5	-5	2	-1	1	2
1981	15	18	17	15	17	17	16	17	18	13	12	11	13	14	10	7	12	13	11	9	6	3	3	4	2	0	0	2	2	-2	0	-7	-12	-13	-5	-6
1982	13	17	19	20	19	18	22	21	16	14	13	14	11	11	12	14	11	11	10	9	7	4	8	7	5	3	6	3	5	3	1	0	-2	-1	2	1
1983	14	21	20	15	17	18	17	20	16	16	17	17	16	11	13	13	9	9	9	5	9	9	5	7	6	7	-1	1	-2	-3	0	-3	-5	-2	0	2
1984	13	17	17	16	15	16	18	17	15	15	17	14	11	11	10	10	11	8	12	10	7	9	7	8	8	5	2	0	3	3	4	4	-1	-1	1	-2
1985	15	17	18	15	14	17	15	14	16	16	15	14	13	11	11	10	7	6	14	10	7	7	5	3	2	4	-1	-1	-2	-3	-1	-12	-4	-8	3	-8
1986	19	15	14	17	16	18	18	16	13	13	11	10	11	9	8	9	7	6	9	7	8	6	3	7	2	5	5	4	5	8	6	2	0	-2	-6	-6
1987	15	17	14	16	18	13	13	11	12	14	15	12	12	12	12	8	9	7	6	10	10	9	7	5	4	0	3	4	2	-1	-3	-3	-2	-5	-1	2
1988	19	17	17	17	17	15	14	17	16	15	14	14	14	13	12	12	11	11	9	9	7	6	2	1	1	-1	3	-2	-2	-6	-8	-2	-4	-3	-1	2
1989	18	20	15	13	19	18	14	17	16	17	15	11	13	13	10	13	14	10	7	7	5	7	11	8	6	6	6	1	-5	-3	1	-4	-12	-2	2	0
1990	15	15	15	15	16	18	20	14	17	16	15	16	13	12	10	10	7	8	9	8	9	8	1	6	1	4	4	2	-1	-2	2	2	-1	-1	-2	2
1991	18	22	17	16	17	19	20	18	15	15	16	15	16	10	11	11	11	9	9	9	9	6	3	6	6	3	3	-1	5	5	1	0	3	1	-1	0
1992	14	18	17	17	20	17	17	18	15	15	14	15	12	11	11	10	12	9	7	7	3	3	3	-1	4	2	2	2	-1	2	5	1	2	2	-5	-2
1993	16	14	15	17	16	14	15	15	13	13	12	11	10	9	8	7	10	6	9	11	6	4	2	3	2	3	2	0	-2	-2	2	1	-4	2	-1	-2
1994	18	19	23	18	20	23	22	18	17	15	14	13	13	12	13	11	11	8	4	8	9	0	6	6	4	3	-1	0	6	2	1	4	-1	0	1	2
1995	13	16	18	16	17	20	19	17	19	20	19	12	14	13	12	9	11	8	9	13	9	11	7	6	-2	0	0	-4	3	0	-3	-2	-2	-6	-12	-10
1996	13	13	16	13	17	16	16	16	19	19	19	17	13	9	8	9	6	9	9	11	8	8	5	5	9	3	0	5	1	-2	2	2	-5	-9	-10	-5
1997	19	18	16	17	20	17	19	20	19	20	20	21	18	14	12	10	10	9	7	9	4	6	0	1	0	5	5	1	1	-3	-3	1	1	-4	-2	0
1998	15	16	15	14	17	15	15	15	15	14	13	11	10	14	14	12	12	10	5	6	7	5	8	4	0	-3	0	-5	-2	0	-1	-5	-2	3	-2	2
1999	16	19	21	18	17	19	21	15	13	14	13	15	17	16	12	14	14	13	11	7	8	4	6	8	9	6	4	1	-1	6	-2	1	-4	-4	-1	-4
2000	17	14	15	16	16	15	16	15	17	16	13	14	11	13	9	8	7	11	12	12	10	10	10	6	7	7	5	5	6	6	6	6	6	0	-3	-3
2001	20	22	16	15	19	19	16	15	16	17	17	15	14	12	12	14	10	6	12	11	11	8	4	9	6	0	2	3	1	2	2	3	1	-2	-9	-10
2002	15	17	19	20	17	20	19	19	21	20	19	19	17	16	13	10	7	8	7	3	3	-1	3	3	-1	0	-2	1	1	1	0	-5	-3	-3	-10	-7
2003	15	18	19	22	20	20	19	18	18	17	16	11	12	15	14	14	12	8	9	6	5	1	-1	3	7	3	2	4	1	5	5	1	0	2	-3	-1
2004	15	15	14	16	17	17	19	22	18	18	14	14	15	13	14	11	11	10	8	7	3	7	8	5	5	3	5	-4	-4	-1	2	4	2	0	-1	-1
2005	17	21	21	17	15	16	16	15	17	17	17	15	15	15	11	10	13	12	10	11	10	3	5	7	9	8	8	-2	2	-2	0	1	3	-5	0	-2
2006	20	21	17	18	21	21	19	20	18	18	17	16	16	13	15	13	15	15	12	11	9	9	10	5	-1	4	3	6	5	8	7	6	6	0	3	2
2007	17	15	15	17	16	16	17	19	19	16	19	11	11	13	11	10	12	10	10	7	6	6	4	6	5	1	-1	1	1	0	3	4	-2	-3	0	4
2008	18	14	17	16	19	21	17	15	17	15	15	13	14	12	9	9	10	9	7	8	10	7	9	4	1	5	6	1	-3	4	2	2	0	3	-1	-3
2009	20	15	16	18	17	16	18	20	15	16	16	15	15	15	12	11	13	10	5	6	3	4	6	4	3	5	3	7	6	4	0	3	-1	-8	-5	-8
2010	20	20	23	20	17	17	17	18	20	17	16	12	10	12	13	11	12	8	9	8	4	3	1	6	6	-1	2	-1	-2	-9	-10	-6	-8	-5	-15	-7
2011	19	20	16	17	19	19	19	16	15	15	16	16	15	14	14	12	11	14	13	8	5	6	6	8	9	5	2	3	5	6	3	0	2	1	1	3
2012	17	18	16	15	18	17	17	15	16	17	15	14	15	12	12	11	8	10	10	7	5	9	5	1	5	2	6	5	5	1	-9	-8	-8	-1	-3	0
Average	16	17	16	16	17	17	17	17	16	16	15	14	14	13	11	11	10	9	9	8	7	6	5	5	4	3	2	1	1	0	0	-1	-2	-3	-3	-3
By quartile																																				
Min. value	12	12	12	12	14	13	13	11	12	13	11	10	10	9	7	7	6	5	3	2	1	-1	-1	-1	-3	-4	-5	-6	-9	-10	-10	-12	-12	-13	-15	-14
Lower	15	15	15	15	16	15	15	15	15	15	13	13	12	11	10	9	8	8	7	7	5	4	3	3	2	1	0	-1	-2	-2	-1	-3	-4	-5	-6	-6
Median	16	17	16	16	17	17	17	16	16	16	15	14	14	12	12	10	10	9	9	9	7	6	5	5	4	3	3	1	1	0	0	0	-2	-2	-2	-2
Upper	18	18	17	18	18	19	19	18	17	17	16	15	15	14	12	12	12	10	10	10	9	8	7	7	6	5	5	3	3	3	2	2	1	0	0	1
Max. value	21	22	23	22	21	23	22	25	21	20	20	21	18	18	16	14	15	15	14	13	12	11	11	9	9	9	8	7	6	8	7	6	6	4	6	4
Range	10	10	11	10	7	10	10	14	9	7	9	11	8	9	9	8	9	10	12	11	11	12	12	10	12	12	13	13	15	18	16	18	19	18	21	18

Figure A3-19. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Södermanland county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Södermanland** **Total precipitation , mm / 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Katrineholm (Värml** Place coordinates (RT90): 1521951-6542351 1543739-6544641 1526397-6533969 1549075-6539305 **Scale for the color intensity:** 0 mm 100 mm

Month	January						February						March						April						May						June						July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	20	5	3	0	1	6	7	3	0	0	1	3	1	0	4	4	0	14	8	11	5	0	0	1	20	16	5	15	0	22	2	8	13	12	3	16	20	16	11	8	11	12	13	7	15	12	16	0	7	4	21	0	0	12	0	10	2	28	10	7	14	17	24	0	1	6	13	2	0	0	4	18
1962	6	5	11	8	31	4	12	6	14	8	0	0	6	8	0	2	0	12	14	13	2	7	4	2	0	12	2	11	12	9	2	2	8	11	5	9	22	6	8	15	11	2	13	41	2	24	12	29	40	16	28	1	0	0	8	0	0	1	0	15	0	0	9	4	10	2	0	0	9	2	5	7
1963	9	1	2	1	2	3	14	0	7	1	1	0	0	0	2	0	6	1	3	0	11	10	1	3	9	10	4	3	5	0	17	4	1	6	13	41	0	27	13	5	1	8	16	11	22	41	10	15	16	10	0	0	6	5	30	3	22	1	2	0	11	16	16	13	19	19	0	1	1	7	1	3
1964	1	0	0	0	1	4	9	4	10	6	0	1	0	0	0	0	0	0	0	1	3	1	0	12	11	9	21	0	0	3	18	7	3	6	22	1	6	18	3	1	25	6	7	2	0	17	11	5	0	1	13	42	0	3	0	17	37	22	7	0	1	0	9	7	14	10	9	7	16	2	2	6
1965	7	7	6	8	12	15	9	0	5	7	1	2	0	2	0	2	1	0	0	0	6	10	8	1	0	1	0	4	0	1	1	11	1	17	4	17	14	18	24	0	23	46	13	8	2	2	2	9	18	30	2	12	0	32	2	0	0	2	0	8	13	0	3	1	2	19	13	33	6	11	9	6
1966	13	1	6	1	2	23	18	8	4	7	11	12	1	7	9	0	6	17	11	0	0	4	23	0	9	5	0	0	5	9	13	1	0	0	3	7	2	12	14	1	12	14	12	11	7	0	0	0	22	1	15	1	2	2	10	9	8	17	4	0	19	16	2	9	1	14	6	25	15	14	12	29
1967	9	7	2	0	2	29	15	0	0	9	19	12	2	5	1	4	8	11	2	14	0	13	6	9	12	13	11	18	14	2	3	14	0	0	8	7	15	0	18	18	3	2	8	12	28	20	0	30	17	23	0	33	37	5	6	19	8	43	14	5	16	7	18	3	0	2	7	3	2	0	26	8
1968	2	0	12	13	10	6	8	8	2	2	1	0	2	2	1	7	4	0	17	1	0	0	10	1	17	26	3	26	2	4	1	6	0	5	9	11	0	40	9	13	11	0	0	1	18	21	0	5	0	4	3	6	8	8	7	0	13	11	2	60	23	6	0	1	11	10	0	0	0	12	11	14
1969	4	1	20	11	7	6	9	17	2	13	4	0	1	8	0	0	0	7	1	1	12	28	1	3	1	12	26	24	0	0	4	1	0	0	0	0	3	18	0	13	1	0	0	0	4	1	36	31	1	0	2	2	14	17	7	2	0	0	5	9	9	24	14	16	14	7	8	2	3	3	1	2
1970	10	0	13	1	0	9	3	5	1	0	1	0	16	18	0	8	1	9	28	17	0	5	19	5	2	0	0	2	6	5	1	0	29	0	6	2	17	8	7	3	51	16	17	6	8	12	0	0	12	9	18	11	1	5	20	9	0	10	3	13	16	9	9	33	20	18	5	9	2	3	0	2
1971	3	2	0	5	15	4	1	0	3	8	5	3	3	2	7	10	3	2	0	6	0	4	2	0	3	0	1	2	6	6	2	4	8	13	8	5	0	0	27	26	13	11	4	15	37	0	0	14	5	7	1	14	11	1	12	1	1	12	10	1	15	26	7	8	6	9	1	10	4	8	0	15
1972	1	1	0	10	1	14	7	10	4	7	2	1	2	5	0	0	2	20	23	8	10	4	3	5	0	0	0	32	12	18	3	1	5	7	7	8	5	19	1	2	0	31	32	2	18	15	17	0	0	16	45	15	5	2	2	1	10	6	7	7	11	5	5	6	10	4	4	9	7	1	0	0
1973	3	0	1	11	7	10	0	6	28	10	4	0	2	0	0	0	0	4	4	1	2	14	2	6	12	12	1	5	3	2	14	6	1	0	0	16	0	39	11	23	32	11	7	15	1	2	0	1	2	2	1	3	24	15	0	21	3	4	0	4	6	0	15	14	15	1	2	15	10	12	16	0
1974	2	1	25	5	2	10	11	22	8	1	0	0	0	0	0	22	22	0	0	0	1	0	3	0	0	0	0	0	5	20	6	6	2	23	16	10	23	21	30	4	9	8	1	3	11	1	0	16	14	14	0	2	13	10	38	20	5	15	19	30	6	19	15	48	10	14	5	3	17	19	3	17
1975	1	2	2	19	6	3	7	0	0	4	0	0	0	5	16	0	4	25	9	19	11	0	3	0	6	0	24	10	5	12	5	0	2	1	0	2	1	0	10	7	7	1	0	1	7	16	16	8	4	15	34	0	14	14	2	1	4	1	0	4	3	0	3	6	1	16	8	4	3	9	15	2
1976	13	7	4	13	0	0	0	3	3	0	3	1	1	8	3	1	2	8	7	6	1	1	1	17	15	1	2	0	0	7	0	5	11	5	4	0	0	2	7	7	6	34	8	3	0	2	0	11	1	14	28	0	3	0	7	9	3	0	1	10	10	17	6	0	2	13	52	24	14	14	20	16
1977	8	17	27	3	4	23	2	5	3	19	6	0	8	0	8	21	1	1	13	17	6	8	8	13	1	3	15	0	0	11	9	5	0	9	0	33	30	8	48	24	23	19	9	0	3	7	5	24	2	5	25	0	0	10	34	17	1	0	6	0	23	11	25	12	24	3	1	16	12	0	23	9
1978	6	1	1	1	5	17	10	3	11	0	9	1	11	11	20	16	7	23	0	2	6	0	3	0	0	0	7	5	0	0	0	21	18	0	2	36	5	12	2	11	9	0	27	5	6	2	15	57	52	25	14	1	12	15	1	0	0	9	4	1	0	1	4	12	3	15	2	1	10	1	6	7
1979	6	7	19	0	12	18	7	0	0	4	0	0	2	5	2	0	8	15	5	0	9	7	19	14	9	23	0	2	28	8	0	37	4	0	6	8	14	22	7	12	13	29	13	30	2	4	7	35	26	3	2	7	1	7	0	1	12	11	0	4	6	8	7	36	13	12	3	7	1	9	5	17
1980	1	2	0	0	9	2	0	12	5	0	0	0	2	5	1	0	0	12	0	0	0	17	10	13	0	2	0	7	13	10	8	0	8	9	45	18	6	7	3	25	3	0	6	19	0	13	28	20	4	12	27	8	5	5	5	18	39	3	36	22	0	1	14	27	3	14	7	9	15	16	12	6
1981	1	4	13	4	4	2	2	10	3	3	4	0	9	25	4	8	11	0	0	0	1	1	3	10	15	0	0	0	6	10	6	14	26	19	25	29	12	0	8	22	8	7	0	19	0	35	7	6	0	0	0	10	6	6	8	26	3	26	1	34	39	0	6	23	20	22	2	22	3	6	20	10
1982	11	0	0	0	12	19	0	17	2	0	0	0	11	3	15	15	0	0	3	20	5	2	0	14	12	7	0	4	13	0	0	1	2	4	2	31	20	4	0	4	0	6	3	3	10	23	18	15	18	7	1	2	2	4	0	13	12	20	7	3	4	2	5	5	20	20	2	15	20	5	2	2
1983	12	1	4	16	3	10	14	0	0	0	0	0	0	17	13	4	20	5	20	4	0	1	12	12	0	1	14	19	0	12	22	5	2	1	2	18	11	0	12	1	0	1	2	0	5	0	0	0	25	38	41	41	31	0	9	18	7	9	3	1	3	1	11	2	0	1	4	6	0	17	16	6
1984	9	24	9	12	4	17	10	24	0	1	4	1	3	1	0	0	0	9	5	0	1	4	0	0	7	1	3	2	11	11	8	3	9	6	49	29	9	0	8	9	7	6	11	16	6	1	0	2	5	17	16	10	41	8	20	10	13	17	34	6	0	11	0	7	16	1	0	13	1	23	5	6
1985	1	1	0	12	23	11	9	9	1	4	4	1	8	18	0	0	4	12	11	9	3	18	11	29	8	6	0	0	3	0	5	12	25	7	0	17	8	7	12	22	17	32	24	6	5	1	8	1	39	9	5	3	1	2	0	28	6	0	0	0	14	19	4	2	1	21	36	15	2	8	13	7
1986	14	6	10	3	2	7	3	0	1	2	8	0	5	0	1	0	23	17	2	1	7	29	22	6	0	7	28	6	11	0	6	24	0	2	0	9	10	19	12	1	29	2	9	5	2	27	37	40	6	7	21	1	0	2	1	3	1	6	3	17	14	6	5	8	13	0	17	0	12	27	6	12
1987	7	5	0	2	2	0	0	15	6	1	0	0	0	0	0	15	0	11	0	0	3	5	2	0	4	11	13	34	0	3	12	4	17	30	12	2	2	22	3	0	8	52	24	23	25	6	5	17	0	27	28	6	4	3	0	1	22	8	5	1	0	1	19	20	9	13	0	3	3	7	11	23
1988	12	8	14	2	14	23	12	19	3	5	14	22	7	8	0	0	3	6	5	6	3	12	6	0	7	2	0	4	1	9	28	31	0	2	15	6	28	10	24	27	10	11	10	2	27	6	24	6	14	0	2	2	9	14	0	19	1	0	0	27	4	5	0	14	0	9	8	4	0	15	12	14
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1990	0	3	10	4	17	19	5	23	4	4	12	25	4	5	9	0	6	0	6	5	1	5	0	4	0	1	2	3	6	2	0	0	5	19	15	11	20	18	4	22	14	11	0	10	29	16	3	0	30	24	4	23	40	12	19	17	0	1	0	22	3	0	13	14	15	7	0	13	1	4	8	7
1991	13	23	2	2	0	1	0	4	10	1	8	2	5	0	8	8	8	3	5	1	0	3	0	3	14	0	7	14	4	0	20	29	15	17	9	22	4	3	6	36	3	0	10	39	8	21	12	11	0	1	1	2	16	33	4	0	6	10	0	3	12	8	11	1	2	0	0	1	2	13	5	6
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1994	11	6	15	4	7	14	3	10	0	0	4	0	7	3	9	4	10	9	14	1	17	0	7	7	0	0	1	1	7	24	20	3	1	9	16	1	0	0	2	5	0	5	8	11	25	19	17	15	42	33	36	31	0	22	21	2	0	0	5	15	6	4	15	2	0	0	6	24	3	10	0	18
1995	2	18	6	6	17	13	1	11	22	7	5	1	4	4	3	20	1	9	1	15	1	44	3	23	0	5	31	18	10	0	4	18	17	18	11	4	11	0	3	43	3	0	1	1	0	0	7	1	27	3	18	1	1	70	6	2	1	4	2	8	4	2	19	15	3	3	1	4	3	0	3	1
1996	0	7	2	1	2	0	2	0	7	8	0	5	0	1	1	0	0	28	0	0	0	0	6	1	23	7	4	1	12	10	0	1	4	16	19	13	39	37	3	12	1	0	3	0	0	0	21	40	0	3	65	0	0	15	2	1	5	8	0	24	23	15	22	28	3	14	14	5	6	6	2	7
1997	0	0	4	0	5	0	0	11	5	14	16	0	0	1	0	0	2	9	1	9	1	5	10	12	19	48	6	0	5	11	0	4	12	17	32	11	13	0	0	2	2	56	17	0	0	1	14	7	20	11	17	3	1	13	21	18	8	7	2	0	8	20	20	1	11	12	33	2	9	0	12	20
1998	18	3	3	10	11	6	17	2	12	11	3	8	12	10	2	6	2	5	8	0	4	12	4	15	25	3	3	2	4	5	24	21	14	22	1	16	14	42	18	12	17	25	3	15	18	7	11	16	0	10	23	3	5	5	0	2	14	22	7	14	8	4	5	1	4	1	21	8	10	0	13	17
1999	17	16	5	1	21	4	4	1	1	9	5	11	18	9	1	7	14	7	2	14	19	36	3	3	1	18	0	0	5	1	7	18	10	1	24	9	4	0	10	18	6	0	2	30	3	8	2	15	0	0	3	1	61	43	10	7	0	0	3	8	0	5	1	9	3	3	20	16	30	9	15	17
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2002	1	0	0	9	22	25	10	11	10	2	8	16	4	10	1	16	2	0	1	0	0	0	2	27	28	0	2	1	3	10	0	1	39	20	28	24	27	3	3	21	67	1	4	0	0	3	0	6	1	0	1	16	1	0	4	1	14	0	28	6	1	3	29	7	11	8	4	0	0	1	0	12
2003	1	1	1	4	7	2	20	0	0	0	0	0	0	2	1	0	0	6	9	15	1	0	0	44	22	10	4	1	23	2	1	25	8	17	36	7	30	1	16	12	15	3	6	1	28	5	6	25	1	1	0	8	1	6	23	11	0	1	0	14	7	2	2	8	31	12	2	0	14	7	25	30
2004	0	4	12	9	0	17	6	17	1	3	9	1	0	0	13	15	1	0	1	3	0	2	11	0	7	2	4	2	7	4	1	20	16	9	29	9	23	23	25	24	8	0	26	0	10	12	8	15	6	0	20	16	9	2	11	6	3	18	17	2	3	3	6	12	26	10	10	0	1	1	24	0
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2006	1	1	0	13	5	0	0	25	1	5	6	2	9	2	2	0	0	16	11	5	5	15	1	10	7	0	1	16	31	23	1	0	1	2	26	20	0	9	1	3	1	27	27	0	51	9	45	23	8	7	0	0	0	6	11	8	1	16	42	40	7	2	19	18	27	0	11	8	6	1	0	6
2007	7	18	19	27	3	6	4	3	6	3	6	13	5	13	0	12	7	0	0	8	0	11	2	0	0	5	9	1	8	16	2	6	7	30	15	24	7	18	20	3	5	10	4	12	13	8	1	4	13	13	3	8	10	14	1	0	11	0	1	11	10	24	4	1	10	13	32	27	0	0	2	9
2008	15	14	5	9	9	8	10	3	0	0	7	12	8	8	6	8	6	1	0	22	9	0	0	2	1	0	14	22	0	0	0	0	4	11	19	12	2	40	9	12	1	3	70	47	18	38	6	10	8	32	0	0	0	2	26	2	9	4	3	28	0	13	20	8	10	5	21	9	16	5	2	0
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2010	1	3	0	10	0	25	17	2	3	23	5	11	10	0	0	2	10	7	7	6	4	2	25	6	0	7	38	7	32	9	0	16	22	5	0	1	0	0	5	13	37	52	25	16	1	18	20	23	0	2	8	21	2	0	0	19	1	8	18	7	8	17	22	5	18	6	10	3	2	15	2	6
2011	11	15	15	2	3	0	2	30	2	0	1	0	0	4	0	13	0	7	7	11	0	0	0	5	8	0	7	8	7	13	0	1	22	33	32	1	3	2	11	25	36	9	0	46	1	44	7	15	24	13	11	18	8	0	4	14	1	14	0	14	0	0	0	4	5	4	3	19	7	26	3	2
2012	29	1	12	6	2	1	1	1	13	7	12	2	0	1	0	1	0	5	6	22	13	14	7	2	0	17	5	1	5	10	26	22	16	42	39	9	1	35	15	8	0	6	11	43	1	9	22	35	1	3	11	10	31	24	12	15	31	22	0	2	6	6	1	1	4	47	21	6	14	5	17	12
Average	7	6	7	6	7	9	6	8	5	5	5	4	5	5	4	6	4	7	6	6	4	7	6	8	7	7	7	7	7	8	7	10	10	10	13	13	10	14	12	13	13	13	11	13	11	11	11	15	12	10	13	8	8	9	8	9	8	9	8	12	9	8	10	11	10	10	9	8	7	8	9	10
By quartile																																																																								
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	1	1	2	2	1	1	1	0	1	0	0	0	0	0	0	1	1	1	0	1	1	0	0	0	0	1	2	2	1	1	1	2	2	5	2	2	4	4	3	1	3	1	2	2	2	5	1	2	1	1	1	2	1	1	1	1	1	2	3	2	4	2	3	3	2	2	2	1	2	5
Median	6	3	4	4	5	6	5	5	3	3	4	1	3	3	2	3	2	7	5	5	3	4	3	4	6	3	3	3	5	8	4	6	6	8	9	10	8	10	9	12	8	8	9	7	7	7	7	14	7	7	8	3	3	5	6	8	4	7	3	8	8	6	9	8	10	9	6	6	5	6	6	7
Upper	11	7	12	10	11	15	10	11	7	7	8	4	7	8	8	8	7	11	8	11	7	11	8	12	12	10	8	10	11	11	11	17	16	17	20	18	15	20	15	22	17	20	15	16	18	17	17	24	20	14	21	11	10	13	11	17	12	14	10	15	14	14	16	14	15	14	12	13	12	12	15	16
Max. value	29	24	27	27	31	29	20	30	28	25	19	25	18	25	20	22	23	28	28	22	20	44	25	44	28	48	38	34	32	24	28	37	39	42	49	41	39	59	66	43	67	56	70	47	51	44	45	57	52	41	65	42	61	70	38	32	39	43	44	60	39	30	30	48	32	47	52	33	30	27	26	38

Figure A3-20. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Södermanland county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A4 ÖSTERGÖTLAND COUNTY♣

A4.1 Crop production and yield

Table A4-1. *Annual production (metric ton) in 2010-2014 for the major crops in Östergötland county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	356 900	298 100	347 300	289 400	342 700	326 880
Winter wheat	265 600	292 500	338 400	201 200	391 800	297 900
Spring barley	57 100	73 300	85 700	128 700	77 700	84 500
Potatoes	58 200	68 300	60 100	60 100	64 300	62 200
Oats	16 600	30 900	35 100	50 100	32 600	33 060
Spring wheat	18 500	16 100	16 300	56 200	16 000	24 620
Triticale	22 000	13 500	22 600	19 100	34 700	22 380
Winter rape	13 900	13 600	26 500	15 400	30 800	20 040
Rye	12 600	16 400	18 900	16 800	21 800	17 300
Field beans	6 500	13 800	15 200	13 600	10 700	11 960
Peas	8 500	9 400	6 500	8 500	9 600	8 500
Linseed	9 400	12 200	7 000	6 200	6 100	8 180

* Data from Jordbruksverket (2015)

Table A4-2. *Average yield of main cereals, potatoes and winter rape in Östergötland county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Winter wheat	5 478	327	6
Spring barley	4 154	341	8
Potatoes	30 495	4 327	9
Oats	3 715	388	10
Spring wheat	4 187	326	8
Winter rape	2 599	207	8

* Coefficient of variation = Standard deviation / Average

♣ For literature references in this Appendix see the *References* section of the main text.

Table A4-3. *Coefficient of variation of farm-level yield for some important crops in Östergötland county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Winter wheat	22	21	20	19	19	25	26	23	22
Spring barley	28	26	20	29	21	32	26	36	27
Oats	29	35	27	31	30	50	33	35	34
Spring wheat	36	27	29	31	22	32	33	41	31
Winter rape	22	27	20	30	33	36	30	27	28
Spring rape	26	27	26	31	39	41	24	28	30
Rye	29	26	22	22	16	29	24	24	24
Average	27	27	23	28	26	35	28	30	

* Based on yield data from SCB (2014a)

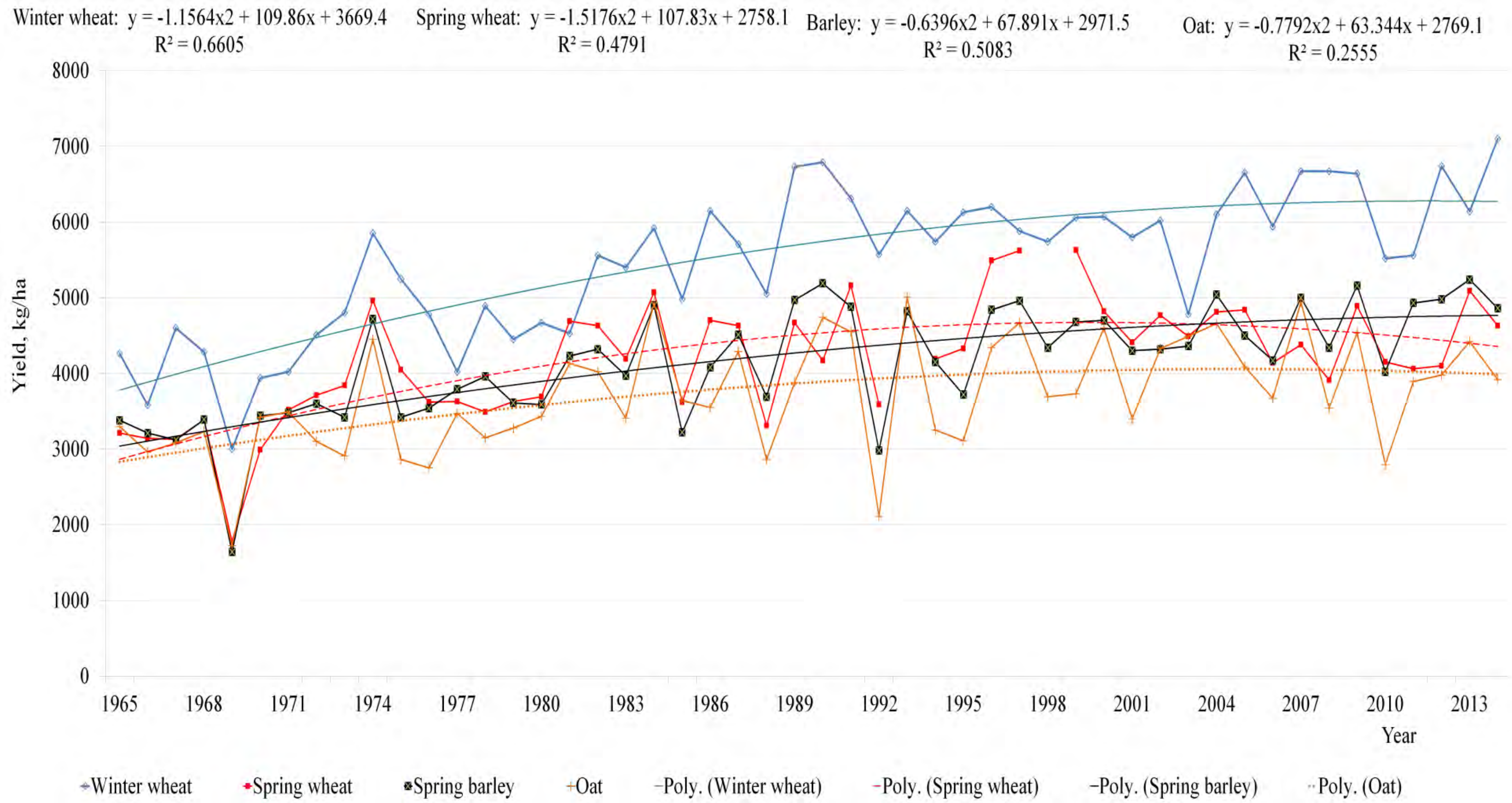

Figure A4-1. Average yield (kg/ha) per year of winter wheat, spring wheat, barley and oats in Östergötland county for the period 1965-2014, and their trend lines with respective equations. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

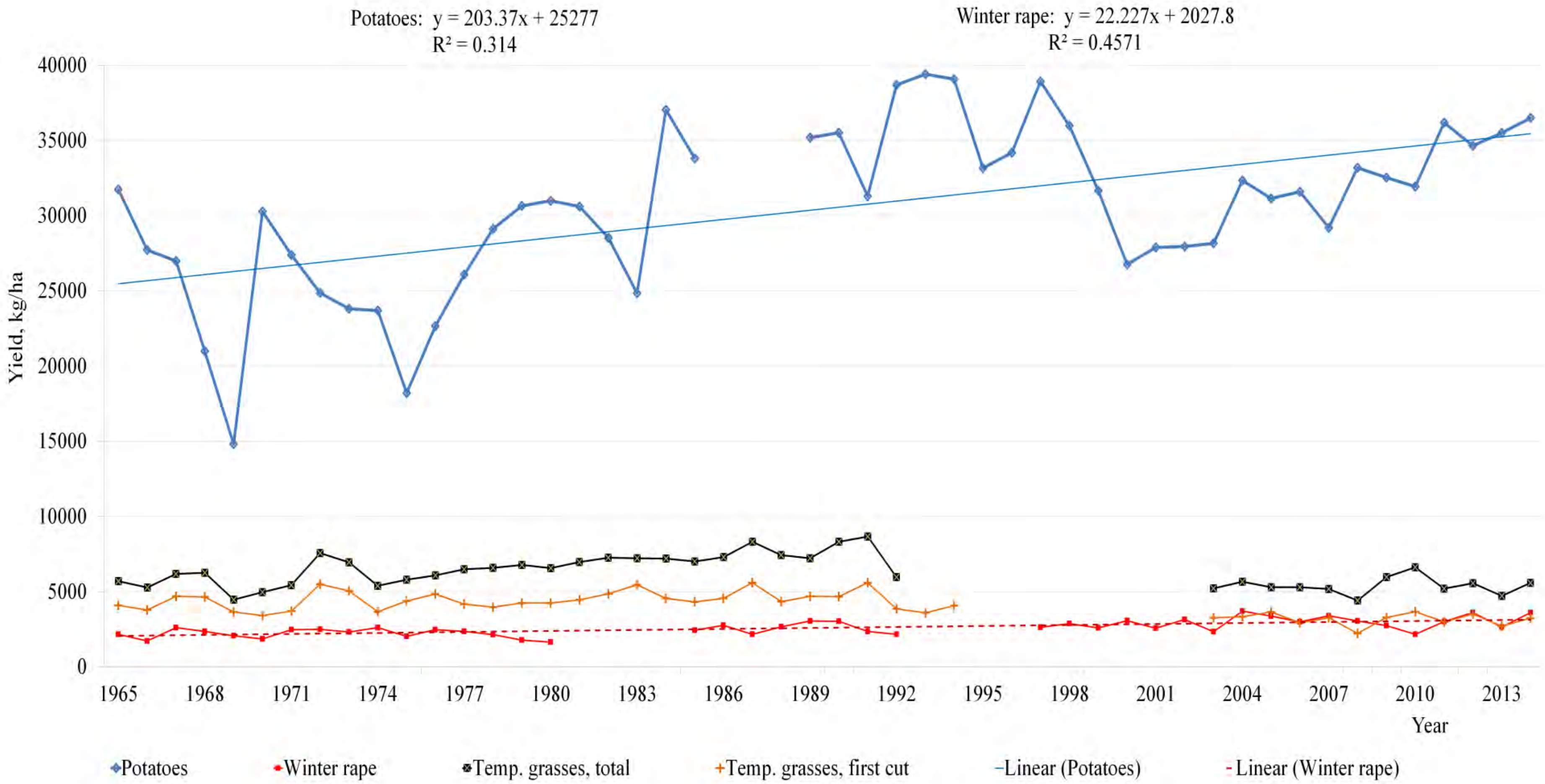

Figure A4-2. Average yield (kg/ha) per year of potatoes, winter rape and temporary grasses (total and first cut) in Östergötland county for the period 1965-2014, and the trend lines with their respective equations for potatoes and winter rape. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ...,50. Data from Jordbruksverket (2015).

A4.2 Precipitation, temperature and cereal yield

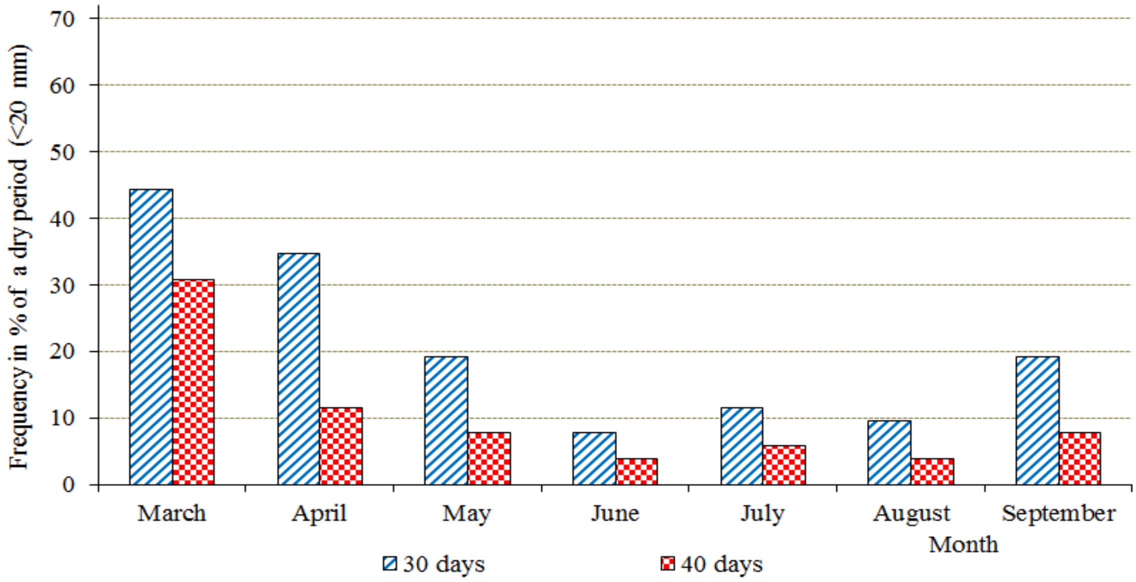

Figure A4-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Östergötland county*.

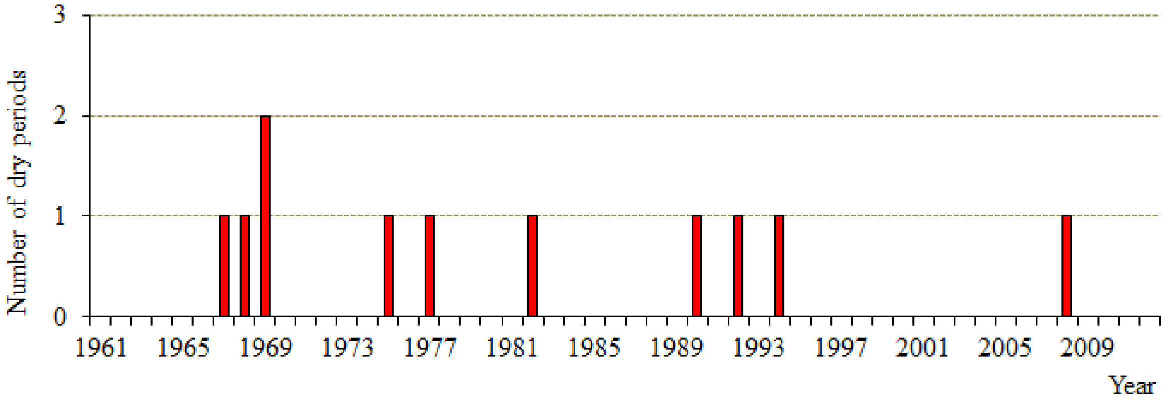

Figure A4-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 May to 31 July in Östergötland county*.

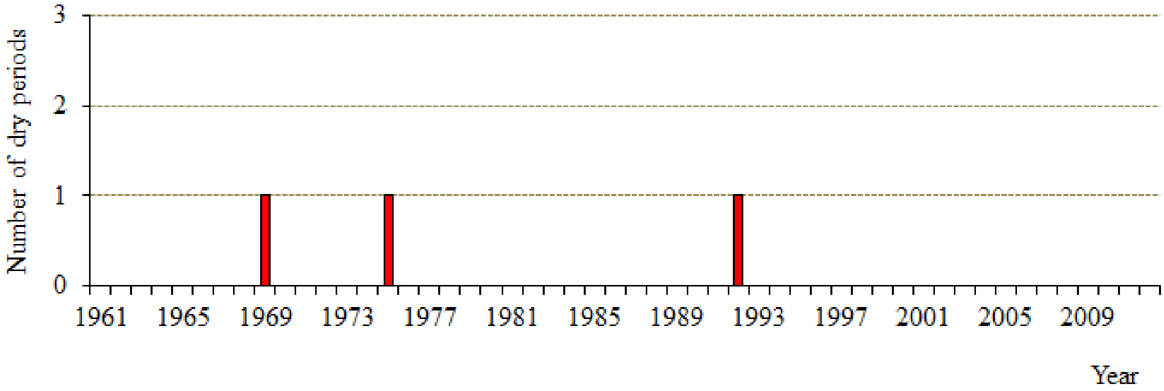

Figure A4-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 May to 31 July in Östergötland county*.

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* The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

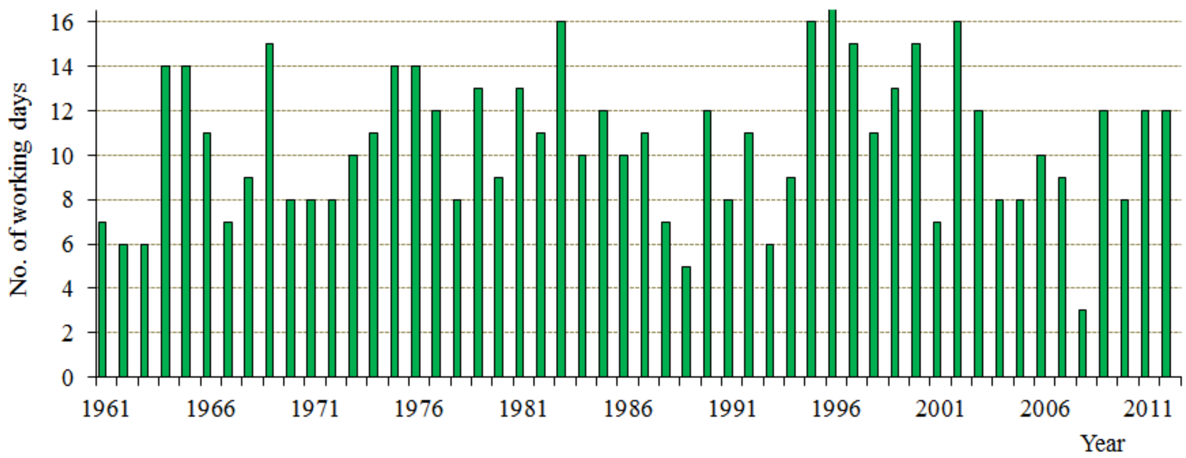

Figure A4-6. Estimated number of working days available for harvesting during the period 3-19 August in Östergötland county (for definition of a working day, see Section 2.1)*.

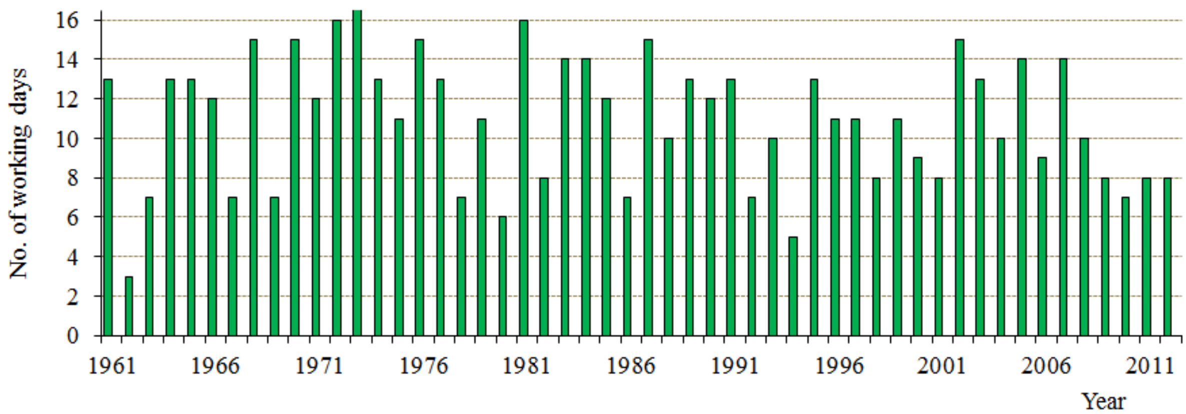

Figure A4-7. Estimated number of working days available for harvesting during the period 20 August-5 September in Östergötland county (for definition of a working day, see Section 2.1)*.

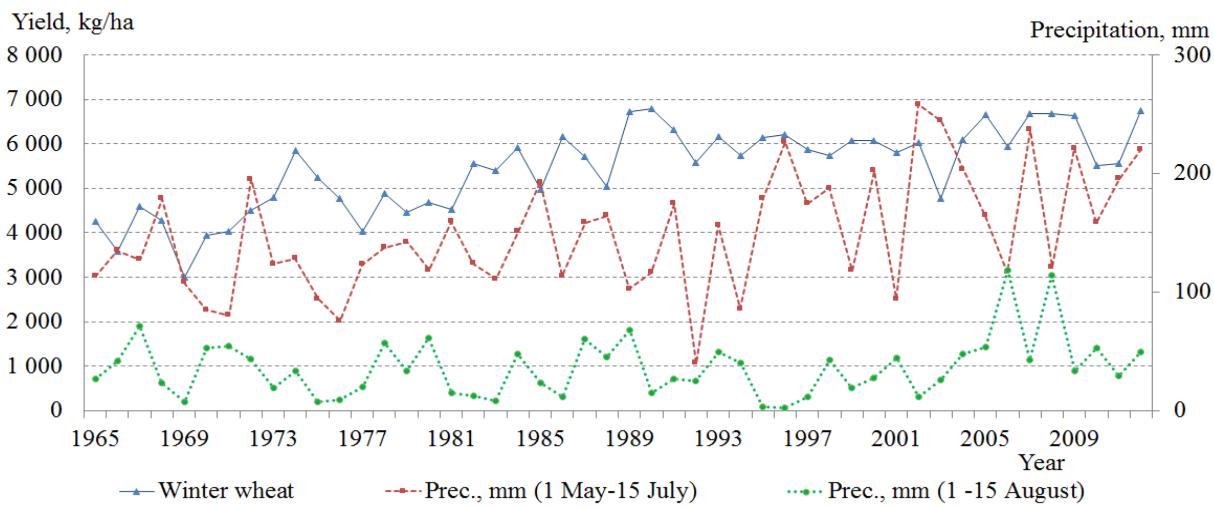

Figure A4-8. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 1-15 August in Östergötland county, 1965-2012*.

* Precipitation data from Luftwebb (2014) and yields from Jordbruksverket (2015).

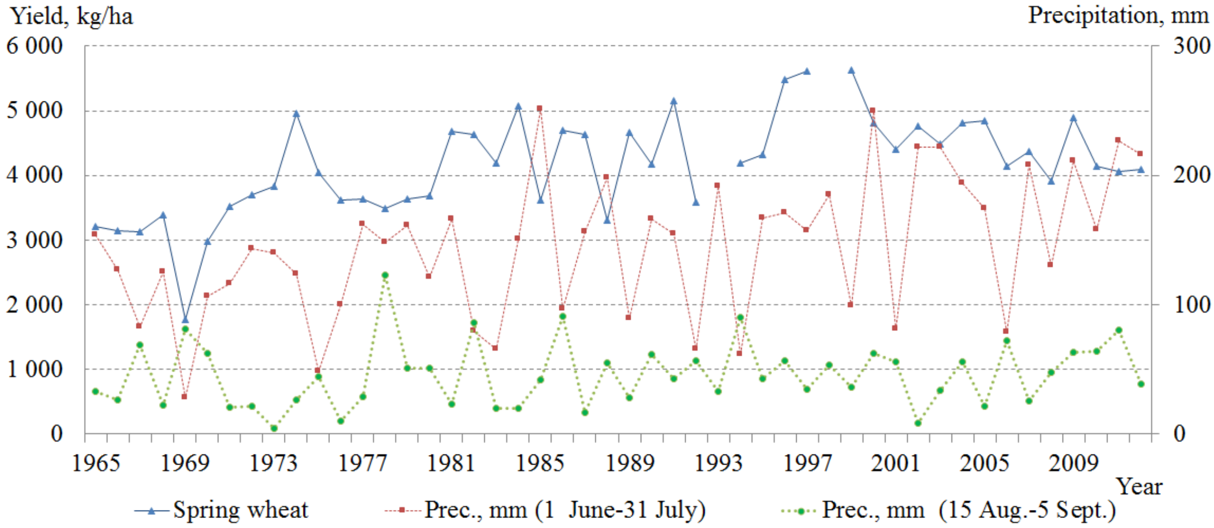

Figure A4-9. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Östergötland county, 1965-2012*.

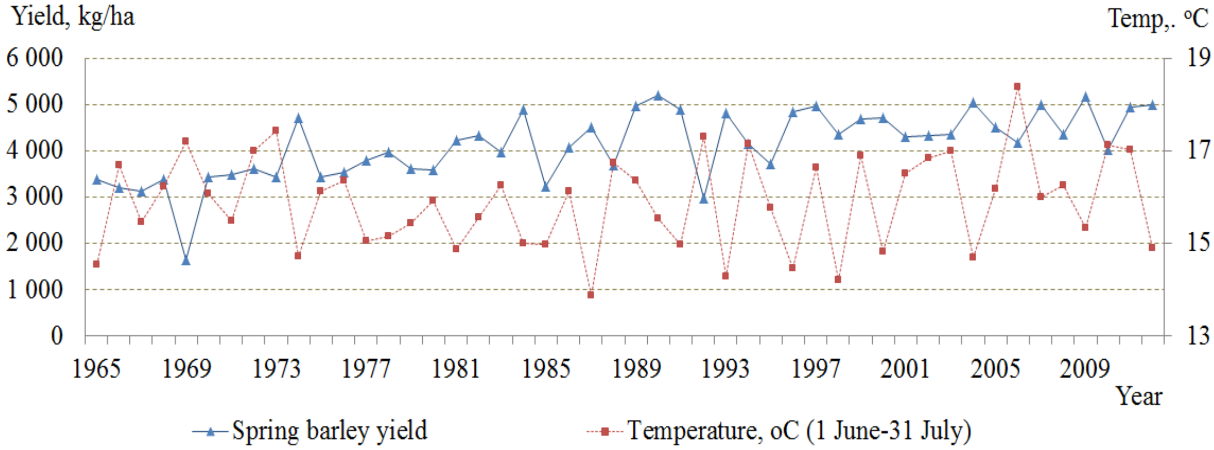

Figure A4-10. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Östergötland county, 1965-2012*.

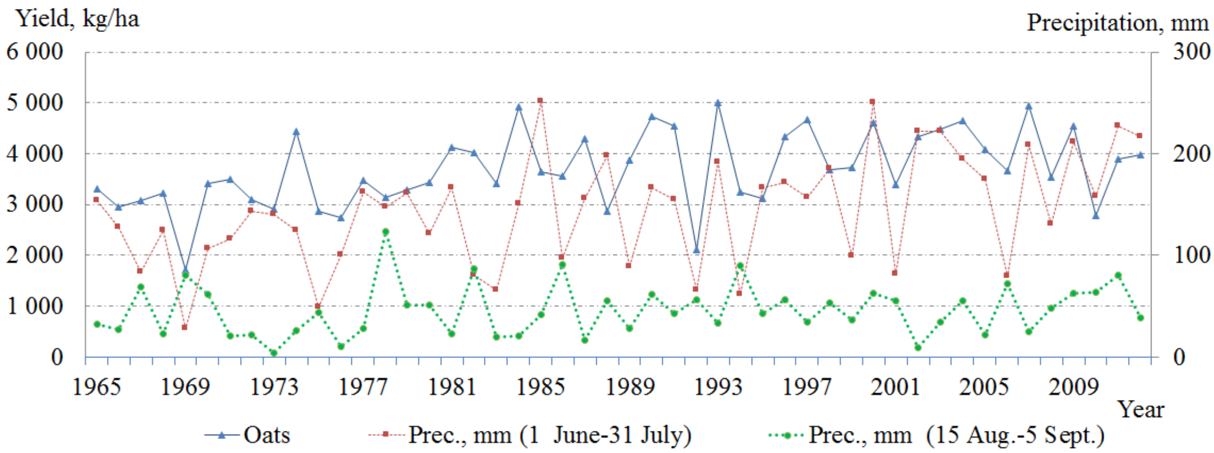

Figure A4-11. Annual oat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Östergötland county, 1991-2011*.

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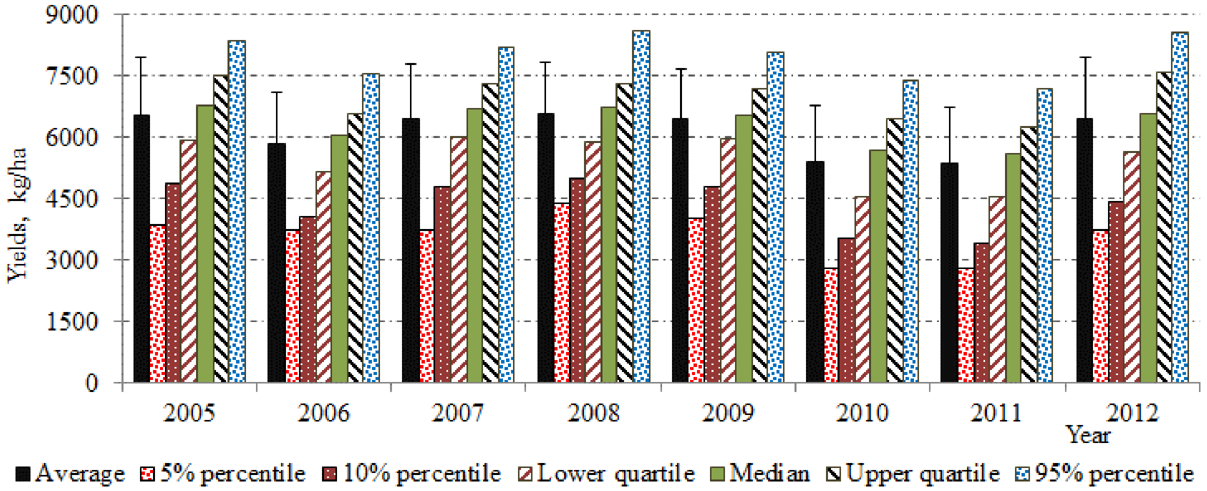
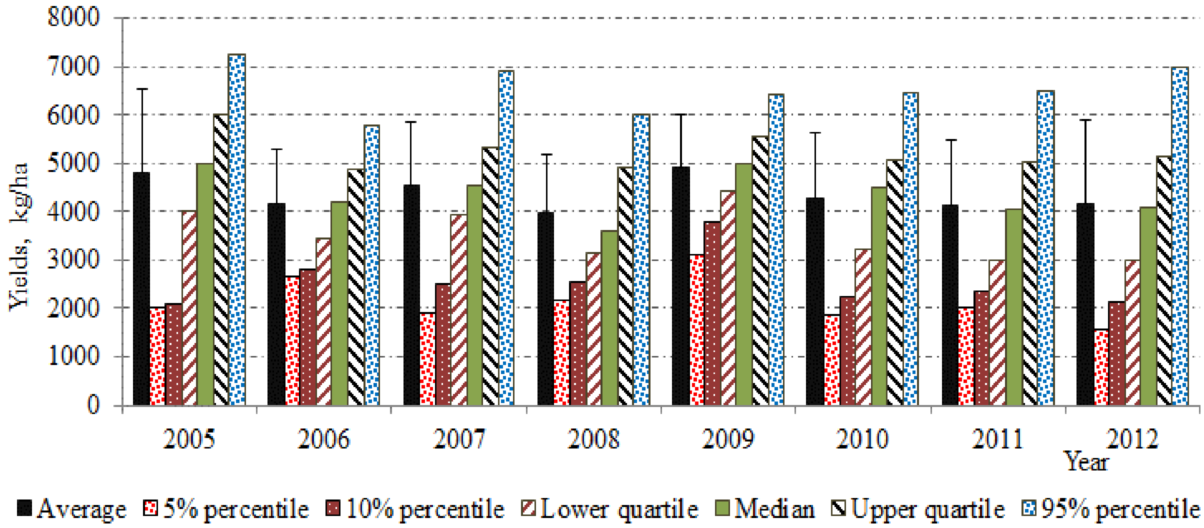
* Precipitation and temperature data from Luftwebb (2014) and yields from Jordbruksverket (2015).

A4.3 Yield on farms



N	275	261	255	277	271	259	263	253

Figure A4-12. Average and estimated percentiles of winter wheat farm-level yield in Östergötland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	66	44	39	60	55	63	69	65

Figure A4-13. Average and estimated percentiles of spring wheat farm-level yield in Östergötland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

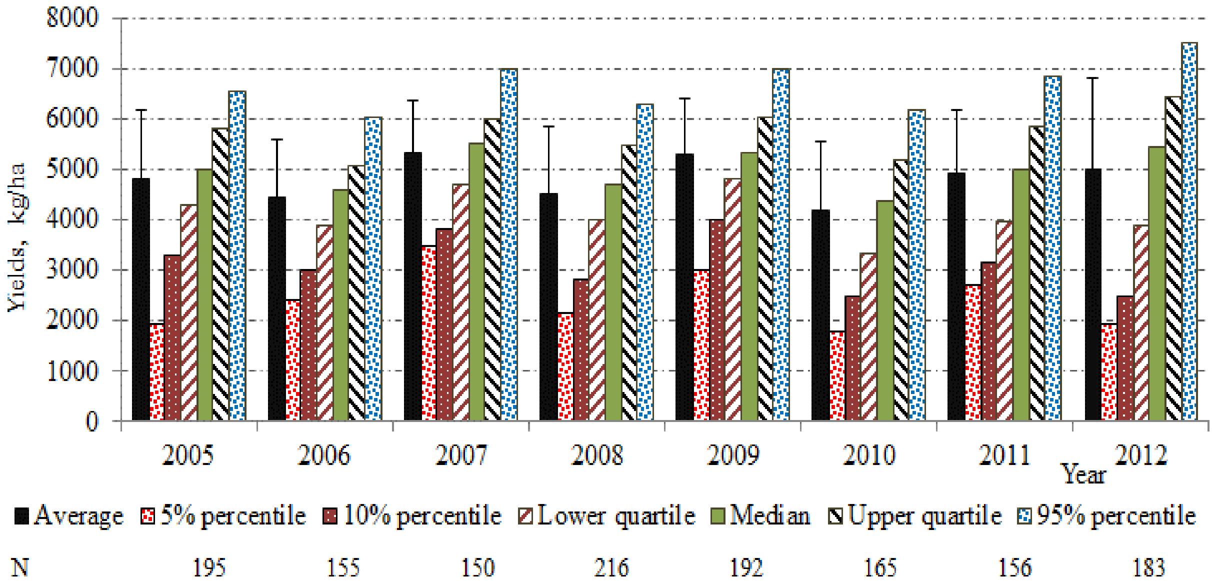


Figure A4-14. Average and estimated percentiles of spring barley farm-level yield in Östergötland county, 2005-2012. The error bars on the averages represent one standard deviation and ‘N’ denotes the sample size. Yield data from SCB (2014a).

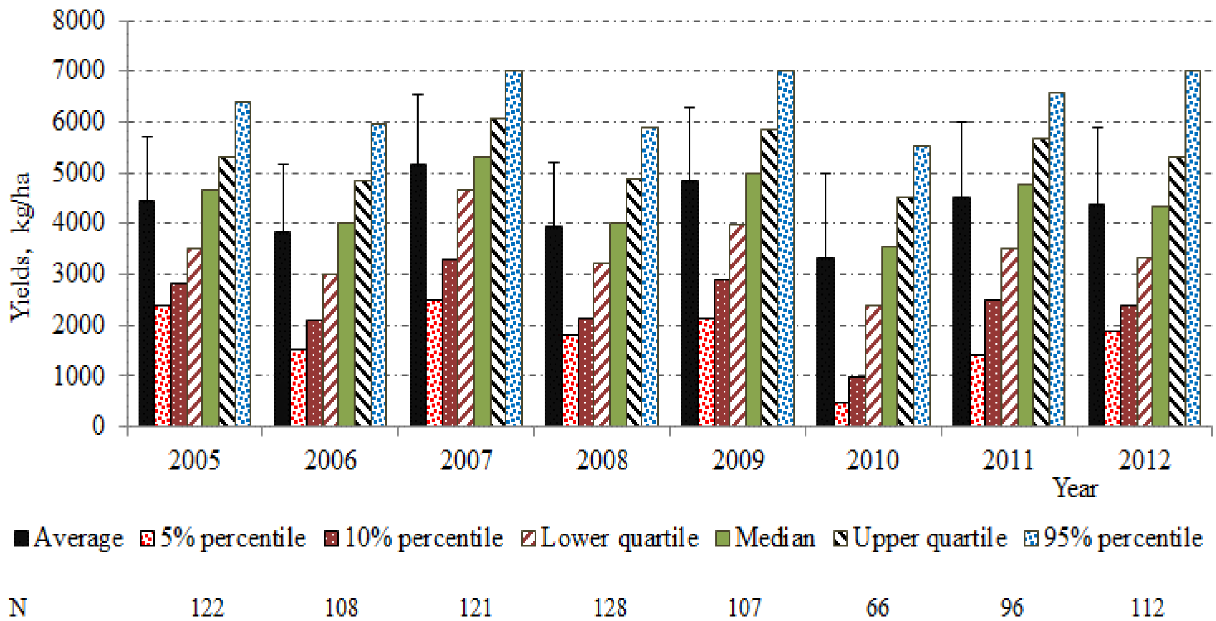
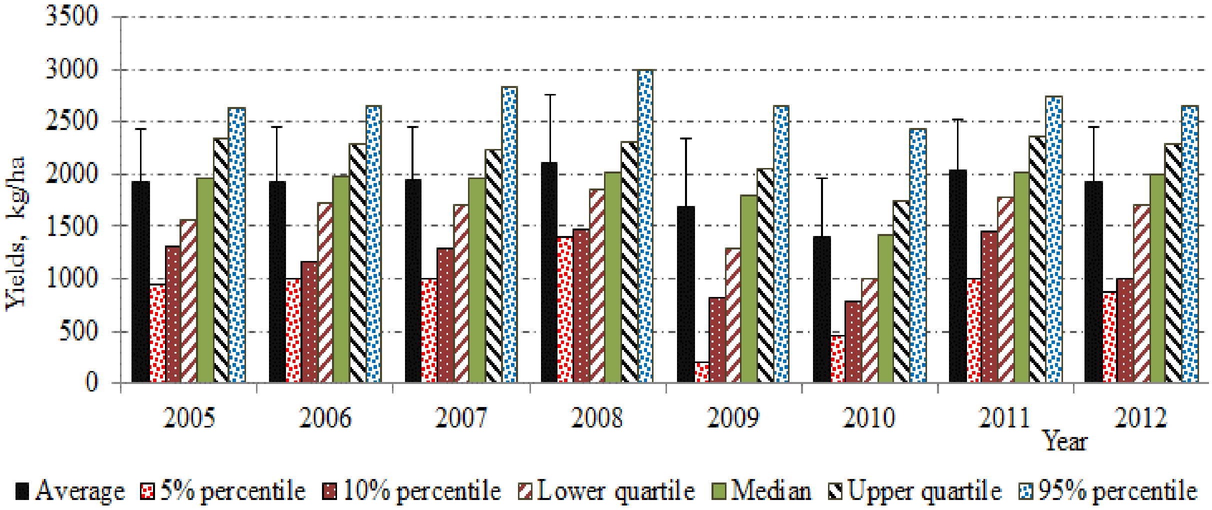
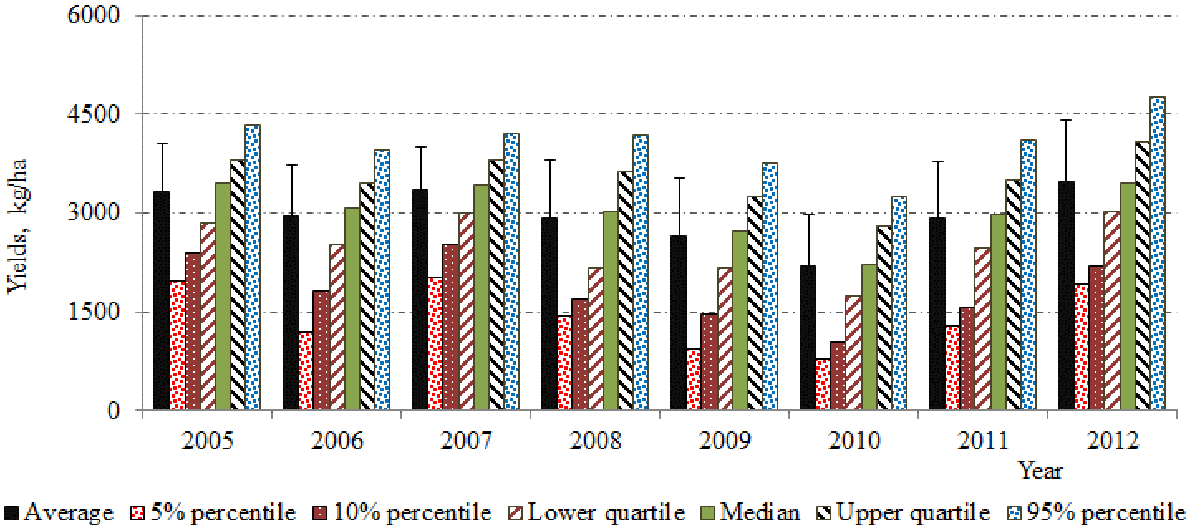


Figure A4-15. Average and estimated percentiles of oat farm-level yield in Östergötland county, 2005-2012. The error bars on the averages represent one standard deviation and ‘N’ denotes the sample size. Yield data from SCB (2014a).



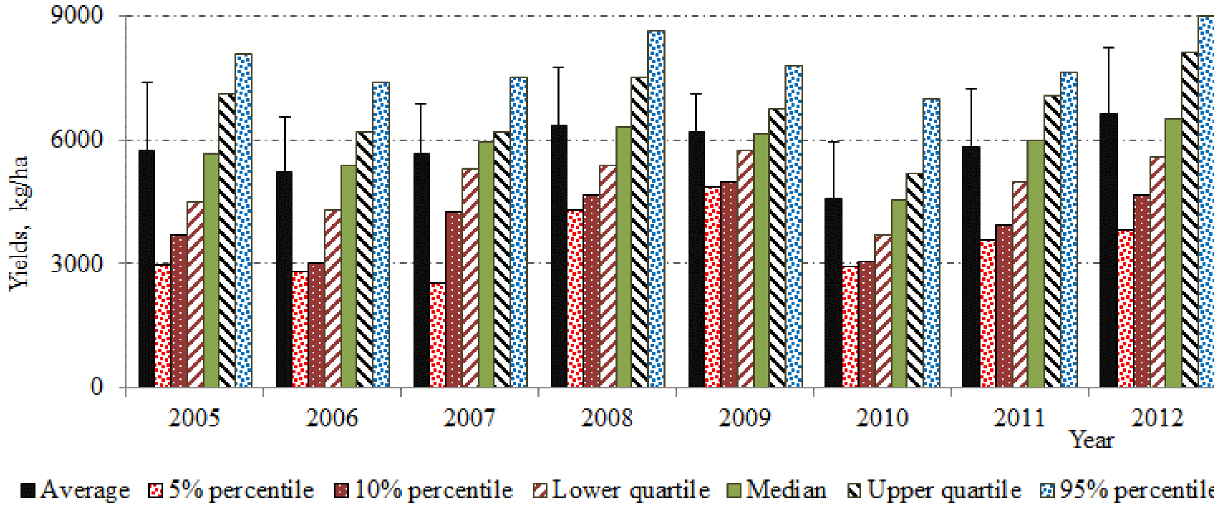
N	56	66	75	74	80	74	76	70

Figure A4-16. Average and estimated percentiles of spring rape farm-level yield in Östergötland county, 2005-2012. The error bars on the averages represent one standard deviation and ‘N’ denotes the sample size. Yield data from SCB (2014a).



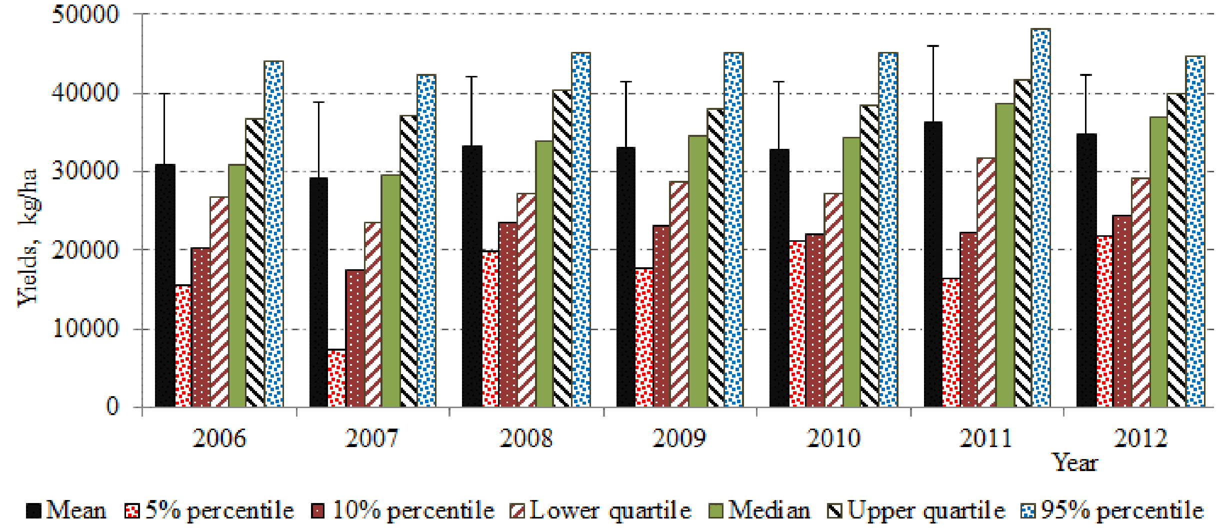
N	123	135	133	168	109	116	84	123

Figure A4-17. Average and estimated percentiles of winter rape farm-level yield in Östergötland county, 2005-2012. The error bars on the averages represent one standard deviation and ‘N’ denotes the sample size. Yield data from SCB (2014a).



N 62 54 38 51 57 42 44 50

Figure A4-18. Average and estimated percentiles of rye farm-level yield in Östergötland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N 68 74 63 62 54 61 52

Figure A4-19. Average and estimated percentiles of potato farm-level yield in Östergötland county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

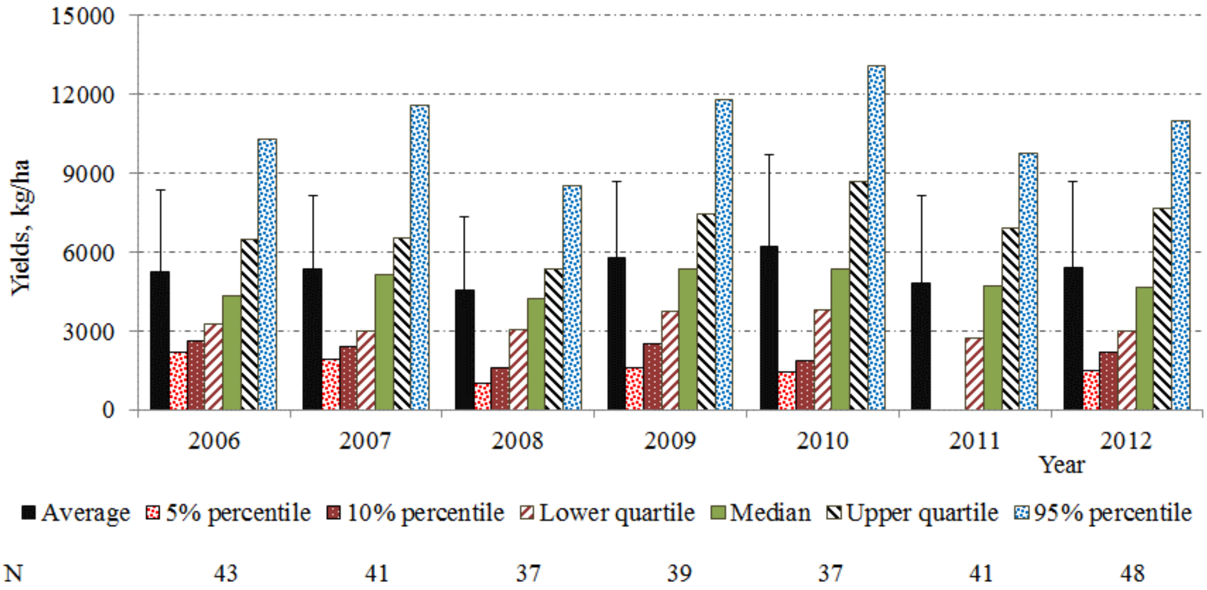


Figure A4-20. Average and estimated percentiles of temporary grasses farm-level yield in Östergötland county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A4.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

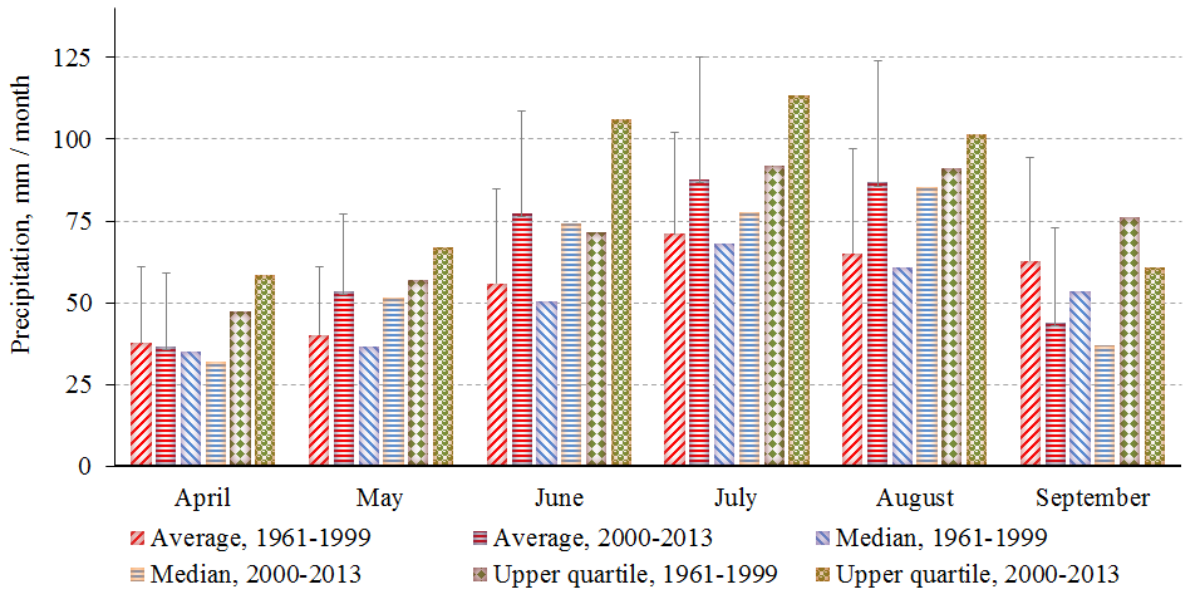


Figure A4-21. Monthly average, median and upper quartile precipitation (mm) from April to September in Östergötland county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1492378-6473351 (close to Linköping).

County: **Östergötland** **Average temperature (°C) for 5 or 6 day periods** Data from 4 places close to each other in the county (*http://l*

Location: **Linköping (Ekhol** Coordinates for the places (RT90): 1492378-6473351 1513058-6477942 1494382-6461934 1513058-6465936

Update temperatur colour

Scale for the color intensity: 30 °C 0 °C 30 °C

Month	January						February						March						April						May						June						July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
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1962	-2	1	1	2	2	-7	-1	1	-3	0	-3	-5	-6	-6	-8	-5	-4	-1	4	2	4	6	9	6	5	8	8	10	10	9	10	15	13	16	14	14	12	14	13	16	16	15	14	14	14	13	13	13	12	12	9	9	9	9	13	10	5	8	8	6	6	5	3	-1	-2	-1	0	2	-1	-8	-7	-8
1963	-7	-13	-11	-10	-8	-6	-8	-8	-5	-14	-5	-4	-4	-1	-6	-4	-2	-2	0	4	4	4	4	8	7	10	12	10	14	16	14	18	15	15	14	15	20	15	14	16	18	16	19	17	15	15	14	14	15	13	13	12	12	9	8	8	6	8	9	7	5	5	4	3	-2	3	0	-1	-4	-7	-5	4
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1965	-2	-7	2	2	-1	-3	-2	-1	-2	-5	-6	-13	-10	-5	1	3	0	3	4	1	4	6	7	7	6	8	10	7	8	11	14	15	15	16	16	15	12	12	14	16	17	14	13	14	13	16	17	13	13	13	10	12	13	13	10	8	8	7	6	9	5	2	-4	-6	-7	-1	-1	-2	-11	-7	-4	-5
1966	-11	-4	-7	-12	-7	-2	-10	-15	-15	-12	0	2	2	2	-6	2	1	0	3	1	-5	-3	3	9	12	7	10	15	11	10	13	15	18	21	17	16	17	16	15	17	20	15	15	15	16	16	13	13	14	12	13	11	9	6	10	7	6	10	7	0	2	5	1	1	0	2	3	1	-2	-1	-4	-2
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1972	-3	-5	-8	-6	0	-6	-3	0	0	0	-2	-2	-1	-1	-1	2	3	3	2	6	6	5	4	5	13	9	7	8	12	11	13	16	15	15	13	20	17	18	17	21	20	18	16	18	16	15	13	13	11	14	10	10	9	5	8	10	7	5	3	8	7	7	3	-1	1	4	6	5	5	4	0	0
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1994	-2	0	2	-4	1	-3	-7	-3	-11	-8	-5	-8	-3	4	2	-1	2	3	5	4	5	5	10	12	7	11	12	8	11	9	13	12	15	11	14	18	18	19	23	18	21	24	22	19	17	15	15	14	14	13	13	11	12	9	5	8	9	0	7	6	5	3	0	1	6	3	1	4	0	0	1	2
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1996	-11	-1	1	-2	-4	-6	-7	-11	-6	-9	-7	1	-1	-1	-2	-1	-1	0	1	5	2	9	10	7	7	5	11	5	10	10	13	17	15	14	14	15	13	13	16	13	17	16	16	17	19	19	20	16	14	9	9	9	7	9	9	10	9	8	5	6	10	3	1	4	1	-1	2	2	-5	-9	-10	-5
1997	-10	-6	-1	0	-1	1	-1	3	-3	-6	5	3	6	5	3	-3	-3	5	5	3	3	3	3	7	9	7	12	11	8	9	15	16	18	13	14	16	19	18	17	17	19	17	18	20	20	20	21	21	18	14	12	11	11	10	8	9	4	6	1	1	0	5	5	1	1	-2	-2	3	1	-4	-1	0
1998	3	-1	5	1	-3	-5	-4	3	3	5	6	4	-2	-4	-2	2	1	6	-1	1	2	4	7	12	9	12	11	13	7	12	12	14	13	12	13	14	16	15	14	14	17	15	15	15	15	14	13	12	11	15	14	12	12	10	6	7	7	6	9	5	0	-2	1	-4	-2	-1	-2	-6	-3	3	-2	2
1999	1	-3	-6	3	4	-10	1	-9	-2	-1	-2	1	1	0	-2	1	3	7	7	9	5	4	8	10	6	6	5	12	13	14	15	14	16	18	14	17	16	19	21	18	17	19	21	17	14	15	13	16	17	17	13	14	15	13	11	8	8	4	7	8	9	6	4	0	0	6	-1	3	-3	-4	-1	-3
2000	1	3	2	1	-7	0	1	3	2	-2	-1	4	0	1	1	2	4	1	2	3	4	8	12	13	10	14	14	14	12	11	12	13	15	15	16	13	16	14	15	16	16	16	16	15	17	16	13	14	11	13	9	9	8	12	13	12	10	10	10	7	7	7	5	5	6	6	6	6	6	0	-3	-3
2001	0	2	-3	-3	0	0	-13	0	3	1	-6	-11	-7	2	4	-4	-3	1	7	6	1	3	5	8	10	12	13	11	11	11	12	12	13	14	16	20	20	22	16	15	19	20	17	15	16	18	17	15	14	12	12	14	10	6	12	11	12	9	4	9	6	0	3	3	1	1	1	3	1	-1	-8	-9
2002	-5	1	2	2	1	0	6	5	1	2	-2	0	0	3	2	3	1	6	5	3	7	5	11	8	10	11	14	11	14	12	17	17	15	18	15	13	14	17	18	20	16	20	19	19	21	20	19	19	17	17	14	11	8	9	9	3	3	0	4	4	0	0	0	1	2	2	0	-4	-3	-2	-9	-7
2003	-13	-9	1	3	1	-3	-4	-7	-3	-5	-4	-5	-3	2	4	4	3	5	3	-1	3	7	7	6	8	11	10	11	12	15	17	17	14	14	15	16	15	17	19	21	20	19	19	18	18	17	16	12	12	15	15	15	13	8	9	7	5	2	-1	3	7	3	2	5	3	5	5	1	1	2	-2	1
2004	-7	-2	0	-4	-10	-4	1	-1	-3	-1	-2	-2	-2	-1	2	7	0	4	3	5	7	9	7	7	12	15	9	12	8	12	16	14	15	11	13	15	14	15	14	15	16	17	19	21	18	18	14	14	15	14	14	11	11	10	8	7	4	8	8	6	5	3	5	-3	-3	0	2	4	3	1	-1	0
2005	2	6	3	2	-3	-3	1	-3	-1	-2	-4	-8	-10	-2	-5	-2	3	3	7	5	8	5	5	8	9	8	11	9	13	14	11	12	13	17	18	15	18	21	21	17	15	16	15	15	17	17	17	15	15	16	12	11	13	12	10	11	9	4	6	7	9	8	8	-1	1	-2	0	1	3	-5	0	-3
2006	-5	-4	0	-6	-7	-2	-6	-3	-4	-2	-3	-6	-7	-8	-7	-3	-5	2	2	3	5	6	6	7	10	14	12	10	11	10	12	15	20	19	16	16	21	22	17	19	22	21	18	20	18	18	17	15	16	14	15	14	15	15	12	11	9	10	10	6	0	5	3	6	5	8	7	6	7	1	3	3
2007	4	6	3	1	-6	-3	2	-6	-3	-1	-5	-1	1	4	7	4	3	6	6	2	10	8	8	11	10	10	10	12	14	13	14	20	17	14	16	15	16	15	15	17	16	15	17	19	19	16	18	11	11	13	11	10	13	10	10	7	6	7	3	6	5	2	-1	2	2	0	3	4	-1	-1	0	3
2008	-1	1	4	4	1	2	1	3	0	2	5	4	1	5	3	-1	-3	3	6	4	4	6	8	12	11	14	12	7	11	16	17	19	13	14	14	15	18	14	17	15	19	21	17	16	16	15	15	13	15	13	9	9	10	10	8	8	11	8	8	4	0	6	6	2	-3	4	2	2	0	2	0	-3
2009	-8	-1	2	-2	0	-1	-2	-1	-5	-6	-1	-1	0	0	0	2	-1	2	7	7	8	6	9	12	10	10	9	10	13	14	11	9	13	13	16	20	20	15	16	18	17	16	18	20	15	16	16	16	16	15	12	11	13	11	6	6	3	5	5	4	3	5	3	7	7	5	0	3	-1	-8	-5	-6
2010	-9	-13	-8	-2	-6	-11	-4	-5	-7	-6	-10	1	-5	-4	-2	2	1	3	4	5	6	6	4	11	7	6	10	14	14	11	15	13	13	14	16	19	20	20	23	19	17	17	17	17	20	17	16	12	10	13	14	11	12	8	9	8	4	3	2	6	6	-1	3	0	-2	-8	-10	-5	-8	-5	-13	-8
2011	-4	-1	-4	0	-3	-4	2	0	-9	-9	-9	-2	-1	0	1	0	5	0	7	9	7	11	11	10	4	12	13	12	13	14	17	18	15	14	14	19	18	19	16	17	18	19	19	16	15	15	16	16	15	14	14	12	12	14	13	8	5	6	6	8	9	5	2	5	6	6	3	1	2	1	1	3
2012	2	-3	1	0	-3	-4	-12	-8	-3	-2	4	1	1	1	5	5	9	6	1	1	6	4	7	10	9	9	11	11	17	13	9	12	13	15	14	16	17	18	15	15	18	17	17	15	16	18	16	14	15	13	13	11	8	11	11	7	5	10	6	1	5	3	6	5	4	1	-8	-8	-8	-1	-3	1
Average	-3	-3	-1	-2	-2	-3	-2	-3	-3	-4	-3	-2	-2	0	0	0	1	2	3	3	5	5	6	8	8	10	10	11	12	13	14	15	15	15	15	16	16	17	16	16	17	17	17	17	16	16	15	14	14	13	12	11	11	9	9	9	7	6	6	5	4	3	3	1	1	1	0	0	-1	-2	-2	-2
By quartile																																																																								
Min. value	-13	-19	-16	-12	-10	-11	-13	-17	-16	-17	-12	-13	-14	-8	-8	-8	-7	-2	-3	-2	-5	-3	1	1	3	5	4	5	6	8	9	9	9	10	12	12	12	12	13	12	14	13	13	11	13	13	11	10	10	9	8	7	7	5	3	3	1	0	-1	-1	-2	-3	-4	-6	-7	-10	-10	-9	-11	-13	-13	-13
Lower	-7	-5	-3	-4	-5	-6	-6	-6	-6	-7	-5	-5	-3	-1	-2	-3	-1	0	2	2	3	4	4	6	6	8	9	9	10	11	12	13	13	13	14	14	15	15	15	15	16	16	15	15	15	15	13	13	12	12	10	10	9	8	8	7	5	4	4	4	2	2	1	-1	-2	-2	-1	-2	-3	-5	-5	-6
Median	-3	-1	-1	-2	-2	-3	-2	-1	-3	-3	-3	-1	-1	0	0	1	1	3	3	3	5	5	6	8	8	9	11	11	12	12	14	14	15	15	15	15	16	17	16	16	17	17	17	16	16	16	15	14	14	13	12	11	11	9	9	9	7	7	6	6	5	3	3	2	1	1	1	1	-1	-1	-1	-2
Upper	1	1	2	1	1	0	1	0	0	0	1	1	1	2	3	3	3	5	5	5	7	7	8	10	10	11	12	13	13	14	16	16	16	17	16	18	18	18	17	18	18	19	19	18	17	17	17	16	15	14	13	12	12	11	11	10	9	9	7	7	7	5	5	3	4	4	2	3	1	0	1	1
Max. value	4	6	5	5	4	4	6	6	3	5	9	4	6	8	7	10	9	8	8	9	10	12	12	14	17	16	15	16	17	19	21	20	20	21	19	21	21	22	23	21	22	24	23	25	21	20	21	21	19	18	17	15	15	15	15	13	12	11	11	9	10	9	8	7	7	8	7	6	7	6	6	4
Range	17	25	21	17	14	16	19	23	19	21	21	17	20	16	16	19	16	11	11	12	15	15	12	12	14	11	11	12	11	10	12	11	11	10	7	9	9	10	11	9	8	11	10	14	9	8	10	11	8	9	9	9	9	10	12	10	11	11	12	10	12	12	12	13	14	18	16	15	17	19	19	17

Figure A4-22. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Östergötland county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Östergötland** | **Total precipitation , mm / 5 or 6 day periods** | Update colour for precipitation | Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Linköping** (Ekhol | Coordinates for the places (RT90): 1492378-6473351 1513058-6477942 1494382-6461934 1513058-6465936

Scale for the color intensity: 0 mm | 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	21	6	3	1	3	3	11	1	0	0	0	1	1	0	4	7	0	14	9	13	7	0	0	0	13	12	19	18	0	33	6	6	17	4	2	16
1962	8	4	8	10	29	3	9	6	19	3	2	0	4	11	0	0	1	11	12	7	3	5	4	3	0	9	2	8	15	7	1	2	9	17	7	6
1963	10	1	2	0	2	3	12	0	3	1	0	0	1	1	2	0	3	1	3	0	8	15	1	2	6	4	8	4	2	0	12	4	8	11	17	20
1964	2	0	0	0	1	4	8	1	10	4	0	0	0	0	0	1	0	0	0	1	2	0	3	11	9	6	9	4	0	2	17	10	2	3	9	1
1965	4	7	2	5	10	17	6	0	5	3	2	5	0	1	1	3	2	2	0	2	7	8	9	1	0	5	1	4	0	0	0	10	16	17	4	7
1966	12	0	9	1	3	12	22	7	12	11	12	9	1	10	15	0	8	12	10	0	3	11	25	0	16	8	0	0	4	14	20	2	0	2	8	24
1967	11	8	2	1	3	31	13	0	0	8	16	9	5	1	0	7	3	10	5	22	2	11	1	8	7	17	13	17	16	1	0	11	0	0	5	11
1968	6	0	20	16	8	8	5	11	2	3	0	0	1	3	1	8	3	0	11	9	0	2	9	0	17	28	4	27	1	1	0	10	0	2	14	10
1969	5	2	25	17	14	7	10	15	2	13	4	2	0	12	0	0	0	4	4	1	10	18	1	4	12	7	34	37	0	0	8	0	0	0	0	0
1970	5	0	13	1	0	8	3	7	2	1	2	0	18	16	1	10	2	13	23	23	3	6	16	4	3	0	0	1	7	4	1	0	23	0	7	3
1971	3	1	0	2	12	3	1	0	3	9	3	5	8	19	9	11	3	6	4	6	0	2	4	1	0	0	1	2	8	11	1	8	10	14	2	7
1972	3	1	0	8	0	20	6	12	3	2	0	2	3	7	0	0	4	8	19	16	14	6	0	13	0	0	0	40	10	16	5	3	7	5	15	8
1973	3	0	1	12	7	13	0	5	17	11	2	0	3	0	0	2	0	2	4	3	6	15	3	8	14	12	2	2	7	2	14	4	1	0	0	29
1974	2	1	20	12	2	11	14	23	4	1	0	0	0	0	0	36	16	0	0	0	1	0	2	0	0	0	0	1	2	19	4	9	3	23	17	5
1975	1	5	2	14	4	8	7	0	0	2	0	0	2	6	18	0	2	28	9	17	19	0	1	0	4	0	36	11	6	7	11	0	0	2	0	3
1976	8	8	12	12	3	0	0	2	3	1	3	0	0	13	2	1	2	8	4	5	2	2	4	16	10	0	4	0	0	6	1	1	20	6	1	0
1977	8	20	28	5	8	14	2	7	3	13	12	0	12	0	9	22	1	9	4	18	3	4	9	10	2	5	12	0	0	9	4	3	0	4	0	25
1978	18	0	2	0	7	9	12	5	17	0	19	1	9	4	22	16	6	20	1	0	3	0	1	0	1	0	7	6	1	1	0	17	17	1	7	45
1979	8	13	13	2	12	33	8	1	0	9	0	0	2	2	9	2	6	20	8	0	6	7	15	10	5	10	0	1	39	6	0	18	11	1	14	6
1980	6	6	0	0	9	9	0	17	5	0	0	0	3	4	2	1	0	11	0	0	0	17	15	9	2	2	1	18	11	4	3	1	3	14	30	12
1981	1	2	6	4	1	0	6	18	13	5	7	0	8	20	7	7	10	6	0	0	0	1	5	6	16	0	0	0	6	15	10	12	22	23	26	17
1982	12	1	0	0	10	26	0	14	0	0	0	0	6	2	13	17	0	0	0	11	2	1	0	9	9	11	0	11	18	0	0	3	11	1	1	32
1983	11	1	6	15	3	22	10	1	0	0	0	0	3	10	12	4	34	5	27	4	0	2	14	13	0	1	12	21	0	17	13	2	3	0	2	17
1984	7	16	17	11	10	18	6	15	0	1	6	1	2	2	0	0	1	8	5	0	0	2	0	0	5	3	2	2	6	17	16	4	4	3	42	25
1985	1	2	1	10	30	11	6	8	1	5	9	0	11	21	0	1	8	11	27	13	1	8	8	56	6	12	4	0	3	0	13	14	30	16	5	50
1986	18	7	16	3	3	8	5	1	3	5	5	0	5	0	1	0	14	21	0	1	8	29	33	8	0	8	15	3	22	0	6	18	0	0	0	8
1987	12	6	2	2	1	1	0	12	3	6	1	0	0	0	0	9	0	6	0	0	3	11	2	0	3	4	9	28	2	1	15	5	17	36	16	4
1988	13	17	9	3	14	18	7	15	2	7	17	24	4	6	1	8	6	8	3	7	0	18	10	0	8	1	0	3	1	9	15	21	0	1	8	0
1989	0	1	1	0	0	0	0	0	5	7	13	10	3	4	6	3	12	6	3	9	0	2	3	2	0	6	10	0	0	23	8	17	0	0	0	9
1990	1	3	10	5	12	12	5	19	3	1	4	14	5	2	7	0	3	0	1	3	3	6	0	4	0	0	6	3	3	6	0	0	6	28	11	12
1991	7	22	8	1	0	0	2	8	14	1	3	3	4	0	6	3	6	2	5	1	0	2	0	5	20	0	5	7	3	1	25	19	18	23	11	29
1992	11	10	0	2	1	0	4	3	22	2	1	0	5	0	7	5	11	5	22	2	25	4	4	27	0	3	4	0	0	0	0	0	3	3	1	0
1993	0	3	23	4	38	0	1	0	0	29	0	4	2	0	0	3	1	3	5	6	0	2	3	0	4	5	2	1	6	11	10	1	17	13	16	16
1994	7	3	10	5	6	10	7	11	1	4	6	1	7	3	6	9	10	4	11	0	12	0	3	3	0	0	2	2	5	19	22	7	0	9	17	1
1995	1	19	6	4	20	10	0	4	19	5	4	7	8	2	2	10	11	7	1	17	1	36	3	11	0	3	22	17	10	3	2	27	27	20	9	6
1996	0	8	2	1	6	0	0	2	6	16	1	4	1	1	1	0	0	13	0	1	1	0	6	4	23	11	3	5	12	10	1	20	3	10	10	18
1997	0	0	4	0	4	0	1	5	18	12	7	0	0	0	4	0	1	5	2	2	2	5	19	9	18	32	6	0	3	7	0	8	8	12	45	18
1998	14	14	2	7	12	4	24	1	16	17	1	4	19	8	4	6	1	4	23	0	12	9	6	9	27	5	3	3	9	1	16	21	22	22	3	19
1999	18	13	7	0	14	20	2	3	1	8	4	9	18	16	0	7	9	8	1	12	16	31	4	3	1	17	3	0	2	6	7	14	3	2	14	12
2000	2	0	8	0	0	3	11	8	1	0	5	2	9	8	1	0	0	6	12	0	15	8	4	1	2	0	0	4	20	6	7	24	2	2	27	21
2001	22	12	0	1	8	2	4	13	4	0	7	11	7	3	9	4	0	10	5	7	13	22	7	6	6	0	1	20	0	11	1	8	3	6	13	7
2002	1	0	0	11	14	36	12	6	11	0	7	20	3	8	1	11	3	0	0	0	3	0	2	29	31	0	4	1	10	61	0	0	59	20	23	18
2003	2	1	3	3	5	10	9	0	0	0	0	0	0	3	4	0	0	2	7	28	1	0	2	50	15	11	6	5	26	0	0	12	17	14	37	10
2004	0	6	14	5	0	18	6	10	0	4	5	1	0	0	9	15	11	0	4	13	0	3	7	0	12	2	10	6	9	2	0	8	26	14	20	5
2005	2	13	1	7	1	1	0	1	37	5	7	1	0	1	25	12	0	0	0	7	11	0	0	0	37	7	2	2	13	13	26	36	5	8	4	1
2006	3	0	0	17	4	0	0	26	1	10	5	2	5	1	2	0	6	15	13	8	3	12	12	10	4	0	1	17	12	26	2	0	1	4	9	22
2007	5	16	15	11	6	15	5	7	4	2	8	14	7	20	0	13	7	0	1	8	0	11	1	0	0	8	14	3	12	19	13	0	2	23	35	33
2008	14	7	3	4	11	8	6	3	0	0	10	11	12	1	5	16	14	1	1	12	10	0	0	1	5	0	7	10	0	0	0	0	4	11	14	9
2009	2	3	0	5	7	1	7	10	3	0	10	0	6	8	1	6	6	10	1	2	0	0	0	0	5	19	0	16	13	9	14	18	14	9	0	2
2010	4	5	1	13	0	24	17	1	6	27	7	9	8	0	0	3	11	5	5	4	0	2	7	6	3	16	32	11	17	10	0	30	17	7	1	1
2011	8	9	15	1	3	0	7	16	4	0	1	0	0	3	0	14	0	10	5	7	1	0	0	2	9	0	6	4	6	13	0	9	11	57	39	1
2012	22	5	6	7	6	1	3	1	11	6	5	2	0	1	0	2	0	5	3	20	17	17	12	3	0	10	4	1	3	8	14	30	14	23	50	8
Average	7	6	7	5	7	10	6	7	6	5	5	4	5	5	4	6	5	7	6	7	5	7	6	7	8	6	7	8	7	9	7	10	10	10	13	13
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	1	1	1	2	1	1	1	1	1	0	0	1	1	0	0	0	2	1	1	0	1	1	0	0	0	1	1	1	1	0	2	2	2	2	5
Median	5	4	4	4	6	8	6	6	3	4	4	1	3	3	2	3	3	6	4	5	3	4	3	4	5	5	4	4	6	6	5	8	6	7	9	10
Upper	11	9	11	10	10	15	9	11	10	8	7	5	7	8	7	10	8	10	9	11	8	11	8	9	12	10	9	11	11	13	13	17	17	16	17	19
Max. value	22	22	28	17	38	36	24	26	37	29	19	24	19	21	25	36	34	28	27	28	25	36	33	56	37	32	36	40	39	61	26	36	59	57	50	50

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	17	17	10	18	5	19	19	6	17	13	17	0	13	10	17	0	0	8	0	7	0	20	6	6	13	12	17	0	1	3	13	1	2	0	9	17
1962	17	13	17	19	7	9	10	44	5	29	14	21	29	12	32	1	1	0	1	0	0	0	0	6	0	0	7	9	13	6	0	0	10	3	5	22
1963	0	25	15	8	2	17	14	17	10	61	12	13	23	3	0	0	9	7	30	4	11	1	5	0	5	29	20	17	28	17	0	2	1	1	0	4
1964	9	16	3	3	22	3	6	2	3	20	6	5	0	3	21	28	0	1	0	14	33	18	8	0	1	0	9	10	10	3	7	12	13	1	0	2
1965	8	21	19	0	23	28	13	11	2	3	1	5	24	20	14	14	0	25	2	0	0	2	0	3	22	0	16	4	4	19	22	30	12	11	4	10
1966	0	18	18	1	23	11	26	6	10	0	0	1	26	5	11	0	1	1	15	8	8	13	14	0	14	21	2	20	2	13	4	7	13	10	6	27
1967	10	0	20	18	2	7	11	15	45	30	3	24	12	16	0	21	33	7	1	11	8	48	16	4	12	3	10	4	0	0	4	3	8	0	29	9
1968	0	37	29	10	13	1	0	4	20	19	0	3	1	2	6	5	10	8	1	2	16	8	1	48	28	17	1	1	8	14	0	0	0	9	10	14
1969	1	10	0	9	1	0	0	0	7	5	34	40	2	0	0	2	11	13	6	3	0	0	5	18	9	14	9	11	5	18	6	1	4	6	2	1
1970	15	9	10	6	19	13	40	8	6	56	0	0	6	6	29	3	1	11	23	5	0	8	3	35	33	8	17	15	19	25	4	13	3	1	0	2
1971	0	1	15	24	11	23	10	13	31	0	0	16	4	7	6	13	11	2	6	3	0	11	9	0	16	33	6	4	3	6	2	9	3	7	0	22
1972	8	34	46	0	0	14	17	2	25	12	9	0	1	13	49	7	4	0	0	0	6	7	4	3	7	3	6	4	3	2	3	5	5	2	0	0
1973	0	25	12	7	30	17	6	12	0	2	0	0	2	3	0	12	49	13	1	18	5	16	2	1	3	1	14	14	19	2	2	19	11	5	14	0
1974	13	13	19	4	8	6	2	11	21	4	0	15	7	15	0	2	12	8	36	35	4	12	36	35	6	17	7	56	6	14	3	2	17	11	6	28
1975	0	0	14	5	12	1	0	0	7	12	25	7	1	16	40	0	14	9	7	1	7	1	0	2	4	4	3	6	0	16	2	1	2	10	1	2
1976	0	4	23	8	16	21	7	2	0	2	0	8	0	13	10	7	1	7	6	17	4	1	1	9	9	16	2	1	1	16	48	21	20	14	29	19
1977	23	8	26	33	20	14	13	0	7	3	1	20	4	5	34	0	0	16	28	16	1	0	2	0	16	5	26	23	26	1	1	17	7	0	23	15
1978	7	24	4	15	10	0	31	15	10	5	5	41	72	35	32	1	15	21	4	0	0	5	1	0	6	0	2	11	2	16	3	0	19	2	8	22
1979	2	17	11	11	16	53	9	23	1	0	15	13	23	2	1	5	0	9	0	0	5	8	0	1	5	7	8	38	2	8	4	2	2	16	3	15
1980	9	6	2	41	0	0	17	44	0	11	26	10	4	12	16	9	5	4	1	8	44	3	26	31	0	3	19	16	4	11	14	17	16	17	12	3
1981	6	0	6	19	12	14	0	15	0	15	6	2	0	0	0	15	7	5	8	19	12	24	5	30	23	1	7	15	21	30	1	26	5	4	21	7
1982	21	5	0	2	1	2	0	5	8	28	15	13	32	7	1	0	1	5	0	21	18	15	5	1	3	1	2	3	8	18	0	16	17	2	1	0
1983	17	0	7	1	0	5	4	0	4	0	0	0	20	23	29	26	22	0	6	20	10	7	3	2	1	2	6	2	1	8	1	5	0	16	17	3
1984	11	0	9	16	18	2	25	15	8	2	0	1	18	11	8	9	30	16	26	8	14	9	32	4	0	7	0	4	18	1	0	13	2	18	5	11
1985	3	23	14	26	17	40	15	6	2	2	6	0	35	7	8	4	5	3	2	24	3	0	0	0	6	13	4	3	1	13	39	16	6	17	8	13
1986	11	13	9	1	29	2	5	2	4	25	21	38	7	3	33	0	0	1	3	1	2	1	8	14	9	4	3	5	7	0	13	1	7	28	13	13
1987	8	4	6	1	1	44	35	4	21	0	3	12	1	20	13	5	7	1	0	1	17	2	4	1	0	0	11	15	8	17	0	2	5	14	13	13
1988	28	25	43	42	3	11	21	2	22	10	13	3	29	0	5	4	7	14	1	21	2	1	1	18	3	1	0	11	1	11	8	5	6	9	16	10
1989	0	25	4	2	0	23	24	14	30	7	17	1	4	5	2	9	7	1	1	23	3	12	20	8	14	8	5	1	5	2	0	0	4	24	16	2
1990	20	19	2	22	37	9	1	7	7	30	8	2	22	19	3	17	32	19	18	17	0	1	0	14	5	0	16	6	20	7	0	7	1	9	6	4
1991	3	3	7	15	2	0	6	16	4	21	14	7	1	0	1	4	12	41	2	1	6	12	0	1	7	15	6	5	0	0	0	0	1	14	4	5
1992	5	1	20	16	0	17	6	7	13	7	9	23	17	1	10	2	1	0	0	5	20	10	29	11	10	4	19	9	13	11	4	1	6	1	0	0
1993	3	24	27	8	25	31	5	29	15	4	5	18	5	0	37	17	3	0	3	15	23	1	2	0	0	10	11	8	9	6	9	5	7	9	17	30
1994	0	0	3	1	0	2	6	8	27	26	18	15	33	27	31	23	0	15	27	1	0	0	2	17	2	6	20	4	0	0	6	19	3	13	0	21
1995	7	0	26	42	2	0	2	0	0	0	3	1	39	6	38	0	3	39	5	3	1	2	1	7	4	3	25	26	1	5	2	2	2	1	5	1
1996	24	72	2	8	1	1	2	0	0	0	17	39	0	6	28	0	0	10	1	1	1	6	0	17	14	4	19	23	5	17	8	5	13	22	1	7
1997	17	0	0	1	8	39	12	0	0	3	13	0	19	10	9	3	2	6	19	31	7	7	1	0	11	22	23	2	8	11	26	5	12	0	15	19
1998	10	18	8	10	21	14	3	19	20	10	27	16	0	11	46	1	7	4	1	2	12	25	5	16	8	3	8	4	4	1	19	6	20	0	17	7
1999	2	1	33	8	4	0	1	16	2	20	2	14	0	0	3	0	36	27	6	3	0	0	2	6	0	4	0	4	4	2	15	11	34	5	4	18
2000	11	26	52	36	23	20	21	1	5	5	5	12	40	2	0	0	0	1	13	19	39	0	15	31	7	29	8	16	22	22	8	10	21	3	0	35
2001	2	0	16	18	4	3	17	21	7	4	1	28	23	43	20	21	14	1	9	26	1	1	1	28	3	9	0	0	1	19	10	4	1	6	18	13
2002	24	7	1	28	41	1	5	0	7	0	0	6	3	0	3	14	2	2	7	0	21	1	21	8	0	2	30	10	12	10	10	0	0	0	0	17
2003	66	6	20	1	15	23	8	0	18	5	4	25	0	0	0	1	4	4	20	16	1	8	1	8	5	1	1	11	35	11	3	0	14	11	16	20
2004	22	34	34	16	12	3	39	0	9	18	15	12	11	0	10	14	4	0	12	10	3	28	35	7	1	4	6	11	32	24	8	0	2	1	14	0
2005	4	0	7	17	42	25	11	27	16	0	17	4	0	2	4	0	0	9	1	1	0	1	34	1	15	2	3	0	6	5	12	11	4	11	5	36
2006	0	18	1	0	1	21	74	0	45	18	14	33	7	6	0	0	0	10	15	7	0	18	46	41	10	9	23	9	21	0	9	2	7	1	0	7
2007	13	47	15	1	15	12	6	19	17	6	2	13	4	5	1	13	13	25	1	1	8	0	0	13	10	12	8	1	8	9	24	19	0	0	1	12
2008	10	36	14	29	1	2	42	52	20	24	4	11	9	32	0	4	0	2	17	1	9	3	3	31	0	9	20	5	7	6	16	6	15	5	1	0
2009	37	45	21	29	8	16	0	2	31	0	30	15	17	3	1	0	6	12	23	8	2	10	13	1	7	2	14	18	7	6	4	6	10	11	24	8
2010	1	0	13	9	43	37	31	16	6	20	20	21	3	4	12	17	4	1	0	23	1	4	26	6	5	21	24	7	40	16	11	5	7	18	3	4
2011	14	5	22	20	38	13	0	27	2	32	3	24	22	4	14	20	6	0	1	28	0	8	0	12	0	0	0	7	4	2	4	9	7	21	4	2
2012	2	37	16	14	0	8	5	44	0	8	21	10	0	4	10	12	37	19	11	7	30	14	4	1	6	14	2	0	8	47	28	8	10	7	23	12
Average	10	15	15	13	13	13	13	12	12	12	10	13	13	9	13	7	9	9	8	10	8	8	9	11	8	8	10	10	9	11	8	7	8	8	9	11
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	1	6	3	2	2	4	2	3	2	2	3	1	2	1	0	1	1	1	1	1	1	1	1	3	2	3	4	2	3	2	2	2	1	1	3
Median	8	13	14	10	11	11	8	7	7	7	6	12	7	6	10	4	5	7	5	7	4	7	3	6	6	4	8	7	7	9	4	5	7	7	5	10
Upper	16	24	20	19	20	20	18	16	18	20	15	19	22	13	23	13	12	13	13	17	11	12	14	16	11	12	17	14	13	16	11	12	12	13	15	18
Max. value	66	72	52	42	43	53	74	52	45	61	34	41	72	43	49	28	49	41	36	35	44	48	46	48	33	33	30	56	40	47	48	30	34	28	29	36

Figure A4-23. Average precipitation (°C) for 5 or 6 day periods and their quartiles in Östergötland county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A5 JÖNKÖPING COUNTY♣

A5.1 Crop production and yield

Table A5-1. *Yearly production (metric ton) in 2010-2014 for the major crops in Jönköping county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	288 800	275 800	319 600	354 800	336 000	315 000
Spring barley	17 100	17 900	16 500	25 300	22 000	19 760
Oats	18 400	19 900	16 900	21 000	15 800	18 400
Winter wheat	8 000				11 200	9 600
Mixed grains	3 900			3 900	4 300	4 033
Spring wheat			3 900		3 400	3 650

* Data from Jordbruksverket (2015)

Table A5-2. *Average oats and spring barley yield in Jönköping county in the period 1965-2014, standard deviation of the differences from the calculated trend and coefficient of variation, based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Spring barley	2 924	283	10
Oats	2 886	355	12

* Coefficient of variation = Standard deviation / Average

Table A5-3. *Coefficient of variation of farm-level yield of important crops in Jönköping county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Temp. grasses		47	41	53	65	41	83	48	53
Spring barley	28	51	31	22	22	30	33	39	32
Oats	23	41	26	25	31	29	30	43	31
Average	26	46	33	33	39	33	49	43	

* Based on yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

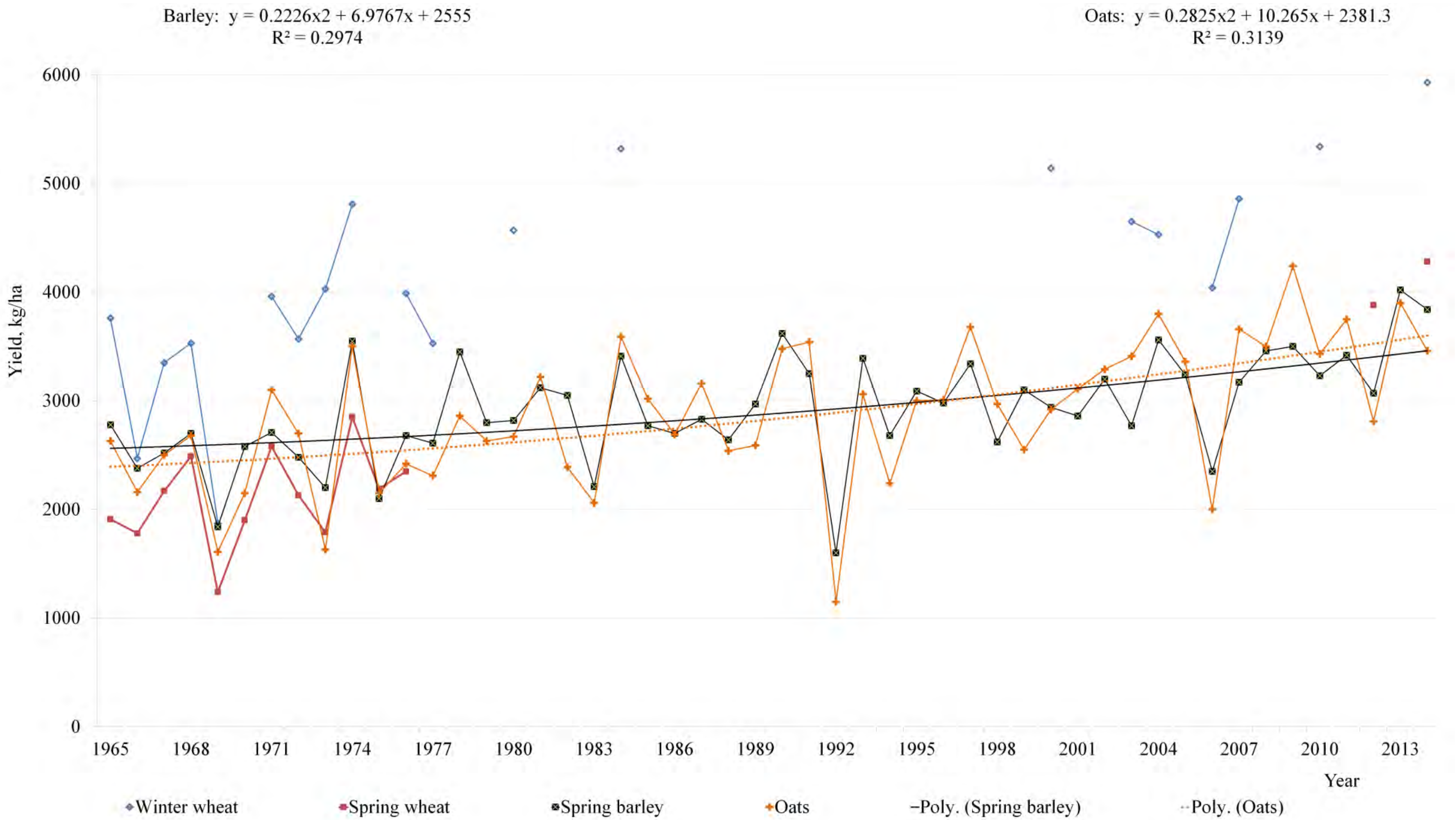

Figure A5-1. Average yield (kg/ha) per year of winter wheat, spring wheat, spring barley and oats in Jönköping county for the period 1965-2014, and the trend lines with respective equations for barley and oats. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

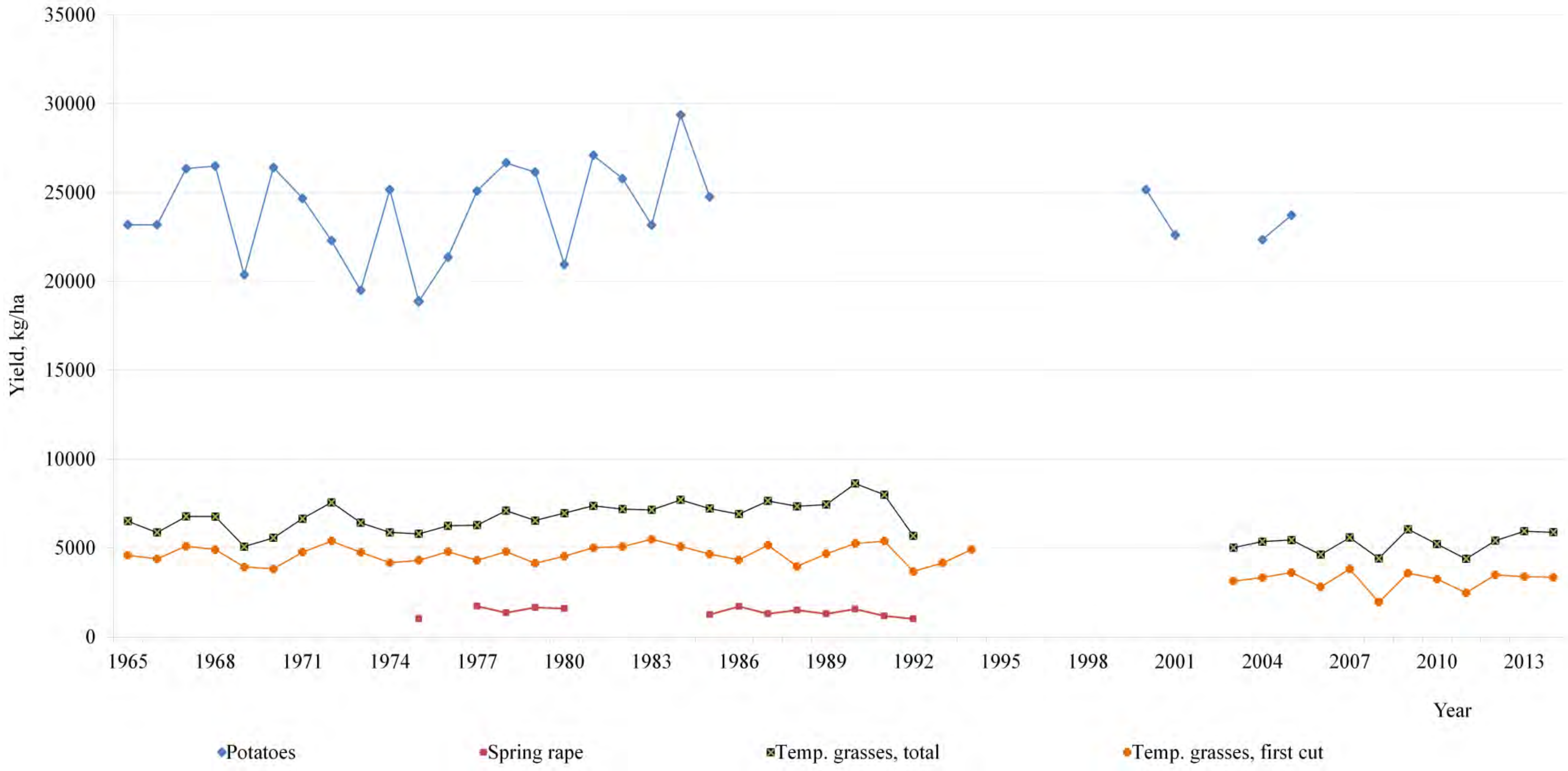

Figure A5-2. Average yield (kg/ha) per year of potatoes, spring rape, temporary grasses (total and first cut) in Jönköping county for the period 1965-2014. Data from Jordbruksverket (2015).

A5.2 Precipitation, temperature and cereal yield

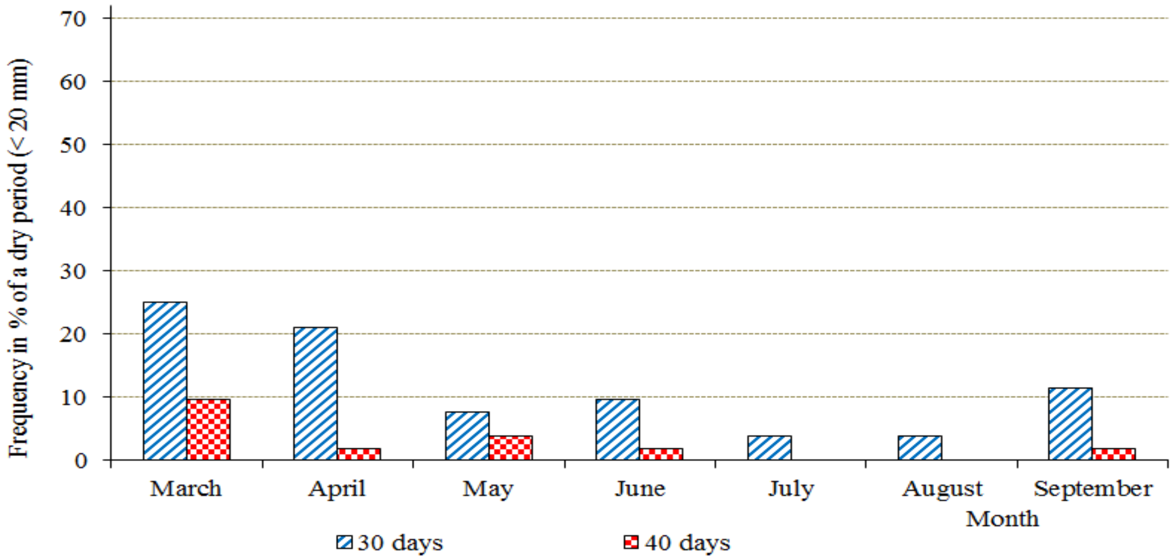

Figure A5-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Jönköping county∗.

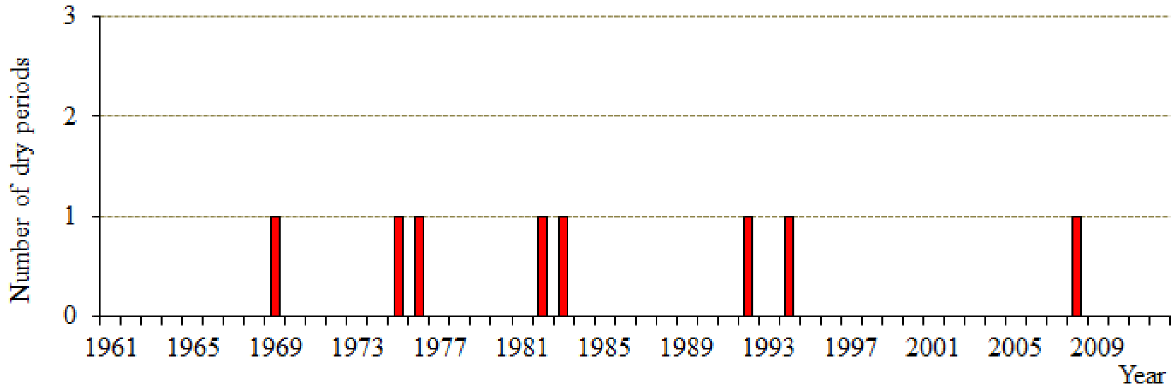

Figure A5-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 May to 31 July in Jönköping county*.

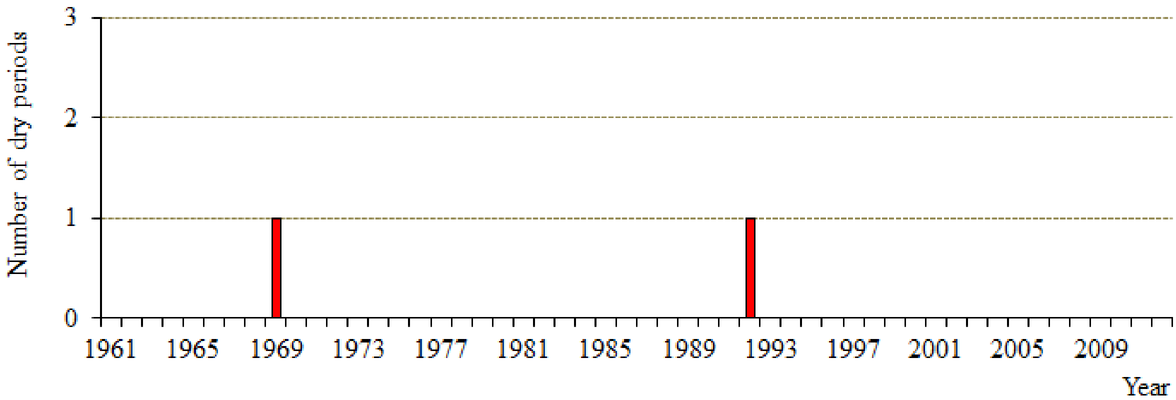

Figure A5-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 May to 31 July in Jönköping county∗.

∗ The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

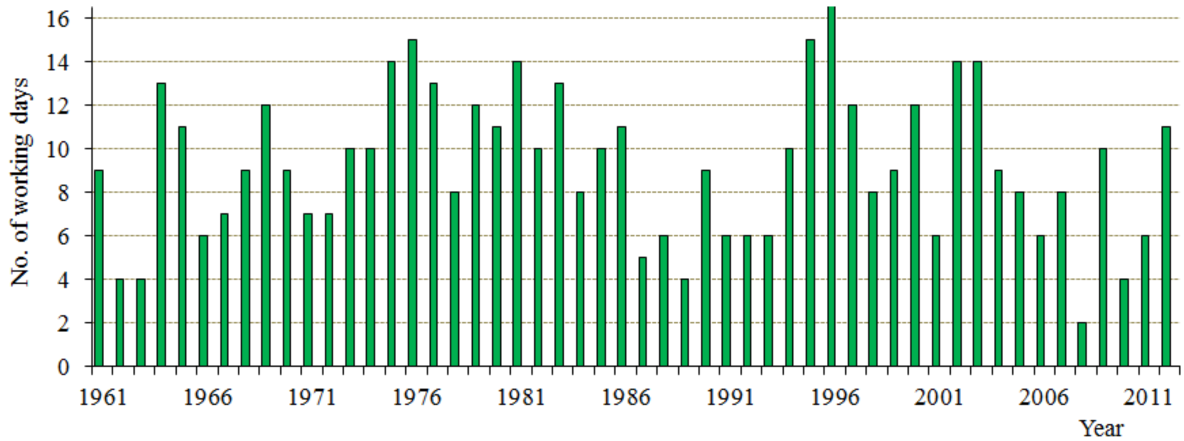

Figure A5-6. Estimated number of working days available for harvesting during the period 3-19 August in Jönköping county (for definition of a working day, see Section 2.1)*.

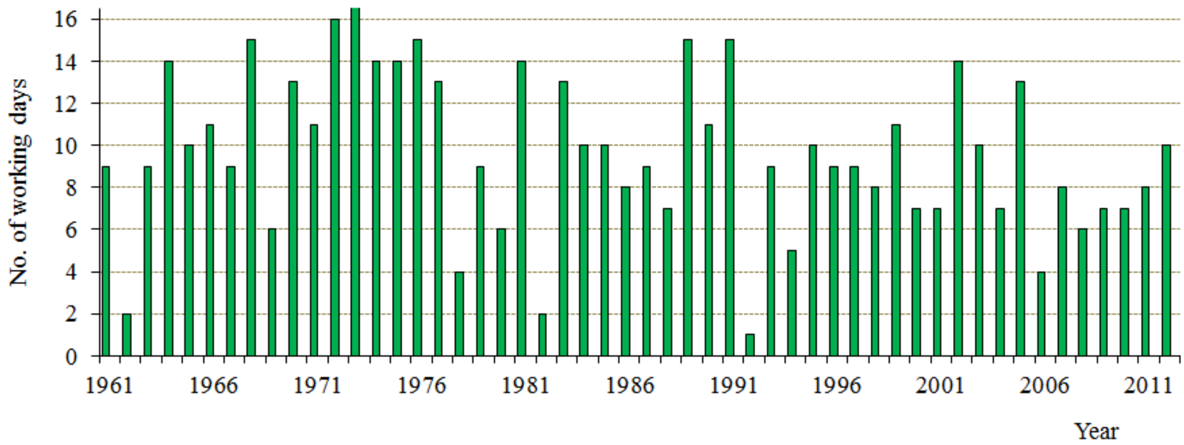

Figure A5-7. Estimated number of working days available for harvesting during the period 20 August-5 September in Jönköping county (for definition of a working day, see Section 2.1)*.

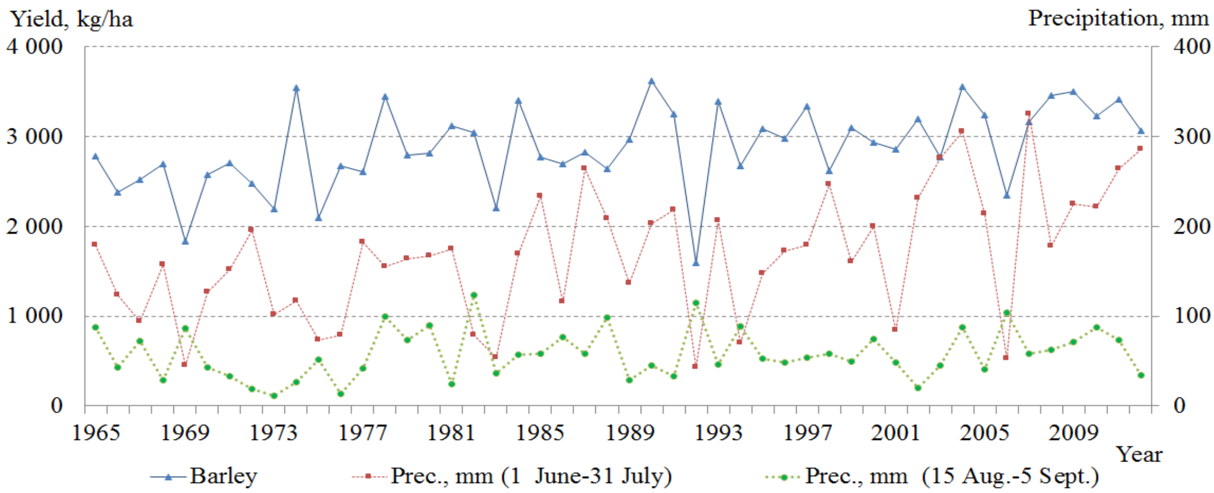

Figure A5-8. Annual barley yield (kg/ha) and precipitation (mm) in the periods 1 June-31 July and 15 August-5 September in Jönköping county, 1965-2012*.

* Precipitation data from Luftwebb (2014) and yields from Jordbruksverket (2015).

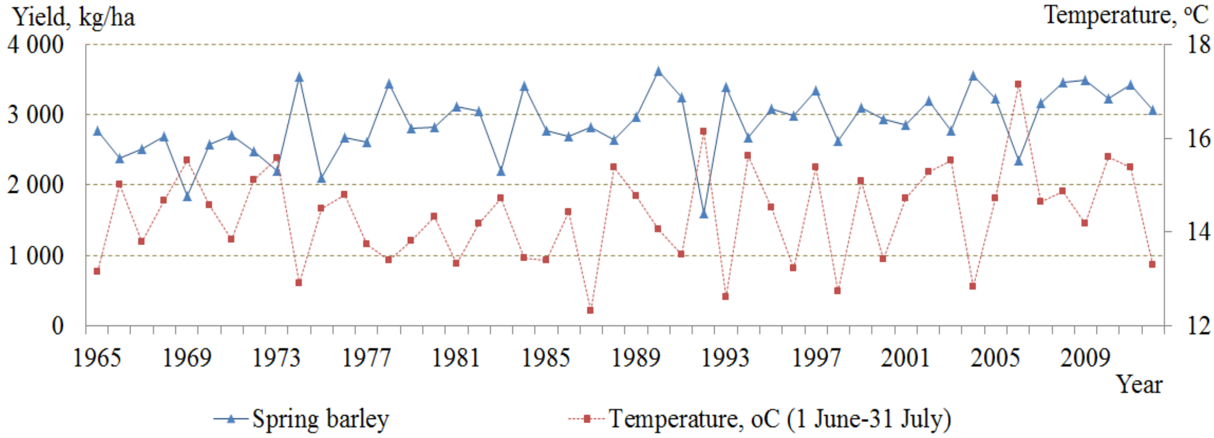

Figure A5-9. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Jönköping county, 1965-2012*.

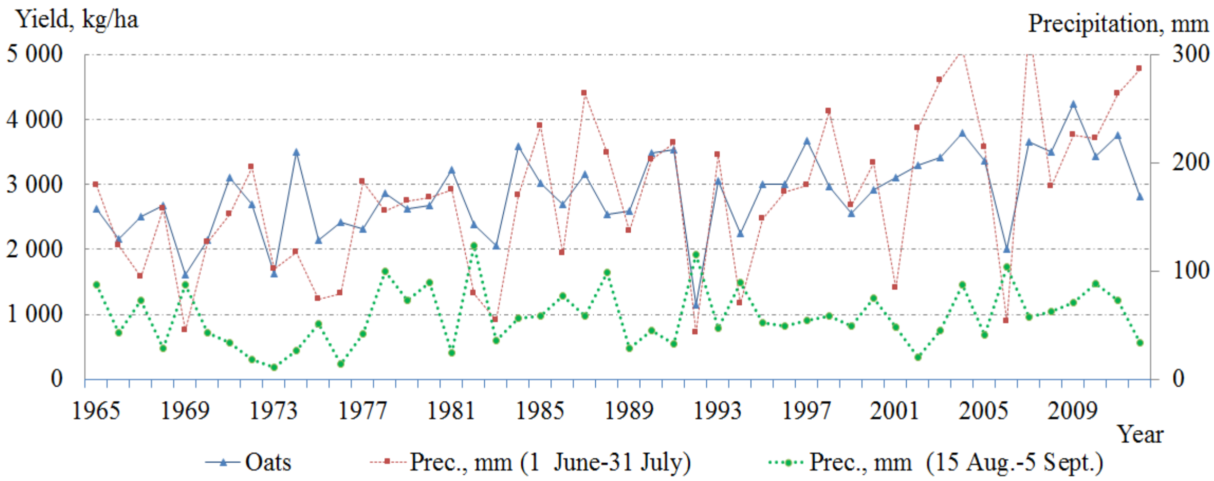

Figure A5-10. Annual oat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Jönköping county, 1991-2011*.

* Precipitation and temperature data from Luftwebb (2014) and yields from Jordbruksverket (2015).

A5.3 Yield on farms

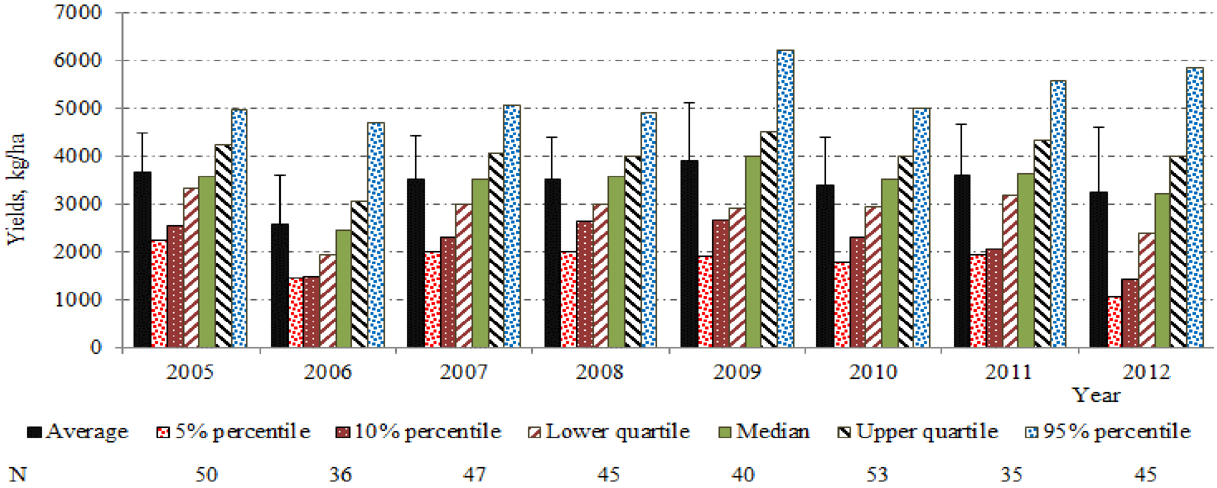

Figure A5-11. Average and estimated percentiles of barley farm-level yield in Jönköping county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

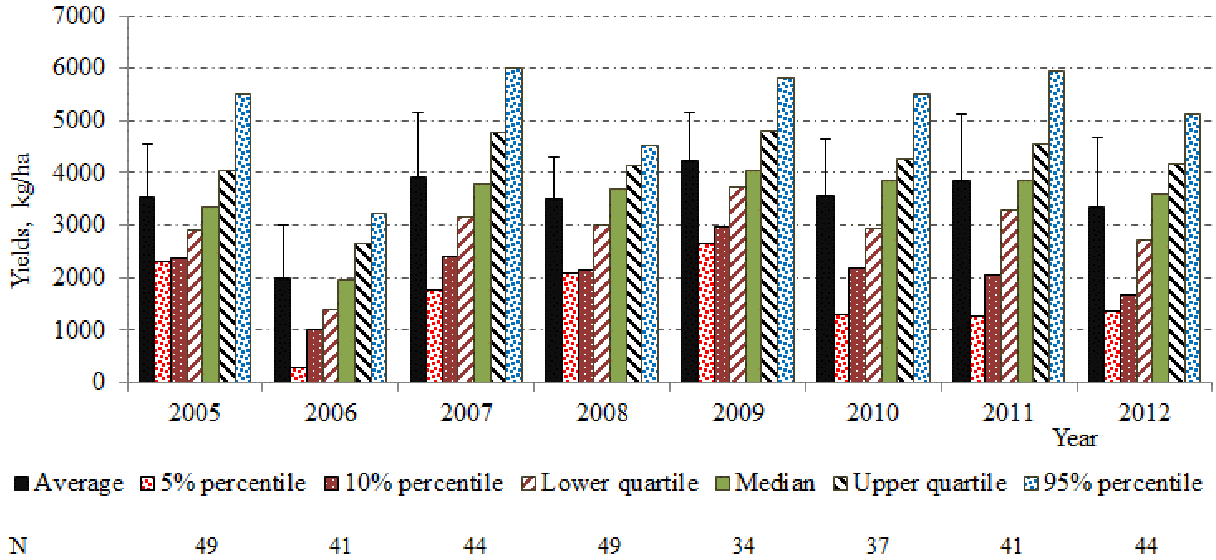

Figure A5-12. Average and estimated percentiles of oat farm-level yield in Jönköping county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

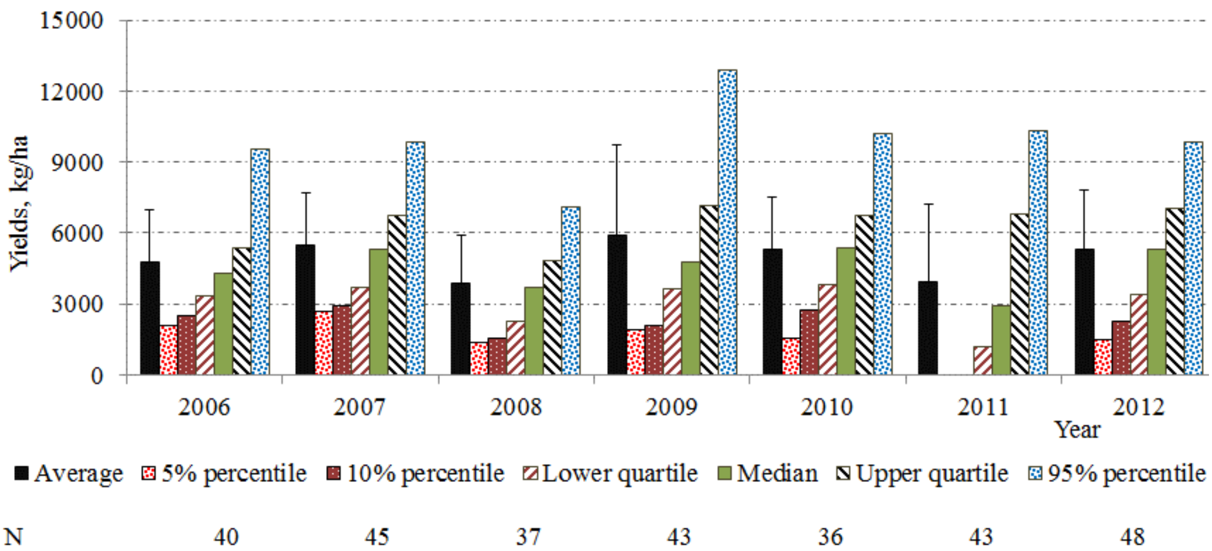

Figure A5-13. Average and estimated percentiles of temporary grasses farm-level yield in Jönköping county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A5.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

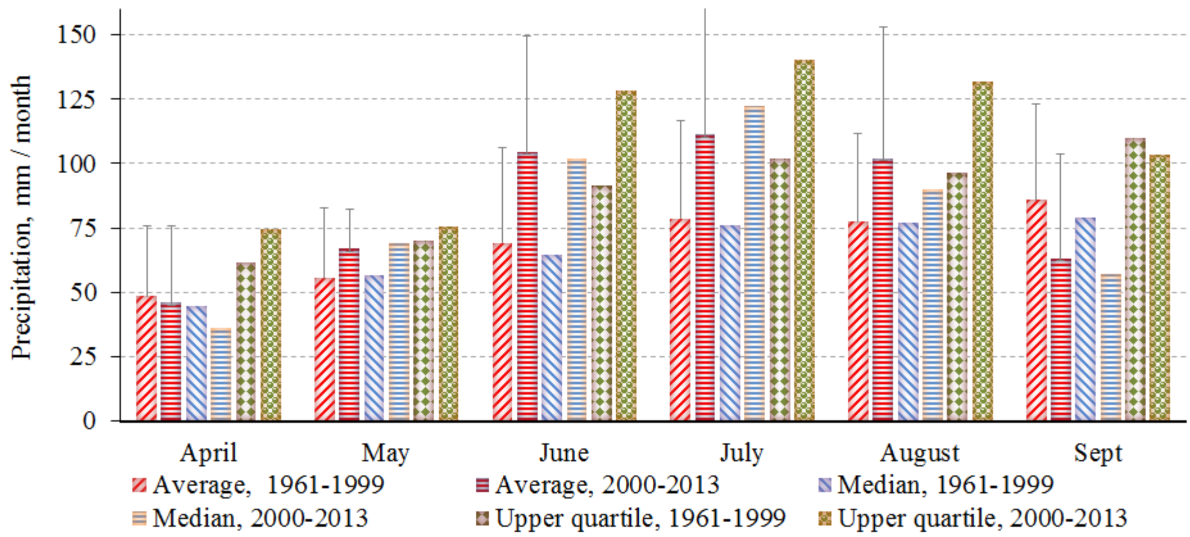

Figure A5-14. Monthly average, median and upper quartile precipitation (mm) from April to September in Jönköping county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1433030-6391998 (close to Nässjö).

County: **Jönköping** **Average temperature (°C) for 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Nässjö** Coordinates for the places (RT90): 1433030-6391998 1414344-6397904 1414344-6387232 1429018-6385898 **Scale for the color intensity:** 30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	-1	-2	-3	-7	-8	-3	-3	0	1	3	0	2	2	6	4	2	2	1	-1	3	7	6	9	8	7	7	7	9	10	10	16	16	14	13	12	14
1962	-4	0	0	1	1	-7	-3	0	-4	0	-4	-5	-6	-6	-9	-6	-4	-1	2	1	3	6	8	4	3	8	6	8	8	7	8	14	12	14	12	11
1963	-7	-14	-12	-11	-8	-7	-9	-8	-6	-13	-5	-4	-4	-2	-6	-4	-3	-2	-1	3	4	4	3	6	6	10	10	8	13	15	13	17	14	13	13	14
1964	0	-2	-5	-3	0	-3	0	-1	-9	-10	-5	-2	-3	-2	-2	-4	-2	-1	0	2	5	12	6	8	7	9	11	9	14	14	11	14	17	13	12	14
1965	-2	-6	1	0	-2	-4	-3	-2	-2	-6	-6	-13	-11	-6	-1	2	-1	2	4	0	4	5	5	6	6	7	9	6	7	10	13	14	13	14	14	13
1966	-12	-5	-8	-10	-7	-3	-8	-15	-14	-11	1	2	1	1	-6	0	0	-1	2	0	-6	-5	3	9	11	6	9	13	9	9	12	14	18	19	16	14
1967	-2	-8	-3	0	-8	-9	-2	-2	-4	-2	0	0	2	4	3	1	2	3	1	2	4	4	2	6	4	7	13	8	11	12	14	10	11	16	12	13
1968	-10	-14	-9	-2	-1	-2	-1	-1	-4	-11	-11	-4	-3	-3	-3	0	5	6	2	-1	4	9	12	9	8	6	7	3	7	11	16	12	17	20	14	13
1969	-8	-6	-3	-1	-6	0	-4	-4	-15	-8	-4	-5	-7	-4	-7	-4	-5	-2	1	5	2	1	4	6	3	8	10	7	9	12	8	13	18	18	18	15
1970	-10	-10	-5	-10	-5	-7	-8	-8	-14	-12	-8	-9	-4	-3	-4	0	-2	-3	-4	-1	0	3	4	3	5	9	10	9	8	10	12	17	13	19	17	16
1971	-9	-2	-2	0	1	-2	-2	0	1	0	-2	-10	-11	-4	-2	1	-1	1	2	3	4	6	3	0	6	12	13	13	6	13	17	12	11	9	11	14
1972	-5	-4	-9	-7	-2	-7	-4	-1	-1	-1	-2	-2	-2	-2	-2	2	2	2	2	5	5	4	2	4	12	8	6	7	12	9	12	14	13	13	11	18
1973	-2	-1	-2	-2	-1	-1	1	0	-2	0	-3	-6	1	0	1	2	6	4	2	1	1	3	4	4	8	8	6	7	12	15	12	16	11	12	18	18
1974	-1	-2	-1	0	0	1	1	-2	2	-1	1	-1	-1	-1	-1	2	1	3	6	7	1	5	5	5	6	6	7	12	10	9	11	9	13	15	14	13
1975	2	-2	3	2	1	0	0	-2	-5	-2	-1	-1	2	3	0	-4	-1	-2	-3	1	0	3	6	8	6	12	11	13	8	8	6	14	14	13	17	12
1976	-5	-2	-5	-2	-6	-10	-6	-5	-4	-3	0	3	-1	-5	-7	-6	-6	2	1	2	5	6	3	1	5	11	9	12	12	7	11	13	13	12	16	18
1977	-2	-4	-2	-4	-6	-5	-4	-4	-6	-4	-3	-9	-2	0	2	2	1	-3	0	-4	0	1	4	6	9	8	9	9	11	9	11	11	19	16	15	12
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1980	-7	-4	-4	-3	-5	-10	-12	-10	-4	-6	-7	-5	-5	-2	-2	-6	-7	-1	0	2	6	4	3	6	5	7	8	11	6	11	15	18	15	14	11	11
1981	-5	-7	-4	-9	-3	-1	1	-1	-4	-4	-4	-4	-5	0	-5	-3	3	2	4	6	7	2	-1	2	2	10	14	13	15	12	14	13	10	11	12	14
1982	-9	-14	-7	-9	-4	-6	-12	-1	0	-4	-7	-3	1	-1	1	1	2	3	4	3	2	4	6	5	4	6	9	10	9	14	20	10	7	11	12	11
1983	2	4	3	-4	3	2	-5	-6	-8	-4	-5	-4	-1	2	0	3	-1	0	1	2	1	6	8	8	5	9	9	11	12	10	11	12	13	15	15	11
1984	0	-3	0	-4	-10	-3	0	-4	-3	-9	-3	-2	-1	-2	-2	-5	-6	0	0	4	5	5	9	7	9	5	7	13	13	13	15	12	10	15	11	11
1985	-11	-14	-10	-8	-5	-7	-7	-17	-13	-16	-6	-1	-2	-3	-1	-2	0	-1	2	-2	1	4	1	0	2	8	11	10	11	16	16	9	9	12	16	12
1986	-7	-11	-1	-8	0	-5	-6	-12	-7	-11	-14	-10	-5	0	-2	0	0	2	1	-1	-2	1	3	7	12	12	10	10	10	11	11	11	14	16	14	18
1987	-12	-19	-17	-8	-5	-10	-2	-3	-2	-7	-7	-9	-17	-9	-7	-3	-2	2	2	2	2	4	6	10	8	8	6	8	10	7	10	11	10	9	12	13
1988	4	-1	0	0	0	-2	1	0	0	-3	-3	-3	-4	-3	-6	-4	-2	1	3	3	2	6	0	5	10	9	12	10	9	16	12	16	14	16	18	18
1989	2	2	3	5	2	3	4	4	1	0	1	2	2	3	3	2	2	5	-2	3	12	3	5	7	10	8	8	12	15	11	9	10	13	17	18	16
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1992	3	0	1	-2	-5	-1	-1	1	2	-6	2	2	4	4	-1	2	3	-1	3	3	4	0	3	7	8	6	10	15	17	16	18	16	15	15	15	18
1993	-7	1	1	3	1	-8	2	-1	-1	-1	-7	-3	-3	-2	1	5	2	-2	2	1	1	4	10	14	10	11	14	13	16	10	11	14	12	11	10	14
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1998	2	0	3	0	-5	-6	-4	2	4	4	5	3	-3	-5	-3	1	-1	5	-2	1	1	3	8	11	8	11	10	12	7	11	12	13	12	10	13	13
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2000	1	2	0	0	-8	0	1	3	1	-3	-3	2	-1	0	0	1	2	0	2	2	3	8	12	15	10	13	13	14	10	9	10	12	13	14	16	12
2001	-1	1	-4	-4	-1	-1	-13	-1	2	0	-6	-9	-8	1	3	-5	-4	-1	5	5	0	2	4	7	9	10	13	10	10	9	11	9	10	12	14	18
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2005	2	5	1	0	-4	-4	0	-4	-2	-4	-4	-8	-10	-3	-5	-2	2	2	5	4	7	4	4	7	9	6	9	7	12	13	10	11	11	15	17	14
2006	-6	-5	-1	-6	-9	-5	-7	-3	-4	-2	-4	-7	-8	-9	-7	-3	-5	2	2	1	3	5	6	6	9	14	10	9	9	9	10	15	19	18	14	15
2007	3	5	3	1	-6	-3	1	-6	-3	-1	-6	-1	1	3	6	2	3	6	5	2	10	7	7	10	9	8	9	10	13	12	13	20	16	14	15	12
2008	-3	1	2	3	0	2	0	2	-1	1	4	3	-1	3	3	-2	-4	1	5	3	3	5	7	12	10	14	11	7	10	14	17	18	11	12	11	13
2009	-8	-2	0	-3	0	-1	-4	-1	-6	-8	-1	-1	0	0	-1	1	-1	1	6	7	8	5	8	13	9	8	8	10	12	13	10	8	12	11	15	19
2010	-9	-11	-7	-3	-7	-11	-4	-6	-7	-6	-9	1	-7	-5	-3	1	1	4	3	5	5	4	4	10	5	4	8	12	12	9	14	12	11	12	14	17
2011	-5	-1	-4	-1	-3	-6	1	0	-8	-9	-9	-3	-2	-1	0	-1	4	0	5	7	7	10	11	10	3	12	11	10	11	12	16	17	12	12	12	18
2012	2	-2	0	-1	-4	-5	-13	-9	-5	-2	3	1	0	0	4	4	7	5	-1	0	5	3	6	9	9	8	9	9	17	12	8	11	12	13	13	14
Average	-4	-4	-2	-3	-3	-4	-3	-3	-4	-5	-3	-3	-3	-1	-1	-1	0	1	2	2	4	4	6	7	7	9	9	10	11	11	13	13	13	14	14	14
By quartile																																				
Min. value	-13	-19	-17	-11	-10	-11	-13	-17	-15	-16	-14	-13	-17	-9	-9	-9	-7	-3	-4	-4	-6	-5	-1	0	2	4	3	3	6	7	6	8	7	9	10	11
Lower	-8	-6	-4	-5	-6	-7	-6	-6	-7	-7	-6	-5	-4	-3	-3	-3	-2	-1	1	1	2	3	3	5	5	7	8	8	9	9	11	11	11	12	12	12
Median	-4	-2	-2	-2	-3	-4	-3	-2	-4	-4	-4	-2	-2	-1	-1	0	0	2	2	2	4	4	6	7	8	8	9	10	10	11	12	13	13	13	14	14
Upper	0	0	0	0	0	-1	0	0	0	-1	0	1	0	1	1	2	2	3	4	4	5	6	8	9	9	11	11	12	12	13	15	15	14	15	15	16
Max. value	4	5	3	5	3	3	5	4	4	4	7	3	4	6	6	8	7	6	7	8	12	12	12	15	16	15	14	15	17	18	20	20	19	20	18	19
Range	16	24	20	16	13	14	18	22	19	20	20	16	20	15	14	17	14	10	11	11	17	16	13	15	14	11	12	12	11	11	13	12	12	11	8	8

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	16	12	14	14	14	13	13	14	12	11	12	14	14	11	12	13	10	11	11	11	10	9	9	7	4	4	2	0	1	0	1	-3	-7	-2	-7	-7
1962	10	12	12	15	14	13	12	11	12	12	12	11	12	10	8	8	8	8	12	8	4	7	7	4	4	4	1	-2	-3	-1	-1	1	-1	-8	-10	-8
1963	18	13	12	15	17	14	18	16	14	13	12	12	13	11	11	11	12	7	7	6	5	7	8	6	5	4	3	2	-1	2	-1	-2	-5	-8	-7	2
1964	11	11	15	18	14	14	12	16	13	14	11	14	12	12	9	9	8	10	6	9	7	5	6	1	2	1	4	1	3	1	-2	3	2	-2	-2	-7
1965	10	11	13	15	15	12	11	13	11	14	16	11	12	11	10	11	11	12	9	7	7	6	6	7	4	1	-5	-7	-8	-2	-1	-3	-10	-7	-3	-6
1966	15	15	13	15	18	13	13	13	14	14	12	11	13	11	12	9	8	4	10	8	5	9	6	0	1	5	0	0	0	1	2	0	-3	-2	-6	-3
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1968	18	13	11	13	13	16	16	17	13	12	15	16	17	16	9	8	8	8	6	2	7	3	6	7	2	-1	-3	-1	3	4	-1	-3	-5	-2	-1	-5
1969	14	13	15	16	18	19	19	18	16	16	13	13	12	14	16	9	10	7	5	11	6	8	5	5	2	2	4	3	-2	-6	-8	-8	-3	-6	-8	-4
1970	12	17	12	13	13	14	16	15	13	12	14	14	12	11	11	12	6	6	7	10	6	7	3	1	0	-4	-1	2	3	1	0	2	1	3	-5	-6
1971	17	20	14	11	14	17	17	14	13	14	13	12	11	10	6	8	11	7	9	9	4	6	6	4	7	0	1	-4	-3	2	1	0	0	5	4	-3
1972	15	16	14	19	18	16	15	17	14	13	12	11	10	13	8	8	8	4	6	8	6	3	2	6	6	6	2	-2	0	3	4	4	4	3	-2	-1
1973	20	18	16	16	14	16	16	14	16	15	10	12	13	12	8	10	9	6	9	7	0	-1	-1	2	1	4	-2	-2	-1	-11	-5	-6	-2	-5	0	2
1974	13	14	13	15	13	12	12	14	13	14	14	14	14	12	12	11	9	7	6	5	2	3	4	2	2	2	5	5	0	0	1	1	-1	-1	5	-1
1975	16	17	16	16	15	17	19	23	18	14	14	16	15	11	11	13	11	9	10	5	3	5	7	8	6	1	3	1	-4	1	1	1	0	-3	2	3
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1981	13	17	15	13	14	14	15	16	17	12	12	10	12	13	10	6	11	12	10	7	4	3	2	3	3	-1	0	2	2	-2	-1	-9	-12	-14	-7	-7
1982	12	15	19	17	18	18	21	19	14	13	11	12	10	9	11	14	10	11	10	8	7	6	7	6	4	2	5	2	4	2	-1	-1	-2	-2	1	1
1983	13	20	19	14	16	17	15	18	14	14	16	15	15	10	11	11	9	7	8	5	8	7	4	6	5	6	-2	-1	-3	-3	-2	-3	-6	-3	0	2
1984	12	16	16	15	14	15	17	15	14	14	16	13	10	9	9	9	9	7	10	9	7	8	7	8	6	5	1	0	3	2	2	4	-2	-2	1	-3
1985	15	15	16	14	13	15	13	13	14	14	13	13	12	9	10	9	6	6	14	9	7	7	4	3	1	3	-2	-3	-2	-4	0	-7	-3	-5	3	-5
1986	19	12	13	15	13	16	16	14	12	12	9	10	9	8	7	8	6	5	7	7	8	6	3	6	2	4	3	4	4	6	5	2	-1	-3	-8	-6
1987	14	16	13	14	15	12	11	10	11	13	14	11	12	11	10	7	9	6	4	9	9	8	6	3	3	-1	2	3	0	-2	-6	-5	-2	-3	0	4
1988	17	15	16	15	15	13	12	16	15	14	12	13	13	11	10	11	11	10	8	8	7	7	1	0	-1	-1	2	-1	-3	-6	-9	-3	-3	-3	1	4
1989	16	20	13	12	18	16	12	14	15	16	14	10	11	12	8	12	14	8	6	5	4	9	10	7	5	5	5	-1	-5	-3	1	-3	-10	-2	3	0
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1991	18	21	16	14	16	17	19	17	13	14	15	13	15	9	9	10	10	8	8	9	9	5	1	4	5	2	2	-1	3	4	1	-2	2	2	-1	0
1992	15	17	16	16	19	15	15	17	14	13	12	13	11	10	10	9	11	8	6	5	2	1	2	-2	3	2	2	1	0	2	4	1	2	1	-6	-5
1993	15	12	12	15	13	12	14	13	12	12	11	10	9	9	7	5	9	5	8	10	5	2	0	2	0	3	1	-2	-3	-3	1	1	-5	1	-1	-2
1994	17	19	22	17	20	23	20	17	16	14	14	12	13	11	11	10	10	7	3	6	8	-1	5	5	4	2	-1	1	5	2	0	3	0	0	-1	1
1995	12	15	17	16	15	19	18	15	17	19	17	11	13	13	12	8	10	6	9	12	10	10	5	6	-3	0	0	-5	1	0	-3	-3	-2	-5	-9	-10
1996	11	12	14	13	16	13	15	16	17	17	18	15	12	8	8	8	5	8	8	8	8	8	4	6	9	2	0	2	1	-2	1	0	-5	-9	-11	-7
1997	17	17	16	16	17	15	16	18	19	19	19	19	17	12	11	9	10	9	7	9	3	5	0	-1	0	5	4	0	0	-4	-3	3	0	-6	-1	0
1998	14	13	12	13	16	13	13	13	14	13	11	10	10	14	12	11	11	10	5	6	6	5	7	4	0	-2	0	-5	-4	-2	-4	-8	-3	2	-3	1
1999	15	17	19	16	15	17	19	16	13	13	12	14	14	15	12	12	14	12	10	6	6	2	5	7	8	5	2	-1	-1	4	-2	2	-3	-5	-3	-3
2000	15	12	13	14	16	14	15	13	15	14	12	13	10	12	8	8	7	11	12	11	9	9	9	6	6	6	5	4	5	5	6	5	5	-1	-5	-3
2001	18	21	14	14	17	18	15	13	15	18	16	13	13	10	11	12	9	6	11	11	11	9	4	8	5	-1	1	1	0	0	0	1	-1	-2	-9	-8
2002	13	17	17	19	14	18	18	17	19	18	17	16	15	15	12	10	7	8	9	1	2	-1	3	3	-1	-1	0	0	1	1	-1	-5	-5	-4	-8	-7
2003	14	16	17	20	18	17	18	17	17	15	14	10	10	13	13	14	11	6	7	6	3	2	-3	2	6	3	1	4	3	3	3	0	0	1	-3	0
2004	12	13	13	14	14	15	18	20	17	17	12	12	13	12	12	10	9	9	8	6	3	7	8	4	4	2	3	-4	-3	0	2	3	2	-1	-1	-1
2005	17	20	19	15	14	15	14	13	15	16	16	13	14	14	11	9	12	10	9	10	8	3	6	7	8	8	6	-2	0	-3	-1	0	2	-5	0	-4
2006	20	20	16	19	20	19	17	18	15	15	15	13	14	13	14	13	14	13	11	11	8	9	10	5	-1	5	3	6	5	7	6	5	5	0	2	2
2007	15	14	13	16	14	13	15	18	17	14	17	9	10	11	10	9	12	10	8	6	5	5	2	5	4	1	-2	1	1	0	3	4	-1	-2	-1	2
2008	17	14	15	14	17	20	15	15	14	14	13	12	13	13	8	8	10	9	7	8	9	7	7	3	-1	5	6	1	-4	3	1	0	-1	2	0	-4
2009	19	15	15	16	16	15	16	18	13	15	14	14	14	14	11	10	11	9	5	5	2	4	5	3	1	4	3	6	6	4	-1	2	-2	-9	-5	-6
2010	19	18	22	18	16	15	16	16	18	15	14	11	9	12	12	9	11	7	8	7	3	2	2	5	5	-1	3	-1	-2	-9	-9	-5	-7	-7	-12	-10
2011	17	18	14	15	16	17	17	14	14	13	15	14	14	12	13	10	11	13	13	7	4	4	5	7	8	4	1	4	4	5	2	0	1	0	1	2
2012	16	17	13	12	16	16	16	14	14	16	14	13	14	12	11	10	7	9	10	6	3	9	5	0	4	4	5	4	4	0	-9	-8	-7	-1	-3	0
Average	15	15	15	15	15	16	16	15	15	14	14	13	12	11	10	10	9	8	8	8	6	5	5	4	3	3	2	1	0	0	0	-1	-2	-3	-3	-3
By quartile																																				
Min. value	10	11	11	11	12	12	11	10	11	11	9	9	9	8	6	5	5	4	1	1	0	-1	-3	-2	-3	-4	-5	-7	-8	-11	-9	-9	-12	-14	-12	-12
Lower	13	13	13	14	14	13	14	14	13	13	12	11	11	10	9	8	8	7	6	6	4	3	2	2	1	1	0	-1	-2	-2	-2	-3	-4	-6	-6	-6
Median	15	15	14	15	15	15	16	15	14	14	14	13	12	11	11	9	9	8	8	8	6	6	5	5	4	2	2	1	0	0	0	0	-2	-2	-2	-3
Upper	17	17	16	16	16	17	17	17	16	15	15	14	14	13	11	11	11	10	10	9	8	8	7	6	6	5	3	2	3	3	2	2	0	0	0	1
Max. value	20	21	22	20	20	23	21	23	19	19	19	19	17	16	16	14	14	13	14	12	11	10	10	8	9	8	6	6	6	7	6	5	5	5	5	4
Range	10	10	11	9	8	11	10	13	8	8	9	11	8	9	9	10	9	10	13	11	11	11	13	10	12	12	12	13	14	18	15	14	17	19	17	17

Figure A5-15. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Jönköping county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Jönköping** **Total precipitation , mm / 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Nässjö** Coordinates for the places (RT90): 1433030-6391998 1414344-6397904 1414344-6387232 1429018-6385898

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31
1961	16	6	3	0	1	22	11	11	1	0	1	3	2	0	5	12	4	13
1962	9	6	18	22	24	4	17	8	24	4	2	1	6	8	0	0	5	12
1963	7	1	7	1	4	3	11	1	5	1	0	0	0	5	4	0	3	1
1964	4	1	0	0	2	12	7	2	13	4	0	1	0	0	0	1	0	0
1965	7	8	12	16	6	15	6	0	14	4	2	12	0	1	3	8	6	6
1966	23	1	7	1	5	5	24	6	33	9	16	8	4	9	7	2	15	24
1967	20	9	3	12	20	32	12	0	0	6	24	10	13	4	6	9	5	20
1968	4	2	20	21	5	11	12	14	4	16	0	0	2	4	5	18	8	4
1969	6	2	29	20	31	11	15	12	5	9	4	2	0	18	0	0	0	7
1970	6	1	7	3	0	10	4	7	1	6	3	0	12	16	2	14	8	23
1971	4	5	0	4	15	4	1	1	9	8	8	4	6	19	5	16	6	1
1972	4	1	0	8	1	13	11	15	4	1	0	1	3	17	0	0	1	19
1973	5	0	1	11	18	16	2	13	35	8	5	1	6	2	0	9	0	3
1974	1	2	35	15	3	12	6	23	6	3	1	1	0	0	0	47	5	0
1975	8	30	14	20	23	14	3	0	1	1	0	0	3	9	18	0	3	29
1976	21	8	1	22	5	1	0	2	6	1	2	1	0	9	2	0	3	15
1977	18	16	31	8	17	23	6	11	11	11	21	0	13	1	18	36	2	13
1978	18	4	9	1	10	11	10	6	17	1	5	0	7	5	38	17	13	28
1979	7	11	14	2	14	33	13	1	1	11	1	1	4	7	12	5	15	17
1980	5	6	1	0	6	19	1	20	6	0	0	0	2	3	1	1	0	11
1981	6	6	18	3	3	0	15	22	10	4	7	0	7	15	7	21	16	16
1982	10	2	0	0	7	21	1	9	2	0	0	1	11	7	13	24	1	3
1983	14	11	12	20	3	18	22	4	0	0	0	3	4	12	11	13	34	13
1984	20	10	46	25	7	14	14	9	0	2	4	2	4	2	0	0	0	12
1985	3	1	1	2	27	9	6	2	1	3	6	0	10	21	1	1	10	20
1986	15	10	15	13	17	5	4	1	2	5	4	0	2	0	2	0	20	30
1987	14	5	3	1	1	5	3	22	5	9	0	0	0	0	1	13	2	19
1988	30	32	13	2	18	25	18	33	5	9	23	16	14	10	3	17	12	8
1989	2	2	11	0	1	1	19	2	14	18	8	9	5	5	15	3	27	5
1990	0	5	17	16	36	39	15	46	9	7	15	21	9	13	5	2	13	0
1991	21	53	3	1	0	0	2	8	9	1	5	1	6	0	7	4	8	3
1992	38	17	1	2	1	0	6	9	27	1	3	0	5	2	16	14	11	6
1993	1	19	62	13	30	2	1	0	1	26	0	9	4	0	1	6	7	2
1994	12	4	36	8	17	22	14	7	1	7	8	10	11	10	17	10	18	11
1995	4	24	8	4	26	16	6	4	24	17	19	12	17	4	3	26	11	11
1996	0	4	2	2	4	1	1	1	7	15	3	4	1	2	2	0	0	12
1997	0	0	5	3	2	0	9	10	24	15	31	2	5	0	7	0	0	17
1998	23	17	8	9	17	6	12	4	17	8	5	13	34	3	7	7	3	9
1999	23	10	9	12	17	16	5	17	6	8	6	16	24	14	4	8	14	4
2000	5	10	10	1	1	22	11	18	8	1	12	10	20	18	5	1	1	18
2001	18	14	0	2	13	9	8	15	6	2	7	13	6	3	16	9	0	5
2002	3	1	2	15	26	48	14	22	12	2	16	18	9	25	2	14	2	0
2003	3	2	11	6	8	7	12	0	0	0	0	0	0	8	6	0	0	0
2004	0	6	16	9	0	36	8	10	0	7	15	3	0	0	11	27	20	3
2005	11	25	4	17	2	1	2	10	24	6	5	6	1	3	22	8	0	0
2006	7	1	1	15	6	0	2	20	1	12	5	4	15	0	2	1	6	26
2007	26	22	21	34	20	22	8	10	2	2	11	13	6	18	0	29	1	0
2008	11	14	14	16	22	33	15	7	0	2	10	20	13	7	16	20	10	1
2009	1	5	2	9	7	1	10	16	5	1	10	4	6	7	7	6	19	12
2010	12	3	0	9	0	15	15	0	8	36	12	8	9	0	0	2	8	11
2011	16	14	19	3	3	1	13	19	2	0	0	0	0	13	2	27	0	14
2012	42	12	16	3	11	0	1	1	12	11	5	2	0	3	0	10	0	7
Average	11	9	11	9	11	13	9	10	8	6	7	5	7	7	6	10	7	11
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	4	2	2	2	3	3	4	2	1	1	1	0	1	2	1	1	1	3
Median	8	6	9	8	7	11	8	8	6	5	5	2	5	5	4	8	5	11
Upper	18	12	16	15	18	19	13	15	12	9	10	10	9	11	8	15	12	16
Max. value	42	53	62	34	36	48	24	46	35	36	31	21	34	25	38	47	34	30

Month	April						May						June					
Year / Day	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	18	9	12	0	0	0	14	14	13	7	0	23	3	25	16	6	7	18
1962	16	16	15	12	3	7	3	13	7	10	27	16	2	0	12	20	14	13
1963	1	0	15	10	1	5	10	4	2	8	7	2	2	2	6	20	16	25
1964	0	3	1	0	10	12	11	8	3	3	0	1	19	4	4	10	12	1
1965	0	20	9	18	4	9	0	13	1	5	2	0	0	7	19	23	8	11
1966	7	0	8	16	23	0	20	5	1	9	12	13	13	2	0	6	6	42
1967	14	15	5	12	2	9	2	11	10	17	14	2	5	16	0	1	6	25
1968	26	10	0	0	11	4	16	26	11	20	3	1	2	13	0	9	13	22
1969	1	3	15	7	3	7	31	10	30	60	2	14	5	0	0	2	2	0
1970	30	26	3	6	22	13	1	0	4	4	8	20	2	8	5	0	13	5
1971	9	3	0	7	1	19	1	0	5	4	7	11	6	3	17	8	8	26
1972	21	13	13	6	0	7	1	0	0	27	15	30	11	2	5	6	14	27
1973	14	9	10	16	3	10	22	19	4	1	15	5	16	5	0	0	4	14
1974	0	0	2	0	1	0	5	0	0	0	4	29	3	11	4	16	14	0
1975	13	19	8	0	0	1	12	3	42	9	12	14	20	0	1	2	0	2
1976	18	2	3	1	7	13	14	3	10	0	6	37	4	1	21	10	0	0
1977	12	21	6	8	17	16	21	8	31	0	0	1	10	8	18	6	0	28
1978	1	0	8	0	14	0	0	0	6	6	5	0	12	24	16	2	18	30
1979	13	0	4	4	20	21	10	8	0	3	23	9	2	7	4	0	13	9
1980	0	1	0	29	6	9	1	3	0	11	14	11	2	4	9	32	24	21
1981	0	0	0	3	3	9	18	1	0	6	27	17	7	18	30	16	26	11
1982	0	17	2	2	2	10	22	12	0	15	13	0	0	4	38	4	1	18
1983	21	7	4	5	11	24	0	2	21	22	3	20	12	5	4	0	0	20
1984	6	1	0	3	1	0	15	1	7	5	6	9	11	9	13	3	72	18
1985	32	22	3	9	9	51	7	3	0	0	4	5	7	12	52	6	16	37
1986	0	2	7	25	20	5	0	14	16	6	22	1	10	10	0	0	0	0
1987	0	4	5	11	1	0	1	4	22	30	3	7	8	11	24	66	25	5
1988	4	7	0	24	14	0	19	1	0	5	4	10	10	5	0	1	18	4
1989	2	5	0	4	7	5	1	5	24	0	0	8	15	25	0	0	4	6
1990	3	4	9	7	1	4	0	0	26	16	5	2	1	12	1	34	37	14
1991	7	5	2	3	1	6	45	0	5	6	2	7	39	19	26	42	18	34
1992	24	4	28	5	6	38	3	7	8	0	0	0	0	0	0	1	0	0
1993	4	5	0	2	6	0	5	9	19	1	2	11	7	0	5	22	17	11
1994	14	0	15	0	0	5	0	0	2	2	3	16	28	8	1	7	9	5
1995	6	15	5	38	2	9	1	4	17	30	21	8	16	20	19	23	12	5
1996	0	1	1	0	13	5	33	17	12	23	40	8	3	22	6	16	8	13
1997	6	4	2	2	16	8	14	40	9	1	2	7	0	14	2	6	38	25
1998	40	0	18	7	6	12	20	7	4	0	8	5	18	29	22	39	12	23
1999	1	15	28	46	7	1	1	12	10	0	13	13	20	19	14	3	20	33
2000	15	0	31	14	5	7	3	0	0	12	27	17	8	22	8	1	37	26
2001	11	8	10	17	11	9	5	2	1	28	0	32	4	15	0	9	9	15
2002	0	2	6	0	2	31	31	2	5	5	10	43	0	7	46	28	13	28
2003	8	27	3	0	4	54	22	12	17	11	32	0	2	15	22	12	32	14
2004	10	11	0	2	5	0	19	15	22	1	7	6	1	4	25	44	26	9
2005	2	9	16	1	0	1	20	9	6	3	20	13	28	11	28	7	6	0
2006	12	18	9	19	1	31	15	0	1	25	18	16	0	0	0	6	8	16
2007	1	16	0	14	3	0	0	13	11	8	12	12	3	1	2	40	42	88
2008	8	6	13	1	0	1	31	0	1	5	0	0	0	1	11	13	11	25
2009	0	3	1	0	0	1	10	26	1	13	13	8	19	18	18	16	5	6
2010	3	2	0	2	4	8	7	9	11	25	18	5	0	58	18	6	0	1
2011	6	1	1	0	0	2	4	0	18	5	13	21	0	65	4	54	39	16
2012	3	26	11	10	31	12	0	21	7	5	1	16	7	30	8	32	69	13
Average	9	8	7	8	7	10	11	8	9	10	10	11	8	12	12	14	16	16
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	2	1	1	1	1	1	1	1	3	3	4	2	3	1	2	6	5
Median	6	5	5	5	4	7	8	5	6	6	7	9	6	9	7	8	12	14
Upper	14	15	11	12	10	12	19	12	14	13	15	16	12	18	18	21	19	25
Max. value	40	27	31	46	31	54	45	40	42	60	40	43	39	65	52	66	72	88

Month	July						August						September					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30
1961	19	22	21	70	9	29	35	4	17	12	23	3	19	35	21	0	2	6
1962	27	13	8	16	12	14	8	46	14	34	22	35	20	26	26	4	5	0
1963	2	29	14	8	4	9	11	15	33	14	13	5	27	3	0	0	19	16
1964	6	27	8	5	21	8	3	7	2	11	9	11	0	7	37	46	0	3
1965	16	17	21	0	28	27	20	7	1	2	23	10	53	30	10	19	2	32
1966	4	19	16	0	8	8	21	10	20	0	0	4	40	13	15	0	1	0
1967	21	0	2	8	7	5	8	6	37	34	0	18	20	23	0	16	48	12
1968	1	26	26	30	15	0	0	1	31	15	1	11	1	2	6	5	6	14
1969	5	8	0	15	7	0	0	0	36	16	40	23	8	0	0	7	15	32
1970	11	16	20	13	23	12	27	10	3	28	4	0	11	6	31	4	0	10
1971	0	0	13	18	23	30	5	24	42	0	0	19	14	3	7	17	12	5
1972	8	19	34	4	0	63	18	6	35	14	5	0	0	27	6	13	6	0
1973	0	11	17	6	17	12	8	21	0	7	0	1	4	2	0	25	45	24
1974	11	11	24	5	4	15	16	2	23	3	2	6	16	28	1	6	22	31
1975	0	1	17	16	15	0	1	0	0	31	20	0	0	19	69	2	27	17
1976	2	6	0	14	3	19	16	0	0	3	0	5	6	23	17	6	0	22
1977	17	6	2	25	37	24	28	3	2	1	2	33	6	12	45	1	0	24
1978	12	15	11	9	6	0	24	16	5	4	10	28	58	31	52	4	18	14
1979	6	21	12	14	23	55	14	24	7	9	23	37	4	4	5	15	2	9
1980	15	10	2	48	0	1	46	16	0	11	47	28	4	23	26	10	5	3
1981	9	8	13	24	11	2	0	0	3	13	7	4	0	0	12	19	10	7
1982	11	1	0	2	0	0	0	7	18	51	29	20	24	14	1	4	5	4
1983	12	0	0	0	0	1	9	7	6	3	0	0	33	22	31	11	23	0
1984	6	0	11	10	14	3	21	10	19	4	0	9	44	14	16	12	19	13
1985	1	4	19	30	10	40	38	16	6	3	10	1	45	27	12	11	12	7
1986	16	16	4	1	54	5	0	8	2	25	9	32	10	12	34	7	1	1
1987	1	7	38	13	13	53	43	17	13	4	38	13	4	19	22	4	13	12
1988	46	9	24	55	6	31	27	0	24	26	13	10	49	1	10	2	22	32
1989	0	24	27	7	0	29	15	16	33	15	6	2	6	8	5	11	5	0
1990	27	26	2	15	31	3	2	13	9	19	14	1	12	18	3	22	41	49
1991	1	2	10	22	5	2	5	11	10	20	8	2	1	2	2	13	26	47
1992	8	2	14	5	0	12	11	7	24	17	50	28	19	2	18	2	3	0
1993	3	15	46	14	27	41	15	44	14	3	6	16	22	0	17	10	2	1
1994	0	0	5	1	0	6	9	6	16	15	1	28	46	29	54	24	1	26
1995	9	2	17	18	8	0	11	0	4	0	7	4	41	12	48	7	11	46
1996	28	52	4	3	0	18	4	0	2	0	10	37	2	4	22	0	0	18
1997	24	0	1	7	20	42	11	0	0	6	10	12	26	6	16	4	1	3
1998	11	13	26	12	21	20	6	18	27	15	23	20	0	18	68	4	2	1
1999	2	1	29	16	4	0	1	33	20	21	7	21	0	0	1	20	28	41
2000	3	13	16	33	20	12	21	3	5	8	14	13	40	5	4	0	0	8
2001	1	6	19	7	0	0	21	25	17	0	10	25	14	34	11	27	25	1
2002	21	15	0	6	39	29	0	4	5	4	0	16	0	0	3	4	1	1
2003	100	6	24	20	16	13	5	0	8	6	17	22	1	1	3	5	8	2
2004	27	104	15	27	19	4	28	0	4	40	24	17	6	0	25	21	6	2
2005	2	7	12	38	33	40	21	20	23	0	26	15	0	3	8	2	0	6
2006	0	2	4	0	4	12	34	9	59	25	27	39	13	6	0	1	0	15
2007	37	30	10	2	46	25	5	13	19	18	9	20	12	23	6	29	22	31
2008	11	53	14	27	9	4	59	61	31	28	5	17	13	41	0	4	0	13
2009	34	37	25	15	15	19	4	9	22	4	19	15	33	2	1	0	5	13
2010	0	0	23	11	69	35	34	27	26	23	40	24	0	4	35	36	5	0
2011	5	1	24	16	30	11	4	46	12	20	8	36	9	24	27	32	12	2
2012	7	64	19	25	1	10	2	36	0	8	12	12	2	4	14	19	69	36
Average	12	15	15	16	15	16	15	13	15	13	13	16	16	13	17	11	12	14
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	2	5	5	4	3	4	3	3	4	5	5	2	3	3	4	1	2
Median	8	10	14	13	12	12	11	9	14	11	10	15	11	10	12	7	6	9
Upper	16	20	22	21	21	27	21	17	23	20	22	24	24	23	26	17	19	23
Max. value	100	104	46	70	69	63	59	61	59	51	50	39	58	41	69	46	69	49

Month	October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	0	10	1	28	20	20	30	29	15	0	1	11	20	5	1	0	8	24
1962	2	0	3	1	2	12	1	0	15	7	16	8	0	5	15	4	4	17
1963	34	6	16	4	10	1	4	14	30	25	43	6	0	1	1	8	0	9
1964	0	32	41	16	12	0	3	0	15	18	14	9	10	18	23	8	0	10
1965	1	0	0	1	0	16	44	0	6	1	10	19	22	26	7	10	10	28
1966	29	14	6	7	26	0	12	22	3	14	1	21	4	10	7	11	16	27
1967	11	15	22	54	10	24	10	1	15	5	0	1	4	3	16	1	40	9
1968	1	14	38	9	0	32	24	10	1	4	12	21	0	0	0	12	15	16
1969	12	8	0	0	7	5	30	19	22	20	7	24	8	0	4	8	1	2
1970	43	15	1	34	8	54	25	14	12	8	21	9	6	7	8	4	1	4
1971	1	5	3	23	16	0	19	32	12	5	7	5	4	15	5	10	4	24
1972	0	0	3	8	12	2	5	24	15	7	7	11	23	28	12	2	0	0
1973	1	24	6	10	2	0	6	10	20	20	25	1	11	12	22	6	9	4
1974	39	34	3	10	27	20	4	18	29	20	5	18	10	10	24	24	11	25
1975	28	5	11	3	1	3	6	6	3	12	0	21	15	4	6	5	1	13
1976	14	20	11	22	3	7	10	11	5	1	2	26	32	12	16	7	24	29
1977	35	8	2	1	7	3	22	22	44	26	21	1	1	4	7	1	19	23
1978	4	0	1	11	5	3	9	2	17	39	9	7	1	0	20	1	8	7
1979	0	0	8	7	0	4	15	8	19	30	11	21	9	11	4	15	4	19
1980	5	25	24	2	29	31	0	5	24	30	10	12	18	19	32	19	19	12
1981	12	37	15	36	1	32	24	2	9	41	33	24	6	31	8	3	21	4
1982	0	15	13	15	7	2	3	6	8	13	27	25	3	29	29	14	8	3
1983	13	22	17	18	9	13	2	4	9	7	8	13	2	12	0	15	17	14
1984	36	9	16	33	35	8	4	2	0	3	29	3	1	8	1	17	2	10
1985	6	32	6	1	0	3	18	24	6	1	0	18	56	18	13	22	14	29
1986	4	11	2	8	13	26	16	7	13	10	15	3	18	0	10	19	18	14
1987	0	7	18	2	9	2	0	0	14	14	11	14	0	3	1	22	7	14
1988	0	56	7	1	5	24	6	0	5	9	0	31	8	5	8	9	20	9
1989	1	25	6	19	38	10	5	15	4	0	7	1	0	1	12	31	14	2
1990	23	26	4	1	0	17	15	0	15	11	5	6	0	8	3	19	4	26
1991	13	0	5	28	0	1	24	24	23	6	2	3	2	1	1	29	14	9
1992	0	6	30	13	23	17	31	3	29	13	16	14	21	1	6	4	1	0
1993	7	33	38	3	1	0	0	21	19	3	7	4	16	14	10	33	18	25
1994	26	2	0	0	2	30	6	9	25	13	1	1	9	20	14	12	1	56
1995	12	2	1	9	0	16	15	2	26	42	4	2	2	5	1	3	5	2
1996	6	3	0	2	2	35	30	29	19	20	9	13	17	4	26	16	1	9
1997	23	45	9	9	6	0	6	22	27	1	4	11	21	24	7	0	24	18
1998	2	5	32	42	30	28	4	4	10	5	10	1	17	11	25	4	21	14
1999	20	12	2	1	5	13	4	7	0	6	4	13	29	36	28	13	26	17
2000	15	29	21	1	28	35	20	22	12	14	20	18	6	12	42	3	0	27
2001	37	35	3	2	1	28	10	20	0	0	8	18	11	5	1	10	29	19
2002	15	0	26	27	24	21	0	3	29	18	12	14	14	0	1	2	0	20
2003	17	9	0	1	0	9	16	0	3	24	26	20	4	1	19	15	12	25
2004	12	19	5	23	53	13	4	4	12	19	35	21	11	1	3	11	20	4
2005	11	1	0	2	52	0	18	6	7	0	8	8	14	10	4	5	10	27
2006	19	23	0	18	46	82	4	33	20	13	18	4	24	20	21	6	1	19
2007	1	0	6	1	0	8	8	15	7	1	10	19	37	20	1	0	1	19
2008	33	4	17	9	14	47	0	19	27	8	12	17	37	4	14	9	3	0
2009	34	10	7	20	17	2	18	16	16	29	21	21	3	8	6	4	28	9
2010	0	17	1	14	39	11	14	16	26	9	38	9	10	9	4	17	3	4
2011	7	26	1	31	2	14	0	0	0	8	7	17	24	41	19	24	6	13
2012	13	7	34	14	6	4	12	16	3	1	19	25	17	5	10	4	27	21
Average	13	15	11	13	13	15	12	12	14	13	12	13	12	11	11	11	11	15
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Lower	1	4	2	2	2	3	4	3	6	4	5	6	3	3	4	4	2	8
Median	12	10	6	9	7	11	9	9	14	10	10	13	10	8	8	9	8	14
Upper	20	24	16	19	20	24	18	20	21	19	18	19	18	15	17	15	18	23
Max. value	43	56	41	54	53	82	44	33	44	42	43	31	56	41	42	33	40	56

Figure A5-16. Average precipitation (°C) for 5 or 6 day periods and their quartiles in Jönköping county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A6 KRONOBERG COUNTY♣

A6.1 Crop production and yield

Table A6-1. *Yearly production (metric ton) in 2010-2014 for the major crops in Kronoberg county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	214 600	147 800	132 700	170 500	186 000	170 320
Oats	12 600	12 500	11 000	11 000	9 900	11 400
Spring barley	6 100	7 100	8 000	10 500	9 600	8 260
Spring wheat		3 100	4 600	3 800		3 833

* Data from Jordbruksverket (2015)

Table A6-2. *Average oats and spring barley yield in Kronoberg county in the period 1965-2014, standard deviation of the differences from the calculated trend and coefficient of variation, based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Oats	3 104	409	13
Spring barley	3 033	249	8

* Coefficient of variation = Standard deviation / Average

Table A6-3. *Coefficient of variation of farm-level yield for oats and spring barley in Kronoberg county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Oats	19	52	36	25	24	22	36	32	31
Spring barley	23	38	46	25	28	27	39	37	33
Average	21	45	41	25	26	24	38	35	

* Based on yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

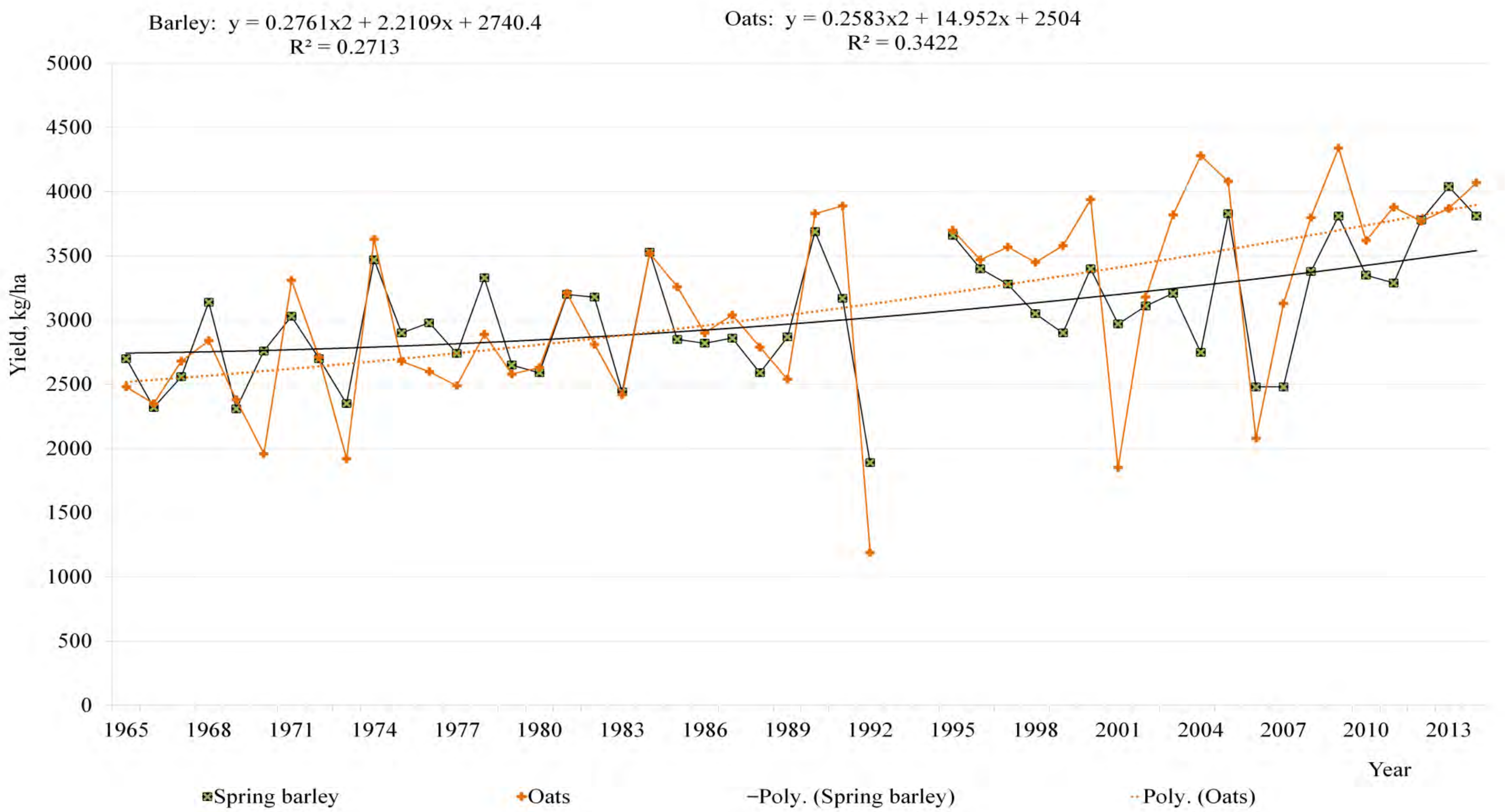

Figure A6-1. Average yield (kg/ha) per year of barley and oats in Kronoberg county for the period 1965-2014, and their trend lines with respective equations. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

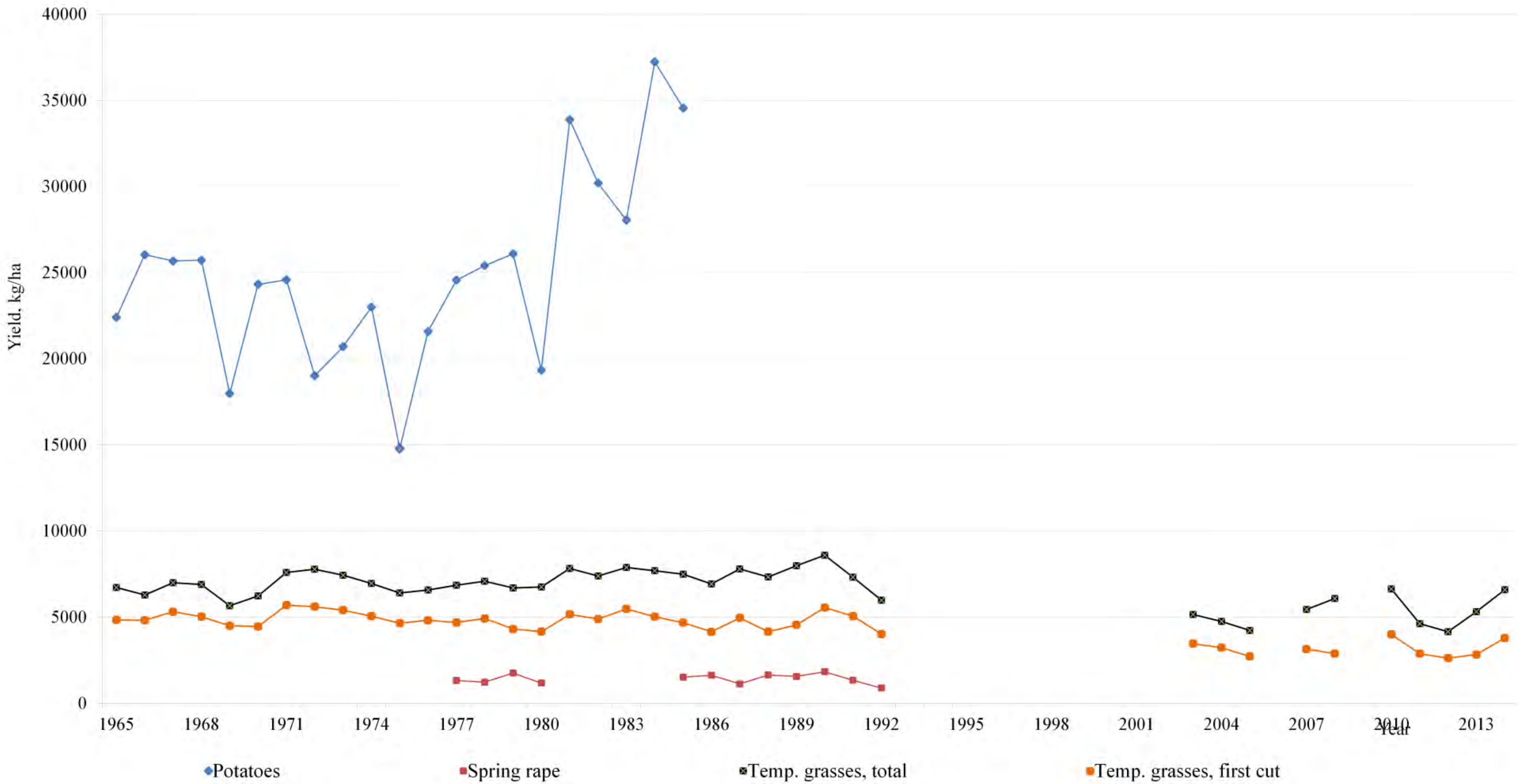

Figure A6-2. Average yield (kg/ha) per year of potatoes, spring rape, temporary grasses (total and first cut) in Kronoberg county for the period 1965-2014. Data from Jordbruksverket (2015).

A6.2 Precipitation, temperature and cereal yield

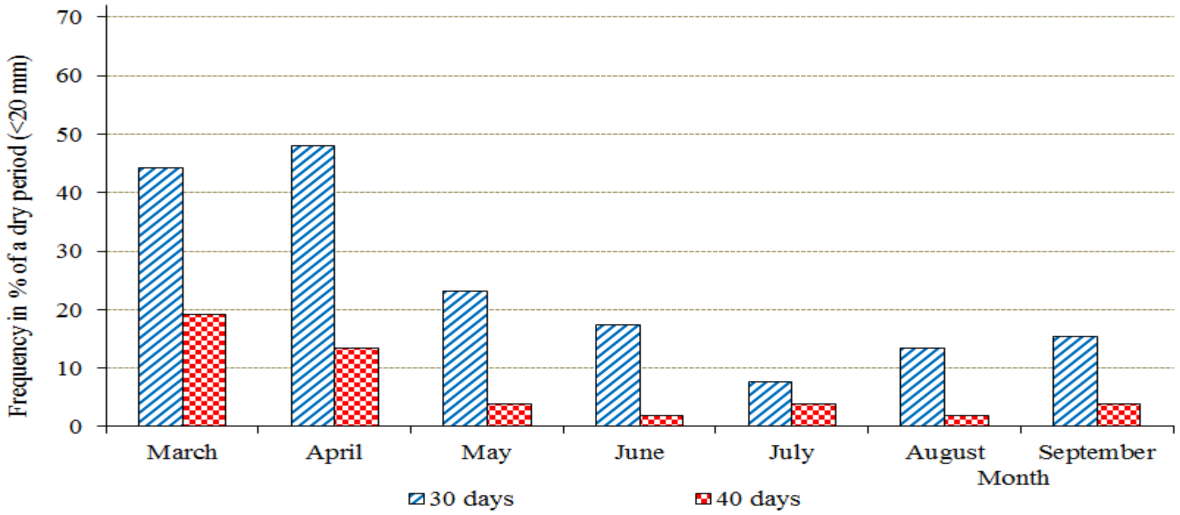

Figure A6-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Kronoberg county*.

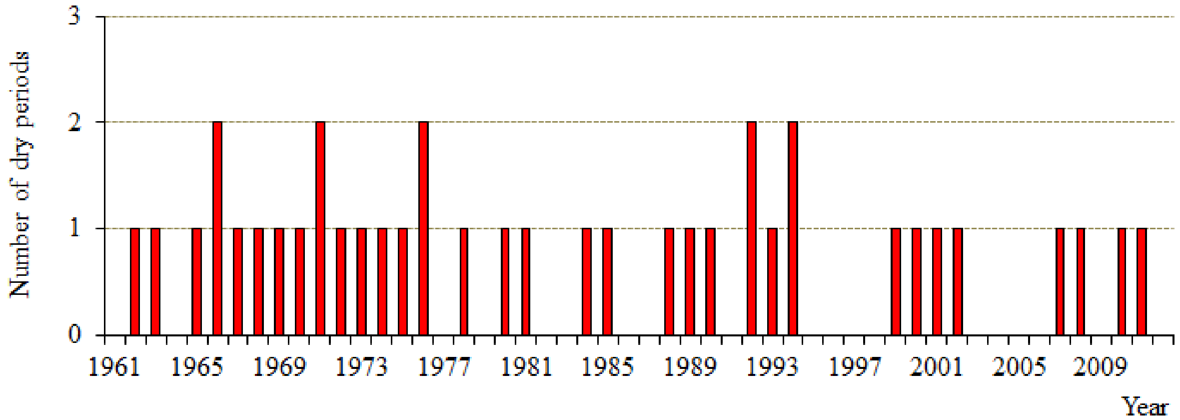

Figure A6-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 April to 31 July in Kronoberg county*.

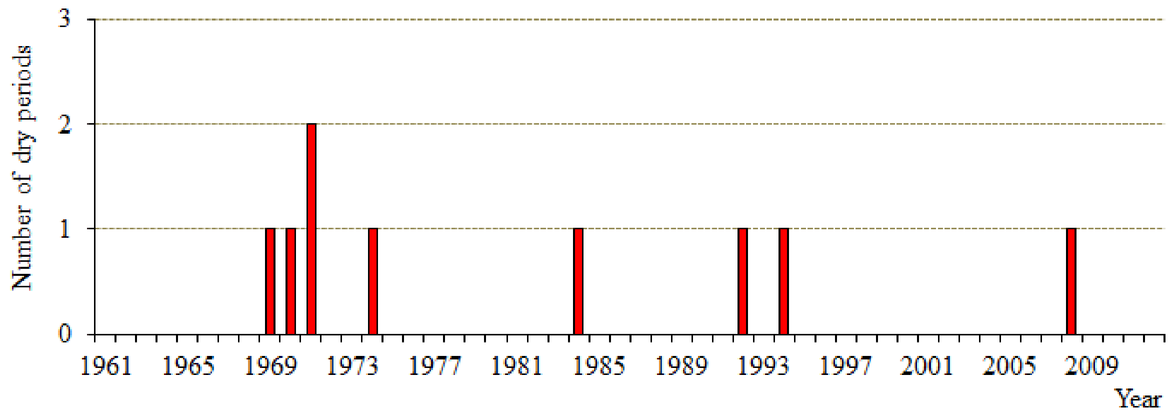

Figure A6-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 April to 31 July in Kronoberg county*.

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* The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

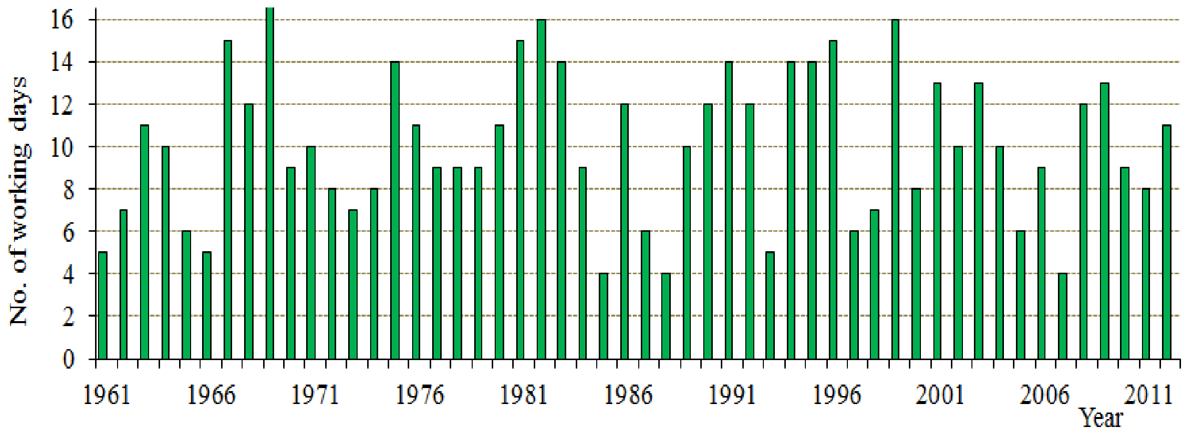

Figure A6-6. Estimated number of working days available for harvesting during the period 22 July-7 August in Kronoberg county (for definition of a working day, see Section 2.1)*.

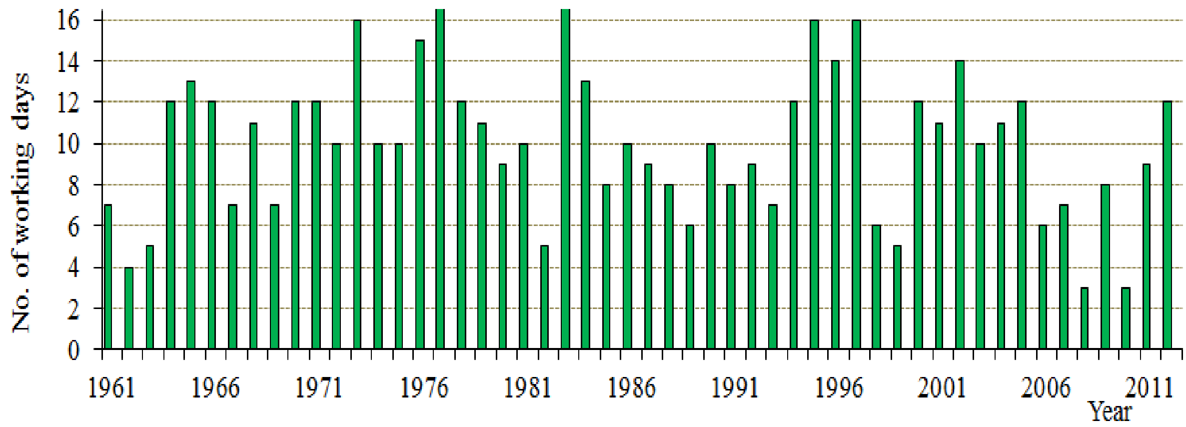

Figure A6-7. Estimated number of working days available for harvesting during the period 8-24 August in Kronoberg county (for definition of a working day, see Section 2.1)*.

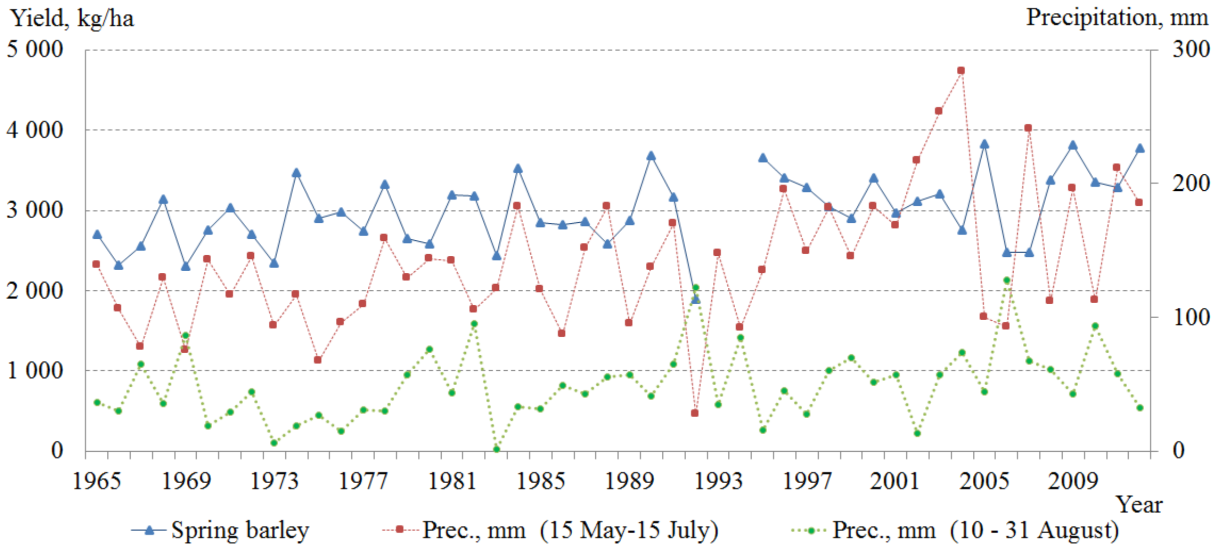

Figure A6-8. Annual spring barley yield (kg/ha) and precipitation (mm) in the period 15 may-15 July and 10-31 August in Kronoberg county, 1965-2012*.

* Precipitation data from Luftwebb (2014) and yields from Jordbruksverket (2015).

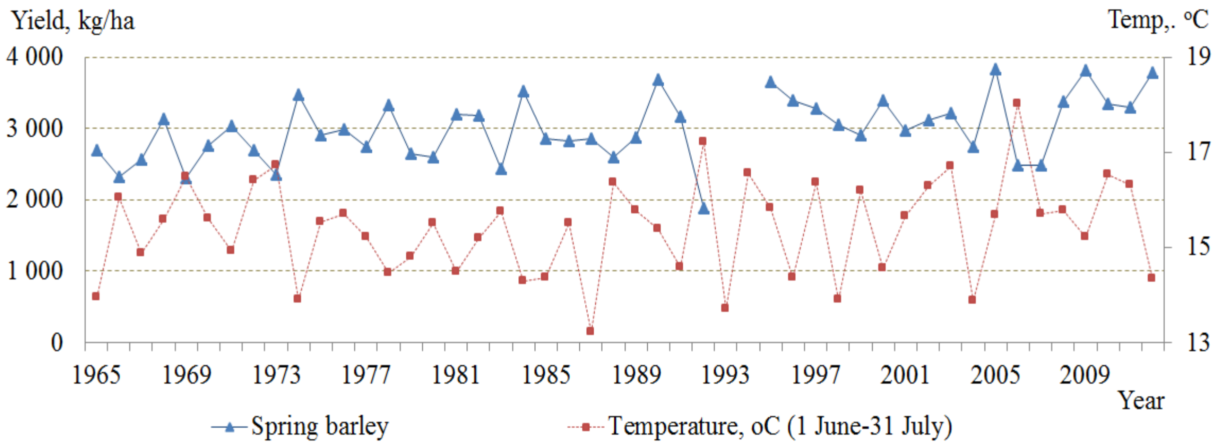

Figure A6-9. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Kronoberg county, 1965-2012*.

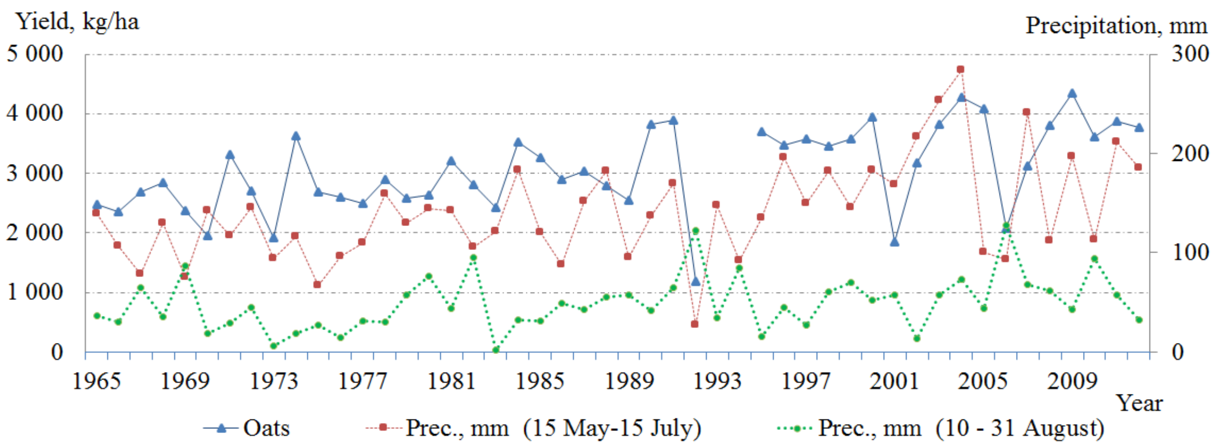

Figure A6-10. Annual oat yield (kg/ha) and precipitation (mm) in the period 15 May-15 July and 10-31 August in Kronoberg county, 1991-2011∗.

∗ Precipitation and temperature data from Luftwebb (2014) and yields from Jordbruksverket (2015).

A6.3 Yield on farms

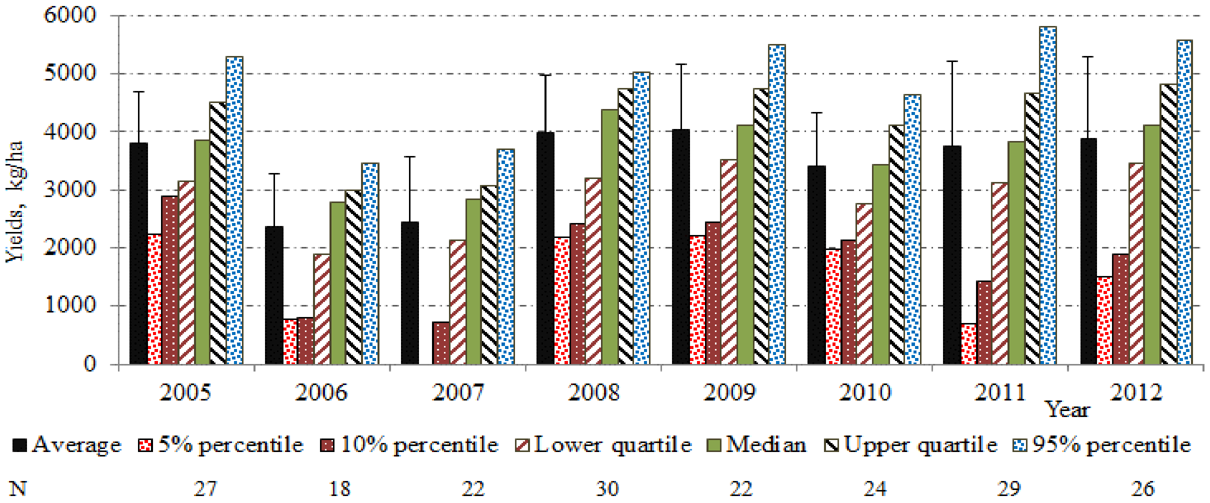

Figure A6-11. Average and estimated percentiles of spring barley farm-level yield in Kronoberg county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

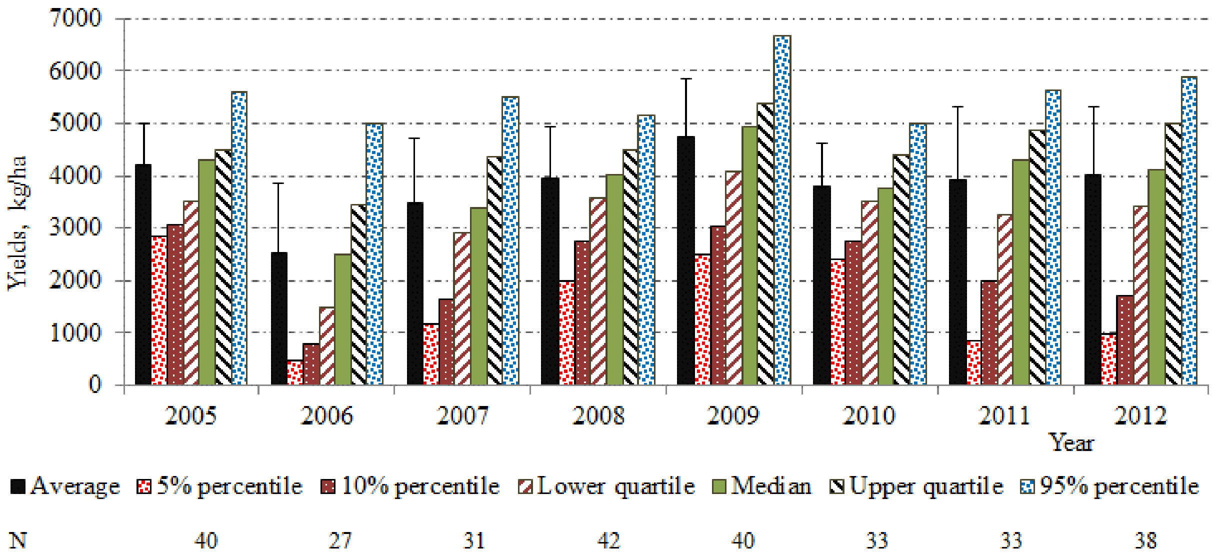

Figure A6-12. Average and estimated percentiles of oat farm-level yield in Kronoberg county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A6.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

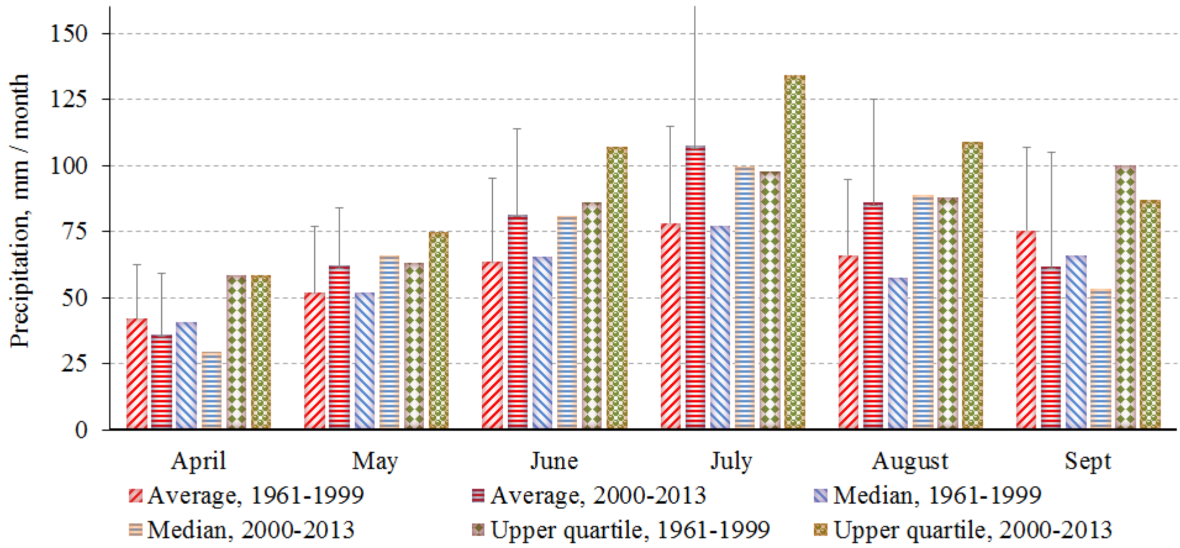

Figure A6-13. Monthly average, median and upper quartile precipitation (mm) from April to September in Kronoberg county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1440556-6307292 (close to Växsjö).

County: **Kronoberg**
Location: **Vaxjo**

Average temperature (°C) for 5 or 6 day periods

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Coordinates for the places (RT90): 1440556-6307292 1425016-6312530 1423682-6301858 1439689-6301858

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31
1961	0	0	-2	-5	-7	-2	-2	1	2	4	1	3	3	7	5	3	3	2
1962	-3	1	2	2	2	-6	-1	1	-3	1	-3	-4	-5	-4	-6	-4	-2	0
1963	-7	-14	-12	-11	-8	-5	-8	-7	-4	-10	-5	-3	-4	0	-5	-3	-3	-1
1964	0	-1	-6	-2	1	-2	1	-1	-8	-8	-4	-1	-2	-3	-1	-3	-1	1
1965	-2	-5	1	1	-1	-2	-3	-1	-2	-5	-5	-12	-9	-5	-1	3	0	4
1966	-11	-5	-6	-7	-7	-2	-5	-13	-10	-10	2	3	1	2	-4	1	1	0
1967	-1	-8	-3	1	-5	-7	0	-1	-2	0	1	2	3	6	4	2	3	4
1968	-7	-13	-9	0	0	-1	1	0	-3	-9	-9	-2	-2	-1	-2	2	6	7
1969	-7	-5	-2	0	-4	1	-2	-3	-13	-5	-3	-3	-6	-2	-4	-3	-2	0
1970	-7	-9	-3	-7	-4	-7	-6	-7	-12	-10	-5	-7	-2	-1	-3	1	-1	-2
1971	-8	-2	-2	1	2	-1	-1	1	2	1	-1	-8	-9	-3	-1	2	0	2
1972	-3	-2	-6	-6	-1	-6	-4	-1	0	0	0	-1	-1	-1	-2	4	3	3
1973	-2	-1	-2	-1	0	0	2	2	-1	1	-1	-5	2	1	2	4	7	5
1974	0	-1	0	2	2	2	1	-1	3	-1	1	0	0	1	1	3	3	5
1975	4	0	4	3	2	1	1	-1	-3	-1	0	1	3	4	2	-2	0	-1
1976	-3	-1	-4	-2	-5	-9	-5	-4	-2	-3	0	4	0	-4	-6	-5	-4	3
1977	-1	-3	-1	-2	-4	-3	-3	-3	-4	-3	-1	-8	0	1	3	3	2	-2
1978	-2	2	-3	-1	-2	-2	-2	-6	-6	-12	-2	2	1	1	2	-6	-3	5
1979	-11	-3	-3	-4	-5	-6	-3	-7	-12	-5	-4	0	1	1	-2	-6	0	2
1980	-6	-2	-3	-3	-3	-8	-8	-7	-2	-3	-5	-4	-3	0	-1	-4	-5	1
1981	-3	-7	-3	-7	-3	0	2	0	-3	-3	-2	-3	-4	2	-3	-1	5	3
1982	-6	-13	-7	-7	-3	-4	-10	0	0	-3	-8	-3	2	-1	2	2	2	5
1983	3	4	3	-2	4	3	-3	-4	-6	-3	-4	-3	0	4	1	4	1	1
1984	1	-2	1	-2	-7	-1	1	-2	-3	-6	-2	-1	0	0	0	-3	-3	1
1985	-9	-13	-9	-9	-3	-5	-5	-14	-12	-13	-5	-2	-1	-2	0	-1	1	0
1986	-5	-11	0	-6	1	-3	-5	-10	-7	-8	-12	-8	-5	1	-1	1	1	3
1987	-10	-16	-15	-6	-4	-9	-2	-1	-1	-6	-5	-7	-13	-7	6	-2	-1	3
1988	5	0	2	1	1	0	2	1	1	-1	-1	-1	-3	-2	-4	-3	0	3
1989	2	3	4	5	3	4	4	6	2	1	2	3	3	3	3	3	3	6
1990	-2	1	4	4	4	3	5	5	1	3	8	3	1	3	4	8	6	4
1991	2	3	-2	-4	0	-4	-4	-4	-6	-4	3	-2	0	1	5	4	4	3
1992	4	1	2	-1	-5	0	0	2	2	-4	3	3	5	4	0	3	3	0
1993	-6	2	2	4	2	-6	2	-1	0	0	-5	-2	-2	-1	2	5	4	0
1994	-1	1	2	-3	1	-1	-4	-2	-9	-5	-3	-5	-3	3	2	0	2	4
1995	-6	-2	-2	0	0	-3	1	-1	2	3	2	1	2	2	0	2	3	0
1996	-8	0	1	-2	-4	-6	-7	-10	-4	-7	-6	0	-2	-2	-2	-1	0	-1
1997	-11	-6	-1	0	-2	-3	-2	3	-1	-4	5	2	5	4	3	-3	-3	5
1998	4	2	3	2	-3	-5	-3	3	5	4	6	4	0	-3	-2	2	0	5
1999	1	-1	-3	3	3	-6	1	-7	-4	-2	-1	2	2	1	-2	1	2	7
2000	2	3	1	1	-7	1	3	4	2	-2	-2	4	0	2	1	2	3	2
2001	1	2	-4	-2	0	0	-10	1	2	1	-4	-5	-7	1	3	-2	-2	0
2002	-7	1	0	1	3	2	5	5	2	0	-2	1	0	3	3	4	1	5
2003	-11	-10	0	3	1	-2	-4	-6	-3	-4	-3	-4	-3	1	3	3	2	5
2004	-7	-2	0	-4	-9	-4	3	0	-3	-1	-3	-3	-3	-1	2	7	1	3
2005	3	6	2	1	-3	-3	0	-3	-1	-3	-2	-7	-9	-3	-3	0	3	3
2006	-3	-3	-1	-5	-9	-4	-6	-1	-3	-1	-3	-6	-6	-9	-6	-2	-3	3
2007	4	6	5	2	-4	-1	3	-4	-2	0	-4	0	2	4	7	4	4	7
2008	-2	2	3	4	2	3	1	4	0	2	5	4	1	4	4	0	-3	2
2009	-8	-1	1	-2	1	0	-3	0	-4	-7	0	0	1	1	1	2	0	2
2010	-8	-9	-4	-2	-6	-10	-3	-5	-5	-3	-6	2	-5	-4	-2	2	3	6
2011	-4	0	-2	1	-2	-5	2	1	-6	-7	-8	-2	-1	0	2	0	5	1
2012	3	-1	1	0	-3	-4	-12	-8	-5	-1	4	2	1	0	5	5	8	6
Average	-3	-3	-1	-1	-2	-3	-2	-2	-3	-3	-2	-1	-1	0	0	1	1	3
By quartile																		
Min. value	-11	-16	-15	-11	-9	-10	-12	-14	-13	-13	-12	-12	-13	-9	-6	-6	-5	-2
Lower	-7	-5	-3	-4	-4	-5	-4	-4	-5	-5	-4	-4	-3	-2	-2	-2	-1	1
Median	-3	-1	-1	-1	-2	-3	-2	-1	-3	-3	-2	-1	0	1	0	1	1	3
Upper	1	1	1	1	1	0	1	1	0	0	0	2	1	2	2	3	3	5
Max. value	5	6	5	5	4	4	5	6	5	4	8	4	5	7	7	8	8	7
Range	16	22	19	16	13	14	17	20	17	17	20	16	18	16	13	14	12	9

Month	April						May						June					
Year / Day	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	0	5	8	8	10	9	8	9	9	10	11	11	18	17	15	15	14	15
1962	3	2	4	8	10	6	4	9	8	9	9	8	8	14	13	15	13	12
1963	1	4	5	5	5	7	7	10	11	9	14	17	14	17	15	14	14	14
1964	1	2	6	11	8	9	8	10	12	9	14	15	12	15	18	14	13	15
1965	4	1	4	6	7	8	6	8	10	7	9	11	13	15	15	15	15	14
1966	3	1	-4	-3	4	10	12	8	10	14	10	10	13	15	19	20	16	15
1967	2	4	6	5	3	7	5	8	14	9	12	13	14	11	11	16	13	14
1968	3	0	5	9	13	10	9	8	8	5	8	13	16	13	17	21	15	15
1969	2	6	3	2	5	8	5	10	12	9	10	13	9	15	19	19	19	16
1970	-2	1	2	4	5	4	6	11	12	10	9	12	13	19	15	19	18	16
1971	3	5	6	7	5	1	7	12	14	15	7	15	18	13	11	10	12	14
1972	3	6	6	5	4	6	14	10	8	8	12	9	13	15	15	14	12	20
1973	3	2	2	4	6	6	9	9	7	8	13	15	13	16	12	14	19	20
1974	7	9	2	7	6	7	7	8	8	13	11	11	11	10	14	16	16	14
1975	-1	2	2	4	8	9	8	14	11	15	9	9	7	15	14	14	19	13
1976	2	3	6	7	4	3	7	11	10	14	14	8	12	14	14	13	17	20
1977	2	-2	1	3	6	7	11	9	10	10	12	10	12	13	21	18	17	14
1978	3	5	3	4	6	1	7	8	4	10	15	18	19	15	12	13	15	13
1979	2	2	6	2	5	5	3	7	11	14	14	15	19	15	13	17	18	13
1980	2	3	7	5	5	8	6	8	8	12	7	12	16	19	16	15	13	12
1981	5	7	8	3	0	4	3	11	15	14	16	13	15	14	11	12	13	16
1982	5	4	3	5	6	6	5	7	11	12	10	15	21	12	8	12	13	12
1983	3	3	2	7	9	9	6	10	10	13	13	11	13	13	14	16	15	13
1984	2	6	6	6	10	8	10	6	9	14	14	15	16	12	11	15	12	12
1985	5	0	3	6	3	1	3	10	13	12	13	17	17	10	10	13	16	13
1986	2	1	0	3	4	9	13	12	11	10	11	12	12	12	15	17	16	20
1987	3	3	3	5	8	10	10	9	7	9	12	8	11	12	11	10	13	14
1988	4	4	3	8	2	5	11	10	14	10	11	17	12	18	15	17	18	19
1989	-1	4	13	4	6	9	11	9	9	14	15	12	10	11	15	18	18	17
1990	6	2	6	7	11	9	16	16	10	9	10	9	14	15	16	15	15	17
1991	8	7	9	1	3	6	6	8	9	8	9	13	8	11	11	10	13	13
1992	4	4	6	2	4	8	9	7	10	15	17	17	19	17	16	16	16	19
1993	3	2	2	5	11	15	11	13	15	14	17	11	13	16	13	13	11	14
1994	4	4	6	4	10	12	7	12	12	8	10	9	12	11	13	10	13	17
1995	3	3	5	2	12	5	11	8	5	7	10	17	15	13	13	13	16	19
1996	0	6	2	9	14	7	7	5	13	6	8	10	13	19	14	13	14	14
1997	4	3	3	3	3	7	9	7	12	11	7	9	14	17	18	13	13	17
1998	0	2	3	5	9	13	10	12	12	13	9	13	14	14	13	11	15	14
1999	8	9	5	3	9	10	7	7	4	12	12	13	14	13	15	17	13	16
2000	4	3	5	9	14	16	11	13	14	14	11	10	12	12	14	16	17	13
2001	6	6	2	3	5	8	10	12	14	11	11	11	11	11	11	13	15	18
2002	5	3	7	5	10	7	10	13	14	12	15	12	16	17	13	18	15	13
2003	2	-1	4	8	9	9	10	10	9	10	12	15	17	16	15	14	14	16
2004	4	5	6	9	8	8	13	15	8	11	8	10	14	14	14	11	12	14
2005	6	5	9	6	5	8	11	7	9	8	13	15	11	12	12	17	18	15
2006	3	3	4	6	7	7	10	15	11	9	10	9	11	15	19	18	16	16
2007	6	3	11	8	8	11	9	9	11	11	15	15	15	21	17	15	17	13
2008	5	4	5	6	8	12	11	15	12	9	11	14	17	18	12	13	13	14
2009	8	8	9	6	9	14	9	9	9	11	13	14	12	9	13	12	16	19
2010	4	6	7	5	4	10	6	5	9	13	13	10	15	13	12	12	15	18
2011	7	8	7	10	12	11	4	12	12	11	12	13	17	18	14	13	13	18
2012	0	2	6	4	7	10	11	9	10	11	18	13	9	12	13	14	13	15
Average	3	4	5	5	7	8	8	10	10	11	12	13	14	14	14	15	15	15
By quartile																		
Min. value	-2	-2	-4	-3	0	1	3	5	4	5	7	8	7	9	8	10	11	12
Lower	2	2	3	4	5	6	6	8	9	9	10	10	12	12	12	13	13	14
Median	3	3	5	5	7	8	9	9	10	11	12	13	13	14	14	14	15	15
Upper	5	5	6	7	9	10	11	12	12	13	13	15	16	16	15	16	16	17
Max. value	8	9	13	11	14	16	16	16	15	15	18	18	21	21	21	21	19	20
Range	10	10	17	14	13	16	13	11	11	10	11	11	14	11	12	11	8	8

Month	July						August						September					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30
1961	16	13	15	15	15	14	14	14	13	12	13	15	15	12	13	14	11	12
1962	11	13	14	16	15	14	13	12	12	14	13	12	13	11	10	9	9	10
1963	18	14	13	16	17	15	20	17	14	14	13	13	14	12	11	12	13	9
1964	12	12	16	18	15	15	13	16	14	14	12	15	12	12	10	11	8	11
1965	11	11	14	16	15	13	12	14	13	15	17	11	14	12	10	12	12	13
1966	15	16	14	16	19	14	15	14	16	15	14	12	14	12	13	10	9	5
1967	15	16	16	18	15	18	19	15	16	14	15	14	14	12	13	14	10	12
1968	19	14	12	14	14	17	18	18	15	13	17	18	18	18	10	10	9	9
1969	15	14	16	17	19	20	20	19	17	17	14	14	14	15	17	10	11	9
1970	13	18	13	14	14	15	17	16	14	13	15	14	13	12	12	13	7	6
1971	18	21	15	12	16	19	18	16	15	16	15	13	13	11	7	9	12	8
1972	16	17	16	21	20	18	16	18	15	14	13	13	12	14	9	9	9	5
1973	21	19	17	17	15	17	17	16	17	16	12	13	14	14	10	11	10	7
1974	14	14	14	16	14	13	13	15	15	15	16	16	15	13	13	12	10	8
1975	17	18	17	17	16	19	19	24	18	15	16	17	16	13	12	13	12	11
1976	17	15	17	19	17	15	12	16	16	17	15	16	10	12	13	10	9	7
1977	16	17	15	13	14	14	16	15	15	14	11	15	14	10	9	7	8	7
1978	15	13	14	12	14	19	19	15	14	15	15	10	10	12	10	9	9	7
1979	13	14	15	13	12	14	14	14	14	18	13	13	15	14	11	10	8	8
1980	15	15	14	14	17	20	18	15	15	15	12	12	13	14	12	11	12	10
1981	14	18	16	14	16	15	15	18	17	13	13	11	12	14	11	8	12	13
1982	14	16	20	18	19	18	21	20	15	14	12	13	12	11	12	14	11	12
1983	14	21	20	15	17	18	16	18	15	16	17	16	17	11	13	12	10	8
1984	13	16	17	16	14	15	18	16	16	15	17	14	12	10	10	10	10	8
1985	15	16	17	15	14	16	14	14	15	15	14	14	13	10	11	10	7	7
1986	20	14	14	16	14	17	17	15	14	13	11	11	11	9	8	9	8	7
1987	15	16	14	14	16	12	12	12	13	14	15	12	13	12	11	9	10	7
1988	18	16	17	16	17	14	13	17	16	15	13	14	14	12	11	13	12	11
1989	17	21	14	13	18	16	13	15	16	17	15	12	12	13	10	13	15	10
1990	14	14	14	16	16	18	20	14	17	14	15	16	13	11	11	10	8	8
1991	19	22	17	15	16	19	21	18	15	14	16	15	16	10	10	12	12	9
1992	17	18	17	17	19	17	16	19	15	14	13	15	12	11	11	10	12	10
1993	16	14	12	15	14	13	15	15	14	14	11	11	11	10	8	6	11	7
1994	18	19	22	18	21	24	21	19	16	15	15	13	14	12	12	11	12	8
1995	13	17	18	17	17	19	19	16	18	19	18	12	14	15	14	10	11	7
1996	13	13	15	14	16	15	16	17	18	18	19	16	13	9	9	9	7	9
1997	18	18	16	17	19	16	17	20	21	20	20	20	18	13	12	11	10	10
1998	15	14	13	14	17	14	14	15	15	14	12	11	12	15	13	12	12	11
1999	16	18	20	17	17	18	20	17	14	14	13	15	15	17	13	13	15	13
2000	16	13	14	15	17	16	15	14	16	15	13	14	11	13	10	10	9	12
2001	19	21	15	15	19	19	16	15	16	18	17	14	14	12	12	13	11	8
2002	14	18	18	20	16	19	20	18	21	19	19	18	16	16	14	11	8	9
2003	15	17	19	21	19	19	19	19	18	17	15	11	12	14	14	15	12	8
2004	13	13	14	15	16	17	19	21	17	18	13	14	14	13	14	11	10	10
2005	18	21	20	16	15	16	15	14	15	16	17	14	15	16	13	10	13	12
2006	20	21	17	20	21	20	17	19	16	16	16	14	15	14	14	15	15	14
2007	15	15	15	18	14	14	15	19	18	15	18	11	11	12	11	11	13	11
2008	18	15	16	15	18	20	17	16	15	15	15	14	14	14	10	9	11	10
2009	20	16	16	17	16	16	17	19	15	16	15	15	15	15	12	11	12	10
2010	19	19	23	19	17	16	17	17	19	17	15	12	10	13	13	10	12	8
2011	18	18	15	16	17	18	18	15	15	14	16	15	14	13	14	11	12	13
2012	17	18	14	13	17	17	17	14	15	18	15	14	14	13	12	11	9	10
Average	16	16	16	16	16	17	17	16	16	15	15	14	13	13	11	11	11	9
By quartile																		
Min. value	11	11	12	12	12	12	12	12	12	12	11	10	10	9	7	6	7	5
Lower	14	14	14	15	15	15	15	15	15	14	13	12	12	12	10	10	9	8
Median	16	16	16	16	16	16	17	16	15	15	15	14	14	12	11	11	11	9
Upper	18	18	17	17	17	18	19	18	16	16	16	15	15	14	13	12	12	11
Max. value	21	22	23	21	21	24	21	24	21	20	20	20	18	18	17	15	15	14
Range	10	11	11	9	9	11	9	12	8	7	9	10	8	9	9	9	8	9

Month	October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	12	12	11	10	9	8	5	5	3	0	2	1	2	-1	-4	-2	-6	-7
1962	13	8	4	8	8	5	6	6	2	-1	-1	1	0	2	0	-6	-13	-8
1963	8	7	7	7	9	7	6	6	5	4	1	4	0	-2	-4	-8	-7	2
1964	6	9	7	6	7	2	4	1	5	2	4	1	-2	3	4	-2	-2	-7
1965	10	7	8	6	6	7	6	3	-4	-6	-7	-1	0	-2	-9	-6	-1	-4
1966	11	9	7	10	7	1	2	6	1	2	1	2	3	1	-2	-1	-4	-2
1967	11	10	11	7	9	8	7	4	4	3	2	1	5	-6	-1	-6	-2	-6
1968	7	3	9	5	7	9	6	1	-1	2	5	5	0	-2	-4	0	0	-4
1969	7	12	8	9	7	6	4	3	6	4	0	-5	-8	-7	-2	-4	-6	-3
1970	8	11	7	8	3	3	1	-3	1	3	4	2	0	3	2	3	-5	-5
1971	10	10	6	7	7	4	8	2	2	-4	-2	2	2	1	1	6	5	-1
1972	6	9	7	4	3	7	7	7	2	-1	1	4	5	5	5	3	-2	-1
1973	9	9	1	0	0	4	1	5	0	-1	1	-9	-4	-4	-1	-3	0	3
1974	6	6	4	4	6	3	3	4	6	6	2	1	3	2	-1	1	5	1
1975	11	6	4	6	8	9	7	3	4	2	-3	1	2	2	0	-3	3	4
1976	7	9	7	3	6	3	4	7	3	1	-2	5	1	2	-2	-6	-4	-8
1977	6	9	8	6	10	9	7	7	6	0	2	-3	-1	-1	2	1	2	0
1978	5	10	10	7	4	7	8	8	6	7	5	-2	-2	-4	-2	-6	-4	-9
1979	4	6	10	9	2	1	2	3	2	4	3	4	7	-1	-8	-3	0	0
1980	8	8	6	7	3	3	-2	-1	2	4	6	-4	-6	-4	5	-1	2	3
1981	11	9	5	4	2	4	4	-1	2	3	3	0	0	-8	-10	-14	-5	-5
1982	11	10	7	6	8	6	5	3	6	3	5	3	1	1	0	0	1	1
1983	9	6	9	8	5	6	6	7	-1	0	-3	-2	-1	-2	-6	-2	2	3
1984	11	10	8	9	8	9	7	6	2	2	4	3	3	5	-1	-1	2	-2
1985	15	10	8	7	6	4	2	4	-1	-2	-1	-4	1	-3	-2	-3	3	-4
1986	8	8	9	7	5	6	3	5	4	6	5	7	6	3	0	-1	-7	-4
1987	6	10	10	9	7	4	3	0	3	4	2	0	-4	-4	-1	-1	1	5
1988	8	9	8	8	2	1	-1	0	3	0	-1	-4	-5	-1	-2	-2	2	5
1989	6	7	5	9	11	8	6	6	6	0	-4	-1	1	-2	-7	0	4	0
1990	9	9	9	10	0	6	3	2	4	4	0	-1	1	2	-1	-1	-1	2
1991	8	11	11	6	2	5	6	3	3	0	3	5	2	-1	2	3	0	1
1992	7	6	3	3	3	0	4	2	3	2	1	3	4	2	2	2	-5	-4
1993	9	11	6	2	1	2	2	4	2	-1	-2	-1	2	2	-3	2	0	-1
1994	5	7	9	0	6	6	5	4	2	3	5	2	1	4	2	1	-1	3
1995	10	13	11	11	6	7	-2	0	0	-3	2	1	-2	-1	-2	-4	-8	-11
1996	8	9	9	9	5	7	10	3	2	3	2	-1	2	0	-3	-7	-10	-7
1997	8	10	4	6	0	0	1	6	5	2	1	-2	-2	4	2	-4	1	1
1998	6	7	7	7	9	5	1	-1	1	-4	-3	0	-4	-7	-2	3	-2	2
1999	11	7	7	4	6	8	8	6	2	0	0	5	0	4	-1	-4	-2	-1
2000	12	11	10	10	10	7	7	7	5	5	6	6	6	6	6	0	-4	-2
2001	12	12	12	10	6	10	6	1	2	2	1	1	1	3	0	-2	-7	-8
2002	10	3	3	2	4	4	0	0	2	2	2	2	0	-4	-4	-3	-7	-5
2003	8	7	5	3	-1	2	7	3	3	6	5	4	4	1	1	2	-1	1
2004	10	7	4	7	10	6	5	3	4	-3	-2	2	2	4	3	-1	0	0
2005	10	11	9	4	7	8	9	8	7	-2	0	-2	0	0	3	-4	0	-3
2006	12	12	9	10	11	7	1	6	4	7	6	7	7	6	6	1	3	3
2007	9	7	6	6	3	6	5	3	-1	2	3	1	3	5	0	-1	-1	3
2008	8	8	10	7	7	4	0	6	7	2	-3	4	2	1	0	2	1	-3
2009	6	7	3	4	6	3	2	5	4	7	7	5	1	3	-1	-7	-4	-4
2010	9	8	4	3	3	6	6	0	5	1	-1	-7	-7	-5	-7	-6	-12	-9
2011	14	8	5	5	6	8	8	6	2	4	5	6	3	1	3	1	2	3
2012	10	6	4	10	6	1	4	5	6	4	4	2	-7	-8	-6	0	-2	1
Average	9	9	7	6	6	5	4	4	3	2	1	1	1	0	-1	-2	-2	-2
By quartile																		
Min. value	4	3	1	0	-1	0	-2	-3	-4	-6	-7	-9	-8	-8	-10	-14	-13	-11
Lower	7	7	5	4	3	3	2	2	2	0	-1	-1	-1	-2	-2	-4	-4	-5
Median	9	9	7	7	6	6	5	4	3	2	2	1	1	1	-1	-1	-1	-1
Upper	11	10	9	9	7	7	6	6	5	4	4	4	3	3	2	1	1	2
Max. value	15	13	12	11	11	10	10	8	7	7	7	7	7	6	6	6	5	5
Range	11	10	11	11	12	10	12	11	11	14	14	16	15	14	17	19	18	16

Figure A6-14. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Kronoberg county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Kronoberg** | **Total precipitation , mm / 5 or 6 day peri** | Update colour for precipitation | Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Vaxjo** | Coordinates for the places (RT90): 1440556-6307292 1425016-6312530 1423682-6301858 1439689-6301858

Scale for the color intensity: 0 mm | 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	18	10	1	0	0	19	9	12	3	0	0	5	2	0	4	10	3	12	19	11	6	0	0	0	15	20	6	1	0	26	6	14	21	5	5	19
1962	7	5	16	15	22	4	13	6	22	5	1	1	6	4	0	0	10	10	16	11	8	6	2	5	6	9	7	7	14	14	6	0	5	14	6	15
1963	4	0	2	0	3	3	8	0	7	3	0	0	0	6	12	0	6	1	2	1	11	12	10	6	8	2	3	6	0	0	8	1	6	15	13	27
1964	3	1	0	0	1	14	8	0	7	2	0	0	0	0	0	1	0	0	0	4	1	0	22	7	12	6	2	2	0	1	12	4	1	8	17	2
1965	6	10	12	17	4	11	6	1	8	1	3	7	0	0	1	5	10	10	0	12	5	16	6	11	3	20	1	9	1	1	3	3	15	29	6	10
1966	15	0	4	1	4	1	21	2	21	9	17	8	5	12	17	2	20	28	7	2	10	17	20	0	26	5	0	4	9	10	10	1	0	4	3	29
1967	8	5	1	5	27	29	9	0	0	11	19	13	16	2	7	7	4	13	12	27	1	12	3	8	2	3	10	12	6	2	2	16	2	2	2	24
1968	3	19	21	17	3	11	7	9	1	7	0	0	2	1	8	23	5	2	16	15	0	1	5	2	14	30	13	16	3	0	1	9	0	17	17	25
1969	4	1	22	24	14	8	9	12	5	9	1	2	0	6	0	0	0	8	1	1	21	8	1	5	31	13	21	27	1	13	10	0	3	1	1	0
1970	8	0	2	1	0	7	6	6	1	4	2	0	13	12	1	8	13	18	23	16	1	10	18	14	2	0	15	3	11	25	1	10	4	0	12	1
1971	2	4	0	5	12	4	1	1	7	6	5	1	5	14	7	15	11	0	6	5	0	3	0	12	1	0	6	3	24	9	4	1	25	8	13	13
1972	5	1	1	5	0	11	8	18	2	0	0	1	4	11	1	0	0	15	17	13	18	6	0	4	0	0	0	17	11	33	8	2	6	3	12	11
1973	2	0	0	9	16	12	4	11	25	10	5	0	11	7	0	6	0	1	16	10	8	14	2	9	25	15	4	2	16	6	24	5	0	0	0	20
1974	1	1	35	9	3	13	10	18	6	2	3	0	0	0	0	39	3	0	0	0	2	0	2	0	14	0	0	1	8	16	5	14	7	14	14	1
1975	8	15	13	12	26	8	2	0	1	1	0	0	2	9	8	0	6	18	21	16	4	0	0	1	8	0	33	5	5	16	13	0	5	2	0	0
1976	17	8	1	31	2	0	0	4	3	0	1	1	0	4	0	0	3	11	30	2	6	1	4	4	12	1	13	0	2	39	11	0	16	14	0	0
1977	15	12	21	3	10	10	7	11	6	15	19	0	18	0	23	27	2	3	11	17	6	6	13	18	9	8	12	0	0	5	7	6	31	7	1	26
1978	10	4	12	1	11	9	8	4	15	3	4	0	4	4	21	18	16	13	0	0	8	0	13	0	0	0	2	6	8	1	13	30	13	0	2	30
1979	2	13	12	2	16	12	15	4	0	8	0	1	4	10	9	7	16	21	12	0	2	2	14	17	12	6	0	4	28	7	1	6	2	0	10	7
1980	4	6	0	0	3	27	3	22	5	0	0	1	1	1	1	1	0	10	0	1	0	9	5	10	1	1	0	1	8	7	1	0	4	29	25	33
1981	7	7	21	1	5	0	15	23	7	3	5	0	3	22	7	23	16	11	0	0	0	5	4	7	9	0	9	2	15	13	20	17	22	10	14	8
1982	16	3	0	0	6	17	0	6	1	0	0	1	11	8	15	25	1	1	0	13	1	2	1	12	16	7	0	8	13	0	1	6	44	1	4	17
1983	10	14	9	20	2	16	22	6	0	0	0	3	3	14	4	6	25	17	22	9	7	9	5	17	3	2	21	18	3	41	18	6	1	0	0	21
1984	18	26	29	14	5	14	15	14	0	1	2	0	2	2	0	0	0	7	6	1	1	2	0	0	14	5	6	4	15	10	1	21	9	7	58	26
1985	2	1	1	2	15	16	6	3	1	2	3	0	7	19	1	3	8	13	18	27	2	4	4	32	15	4	0	0	2	0	3	12	35	6	11	25
1986	9	8	15	22	22	2	3	2	1	3	1	0	2	0	2	0	24	20	1	0	7	16	23	11	0	10	19	4	24	0	12	11	0	1	0	0
1987	19	3	2	0	1	6	2	19	3	15	0	0	0	0	0	13	2	11	0	5	5	27	1	0	6	2	20	7	0	15	3	7	39	37	18	8
1988	34	37	14	2	15	22	15	28	5	9	18	12	8	8	12	28	10	7	5	8	0	5	15	0	17	0	0	8	3	19	9	13	0	2	32	14
1989	1	2	9	0	1	1	12	1	14	13	7	7	3	5	20	1	35	4	2	4	0	8	4	4	0	5	18	0	0	8	15	11	0	0	5	6
1990	0	5	12	10	35	30	11	42	14	6	6	28	9	7	3	3	6	0	3	3	6	4	0	8	0	0	37	9	1	10	1	5	7	23	24	10
1991	17	41	2	2	0	0	1	5	9	1	3	1	5	0	7	7	3	1	6	4	1	0	3	5	31	0	3	2	4	0	27	13	25	36	19	33
1992	27	14	1	2	0	0	5	11	33	2	3	0	4	1	23	10	7	10	15	1	18	5	3	28	3	7	4	0	0	0	0	0	0	0	0	0
1993	1	18	34	9	32	2	1	0	2	21	0	3	2	0	1	7	6	3	4	3	0	2	3	0	6	11	9	0	3	13	1	0	4	22	24	17
1994	10	2	32	8	14	20	10	4	1	3	7	25	12	17	16	7	20	10	16	0	20	0	0	5	0	0	4	8	2	9	19	13	6	14	16	5
1995	1	21	2	3	30	18	4	7	22	21	18	5	25	3	2	23	9	9	4	9	4	42	1	1	0	16	12	20	7	2	8	14	16	18	5	1
1996	1	5	2	1	3	0	0	0	4	17	3	1	0	0	2	0	0	17	0	0	1	0	8	2	26	18	7	36	43	11	6	5	3	18	5	3
1997	0	0	3	2	1	0	13	10	24	12	23	2	6	0	3	0	0	16	8	2	3	2	26	2	17	35	9	5	6	11	2	1	4	12	47	20
1998	14	9	5	3	17	3	8	4	13	5	6	8	35	1	3	8	2	7	30	1	14	5	6	7	13	6	3	1	13	5	8	27	25	24	10	20
1999	15	8	8	10	17	11	5	14	6	10	13	10	14	13	4	1	5	0	0	10	13	38	12	0	0	14	34	0	11	9	10	21	16	4	14	34
2000	4	7	4	0	1	28	10	16	6	0	6	5	15	12	3	0	0	14	17	0	31	16	0	0	1	0	0	10	19	13	7	26	1	1	31	41
2001	19	9	0	1	13	8	5	11	9	0	5	7	5	5	17	4	0	6	9	4	2	10	26	8	1	0	1	25	0	38	9	13	2	12	14	16
2002	2	0	0	14	20	52	16	20	9	5	18	17	9	29	3	10	0	0	0	0	5	4	2	27	30	0	2	6	10	65	1	20	32	17	5	30
2003	2	2	7	4	5	11	10	0	0	0	0	0	0	6	6	0	0	0	6	19	3	0	1	38	15	2	14	8	33	0	0	15	8	9	30	13
2004	0	5	15	11	0	28	8	8	0	2	11	4	0	0	8	33	7	3	6	8	0	3	3	0	9	12	29	0	11	12	0	3	22	16	34	12
2005	19	22	3	14	0	1	1	10	21	5	4	9	2	2	19	8	0	0	2	7	6	0	0	0	9	8	9	1	19	13	27	3	19	4	8	1
2006	3	0	2	15	3	0	2	24	2	13	2	4	17	0	0	0	0	31	8	19	8	13	0	31	13	0	0	27	27	15	6	0	0	3	5	6
2007	18	19	22	29	10	18	6	5	3	2	14	10	6	16	0	19	0	0	0	12	0	11	1	0	0	28	20	13	0	4	3	1	1	18	38	46
2008	6	18	7	11	23	23	11	2	0	1	8	22	12	4	19	12	10	1	9	7	10	2	0	0	14	0	0	8	0	0	0	1	8	14	7	10
2009	2	4	5	6	7	1	11	9	4	1	11	5	6	8	9	5	7	11	0	4	0	0	0	0	12	22	2	14	11	10	7	23	16	18	4	18
2010	9	2	0	6	0	13	17	0	7	27	8	7	5	0	0	3	3	21	1	2	0	6	4	9	11	13	11	17	15	8	1	27	15	8	2	3
2011	12	14	21	3	2	1	14	16	2	0	0	0	0	13	4	12	0	11	6	1	1	0	0	0	2	0	11	2	15	24	0	40	2	38	50	9
2012	43	10	10	5	10	0	0	1	12	18	10	3	0	3	0	9	0	2	2	14	8	9	10	7	0	9	4	5	0	3	11	9	7	33	48	12
Average	9	9	9	7	9	11	8	9	7	6	6	5	6	6	6	9	6	9	8	7	6	7	6	8	9	7	9	8	9	12	7	10	11	12	14	15
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	2	1	1	2	1	3	2	1	1	0	0	2	0	1	0	0	1	1	1	1	1	1	0	1	0	2	2	1	2	1	1	2	2	4	6
Median	7	6	5	5	5	11	8	6	5	3	3	1	4	4	3	6	4	10	6	4	4	5	3	5	9	5	6	5	8	9	6	7	6	8	11	13
Upper	15	13	14	12	15	16	11	13	9	9	8	7	9	10	9	12	10	13	15	11	8	10	9	10	14	11	13	10	14	14	10	14	16	18	19	24
Max. value	43	41	35	31	35	52	22	42	33	27	23	28	35	29	23	39	35	31	30	27	31	42	26	38	31	35	37	36	43	65	27	40	44	38	58	46

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	20	16	26	48	11	32	7	15	9	7	20	5	22	33	26	0	2	2	0	9	0	24	21	19	15	23	15	0	0	8	24	8	1	0	9	18
1962	18	11	16	8	13	11	8	36	10	27	38	26	18	35	15	1	2	0	2	0	3	1	1	10	0	0	12	10	3	11	0	6	13	5	1	11
1963	1	39	30	7	5	13	5	30	39	8	16	7	16	1	0	0	19	18	33	4	17	8	18	1	2	9	27	34	35	6	0	0	0	7	0	8
1964	3	22	4	3	14	39	3	7	0	6	7	11	0	4	33	25	1	1	0	30	25	8	12	0	1	2	17	18	11	4	10	22	31	15	0	9
1965	13	30	19	0	26	30	15	4	2	4	18	13	30	56	15	9	0	16	1	0	0	0	0	16	26	1	2	1	14	18	20	28	8	11	8	30
1966	5	11	20	1	18	23	17	12	23	0	1	6	30	3	14	1	1	0	19	10	6	4	27	0	10	7	2	17	1	29	4	14	4	10	20	26
1967	8	1	0	15	2	6	5	3	31	21	0	13	20	23	0	14	34	12	10	13	14	42	12	11	9	0	11	3	0	4	3	0	11	0	39	14
1968	2	22	17	18	11	5	2	4	11	17	0	7	5	1	8	7	12	23	2	28	18	11	0	14	14	11	1	4	9	21	0	0	0	9	11	13
1969	2	17	0	8	1	0	0	2	15	18	16	38	13	0	0	9	8	25	3	3	0	0	9	6	39	20	18	27	2	24	9	0	3	4	1	1
1970	19	19	38	15	9	12	17	12	4	12	3	0	10	7	31	7	1	11	31	2	1	33	2	45	33	13	16	8	16	8	8	7	5	7	0	1
1971	0	0	16	8	7	26	1	12	15	0	0	14	22	4	3	16	8	4	0	5	6	29	17	0	10	27	13	11	7	5	5	12	2	7	8	10
1972	17	24	2	0	3	39	12	1	25	16	3	0	0	20	4	6	5	0	0	0	2	5	8	0	2	27	17	9	5	16	13	25	12	0	0	0
1973	0	4	16	10	20	6	19	9	0	4	0	2	6	1	0	15	36	21	1	27	6	8	3	1	3	6	22	23	14	0	13	10	21	6	4	2
1974	13	12	12	4	9	18	23	8	10	2	0	7	11	15	6	6	16	24	28	25	4	8	18	13	6	16	26	13	7	14	10	14	28	25	12	14
1975	0	1	19	17	17	0	0	4	3	19	5	0	3	9	64	1	14	28	25	2	11	1	0	2	3	0	2	11	0	26	9	4	3	3	1	11
1976	2	7	6	17	3	9	11	3	1	6	0	8	4	11	10	7	0	10	13	6	14	14	3	2	6	10	2	0	2	30	19	10	7	15	13	16
1977	21	3	1	28	30	25	33	2	1	0	3	27	2	15	15	0	0	22	31	5	1	0	6	2	16	13	34	18	16	0	0	2	7	8	20	31
1978	16	19	20	9	17	0	19	8	5	5	8	11	30	26	35	6	20	22	7	0	0	11	4	2	2	1	10	41	3	3	0	0	22	0	9	9
1979	9	36	20	29	2	24	13	19	2	5	40	11	5	1	17	20	1	7	0	0	2	9	1	2	17	8	14	17	11	16	12	17	6	14	3	10
1980	6	20	9	53	1	0	28	11	0	10	19	47	3	16	20	9	7	3	6	24	24	2	24	28	0	1	17	32	30	9	8	10	32	15	14	11
1981	9	6	7	28	12	2	0	0	8	26	5	5	0	0	7	14	8	1	15	29	16	36	1	28	22	1	8	29	28	20	3	16	2	1	13	4
1982	11	1	0	6	0	6	0	4	10	36	27	23	18	15	0	3	3	1	0	11	19	10	10	2	2	3	11	18	22	11	2	27	28	18	9	3
1983	12	0	1	0	0	0	10	2	1	1	0	0	25	29	26	12	12	0	11	22	13	15	4	8	2	4	8	10	12	14	2	19	0	9	13	13
1984	14	0	20	13	23	9	24	14	2	11	1	19	42	28	18	13	9	4	30	8	12	24	32	11	1	0	0	4	24	1	1	7	0	16	0	12
1985	9	5	15	27	18	28	21	10	10	11	10	1	35	18	8	13	13	7	1	15	4	0	0	1	23	31	2	1	1	24	45	24	16	22	10	21
1986	11	21	4	2	50	6	1	5	8	20	3	17	10	14	20	3	1	1	1	7	1	13	19	17	13	5	9	15	10	2	19	1	8	20	11	12
1987	1	5	10	20	5	41	25	17	7	5	20	11	2	37	24	6	18	6	0	6	16	1	10	2	0	1	14	17	11	9	0	1	3	22	5	12
1988	61	7	16	45	16	29	32	0	16	14	13	13	37	2	20	0	23	22	0	36	5	2	3	14	4	2	3	4	0	25	5	3	6	8	21	6
1989	0	20	31	20	0	28	10	14	24	23	6	4	6	11	7	11	13	0	2	30	8	10	25	10	5	11	1	0	2	1	0	3	7	21	23	3
1990	25	19	3	7	8	1	3	11	5	18	18	0	6	10	1	19	42	41	24	21	6	1	0	14	13	0	10	14	6	21	2	3	3	6	3	26
1991	0	1	8	14	15	0	11	4	11	39	14	1	2	4	1	15	29	46	11	0	7	18	0	0	18	24	16	4	2	10	0	0	1	23	18	4
1992	6	0	21	8	0	18	14	1	25	7	64	27	17	1	23	0	6	0	0	4	29	7	19	20	33	2	32	22	16	14	15	1	9	4	0	0
1993	3	13	48	8	24	52	13	23	9	9	6	11	24	2	18	11	11	1	3	22	24	3	5	0	0	27	17	3	10	2	18	15	5	27	20	13
1994	0	0	1	0	0	3	7	2	16	49	1	20	40	28	38	31	3	26	19	0	0	3	1	27	5	2	28	16	0	1	9	21	20	11	0	55
1995	7	1	36	15	4	0	25	0	0	0	11	4	28	9	42	15	7	25	8	1	1	7	1	26	12	10	7	29	4	0	2	5	1	2	10	1
1996	27	37	1	4	0	8	4	0	7	0	10	28	0	4	22	0	0	27	4	1	0	2	2	32	20	22	16	19	6	14	12	3	19	9	0	3
1997	32	9	1	5	18	48	12	0	0	5	4	19	31	10	9	2	0	2	19	42	3	4	9	0	5	21	11	0	0	10	10	16	7	0	23	19
1998	18	12	19	10	14	40	7	16	28	9	17	7	0	16	48	1	1	0	0	6	27	31	32	30	7	15	7	3	3	1	10	2	21	2	18	14
1999	8	3	17	10	5	0	0	24	34	19	6	11	0	0	0	18	20	29	18	18	3	0	4	13	3	11	0	6	6	7	17	32	25	15	28	16
2000	12	15	6	10	29	10	13	8	8	8	17	18	8	3	10	0	0	4	13	38	19	1	27	27	15	18	13	12	15	16	2	8	32	1	0	16
2001	1	11	27	10	0	0	11	24	16	7	8	27	16	44	16	64	31	2	20	28	3	0	1	22	7	23	0	0	11	20	7	2	1	11	24	14
2002	23	9	0	6	31	20	0	1	4	8	0	2	1	0	1	3	3	1	12	0	15	45	29	18	0	2	21	29	8	8	11	0	0	3	0	29
2003	##	16	21	14	7	4	5	0	20	8	16	14	1	7	7	0	9	1	16	11	0	0	0	5	9	0	1	25	18	20	2	1	18	14	18	15
2004	18	##	39	33	8	4	17	0	0	19	34	20	16	0	13	24	11	2	21	8	5	30	31	6	4	2	9	14	25	23	9	0	2	16	18	3
2005	0	3	2	41	25	42	20	38	12	0	18	14	0	0	5	1	0	7	9	0	0	1	42	0	12	5	10	4	9	5	9	12	3	2	8	22
2006	0	2	2	0	6	19	26	0	44	23	11	50	19	6	0	1	0	26	19	21	0	6	27	70	4	16	21	15	19	1	16	11	26	5	0	21
2007	70	29	19	2	49	36	9	16	16	8	24	20	19	11	5	18	14	36	1	0	4	6	0	17	9	16	2	1	7	8	30	26	0	0	0	15
2008	8	31	25	32	2	1	67	18	15	25	10	12	7	25	1	2	2	20	26	2	19	12	13	37	0	20	22	10	1	9	23	8	12	11	4	0
2009	45	14	15	27	14	6	1	8	17	4	18	4	35	0	2	0	3	9	32	10	3	3	17	2	12	9	15	25	15	16	1	8	6	3	23	6
2010	2	0	15	5	56	26	10	20	21	13	43	17	1	5	32	43	2	0	0	21	0	16	20	7	20	12	26	16	45	10	13	8	3	22	5	2
2011	4	2	25	14	31	20	2	41	8	17	3	29	11	15	26	22	14	1	5	28	3	23	1	12	0	0	0	4	5	11	25	28	14	10	9	6
2012	6	35	17	20	1	14	2	18	0	1	17	14	1	5	11	10	49	16	21	8	36	1	3	6	19	13	3	0	21	11	17	4	6	3	20	24
Average	14	14	15	14	13	16	12	10	12	12	13	14	14	12	15	10	11	12	11	12	9	11	11	13	10	10	12	13	10	11	10	10	10	10	10	13
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	2	3	5	3	4	3	2	3	5	3	5	2	2	4	1	1	1	1	2	1	1	1	2	2	2	3	4	3	5	2	2	3	3	1	4
Median	9	11	16	10	10	12	10	8	9	9	10	11	10	9	12	7	8	7	9	8	5	7	7	10	7	9	11	12	9	10	9	8	6	8	9	12
Upper	18	20	20	20	18	27	18	16	16	19	18	19	22	17	22	15	14	22	19	22	15	14	19	18	15	16	17	18	15	17	14	16	16	15	18	16
Max. value	102	115	48	53	56	52	67	41	44	49	64	50	42	56	64	64	49	46	33	42	36	45	42	70	39	31	34	41	45	30	45	32	32	27	39	55

Figure A6-15. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Kronoberg county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A7 KALMAR COUNTY♣

A7.1 Crop production and yield

Table A7-1. *Yearly production (metric ton) in 2010-2014 for the major crops in Kalmar county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	393 500	388 300	379 000	383 900	306 800	370 300
Winter wheat	55 700	53 200	80 100	74 000	85 000	69 600
Spring barley	25 400	34 800	45 100	43 200	42 500	38 200
Potatoes for starch	25 500	31 000	26 700	27 800	29 800	28 160
Triticale	12 400	11 300	22 000	17 300	21 300	16 860
Potatoes	14 200			14 000		14 100
Winter rape	11 300	10 500	16 500	15 100	14 700	13 620
Winter barley	13 300	9 000	13 200	15 000	17 000	13 500

* Data from Jordbruksverket (2015)

Table A7-2. *Average yield of important crops in Kalmar county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Winter wheat	4 955	383	8
Spring barley	3 345	360	11
Winter rape	2 596	186	7
Oats	3 126	367	12
Spring wheat	3 690	264	7

* Coefficient of variation = Standard deviation / Average

Table A7-3. *Coefficient of variation of farm-level yield for important crops in Kalmar county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Temporary grasses		45	41	50	54	52	58	45	49
Winter wheat	23	35	20	24	26	31	32	22	27
Spring barley	30	43	36	34	30	44	38	30	36
Winter rape	31	28	26	27	25	24	33	19	27
Oats	22	52	30	29	24	44	38	28	33
Average	27	41	31	33	32	39	40	29	

* Based on yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

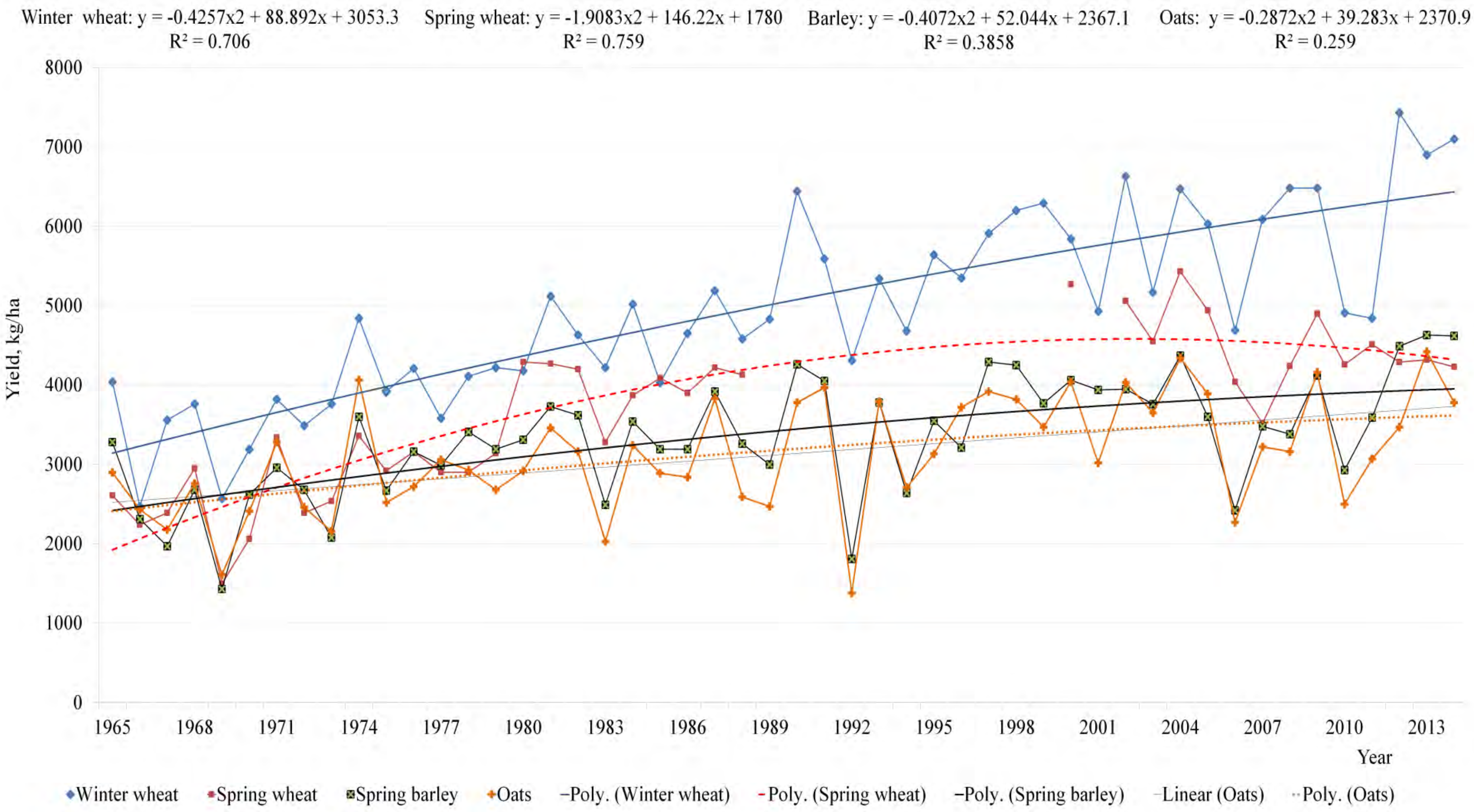

Figure A7-1. Average yield (kg/ha) per year of winter wheat, spring wheat, barley and oats in Kalmar county for the period 1965-2014, and their trend lines with respective equations. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

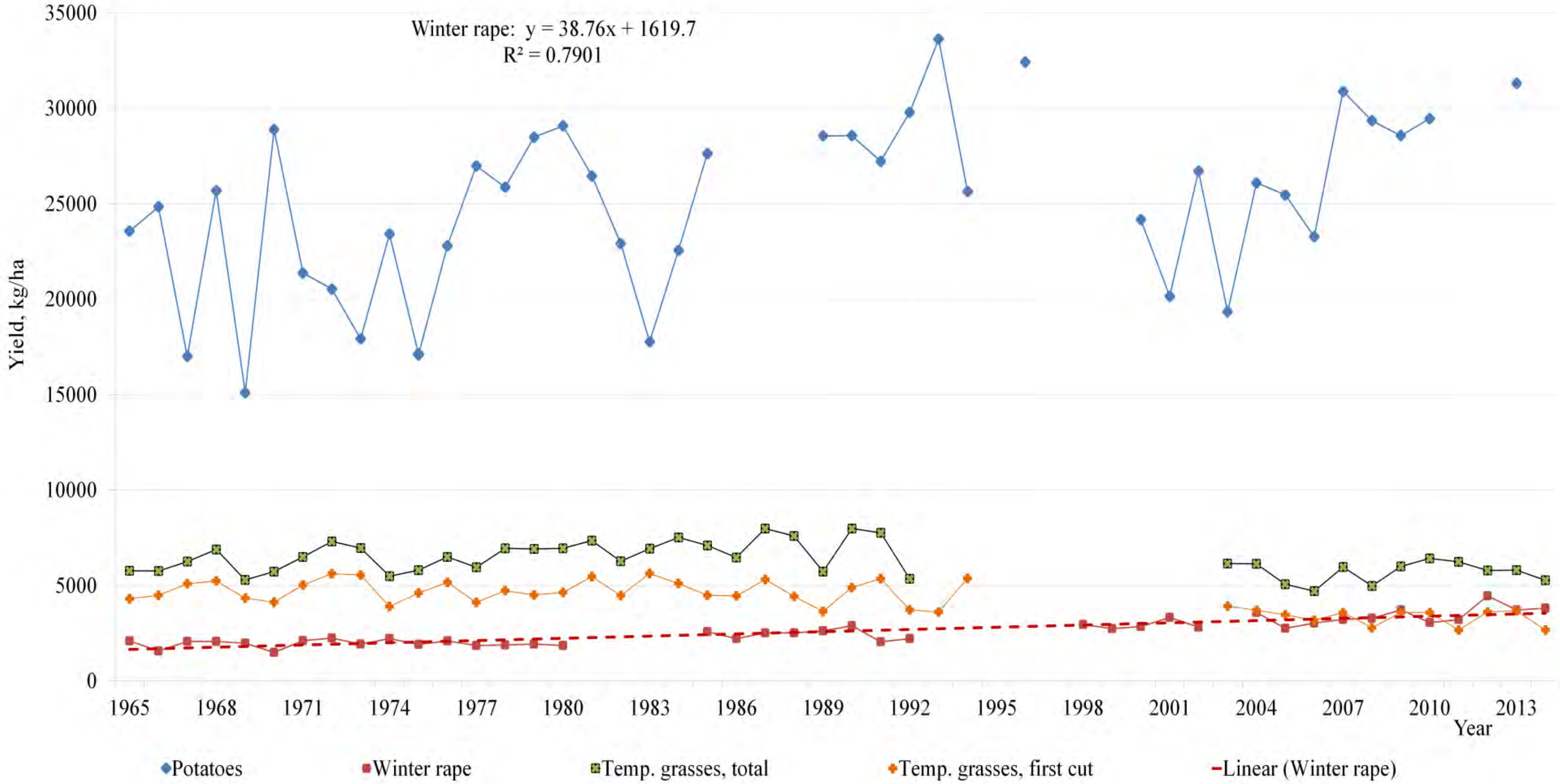

Figure A7-2. Average yield (kg/ha) per year of potatoes, winter rape, temporary grasses (total and first cut) in Kalmar county for the period 1965-2014, and the trend line with its respective equation for winter rape. The variable x in the equation is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

A7.2 Precipitation, temperature and cereal yield

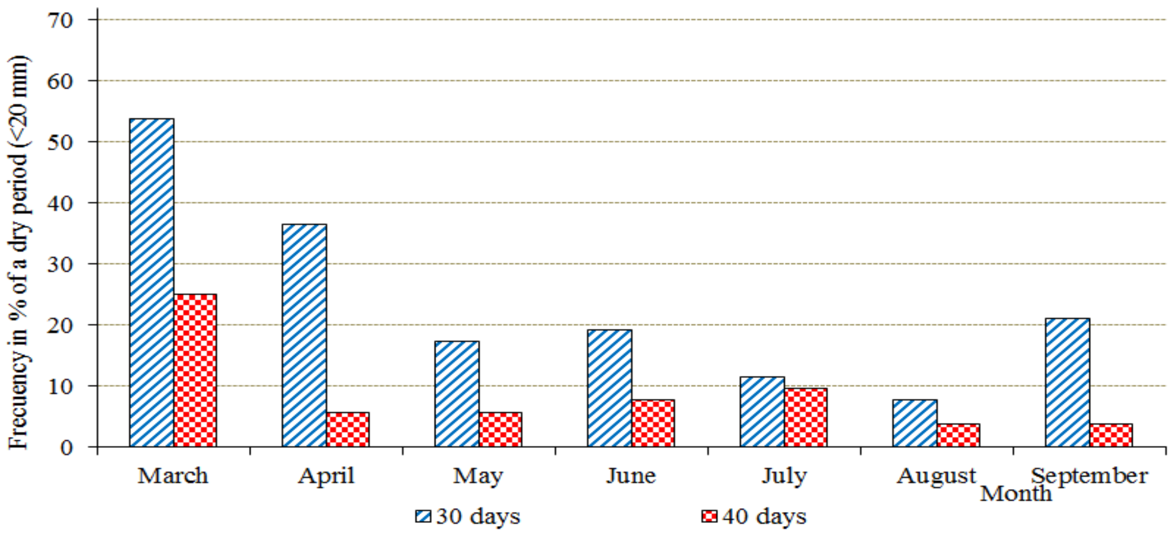

Figure A7-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Kalmar county∗.

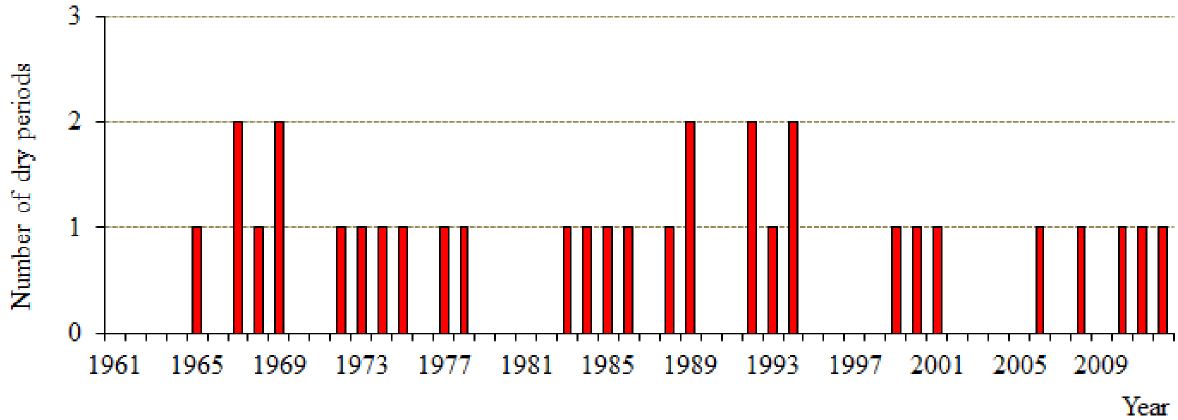

Figure A7-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 April to 31 July in Kalmar county*.

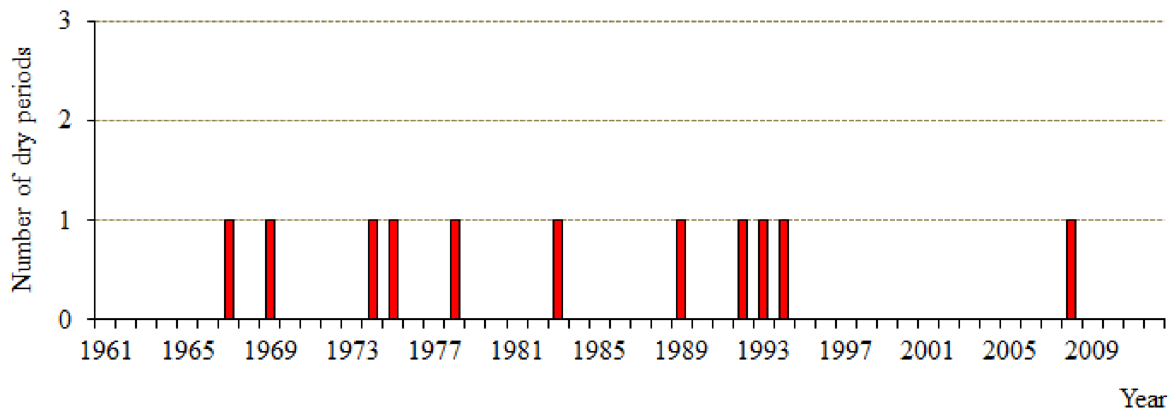

Figure A7-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 April to 31 July in Kalmar county∗.

∗ The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

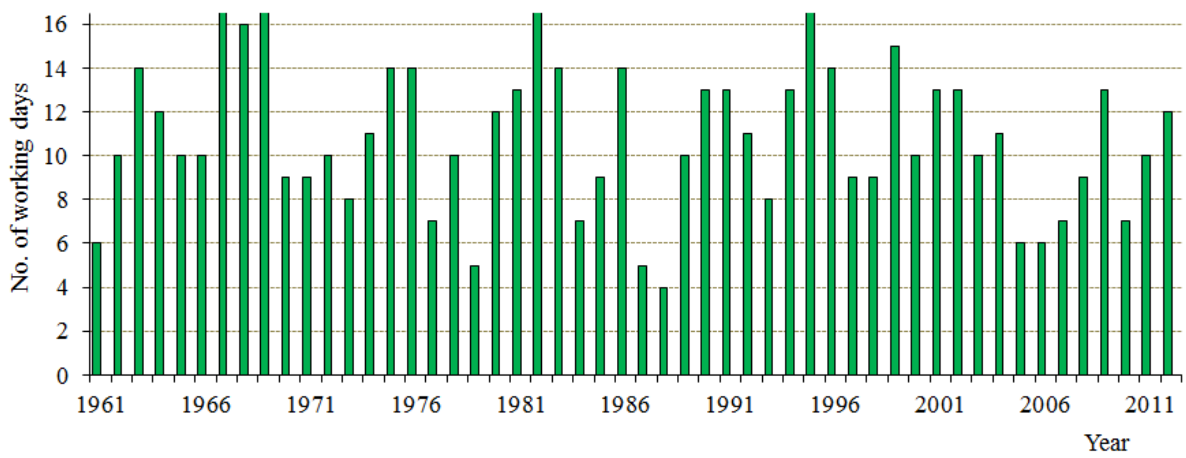

Figure A7-6. Estimated number of working days available for harvesting during the period 22 July-7 August in Kalmar county (for definition of a working day, see Section 2.1)*.

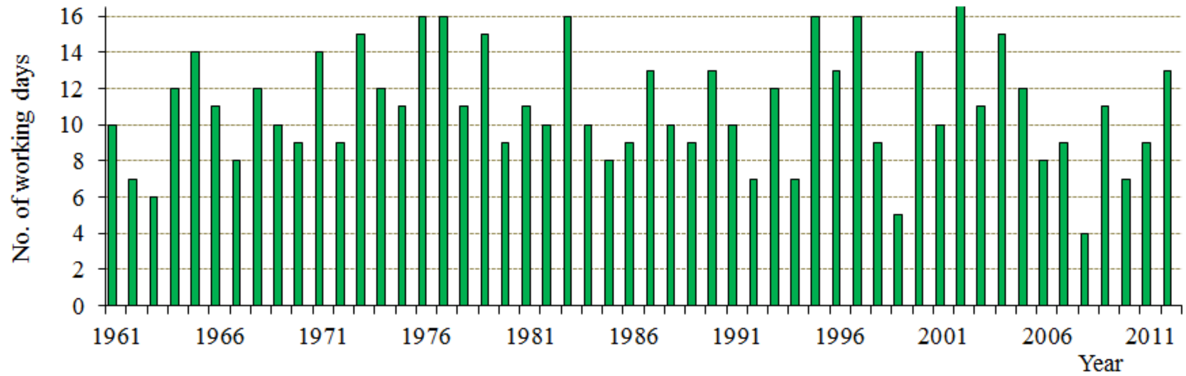

Figure A7-7. Estimated number of working days available for harvesting during the period 8-24 August in Kalmar county (for definition of a working day, see Section 2.1)*.

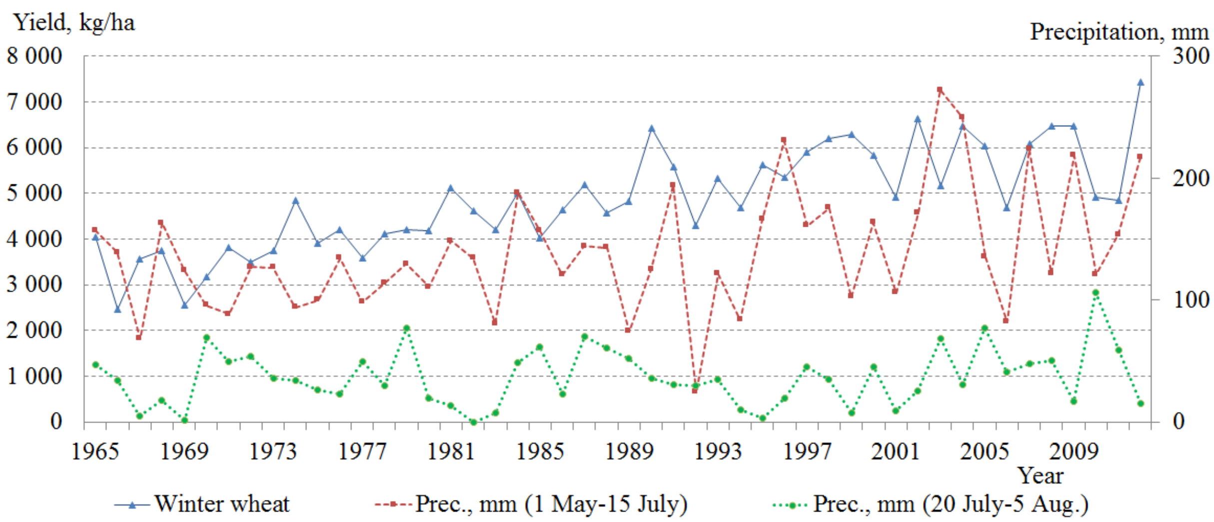

Figure A7-8. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 20 July-5 August in Kalmar county, 1965-2012*.

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* Precipitation and temperature from Luftwebb (2014) and yields from Jordbruksverket (2015).

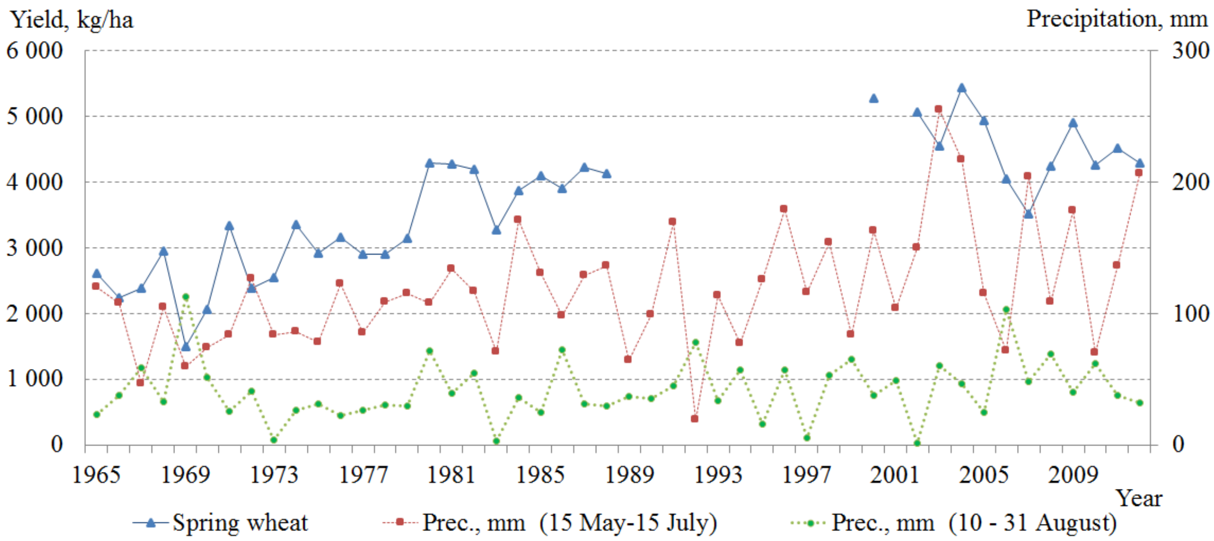


Figure A7-9. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 15 May-15 July and 10-31 August in Kalmar county, 1965-2012*.

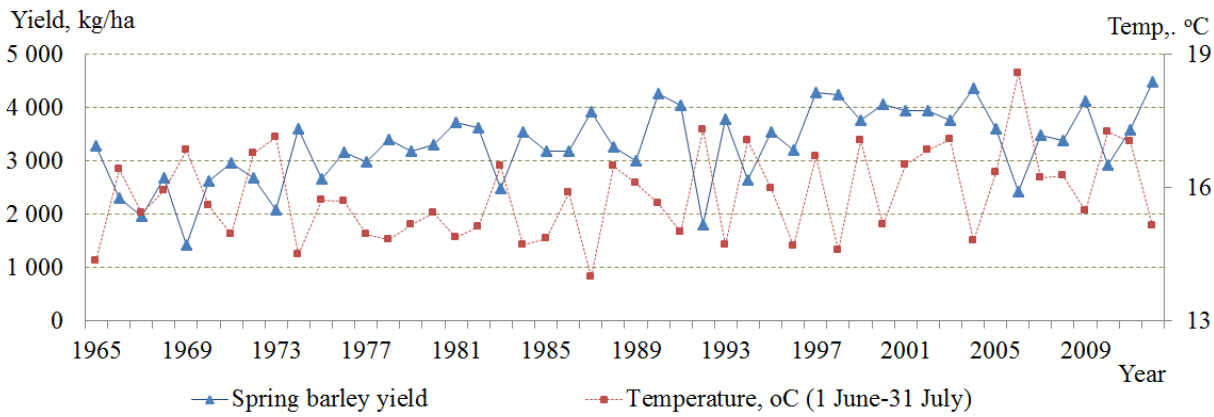


Figure A7-10. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-15 July in Kalmar county, 1965-2012*.

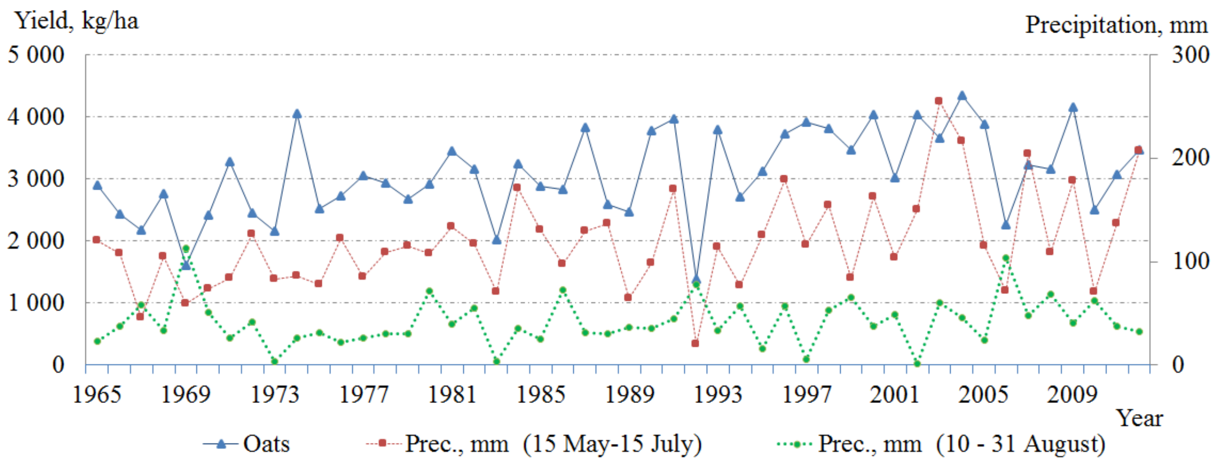
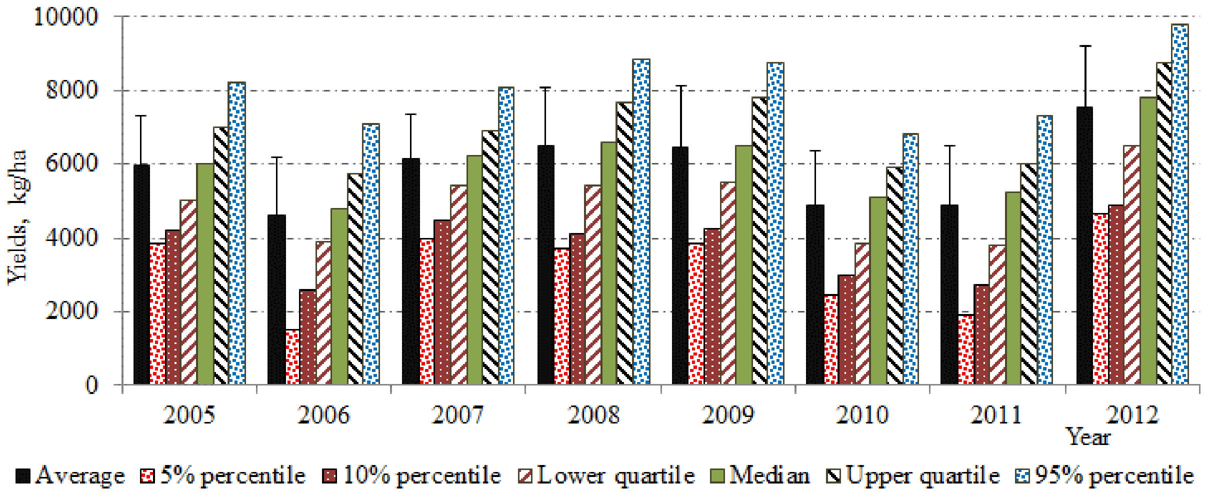


Figure A7-11. Annual oat yield (kg/ha) and precipitation (mm) in the period 15 May-15 July and 10-31 August in Kalmar county, 1991-2011*.

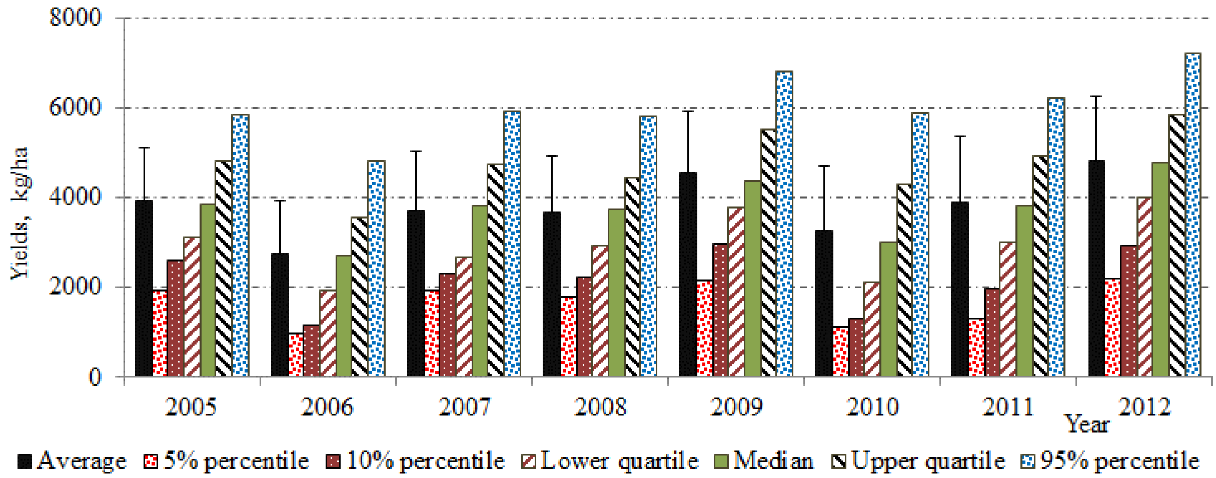
* Precipitation from Luftwebb (2014) and yields from Jordbruksverket (2015).

A7.3 Yield on farms



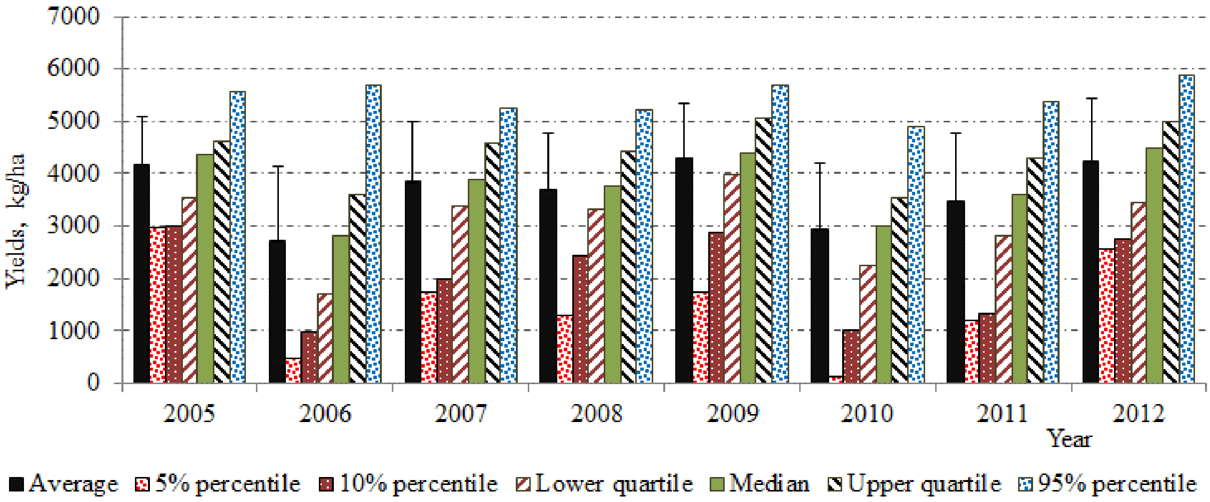
N	93	92	94	99	101	106	117	103

Figure A7-12. Average and estimated percentiles of winter wheat farm-level yield in Kalmar county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



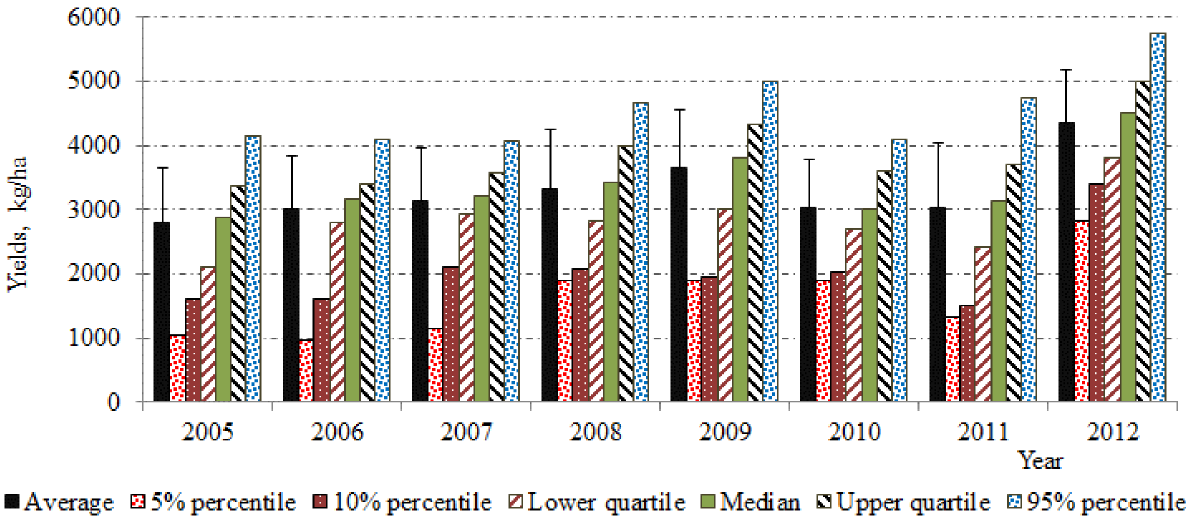
N	115	104	111	115	103	107	114	108

Figure A7-13. Average and estimated percentiles of spring barley farm-level yield in Kalmar county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	42	37	46	51	39	38	42	29

Figure A7-14. Average and estimated percentiles of oat farm-level yield in Kalmar county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	50	48	56	60	57	69	76	79

Figure A7-15. Average and estimated percentiles of winter rape farm-level yield in Kalmar county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

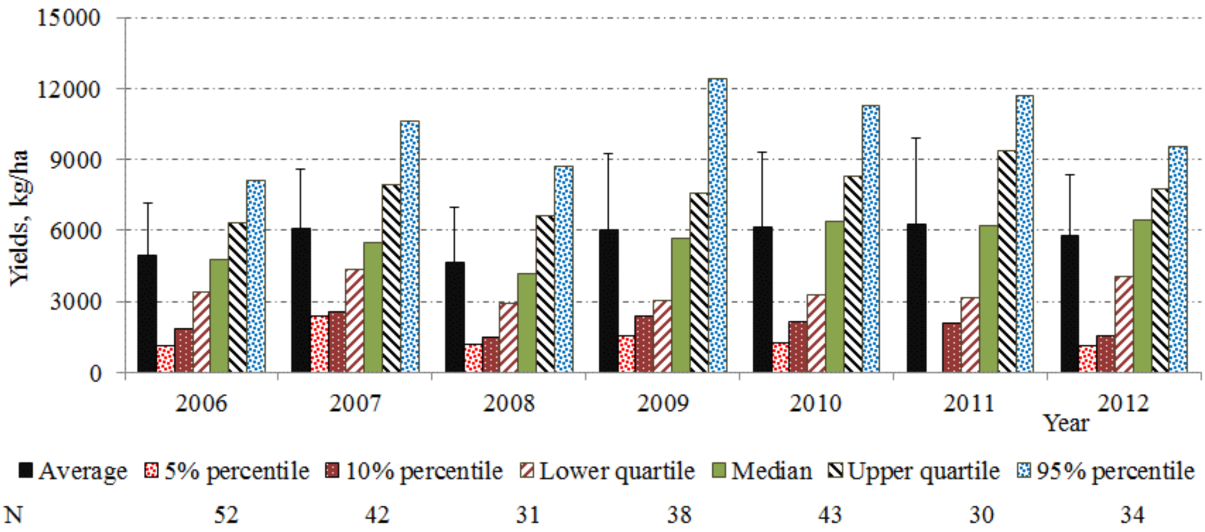


Figure A7-16. Average and estimated percentiles of temporary grasses farm-level yield in Kalmar county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A7.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

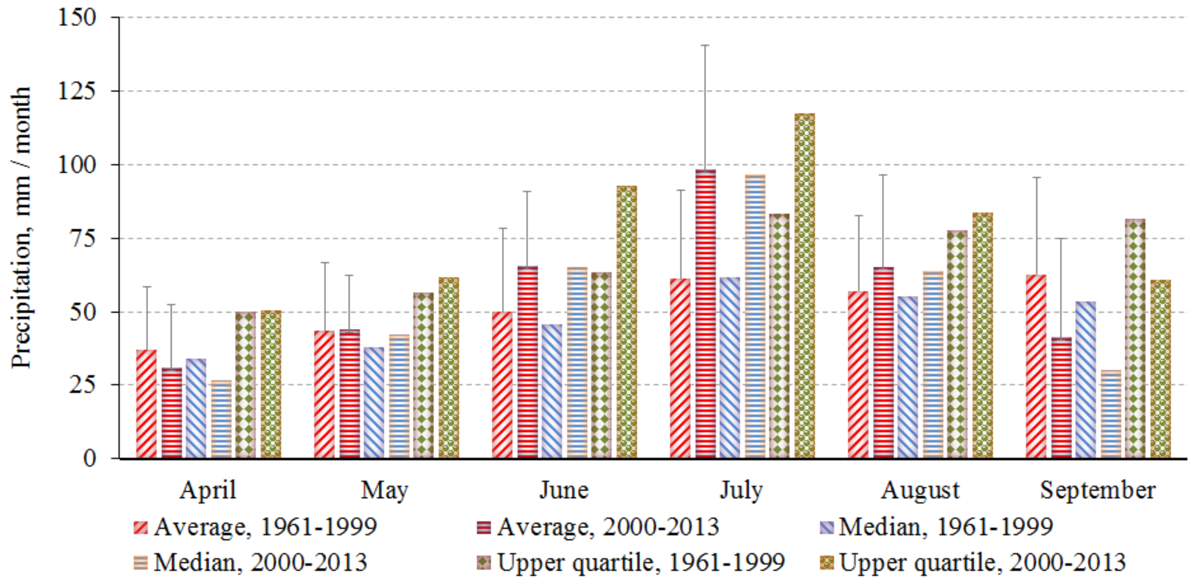


Figure A7-17. Monthly average, median and upper quartile precipitation (mm) from April to September in Kalmar county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1540714-6349094 (close to Oskarhamn).

County: **Kalmar**

Location: **Oskarshamn**

Average temperature (°C) for 5 or 6 day periods

Coordinates for the places (RT90): 1540714-6349094 1521061-6356050 1519728-6349381 1531733-6345379

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	1	0	-1	-5	-6	-1	-1	1	3	5	1	3	4	8	6	4	4	3	0	6	8	7	7	7	8	9	8	10	12	11	16	18	15	15	15	16
1962	-2	1	2	3	3	-5	-1	1	-2	0	-2	-3	-4	-4	-5	-4	-2	0	4	3	4	6	9	6	4	8	8	10	10	9	9	14	14	16	15	13
1963	-6	-12	-10	-9	-8	-4	-7	-7	-4	-9	-5	-5	-2	0	-6	-5	-3	-2	0	3	4	4	3	8	7	9	12	10	13	15	13	16	15	15	14	15
1964	1	0	-4	-4	2	-2	1	-1	-8	-7	-4	-1	-2	-2	-1	-3	-1	0	0	2	7	10	7	10	8	11	13	10	13	15	13	15	18	15	14	17
1965	-1	-5	2	2	0	-2	-2	-1	-1	-4	-5	-10	-8	-4	0	3	0	3	4	1	4	6	6	7	5	7	9	8	8	10	12	14	15	16	16	16
1966	-9	-4	-4	-8	-5	-2	-7	-14	-11	-10	1	3	2	3	-4	2	2	1	3	1	-4	-3	3	9	13	7	9	13	11	9	14	15	17	19	17	16
1967	-1	-7	-4	1	-4	-6	0	-1	-2	0	2	2	4	6	5	3	4	4	2	4	5	6	3	8	5	7	13	10	11	12	15	12	11	15	14	16
1968	-7	-12	-9	-1	1	-1	1	0	-2	-9	-9	-1	-2	0	-1	2	7	9	5	1	5	9	12	10	9	8	10	5	7	12	15	14	17	21	16	16
1969	-9	-4	-2	0	-4	1	-2	-2	-12	-4	-2	-3	-7	-1	-4	-2	-2	0	3	6	4	2	5	8	4	8	12	9	9	12	10	14	18	18	18	18
1970	-8	-10	-2	-6	-3	-7	-7	-6	-13	-12	-6	-7	-3	-1	-2	2	-1	-1	-1	0	2	6	6	5	5	8	9	11	10	11	12	17	14	19	17	17
1971	-8	-1	-1	1	3	0	0	0	2	1	-1	-7	-7	-3	-1	2	0	1	2	5	5	8	4	1	7	11	14	15	7	13	16	12	11	11	13	15
1972	-4	-2	-7	-5	0	-5	-3	-1	0	0	0	-1	0	-1	-1	2	4	3	3	6	5	4	4	6	11	7	6	7	12	10	12	15	15	15	13	19
1973	-1	1	0	-1	1	1	2	2	0	2	0	-4	2	1	2	4	8	5	4	2	3	4	5	6	10	10	9	8	12	14	15	17	14	12	18	20
1974	0	0	0	1	1	2	1	0	3	0	2	0	1	0	1	3	2	3	6	8	2	6	6	5	6	6	7	12	10	11	12	12	13	15	16	15
1975	3	0	4	3	3	1	1	0	-4	0	1	1	2	4	1	-1	1	0	0	3	2	4	8	9	8	11	12	14	10	9	8	14	15	14	18	14
1976	-3	-1	-4	-2	-5	-10	-5	-5	-2	-2	1	4	0	-4	-5	-4	-4	4	2	4	6	8	3	2	6	11	11	13	12	8	11	14	13	13	17	20
1977	-1	-3	0	-2	-3	-2	-2	-3	-4	-3	-1	-7	0	1	3	3	2	-2	2	-1	1	4	7	7	9	10	10	9	11	9	11	13	19	17	16	15
1978	-2	2	-2	0	-1	-2	-1	-5	-6	-12	-4	1	1	1	3	-6	-3	6	2	5	4	3	5	1	6	6	4	10	13	17	19	16	11	13	15	14
1979	-10	-3	-2	-3	-5	-7	-4	-7	-11	-6	-4	1	2	1	-1	-6	0	2	1	1	5	3	5	6	4	7	13	15	13	15	16	15	15	16	18	14
1980	-4	-2	-2	-2	-3	-9	-11	-7	-2	-3	-4	-3	-3	-1	-1	-5	-6	0	1	4	7	5	5	7	5	8	7	10	7	11	15	17	15	15	13	13
1981	-3	-6	-3	-7	-2	1	3	0	-3	-2	-2	-3	-3	2	-4	-2	5	2	4	7	9	3	1	3	4	10	12	13	15	13	15	15	12	12	13	15
1982	-7	-11	-5	-7	-3	-3	-11	0	0	-3	-7	-2	2	-1	2	2	3	5	6	4	3	5	7	6	6	8	10	11	10	16	20	11	9	12	13	12
1983	3	5	4	-3	4	4	-3	-3	-5	-2	-2	-2	0	4	1	4	1	2	3	4	2	6	7	8	5	9	10	13	12	12	14	14	15	16	15	14
1984	2	-2	1	-2	-6	-1	1	-2	-2	-6	-1	-1	1	0	1	-3	-3	1	2	6	6	7	9	7	10	7	7	13	13	14	15	12	12	17	14	13
1985	-8	-11	-7	-9	-3	-5	-6	-13	-12	-12	-7	-2	-1	-2	1	-1	1	1	4	0	2	6	4	1	3	8	10	10	11	16	16	10	11	14	17	14
1986	-5	-11	0	-7	1	-3	-5	-9	-7	-8	-12	-7	-3	1	0	0	2	4	3	1	0	2	5	9	12	11	11	12	12	13	12	12	16	17	15	19
1987	-10	-15	-12	-6	-4	-9	-1	-2	-1	-5	-5	-10	-13	-7	-7	-1	-1	3	1	2	4	5	7	11	10	9	8	9	10	7	11	13	12	11	13	14
1988	5	0	2	1	1	0	3	2	2	-1	-1	-1	-3	-2	-3	-2	0	2	4	5	3	7	1	4	11	9	11	11	10	16	13	16	14	16	18	19
1989	3	2	4	6	3	4	5	6	3	1	2	4	3	3	4	4	4	7	0	4	10	4	7	9	12	10	11	14	15	13	11	12	14	16	19	18
1990	-2	2	4	4	3	3	5	6	2	3	9	4	2	4	4	10	7	5	7	3	7	7	10	10	16	15	10	9	10	10	14	14	15	14	17	18
1991	2	3	-1	-4	1	-3	-3	-3	-5	-4	4	-1	1	1	6	4	4	4	8	7	8	1	3	5	5	7	10	8	10	12	9	11	12	11	14	13
1992	5	1	3	-1	-4	1	0	2	3	-3	3	3	5	4	1	4	4	0	4	3	6	3	4	9	10	9	11	15	16	16	17	16	16	17	15	20
1993	-7	2	3	5	2	-6	4	1	0	1	-4	-1	-1	0	3	7	5	1	3	2	1	6	10	12	10	12	14	14	16	12	14	16	13	13	13	15
1994	-1	1	3	-3	2	-2	-4	-2	-8	-5	-4	-6	-2	4	3	1	3	3	5	4	5	5	8	13	6	10	10	8	10	9	13	12	15	11	15	19
1995	-5	-2	-1	0	0	-3	2	0	2	3	2	1	3	2	1	3	4	1	4	3	5	3	9	5	10	8	5	8	9	16	16	14	13	14	16	17
1996	-8	0	1	-1	-3	-5	-6	-10	-4	-6	-5	0	-2	-2	-2	0	-1	0	0	4	2	9	11	8	7	5	11	6	9	11	13	17	15	14	14	14
1997	-11	-6	-1	0	-1	-1	-1	4	-1	-4	6	3	6	5	4	-2	-3	6	5	3	3	2	4	7	10	8	12	10	7	9	13	17	18	14	15	16
1998	4	2	4	2	-2	-4	-3	3	4	5	6	5	0	-3	-2	3	0	5	0	2	2	4	7	11	9	13	11	13	8	11	14	15	14	12	13	15
1999	2	-1	-4	4	4	-6	2	-7	-4	-1	-1	2	2	1	-1	2	3	7	7	10	6	4	8	9	6	7	5	12	13	14	15	14	16	18	14	17
2000	1	2	2	2	-7	1	2	4	2	-2	-2	4	1	2	2	3	4	2	3	3	5	8	13	13	10	12	14	14	12	12	12	13	16	16	17	14
2001	1	2	-3	-2	1	1	-10	1	3	1	-4	-6	-6	2	4	-3	-3	1	7	6	2	4	5	9	11	10	12	12	12	11	12	12	13	14	16	19
2002	-6	2	1	2	3	1	5	5	2	2	-1	2	1	4	3	3	1	6	4	2	6	5	11	9	10	10	14	11	14	13	16	17	15	19	16	14
2003	-10	-9	1	3	2	-2	-4	-7	-2	-3	-4	-4	-2	2	3	4	3	5	2	0	3	6	6	9	9	11	10	10	12	16	16	18	15	14	15	16
2004	-6	-2	0	-3	-9	-3	3	1	-2	0	-2	-1	-2	-1	2	8	2	4	3	5	7	8	6	7	11	14	8	12	8	11	15	15	15	12	13	16
2005	2	7	3	1	-2	-3	1	-3	0	-2	-2	-7	-8	-2	-3	0	3	3	6	6	9	5	3	7	9	7	9	9	13	16	12	12	13	17	19	15
2006	-4	-3	-1	-4	-8	-2	-5	-2	-2	-1	-2	-6	-5	-8	-5	-1	-4	3	3	4	5	7	6	7	9	13	12	10	11	10	13	15	20	18	16	17
2007	4	6	4	2	-4	-2	2	-4	-2	0	-4	0	1	5	8	5	4	5	6	3	10	9	9	10	9	10	11	12	15	15	14	19	18	16	17	14
2008	-1	2	3	4	2	2	2	4	1	2	6	5	1	5	4	1	-1	3	6	5	5	5	8	12	11	14	12	9	11	13	16	18	13	14	14	15
2009	-7	-1	1	-2	1	0	-2	0	-3	-6	0	1	1	1	1	2	0	3	7	7	7	5	8	11	10	10	9	11	13	14	11	10	14	13	16	19
2010	-8	-7	-3	-2	-5	-10	-3	-4	-4	-3	-7	1	-4	-3	-2	3	3	5	4	6	5	6	5	10	7	5	9	12	13	11	14	13	14	14	16	18
2011	-3	0	-3	0	-2	-4	3	1	-6	-6	-8	-2	-1	1	2	1	6	1	7	9	7	10	10	9	4	11	13	13	13	14	17	18	16	14	15	18
2012	2	-1	1	0	-2	-3	-11	-8	-4	-1	4	1	1	1	5	5	8	7	1	2	6	4	6	10	9	10	11	11	15	12	10	13	14	15	14	16
Average	-3	-2	-1	-1	-1	-2	-2	-2	-2	-3	-2	-1	-1	1	0	1	1	3	3	4	5	5	6	8	8	9	10	11	11	12	14	14	14	15	15	16
By quartile																																				
Min. value	-11	-15	-12	-9	-9	-10	-11	-14	-13	-12	-12	-10	-13	-8	-7	-6	-6	-2	-1	-1	-4	-3	1	1	3	5	4	5	7	7	8	10	9	11	13	12
Lower	-7	-4	-3	-3	-4	-4	-4	-4	-4	-5	-4	-4	-3	-1	-2	-1	-1	1	2	2	3	4	5	6	6	8	9	9	10	11	12	13	13	14	14	14
Median	-2	-1	-1	-1	-2	-2	-1	-1	-2	-2	-2	-1	0	1	1	2	2	3	3	4	5	5	6	8	9	9	10	11	12	12	14	14	15	15	15	16
Upper	1	1	2	1	1	0	2	1	0	0	1	2	1	2	3	3	4	5	5	5	6	7	8	9	10	11	12	13	13	14	15	16	15	16	17	18
Max. value	5	7	4	6	4	4	5	6	4	5	9	5	6	8	8	10	8	9	8	10	10	10	13	13	16	15	14	15	16	17	20	19	20	21	19	20
Range	16	21	17	16	13	14	16	19	17	18	22	15	19	16	14	16	15	10	10	11	14	13	12	12	13	10	10	10	10	10	12	10	11	10	6	8

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	18	14	15	16	16	15	15	16	14	13	14	16	16	12	14	15	11	11	12	12	11	11	10	8	6	5	4	1	2	1	2	-1	-3	-2	-5	-5
1962	12	14	14	16	16	14	14	13	14	14	13	13	14	12	10	9	9	10	12	9	5	8	8	6	6	6	3	0	-1	0	0	2	0	-5	-10	-6
1963	19	15	14	17	18	15	20	18	15	15	14	14	15	13	12	13	13	9	9	7	7	8	9	7	6	6	5	4	1	4	1	-1	-3	-8	-5	3
1964	14	13	16	20	17	17	14	16	15	15	14	16	13	13	11	11	9	11	7	10	8	7	7	3	4	2	5	3	4	1	-1	4	4	-1	-1	-6
1965	12	12	15	14	16	14	13	15	12	16	17	12	14	13	11	13	13	13	11	8	8	6	5	8	6	1	-2	-6	-6	0	0	-1	-8	-5	-2	-3
1966	17	17	16	16	20	15	15	15	16	16	14	12	15	13	14	11	9	6	11	8	7	10	7	1	3	6	1	3	1	2	3	1	-1	-1	-4	-1
1967	16	17	16	17	17	19	20	17	17	15	15	15	15	13	13	14	11	11	12	10	12	7	9	9	7	4	4	3	3	2	5	-5	-2	-6	-3	-5
1968	19	15	12	14	14	17	17	18	15	14	17	18	18	17	11	10	10	10	8	4	9	5	7	9	5	2	0	2	5	5	1	-2	-4	0	1	-3
1969	17	15	16	18	21	19	19	18	18	17	15	15	14	15	16	11	11	9	7	12	8	9	7	7	4	4	6	5	0	-4	-8	-8	-2	-3	-5	-2
1970	14	18	14	14	14	16	17	16	15	14	16	15	14	12	13	13	8	7	8	11	7	9	3	3	2	-2	1	3	4	2	1	4	3	3	-4	-4
1971	16	20	16	13	16	18	18	16	16	16	14	14	14	12	8	9	12	9	10	11	6	7	8	5	8	2	2	-3	-2	3	2	1	1	6	5	-1
1972	17	19	17	20	20	18	16	18	16	15	14	13	12	14	10	10	10	6	7	8	8	4	2	7	8	7	3	-1	2	5	6	5	6	4	-2	0
1973	21	20	17	19	16	18	18	17	17	17	12	14	15	15	10	10	11	8	11	9	2	1	1	4	1	5	0	0	1	-8	-4	-5	0	-4	1	3
1974	15	15	15	16	15	14	14	15	15	16	16	16	16	15	13	12	11	9	7	7	4	4	6	4	4	3	6	6	2	2	2	3	0	1	7	0
1975	17	18	18	17	17	18	20	24	19	17	17	17	17	14	13	14	13	11	12	7	5	7	9	10	7	3	5	3	-2	2	3	2	1	-2	3	4
1976	17	14	16	19	17	16	13	16	16	17	16	16	11	13	13	11	9	7	7	9	7	4	5	4	4	6	4	1	-1	5	2	2	-1	-5	-4	-8
1977	15	15	14	14	14	15	17	15	15	14	12	15	15	11	9	8	8	8	7	9	8	6	10	9	8	8	6	1	2	-1	0	0	2	1	3	0
1978	15	13	15	13	15	19	19	15	14	16	15	11	11	12	11	10	8	8	6	10	11	7	4	7	9	8	7	8	5	-1	-1	-2	-2	-5	-3	-8
1979	14	15	16	14	14	15	15	14	15	17	13	14	15	14	11	11	8	9	4	6	9	9	2	2	3	2	2	4	4	4	7	0	-7	-4	0	1
1980	15	16	15	14	17	19	19	16	16	15	13	13	13	14	12	11	12	10	9	8	7	7	4	3	-1	0	2	4	6	-4	-4	-4	5	-1	2	4
1981	15	18	17	15	17	16	16	17	19	13	13	12	13	14	12	8	12	13	11	10	5	4	3	4	4	0	2	4	4	0	1	-6	-10	-13	-4	-5
1982	14	16	19	20	19	18	20	21	17	15	13	14	13	11	13	15	11	11	11	9	8	6	8	6	5	2	6	3	6	4	0	1	-1	0	1	1
1983	16	21	21	17	17	19	18	19	17	17	16	17	17	12	13	13	11	9	9	7	9	9	5	7	6	7	0	0	-2	-1	-1	-1	-5	-1	1	4
1984	14	16	17	16	15	16	18	17	16	16	18	15	12	11	10	11	11	8	11	10	8	9	9	9	7	6	2	2	4	2	4	5	0	0	2	-2
1985	15	16	18	16	14	16	15	14	16	16	15	15	14	11	11	11	8	7	15	10	8	8	5	4	2	4	0	-1	0	-2	1	-4	-2	-4	3	-5
1986	20	15	15	17	15	17	18	16	14	13	12	12	11	9	8	10	8	7	8	8	8	7	4	7	3	5	5	6	5	7	7	3	0	0	-6	-5
1987	16	17	14	15	17	13	13	12	13	14	15	13	13	12	12	9	10	8	6	10	10	10	7	4	4	0	3	4	2	1	-3	-3	-1	-2	0	5
1988	19	17	17	17	17	15	14	17	17	16	14	15	14	13	12	13	13	12	8	9	8	8	2	2	1	1	3	0	-2	-4	-6	-2	-2	-2	2	5
1989	17	21	16	14	18	17	14	16	17	18	16	12	13	14	10	13	14	10	7	7	6	9	12	8	6	7	6	1	-3	-1	2	-2	-7	-1	4	1
1990	15	15	16	16	16	18	20	15	17	15	16	16	14	12	11	10	9	9	9	10	8	9	1	6	3	4	4	4	0	0	2	2	-1	0	0	2
1991	18	22	18	16	16	19	21	19	15	15	16	15	16	11	11	12	12	9	9	9	10	7	2	5	6	3	3	1	4	5	2	0	3	3	0	1
1992	16	17	18	18	20	17	17	19	16	16	14	16	13	11	11	11	12	10	8	7	4	3	4	1	5	3	3	2	1	2	5	2	2	2	-7	-3
1993	17	15	14	17	16	15	15	15	14	15	13	12	11	10	10	7	11	7	10	11	7	3	2	3	3	5	2	0	-1	-1	2	2	-3	3	0	0
1994	17	18	22	19	21	23	22	19	17	16	15	14	14	13	13	12	12	9	5	8	10	1	7	6	5	4	2	2	6	3	1	4	1	2	-1	3
1995	14	17	17	17	17	19	19	17	19	21	19	13	15	14	14	10	11	8	10	13	11	11	6	7	-1	0	1	-2	2	1	0	0	-1	-3	-9	-12
1996	14	13	16	13	16	16	16	16	18	18	18	17	14	10	10	9	7	9	9	10	9	9	5	8	11	4	2	4	2	0	3	1	-3	-7	-9	-5
1997	18	19	16	17	20	17	18	20	20	20	21	21	19	15	13	12	11	10	9	10	5	7	1	1	1	6	5	2	2	-2	-1	4	2	-5	1	2
1998	16	16	15	14	17	15	15	16	15	15	13	12	11	15	14	12	13	12	7	8	7	7	9	5	1	0	2	-2	-2	0	-3	-6	-3	3	-2	3
1999	17	19	20	18	18	19	21	18	14	14	14	16	16	17	12	14	15	14	11	8	8	4	7	8	9	6	4	1	-1	6	0	4	0	-4	-2	-2
2000	16	14	15	16	17	16	17	15	17	16	13	14	12	13	10	9	8	12	12	12	10	10	10	8	7	7	6	5	7	7	6	6	7	1	-2	-1
2001	19	22	16	16	19	20	17	16	17	19	18	15	15	12	12	13	12	8	12	12	12	10	6	10	6	1	2	2	2	2	2	3	2	-1	-7	-6
2002	15	18	18	20	16	19	20	18	21	19	18	19	17	16	14	12	8	9	11	4	4	2	5	4	1	1	2	2	3	3	0	-2	-2	-2	-6	-5
2003	15	18	19	21	20	19	20	18	19	17	16	12	12	14	14	15	13	9	8	7	6	4	0	4	7	4	2	5	5	5	5	1	1	3	-1	2
2004	14	14	15	16	16	17	19	20	18	19	14	15	15	14	14	11	11	10	10	8	4	8	9	6	5	3	4	-2	-2	2	3	4	2	0	0	0
2005	17	20	21	17	16	17	16	14	17	16	17	15	15	16	13	11	12	12	10	10	9	4	8	7	9	8	8	-1	0	-1	0	1	3	-4	0	-2
2006	20	22	19	20	21	21	18	19	18	17	17	16	16	15	15	15	15	15	13	12	10	10	11	7	0	6	4	7	6	7	7	7	7	1	3	3
2007	15	16	16	18	16	15	16	19	19	16	18	11	12	13	11	12	13	12	10	8	6	7	3	7	6	3	0	2	3	1	4	5	0	-1	-1	4
2008	18	16	17	16	18	20	17	16	17	15	15	14	15	14	10	9	12	10	9	8	11	8	8	5	0	7	8	2	-2	4	3	2	2	3	1	-3
2009	20	16	16	18	18	17	18	18	15	16	16	16	16	16	13	11	13	11	6	7	4	4	6	4	3	5	4	7	7	5	2	3	0	-6	-4	-4
2010	20	21	23	20	18	17	17	18	20	18	17	13	11	13	14	11	12	9	9	8	4	3	3	6	6	1	5	2	1	-5	-7	-5	-5	-5	-11	-9
2011	18	19	16	17	18	18	18	16	16	15	16	16	15	14	15	12	12	14	14	9	5	6	5	8	8	5	2	4	6	6	3	1	3	2	1	3
2012	17	18	15	14	18	17	17	16	15	18	16	15	15	14	13	12	9	11	11	7	5	9	6	1	5	5	6	4	5	3	-6	-8	-5	0	-1	1
Average	16	17	17	17	17	17	17	17	16	16	15	14	14	13	12	11	11	10	9	9	7	7	6	6	5	4	3	2	2	1	1	0	-1	-1	-1	-1
By quartile																																				
Min. value	12	12	12	13	14	13	13	12	12	13	12	11	11	9	8	7	7	6	4	4	2	1	0	1	-1	-2	-2	-6	-6	-8	-8	-8	-10	-13	-11	-12
Lower	15	15	15	15	16	16	15	15	15	15	14	13	13	12	11	10	9	8	8	8	6	4	4	4	3	2	2	1	0	0	0	-2	-3	-4	-4	-5
Median	16	17	16	16	17	17	17	16	16	16	15	15	14	13	12	11	11	9	9	9	8	7	6	6	5	4	3	2	2	2	1	1	0	-1	-1	-1
Upper	18	18	18	18	18	19	19	18	17	17	16	16	15	14	13	13	12	11	11	10	9	9	8	7	6	6	5	4	4	4	3	3	2	1	1	2
Max. value	21	22	23	21	21	23	22	24	21	21	21	21	19	17	16	15	15	15	15	13	12	11	12	10	11	8	8	8	7	7	7	7	7	6	7	5
Range	9	10	11	9	8	10	9	12	9	8	9	10	8	8	8	8	8	9	11	10	10	11	12	9	12	10	10	13	14	16	16	14	17	19	17	16

Figure A7-18. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Kalmar county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Kalmar** | **Total precipitation , mm / 5 or 6 day periods** | Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Oskarshamn** | Coordinates for the places (RT90): 1540714-6349094 1521061-6356050 1519728-6349381 1531733-6345379

Scale for the color intensity: 0 mm – 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	24	8	1	0	5	3	13	3	1	0	0	1	0	0	0	8	3	4	15	6	3	0	0	0	8	9	6	6	0	54	1	3	14	10	1	14
1962	1	2	5	4	15	6	6	1	10	1	2	2	1	3	0	0	0	8	8	9	4	4	6	16	4	11	3	8	5	13	5	0	8	14	2	21
1963	5	3	7	2	1	7	23	0	7	5	0	0	0	2	16	0	4	1	0	0	4	10	7	6	6	3	5	2	8	0	8	2	11	19	17	15
1964	2	0	0	0	0	4	8	2	10	7	0	0	2	0	0	3	0	0	0	1	0	0	4	9	9	3	3	5	0	1	17	2	0	7	7	1
1965	5	8	2	11	10	16	7	2	3	3	2	3	4	1	0	1	13	3	0	12	4	14	11	2	0	36	1	6	2	0	0	6	12	18	8	3
1966	19	2	17	1	5	1	28	4	21	11	13	7	1	7	11	0	7	15	6	3	15	23	20	0	26	5	0	0	3	28	7	0	0	4	6	36
1967	14	6	2	8	16	40	9	0	0	10	8	3	3	0	1	12	3	10	12	37	2	5	0	5	4	12	6	15	5	3	0	10	1	0	2	3
1968	11	5	24	25	3	5	2	29	2	2	0	0	0	2	8	6	3	0	4	14	0	0	8	1	17	30	11	17	1	1	1	10	0	4	16	11
1969	4	2	15	28	24	2	11	18	10	22	4	1	0	2	0	0	0	4	5	0	10	16	1	6	40	4	20	38	3	5	7	0	0	0	0	2
1970	4	0	8	3	0	7	2	3	0	4	7	1	27	22	1	4	10	19	40	30	3	6	10	7	3	0	18	0	2	10	2	0	17	0	5	6
1971	2	0	0	2	11	5	0	0	1	14	4	12	27	12	7	11	7	0	9	4	0	1	3	19	0	0	4	0	20	8	1	0	26	8	4	4
1972	4	3	0	9	0	27	6	19	2	1	0	3	4	17	0	0	2	14	10	7	15	4	0	3	0	0	0	41	6	12	9	0	8	1	7	3
1973	1	0	0	14	9	13	0	3	24	37	1	0	5	4	0	5	0	0	6	5	9	22	3	8	22	20	1	0	12	4	22	3	2	0	0	13
1974	1	1	17	10	0	5	4	23	2	3	2	0	0	0	0	28	2	0	0	0	7	0	2	0	8	0	0	1	8	8	2	7	12	19	7	3
1975	4	13	8	6	4	15	2	0	0	1	0	0	1	5	8	3	1	27	14	13	8	0	2	0	4	0	18	14	2	31	9	0	1	0	0	0
1976	13	7	1	8	1	0	0	3	4	0	3	0	0	14	8	1	10	3	25	3	4	1	5	24	7	1	4	3	0	57	1	0	24	7	2	0
1977	8	12	26	5	11	9	1	12	3	13	23	0	7	0	7	17	1	17	2	14	6	2	7	11	1	6	7	0	0	5	3	5	7	6	3	18
1978	9	1	12	0	13	9	21	19	20	0	10	0	10	3	16	20	6	8	0	0	5	0	10	0	0	0	5	2	2	2	2	12	21	1	2	20
1979	14	9	16	3	14	25	4	3	7	11	0	0	1	6	11	11	7	31	7	0	3	1	16	3	9	6	0	1	25	1	0	14	0	3	6	2
1980	7	7	0	0	5	31	5	20	5	0	0	0	0	4	2	3	0	14	0	0	0	13	10	12	2	0	0	10	17	5	3	0	2	7	27	12
1981	2	2	7	2	1	0	11	23	17	14	10	0	5	14	6	10	11	18	0	0	0	2	8	8	10	0	5	0	6	11	19	21	18	21	27	6
1982	11	7	0	0	3	12	0	9	1	1	0	0	4	4	12	17	0	0	0	6	1	1	0	6	9	8	0	16	19	0	3	2	29	4	1	24
1983	5	1	1	10	1	6	10	12	2	0	0	2	2	10	5	8	22	13	22	4	6	4	10	13	2	2	6	13	0	19	18	3	2	0	0	9
1984	8	16	18	8	19	15	13	7	0	3	6	0	1	2	0	0	1	4	8	0	1	1	0	0	4	9	3	2	19	7	22	15	5	2	48	19
1985	48	18	11	2	18	13	7	8	1	3	4	0	9	24	0	1	7	8	13	19	3	2	2	54	12	12	3	0	2	0	7	9	45	9	1	37
1986	8	8	10	15	4	4	4	7	3	10	6	0	1	1	1	0	16	12	0	0	5	29	18	1	0	6	16	1	24	0	10	6	1	0	0	10
1987	20	30	31	1	1	5	0	13	1	19	0	0	1	0	0	11	1	4	0	0	8	16	5	0	6	1	8	10	1	7	7	3	24	27	9	10
1988	8	30	8	2	14	25	5	20	3	6	37	22	5	7	3	29	10	3	4	3	0	6	15	0	7	0	0	4	2	17	14	12	1	0	15	11
1989	0	0	1	0	1	0	1	0	4	12	9	10	2	4	9	0	15	6	13	4	0	2	2	1	0	3	6	0	0	8	12	23	0	0	0	4
1990	0	1	3	4	15	7	8	15	5	2	2	5	2	2	4	2	2	0	1	1	1	5	0	12	0	0	27	10	1	4	2	1	8	29	8	12
1991	6	17	0	1	0	0	4	17	20	0	0	4	4	0	7	2	3	1	2	1	1	2	1	15	23	0	2	9	6	0	27	25	14	23	17	35
1992	3	10	0	3	0	0	2	3	24	8	1	0	2	0	8	10	11	11	17	2	27	2	2	17	0	3	2	0	0	0	0	0	0	0	1	0
1993	0	2	23	3	16	1	1	0	1	19	6	5	4	0	0	1	2	14	8	8	0	1	3	0	6	1	0	0	4	15	1	1	1	13	29	14
1994	8	3	7	5	10	8	15	7	1	18	16	16	6	3	8	3	3	3	13	0	20	1	1	3	0	0	7	13	0	13	16	13	1	10	3	2
1995	1	16	7	5	28	9	0	2	16	9	4	1	11	1	2	14	3	4	4	13	1	38	0	5	1	10	30	12	19	3	3	24	20	9	7	2
1996	4	4	4	3	3	0	1	2	6	24	8	0	2	1	3	0	0	11	2	1	9	0	3	2	29	19	3	21	35	6	2	14	2	16	4	15
1997	0	0	2	0	0	0	6	1	17	9	10	0	0	0	5	0	1	7	5	1	4	5	11	2	12	27	5	4	9	5	1	4	4	10	29	29
1998	9	11	1	5	13	3	8	3	7	9	1	5	21	6	1	8	0	3	45	3	12	11	6	7	19	1	2	1	12	6	8	33	14	36	7	9
1999	14	5	9	0	11	16	2	8	0	7	9	8	27	24	0	2	3	1	1	7	8	29	1	1	2	5	12	0	7	14	6	18	7	1	14	8
2000	3	1	0	0	0	12	6	4	1	1	4	1	6	10	2	0	0	23	14	1	31	5	1	3	1	0	0	7	12	6	3	34	3	1	18	43
2001	19	12	0	2	12	7	25	7	3	1	8	11	12	4	7	17	0	5	2	2	6	11	11	3	1	2	0	14	0	21	5	3	2	11	11	5
2002	2	0	0	6	12	39	5	5	6	1	5	11	2	5	2	10	3	0	1	0	2	4	1	17	18	0	3	7	10	40	1	1	21	7	20	15
2003	5	1	1	1	2	11	11	0	0	0	0	0	1	3	0	0	0	0	11	30	1	0	1	32	9	1	8	5	17	0	0	4	28	9	20	10
2004	4	6	19	13	0	15	4	6	0	3	4	0	1	1	4	19	8	1	6	16	0	1	4	0	7	10	16	2	12	5	1	4	27	9	17	8
2005	2	5	0	6	10	2	0	2	48	2	20	4	1	0	19	6	0	0	0	3	1	0	0	1	7	9	5	0	14	15	17	26	12	8	11	0
2006	7	0	0	20	4	0	2	25	1	12	2	2	19	6	4	2	1	26	17	3	4	8	7	18	10	0	1	21	10	15	1	0	5	3	8	5
2007	4	2	8	13	12	21	8	22	6	2	5	16	11	10	0	5	0	0	1	11	0	4	0	0	0	8	12	3	3	14	5	0	0	13	26	62
2008	14	5	1	4	6	21	2	3	0	0	3	6	6	1	7	11	7	0	2	1	15	5	0	3	12	0	2	6	0	0	0	0	12	9	3	14
2009	5	3	1	5	6	2	8	2	11	2	9	4	6	8	2	5	9	13	1	1	0	0	0	0	7	25	8	14	8	7	23	22	16	12	1	0
2010	12	7	2	16	0	23	12	2	15	36	13	6	3	0	0	5	7	5	4	4	0	7	2	5	17	15	19	5	13	7	0	20	7	3	5	0
2011	7	12	12	2	3	0	7	7	4	1	2	0	0	2	0	10	0	9	2	2	1	0	0	1	15	0	3	1	12	14	0	10	10	29	32	1
2012	22	11	3	7	22	1	19	5	17	7	0	4	0	1	0	8	0	4	1	14	19	14	13	3	0	3	7	1	0	11	5	9	7	15	63	12
Average	8	6	7	6	8	10	7	8	7	7	6	3	5	5	4	7	4	7	7	6	6	7	5	7	8	6	6	7	8	10	6	8	10	9	11	12
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	3	1	1	2	1	2	2	2	1	1	0	0	1	1	0	1	0	1	1	1	1	1	1	1	1	0	1	1	1	3	1	1	1	1	2	3
Median	5	5	3	4	5	7	6	4	4	4	4	1	2	3	2	5	3	4	4	3	3	4	3	3	7	3	4	4	5	7	3	4	7	8	7	10
Upper	11	9	10	8	12	15	9	12	10	11	8	5	6	7	7	10	7	12	11	8	8	8	8	10	10	9	8	11	12	14	9	13	15	13	17	15
Max. value	48	30	31	28	28	40	28	29	48	37	37	22	27	24	19	29	22	31	45	37	31	38	20	54	40	36	30	41	35	57	27	34	45	36	63	62

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	11	15	16	30	16	21	22	8	8	8	12	1	19	34	13	0	0	5	0	7	0	23	6	8	4	28	34	0	1	3	14	0	4	0	1	14
1962	21	10	26	16	9	11	4	28	7	22	16	13	10	22	16	2	5	1	1	0	0	0	0	7	1	0	19	14	9	7	0	1	10	14	1	16
1963	0	25	22	1	2	14	2	6	22	21	14	10	17	9	0	0	10	9	16	2	8	7	12	0	2	6	16	15	36	23	0	0	4	3	0	0
1964	3	9	2	1	8	19	2	0	4	18	3	6	0	5	33	21	1	1	0	19	52	12	17	0	0	1	5	20	13	1	7	11	9	13	0	2
1965	14	35	16	0	28	14	5	2	9	2	4	7	29	28	8	7	0	28	6	0	0	1	0	3	15	0	22	4	14	25	20	15	9	8	5	29
1966	4	5	13	0	9	10	14	4	30	0	4	3	18	4	4	0	0	0	15	10	5	7	29	2	11	5	1	27	2	18	4	14	14	10	6	15
1967	6	1	0	5	1	1	2	22	18	20	7	14	9	22	0	9	41	10	3	9	5	29	8	1	11	3	7	3	0	3	3	1	11	5	50	11
1968	1	8	35	30	14	1	3	0	15	14	0	5	0	2	7	5	19	7	2	23	23	7	2	6	17	18	3	5	3	28	0	0	0	3	11	20
1969	1	3	0	5	1	0	0	0	25	10	21	57	6	0	0	5	9	11	5	3	0	0	7	5	22	14	8	6	0	27	5	0	6	11	2	2
1970	9	5	17	20	9	8	53	12	4	44	4	0	2	13	28	2	1	9	50	1	0	7	5	51	26	9	18	16	11	9	6	3	1	0	4	2
1971	2	5	5	12	2	33	15	9	12	0	0	14	10	14	13	9	4	3	1	0	1	6	11	0	12	19	5	2	9	4	3	8	2	5	1	45
1972	3	31	6	5	6	27	21	2	10	28	4	0	0	3	27	13	14	0	0	0	10	6	5	0	2	9	15	3	3	1	4	3	4	1	0	0
1973	0	5	22	1	22	6	8	5	0	4	0	0	1	2	0	8	64	9	0	22	6	28	2	0	1	2	14	9	16	5	4	17	16	4	6	1
1974	8	5	6	8	11	9	14	3	11	2	0	13	11	7	0	1	7	0	36	40	5	9	47	56	18	11	7	24	7	23	2	7	16	11	6	14
1975	0	1	19	8	21	5	0	0	2	15	14	0	8	4	34	0	5	15	26	1	9	3	0	3	6	1	4	11	0	14	2	2	2	1	1	1
1976	1	9	18	13	14	5	4	0	1	4	0	18	4	10	9	14	0	17	10	7	15	4	1	3	13	9	3	1	1	13	44	16	39	25	21	18
1977	24	13	2	15	14	20	17	0	5	2	2	18	3	6	27	0	0	7	18	5	1	0	4	0	9	5	21	7	8	2	6	8	9	2	11	28
1978	15	19	12	11	17	1	12	17	7	7	7	11	46	22	19	1	12	22	3	0	0	6	0	4	3	0	3	20	0	20	4	0	23	2	18	15
1979	6	30	25	15	19	43	16	38	1	0	15	14	8	1	1	7	0	1	1	0	2	2	0	2	7	7	12	36	2	5	1	12	12	12	3	19
1980	4	16	6	44	2	0	18	15	0	6	30	37	4	9	14	14	3	2	2	10	44	2	20	22	0	0	10	8	5	6	7	9	9	13	8	1
1981	4	0	1	17	9	5	0	1	2	13	21	4	1	0	9	19	7	3	10	14	3	22	0	17	11	2	5	9	13	24	9	26	3	4	21	9
1982	12	5	0	7	0	0	0	0	3	18	13	20	10	15	0	1	1	2	0	8	22	4	9	1	0	0	2	6	4	4	0	18	15	6	1	0
1983	5	0	1	2	0	1	7	2	3	0	0	0	14	16	27	23	19	0	5	13	7	4	2	3	0	3	7	2	6	36	0	13	0	11	6	1
1984	10	0	22	24	22	11	16	15	9	16	1	9	48	24	9	12	24	9	24	4	10	7	16	4	0	2	0	5	17	1	0	4	3	23	1	19
1985	2	17	3	28	35	15	13	26	12	5	8	0	25	6	6	4	14	3	1	4	1	0	0	3	7	8	3	2	0	15	41	26	8	29	6	18
1986	12	23	9	2	19	1	3	2	8	14	4	47	6	7	20	8	0	0	1	1	0	9	17	8	8	3	2	9	9	0	9	0	7	32	18	13
1987	0	5	26	7	1	49	20	7	6	1	18	6	1	30	12	5	7	15	0	1	13	3	9	1	1	0	7	15	28	20	0	2	1	25	9	6
1988	20	13	27	28	19	24	18	3	9	17	3	1	29	3	20	1	9	4	0	14	3	2	2	6	5	0	1	3	0	21	8	2	9	5	10	1
1989	0	8	10	8	0	16	36	13	13	18	1	5	3	9	2	4	9	5	1	38	4	12	13	6	21	8	2	1	1	1	0	1	8	14	12	1
1990	13	8	3	21	33	3	1	7	3	15	17	0	23	17	1	11	46	40	18	7	4	1	0	17	11	0	12	12	26	23	0	5	6	8	7	8
1991	0	8	5	14	21	0	10	2	7	17	14	7	1	1	1	5	20	29	2	0	5	7	1	1	12	13	7	18	0	6	0	1	0	16	10	7
1992	5	0	13	24	0	16	13	1	20	2	32	24	16	1	16	0	2	1	1	4	14	4	32	15	9	5	19	16	12	14	5	0	6	1	0	0
1993	2	7	28	13	7	24	5	26	7	2	5	19	12	0	58	14	7	1	2	16	24	0	20	0	0	30	7	4	14	4	7	9	9	12	35	24
1994	0	0	6	3	0	5	5	17	9	30	8	10	31	33	34	42	3	14	9	1	0	0	2	20	1	7	12	19	0	0	6	14	11	7	0	24
1995	5	0	20	21	2	0	0	0	0	0	6	10	34	3	74	3	1	26	3	1	1	2	0	21	9	1	7	52	0	3	2	2	2	2	11	1
1996	18	44	2	12	0	17	3	0	8	0	19	29	3	7	23	0	0	25	2	1	0	4	0	15	5	5	19	22	5	34	5	1	15	21	2	19
1997	18	4	0	2	2	29	15	0	2	1	0	2	27	4	3	1	1	5	13	43	7	5	1	0	9	19	6	3	6	9	14	17	13	0	13	17
1998	11	13	3	6	13	17	5	18	21	2	13	17	1	11	45	1	3	1	4	2	9	14	10	17	6	7	15	12	3	2	17	9	24	2	10	5
1999	0	1	9	5	3	0	4	28	23	23	10	9	0	0	1	2	15	27	10	9	0	11	3	6	0	4	0	13	8	3	17	8	52	4	10	13
2000	7	19	9	31	13	11	21	2	3	14	9	11	19	2	5	0	0	3	29	12	28	1	5	17	7	32	11	19	28	30	2	8	11	4	2	25
2001	4	1	27	18	1	0	8	41	7	8	9	26	17	77	8	35	15	0	12	16	1	2	1	11	3	20	0	0	4	9	3	5	1	4	22	34
2002	18	9	0	36	25	1	0	0	1	0	0	1	5	0	1	5	10	1	23	31	48	25	30	14	0	5	19	26	11	10	15	0	0	1	0	27
2003	##	1	13	1	12	49	7	2	6	15	7	33	3	3	2	1	5	1	16	6	0	6	5	3	3	0	0	16	18	17	5	2	15	10	9	10
2004	12	87	32	14	4	3	24	0	0	6	25	15	4	0	4	7	4	0	16	6	3	51	18	5	0	7	3	10	28	26	5	0	0	3	12	0
2005	7	1	4	17	41	25	11	39	9	0	11	5	0	0	2	0	0	7	0	0	0	1	30	0	7	2	1	0	8	3	17	15	5	7	5	38
2006	0	2	0	0	9	16	16	2	33	18	8	45	6	3	0	1	0	5	12	6	0	10	15	53	7	19	16	9	14	0	2	3	6	3	0	12
2007	32	34	12	0	27	17	5	13	12	3	15	18	12	15	1	15	4	25	2	0	4	4	0	15	5	11	23	1	3	6	20	18	1	0	0	14
2008	13	39	15	24	2	2	46	20	8	33	19	9	3	20	10	9	1	6	15	0	12	4	5	33	1	15	11	7	3	5	23	12	16	5	1	0
2009	32	22	19	32	3	13	1	5	12	1	25	2	26	1	3	0	3	4	19	3	10	7	12	1	10	15	15	12	4	8	7	10	10	16	32	3
2010	0	0	10	19	67	25	14	7	2	19	27	14	1	6	22	11	1	5	0	12	1	9	13	2	3	36	14	21	100	38	14	2	9	25	17	0
2011	4	0	23	14	31	29	0	28	5	17	4	12	12	12	20	22	3	0	1	18	1	6	1	10	0	1	0	5	0	3	7	15	10	22	4	1
2012	5	56	23	24	3	10	2	8	0	5	9	19	0	1	3	6	41	12	14	2	27	0	9	1	15	9	0	0	15	23	27	11	14	12	22	8
Average	11	13	12	14	12	13	11	10	9	11	10	13	11	10	13	7	9	8	9	9	9	8	9	10	7	8	9	11	10	12	8	7	9	9	9	12
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	1	3	5	2	2	3	1	3	2	3	4	3	2	2	1	1	1	1	1	1	2	1	1	1	2	3	3	2	3	2	1	3	3	1	1
Median	5	8	11	13	9	11	8	5	7	8	8	10	8	6	8	5	4	5	3	5	4	6	5	5	6	6	7	9	6	8	5	6	9	6	6	11
Upper	12	17	20	21	19	19	16	15	12	17	15	18	17	15	20	11	10	12	15	12	10	9	13	15	11	12	15	16	14	21	10	13	12	13	12	18
Max. value	149	87	35	44	67	49	53	41	33	44	32	57	48	77	74	42	64	40	50	43	52	51	47	56	26	36	34	52	100	38	44	26	52	32	50	45

Figure A7-19. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Kalmar county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A8 GOTLAND COUNTY♣

A8.1 Crop production and yield

Table A8-1. *Yearly production (metric ton) in 2010-2014 for the major crops in Gotland county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	262 900	191 900	244 600	176 100	257 200	226 540
Spring barley	44 500	48 300	67 000	66 900	50 700	55 480
Winter wheat	27 200	38 800	58 900	35 000	59 400	43 860
Potatoes	26 100	25 200	27 800	25 900	27 700	26 540
Spring wheat	11 100	14 900	17 600	19 200	15 900	15 740
Winter rape	10 300	9 300	17 300	13 200	13 500	12 720
Winter barley	10 100	7 200	12 800	14 600	17 200	12 380
Triticale	9 400	6 200	17 000	11 500	16 600	12 140

* Data from Jordbruksverket (2015)

Table A8-2. *Average yield for cereals, potatoes and winter rape in Gotland county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Spring barley	3 424	348	10
Winter wheat	4 336	402	9
Potatoes	27 014	2 112	8
Spring wheat	4 133	247	6
Winter rape	2 373	213	9
Oats	3 151	459	15

* Coefficient of variation = Standard deviation / Average

Table A8-3. *Coefficient of variation of farm-level yield for important crops in Gotland county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Spring barley	28	33	31	32	30	37	32	26	31
Winter wheat	24	30	27	28	29	25	31	24	27
Potatoes		35	28	29	35	39	40	38	35
Spring wheat	29	35	40	34	38	36	34	27	34
Winter rape	23	29	20	27	28	23	35	20	26
Oats	27	41	34	36	37	30	40	32	35
Average	26	34	30	31	33	32	35	28	

* Based on farm-level yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

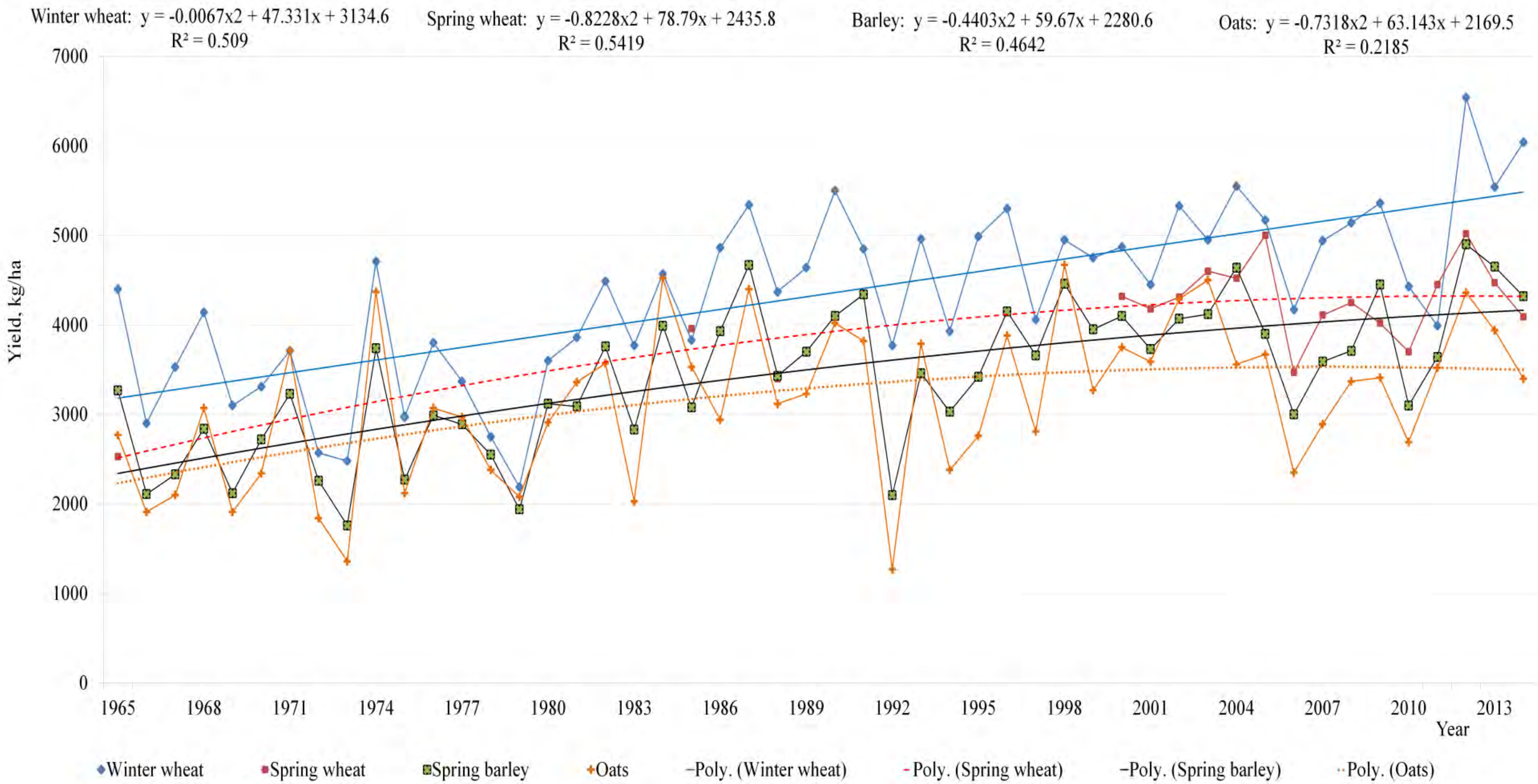


Figure A8-1. Average yield (kg/ha) per year of winter wheat, spring wheat, barley and oats in Gotland county for the period 1965-2014, and their trend lines with respective equations. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

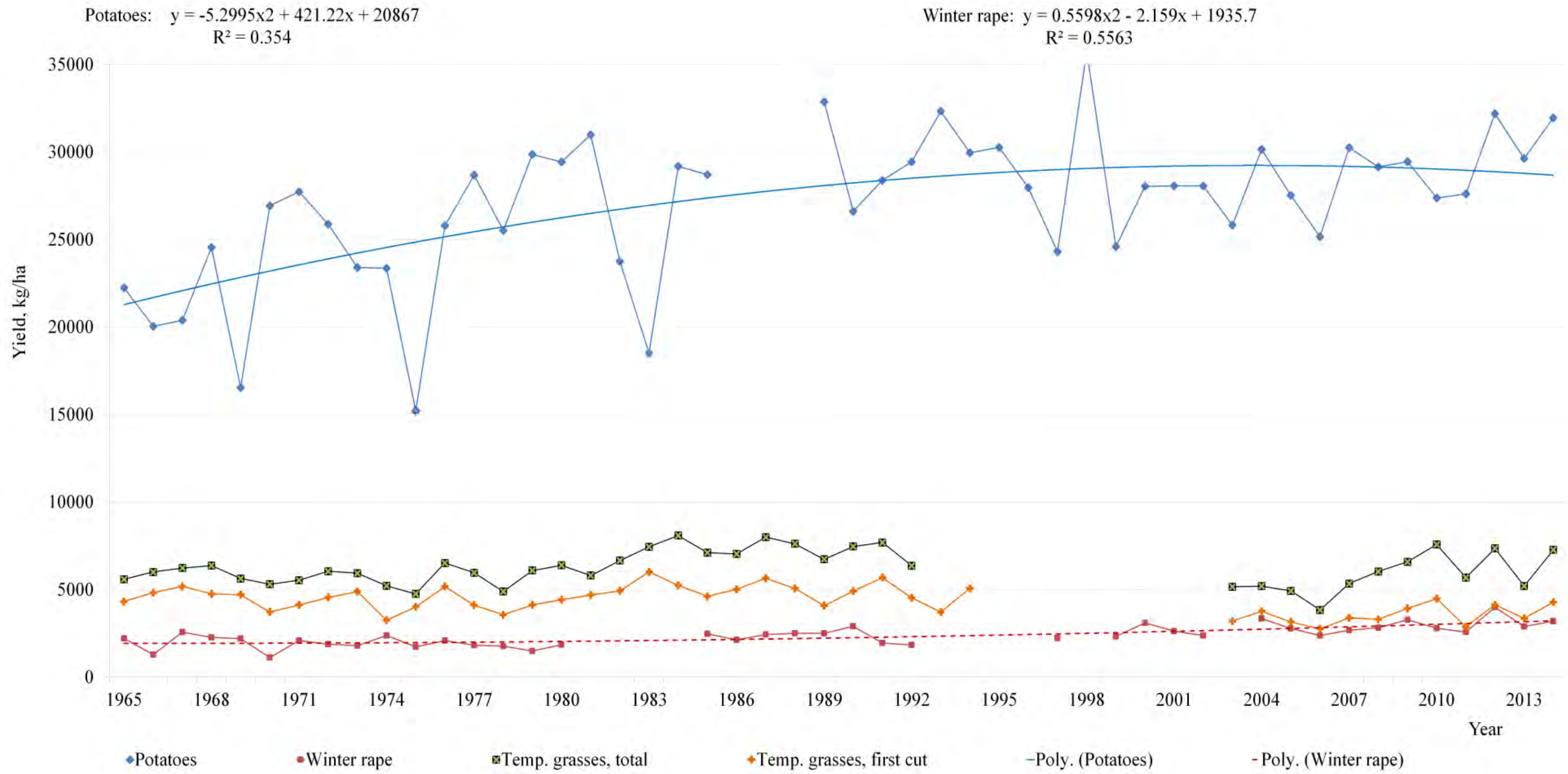


Figure A8-2. Average yield (kg/ha) per year of potatoes, winter rape, temporary grasses (total and first cut) in Gotland county for the period 1965-2014, and the trend lines with its respective equations for potatoes and winter rape. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

A8.2 Precipitation, temperature and cereal yield

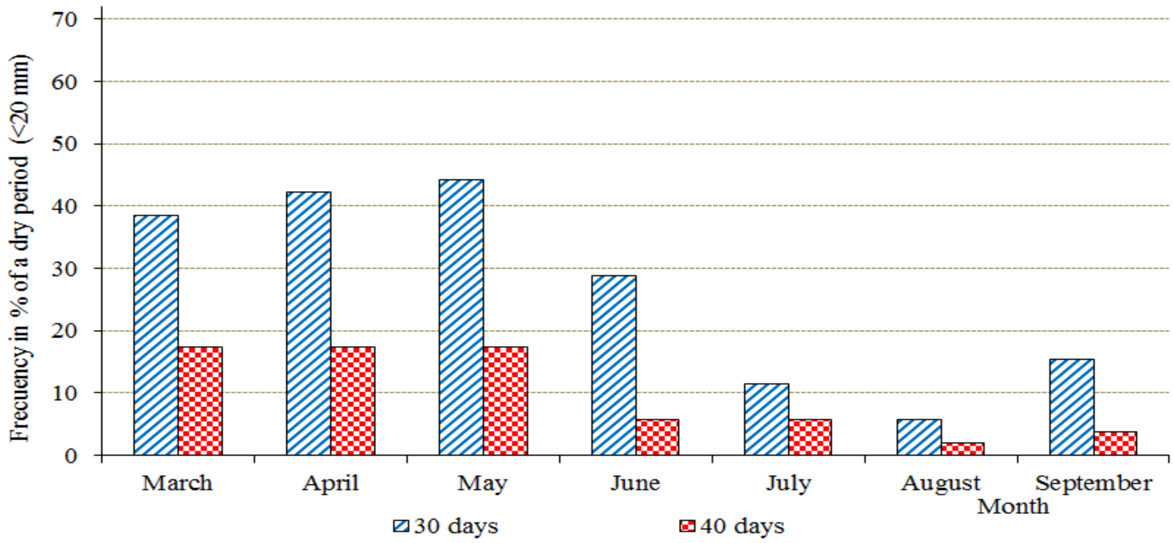


Figure A8-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Gotland county∗.

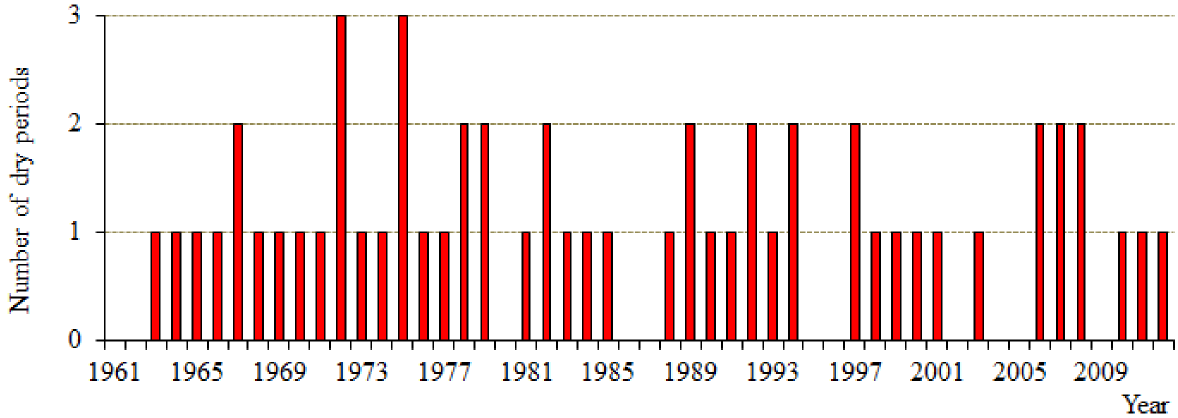


Figure A8-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 April to 31 July in Gotland county*.

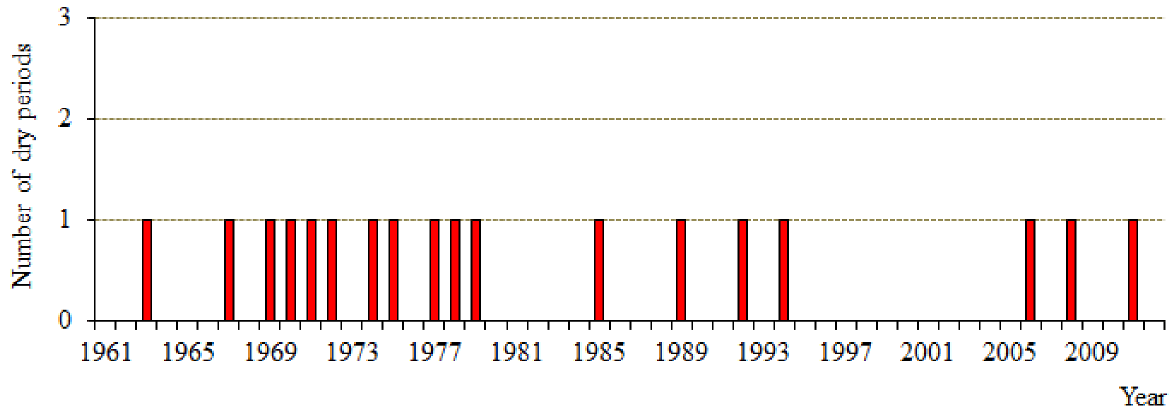


Figure A8-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 April to 31 July in Gotland county∗.

∗ The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

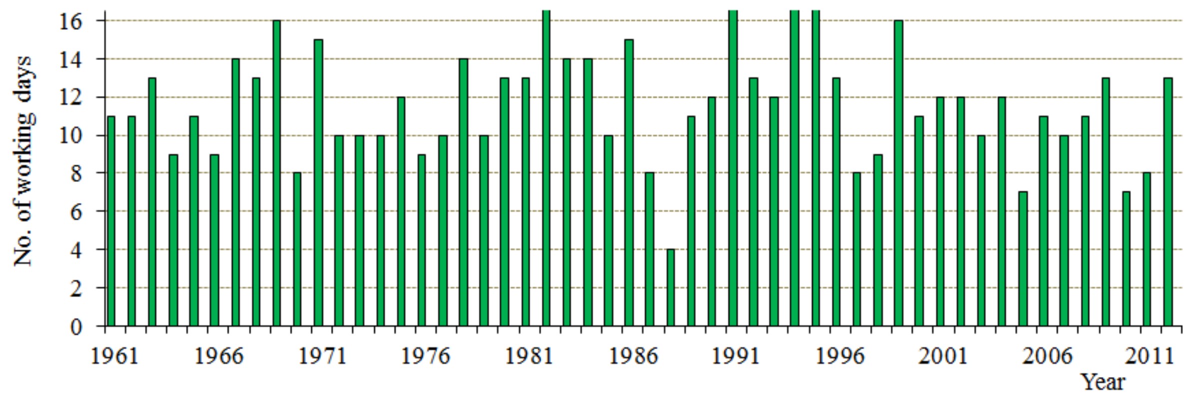


Figure A8-6. Estimated number of working days available for harvesting during the period 22 July-7 August in Gotland county (for definition of a working day, see Section 2.1)*.

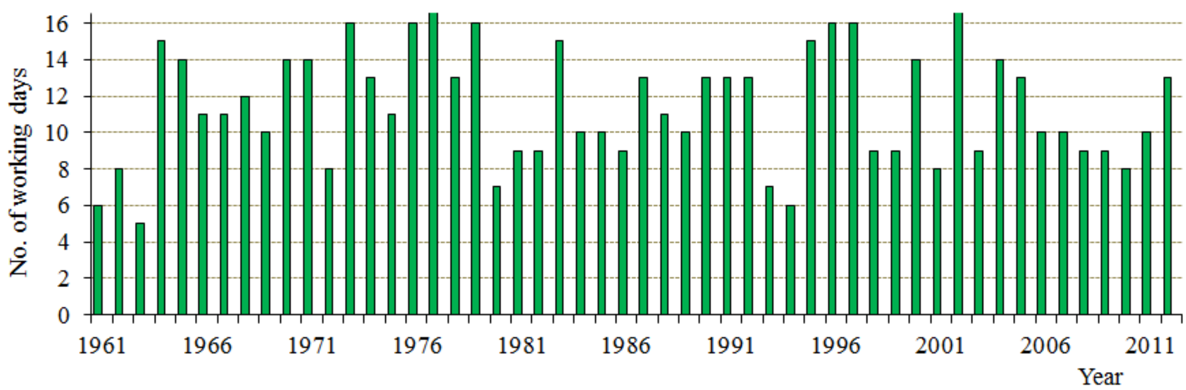


Figure A8-7. Estimated number of working days available for harvesting during the period 8-24 August in Gotland county (for definition of a working day, see Section 2.1)*.

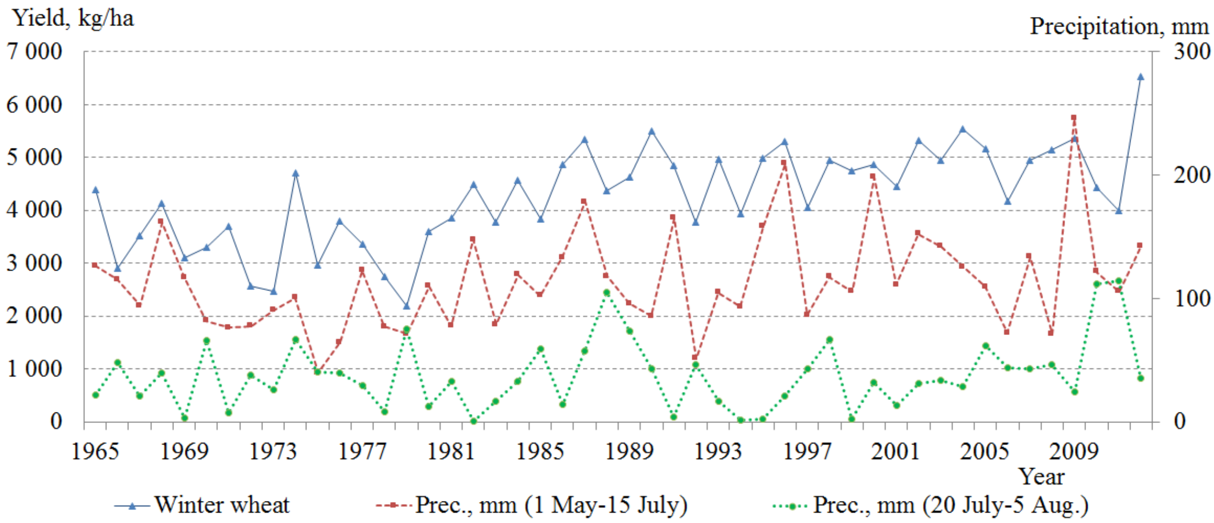


Figure A8-8. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 20 July-5 August in Gotland county, 1965-2012*.

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* Precipitation data from Luftwebb (2014) and yields from Jordbruksverket (2015).

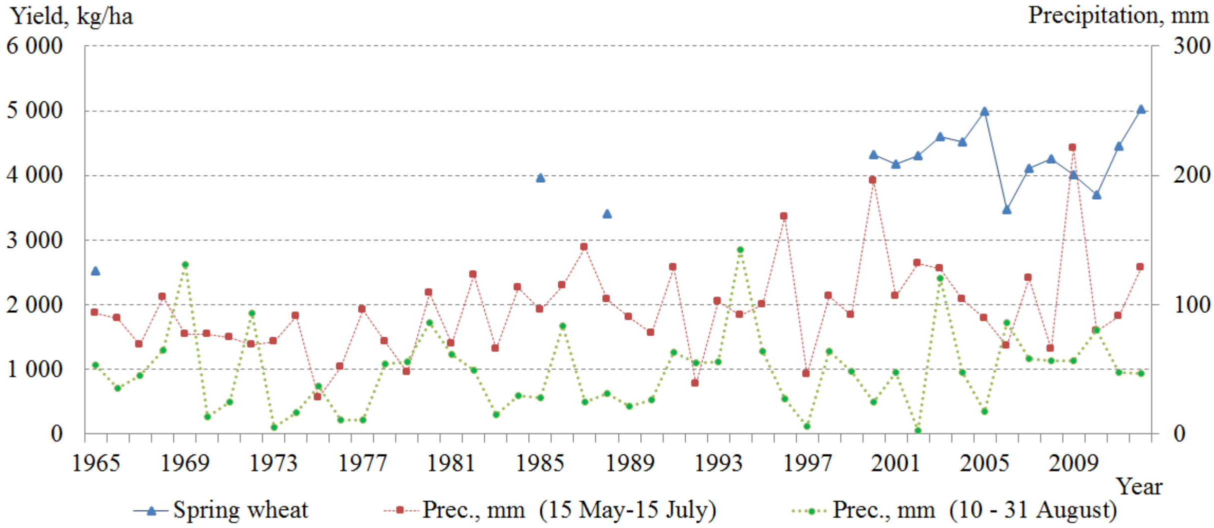

Figure A8-9. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 15 May-15 July and 10-31 August in Gotland county, 1965-2012*.

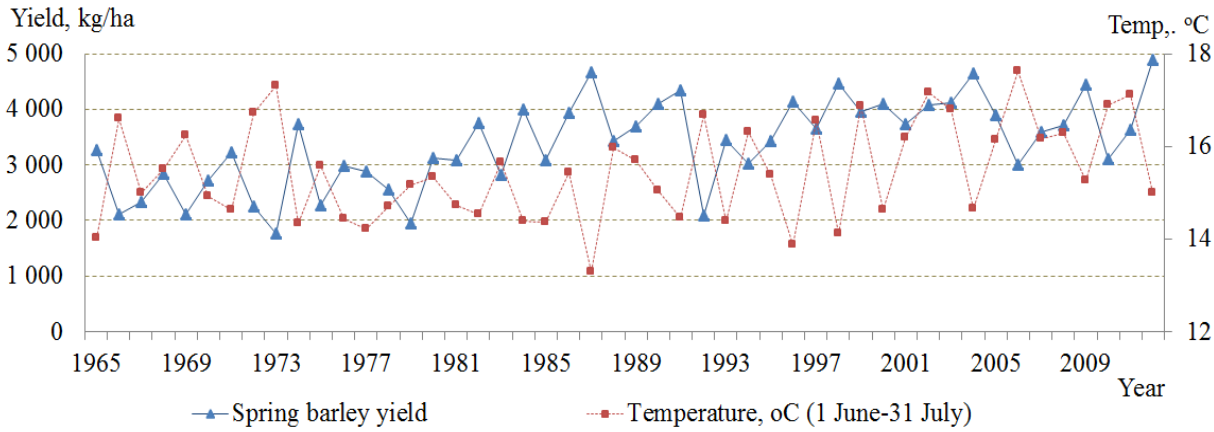

Figure A8-10. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Gotland county, 1965-2012*.

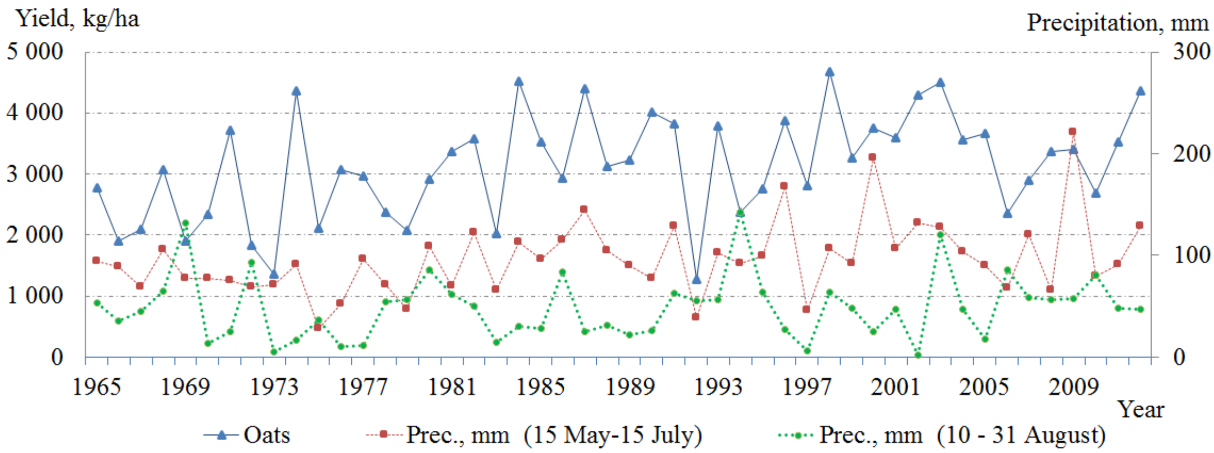

Figure A8-11. Annual oat yield (kg/ha) and precipitation (mm) in the period 15 May-15 July and 10-31 August in Gotland county, 1991-2011*.

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* Precipitation and temperature data from Luftwebb (2014) and yields from Jordbruksverket (2015).

A8.3 Yield on farms

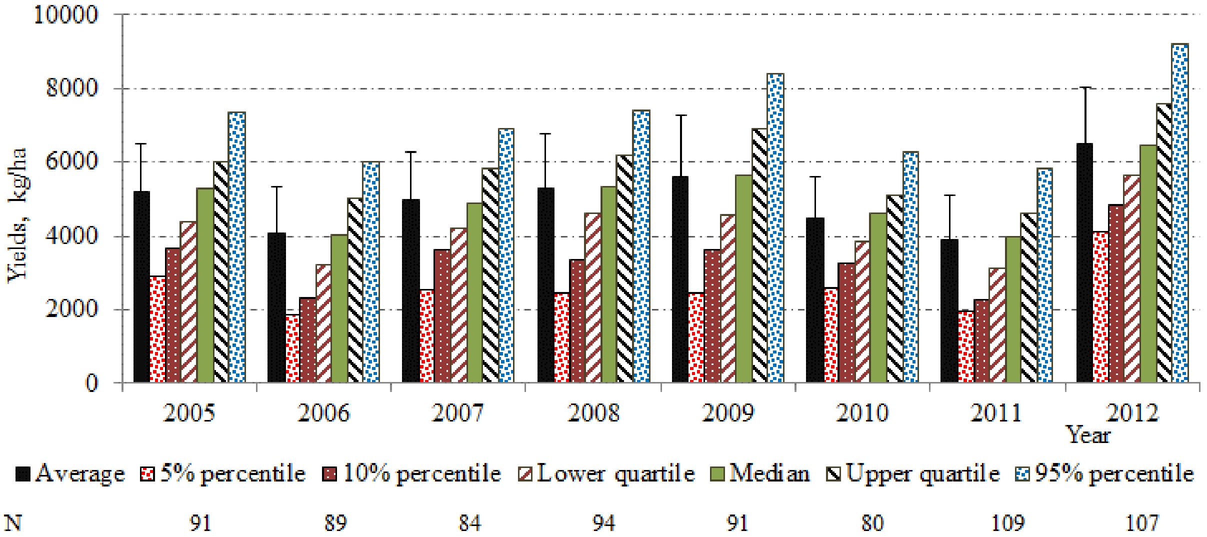


Figure A8-12. Average and estimated percentiles of winter wheat farm-level yield in Gotland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

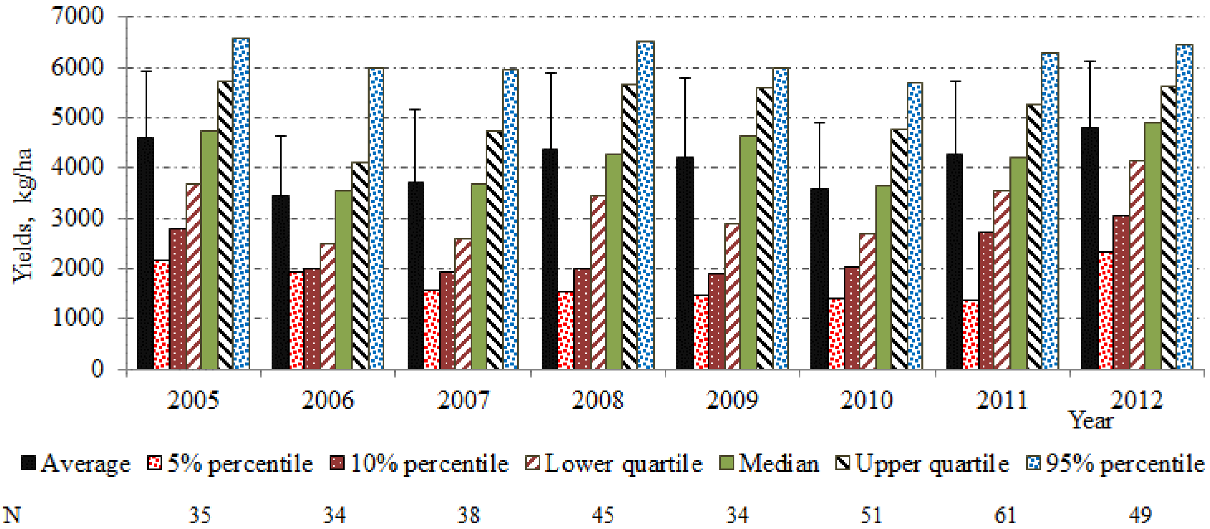


Figure A8-13. Average and estimated percentiles of spring wheat farm-level yield in Gotland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

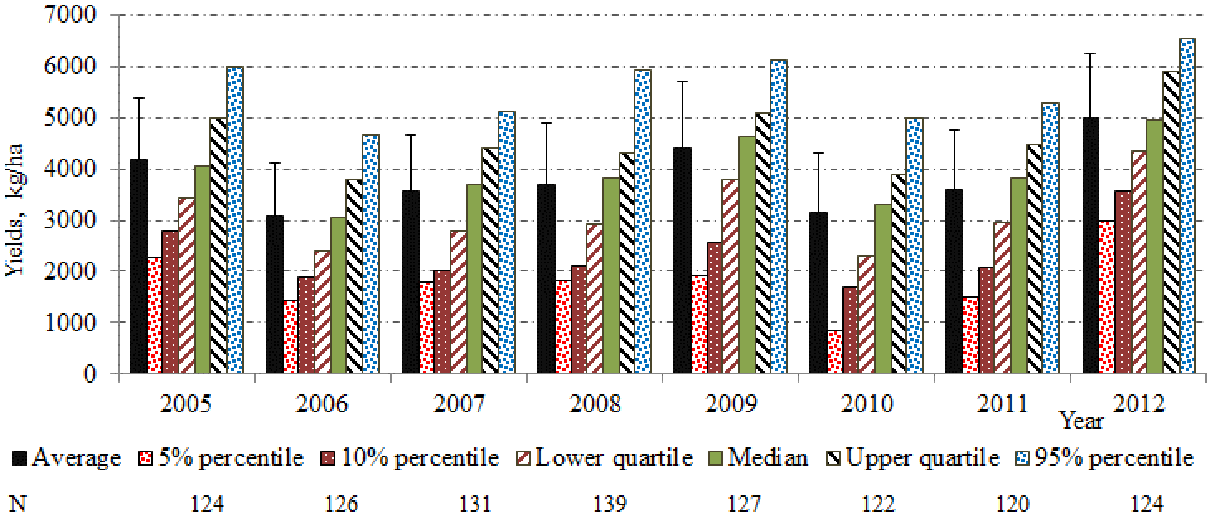


Figure A8-14. Average and estimated percentiles of spring barley farm-level yield in Gotland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

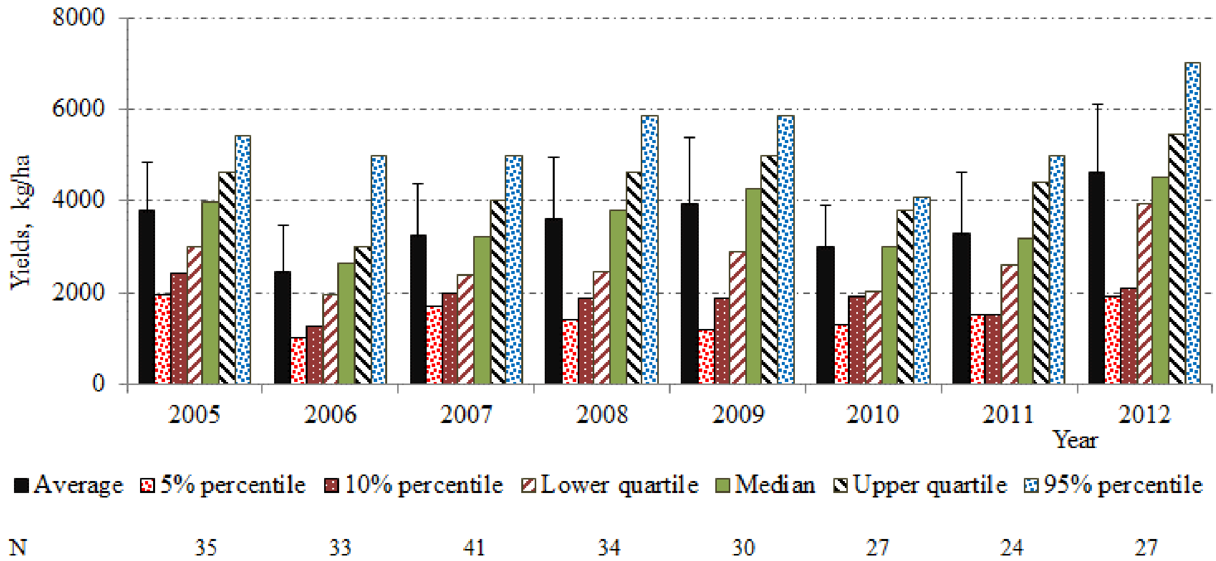
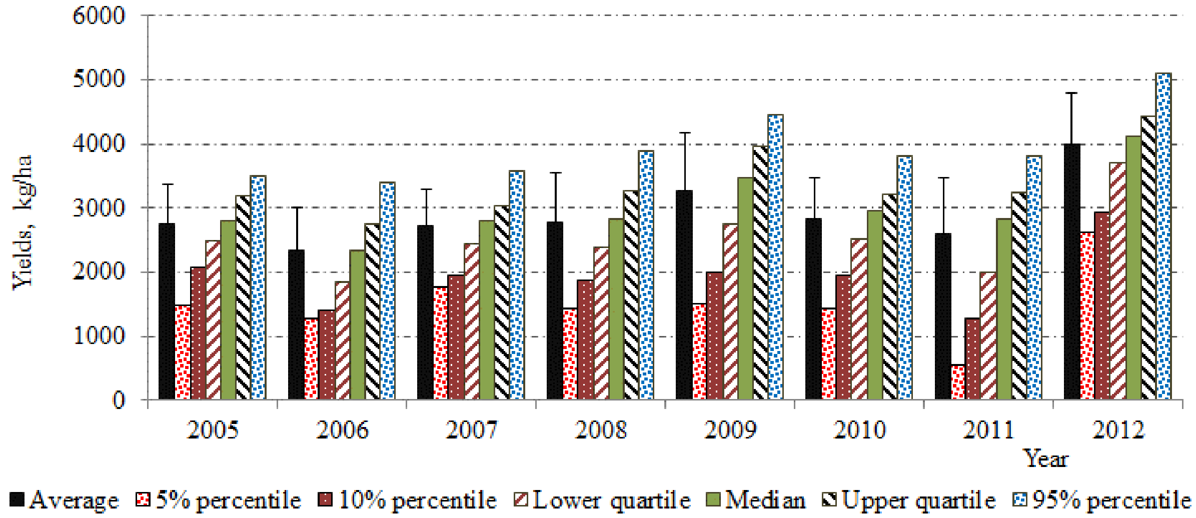
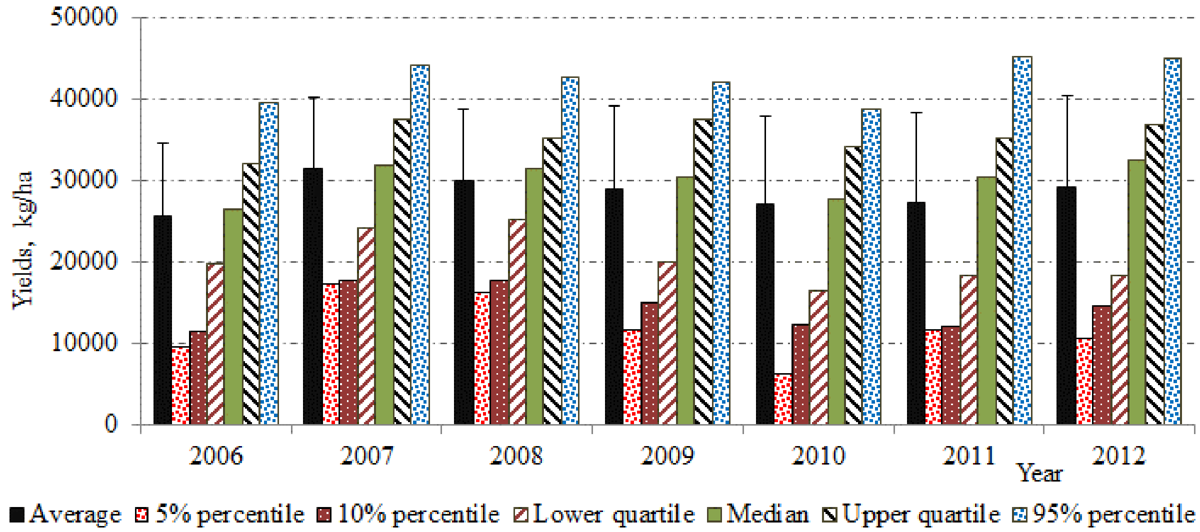


Figure A8-15. Average and estimated percentiles of oat farm-level yield in Gotland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	46	45	71	76	84	68	76	90

Figure A8-16. Average and estimated percentiles of winter rape farm-level yield in Gotland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	39	34	41	32	29	29	25

Figure A8-17. Average and estimated percentiles of potato farm-level yield in Gotland county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A8.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

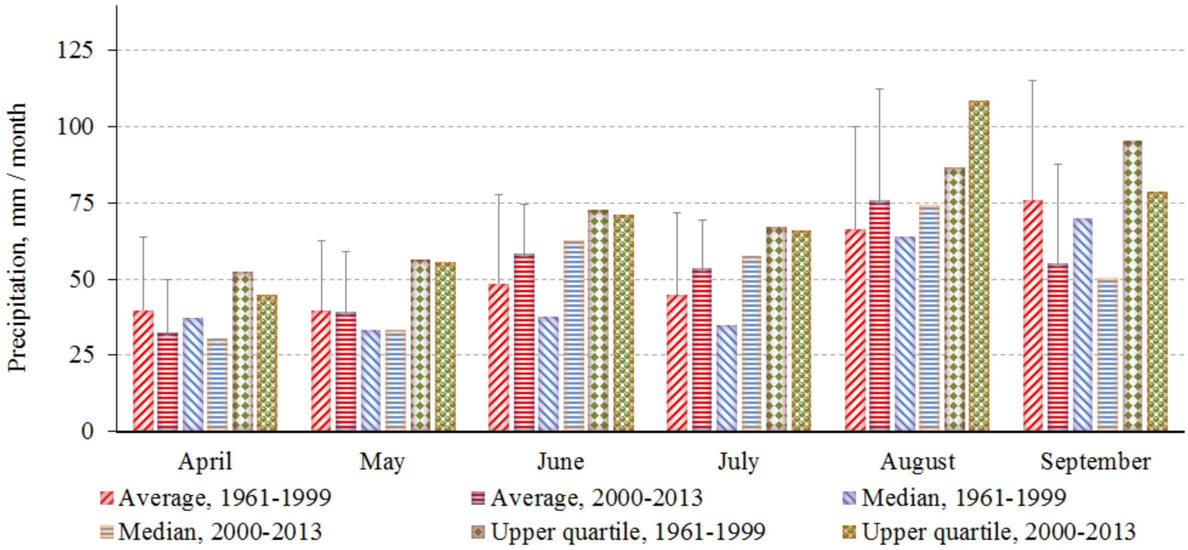


Figure A8-18. Monthly average, median and upper quartile precipitation (mm) from April to September in Gotland county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1648273-6393448 (close to Visby).

County: **Gotland** Location: **Visby**

Average temperature (°C) for 5 or 6 day periods

Coordinates for the places (RT90): 1648273-6393448 1659794-6392068 1646455-6381396 1663796-6384064

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Update temperatur colour

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March												May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	2	1	1	-1	-3	1	0	1	3	4	1	3	4	6	4	3	3	3	1	4	6	6	8	8	8	9	7	9	11	12	15	18	15	14	14	15
1962	1	2	2	3	3	-3	0	2	-1	-1	-2	-3	-3	-3	-4	-3	-1	0	3	3	3	6	7	4	4	7	7	9	9	9	8	12	12	15	14	13
1963	-3	-5	-5	-5	-3	-3	-4	-5	-4	-7	-5	-4	-2	-1	-4	-4	-3	-3	0	2	4	3	3	6	6	9	11	10	13	15	12	14	14	15	15	15
1964	1	0	-2	-1	2	-1	1	-1	-6	-5	-2	-1	-2	-2	-2	-2	-1	0	0	1	5	9	5	7	7	10	10	9	12	15	12	14	17	15	14	16
1965	1	-2	2	2	0	-1	-2	-1	-1	-3	-3	-8	-6	-2	1	2	0	2	2	1	3	5	6	6	4	6	7	7	8	9	11	13	14	15	15	15
1966	-4	-3	-4	-6	-4	-1	-8	##	-9	-8	0	2	0	2	-4	0	1	1	3	1	-3	-2	3	6	9	6	7	13	9	7	11	14	17	19	17	16
1967	0	-4	-2	1	-5	-6	-1	0	-1	-1	1	1	2	4	4	2	3	4	1	4	5	5	3	6	4	6	12	8	11	12	14	12	10	14	14	15
1968	-3	-6	-6	-2	1	0	1	0	-1	-5	-6	0	-1	0	-1	1	5	7	4	2	3	7	10	9	8	8	9	5	6	11	15	13	15	20	17	15
1969	-5	-4	-1	-1	-3	1	-1	-2	##	-4	-2	-3	-6	-2	-4	-3	-3	0	2	4	3	2	5	7	5	8	9	8	7	10	8	11	16	18	17	17
1970	-4	-5	-1	-6	-3	-4	-4	-4	-9	##	-5	-7	-2	0	-2	0	-1	-2	-1	1	1	4	4	5	3	8	10	9	8	10	11	16	11	16	16	17
1971	-3	0	1	1	3	1	0	0	2	1	-1	-5	-6	-2	-1	1	-1	1	3	4	3	7	3	2	5	10	12	14	6	14	16	12	10	11	13	16
1972	0	-2	-4	-4	0	-6	-2	0	1	0	-1	0	0	-1	0	2	3	2	2	5	5	4	3	5	11	6	5	8	11	9	12	15	14	15	13	18
1973	1	3	2	0	1	1	3	2	1	2	0	-2	2	2	2	3	6	5	3	3	3	4	5	5	9	10	9	7	11	13	14	16	13	12	18	20
1974	1	0	0	2	1	2	1	0	3	1	1	0	1	0	1	2	2	3	5	6	2	5	4	6	7	5	7	10	9	10	12	12	13	15	14	15
1975	3	1	4	4	3	2	2	1	-2	1	2	2	3	3	2	0	1	1	1	3	2	4	6	8	7	11	11	13	9	8	9	14	14	14	17	14
1976	-2	-1	-2	0	-1	-5	-3	-3	-3	-1	0	4	0	-3	-4	-3	-3	3	2	3	5	6	3	2	5	9	9	11	12	8	10	12	11	11	15	18
1977	1	0	1	-2	-3	0	-1	-1	-5	-2	-1	-4	-1	1	3	3	2	-2	2	-1	2	3	5	7	9	9	9	7	9	7	10	13	20	15	14	15
1978	0	2	1	0	-1	0	-2	-4	-4	-6	-4	1	1	1	2	-4	-2	4	2	3	3	3	4	1	5	6	3	8	13	15	17	16	11	12	14	14
1979	-8	-1	0	-3	-4	-6	-3	-4	-8	-5	-3	0	1	0	-1	-5	0	1	1	1	4	2	4	6	4	6	10	13	13	14	15	15	14	16	18	16
1980	-2	-2	-1	-1	-1	-6	-6	-5	-3	-2	-3	-2	-2	-1	-1	-4	-5	0	1	3	6	5	5	5	4	7	6	9	6	11	13	17	14	16	13	14
1981	-1	-3	-1	-5	-1	1	2	1	-2	-2	-2	-2	-2	1	-4	-1	4	2	4	6	6	2	1	3	4	10	12	13	15	13	14	14	11	11	13	15
1982	-3	-6	-2	-2	-2	-2	-4	-1	0	-2	-4	-1	1	-1	2	2	2	4	4	3	2	4	5	5	6	7	9	10	9	15	18	10	9	11	12	12
1983	3	5	4	-1	3	3	-2	-3	-3	0	0	-1	0	2	1	3	1	2	4	4	2	6	7	7	5	9	9	12	12	12	12	13	15	14	14	14
1984	3	0	2	0	-3	0	1	-1	-1	-4	-1	0	1	0	1	-2	-3	2	2	6	5	5	6	5	10	6	8	13	13	13	16	12	11	15	13	13
1985	-5	-7	-5	-5	-2	-3	-6	##	-9	-8	-7	-2	-2	-2	0	0	1	0	3	0	1	5	3	2	4	8	9	9	9	15	13	10	10	13	17	15
1986	-2	-6	0	-4	1	-1	-4	-6	-4	-6	-9	-5	-3	0	0	1	1	3	2	0	0	3	4	9	10	12	9	11	11	11	11	11	15	17	14	17
1987	-6	##	##	-4	-3	-6	0	-2	0	-3	-4	-7	##	-7	-6	-1	0	2	2	1	3	4	5	9	7	7	7	8	9	7	9	12	12	10	13	13
1988	5	2	3	1	1	-2	2	3	2	-1	-1	-1	-2	-1	-2	-2	0	3	4	4	2	6	1	3	9	8	10	10	9	15	12	14	12	15	15	18
1989	3	2	3	5	3	4	4	4	2	2	2	4	3	1	3	3	4	5	0	4	9	3	6	8	9	9	10	13	14	13	11	12	13	15	18	17
1990	-1	2	4	4	3	4	4	6	2	3	8	4	2	4	3	9	7	4	7	3	6	7	10	8	14	13	10	8	10	9	13	13	14	14	16	18
1991	3	4	1	0	2	-1	-2	-3	-3	-2	3	0	1	2	4	3	3	3	7	6	7	1	3	5	6	7	9	7	9	10	9	10	12	11	14	12
1992	5	2	3	-1	-1	3	0	2	3	-1	3	3	4	4	2	3	3	1	4	3	4	3	3	8	9	9	9	13	14	15	16	16	16	16	14	18
1993	-1	3	4	5	3	-3	4	2	1	1	-2	0	-1	1	2	6	4	1	3	2	1	4	8	11	11	12	14	14	15	11	13	14	12	13	13	14
1994	0	2	3	-2	2	-1	-4	-2	-7	-5	-3	-5	-2	3	2	0	2	2	4	3	5	4	8	11	5	10	9	7	9	9	12	12	14	11	13	17
1995	-2	0	0	1	1	-1	2	0	2	3	3	1	4	2	1	2	4	1	3	2	4	4	8	4	8	7	5	8	8	15	16	14	14	14	14	15
1996	-5	0	1	-1	-3	-2	-3	-8	-4	-5	-3	1	-2	-2	-2	-1	-1	0	0	5	1	8	10	6	6	5	10	6	8	9	12	15	14	13	13	13
1997	-4	-2	0	0	0	1	0	3	0	-2	4	3	5	4	3	-2	-3	4	4	2	1	2	4	6	7	7	12	9	7	8	12	16	17	13	15	17
1998	4	2	5	3	1	-2	-2	2	3	4	4	4	1	-2	-2	2	0	4	0	2	2	4	7	11	9	11	9	12	7	10	13	15	13	11	11	14
1999	2	0	-3	4	4	-4	2	-5	-2	0	0	1	2	1	-1	2	3	5	5	8	6	5	7	8	5	6	5	10	13	13	14	13	16	17	13	17
2000	2	3	2	2	-4	1	2	3	2	-1	-1	3	1	2	2	2	3	2	3	2	5	8	11	12	8	10	11	13	12	12	12	12	15	14	17	14
2001	3	3	1	0	0	1	-7	2	3	2	-4	-5	-3	2	3	-1	-1	1	6	6	2	4	5	8	10	9	10	11	10	10	11	12	13	13	15	17
2002	-2	2	2	2	3	1	5	4	2	2	-1	1	1	3	2	3	1	5	3	2	6	3	9	7	9	10	13	10	14	13	16	18	15	18	16	15
2003	-7	-5	0	3	1	-1	-3	-4	-2	-2	-3	-3	-3	1	2	2	2	4	1	0	2	6	6	6	7	10	10	9	13	14	15	17	14	13	15	16
2004	-3	-1	1	-1	-4	-2	3	1	-1	0	-1	-1	-2	0	2	6	2	3	2	5	6	9	6	7	11	13	7	11	8	11	14	13	14	12	14	14
2005	3	6	4	3	0	-2	1	0	0	0	-2	-5	-7	-2	-3	0	2	2	6	5	8	4	3	7	7	7	9	9	12	14	12	11	12	16	17	15
2006	-1	-1	1	-4	-5	1	-1	-2	-1	-1	-1	-4	-5	-5	-3	-1	-3	3	2	3	4	6	5	7	9	11	11	9	11	10	11	12	17	16	17	17
2007	5	6	4	3	-2	-1	3	-4	-1	0	-5	0	1	4	6	4	4	5	5	2	8	8	7	8	7	9	10	11	14	14	14	18	17	15	17	15
2008	-1	2	4	5	3	3	3	4	2	2	5	5	1	4	4	1	-1	4	5	4	4	5	7	11	10	12	10	8	11	12	15	17	13	15	15	16
2009	-3	0	2	-1	2	1	-2	1	-1	-3	0	1	1	1	1	2	0	2	6	6	6	4	7	10	9	9	8	10	12	13	11	10	13	13	15	18
2010	-4	-3	-2	-2	-6	-7	-2	-3	-3	-3	-5	1	-3	-3	-2	1	2	4	3	4	3	5	4	8	6	5	9	11	12	10	13	12	13	13	14	18
2011	-2	1	-1	1	-1	-2	2	1	-5	-7	-8	-3	-1	0	1	0	4	1	5	6	5	8	9	8	4	10	11	11	13	13	15	19	16	14	15	18
2012	3	1	2	1	0	-4	##	-6	-2	0	3	1	1	0	4	4	6	5	1	2	5	4	6	9	8	8	10	10	14	11	10	12	13	15	14	15
Average	-1	0	0	0	0	-1	-1	-1	-2	-2	-1	-1	-1	0	0	1	1	2	3	3	4	5	5	7	7	8	9	10	11	12	13	14	14	14	15	16
By quartile																																				
Min. value	-8	##	##	-6	-6	-7	##	##	##	##	-9	-8	##	-7	-6	-5	-5	-3	-1	-1	-3	-2	1	1	3	5	3	5	6	7	8	10	9	10	11	12
Lower	-3	-3	-1	-2	-3	-3	-3	-3	-3	-4	-3	-3	-2	-1	-2	-1	-1	1	2	2	2	4	4	5	5	7	8	8	9	10	11	12	12	13	14	14
Median	-1	0	1	0	0	-1	-1	0	-1	-1	-1	0	0	0	1	1	1	2	3	3	4	4	5	7	7	9	9	10	11	11	12	13	14	14	14	15
Upper	2	2	2	2	2	1	2	1	1	0	0	1	1	2	2	2	3	4	4	4	5	6	7	8	9	10	10	11	13	14	14	15	15	15	16	17
Max. value	5	6	5	5	4	4	5	6	3	4	8	5	5	6	6	9	7	7	7	8	9	9	11	12	14	13	14	14	15	15	18	19	20	20	18	20
Range	13	17	14	11	9	10	15	16	14	14	17	12	16	13	13	14	12	10	7	9	12	11	11	11	10	9	10	9	9	8	10	9	10	10	7	8

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	17	14	15	15	16	15	15	16	15	14	14	15	15	12	14	15	11	12	12	13	12	11	11	9	7	7	4	4	4	3	3	2	-1	1	-2	-1
1962	13	14	13	16	17	15	15	15	14	14	13	13	13	12	11	10	9	10	12	9	7	9	8	7	8	6	4	2	2	2	3	3	1	-3	-5	-3
1963	17	16	15	17	18	17	20	18	16	15	15	14	16	14	14	13	13	10	9	8	7	8	8	6	6	6	5	5	1	3	2	1	-1	-3	-1	3
1964	14	14	16	19	17	17	14	16	15	16	14	16	14	14	11	12	10	11	9	11	9	8	8	5	6	3	6	4	4	3	0	4	4	1	1	-2
1965	13	12	14	15	16	15	14	15	13	15	17	13	15	13	12	13	13	14	11	9	9	8	7	9	7	5	-2	-2	-3	1	1	1	-2	-1	0	-1
1966	17	16	16	17	21	17	16	16	16	16	14	13	15	13	14	12	11	8	12	9	8	11	9	4	4	7	3	3	3	4	4	2	-1	1	0	0
1967	15	17	16	18	18	19	20	17	18	16	15	15	16	15	14	15	13	12	13	11	12	8	10	9	8	6	6	5	5	2	5	-3	-1	-3	-3	-1
1968	18	15	13	14	14	16	17	18	17	15	17	18	19	18	12	11	11	9	9	6	9	6	7	8	7	3	2	2	5	5	2	0	0	1	2	-1
1969	17	16	16	18	20	20	19	18	19	18	16	15	14	14	16	10	10	10	8	10	8	10	7	7	4	5	6	5	2	0	-2	-2	-1	-3	-3	-2
1970	14	18	15	14	15	16	17	15	15	16	16	16	15	13	14	14	9	8	9	11	8	9	5	4	2	1	3	4	5	3	2	4	3	3	-1	-3
1971	15	18	16	14	16	19	19	17	16	16	15	15	14	12	9	10	13	10	10	11	8	8	8	6	8	3	3	0	-1	4	3	2	2	5	4	1
1972	18	19	17	20	20	20	17	19	18	17	13	13	12	15	12	12	11	7	8	10	8	6	4	8	7	8	4	2	3	5	6	6	5	4	1	2
1973	20	22	18	19	16	18	18	16	17	18	13	15	15	14	9	11	9	9	11	10	4	3	4	5	5	6	2	2	2	-3	-2	-3	1	-1	1	3
1974	15	15	16	15	16	14	15	15	15	16	16	17	16	15	13	13	12	10	9	9	7	6	7	5	5	4	7	7	4	3	3	4	2	2	6	2
1975	16	18	18	18	18	17	19	23	19	17	17	17	18	15	15	15	14	13	12	8	7	8	9	9	8	5	6	4	1	4	4	3	2	1	4	4
1976	15	13	15	18	17	16	14	16	16	17	16	17	12	13	14	11	9	8	8	10	7	4	5	4	4	7	5	3	1	5	4	3	0	-3	-2	-4
1977	14	15	13	13	14	15	17	16	16	14	12	15	16	12	9	8	8	8	7	9	8	7	10	9	8	8	7	3	4	2	2	-1	3	3	2	1
1978	15	14	15	14	16	19	20	15	15	16	16	12	12	13	12	10	8	9	7	9	11	8	6	6	8	8	7	8	5	1	0	-1	-1	-3	-3	-8
1979	14	14	16	15	14	16	16	15	15	18	15	14	15	14	12	11	10	10	5	7	10	9	4	2	2	4	3	5	4	4	6	1	-5	-1	2	1
1980	15	16	15	15	17	20	20	15	15	15	14	13	14	15	13	12	13	11	10	10	9	8	5	4	1	2	2	5	5	-1	-1	-1	4	0	3	3
1981	15	17	18	15	17	16	17	18	18	14	13	11	12	14	11	8	13	14	12	11	7	6	5	6	5	2	3	4	4	1	2	-3	-5	-6	-2	-1
1982	13	15	19	20	18	17	20	21	18	15	14	15	13	11	13	14	12	12	11	10	8	6	9	7	7	5	7	5	6	5	3	2	1	1	3	3
1983	16	19	20	17	16	18	19	19	17	16	16	17	18	12	14	14	11	10	10	8	10	10	6	7	7	7	2	3	0	1	1	1	-1	1	2	3
1984	14	15	17	15	15	16	18	18	15	16	18	15	13	12	11	12	12	10	13	11	9	10	9	9	8	6	3	2	5	4	4	5	1	0	3	-1
1985	14	16	18	16	15	16	15	15	16	16	15	15	15	11	11	11	9	8	14	11	7	8	6	5	4	5	2	0	1	-1	2	-2	0	-3	4	-2
1986	19	16	14	17	16	17	19	17	15	14	12	12	12	11	10	10	9	8	9	8	8	8	6	8	4	6	5	6	6	7	7	4	1	0	-3	-3
1987	15	17	14	15	17	13	13	13	14	14	15	14	12	13	13	9	10	9	7	11	10	10	8	6	6	2	4	5	3	3	1	0	1	0	1	4
1988	19	17	18	17	17	16	14	16	17	16	15	15	16	14	13	13	13	12	10	10	8	8	4	3	2	1	3	1	0	-2	-4	0	-1	0	1	4
1989	17	21	16	13	17	18	14	16	17	18	16	12	13	14	12	14	14	12	8	9	7	9	12	9	8	8	7	3	-1	0	3	-1	-4	1	4	1
1990	15	16	15	15	15	17	19	16	18	17	16	16	14	13	12	11	9	10	10	10	9	9	4	7	5	6	5	5	1	2	4	3	1	1	1	3
1991	17	20	17	16	16	19	21	19	16	16	17	15	16	11	12	12	12	11	10	11	10	9	4	6	6	5	4	3	5	5	3	1	4	3	2	2
1992	16	16	18	17	19	17	17	18	16	16	15	16	13	12	13	11	13	11	8	8	5	5	5	2	6	4	4	3	2	4	5	2	3	3	-2	1
1993	16	15	14	16	16	15	16	15	15	15	13	12	12	11	10	8	11	8	9	11	8	5	4	5	3	4	2	0	0	-1	2	3	-1	3	1	0
1994	16	17	22	18	20	23	22	20	17	16	16	15	15	14	14	13	12	10	6	9	10	3	7	7	6	4	2	4	6	4	3	5	2	2	1	4
1995	13	16	17	17	17	18	17	17	18	20	19	13	15	14	14	10	13	9	11	13	11	12	8	8	2	3	3	1	4	2	1	1	1	-1	-5	-6
1996	14	13	15	13	16	17	16	17	19	18	19	18	15	10	10	10	8	10	10	11	9	10	7	8	10	6	4	5	3	2	4	3	-1	-3	-5	-4
1997	19	18	16	18	20	18	19	21	20	20	21	22	20	15	14	12	11	10	9	11	6	7	3	3	3	6	6	3	2	1	2	4	1	-2	1	2
1998	14	15	15	14	18	15	15	15	15	16	14	12	12	15	15	13	12	11	7	8	9	8	9	6	3	1	1	-1	0	0	0	-1	0	4	0	3
1999	18	18	21	19	18	19	21	18	16	15	14	16	17	18	14	15	16	15	12	10	10	6	7	9	9	7	5	2	0	6	3	4	2	0	1	0
2000	16	15	14	15	16	16	17	16	17	17	14	15	14	14	11	10	10	13	13	13	10	11	11	9	8	8	7	6	7	6	7	7	7	2	0	0
2001	19	22	17	17	19	20	18	17	17	19	17	15	15	13	13	14	12	8	13	12	12	10	7	10	7	3	4	4	3	2	2	3	2	1	-4	-3
2002	15	18	19	21	17	19	20	19	22	20	20	20	19	18	15	12	10	11	9	5	4	3	5	6	3	3	3	3	3	3	0	-2	-1	0	-3	-3
2003	15	16	18	22	20	21	21	19	19	18	17	13	13	15	15	15	13	10	10	8	8	5	2	5	8	5	4	6	5	6	5	3	3	3	1	2
2004	15	16	14	16	17	17	19	21	18	19	16	16	16	14	15	12	12	11	11	10	7	9	9	7	6	5	6	1	0	2	4	5	3	2	1	1
2005	17	21	21	18	16	17	16	15	16	17	17	15	16	17	14	12	14	13	11	12	11	7	8	8	9	8	8	2	2	1	2	2	4	-1	1	-1
2006	19	23	19	18	20	21	19	20	19	19	18	17	17	16	16	15	16	16	14	13	11	11	12	8	2	7	5	7	7	7	7	7	7	3	4	4
2007	16	15	16	18	16	16	17	20	19	17	19	13	13	13	13	12	13	13	11	9	7	8	5	8	6	5	1	4	4	3	5	6	2	2	1	4
2008	17	15	17	17	18	20	19	17	17	16	16	15	15	14	11	10	12	11	10	9	11	9	9	7	3	7	8	4	0	5	4	3	3	4	2	0
2009	18	15	17	18	18	18	18	19	16	17	16	17	16	16	14	13	14	12	8	8	6	5	7	6	4	6	5	7	7	6	4	4	1	-4	-2	-1
2010	19	20	23	21	19	17	18	18	20	18	17	13	12	14	15	12	13	10	10	9	6	6	5	7	7	3	6	3	3	-4	-4	-1	-1	-4	-5	-4
2011	18	19	17	18	18	18	18	17	16	16	17	16	15	14	14	13	13	14	13	10	7	8	7	8	8	6	4	5	6	6	4	3	4	2	2	4
2012	17	18	16	15	17	18	18	16	15	18	16	16	16	14	14	13	10	12	12	9	7	10	7	4	6	5	7	6	5	4	-2	-3	-2	-1	-2	3
Average	16	17	17	17	17	17	18	17	17	16	16	15	15	14	13	12	11	11	10	10	8	8	7	7	6	5	4	3	3	3	2	2	1	0	0	0
By quartile																																				
Min. value	13	12	13	13	14	13	13	13	13	14	12	11	12	10	9	8	8	7	5	5	4	3	2	2	1	1	-2	-2	-3	-4	-4	-3	-5	-6	-5	-8
Lower	15	15	15	15	16	16	16	16	15	16	14	13	13	13	12	11	10	9	9	9	7	6	5	5	4	4	3	2	1	1	1	0	-1	-1	-2	-1
Median	16	16	16	17	17	17	18	17	16	16	16	15	15	14	13	12	12	10	10	10	8	8	7	7	6	5	4	4	3	3	3	2	1	1	1	0
Upper	17	18	18	18	18	19	19	18	18	18	17	16	16	15	14	13	13	12	12	11	10	9	8	8	8	7	6	5	5	4	4	4	3	2	2	3
Max. value	20	23	23	22	21	23	22	23	22	20	21	22	20	18	16	15	16	16	14	13	12	12	12	10	10	8	8	8	7	7	7	7	7	5	6	4
Range	8	10	11	9	7	10	9	10	9	6	9	11	8	8	7	7	8	9	9	8	9	9	10	8	10	7	10	10	10	11	11	11	12	10	11	12

Figure A8-19. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Gotland county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Gotland** | Location: **Visby**

Total precipitation , mm / 5 or 6 day periods

Coordinates for the places (RT90): 1648273-6393448 1659794-6392068 1646455-6381396 1663796-6384064

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March						April					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30
1961	23	26	6	0	5	5	13	9	1	0	0	1	3	0	8	14	2	8	11	8	4	0	0	0
1962	5	6	14	18	36	11	11	7	36	12	1	1	9	14	3	0	4	6	33	4	3	0	9	9
1963	11	13	24	13	1	9	27	3	5	8	4	0	0	9	11	0	6	0	2	0	5	2	1	14
1964	2	0	4	1	1	19	13	6	9	3	0	0	1	0	0	2	0	0	0	0	1	0	1	7
1965	2	10	3	13	12	16	2	6	17	1	9	10	4	1	0	3	10	2	0	1	4	8	7	0
1966	12	0	15	3	4	3	19	7	2	7	6	12	1	16	14	1	6	26	3	2	7	13	24	0
1967	35	11	16	8	2	24	21	0	0	8	10	10	5	0	4	7	10	4	1	22	1	11	4	8
1968	7	6	28	15	14	20	6	9	4	8	0	0	1	2	8	7	8	3	5	9	1	1	9	0
1969	1	2	3	12	6	3	18	21	6	19	3	0	1	10	0	0	0	4	4	0	13	13	0	8
1970	14	3	5	3	0	9	3	7	1	1	2	1	26	13	4	14	7	28	25	27	2	12	21	2
1971	4	4	0	4	11	13	12	4	6	5	19	21	19	27	10	7	24	0	1	21	0	0	1	3
1972	0	3	1	12	0	18	5	16	11	0	0	0	1	1	1	0	9	19	16	4	6	2	1	8
1973	8	0	1	12	5	13	0	8	17	12	1	1	6	11	5	2	0	1	14	5	10	15	1	13
1974	1	0	38	13	9	15	2	36	8	2	17	0	0	0	0	27	1	0	0	0	2	0	1	0
1975	5	12	2	7	11	2	5	0	2	4	0	0	1	6	7	11	2	39	7	10	9	1	2	0
1976	25	20	21	18	18	3	1	10	15	0	2	1	2	13	12	4	9	9	18	3	1	1	9	22
1977	5	12	12	1	9	16	2	9	2	13	22	5	6	0	5	4	2	19	6	9	1	6	7	7
1978	17	7	25	0	10	12	9	12	12	1	21	0	15	16	20	17	15	16	1	1	5	0	2	0
1979	32	25	16	3	17	43	24	4	6	0	0	1	13	7	13	9	14	38	10	0	3	0	9	14
1980	10	3	1	0	14	26	7	10	12	0	0	5	3	5	2	2	0	13	0	0	0	24	2	22
1981	4	12	39	4	6	0	11	13	14	8	4	1	10	26	7	14	13	20	0	0	0	3	3	5
1982	12	11	0	0	21	33	0	15	4	0	0	1	24	2	9	8	0	0	0	7	3	2	0	12
1983	15	2	4	30	8	15	15	1	2	1	1	0	6	22	2	6	37	11	20	1	6	2	2	9
1984	15	16	30	16	13	19	16	16	2	1	4	0	4	9	0	1	3	15	16	0	1	1	1	0
1985	27	27	10	2	27	18	9	8	7	2	6	0	7	23	2	8	3	8	19	13	3	3	9	70
1986	18	13	21	6	27	12	5	3	1	8	11	0	7	1	2	0	23	17	1	0	2	45	22	1
1987	21	36	20	2	4	20	1	22	2	11	2	0	3	0	0	12	0	9	0	0	2	0	2	0
1988	19	19	5	1	23	22	15	18	2	4	19	14	9	12	1	26	7	3	9	7	2	7	16	0
1989	1	6	6	0	2	0	0	0	8	12	7	10	4	1	18	0	24	5	7	4	0	4	3	4
1990	4	17	17	10	26	19	12	12	4	10	1	12	6	3	6	6	3	0	0	0	0	2	0	32
1991	11	34	5	15	1	1	1	5	24	5	4	3	3	0	10	5	4	1	3	1	0	8	3	15
1992	6	29	0	3	0	0	24	2	17	6	8	0	1	0	36	11	15	9	17	4	11	8	4	16
1993	1	11	20	8	29	2	2	0	1	50	11	1	9	0	1	3	8	14	7	9	0	5	2	0
1994	13	3	10	4	15	14	11	8	1	5	17	3	4	25	13	5	20	13	11	8	22	1	1	2
1995	5	16	15	2	34	14	7	8	25	18	6	6	6	2	4	17	14	17	3	30	0	17	2	20
1996	3	2	2	2	3	1	2	3	18	17	6	0	3	0	5	1	1	6	1	1	8	0	3	3
1997	1	3	12	3	4	0	15	10	15	14	12	1	0	1	4	1	5	10	6	8	11	2	15	4
1998	26	11	1	17	9	15	24	4	17	17	3	3	21	8	6	7	0	6	22	1	9	10	2	4
1999	15	16	14	5	23	24	6	4	13	8	19	12	7	13	2	2	7	0	1	7	6	38	4	8
2000	5	4	13	1	10	10	8	15	5	3	11	2	14	11	7	0	0	4	12	1	16	5	0	0
2001	10	25	1	2	13	9	21	10	9	2	19	11	7	2	7	3	1	7	6	1	16	10	8	2
2002	9	0	0	12	20	43	14	3	12	4	8	22	7	10	0	12	10	0	0	0	1	3	0	7
2003	8	6	11	5	5	23	19	1	1	0	0	0	1	4	5	0	0	2	8	25	4	0	0	25
2004	3	3	14	14	2	36	7	6	3	4	10	1	4	2	12	15	6	2	2	6	0	2	10	0
2005	10	18	1	19	14	11	2	7	31	5	6	14	2	2	17	10	0	0	0	2	0	0	0	3
2006	4	0	4	8	9	0	10	23	2	14	2	4	11	11	5	0	2	24	24	5	2	8	2	5
2007	13	16	25	12	16	38	24	2	6	5	1	15	22	8	0	9	0	0	0	11	0	11	3	0
2008	7	12	4	12	13	12	4	4	2	0	3	14	20	2	15	17	7	0	0	17	18	1	0	1
2009	15	11	4	5	7	9	3	4	17	6	13	4	4	10	2	19	18	6	0	9	0	0	0	0
2010	13	5	2	13	0	29	18	4	13	20	10	2	16	0	1	2	8	10	5	3	0	7	8	7
2011	14	21	11	5	6	0	13	23	3	1	4	0	0	4	0	5	0	9	18	12	0	0	0	0
2012	25	20	13	13	13	1	15	7	15	21	16	9	0	2	0	9	0	8	4	16	15	8	16	1
Average	11	11	11	8	11	14	10	9	9	7	7	5	7	7	6	7	7	9	7	7	5	6	5	8
By quartile																								
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	4	3	3	2	4	3	3	4	2	1	1	0	2	1	1	1	1	1	1	1	0	1	1	0
Median	10	11	10	6	9	13	10	7	6	5	5	1	5	4	5	6	5	7	4	4	2	3	2	4
Upper	15	16	16	13	15	19	15	11	14	11	11	9	9	11	9	11	10	14	12	9	7	8	8	9
Max. value	35	36	39	30	36	43	27	36	36	50	22	22	26	27	36	27	37	39	33	30	22	45	24	70

Month	May						June						July						August					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	31
1961	16	10	4	1	0	23	2	7	48	10	4	12	15	8	7	11	3	10	5	13	8	21	18	0
1962	2	4	6	12	1	11	1	1	5	2	3	45	19	9	22	5	3	15	13	31	7	8	19	9
1963	2	3	0	3	7	0	4	0	3	8	12	21	0	12	30	2	1	29	0	4	26	52	14	14
1964	1	4	14	3	0	0	11	4	1	4	6	0	11	5	0	0	18	15	8	1	2	9	8	4
1965	0	30	3	9	0	0	0	9	0	7	7	5	7	37	13	0	8	13	1	0	13	0	25	14
1966	20	6	0	0	2	43	6	0	0	0	4	4	3	13	14	0	3	11	34	6	21	0	14	1
1967	21	3	1	31	20	0	0	3	1	0	4	4	2	4	0	1	1	1	19	0	8	24	3	10
1968	9	16	31	32	1	0	0	5	0	0	8	19	1	13	26	19	32	3	4	0	15	31	0	20
1969	15	1	24	46	0	1	6	0	0	0	0	0	3	22	0	3	3	0	0	0	7	13	26	86
1970	2	0	3	2	1	2	3	0	17	0	2	6	15	6	22	9	17	29	20	4	6	7	0	0
1971	1	0	1	0	7	7	0	0	21	8	1	7	9	0	14	7	0	6	2	3	17	1	0	7
1972	0	0	9	36	11	5	0	0	4	0	6	1	1	4	1	1	3	12	24	0	13	8	71	1
1973	16	1	2	1	6	0	17	2	1	0	0	2	0	37	5	23	20	1	6	9	0	2	1	3
1974	2	7	0	0	1	8	2	14	7	7	4	0	3	45	1	21	44	5	18	6	6	9	0	2
1975	3	4	6	3	3	10	4	0	1	0	0	2	0	0	5	2	21	20	0	1	6	12	18	0
1976	5	0	8	0	0	24	1	2	13	5	0	0	0	6	1	7	21	14	5	6	0	2	0	8
1977	0	6	21	3	0	6	4	1	3	0	1	23	30	3	22	21	14	6	10	0	2	3	2	5
1978	0	1	6	9	0	0	0	2	15	0	3	5	15	14	8	5	5	0	4	26	4	0	21	29
1979	16	8	0	4	1	1	0	6	0	1	1	3	5	19	6	11	50	23	2	11	1	2	30	23
1980	0	0	1	0	20	8	6	0	0	2	34	5	5	5	22	22	3	0	10	38	5	17	40	24
1981	8	0	0	0	2	4	10	13	17	7	9	5	1	0	2	7	20	12	1	1	5	18	21	17
1982	11	14	0	3	20	1	0	3	14	1	0	65	15	1	0	0	0	1	0	1	10	23	10	7
1983	5	2	7	11	1	6	9	5	0	3	1	10	4	0	15	2	9	1	7	0	14	0	0	0
1984	1	2	4	0	22	8	3	14	7	0	28	19	2	2	8	69	23	9	1	28	6	10	3	11
1985	4	2	0	0	0	1	5	5	25	1	0	50	3	7	0	42	23	26	11	8	15	6	6	1
1986	0	4	15	1	42	0	8	9	6	3	0	3	6	17	18	0	10	3	2	1	5	28	10	41
1987	14	7	13	20	1	3	39	7	24	11	5	7	0	3	24	0	1	30	26	2	4	0	13	7
1988	14	0	0	7	0	2	33	30	0	0	5	5	1	6	16	20	34	33	38	1	3	12	11	5
1989	2	1	3	0	0	9	32	27	0	0	0	8	0	0	13	11	0	11	62	38	7	3	7	4
1990	0	0	8	4	1	9	1	0	2	16	14	4	13	6	8	27	33	8	2	2	1	15	10	0
1991	30	0	6	7	4	1	12	14	10	36	6	35	0	0	3	5	4	0	0	2	2	18	3	40
1992	2	4	7	0	0	0	0	0	6	0	1	0	4	0	27	15	0	43	4	1	9	5	16	25
1993	2	0	0	4	8	13	0	0	2	10	30	7	3	10	14	15	8	9	0	31	20	4	19	14
1994	0	0	1	26	0	11	12	20	1	9	12	1	0	0	0	1	0	1	1	3	29	49	34	30
1995	1	7	50	21	8	0	2	7	31	8	8	3	9	0	2	72	2	0	0	0	5	0	20	40
1996	9	30	2	10	9	10	7	6	1	9	0	4	40	70	3	6	0	15	6	0	5	0	2	20
1997	12	26	3	0	5	2	0	5	7	4	16	1	5	0	0	0	7	26	10	2	4	1	2	0
1998	5	4	3	0	24	4	2	22	13	21	2	6	2	6	3	1	10	46	12	19	16	2	14	31
1999	0	5	9	0	3	9	6	20	26	0	21	4	1	0	0	3	2	0	0	7	10	13	9	16
2000	3	0	0	7	12	7	7	19	3	0	5	28	3	6	98	17	15	6	11	1	0	12	8	5
2001	2	1	1	9	0	13	1	0	3	26	4	4	2	29	16	12	2	0	12	23	12	9	3	23
2002	13	1	8	8	2	34	1	0	34	9	7	7	18	11	0	3	25	6	1	0	1	0	0	1
2003	8	1	6	0	7	0	0	2	19	17	15	4	60	0	4	4	9	23	2	0	17	14	8	81
2004	14	1	7	1	16	5	0	6	18	3	9	1	8	23	13	3	6	10	14	0	5	5	12	25
2005	15	5	0	1	13	10	19	11	1	10	15	3	1	0	8	38	45	11	5	33	2	0	6	10
2006	3	0	1	18	12	16	0	1	8	0	10	2	0	0	1	0	2	29	13	0	23	11	10	42
2007	0	9	4	1	10	6	1	1	0	6	4	32	7	38	14	1	19	12	12	22	6	2	14	36
2008	1	0	5	1	0	0	0	0	16	4	6	10	1	24	3	9	0	0	47	29	3	22	16	16
2009	3	22	0	10	22	13	11	27	23	5	1	2	14	93	0	37	19	5	0	2	37	1	11	8
2010	16	6	20	0	10	20	0	36	7	0	7	0	0	0	0	51	78	12	22	14	0	18	40	23
2011	8	0	6	0	5	6	0	1	18	23	13	0	9	1	16	26	40	75	0	19	2	12	7	26
2012	4	8	2	1	0	3	6	4	1	13	44	4	1	20	33	32	0	33	3	26	0	2	7	39
Average	7	5	6	7	7	7	6	7	9	6	8	10	7	12	11	13	14	14	10	9	9	10	13	17
By quartile																								
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	0	1	0	0	1	0	0	1	0	1	2	1	0	1	1	2	3	1	1	3	2	3	4
Median	3	3	3	3	3	5	2	4	6	4	5	4	3	6	7	7	8	10	5	2	6	8	10	12
Upper	12	6	7	9	10	10	7	10	16	9	10	9	9	15	16	20	20	21	12	15	13	15	18	25
Max. value	30	30	50	46	42	43	39	36	48	36	44	65	60	93	98	72	78	75	62	38	37	52	71	86

Month	September						October						November						December					
Year / Day	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	9	27	14	0	0	0	0	2	0	24	6	9	11	21	16	4	1	10	25	0	2	1	21	10
1962	15	28	26	24	2	2	1	0	1	2	0	18	6	0	10	14	11	8	3	5	9	8	0	21
1963	23	32	0	0	3	9	15	9	16	12	7	0	2	5	20	18	18	7	0	1	4	11	7	4
1964	0	5	24	17	0	2	0	12	36	16	13	0	0	0	17	17	26	7	14	10	31	11	0	6
1965	7	39	10	6	0	36	2	1	0	1	0	10	30	4	23	4	8	32	24	35	8	18	14	19
1966	6	3	10	0	0	1	18	8	5	7	33	0	6	6	4	17	2	36	9	34	18	35	12	25
1967	11	24	2	15	60	12	9	10	6	39	13	5	7	11	17	8	1	3	14	22	6	7	28	25
1968	1	1	14	2	24	9	13	15	12	19	2	12	12	20	2	2	17	27	0	0	0	5	6	21
1969	1	0	0	7	16	34	19	8	0	0	7	18	16	22	10	14	3	21	8	2	3	1	2	1
1970	4	11	24	1	7	0	42	1	0	18	8	38	43	31	18	31	13	15	5	11	6	6	9	11
1971	11	9	17	1	1	2	10	3	2	13	9	1	7	31	11	5	11	2	9	6	5	4	2	33
1972	0	12	24	10	13	23	6	0	16	15	13	0	12	22	21	3	8	5	14	10	9	3	0	0
1973	6	4	1	2	73	12	0	35	5	36	6	9	1	4	28	22	12	5	11	23	11	9	3	1
1974	46	18	0	1	6	1	42	48	7	12	21	39	21	19	11	43	5	33	13	14	25	29	10	25
1975	9	11	30	0	3	10	23	10	0	10	0	1	1	1	2	23	2	18	6	4	5	2	0	4
1976	13	16	17	4	1	6	3	13	2	0	1	13	8	17	2	1	12	17	39	27	34	12	20	24
1977	11	9	44	3	1	21	30	5	2	0	8	0	12	4	23	18	22	11	9	14	15	1	27	34
1978	30	24	34	1	10	18	6	0	0	9	2	1	4	1	4	23	8	21	1	1	13	3	8	13
1979	4	3	3	25	0	1	2	0	2	5	0	2	19	10	6	26	11	25	5	3	9	23	10	18
1980	9	6	18	4	4	11	5	18	45	11	22	36	2	3	24	21	8	15	27	18	25	9	21	4
1981	0	0	1	8	9	2	14	15	16	28	32	16	29	14	14	21	16	39	12	26	7	26	23	16
1982	10	19	1	0	2	12	0	5	28	20	8	2	6	1	5	16	16	5	1	15	31	16	5	4
1983	7	29	42	51	53	0	8	36	7	10	7	3	3	3	13	3	5	28	3	21	2	7	8	7
1984	42	16	37	10	70	14	13	16	19	13	32	11	6	2	0	3	33	2	1	16	3	27	4	13
1985	19	17	6	1	10	3	1	5	11	1	0	1	18	25	8	3	4	19	29	24	7	11	6	21
1986	8	3	18	0	3	6	4	2	1	6	17	7	14	10	7	20	11	0	9	1	3	25	32	20
1987	1	22	15	11	10	18	0	3	14	36	19	0	0	2	10	18	21	36	0	9	8	19	13	22
1988	3	1	22	2	22	17	0	24	0	0	2	18	14	3	2	8	3	22	13	23	3	14	10	26
1989	0	7	1	8	0	6	8	19	12	11	29	13	31	15	19	1	19	24	0	12	15	14	12	1
1990	25	11	21	18	36	26	39	12	2	6	0	30	15	0	14	14	25	28	0	7	7	20	13	12
1991	4	13	2	4	21	21	6	1	9	26	4	3	20	19	14	16	9	3	4	2	1	28	18	9
1992	29	1	11	5	4	5	2	4	51	19	22	15	16	11	23	15	16	19	8	1	12	7	0	0
1993	6	0	60	4	13	0	3	6	23	12	8	0	2	10	10	3	10	6	11	10	12	18	19	23
1994	17	8	28	30	6	20	17	13	0	1	5	25	4	1	27	15	0	0	7	48	3	7	4	50
1995	20	1	33	0	2	18	2	6	1	6	0	11	39	3	8	34	2	2	3	5	4	2	6	9
1996	15	15	23	1	0	42	3	1	0	16	0	21	17	10	16	25	9	39	5	1	19	22	18	14
1997	19	23	6	3	3	7	31	28	23	8	11	3	27	15	4	1	9	8	22	10	8	0	16	19
1998	2	17	30	2	1	1	4	4	16	20	13	26	18	5	8	10	2	5	11	13	21	3	28	10
1999	0	0	6	2	5	62	17	17	8	11	2	9	2	5	5	16	12	4	22	27	41	19	20	11
2000	16	1	1	0	0	1	13	5	13	1	14	23	10	30	21	8	28	21	2	7	27	13	10	32
2001	31	52	30	12	7	2	16	19	1	2	1	27	5	25	0	1	22	7	3	4	1	21	24	37
2002	0	0	12	40	3	2	12	15	29	8	17	25	4	7	18	32	7	9	6	2	1	1	1	26
2003	4	0	0	0	3	12	8	11	9	8	7	15	5	0	1	14	30	21	9	4	31	12	40	19
2004	11	0	4	15	8	1	5	6	2	18	36	8	3	7	9	26	38	14	12	0	9	9	25	8
2005	0	0	6	0	0	9	0	0	0	1	48	0	21	10	15	12	6	26	7	24	8	6	13	23
2006	12	8	0	2	0	1	26	6	0	15	13	53	21	27	16	23	24	1	8	3	22	12	0	22
2007	22	10	6	29	10	6	3	1	14	11	0	9	16	30	21	2	16	16	30	26	0	0	1	26
2008	4	21	6	3	0	7	33	1	9	23	10	43	0	15	27	21	25	10	25	11	21	11	4	0
2009	40	5	18	1	6	12	25	6	29	21	10	4	9	9	12	27	8	5	6	8	21	24	23	12
2010	5	3	27	21	2	1	0	0	4	36	21	5	5	37	17	11	75	25	23	7	10	22	18	12
2011	11	10	14	8	1	0	6	30	1	9	1	8	1	1	0	6	3	3	13	21	22	39	15	5
2012	1	2	4	3	27	15	27	34	30	1	6	3	16	13	1	0	14	29	31	10	28	10	15	15
Average	11	12	15	8	11	11	11	11	10	13	11	13	12	11	12	14	14	15	11	12	12	13	12	16
By quartile																								
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	3	2	4	1	1	2	2	2	1	6	2	2	4	3	5	4	6	5	4	4	4	5	4	8
Median	9	9	14	3	3	7	7	6	6	11	8	9	9	10	11	15	11	14	9	10	9	11	11	15
Upper	16	17	24	10	10	15	17	15	16	18	15	18	17	19	18	21	18	25	14	21	21	20	19	23
Max. value	46	52	60	51	73	62	42	48	51	39	48	53	43	37	28	43	75	39	39	48	41	39	40	50

Figure A8-20. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Gotland county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A9 BLEKINGE COUNTY♣

A9.1 Crop production and yield

Table A9-1. *Annual production (metric ton) in 2010-2014 for the major crops in Blekinge county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Potatoes for starch	74 600	92 100	74 900	71 400	76 000	77 800
Temporary grasses				67 100		67 100
Sugar beet	37 300	45 000	42 200	44 700		42 300
Winter wheat	16 900	16 800	22 900	20 100	24 900	20 320
Spring barley	13 500	15 300	17 300	15 900	15 800	15 560
Spring wheat		6 700	8 700	6 800	6 900	7 275
Oats				3 000	2 900	2 950
Winter rape	2 300	2 200	3 000	3 500	3 700	2 940

* Data from Jordbruksverket (2015)

Table A9-2. *Average yield of potatoes for starch, sugar beets and cereals in Blekinge county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Potatoes for starch	34 530	4 529	13
Sugar beet	47 004	3 092	7
Winter wheat	5 372	316	6
Spring wheat	4 547	346	8
Spring barley	3 652	277	8
Oats	3 457	392	11

* Coefficient of variation = Standard deviation / Average

Table A9-3. *Coefficient of variation of farm-level yield for spring barley and winter wheat in Blekinge county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Winter wheat	29	41	21	34	22	26	25	20	27
Spring barley	26	28	25	30	23	23	24	23	25
Average	28	35	23	32	23	25	25	22	

* Based on farm-level yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

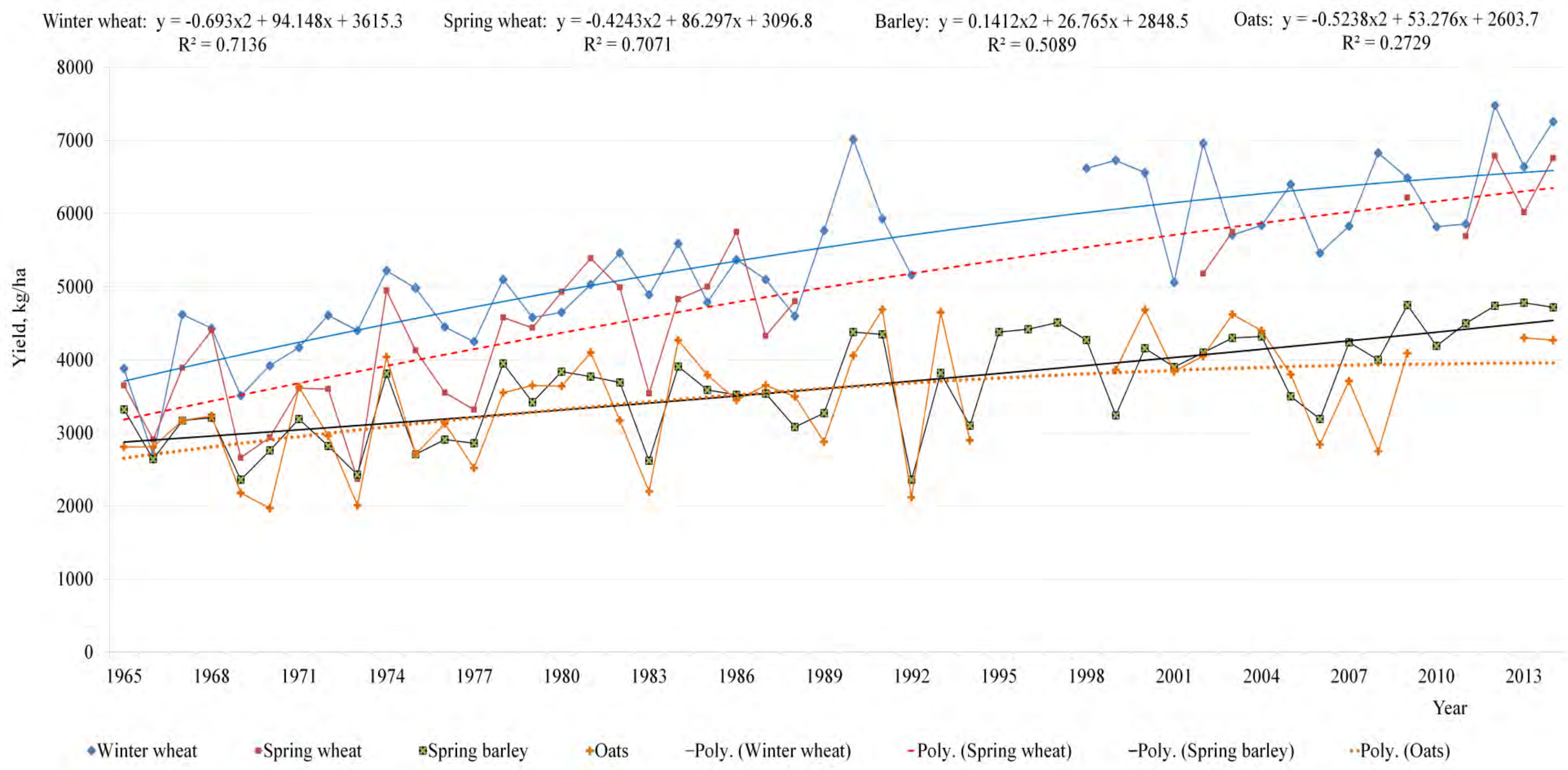


Figure A9-1. Average yield (kg/ha) per year of winter wheat, spring wheat, barley and oats in Blekinge county for the period 1965-2014, and their trend lines with respective equations. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

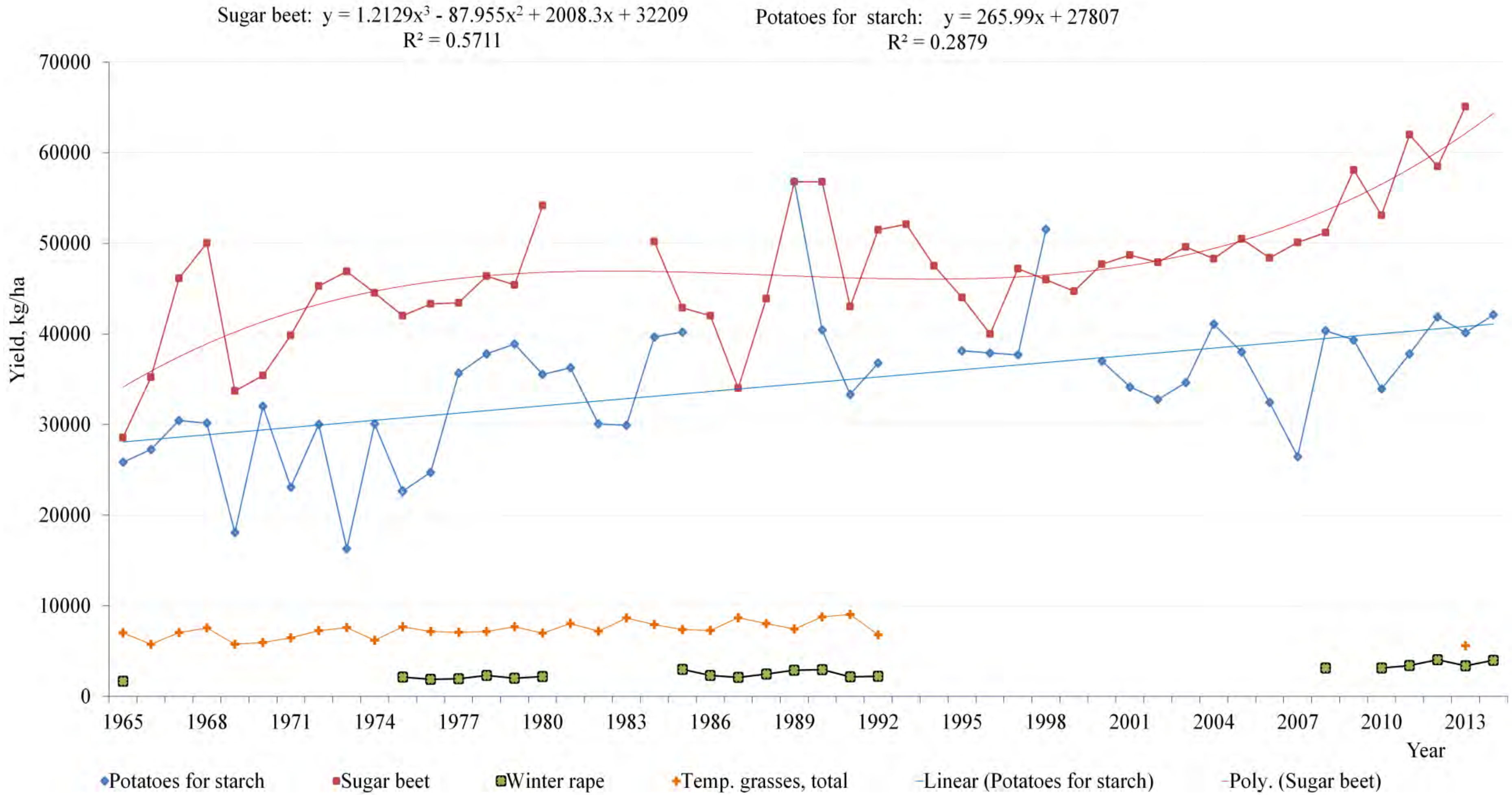


Figure A9-2. Average yield (kg/ha) per year of potatoes for starch, sugar beet, winter rape and temporary grasses (total) in Blekinge county for the period 1965-2014, and the trend lines with its respective equations for potatoes for starch and sugar beet. The variable x in equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Data from Jordbruksverket (2015).

A9.2 Precipitation, temperature and cereal yield

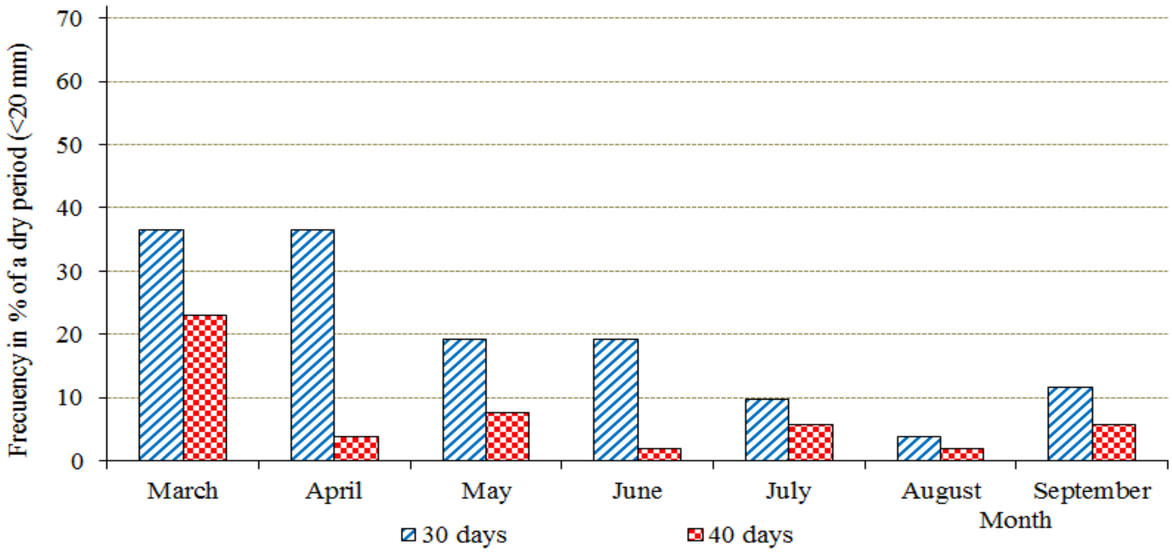


Figure A9-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Blekinge county∗.

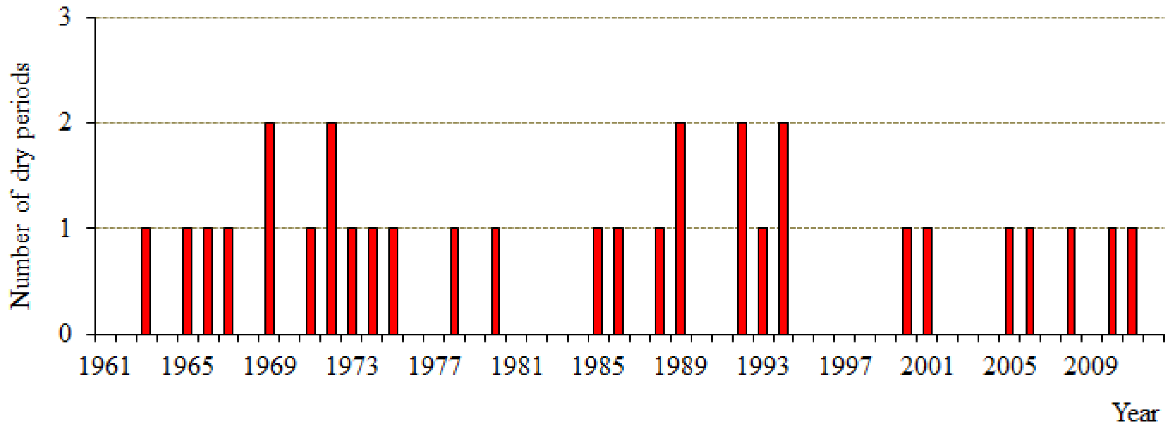


Figure A9-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 April to 31 July in Blekinge county*.

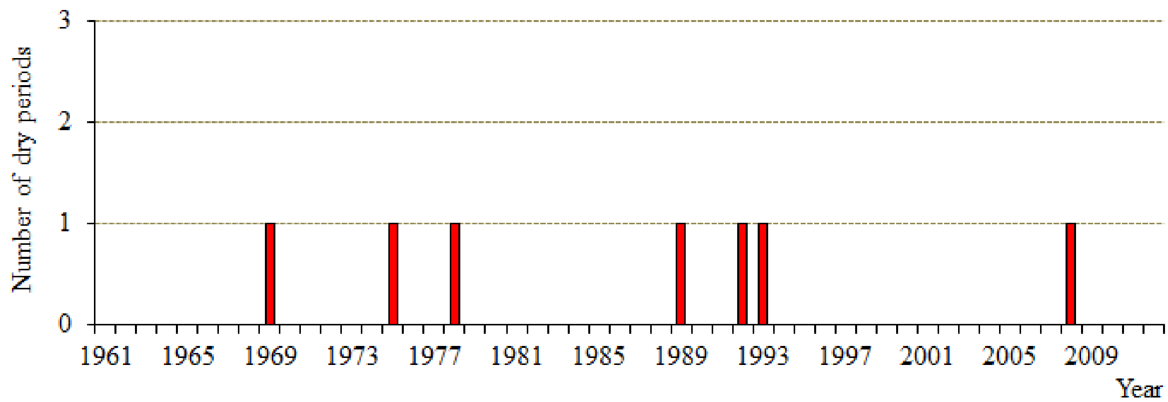


Figure A9-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 April to 31 July in Blekinge county∗.

∗ The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

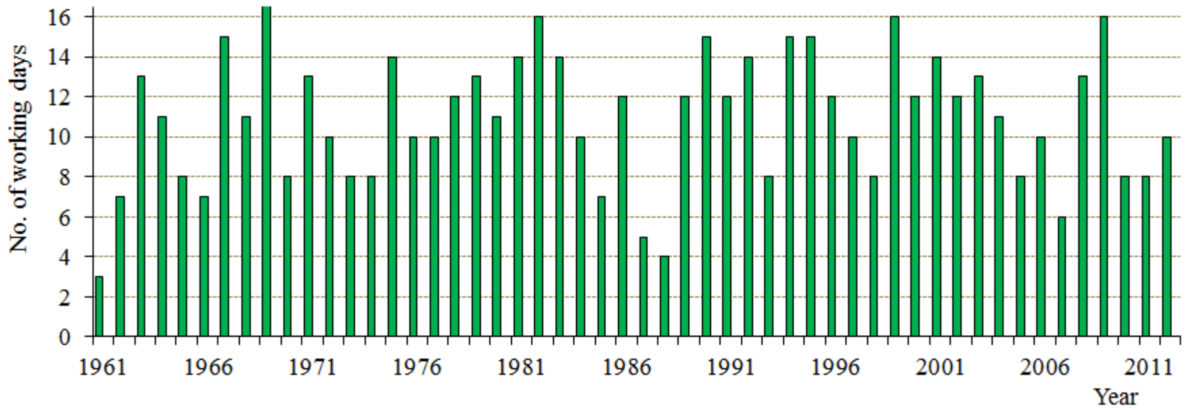


Figure A9-6. Estimated number of working days available for harvesting during the period 22 July-7 August in Blekinge county (for definition of a working day, see Section 2.1)*.

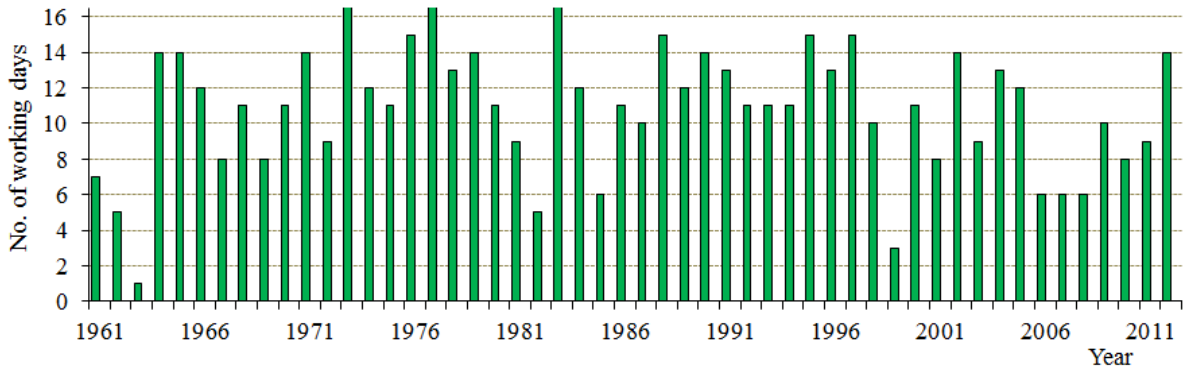


Figure A9-7. Estimated number of working days available for harvesting during the period 8-24 August in Blekinge county (for definition of a working day, see Section 2.1)*.

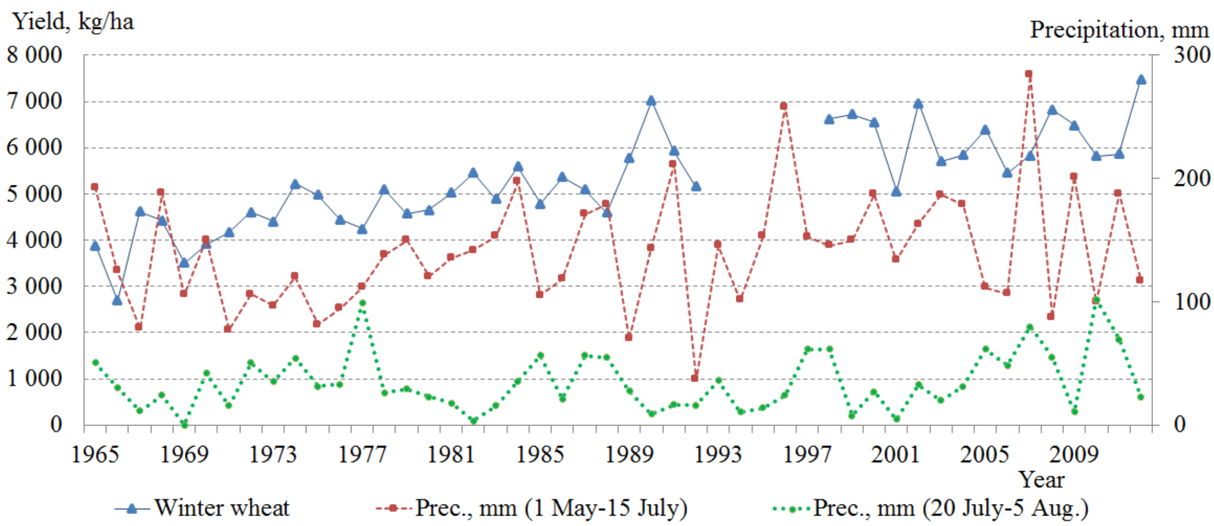


Figure A9-8. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 20 July-5 August in Blekinge county, 1965-2012*.

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* Precipitation data from Luftwebb (2014) and yields from Jordbruksverket (2015).

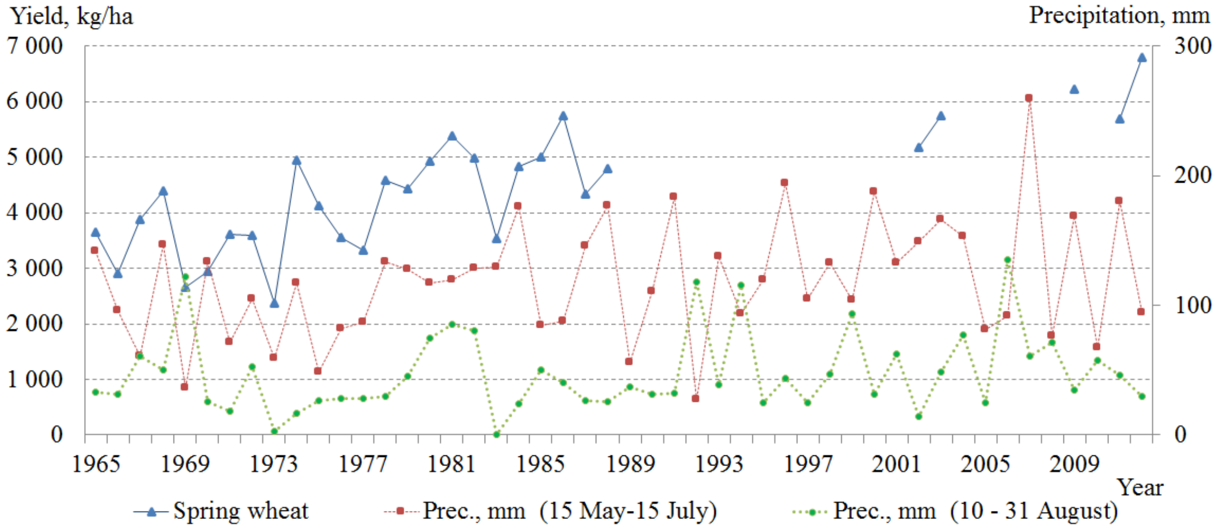

Figure A9-9. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 15 May-15 July and 10-31 August in Blekinge county, 1965-2012*.

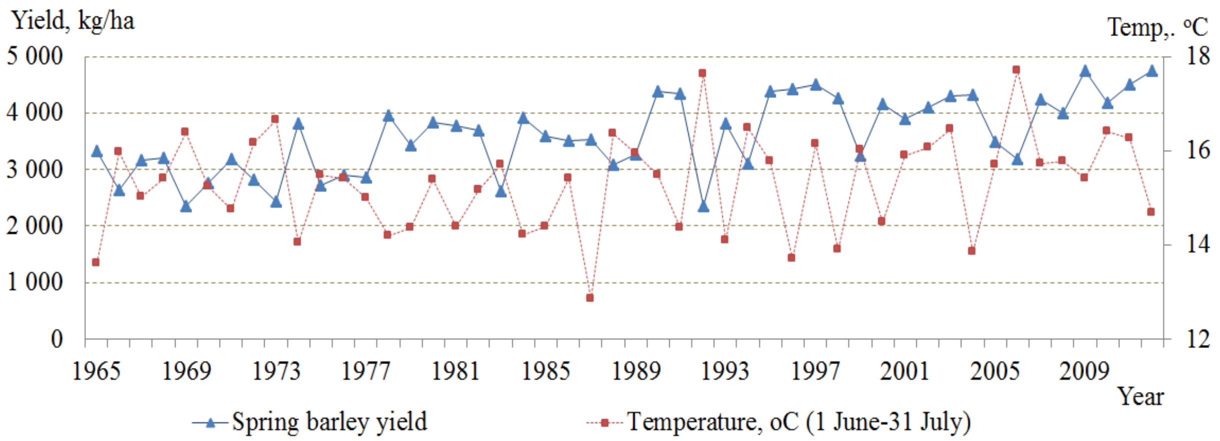

Figure A9-10. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Blekinge county, 1965-2012*.

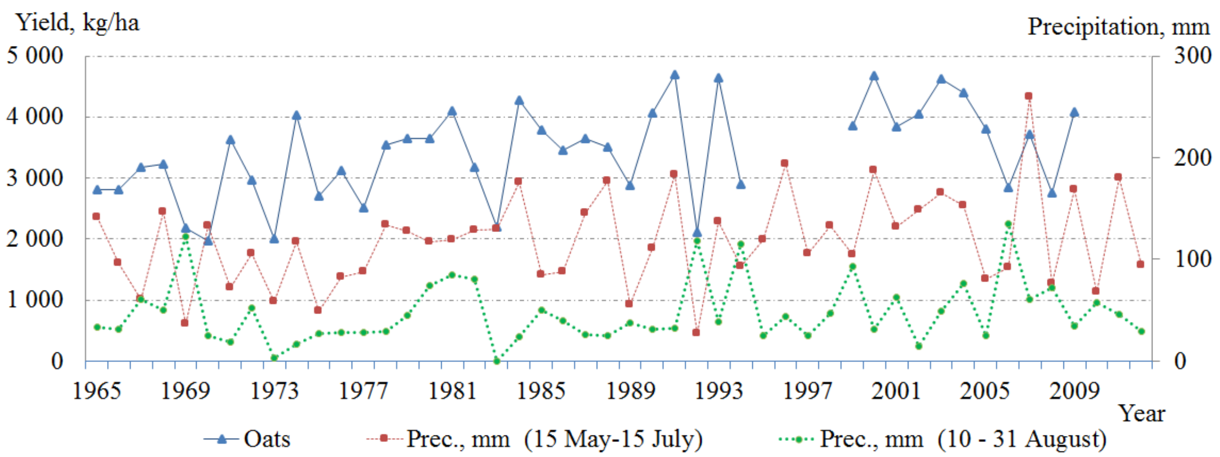

Figure A9-11. Annual oat yield (kg/ha) and precipitation (mm) in the period 15 May-15 July and 10-31 August in Blekinge county, 1991-2011*.

* Precipitation and temperature data from Luftwebb (2014) and yields from Jordbruksverket (2015).

A9.3 Yield on farms

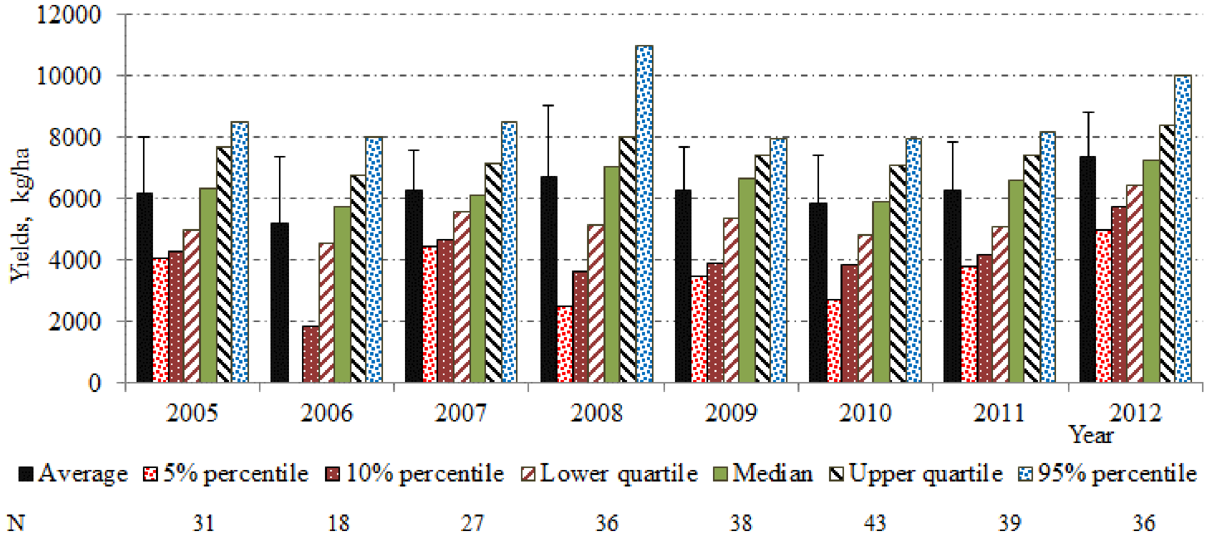

Figure A9-12. Average and estimated percentiles of winter wheat farm-level yield in Blekinge county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

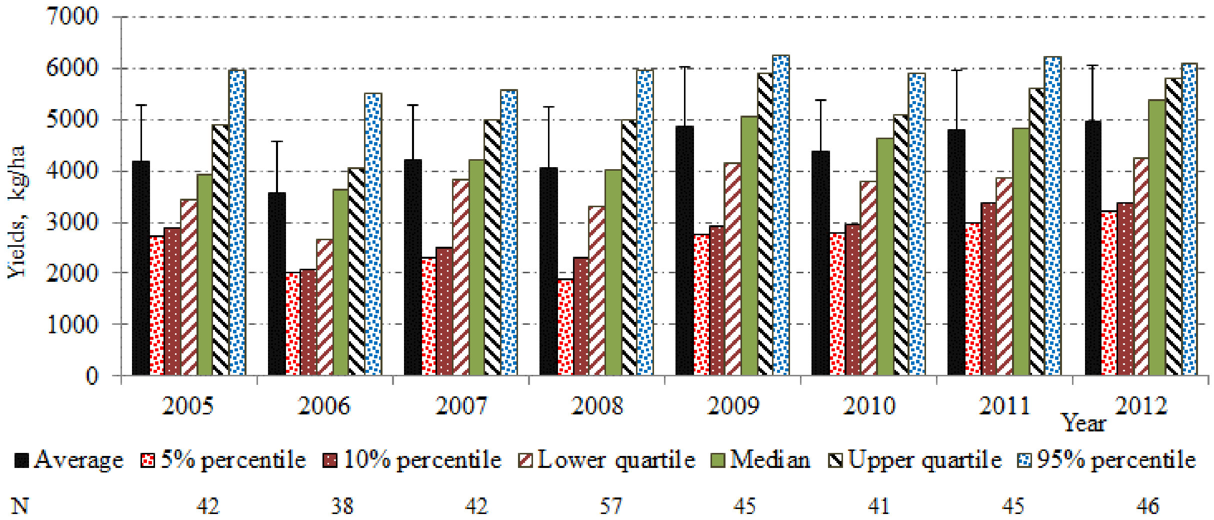

Figure A9-13. Average and estimated percentiles of spring barley farm-level yield in Blekinge county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A9.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

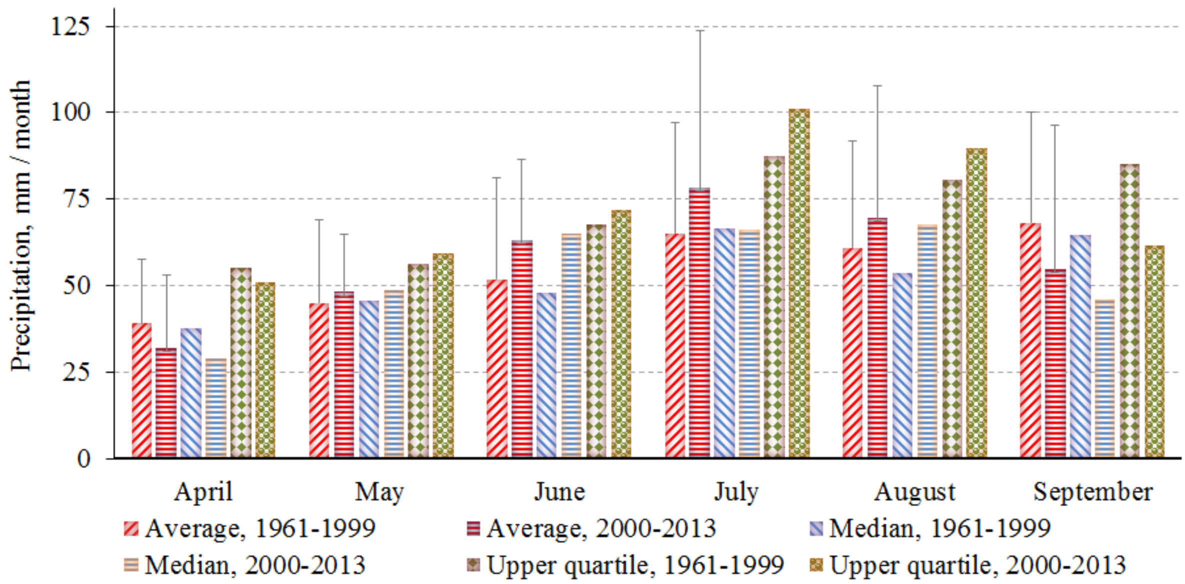

Figure A9-14. Monthly average, median and upper quartile precipitation (mm) from April to September in Blekinge county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1467623-6231773 (close to Ronneby).

Cou **Blekinge**
Loc **Ronneby**

Mean temperature (°C) for 5 or 6 day periods

Coordinates for the places (RT90): 1467623-6231773 1485044-6234659 1470371-6249333 1491714-6256003

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Update temperatur colour

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
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By quartile																																				
Min.	-10	-13	-11	-8	-7	-8	-9	-11	-11	-11	-11	-9	-12	-7	-6	-5	-3	-1	-1	-1	-3	-2	1	1	3	5	4	5	7	8	8	10	9	10	12	12
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Ran	15	20	17	14	11	12	14	17	16	15	18	14	17	14	12	13	10	8	8	9	13	11	10	12	11	9	10	9	10	9	11	9	10	10	6	8

Month	July						August						September						October						November						December					
Year	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
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###	20	20	17	18	15	17	17	16	17	17	13	14	14	15	11	12	11	8	10	10	3	2	2	4	3	6	1	1	3	-6	-3	-3	1	-1	1	3
###	14	15	14	16	15	14	13	15	15	15	16	16	16	14	13	12	11	9	8	7	6	5	6	4	4	4	7	6	3	2	4	3	1	2	6	2
###	16	18	18	17	17	18	19	23	19	16	17	18	17	14	13	14	13	11	12	7	5	7	9	9	8	4	5	4	-2	3	4	3	1	-1	4	4
###	17	15	16	19	17	16	13	16	16	17	16	17	12	13	14	11	10	8	8	10	8	4	6	4	5	7	4	2	-1	5	3	3	-1	-3	-2	-6
###	16	16	15	14	14	14	17	15	16	14	13	15	15	12	10	8	9	9	8	10	9	7	10	10	8	8	7	2	3	-1	-1	0	3	2	3	1
###	15	13	14	12	14	18	19	16	15	16	15	11	11	12	11	10	9	8	6	10	9	8	5	8	9	8	7	8	6	0	0	-2	0	-4	-2	-7
###	13	14	15	13	12	14	14	14	14	18	14	13	14	14	11	10	8	9	5	7	10	9	4	3	3	3	3	5	4	5	7	1	-5	-1	1	1
###	15	15	15	14	17	20	19	15	16	16	13	13	14	14	13	12	12	11	9	9	7	8	5	4	0	1	3	5	6	-3	-4	-3	5	0	3	3
###	14	17	17	14	15	15	15	18	18	14	13	12	13	14	12	9	13	14	12	10	6	6	4	5	5	1	3	4	5	1	1	-5	-7	-11	-3	-4
###	14	16	19	19	19	19	21	21	16	15	13	13	12	11	12	13	11	12	12	11	9	7	9	7	6	5	7	4	6	5	2	2	1	1	3	2
###	15	20	20	16	17	18	17	18	16	16	17	17	17	12	13	13	11	9	9	7	10	9	6	7	7	7	0	1	-1	0	0	0	-4	0	2	4
###	13	15	17	16	14	16	18	17	16	16	17	15	13	11	11	11	11	9	12	11	9	9	9	9	8	7	4	3	5	4	4	5	0	1	3	-2
###	15	16	17	15	14	16	14	14	15	15	15	14	13	10	11	10	8	8	13	11	8	7	6	5	4	5	1	-1	0	-3	2	0	0	-1	4	-3
###	20	15	14	16	15	16	18	16	14	14	12	12	11	9	9	9	9	8	8	8	8	8	6	7	4	6	5	6	6	7	7	4	1	1	-5	-3
###	15	16	14	14	15	13	12	12	13	14	15	13	13	13	12	10	10	8	8	11	10	10	8	5	4	2	5	5	3	2	-1	-2	0	1	2	5
###	18	17	17	16	17	15	13	16	16	15	14	14	14	13	12	13	12	11	9	9	9	9	3	3	1	2	3	1	0	-2	-2	0	0	0	3	5
###	17	21	16	13	18	17	14	15	16	17	16	12	14	14	11	14	15	11	8	8	7	10	12	9	7	7	7	2	-2	0	2	-1	-4	2	5	2
###	15	14	15	16	16	18	19	15	17	16	16	16	14	12	12	11	9	9	10	11	9	10	3	7	4	4	5	5	1	1	2	3	0	0	1	3
###	17	21	17	15	16	18	21	19	15	15	16	15	16	11	12	13	12	11	10	11	11	8	3	6	7	5	5	1	4	5	3	0	3	4	1	2
###	18	18	18	18	19	17	17	19	16	15	14	15	13	12	12	11	13	10	9	8	5	5	5	2	6	4	4	3	2	4	5	3	3	3	-3	-2
###	16	14	13	15	15	14	15	16	14	14	12	11	11	12	10	8	11	8	10	11	8	4	3	3	4	5	3	0	0	0	3	3	-1	3	1	1
###	17	18	22	19	21	23	22	20	17	16	16	15	15	13	14	12	12	10	6	8	10	2	8	7	6	5	4	4	6	4	2	5	3	3	0	4
###	14	17	18	18	18	19	19	17	19	20	19	14	14	15	15	11	12	8	11	14	12	12	7	8	0	2	2	-1	3	2	-1	0	-1	-3	-6	-10
###	12	13	14	13	15	15	16	17	18	17	18	17	14	11	10	10	8	10	10	10	10	10	6	9	11	5	3	4	3	1	4	2	-1	-4	-7	-5
###	17	18	16	18	19	17	17	20	21	20	21	21	19	15	13	12	11	10	9	11	6	7	2	2	2	7	6	3	2	-1	0	4	2	-2	2	3
###	15	14	14	14	17	14	15	15	15	15	13	12	12	15	14	12	13	12	8	9	8	8	9	6	2	1	3	-2	-1	1	-2	-5	-1	3	-1	3
###	17	18	20	17	17	17	20	18	15	15	14	16	16	17	14	15	16	14	12	8	8	4	7	9	9	7	3	1	0	6	2	5	2	-2	0	0
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###	18	21	16	15	19	20	17	16	16	18	17	15	15	12	13	13	12	9	13	12	12	11	7	11	7	3	3	3	2	2	2	3	2	-1	-5	-5
###	14	17	17	19	16	18	20	18	21	20	19	20	17	18	15	12	10	10	11	5	5	4	6	6	2	2	4	3	3	4	1	-2	-2	-2	-4	-3
###	15	17	18	20	19	19	20	19	19	18	16	12	12	15	14	15	13	10	9	8	6	5	1	4	8	5	4	6	6	6	5	3	3	3	0	3
###	13	14	13	15	15	17	19	20	18	19	15	15	15	14	14	12	11	10	11	9	6	8	10	7	6	5	5	0	0	3	3	5	3	1	2	1
###	17	20	20	17	15	17	16	14	15	16	17	15	15	17	14	11	13	12	11	12	10	6	9	9	10	9	8	0	0	0	2	1	4	-2	1	-1
###	19	21	18	20	21	21	18	19	17	17	17	15	16	14	15	15	15	15	13	12	11	11	12	8	2	7	5	7	7	7	7	7	7	3	4	4
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###	17	16	17	16	17	20	18	16	16	15	15	15	15	15	11	10	12	11	9	9	11	9	9	6	4	8	9	4	-2	5	3	3	2	4	2	-2
###	20	16	16	17	17	17	18	19	16	16	16	16	16	15	13	12	13	11	8	8	4	5	7	4	4	6	5	7	8	6	3	4	0	-4	-2	-2
###	19	19	22	20	17	17	18	18	19	18	17	12	12	14	14	12	12	10	10	9	6	5	5	7	7	2	7	3	1	-4	-4	-3	-4	-4	-9	-7
###	18	18	16	17	17	18	18	16	15	15	16	16	15	13	14	11	11	13	13	9	6	7	6	8	8	6	3	5	6	7	4	3	4	3	3	4
###	16	18	15	14	17	17	17	15	15	18	17	16	16	14	13	12	10	12	11	8	6	10	7	2	5	6	6	5	5	3	-4	-6	-4	1	0	3
Ave	16	16	16	16	16	17	17	17	16	16	15	15	14	13	12	12	11	10	10	10	8	7	7	6	6	5	4	3	3	2	2	1	1	0	0	0
By quartile																																				
Min.	11	11	13	12	12	13	12	12	13	13	12	11	11	9	8	8	8	6	5	5	3	2	1	2	0	-1	-3	-4	-5	-6	-5	-6	-7	-11	-9	-10
Low	14	15	14	14	15	15	15	15	15	15	14	13	13	12	11	11	10	9	8	8	6	6	5	5	4	4	3	1	0	1	0	-1	-1	-2	-3	-3
Mec	16	16	16	16	16	17	17	16	16	16	15	15	14	13	12	12	11	10	10	10	8	8	7	7	6	5	4	3	3	2	2	2	0	0	0	0
Upp	17	18	17	18	17	18	19	18	17	17	17	15	15	14	14	13	12	11	12	11	10	9	9	8	7	7	6	5	5	5	4	3	3	2	2	3
Max	20	21	22	20	21	23	22	23	21	20	21	21	19	18	16	15	16	15	13	14	12	12	12	11	11	9	9	8	8	7	7	7	7	6	6	5
Ran	9	11	10	8	9	10	9	11	8	7	9	10	8	9	8	8	8	9	8	9	10	10	11	9	11	10	11	12	12	14	13	13	14	17	15	15

Figure A9-15. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Blekinge county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Blekinge** | **Total precipitation , mm / 5 or 6 day periods** | Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Ronneby** | Coordinates for the places (RT90): 1467623-6231773 1485044-6234659 1470371-6249333 1491714-6256003 | **Scale for the color intensity:** 0 mm 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	22	10	1	0	1	13	10	11	2	0	1	6	2	0	2	13	2	13	20	2	3	0	0	0	11	12	11	4	0	28	0	17	10	3	2	12
1962	2	7	18	9	25	4	11	6	21	4	3	1	3	8	1	0	1	16	13	8	4	3	7	8	2	16	7	6	4	10	8	1	3	16	1	24
1963	3	1	2	1	2	5	15	0	5	7	0	0	0	3	10	0	2	0	2	1	10	15	19	7	9	1	3	4	2	0	10	3	1	18	19	26
1964	1	3	0	0	0	17	6	0	10	2	0	0	1	0	0	2	2	0	0	2	1	0	11	6	10	8	6	2	0	1	20	4	1	2	6	1
1965	3	11	10	22	4	14	6	1	3	2	2	10	5	1	1	3	15	1	0	6	5	19	10	7	6	43	2	8	1	2	0	3	17	25	8	4
1966	16	1	9	2	4	5	25	1	23	8	17	6	2	14	9	0	7	34	7	13	13	29	13	0	21	8	1	3	7	11	4	0	0	1	3	30
1967	2	6	1	7	23	27	8	0	0	16	14	12	10	1	4	8	4	13	16	31	1	10	6	4	3	4	11	23	2	8	2	5	1	0	5	4
1968	7	32	35	28	3	7	4	15	2	2	0	0	1	1	10	16	4	2	8	8	0	1	3	4	14	19	8	11	1	0	4	7	0	15	11	31
1969	6	1	13	39	21	8	11	15	12	12	3	1	0	2	0	1	0	7	1	1	21	11	0	11	33	15	21	10	2	9	7	0	0	3	0	0
1970	12	1	1	1	0	5	7	5	1	6	5	0	19	14	1	8	11	20	22	15	3	9	17	14	1	0	16	2	8	26	3	2	14	0	9	2
1971	1	3	1	7	19	11	1	1	7	10	6	4	11	9	7	9	21	1	7	3	0	3	1	13	3	0	2	0	18	6	2	0	17	4	6	8
1972	5	3	0	7	0	24	8	12	2	0	0	4	6	28	0	0	0	12	21	11	19	2	1	2	0	0	0	19	13	15	3	2	4	0	7	0
1973	1	0	1	8	11	16	2	6	37	25	8	0	12	14	0	4	0	0	27	11	10	17	1	9	14	20	4	3	9	5	21	3	0	0	0	6
1974	1	1	37	12	4	11	5	22	7	2	4	0	0	0	0	21	1	0	0	0	6	0	3	0	3	0	0	1	14	10	4	12	3	7	28	5
1975	3	12	10	8	24	13	2	0	7	2	0	0	2	6	4	3	0	16	21	18	12	0	0	1	5	0	27	3	4	16	10	0	1	1	0	2
1976	21	11	1	18	3	2	0	4	3	0	3	0	0	17	1	0	5	9	20	2	7	0	4	10	7	0	6	2	3	33	5	0	14	10	1	0
1977	8	18	25	6	14	14	7	10	6	20	24	0	15	0	20	16	2	3	13	17	3	6	8	22	2	10	12	0	1	8	6	15	3	0	5	19
1978	8	5	19	1	15	12	17	6	20	3	15	0	6	3	15	21	21	15	0	0	9	0	12	0	0	0	4	4	4	0	2	14	26	0	1	20
1979	5	11	15	3	19	8	12	6	3	17	0	0	8	13	14	6	17	23	10	0	1	1	17	14	16	6	0	5	30	3	0	14	1	3	11	9
1980	2	8	3	0	10	31	5	27	5	0	0	1	1	3	3	1	0	8	0	0	0	8	4	10	1	0	1	3	10	3	19	0	2	20	7	9
1981	12	5	44	2	5	0	13	25	9	6	10	0	3	23	5	17	17	12	0	0	1	3	6	7	13	0	3	2	7	10	26	19	6	23	18	3
1982	26	11	0	0	6	17	0	6	1	1	0	1	25	10	20	25	0	2	0	8	1	0	0	6	9	5	0	5	13	0	0	3	44	2	9	38
1983	14	5	5	17	3	7	28	10	1	0	0	8	4	9	3	6	31	22	20	7	8	4	6	16	6	4	14	20	15	32	13	8	2	0	0	17
1984	16	21	33	13	14	15	21	20	0	2	5	0	2	1	0	1	1	8	9	1	0	2	0	0	10	5	7	3	29	11	1	34	13	6	23	18
1985	11	3	4	3	18	27	8	6	1	3	2	0	4	19	2	3	10	11	10	19	1	0	1	29	16	4	0	0	0	7	0	4	24	4	5	13
1986	12	9	10	28	21	3	6	7	3	10	2	0	2	1	1	0	33	19	0	0	3	21	19	3	0	9	21	0	20	7	24	9	1	0	0	1
1987	18	6	15	0	1	4	1	18	4	19	0	0	0	0	0	26	3	13	0	6	10	19	1	0	5	1	18	5	0	16	4	3	47	22	18	15
1988	25	36	16	4	18	33	14	30	1	5	26	17	10	9	9	25	10	2	4	8	7	4	9	0	2	0	0	9	1	6	18	5	0	2	36	10
1989	0	1	6	0	0	1	5	1	10	12	9	8	5	5	28	0	29	4	7	1	0	3	3	2	0	3	11	0	0	4	9	5	1	0	0	11
1990	1	3	7	6	34	12	11	28	10	3	3	16	4	7	2	4	4	0	1	3	4	3	0	12	0	0	33	12	2	10	5	0	7	13	17	15
1991	24	36	1	4	0	0	5	15	15	0	4	1	3	0	5	8	2	1	2	7	0	6	6	5	24	3	1	8	8	0	18	11	23	27	18	66
1992	9	10	1	4	0	0	8	9	19	4	1	0	2	1	20	13	14	13	5	1	13	7	2	22	2	4	5	0	0	0	0	0	0	0	0	0
1993	3	18	31	6	27	1	0	0	2	14	3	2	4	0	0	3	6	9	7	5	0	1	1	0	8	0	0	0	2	17	1	0	7	14	23	22
1994	16	3	19	9	17	20	11	7	3	6	15	41	11	19	15	5	13	12	17	0	19	1	0	2	0	0	8	26	1	8	8	16	4	12	11	8
1995	1	21	2	3	32	32	4	8	35	20	11	4	6	1	3	22	6	7	4	8	1	44	1	3	0	26	7	23	1	1	4	24	11	8	2	0
1996	5	4	3	2	5	1	1	3	5	37	4	0	1	0	5	0	0	14	3	0	10	0	8	2	33	22	9	31	40	10	3	9	2	11	3	23
1997	0	1	1	0	0	0	12	4	19	26	18	0	2	0	4	0	1	13	5	1	4	5	18	3	12	32	4	6	9	10	3	0	3	15	24	17
1998	20	9	3	4	9	2	10	4	6	6	3	6	35	4	2	10	1	6	35	2	12	10	5	6	4	8	1	0	8	13	4	7	29	29	9	11
1999	11	11	15	8	14	5	5	15	7	11	12	7	21	22	4	0	4	0	1	5	13	32	2	5	1	9	35	0	5	9	10	21	11	3	12	19
2000	6	4	0	1	0	28	7	8	7	5	7	5	19	7	5	0	1	18	11	0	23	12	0	0	0	0	0	10	27	9	8	25	2	1	14	60
2001	22	9	0	3	24	7	10	13	8	0	4	4	6	5	13	6	0	6	9	3	2	11	23	5	0	0	1	10	0	26	15	3	3	15	18	12
2002	2	0	0	12	16	54	15	12	3	26	22	16	6	14	3	11	0	0	0	0	1	3	2	23	11	1	2	6	14	50	1	10	19	4	6	23
2003	2	1	3	2	1	9	20	0	0	0	0	0	0	3	2	0	0	0	9	18	0	0	1	35	9	0	12	4	29	0	0	4	9	6	30	20
2004	1	6	24	20	0	35	5	7	0	1	5	3	0	1	8	27	7	2	7	14	0	2	4	0	3	9	13	0	7	15	1	2	16	5	28	8
2005	14	17	3	22	0	1	1	9	43	5	17	6	7	1	16	6	0	0	0	2	0	0	0	0	13	7	11	1	18	11	14	3	16	1	8	1
2006	5	0	1	21	4	0	0	28	3	15	2	8	27	0	1	1	1	22	24	5	5	13	3	29	14	0	0	26	12	21	8	0	1	8	5	11
2007	9	13	21	32	7	19	2	24	5	4	25	9	13	13	0	12	1	0	1	11	0	6	0	0	0	16	9	6	9	4	10	1	1	12	40	40
2008	12	16	4	14	17	18	7	2	0	0	4	18	7	2	11	10	27	1	5	2	13	2	0	4	11	0	0	7	0	0	0	1	12	10	7	9
2009	4	3	3	7	6	1	6	7	9	0	11	2	5	12	10	5	7	19	0	3	0	0	0	0	12	18	3	17	16	10	10	26	14	13	0	0
2010	5	4	0	11	0	23	21	2	9	22	10	10	3	0	1	6	1	17	3	2	0	6	1	5	3	19	10	6	17	8	0	16	9	0	7	0
2011	7	21	21	6	3	0	12	11	3	0	2	0	0	10	0	7	0	10	7	1	0	0	0	0	1	0	7	8	23	14	0	20	3	29	27	11
2012	48	9	3	7	16	1	3	2	17	21	5	4	0	2	0	3	0	1	1	13	18	10	8	3	2	13	7	2	0	2	10	4	4	6	35	8
Average	9	9	10	9	10	12	8	9	8	8	7	5	7	7	6	8	7	9	8	6	6	7	5	7	7	7	8	7	9	10	7	8	9	8	11	14
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	3	1	2	1	2	4	2	2	1	1	0	1	1	1	1	0	1	1	1	0	1	1	0	1	0	1	2	1	3	1	1	1	1	3	4
Median	7	6	4	6	6	9	7	7	5	5	4	1	4	3	3	5	2	8	6	3	3	3	3	4	5	4	6	4	7	9	4	4	4	5	8	11
Upper	14	11	16	12	17	17	11	13	10	13	10	7	8	11	9	11	10	13	12	8	10	10	8	10	11	11	11	9	14	14	10	13	14	13	18	19
Max. value	48	36	44	39	34	54	28	30	43	37	26	41	35	28	28	27	33	34	35	31	23	44	23	35	33	43	35	31	40	50	26	34	47	29	40	66

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	6	17	32	18	11	30	24	7	14	9	14	3	26	12	22	0	4	3	0	16	0	33	20	13	12	33	16	0	1	10	27	4	4	0	6	13
1962	19	6	22	12	14	12	7	39	6	14	33	14	17	20	23	2	5	1	6	0	2	1	0	13	1	0	25	11	13	10	0	9	20	5	3	15
1963	1	16	12	1	2	13	6	20	24	24	27	21	19	4	0	0	14	18	34	4	7	6	21	0	2	9	21	32	35	10	0	1	1	5	0	2
1964	8	14	4	2	14	13	3	3	0	7	7	4	1	9	22	15	0	2	0	29	36	9	16	0	0	1	16	19	8	3	13	17	23	19	1	8
1965	14	40	19	0	26	19	5	3	4	3	12	15	25	42	10	7	0	19	2	0	0	0	0	12	24	2	16	3	21	26	27	37	10	15	11	21
1966	5	7	24	1	8	8	15	12	22	0	5	5	25	2	12	1	0	0	19	9	8	5	17	0	16	3	3	21	4	34	8	20	9	12	13	27
1967	6	4	1	9	3	4	5	10	22	19	2	17	11	23	0	15	34	11	7	16	7	34	19	4	10	0	13	1	0	6	2	0	10	0	39	20
1968	3	12	52	12	15	7	3	3	9	32	0	8	6	3	11	8	35	26	3	46	10	14	0	14	6	22	1	5	9	19	0	0	0	5	11	15
1969	1	4	0	5	0	0	0	0	16	22	32	52	8	0	0	7	12	21	4	1	0	0	10	5	32	24	19	18	1	23	14	1	4	14	1	2
1970	11	4	53	30	11	14	17	6	3	17	6	0	4	19	32	5	4	7	31	2	0	13	6	45	35	10	24	28	11	13	21	6	1	2	1	2
1971	1	0	8	4	1	15	0	7	7	0	0	11	13	9	6	12	4	3	0	0	8	26	13	0	5	20	11	25	11	3	6	15	2	10	4	17
1972	7	29	9	6	7	39	5	2	22	27	3	0	0	12	12	2	8	0	0	0	2	4	9	0	1	20	18	16	5	6	9	16	11	0	0	0
1973	0	0	13	9	23	5	7	7	0	1	0	2	3	0	0	10	55	14	0	13	6	11	1	0	2	10	31	13	14	14	12	12	21	8	5	0
1974	6	21	6	5	11	18	26	7	8	1	1	8	24	16	2	2	13	10	37	36	14	12	27	26	14	15	15	12	14	21	6	14	24	25	14	16
1975	0	0	10	19	29	3	0	2	1	15	10	0	3	2	54	0	5	33	14	4	14	1	0	2	1	0	3	15	0	24	5	3	3	1	1	6
1976	3	6	6	4	17	12	4	6	0	13	0	15	9	11	10	12	0	6	7	6	33	20	2	1	10	11	1	0	1	34	30	13	16	41	9	11
1977	18	12	1	13	37	19	43	0	3	2	2	22	2	11	9	0	0	22	29	6	0	0	5	1	21	9	39	17	32	2	1	8	12	13	18	31
1978	21	12	28	8	13	0	13	1	7	3	9	11	46	18	28	2	21	18	7	2	1	9	5	5	0	0	1	12	4	16	1	0	26	0	12	17
1979	6	31	16	16	2	22	5	24	1	2	33	9	5	1	11	11	0	1	0	0	1	3	1	2	24	14	19	21	10	13	5	29	8	20	5	10
1980	8	25	11	39	2	3	18	10	0	9	16	49	0	19	11	15	3	3	6	38	32	9	27	26	1	2	23	14	33	20	7	4	22	12	14	9
1981	4	0	2	14	15	1	2	0	8	38	31	8	3	0	10	21	12	2	29	31	15	35	2	29	18	1	8	27	18	24	4	20	7	1	14	6
1982	12	3	0	9	0	3	0	1	14	36	16	15	12	14	0	2	2	0	0	6	53	9	9	4	2	1	10	21	15	5	1	24	36	22	7	4
1983	8	1	15	1	0	0	15	0	0	0	0	0	11	18	21	16	15	0	12	18	10	8	5	1	1	2	8	4	16	29	0	26	0	4	7	3
1984	13	0	24	26	22	8	6	13	2	13	1	8	44	44	11	13	3	2	28	6	13	16	25	9	1	1	0	5	33	1	1	4	0	26	0	8
1985	19	7	1	34	17	20	19	23	26	14	10	0	36	11	12	12	9	5	2	13	3	1	0	2	30	25	2	4	4	27	50	39	20	25	8	6
1986	6	15	5	4	15	6	1	5	12	6	4	19	6	13	20	2	1	0	1	11	1	28	17	16	14	5	4	23	13	1	10	0	9	33	12	20
1987	2	4	10	32	5	41	11	19	7	5	6	8	0	28	15	5	9	4	0	6	22	7	14	2	1	0	21	20	24	13	0	2	1	25	6	10
1988	59	7	25	35	17	19	19	1	4	6	2	13	26	4	11	0	19	15	0	47	4	3	1	11	2	3	1	5	1	22	12	2	4	11	17	1
1989	0	10	16	32	0	19	8	13	3	19	7	9	4	1	6	12	8	12	4	32	10	7	20	28	19	10	0	0	2	1	0	3	5	23	18	1
1990	23	7	2	9	7	1	1	2	2	24	4	0	10	12	0	24	64	19	20	13	10	1	0	17	11	0	14	31	14	19	1	4	5	9	5	22
1991	0	1	4	11	7	0	9	7	5	19	5	4	1	0	1	11	17	16	8	1	5	28	0	0	29	22	24	9	1	4	0	0	0	28	22	4
1992	1	0	25	11	1	8	8	0	18	4	57	39	14	1	18	0	3	0	0	1	38	8	29	19	21	4	20	25	16	20	18	1	21	5	0	0
1993	4	9	40	11	3	19	14	15	14	2	7	16	17	6	36	7	27	2	5	19	43	1	16	0	0	28	19	6	24	2	12	22	7	29	34	14
1994	0	0	1	1	0	4	7	5	8	88	0	19	44	34	30	53	17	15	7	1	0	2	1	40	3	3	22	13	1	1	7	24	13	11	1	48
1995	9	1	33	25	7	0	7	0	1	0	17	7	32	3	26	13	3	33	4	1	0	3	1	36	6	12	3	22	1	0	1	12	0	5	14	2
1996	23	38	0	13	1	19	4	0	19	0	12	13	1	6	45	0	0	50	6	1	0	1	1	29	12	31	25	21	12	32	16	1	18	6	0	11
1997	14	2	2	1	3	43	17	0	0	8	1	17	21	7	4	1	0	2	18	57	6	3	5	0	5	28	5	1	4	12	3	18	5	0	15	15
1998	11	5	6	8	10	43	9	10	16	3	12	16	1	16	31	0	0	1	1	7	21	27	39	27	8	9	14	6	0	2	11	2	22	1	19	15
1999	5	0	10	12	7	0	0	26	47	32	6	8	0	0	0	23	19	37	13	19	4	2	2	3	3	13	0	20	9	7	24	22	43	23	33	17
2000	8	17	6	8	6	8	13	3	4	8	10	9	14	2	11	0	0	2	25	36	16	0	16	22	7	31	27	20	20	29	1	6	37	1	0	22
2001	2	13	15	15	0	0	5	27	9	37	4	13	13	65	18	72	26	3	15	15	4	4	1	12	5	15	3	0	10	14	4	4	1	11	22	27
2002	13	2	0	34	29	3	0	0	10	4	0	0	1	0	0	3	14	2	14	7	22	62	40	21	0	3	13	40	6	20	14	0	3	2	0	34
2003	42	6	16	1	4	13	3	0	13	9	11	16	0	13	4	0	4	9	15	10	0	9	0	2	8	0	1	24	21	23	2	2	19	17	13	12
2004	14	48	11	15	17	3	11	0	0	17	27	33	7	0	4	15	10	1	6	4	8	74	16	6	4	6	3	14	23	21	5	0	1	12	22	1
2005	4	1	5	21	15	25	22	37	7	0	13	4	0	3	4	0	0	11	4	0	0	0	41	0	12	5	11	4	8	10	13	14	2	2	8	46
2006	0	0	0	0	3	17	28	2	62	25	7	41	10	3	0	0	0	5	29	20	0	2	16	36	4	12	23	22	35	1	8	9	20	3	0	19
2007	97	24	16	1	49	25	5	13	14	5	28	14	11	13	4	13	6	53	1	0	2	6	0	17	9	14	3	1	9	5	35	36	0	0	0	6
2008	3	15	12	23	1	1	54	11	12	28	26	6	10	19	1	3	4	25	24	1	12	8	4	36	0	17	13	12	1	7	28	8	14	10	4	0
2009	45	12	6	22	7	3	1	4	17	1	13	3	29	3	7	0	2	4	27	5	8	2	17	1	19	8	16	17	10	12	3	8	8	17	24	5
2010	1	0	3	35	81	13	8	10	15	14	18	12	0	8	25	20	0	1	0	7	0	25	24	6	21	19	15	21	74	19	23	6	6	31	24	2
2011	10	1	32	13	23	47	0	50	8	12	7	20	13	18	22	18	3	0	1	19	1	11	0	7	1	1	0	4	2	6	19	29	25	19	6	2
2012	1	15	8	23	3	15	4	10	0	2	7	21	0	2	5	3	34	16	29	5	37	1	2	13	30	10	1	0	22	15	24	14	10	8	26	17
Average	11	10	13	14	12	13	10	9	11	13	11	13	12	12	13	10	11	11	11	12	11	12	11	12	10	10	12	14	13	14	11	11	11	12	11	12
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	1	3	5	2	3	3	1	3	2	3	4	2	2	4	1	1	2	1	1	1	2	1	1	2	2	3	5	3	5	1	2	3	3	1	3
Median	6	6	10	12	7	12	7	6	8	9	7	11	10	9	11	6	4	5	6	6	7	7	6	7	7	9	13	14	10	13	7	8	9	10	8	11
Upper	13	15	17	21	16	19	14	12	14	19	15	17	18	17	21	13	14	17	18	18	14	13	17	20	16	16	19	21	19	21	15	17	20	19	16	17
Max. value	97	48	53	39	81	47	54	50	62	88	57	52	46	65	54	72	64	53	37	57	53	74	41	45	35	33	39	40	74	34	50	39	43	41	39	48

Figure A9-16. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Blekinge county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A10 SKÅNE COUNTY♣

In this appendix some additional figures of yield at county and farm-level are presented for some of the major crops in Skåne county which are not in the main text (Section 3.4.1) as well as temperature and precipitation data for the period 1961-2012.

♣ For literature references in this Appendix see the *References* section of the main text.

A10.1 Crop yield

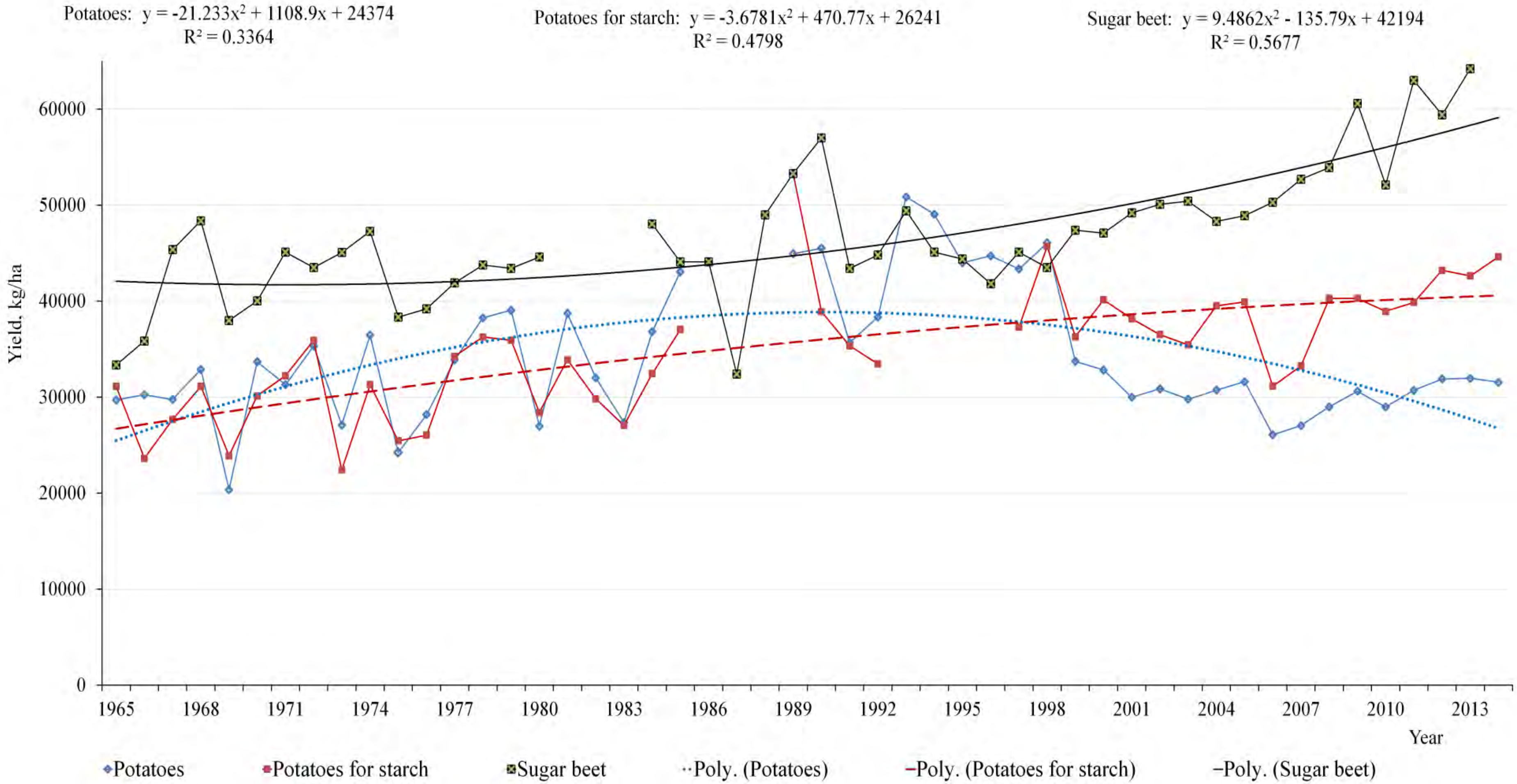


Figure A10-1. Average yield (kg/ha) per year of potatoes, potatoes for starch and sugar beet in Skåne county for the period 1965-2014, and their trend lines with respective equations. Yield data in the period 1965-1996 from Malmöhus county and 1997-2014 from Skåne county (Jordbruksverket, 2015). The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50.

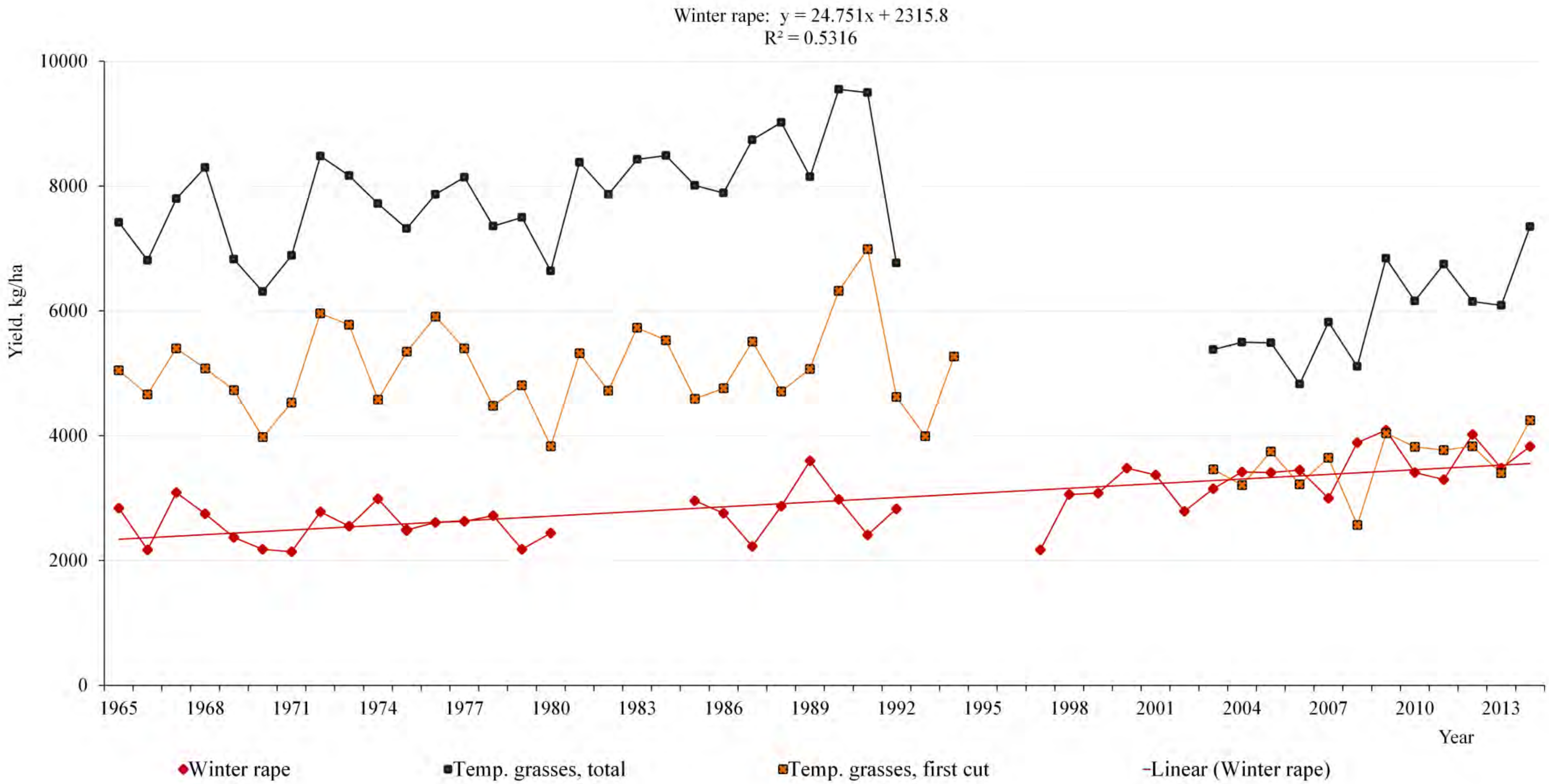


Figure A10-2. Average yield (kg/ha) per year of winter rape, temporary grasses (total and first cut) in Skåne county for the period 1965-2014, and the trend line and its equation for winter rape. Yield data in the period 1965-1996 from Malmöhus county and 1997-2014 from Skåne county (Jordbruksverket, 2015). The variable x in the equation is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50.

A10.2 Yield on farms

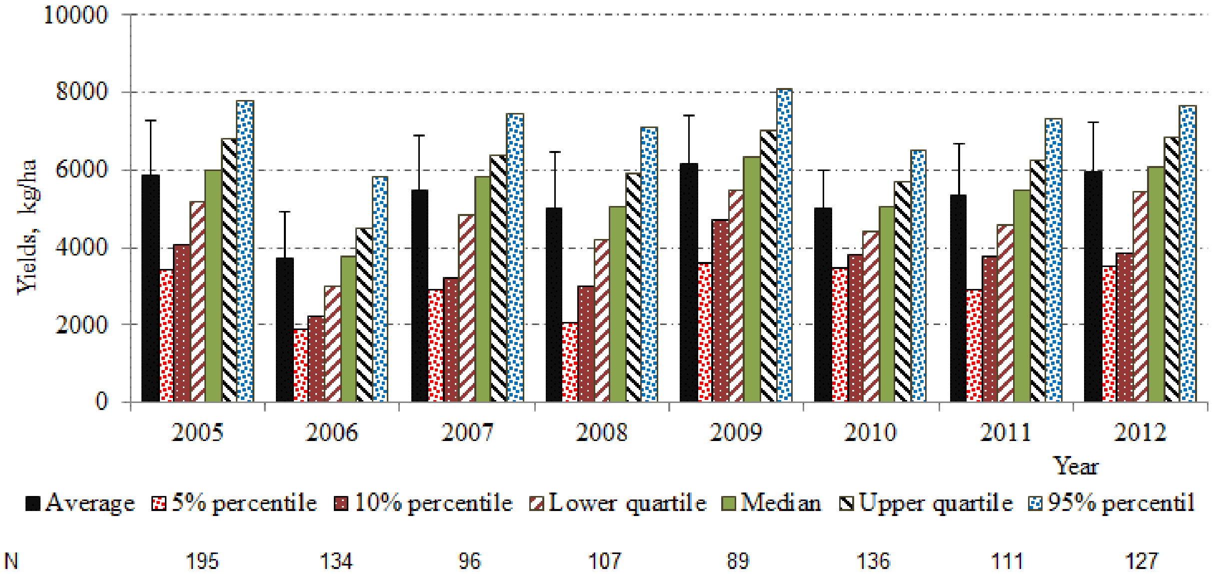


Figure A10-3. Average and estimated percentiles of spring wheat farm-level yield in Skåne county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

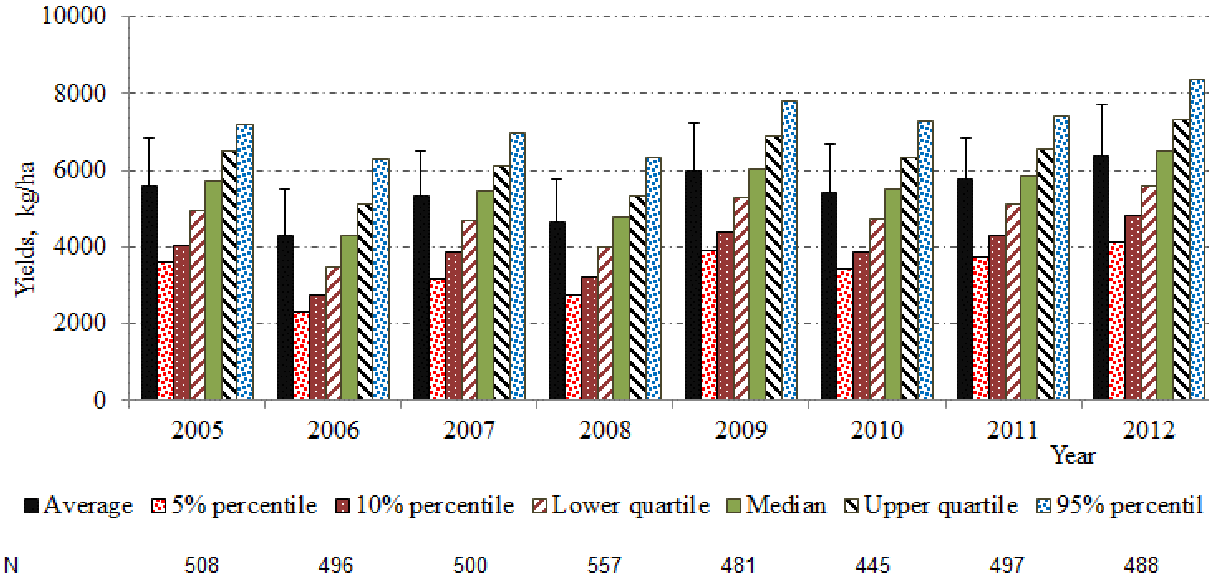
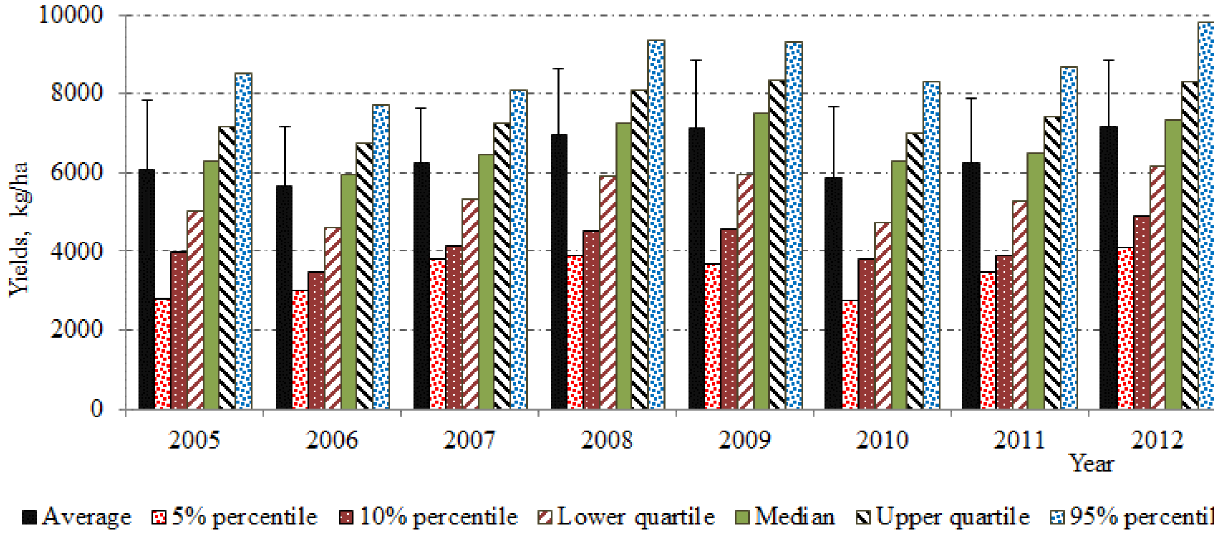
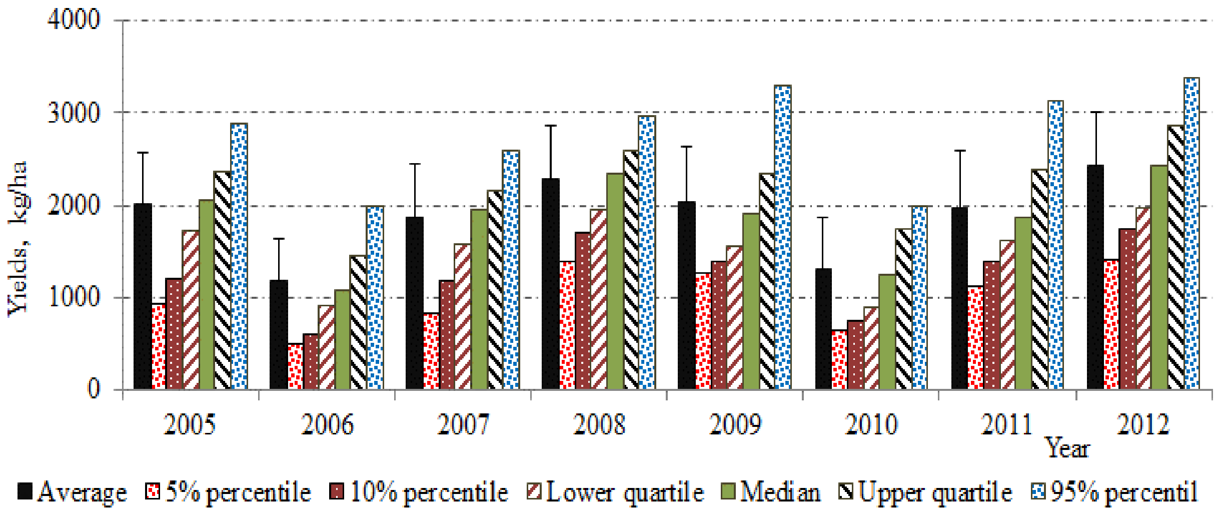


Figure A10-4. Average and estimated percentiles of spring barley farm-level yield in Skåne county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	131	121	148	162	198	134	157	157

Figure A10-5. Average and estimated percentiles of rye farm-level yield in Skåne county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	78	40	42	23	10	21	38	40

Figure A10-6. Average and estimated percentiles of spring rape farm-level yield in Skåne county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

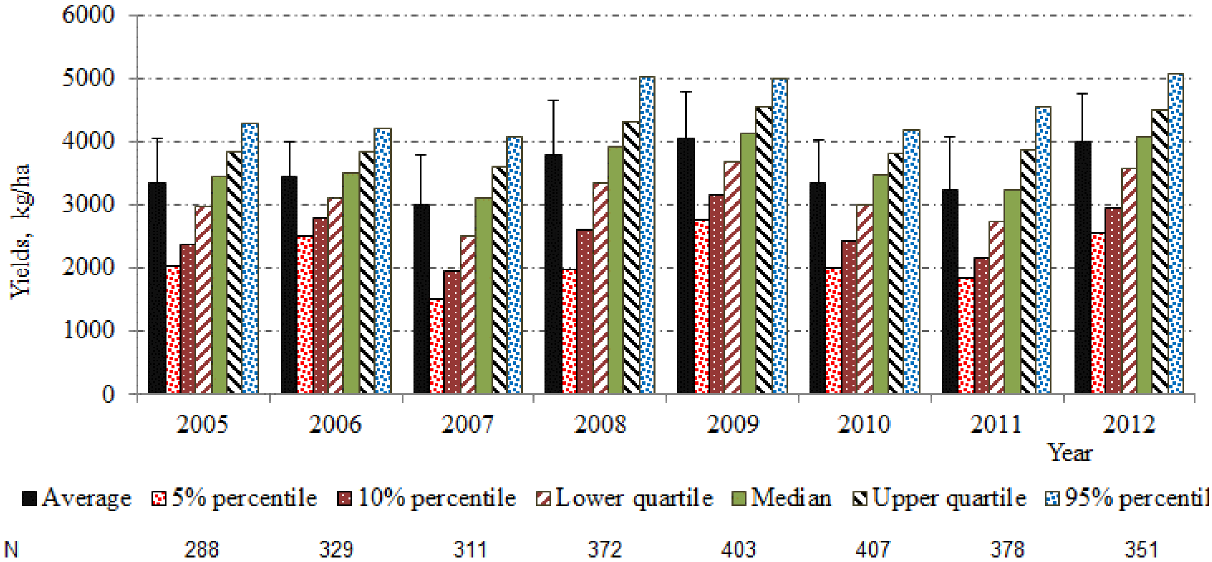


Figure A10-7. Average and estimated percentiles of winter rape farm-level yield in Skåne county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

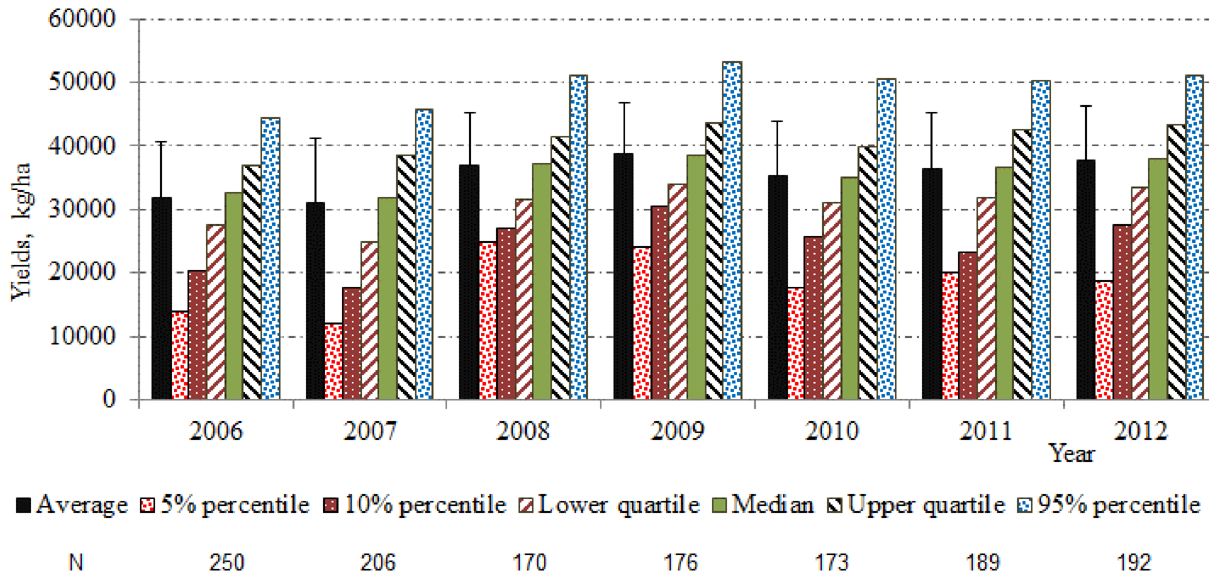


Figure A10-8. Average and estimated percentiles of potato farm-level yield in Skåne county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

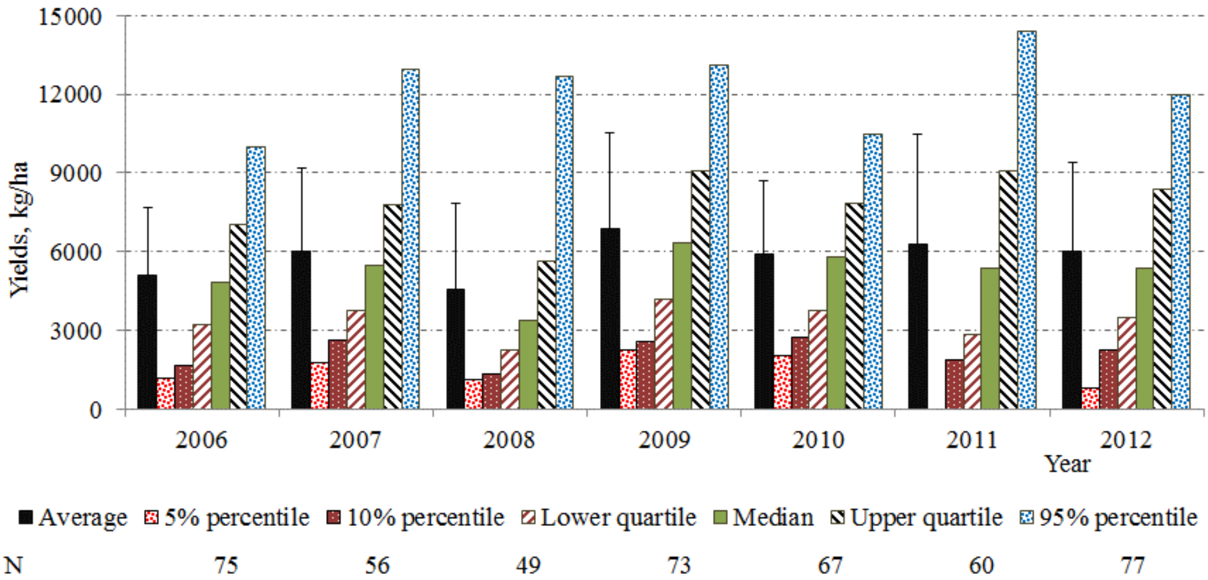


Figure A10-9. Average and estimated percentiles of temporary grasses farm-level yield in Skåne county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A10-3 Temperature and precipitation, 1961-2012

In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

County: **Skåne**
Location: **Lund**

Average temperature (°C) for 5 or 6 day periods

Coordinates for the places (RT90): 1338046-6179375 1351647-6179966 1336973-6165293 1351647-6165293

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year / Da	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	2	2	0	-2	-3	-1	0	2	4	4	2	4	4	6	6	5	5	4	1	6	9	8	10	10	10	11	10	11	11	11	17	17	15	16	15	16
1962	-1	2	3	4	3	-3	0	2	0	2	-2	-2	-2	-1	-3	-1	0	2	4	4	5	8	9	7	5	10	9	9	10	9	9	14	14	15	15	12
1963	-6	-10	-10	-10	-5	-4	-7	-6	-3	-6	-6	-3	-4	0	-2	-1	-1	0	2	4	6	5	5	7	7	10	11	10	14	17	15	17	16	15	15	14
1964	1	0	-3	-1	2	0	3	0	-4	-5	-1	0	-1	-2	-1	-2	0	1	2	3	6	12	9	9	9	11	12	10	13	16	13	15	18	15	14	15
1965	1	0	3	3	0	-2	-1	-1	0	-3	-3	-8	-6	-2	1	3	2	5	4	3	4	6	8	8	6	8	10	8	9	11	12	15	15	15	16	14
1966	-5	-2	-4	-3	-4	-1	-1	-7	-5	-6	3	4	2	3	-1	2	3	2	5	2	-2	-1	6	8	12	9	10	14	11	11	14	15	17	18	17	16
1967	0	-7	0	1	-1	-2	3	0	-1	1	2	3	4	6	5	3	4	5	4	5	6	6	5	8	7	9	14	11	12	13	14	12	12	15	14	15
1968	-4	-9	-6	1	1	1	2	1	-1	-4	-5	-2	-1	1	0	3	7	8	4	2	5	9	13	10	9	9	9	7	8	13	16	14	17	20	16	15
1969	-4	-3	-1	1	-1	2	0	-2	-8	-3	-1	-1	-3	0	-1	-1	-1	1	3	6	4	3	5	9	6	10	13	9	10	12	10	14	19	19	17	15
1970	-5	-5	-1	-5	-2	-5	-3	-3	-7	-6	-2	-5	-1	-1	-1	1	0	0	0	1	2	6	6	5	7	12	12	10	10	12	13	18	16	18	19	17
1971	-7	0	0	1	3	1	0	3	3	2	2	-6	-6	-2	0	4	2	2	5	6	7	8	6	3	7	12	15	15	8	13	18	14	12	11	13	15
1972	1	0	-2	-4	-1	-4	-3	0	1	1	1	0	1	1	-1	5	4	4	5	6	6	5	5	7	13	10	9	9	12	11	13	15	13	14	13	18
1973	-1	1	0	0	1	2	3	4	1	2	1	-2	3	2	2	5	7	6	4	3	4	5	6	6	10	10	8	10	13	15	14	15	13	14	18	20
1974	1	0	2	4	3	3	2	2	5	1	3	1	2	1	2	4	4	5	7	9	4	8	8	7	8	8	9	12	12	11	12	12	15	16	16	15
1975	5	3	6	5	4	3	3	0	0	0	1	2	4	5	3	1	2	1	2	3	4	4	9	9	8	13	11	14	9	11	9	15	14	15	19	14
1976	-1	1	0	1	-1	-4	-3	-1	-1	-2	1	4	1	-3	-4	-3	-2	4	4	4	6	8	4	4	8	11	11	13	12	9	12	14	14	14	16	20
1977	0	0	0	-2	-1	0	-1	0	-1	1	2	-4	2	3	5	4	3	0	4	0	3	4	7	8	11	10	10	11	12	11	13	13	19	17	17	14
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1979	-10	-2	-3	-2	-4	-4	-1	-5	-8	-4	-4	0	1	1	1	-4	1	4	3	3	7	3	6	5	4	7	11	13	14	15	19	14	13	16	18	15
1980	-4	-1	-3	-3	-1	-4	-4	-2	-1	-2	-2	-2	-1	1	0	-2	-2	2	3	4	7	6	6	8	7	8	8	13	8	13	15	18	16	14	14	13
1981	0	-5	-1	-4	-1	1	3	2	-2	-1	-1	-1	-1	3	-1	1	6	5	6	7	9	4	3	5	5	11	15	13	15	14	16	15	13	13	14	16
1982	-2	-11	-6	-4	-2	-1	-4	1	1	-1	-5	-2	3	1	3	2	3	5	6	5	5	7	7	8	7	7	11	13	11	15	21	14	11	13	13	14
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1984	3	0	3	1	-3	1	2	1	-1	-3	0	0	1	1	1	-1	-1	3	3	5	6	7	10	8	11	7	9	14	13	14	15	14	13	16	13	12
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1987	-5	-12	-11	-4	-1	-6	-2	1	0	-5	-2	-3	-9	-6	-4	0	0	4	3	3	4	6	8	10	10	10	8	9	11	9	11	13	12	11	13	15
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2010	-6	-5	-1	-2	-4	-5	-2	-4	-4	0	-3	2	-2	-3	0	4	5	6	5	6	7	6	6	11	8	7	8	12	14	11	15	14	13	13	16	17
2011	-3	0	0	2	0	-4	2	3	-2	-4	-5	-1	0	0	3	2	6	3	8	9	7	10	12	12	6	13	12	12	13	14	16	18	15	15	15	17
2012	5	3	3	2	-2	-2	-9	-6	-3	1	4	3	3	2	6	6	6	7	2	4	7	6	8	11	11	10	11	11	18	13	10	13	14	15	14	16
Average	-1	-1	0	0	0	0	0	0	-1	-1	0	0	0	2	2	2	3	4	4	5	6	6	8	9	9	10	11	11	12	13	14	15	15	15	15	16
By quartile																																				
Min. valu	-10	-12	-11	-10	-5	-6	-9	-11	-11	-11	-10	-8	-9	-6	-5	-4	-2	0	0	0	-2	-1	3	2	4	7	5	7	8	9	9	10	11	11	13	12
Lower	-4	-2	-1	-2	-2	-3	-2	-2	-3	-3	-2	-2	-1	0	-1	0	0	2	3	3	4	5	6	7	7	9	10	10	10	11	12	13	13	14	14	14
Median	-1	0	0	1	0	-1	0	1	-1	-1	0	0	1	1	2	2	3	4	5	5	6	6	7	8	10	10	11	11	12	13	14	14	15	15	15	16
Upper	3	3	3	3	2	2	3	2	1	1	2	3	3	4	4	4	4	5	6	6	7	8	9	10	11	12	12	13	13	15	16	16	16	16	16	17
Max. valu	6	7	6	6	5	5	6	6	6	6	8	6	6	6	7	8	7	8	8	9	12	12	14	15	15	17	15	15	18	17	21	20	19	20	19	20
Range	16	19	18	15	11	11	15	17	17	16	18	13	14	12	12	13	9	8	8	9	15	12	12	13	11	10	10	8	10	8	12	10	8	9	7	8

Month	July						August						September						October						November						December					
Year / Da	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	17	14	15	15	15	15	15	15	14	14	14	16	16	14	14	15	12	13	13	13	12	10	10	10	7	6	5	3	2	3	4	2	0	-1	-4	-4
1962	12	14	15	16	16	14	15	13	14	15	14	13	14	13	12	10	10	11	13	10	7	10	9	7	7	7	3	1	0	4	0	2	2	-3	-9	-6
1963	19	15	15	18	18	16	20	18	15	15	14	14	15	13	13	13	14	10	10	8	9	9	10	7	8	8	7	6	5	5	1	0	-1	-4	-6	2
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1965	12	11	14	16	16	14	14	14	14	16	17	13	15	13	12	14	14	14	11	9	9	8	6	9	7	7	-2	-3	-4	1	1	1	-3	1	1	0
1966	16	17	15	17	19	15	15	14	17	15	14	13	15	13	14	12	11	9	13	11	9	11	9	3	4	7	3	3	2	4	4	2	-1	2	0	0
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1971	18	20	16	13	17	19	19	17	17	16	16	15	14	12	10	11	12	11	11	12	8	8	10	6	10	5	5	-1	0	4	4	4	4	6	6	2
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1973	20	19	18	17	15	18	18	17	17	18	14	15	15	15	12	13	12	9	11	11	4	3	3	6	5	7	3	3	4	-5	-2	-1	1	0	1	3
1974	14	15	15	16	15	15	14	16	17	16	17	17	16	14	15	14	12	10	8	8	6	6	7	5	4	6	7	7	4	3	5	5	2	4	6	4
1975	17	19	19	17	18	19	19	24	20	17	17	19	18	15	14	15	14	13	13	8	6	8	9	8	8	6	5	4	-1	3	4	4	1	0	4	5
1976	18	17	18	20	17	16	14	17	17	18	16	18	13	14	14	12	11	10	10	12	10	6	8	5	6	8	5	3	0	6	3	4	-1	-3	0	-5
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1981	15	19	17	15	16	15	16	19	18	15	14	13	14	15	13	11	13	14	12	11	7	7	5	6	8	1	4	5	6	3	2	-4	-5	-10	-4	-4
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1986	20	15	15	16	15	18	18	16	16	15	12	13	12	11	10	10	10	10	9	10	10	8	7	8	6	7	7	7	6	7	7	5	3	2	-5	-1
1987	16	17	15	14	16	13	14	13	14	15	17	14	15	14	13	11	12	9	9	12	11	11	9	6	6	6	5	6	4	3	-1	0	1	4	4	6
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1991	18	22	18	16	15	19	20	19	17	16	17	16	17	13	13	14	13	12	11	12	12	8	4	6	7	6	5	2	4	5	4	0	3	4	2	3
1992	19	19	18	18	20	18	19	20	17	16	15	17	13	13	14	13	14	11	9	9	6	6	5	3	7	5	4	4	4	4	6	4	5	4	-2	-1
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1994	17	18	22	18	22	24	22	20	17	15	16	15	15	14	14	12	12	11	8	8	10	4	9	8	7	6	5	6	6	6	4	6	5	4	1	4
1995	15	18	19	19	18	20	21	18	20	21	20	14	14	16	16	12	13	9	12	14	13	12	8	9	1	4	4	1	4	4	0	1	0	-2	-5	-8
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2007	16	15	16	19	16	16	17	20	19	17	19	13	13	14	12	13	14	12	11	9	8	8	6	8	8	6	0	5	5	3	6	6	2	1	1	4
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2011	18	18	16	17	16	18	19	16	15	16	17	15	16	14	15	13	13	14	14	10	7	7	8	9	9	8	3	5	6	7	5	3	4	3	4	4
2012	17	18	16	15	18	18	18	16	16	20	17	16	16	16	14	13	11	12	12	9	7	11	9	3	6	7	7	5	6	4	-3	-4	-5	1	1	4
Average	16	17	17	17	17	17	18	17	17	17	16	15	15	14	13	13	12	11	11	10	9	8	8	7	6	6	5	4	3	3	2	2	1	1	1	0
By quartile																																				
Min. valu	12	11	13	13	13	13	14	13	14	13	12	12	12	11	10	8	9	7	6	5	4	3	1	3	1	0	-2	-3	-4	-5	-4	-5	-5	-10	-9	-8
Lower	15	15	15	15	16	16	16	16	16	15	14	14	14	13	12	12	11	10	9	9	7	7	6	6	5	5	4	2	1	1	0	0	0	-1	-2	-2
Median	16	17	16	17	17	18	18	17	17	16	16	15	15	14	13	13	12	11	11	10	9	9	8	8	7	6	5	4	4	4	3	3	2	1	1	1
Upper	18	19	18	18	18	19	19	19	17	18	17	16	16	15	14	13	13	12	12	12	11	10	9	9	8	7	7	5	6	5	4	5	4	3	3	4
Max. valu	21	22	23	21	22	24	22	24	22	21	22	20	19	19	18	16	17	16	15	14	13	12	13	11	11	9	9	8	9	8	8	8	8	6	6	6
Range	9	11	10	8	9	10	8	10	8	8	10	9	7	8	8	8	7	9	9	9	10	9	11	8	10	9	11	11	12	13	12	12	13	16	15	14

Figure A10-10. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Skåne county, 1961-2012. Temperature data from Luftwebb (2014).

County:	Skåne	Total precipitation , mm / 5 or 6 day periods
Location:	Lund	Coordinates for the places (RT90): 1338046-6179375 1351647-6179966 1336973-6165293 1351647-6165293

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	24	13	5	0	0	11	9	18	2	1	1	12	1	0	10	7	5	21	25	0	3	0	0	0	3	16	18	8	0	12	2	4	21	1	1	16
1962	7	8	26	11	27	2	12	12	30	6	7	1	2	7	3	0	3	8	19	13	5	5	2	13	5	21	12	19	5	13	15	1	1	15	2	23
1963	3	0	2	0	3	3	7	0	3	11	0	0	2	21	10	1	6	1	4	0	16	19	13	4	7	2	1	5	0	0	0	0	3	43	15	22
1964	1	3	0	1	1	26	8	2	7	0	0	0	0	0	0	5	0	0	0	7	5	1	16	6	27	6	2	1	0	0	19	10	3	11	29	2
1965	2	18	10	20	2	11	4	1	6	0	1	6	1	0	1	2	7	3	0	9	2	28	6	4	11	47	4	8	0	3	0	0	11	17	8	7
1966	24	1	5	2	1	4	18	1	7	6	24	3	4	20	9	3	11	30	1	22	20	20	19	0	17	14	0	4	10	3	2	43	7	18	11	26
1967	8	8	7	7	18	16	8	4	0	11	19	17	9	2	11	9	8	4	14	34	0	17	2	3	1	1	19	3	8	34	4	5	4	9	5	24
1968	12	8	28	29	4	14	3	6	2	6	0	0	4	2	11	16	6	7	8	3	0	0	1	4	13	17	17	15	1	2	4	7	0	24	12	34
1969	5	0	8	17	14	6	13	8	13	7	1	3	0	1	0	0	0	11	0	3	17	12	3	11	35	7	15	13	1	6	2	0	0	9	34	6
1970	10	2	3	2	1	3	16	7	1	7	2	1	26	4	2	24	13	31	17	35	4	12	23	9	1	1	15	7	9	18	1	3	0	0	6	12
1971	3	6	0	6	19	22	2	2	7	7	8	0	5	5	9	7	30	2	3	4	0	3	0	9	1	0	5	7	11	12	0	1	30	10	17	23
1972	3	4	0	5	1	12	3	11	6	0	0	5	2	32	0	0	0	17	31	18	9	3	1	3	0	0	0	15	15	24	3	16	11	1	9	2
1973	3	2	1	9	8	19	2	15	26	14	10	0	21	11	0	6	0	1	31	12	8	13	6	9	21	9	6	1	14	5	16	5	1	0	0	1
1974	0	3	42	20	6	14	2	25	7	2	8	0	0	0	0	17	0	0	0	0	0	0	4	0	11	3	0	0	10	7	8	10	3	3	31	1
1975	6	13	13	7	26	18	1	1	7	4	0	0	4	9	12	1	5	15	21	25	20	1	0	0	4	3	17	6	4	2	16	0	2	4	0	0
1976	28	21	7	18	5	0	0	6	6	0	5	0	0	9	0	0	6	6	20	2	2	0	5	4	12	0	5	0	26	15	15	0	6	20	0	0
1977	20	26	27	1	16	12	4	10	5	20	19	0	24	3	9	23	0	0	17	9	8	10	17	15	7	6	16	0	0	4	5	10	8	15	6	14
1978	11	9	26	3	13	10	9	6	10	2	8	0	2	6	26	20	21	14	0	0	7	0	5	0	0	0	1	0	13	0	0	16	18	0	7	24
1979	0	18	10	0	18	2	9	11	8	7	0	4	14	14	15	11	19	22	11	0	0	1	9	12	14	2	0	7	28	5	0	13	5	0	4	8
1980	3	5	3	0	11	27	7	26	6	0	0	3	1	7	0	1	0	10	4	5	0	8	11	3	0	3	0	1	4	19	7	2	32	55	5	12
1981	35	8	23	1	3	3	26	25	3	3	10	0	3	35	8	13	16	14	0	0	0	5	1	9	6	0	0	9	5	14	27	15	9	28	3	9
1982	41	2	0	0	11	13	0	13	3	0	0	2	26	7	24	16	0	0	0	11	0	2	3	12	17	14	0	7	9	0	0	1	31	2	11	36
1983	22	11	6	13	5	13	20	4	0	0	0	10	8	23	5	10	30	26	32	15	5	9	1	22	9	11	25	7	16	27	11	8	0	0	0	23
1984	22	22	38	11	15	13	15	16	0	1	3	0	2	0	0	0	0	8	7	10	2	1	0	0	7	1	4	6	11	19	9	50	23	7	47	14
1985	3	1	5	0	14	36	17	0	2	2	3	0	4	16	5	2	9	25	5	18	0	0	7	31	18	3	1	0	0	2	0	14	27	0	8	6
1986	10	12	15	39	17	2	2	1	1	6	0	0	7	1	1	0	26	18	2	0	3	6	20	2	0	16	16	0	19	1	18	5	0	0	0	0
1987	11	7	2	0	5	7	3	19	4	8	0	1	3	0	2	16	5	9	1	18	1	25	2	1	11	1	26	9	1	12	7	6	39	18	13	19
1988	30	36	10	2	17	27	19	22	1	7	16	10	6	4	20	11	11	3	7	8	3	4	13	0	2	0	0	10	1	9	11	4	0	3	21	14
1989	1	3	6	2	2	1	4	0	10	8	9	4	6	5	22	1	27	6	4	3	0	14	3	4	0	3	7	0	0	3	10	17	0	0	0	19
1990	1	8	11	6	26	6	12	11	7	5	4	15	16	14	2	10	3	0	1	4	10	1	0	13	0	0	8	14	4	15	11	5	4	15	4	16
1991	18	31	4	10	2	0	3	9	10	0	13	0	1	0	2	16	2	1	19	8	0	0	4	32	47	0	2	2	1	0	20	7	26	28	26	41
1992	10	10	1	11	0	1	8	7	17	2	5	1	12	3	20	12	11	11	9	0	14	7	1	13	3	7	5	0	0	0	0	0	0	1	0	0
1993	5	18	20	8	33	2	1	5	3	23	1	1	3	0	2	5	9	0	6	4	0	2	1	0	1	1	1	0	2	18	0	0	5	17	13	11
1994	17	1	20	23	21	25	18	4	1	7	8	18	14	24	16	8	21	10	17	1	32	0	0	1	0	0	5	24	9	6	10	18	4	17	10	9
1995	0	18	3	7	40	43	3	8	26	26	4	6	7	3	1	12	4	10	21	11	8	31	0	1	0	17	4	19	0	15	6	20	32	11	2	0
1996	0	4	1	1	6	1	1	1	5	24	4	0	0	2	6	0	3	8	1	0	3	0	13	2	29	8	7	56	15	11	6	6	0	11	9	15
1997	0	1	1	2	0	0	14	6	16	26	16	0	1	0	10	0	0	14	11	0	2	0	15	5	9	29	11	10	15	14	0	1	3	2	21	18
1998	21	11	3	8	9	5	17	4	31	5	5	2	54	7	3	6	1	4	44	1	11	5	2	5	9	10	3	0	9	9	5	16	12	19	11	22
1999	16	11	24	6	12	8	11	12	8	14	9	7	13	35	2	1	4	0	3	7	13	41	0	0	0	22	23	0	7	3	27	24	11	3	5	21
2000	11	3	3	3	1	31	9	15	7	4	6	5	20	31	12	0	2	22	7	0	31	4	1	0	0	0	0	17	17	11	7	14	2	1	36	37
2001	30	3	0	1	12	3	12	13	18	0	2	1	1	4	12	7	0	3	4	7	2	22	27	7	0	0	1	8	0	26	17	4	6	9	7	19
2002	2	1	0	21	31	58	21	14	11	27	21	22	10	13	10	8	0	0	0	0	2	10	2	24	32	1	9	3	4	15	2	9	19	14	11	53
2003	17	1	10	5	5	17	9	2	0	0	0	0	0	5	4	0	1	2	4	11	1	0	0	36	14	1	7	13	25	0	0	26	6	11	14	12
2004	0	8	27	17	0	34	21	7	0	1	6	3	0	0	11	29	13	3	5	12	0	3	10	0	6	7	7	0	3	4	2	2	10	25	37	20
2005	23	16	4	18	4	1	1	11	30	6	9	4	11	3	21	15	1	0	2	2	2	0	1	3	11	9	6	2	7	14	20	6	16	3	12	0
2006	3	0	2	21	2	0	4	30	5	5	1	9	15	1	0	0	1	25	22	11	4	11	1	10	1	0	0	29	18	30	9	1	1	5	6	13
2007	11	21	24	43	9	22	8	4	7	3	37	9	12	12	0	18	3	0	0	16	0	5	0	0	0	19	6	18	3	13	4	0	2	25	71	39
2008	12	15	8	14	11	20	7	1	0	0	6	16	21	3	22	21	17	4	25	7	7	6	0	4	11	0	1	3	0	20	0	0	7	10	8	7
2009	4	3	6	13	4	1	8	15	2	8	14	2	3	6	12	4	3	14	0	12	0	0	1	1	18	6	1	12	17	10	9	8	47	5	1	3
2010	5	1	3	7	0	22	15	2	3	18	12	8	1	0	3	14	2	15	10	2	0	5	4	2	1	6	31	1	9	13	7	30	9	4	2	1
2011	6	16	25	7	4	1	23	14	2	0	2	0	0	8	9	14	2	12	4	1	13	0	0	0	7	0	18	15	18	14	0	24	2	20	30	0
2012	59	13	4	17	15	0	1	1	8	21	10	6	0	11	0	2	0	0	4	13	3	0	21	3	1	18	3	4	0	3	5	4	2	10	41	13
Average	12	9	10	10	10	12	9	9	8	7	7	4	8	8	8	8	7	9	10	8	6	7	6	7	9	7	8	8	8	10	7	9	10	11	13	15
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	3	3	3	2	2	2	3	2	2	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	0	1	1	1	3	1	1	2	2	4	5
Median	9	8	6	7	7	10	8	7	6	6	5	2	4	5	5	7	4	7	5	7	3	4	2	4	6	3	5	7	6	10	6	6	5	9	9	14
Upper	19	14	16	15	15	19	14	13	9	8	9	6	12	11	11	14	11	14	17	12	8	10	9	9	13	10	12	12	13	15	11	14	13	17	15	22
Max. value	59	36	42	43	40	58	26	30	31	27	37	22	54	35	26	29	30	31	44	35	32	41	27	36	47	47	31	56	28	34	27	50	47	55	71	53

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	10	13	38	32	18	29	17	9	10	14	22	3	24	14	27	0	2	0	0	11	0	19	26	9	19	15	2	0	2	20	30	3	9	1	5	13
1962	35	9	18	15	12	19	7	29	6	25	35	17	20	16	18	1	3	3	9	1	4	3	1	14	2	0	17	4	6	11	1	12	23	5	1	15
1963	6	23	7	1	9	20	7	33	32	51	29	25	17	3	0	0	40	17	38	17	7	10	17	1	1	17	25	44	35	11	0	2	1	5	2	5
1964	7	12	7	2	8	6	9	13	1	4	8	5	1	22	19	24	2	1	0	39	11	3	10	0	0	0	16	20	8	6	13	23	25	21	2	9
1965	10	34	24	0	23	33	11	0	0	4	7	11	6	60	5	3	0	9	6	0	4	1	0	13	17	5	4	1	15	29	26	44	6	17	11	17
1966	10	1	28	13	1	13	28	12	24	0	8	11	27	5	35	0	3	0	19	22	2	4	10	1	5	2	4	21	4	37	9	20	14	19	13	36
1967	4	6	1	6	5	4	9	6	15	19	0	13	10	14	0	29	59	9	15	27	6	33	5	4	5	3	15	1	0	22	6	5	10	11	54	20
1968	7	14	59	9	11	3	0	2	2	29	2	5	2	4	11	6	26	14	6	49	12	8	0	8	2	36	0	8	12	16	0	0	0	3	9	9
1969	0	17	1	6	6	0	0	0	7	26	18	44	3	0	0	4	6	19	11	0	1	0	4	11	59	20	18	18	0	22	7	4	1	18	1	2
1970	8	3	20	24	8	5	5	11	0	22	2	0	17	11	25	7	1	5	24	2	1	5	14	49	36	14	29	6	13	20	28	9	1	6	0	2
1971	1	0	16	4	10	21	3	19	6	0	0	24	21	9	1	20	6	4	0	8	17	22	20	0	11	20	9	30	19	3	14	11	3	9	3	8
1972	2	24	4	2	12	32	9	3	51	15	4	0	0	22	3	0	13	0	0	0	0	2	8	2	3	32	25	16	8	11	7	13	10	0	0	0
1973	0	10	17	20	27	12	8	9	0	3	1	3	4	2	1	5	72	15	0	11	4	11	4	3	3	16	20	12	20	16	23	11	16	8	4	2
1974	14	19	16	3	3	19	37	8	8	2	0	5	23	16	7	5	6	26	30	25	20	11	17	36	5	16	9	7	9	30	11	20	26	22	17	22
1975	3	2	24	16	14	3	0	0	0	18	1	0	12	3	37	5	5	24	21	1	16	1	1	0	2	1	3	13	3	29	10	3	2	2	6	16
1976	0	15	5	5	12	19	8	0	1	1	1	6	18	13	4	12	0	3	9	13	36	15	4	2	4	5	4	0	8	31	18	11	4	17	10	12
1977	15	4	0	15	21	28	2	3	12	1	0	12	0	8	13	0	1	17	24	10	0	0	5	6	18	9	29	8	31	0	0	2	9	9	24	28
1978	18	21	1	11	13	0	10	4	3	4	13	30	38	14	38	7	25	6	13	5	3	13	11	4	2	0	6	17	16	7	0	4	16	0	17	43
1979	6	20	0	15	7	7	3	29	0	0	12	29	3	3	19	21	0	1	0	0	2	5	3	5	32	9	15	11	17	27	21	53	11	17	1	11
1980	12	37	24	37	7	3	20	3	1	15	36	19	0	21	5	8	5	5	3	27	20	3	23	53	1	3	33	20	37	15	11	18	32	15	21	11
1981	3	1	7	18	56	9	1	0	14	50	21	2	3	0	8	13	8	8	29	34	9	39	2	40	18	9	15	26	29	22	8	26	5	0	16	4
1982	9	3	0	17	0	0	0	4	34	35	11	15	12	5	0	5	1	1	0	46	47	10	10	4	2	0	13	25	13	4	2	16	30	16	10	13
1983	6	2	4	1	0	0	20	0	3	3	1	0	19	14	24	10	10	10	10	30	7	9	8	1	2	1	14	6	23	36	1	35	0	10	15	16
1984	3	1	19	14	3	3	24	17	4	3	0	17	41	25	22	17	10	3	19	21	13	18	27	8	1	0	0	8	37	1	1	7	1	26	0	10
1985	5	1	4	16	25	21	14	11	38	28	6	2	26	27	8	18	9	3	1	14	2	0	0	2	24	22	5	4	4	27	61	32	20	24	11	2
1986	20	9	2	1	45	17	2	9	9	5	11	12	6	16	15	2	5	0	1	10	1	34	16	25	24	7	5	21	11	1	14	0	8	28	5	31
1987	0	2	11	64	5	13	23	11	13	11	12	3	8	19	23	9	17	5	0	3	10	1	10	2	3	11	22	23	18	6	0	0	1	24	7	21
1988	47	6	11	15	20	32	15	0	6	5	23	3	19	2	26	0	22	20	1	51	6	16	1	13	8	1	4	8	1	23	14	5	5	20	24	2
1989	2	8	23	11	0	29	16	20	5	31	6	42	4	0	4	5	3	0	1	23	20	14	24	12	5	25	1	0	4	1	1	1	10	35	20	2
1990	49	16	0	5	9	0	0	6	2	30	1	1	4	12	2	25	78	15	23	12	11	0	0	23	4	0	14	21	8	17	1	1	6	5	3	23
1991	0	9	9	22	11	1	0	21	3	29	3	3	0	0	1	8	24	20	10	0	9	21	0	1	30	30	23	1	2	7	1	0	1	27	34	6
1992	1	0	37	14	11	8	4	0	27	13	31	27	21	1	23	1	4	1	0	2	25	8	25	19	17	13	36	20	21	31	16	4	29	7	0	0
1993	9	14	54	23	26	42	21	11	12	0	6	17	11	16	57	1	29	3	5	44	34	1	6	0	0	11	26	10	21	0	18	23	7	24	24	23
1994	0	0	0	1	0	1	22	3	17	27	2	16	23	33	53	53	2	14	8	0	0	0	7	39	2	1	29	22	3	2	8	35	19	10	4	48
1995	9	2	2	3	17	0	2	0	0	0	19	0	35	10	26	12	3	33	14	2	0	4	1	29	12	7	3	12	1	0	4	10	0	2	17	2
1996	30	20	0	5	0	10	4	0	8	0	4	28	0	0	32	0	0	42	7	2	0	2	7	26	12	17	10	19	5	17	17	1	9	6	0	4
1997	11	0	1	2	16	28	3	0	0	9	0	14	10	24	4	1	0	2	25	55	7	2	11	5	8	21	19	1	5	7	1	20	12	0	18	13
1998	20	9	11	12	14	35	10	16	5	4	14	12	0	8	62	4	1	1	3	16	27	22	42	44	15	17	7	1	1	4	6	0	25	3	20	14
1999	9	0	4	14	12	0	0	17	58	39	11	15	0	0	0	2	26	36	17	20	7	3	3	6	4	0	0	12	10	8	28	22	34	12	38	10
2000	3	22	2	8	16	5	13	5	3	12	9	12	53	5	30	0	0	12	4	19	11	1	12	15	8	14	23	9	14	8	2	8	31	4	1	12
2001	0	17	12	10	0	0	11	32	20	20	12	24	21	34	10	54	9	10	23	10	1	1	1	16	10	16	4	1	9	17	9	1	0	7	22	23
2002	12	2	0	14	40	4	19	2	6	1	0	1	0	0	0	3	14	9	20	0	17	46	31	21	1	2	9	30	18	7	6	0	1	2	0	28
2003	39	1	10	15	3	8	5	0	5	3	9	30	3	22	0	0	8	7	7	20	4	18	6	8	10	0	1	34	15	14	4	1	25	15	16	14
2004	23	38	14	36	13	5	16	0	11	9	20	26	7	0	6	25	11	4	7	2	4	45	19	6	5	5	5	10	25	16	10	0	2	15	45	4
2005	2	10	1	17	12	38	27	11	9	0	13	1	0	8	3	1	0	10	14	0	0	0	45	0	22	3	21	0	7	0	11	6	7	4	9	45
2006	0	3	0	0	4	9	39	20	##	21	21	42	17	4	0	2	0	14	24	14	0	1	25	28	9	18	29	17	19	1	11	14	34	9	1	28
2007	96	18	19	5	57	35	3	3	21	6	11	12	11	18	4	22	7	24	5	0	2	9	0	21	13	14	1	0	11	6	29	31	0	0	0	5
2008	0	22	5	21	0	0	49	15	14	5	51	18	10	5	0	1	2	17	30	0	11	16	11	32	1	15	17	22	4	7	40	10	6	9	6	0
2009	14	15	5	29	7	5	27	6	10	4	4	2	25	2	5	0	2	6	28	9	2	1	14	16	27	17	18	14	15	14	3	11	7	32	12	4
2010	1	0	13	5	0	8	8	40	80	37	22	3	0	4	33	22	4	0	0	5	1	19	32	10	34	9	16	31	29	16	23	7	2	34	13	5
2011	40	5	27	16	66	24	4	47	38	6	21	27	9	16	22	7	3	0	2	28	3	12	0	5	0	0	0	1	3	8	22	20	22	10	9	4
2012	2	10	24	20	0	15	1	11	0	0	13	21	0	1	8	3	29	13	21	11	28	2	3	11	34	11	2	1	18	6	16	13	11	9	15	24
Average	12	11	12	13	14	13	11	10	15	13	11	14	12	11	15	9	12	10	11	15	9	10	11	14	11	10	13	13	13	13	12	12	11	12	12	14
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	2	2	5	4	3	3	1	2	3	2	3	3	3	3	1	2	3	1	2	1	1	2	3	2	2	4	3	4	6	2	2	2	5	2	4
Median	7	9	8	13	11	8	8	7	7	7	9	12	10	9	8	5	5	8	9	11	6	6	8	9	7	9	13	11	11	11	9	9	9	10	10	12
Upper	14	17	19	17	16	21	18	15	16	23	18	22	21	16	24	12	13	15	20	22	12	16	17	21	17	16	20	20	18	20	17	20	19	18	17	21
Max. value	96	38	59	64	66	42	49	47	100	51	51	44	53	60	62	54	78	42	38	55	47	46	45	53	59	36	36	44	37	37	61	53	34	35	54	48

Figure A10-11. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Skåne county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A11 HALLAND COUNTY♣

A11.1 Crop production and yield

Table A11-1. *Annual production (metric ton) in 2010-2014 for the major crops in Halland county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	256 800	277 400	233 800	240 600	308 600	263 440
Spring barley	86 300	91 600	120 400	125 700	99 900	104 780
Potatoes	66 500	65 900	65 900	67 700	72 800	67 760
Sugar beet	39 900	50 800	47 600	55 500		48 450
Winter wheat	63 600	48 200	25 900	20 400	79 600	47 540
Oats	29 400	31 200	34 600	42 700	36 000	34 780
Spring wheat	14 700	13 200	29 200	39 800	18 900	23 160
Triticale	23 500	15 500	10 400	8 400	21 200	15 800

* Data from Jordbruksverket (2015)

Table A11-2. *Average yield of cereals, potatoes and sugar beet in Halland county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Spring barley	4 004	337	8
Potatoes	32 001	2 426	8
Sugar beet	43 806	3 653	8
Winter wheat	5 491	351	6
Oats	3 901	401	10
Spring wheat	4 269	362	8

* Coefficient of variation = Standard deviation / Average

Table A11-3. *Coefficient of variation of farm-level yield for important crops in Halland county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Temporary grasses		41	45	55	52	44	60	50	49
Spring barley	21	24	23	23	20	25	32	31	25
Potatoes		21	28	17	18	23	27	27	23
Winter wheat	26	19	19	27	23	21	27	22	23
Oats	22	27	20	25	25	21	39	38	27
Spring wheat	21	22	21	34	17	27	40	32	27
Winter rape	43	24	24	42	24	24	57	28	33
Average	27	25	26	32	26	26	40	33	

* Based on farm-level yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

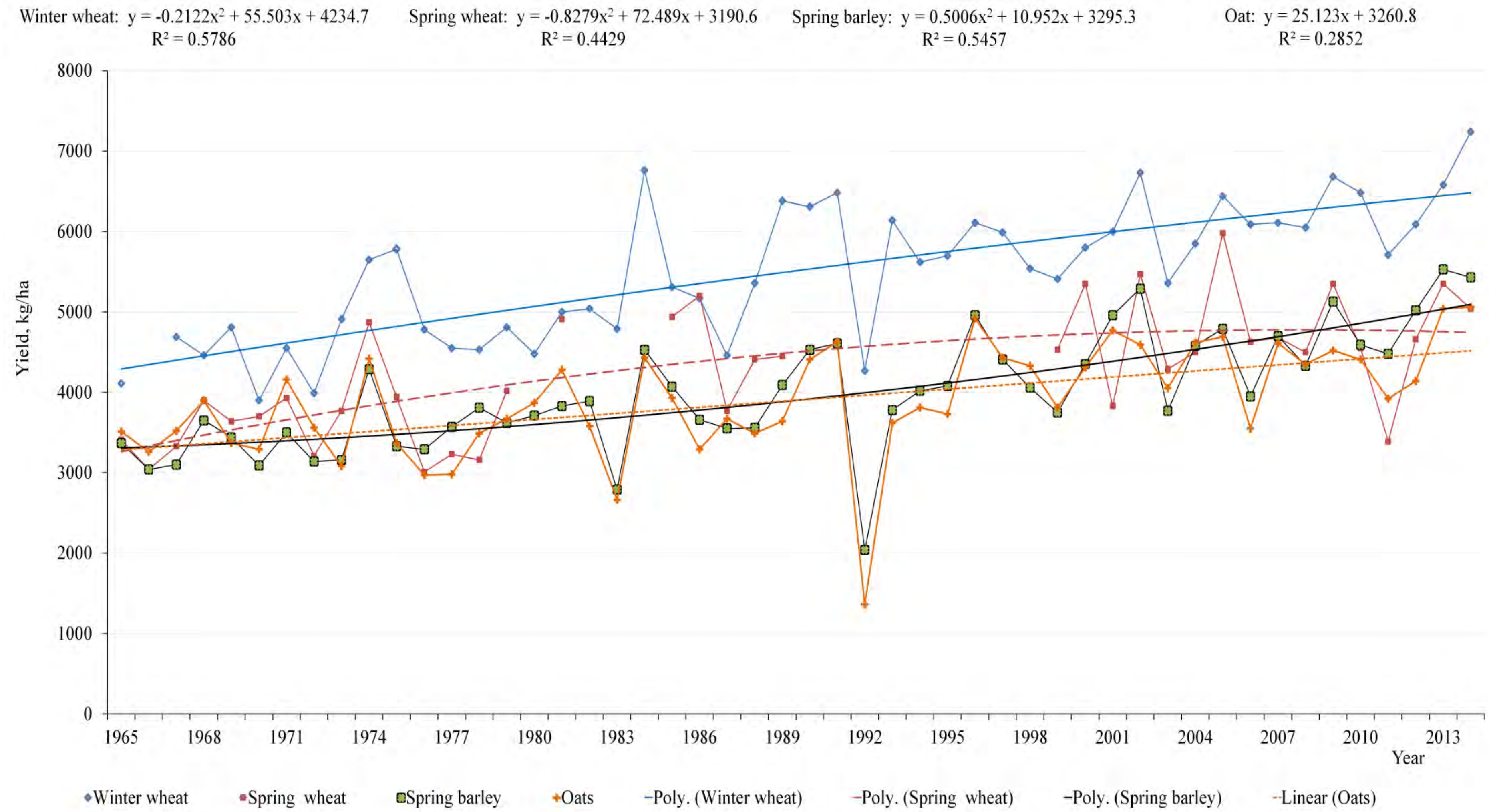

Figure A11-1. Average yield (kg/ha) per year of winter wheat, spring wheat, spring barley, and oats in Halland county for the period 1965-2014, and their trend lines with respective equations. The variable x in equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

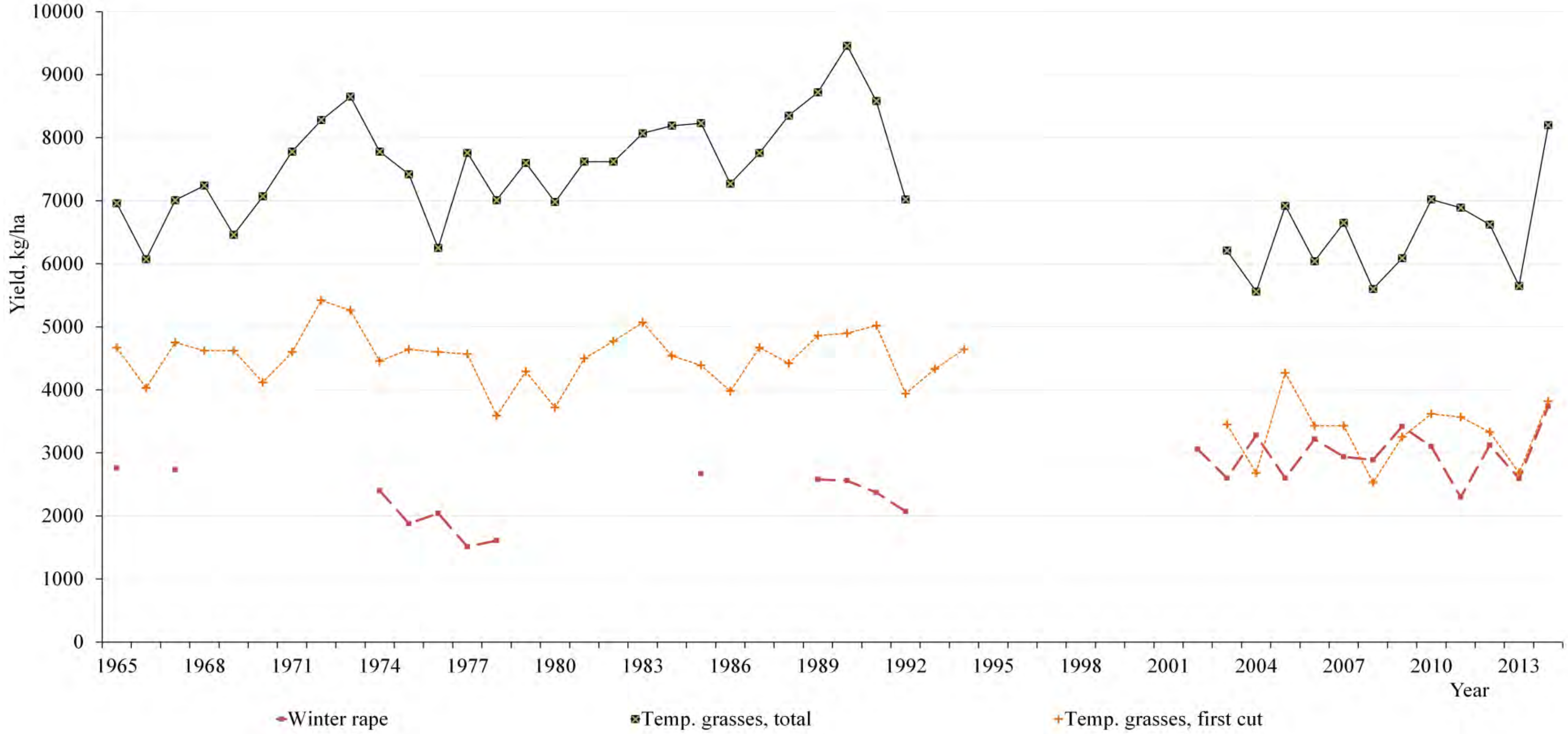

Figure A11-2. Average yield (kg/ha) per year of winter rape and temporary grasses (total and first cut) in Halland county for the period 1965-2014. Yield data from Jordbruksverket (2015).

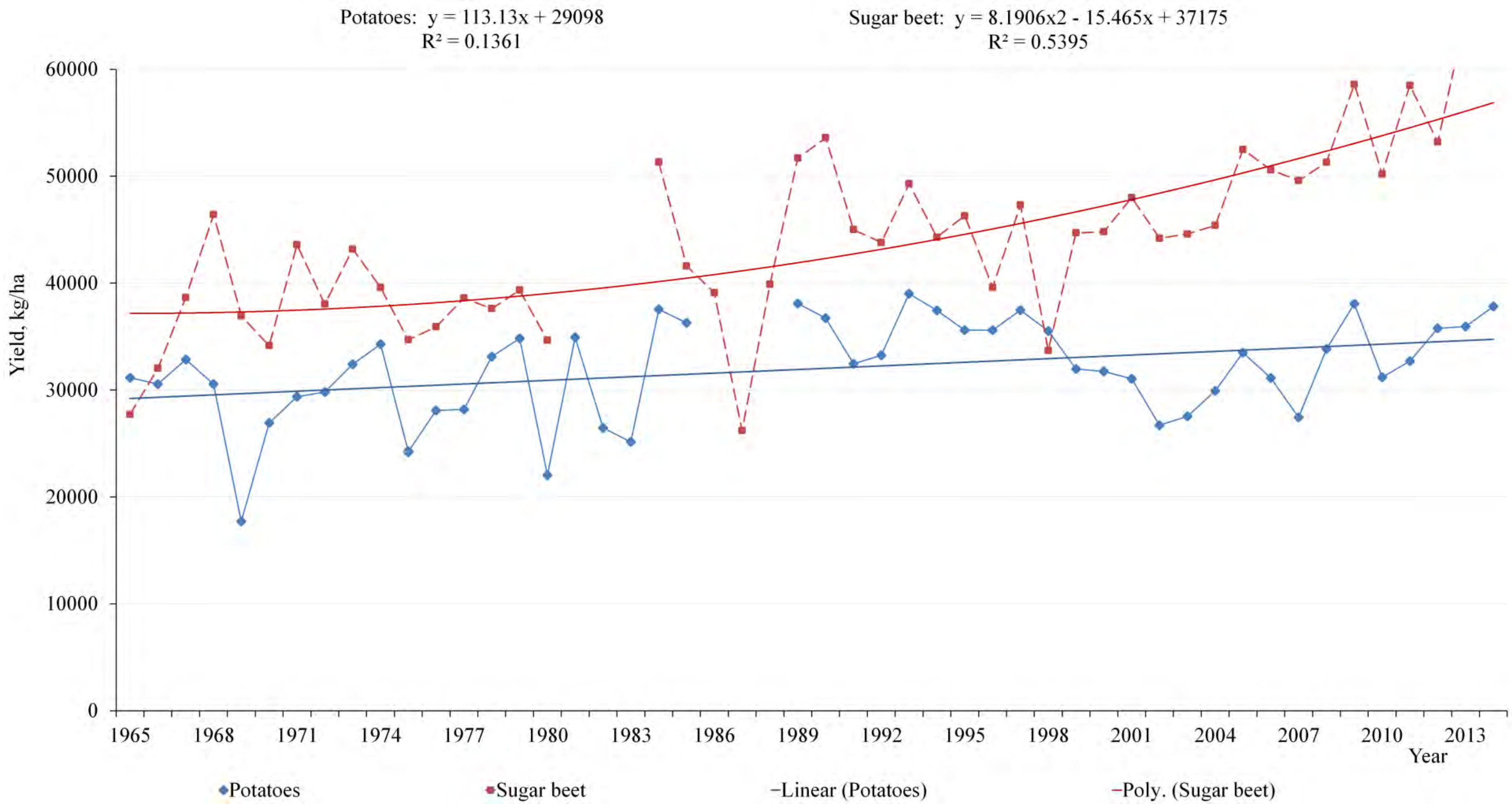

Figure A11-3. Average yield (kg/ha) per year of potatoes and sugar beet in Halland county for the period 1965-2014, and their trend line with respective equations. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

A11.2 Precipitation, temperature and cereal yield

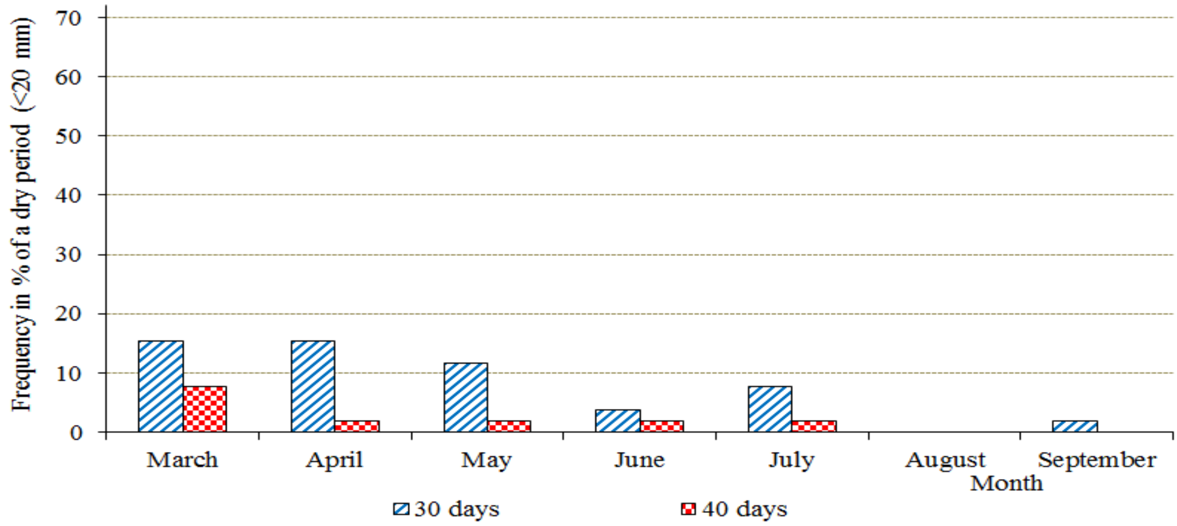

Figure A11-4. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Halland county∗.

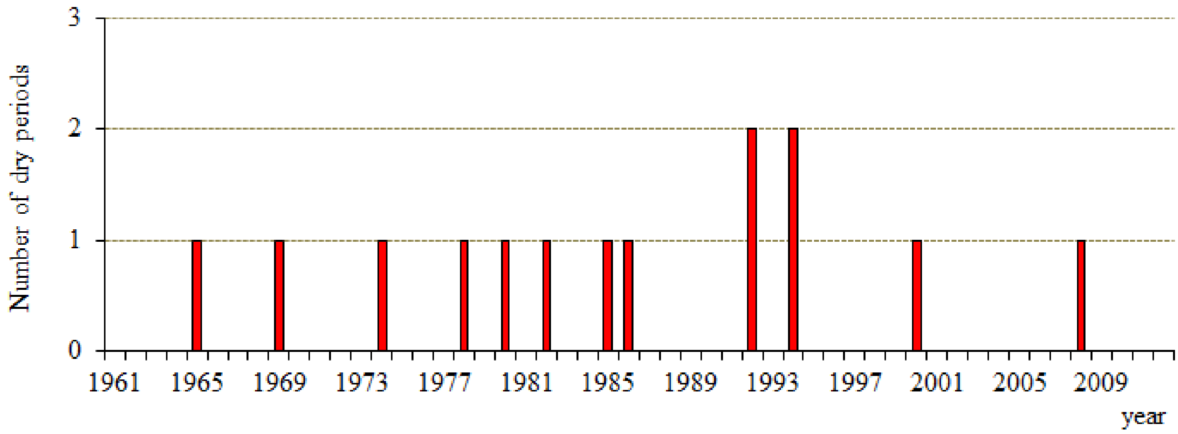

Figure A11-5. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 April to 31 July in Halland county*.

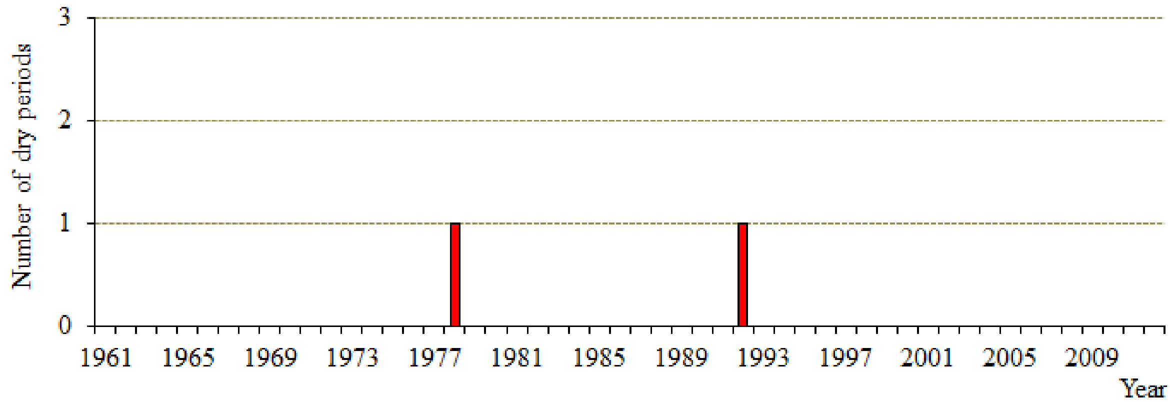

Figure A11-6. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 April to 31 July in Halland county∗.

∗ The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

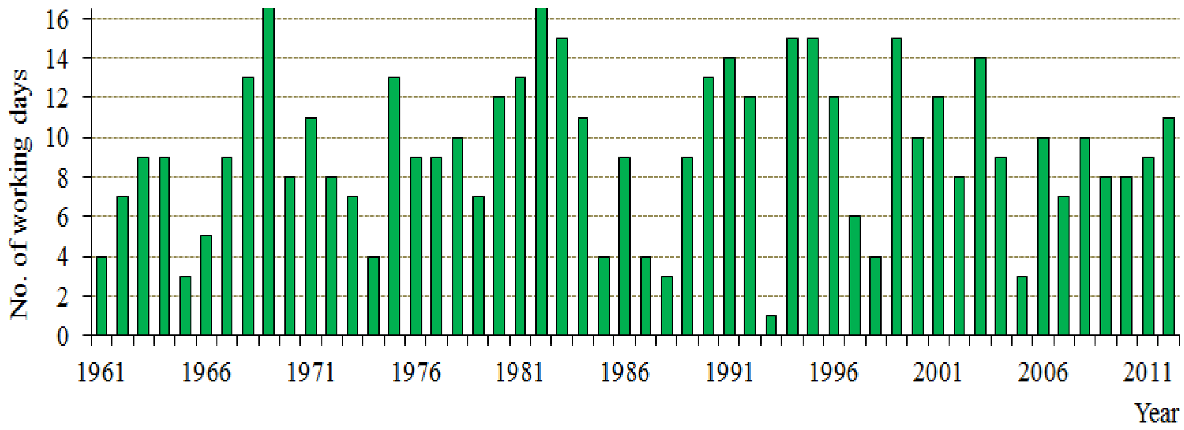

Figure A11-7. Estimated number of working days available for harvesting during the period 22 July-7 August in Halland county (for definition of a working day, see Section 2.1)*.

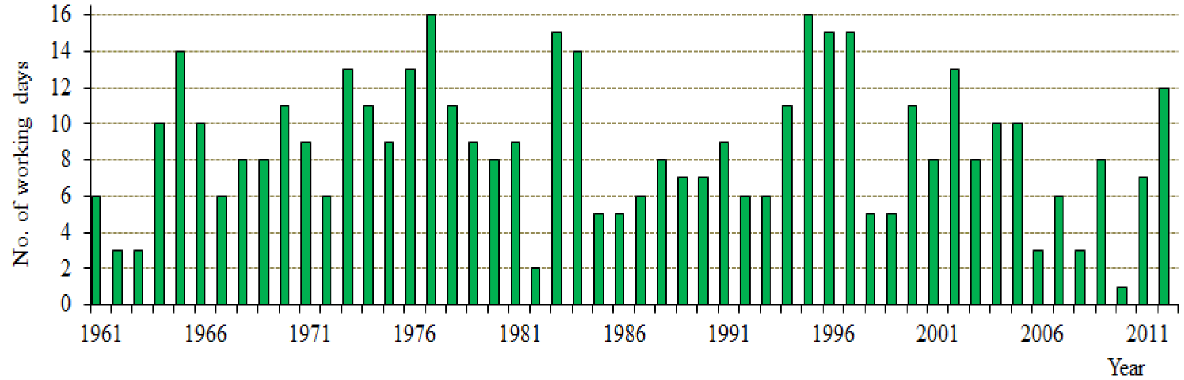

Figure A11-8. Estimated number of working days available for harvesting during the period 8-24 August in Halland county (for definition of a working day, see Section 2.1)*.

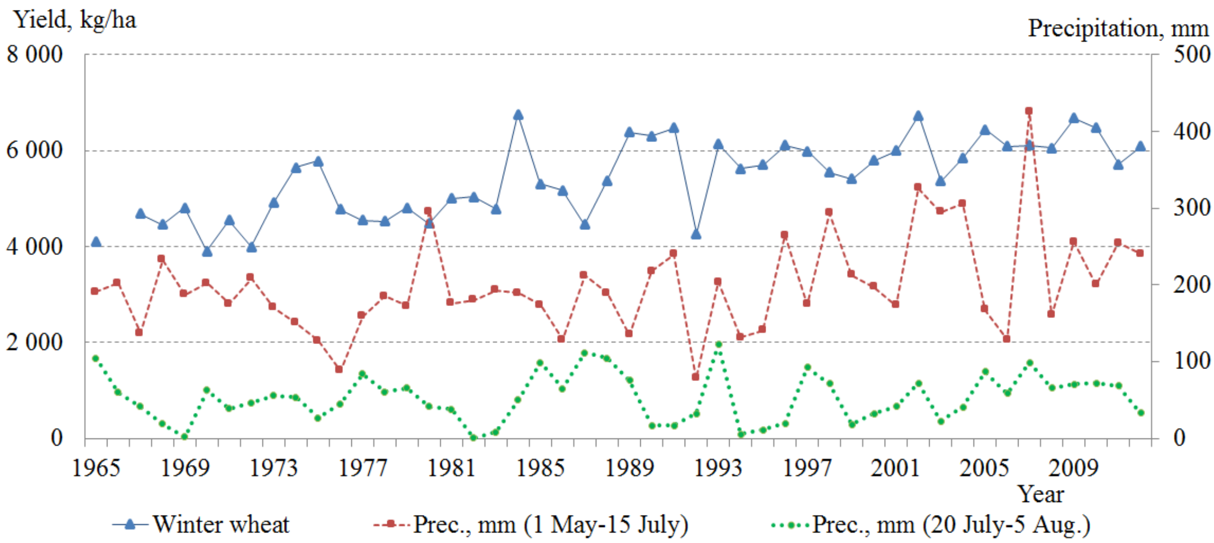

Figure A11-9. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 20 July-5 August in Halland county, 1965-2012*.

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* Precipitation from Luftwebb (2014) and yield data from Jordbruksverket (2015).

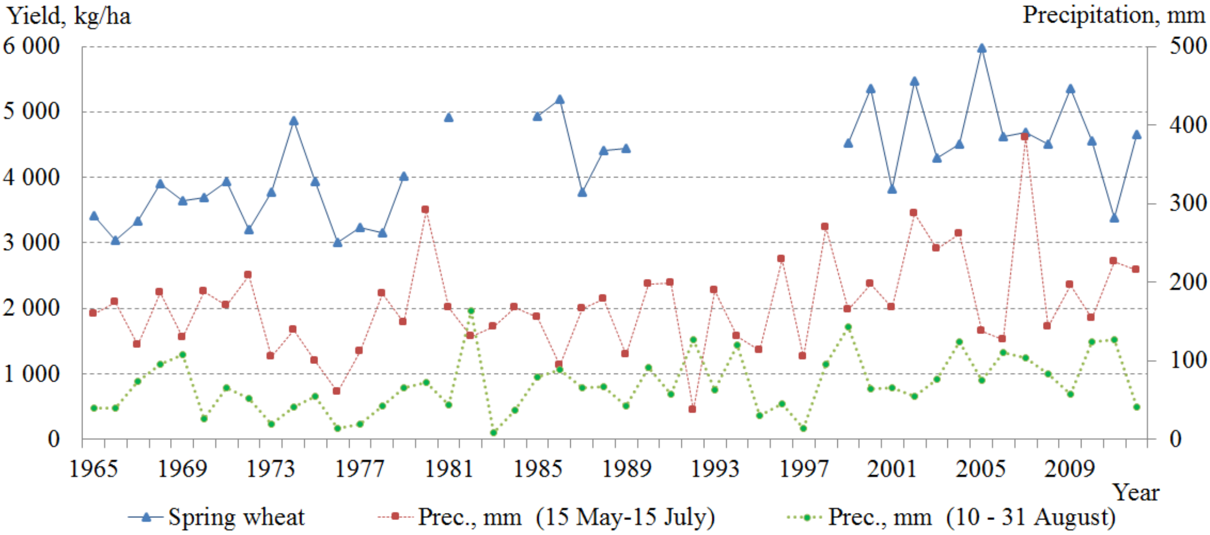


Figure A11-10. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 15 May-15 July and 10-31 August in Halland county, 1965-2012*.

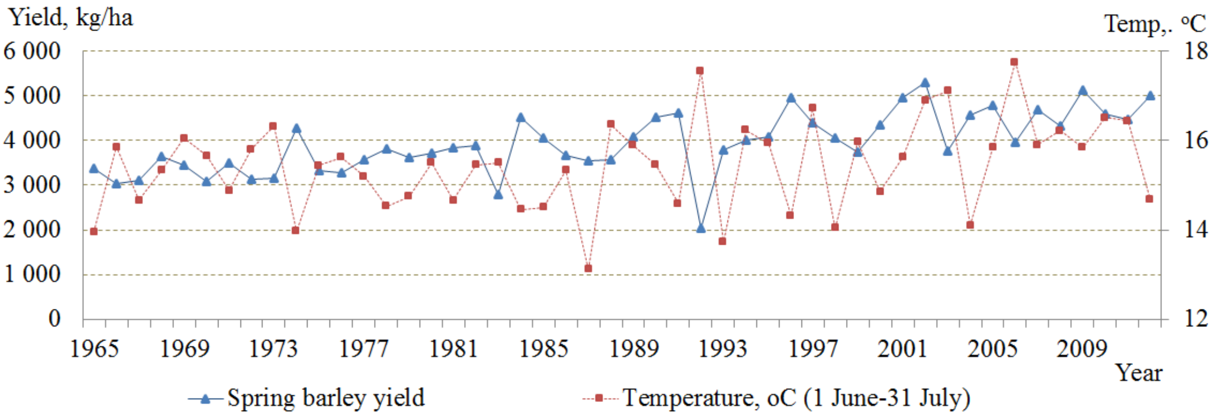


Figure A11-11. Annual spring barley yield (kg/ha) and average temperature (ºC) in the period 1 June-31 July in Halland county, 1965-2012*.

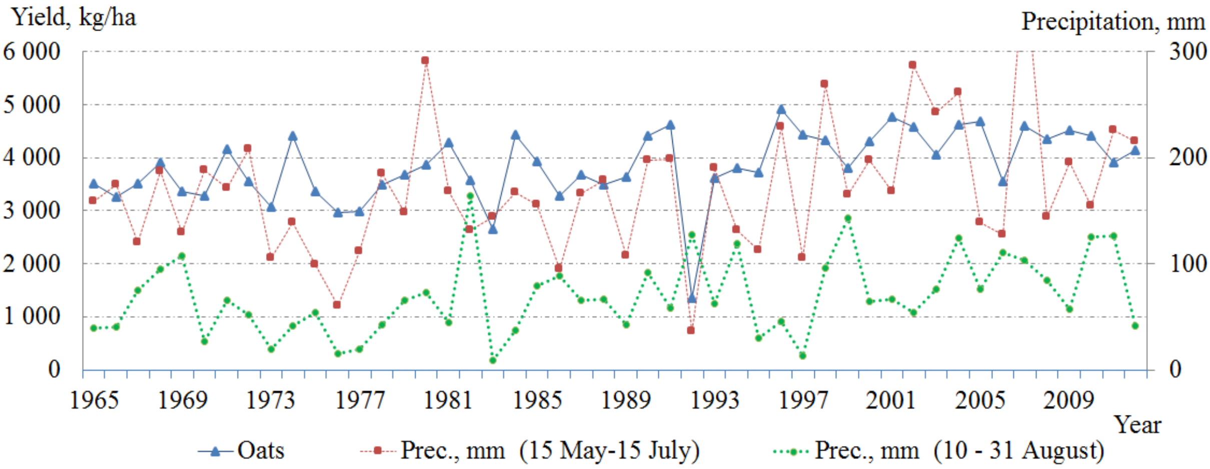
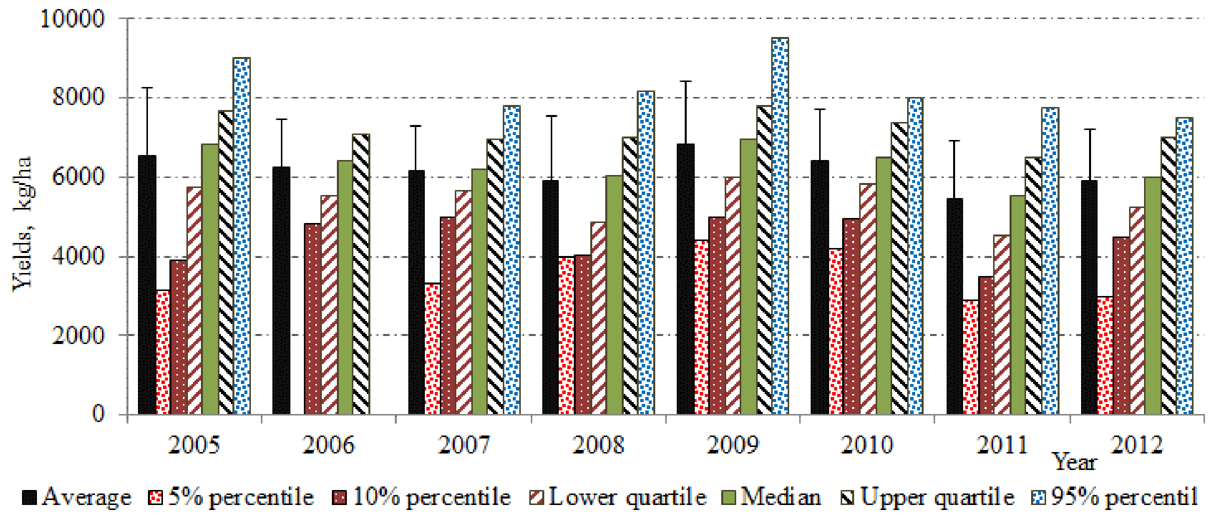


Figure A11-12. Annual oat yield (kg/ha) and precipitation (mm) in the period 15 May-15 July and 10-31 August in Halland county, 1991-2011∗.

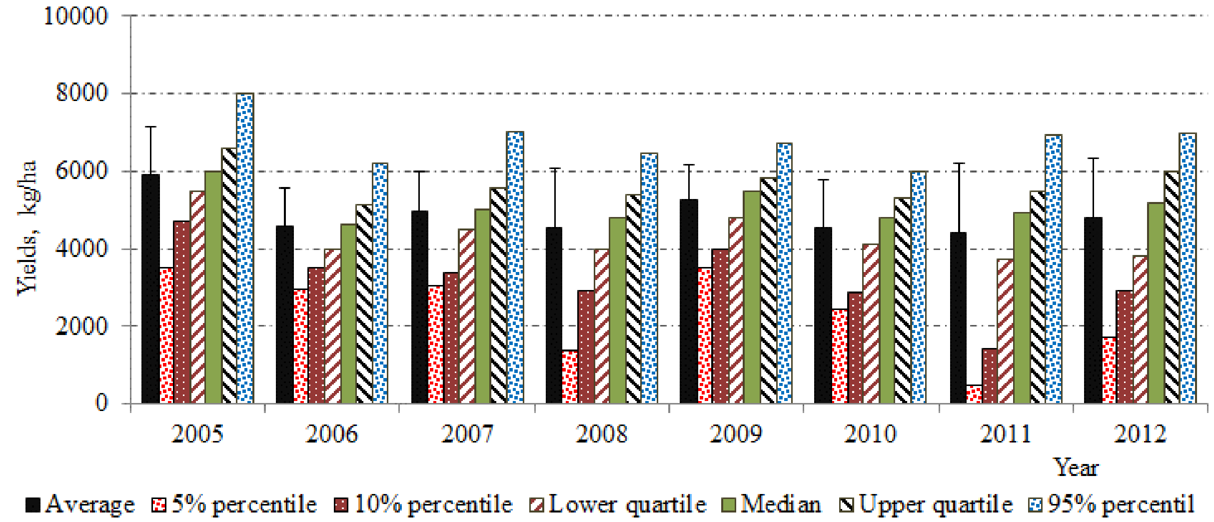
∗ Precipitation and temperature from Luftwebb (2014) and yields data from Jordbruksverket (2015).

A11.3 Yield on farms



N	68	83	70	63	76	91	74	48

Figure A11-13. Average and estimated percentiles of winter wheat farm-level yield in Halland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	53	46	38	47	34	46	54	76

Figure A11-14. Average and estimated percentiles of spring wheat farm-level yield in Halland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

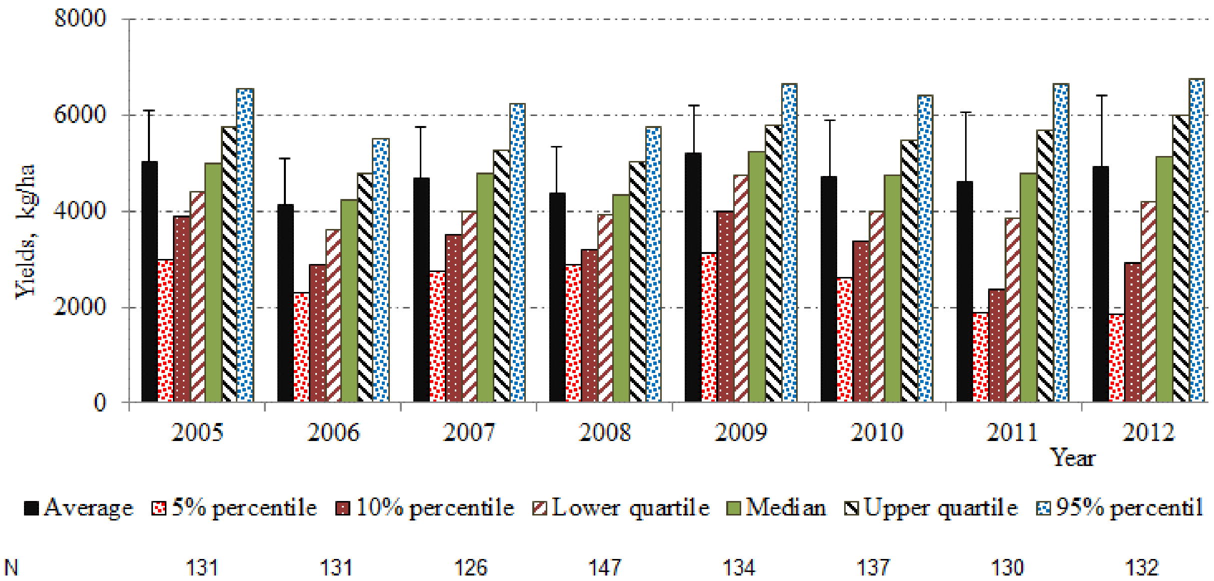


Figure A11-15. Average and estimated percentiles of spring barley farm-level yield in Halland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

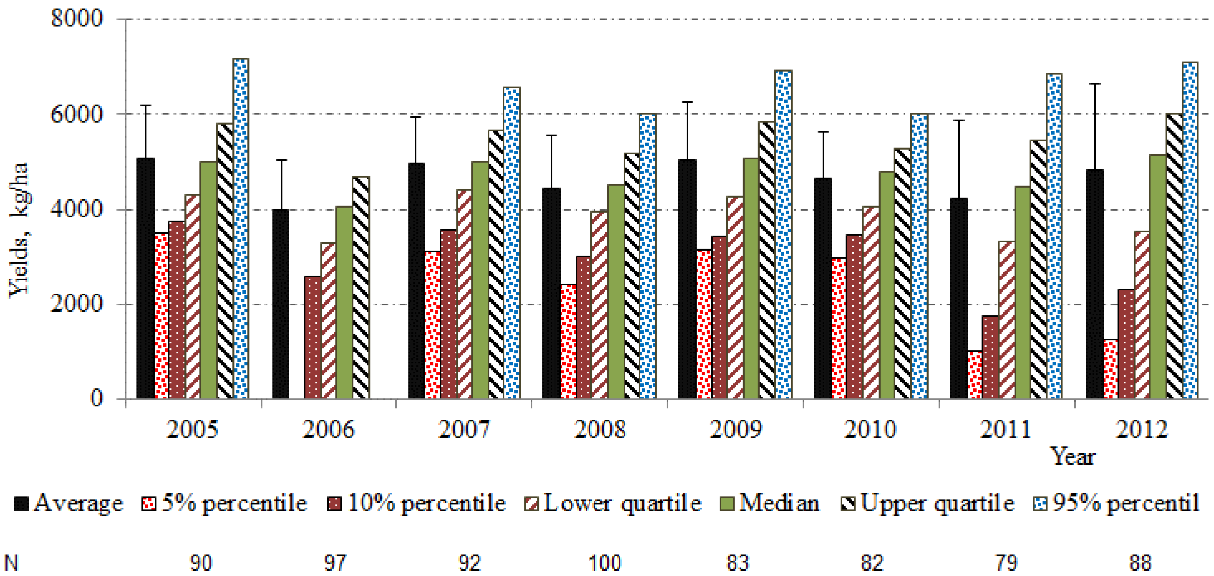


Figure A11-16. Average and estimated percentiles of oat farm-level yield in Halland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

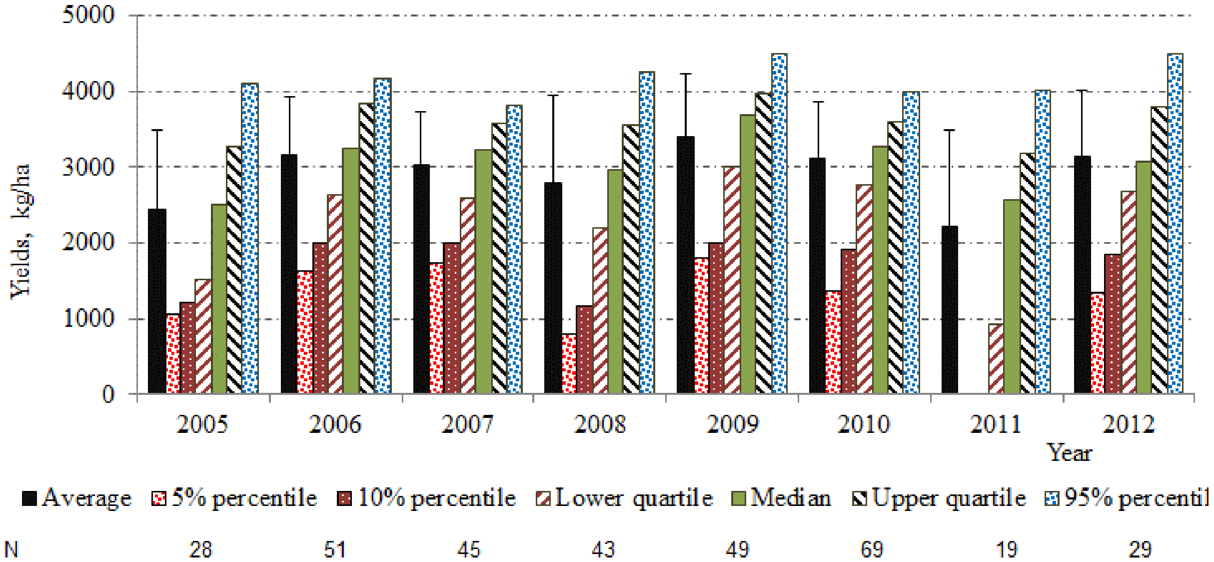


Figure A11-17. Average and estimated percentiles of winter rape farm-level yield in Halland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

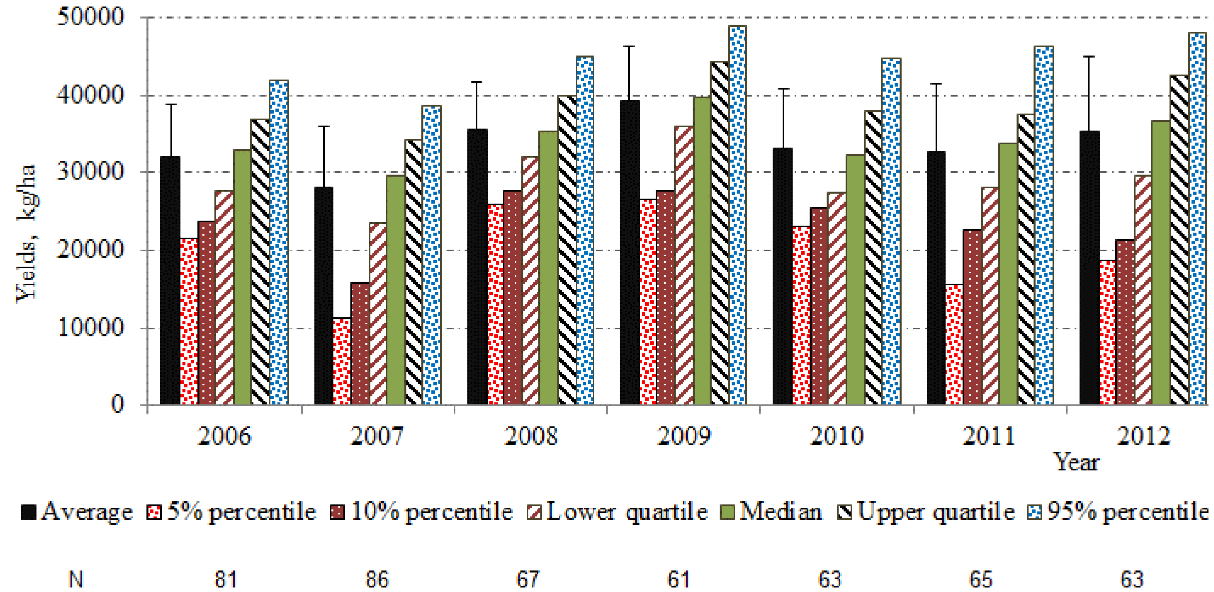


Figure A11-18. Average and estimated percentiles of potato farm-level yield in Halland county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

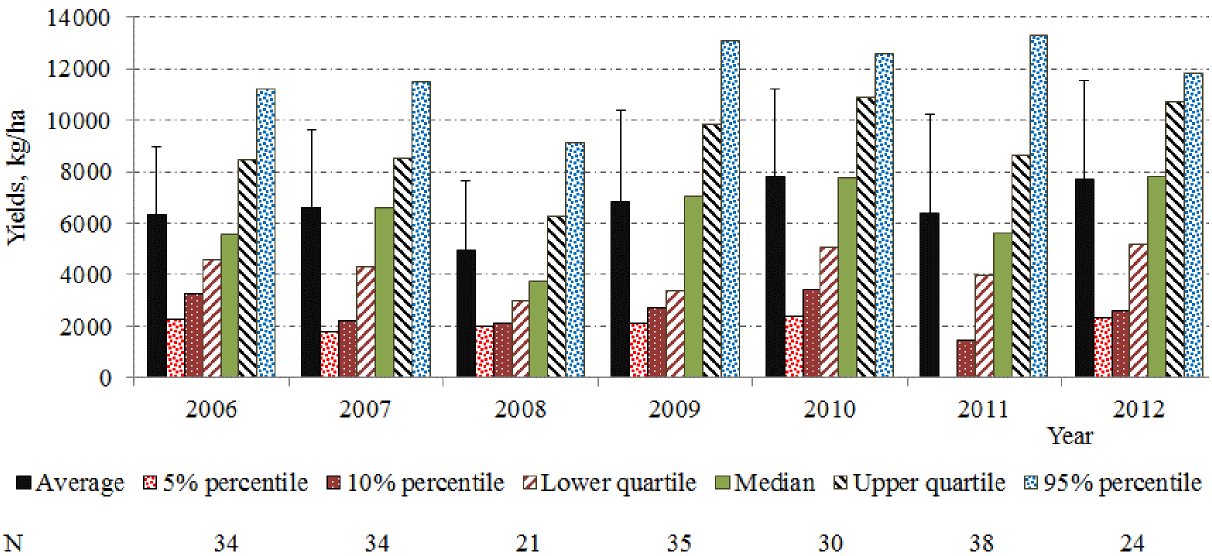


Figure A11-19. Average and estimated percentiles of temporary grasses farm-level yield in Halland county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A11.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

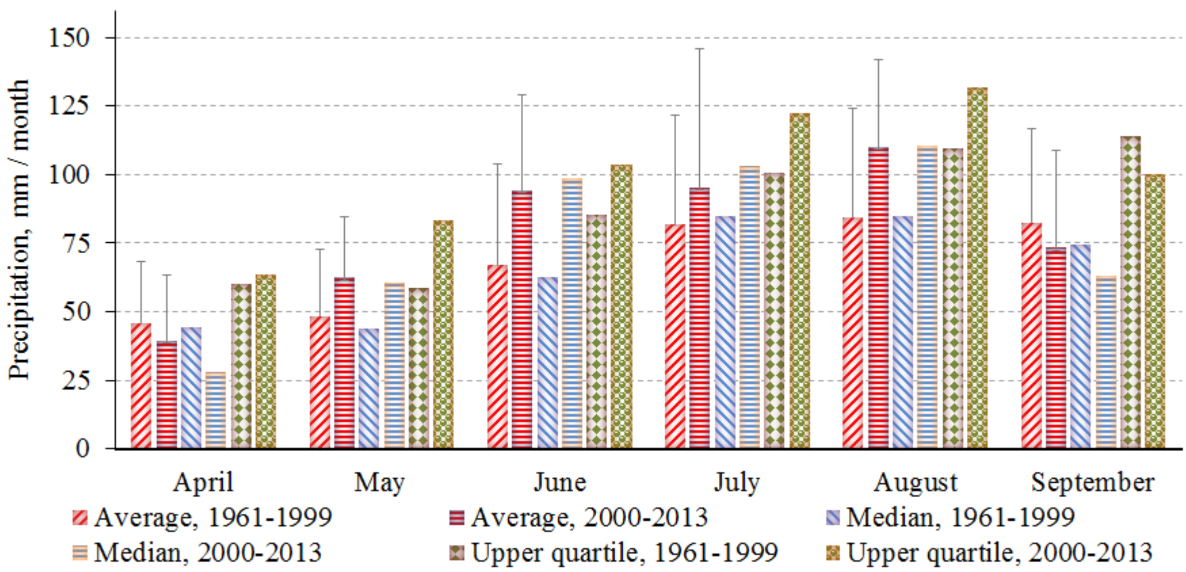


Figure A11-20. Monthly average, median and upper quartile precipitation (mm) from April to September in Halland county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates: 1317478-6285621 (close to Halmstad).

County: **Halland** — **Average temperature (°C) for 5 or 6 day periods**

Location: **Halmstad (Söndrum)** — Coordinates for the places (RT90): 1317478-6285621, 1340975-6289352, 1327636-6276012, 1340975-6276012

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Scale for the color intensity: -30 °C, 0 °C, 30 °C

Month	January						February						March						April						May						June						July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	1	0	-1	-4	-6	-1	-1	1	3	3	2	4	3	5	5	4	3	3	0	5	8	7	11	11	9	10	9	10	10	12	17	17	15	15	14	15	16	13	15	14	15	15	14	15	13	13	14	16	15	14	14	15	12	13	13	13	12	10	10	9	6	5	4	2	3	2	3	0	-3	-1	-4	-5
1962	-2	1	2	3	3	-4	0	2	-1	2	-2	-3	-4	-2	-5	-3	-1	1	3	3	5	9	10	6	5	9	9	9	10	8	9	14	13	15	14	12	12	13	15	16	15	13	14	13	13	14	14	13	14	12	11	10	10	11	13	9	6	9	9	6	6	7	3	0	-1	3	1	3	1	-6	-10	-7
1963	-7	-12	-12	-10	-7	-5	-7	-6	-4	-9	-5	-2	-4	0	-3	-1	-2	0	2	4	5	5	6	7	7	11	11	9	16	18	15	17	15	15	14	14	18	14	14	16	17	15	20	17	14	14	13	14	15	13	12	13	13	10	9	8	8	9	9	7	7	7	6	5	3	5	0	-1	-3	-7	-7	3
1964	1	-1	-5	-1	2	0	2	0	-5	-7	-2	0	-1	-3	-1	-2	0	2	2	3	6	12	8	9	8	11	11	10	13	15	12	15	18	14	13	14	12	13	15	17	15	15	13	16	15	14	13	15	13	13	11	11	9	12	7	9	8	7	7	4	5	3	5	4	6	3	-1	4	5	-1	0	-6
1965	-1	-3	2	2	0	-2	-2	-1	-1	-5	-5	-10	-9	-5	-1	3	1	4	3	2	4	6	8	9	7	8	10	7	10	11	13	15	15	15	15	14	11	11	14	16	15	13	13	14	14	15	17	12	15	13	11	13	14	14	11	8	8	7	6	9	6	5	-3	-5	-5	0	0	-1	-6	-2	0	-2
1966	-9	-3	-6	-5	-6	-2	-3	-11	-9	-8	2	3	2	2	-3	1	2	1	4	2	-3	-2	5	9	11	9	11	14	10	11	12	14	19	20	16	15	15	16	14	17	19	14	15	14	16	14	14	13	14	13	13	11	10	7	12	10	7	11	8	2	2	6	2	3	1	3	4	1	-2	0	-2	-2
1967	-1	-7	-1	1	-4	-5	1	0	-2	0	1	2	3	6	4	2	4	4	3	5	6	5	4	7	5	8	15	10	13	14	14	11	12	15	13	14	15	15	16	18	15	17	18	15	15	14	15	15	14	13	14	14	11	12	12	11	12	8	10	9	8	5	6	4	4	1	5	-6	0	-5	0	-4
1968	-6	-10	-7	1	1	0	1	1	-1	-6	-7	-2	-1	0	-1	2	7	7	4	0	5	9	12	11	9	8	8	6	9	14	16	13	17	20	15	15	18	14	12	14	14	17	18	19	15	13	16	18	18	18	11	11	10	10	8	4	10	5	8	10	7	1	0	3	5	5	1	-1	-4	0	1	-4
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1972	-1	-2	-4	-6	-1	-5	-3	0	1	1	1	0	0	0	-2	5	3	3	4	6	6	5	4	6	14	11	9	9	12	10	13	15	13	13	12	18	16	16	16	21	20	18	16	18	15	14	13	13	12	13	9	9	9	5	7	10	7	5	5	8	8	8	4	0	2	5	6	6	6	4	-1	-1
1973	-1	0	-1	-1	0	1	3	3	0	2	0	-4	3	1	2	4	6	5	4	2	3	5	7	6	9	9	8	9	13	15	13	15	12	14	18	19	20	19	17	17	15	17	17	16	16	16	12	13	14	13	10	12	11	8	10	10	2	1	2	5	3	6	1	1	2	-8	-3	-2	0	-2	1	3
1974	0	0	1	3	3	3	2	1	4	0	2	1	2	1	2	4	4	6	8	8	3	7	7	8	8	8	9	12	12	11	11	11	15	16	16	14	13	14	14	15	14	14	14	15	15	15	15	16	16	14	14	13	11	9	7	7	4	5	7	4	4	5	7	7	3	2	4	4	0	2	6	3
1975	5	1	5	4	3	3	2	0	-2	-1	0	0	4	4	2	-1	1	0	1	3	3	5	8	9	8	15	11	14	9	10	8	15	14	14	19	14	16	18	17	17	16	17	18	24	19	15	16	17	16	14	13	14	13	12	12	7	5	6	8	9	8	4	4	3	-2	2	4	3	1	-1	4	5
1976	-2	-1	-1	0	-3	-8	-5	-3	-2	-3	1	3	0	-3	-4	-4	-3	3	2	3	7	6	5	4	7	12	10	13	14	8	11	14	13	13	15	18	18	16	18	19	16	15	13	17	17	17	15	18	11	13	13	11	9	8	8	10	9	4	7	4	5	7	4	2	-1	5	1	3	-2	-5	-2	-7
1977	0	-1	-1	-2	-2	-3	-1	-2	-3	-1	0	-7	1	2	4	4	3	-1	3	-1	2	3	6	7	12	9	10	11	13	11	13	13	19	17	17	14	16	18	15	13	14	14	16	15	16	14	12	15	14	11	10	8	9	9	7	10	9	7	11	10	7	9	7	2	2	-2	-1	0	3	2	3	1
1978	0	3	-1	0	-1	-1	-2	-5	-5	-9	-1	2	2	1	3	-4	-2	5	5	4	3	5	7	3	8	9	5	10	17	17	19	15	13	13	15	13	14	13	14	12	15	19	19	15	15	15	15	11	11	12	11	10	10	8	7	11	11	8	6	8	9	9	7	8	6	-1	-1	-4	0	-4	-3	-8
1979	-11	-2	-3	-3	-5	-5	-3	-7	-11	-4	-4	0	1	1	-1	-5	1	4	3	4	7	3	5	5	4	7	10	14	14	15	20	15	13	15	18	14	14	15	15	13	13	14	15	14	15	17	14	13	16	14	12	11	9	10	4	7	11	10	3	3	3	4	3	4	4	5	7	1	-6	-3	-1	1
1980	-6	-2	-3	-3	-2	-5	-7	-5	-1	-2	-3	-3	-2	1	0	-3	-3	2	2	3	6	5	6	9	7	8	9	13	8	12	15	19	16	15	13	13	15	16	14	14	16	21	18	15	16	16	13	13	13	14	13	12	13	10	9	9	6	7	5	4	-1	0	3	5	6	-4	-4	-4	5	0	3	4
1981	-1	-6	-2	-6	-1	0	2	1	-3	-2	-2	-2	-2	2	-1	0	5	5	6	5	8	4	2	5	4	12	18	14	15	13	15	15	12	13	14	15	14	18	16	14	15	15	15	19	17	13	14	12	13	15	13	10	13	13	12	10	7	6	4	4	7	0	3	4	5	1	1	-8	-10	-14	-5	-5
1982	-5	-13	-8	-7	-2	-3	-8	1	1	-3	-6	-2	2	0	3	3	3	4	5	5	3	6	7	7	6	7	10	12	10	15	20	13	10	12	13	13	15	16	21	18	18	18	22	20	16	14	14	14	13	12	12	14	13	13	12	11	8	7	9	7	6	4	7	4	6	4	1	2	0	1	2	2
1983	3	5	4	0	4	4	0	-3	-5	-2	-3	-2	1	4	2	4	2	2	4	4	3	8	9	9	7	10	10	12	13	11	13	13	14	16	15	13	14	20	19	15	17	17	16	19	15	15	18	15	17	12	13	13	11	9	10	8	10	9	6	7	7	8	0	1	-1	-1	-1	0	-5	-1	3	4
1984	2	-1	2	0	-6	0	1	0	-1	-5	-1	0	1	0	0	-2	-2	2	3	6	6	6	9	9	10	7	10	14	15	15	17	14	12	15	13	12	12	16	17	16	14	15	18	16	16	15	18	15	12	11	11	10	10	9	12	11	9	10	9	10	8	7	4	3	5	4	3	5	0	0	3	-2
1985	-9	-13	-8	-9	-2	-5	-3	-14	-11	-13	-3	0	0	0	0	-1	2	1	5	1	4	6	3	2	4	12	14	12	13	17	17	12	10	12	16	13	15	16	17	16	14	16	14	15	16	15	15	15	14	10	12	12	8	9	15	11	9	9	7	5	4	5	0	-1	-1	-4	2	-1	0	0	4	-3
1986	-5	-12	1	-3	1	-2	-3	-10	-6	-7	-11	-8	-6	0	1	2	2	3	2	3	0	4	5	9	13	12	11	10	11	11	12	13	14	16	16	19	18	14	14	16	15	17	18	15	15	13	12	12	12	10	9	9	9	8	8	9	9	8	6	7	5	7	6	6	6	7	7	4	2	0	-6	-3
1987	-8	-14	-14	-5	-2	-7	-2	0	0	-5	-3	-4	-10	-5	-5	-1	1	3	4	2	4	6	7	10	8	9	8	8	12	9	11	12	11	10	12	14	14	16	14	15	16	13	13	12	13	14	16	13	13	13	12	10	11	8	7	11	11	10	8	5	5	3	4	5	3	1	-3	-2	1	2	2	5
1988	6	2	3	2	1	1	3	2	2	0	0	0	-1	-1	-3	-2	1	4	5	4	4	9	3	6	11	10	14	10	11	17	12	18	15	17	18	19	18	16	16	16	17	15	14	17	16	15	13	15	14	13	12	13	12	12	9	10	9	9	3	3	1	1	4	1	0	-1	-3	1	1	0	3	5
1989	3	4	4	5	3	4	5	6	4	3	3	4	4	5	4	4	4	7	0	5	14	5	6	7	10	9	10	13	15	12	11	11	15	18	18	17	17	21	14	14	18	17	14	15	17	17	15	12	12	14	11	14	15	10	7	7	7	10	12	9	7	6	6	0	-3	0	1	0	-4	2	5	1
1990	-1	2	4	5	5	4	6	6	2	4	7	4	2	4	5	8	6	5	6	3	7	7	12	9	14	16	11	10	11	10	14	16	16	15	15	17	14	14	15	17	16	18	19	15	17	15	15	16	13	13	12	10	9	9	10	10	11	10	2	7	4	2	5	5	0	0	2	3	-1	-1	1	3
1991	3	4	-1	-3	2	-2	-4	-3	-5	-3	3	-1	1	3	5	5	4	4	7	7	10	2	4	7	6	8	9	9	10	12	8	11	12	11	14	13	19	21	17	15	16	18	20	18	16	15	17	15	16	12	12	13	12	10	10	11	11	7	3	5	6	5	5	0	4	5	3	-2	2	4	1	2
1992	5	1	3	0	-5	0	2	3	3	-3	3	3	5	5	2	4	4	1	4	4	6	3	5	8	9	7	11	14	17	18	20	18	16	16	16	19	18	18	17	17	19	17	17	18	16	15	14	15	13	12	13	11	13	11	8	7	5	4	4	1	6	4	3	3	2	3	5	3	4	3	-3	-2
1993	-5	3	3	5	3	-5	2	0	1	2	-5	-2	-1	0	2	5	4	1	5	3	3	6	12	17	11	13	16	15	17	12	12	15	14	13	12	15	15	13	12	15	14	14	15	15	15	14	12	11	11	11	9	7	11	8	9	11	7	4	2	3	3	4	4	-1	-2	-1	3	3	-2	3	1	0
1994	0	2	3	-1	2	1	-2	-1	-6	-4	-2	-3	-2	3	2	1	2	5	5	5	7	5	11	11	8	12	14	10	11	10	12	12	13	11	13	16	17	17	22	18	21	23	22	20	17	15	15	14	14	13	13	12	11	10	6	8	10	1	8	7	6	5	3	5	6	4	2	5	3	3	0	4
1995	-4	-2	-2	1	1	-2	2	1	3	3	3	3	3	3	1	3	4	1	3	3	6	3	14	7	10	8	6	8	11	16	13	13	13	13	16	18	14	17	19	18	17	20	20	17	19	19	19	13	14	16	15	11	11	8	11	13	12	11	7	8	0	3	2	-2	3	2	-1	-1	-2	-3	-6	-9
1996	-9	1	1	-1	-3	-5	-5	-8	-3	-5	-5	1	-1	-1	-1	0	1	0	0	6	3	9	14	7	8	7	11	7	9	11	12	19	14	12	13	14	13	14	15	14	17	15	16	18	19	18	19	17	14	10	10	9	8	10	10	10	10	10	6	8	10	5	3	4	3	0	3	2	-1	-4	-8	-5
1997	-10	-6	-1	0	-1	-2	-1	3	0	-3	5	3	5	4	3	-2	-1	5	5	4	4	3	4	8	9	7	12	11	8	10	14	17	17	14	14	17	17	18	18	18	19	17	17	21	21	20	21	20	18	14	13	11	11	10	9	12	5	6	2	2	2	7	6	3	2	-2	-2	4	2	-3	1	3
1998	4	3	4	3	-4	-4	-2	3	5	4	6	5	1	-1	0	3	1	6	2	4	5	6	10	13	11	12	12	13	9	15	13	14	13	11	15	14	14	14	13	14	17	15	15	15	16	15	13	12	13	16	13	12	12	12	8	8	8	8	9	7	2	1	2	-3	-2	0	-3	-8	-1	3	-1	3
1999	2	0	-2	4	4	-4	2	-5	-3	-1	0	3	3	2	-1	2	3	6	8	8	6	4	9	10	8	8	6	12	13	14	13	13	14	16	13	16	16	18	19	18	17	18	20	18	15	14	14	15	16	17	15	15	15	14	12	9	9	4	7	9	9	7	3	1	1	6	2	5	0	-2	-1	0
2000	3	4	1	3	-5	2	3	4	3	0	-1	4	2	3	2	2	3	3	5	4	5	9	12	17	13	14	13	14	12	11	12	13	14	16	17	14	16	13	15	15	17	16	16	14	16	16	14	15	12	14	10	11	10	14	13	11	10	11	11	9	8	8	7	6	6	7	7	7	7	0	-3	-2
2001	2	3	-2	-1	1	1	-8	1	3	1	-3	-3	-5	2	4	-1	-1	2	6	6	2	3	6	9	10	12	13	12	11	12	12	11	11	13	15	17	18	21	16	16	18	18	17	15	17	19	17	15	15	13	12	13	12	10	13	13	13	10	8	11	8	3	3	3	2	2	2	4	1	-1	-4	-7
2002	-4	2	0	2	4	3	7	5	3	1	0	3	2	4	4	5	2	4	7	4	8	6	9	8	11	15	14	12	15	13	16	18	14	18	16	14	15	18	18	20	16	20	21	19	20	20	20	18	17	18	15	12	9	10	11	4	4	2	5	6	1	1	4	2	3	3	1	-3	-3	-2	-5	-3
2003	-8	-8	1	3	2	-1	-3	-4	-3	-4	-2	-3	-2	2	3	2	2	4	4	0	5	9	10	9	11	11	10	11	13	14	18	16	15	14	15	17	16	17	19	21	19	18	19	20	19	17	16	12	13	16	14	16	14	9	9	8	5	3	0	3	7	4	4	7	6	5	6	2	3	3	0	2
2004	-6	-1	0	-2	-7	-4	3	1	-2	-1	-2	-1	-2	0	3	7	3	4	5	5	6	11	9	9	13	15	10	11	9	11	14	14	14	11	13	14	14	14	14	15	16	16	19	21	18	18	15	14	15	14	14	12	11	11	10	8	5	8	11	7	7	3	5	-1	0	4	3	5	4	1	2	1
2005	4	6	3	2	-3	-3	1	-2	0	-1	-1	-5	-7	-2	-1	1	3	4	6	5	9	8	6	8	11	7	10	9	13	15	12	12	12	16	17	15	18	20	19	17	16	16	16	14	15	17	17	14	15	16	13	11	13	12	10	12	10	5	8	10	10	9	9	-1	1	-1	1	1	4	-2	2	-2
2006	-2	-2	0	-3	-7	-3	-4	0	-1	0	-1	-4	-4	-8	-6	-2	-2	4	4	3	4	6	7	7	11	16	11	10	10	10	12	14	19	18	16	16	20	21	17	20	20	21	18	19	16	17	16	15	16	14	16	16	16	15	13	13	10	10	12	9	2	7	6	8	7	8	7	7	7	3	5	5
2007	6	7	6	4	-3	1	3	-3	0	1	-3	1	3	5	6	4	6	8	6	4	10	8	9	12	10	10	11	11	14	15	16	20	17	16	16	14	15	15	15	18	14	15	16	20	18	16	18	12	12	13	12	12	13	11	10	8	7	7	3	7	6	4	-1	4	4	2	5	5	2	1	1	3
2008	-1	3	4	5	3	3	2	4	1	3	5	5	2	5	5	1	-2	3	5	4	5	7	8	13	11	14	13	9	12	15	18	18	13	14	13	15	18	16	17	15	17	21	18	17	16	16	15	15	15	15	11	10	11	11	9	10	12	9	9	5	2	7	8	4	-2	5	2	2	1	3	2	-2
2009	-6	0	2	-1	1	0	-1	1	-3	-5	1	0	3	2	2	3	1	3	7	8	10	8	9	15	10	10	10	12	12	15	13	10	13	12	17	20	21	17	17	17	17	17	17	19	16	17	16	16	16	16	13	11	14	11	8	8	4	5	7	4	3	6	5	8	8	6	2	4	0	-6	-2	-2
2010	-7	-8	-3	-2	-5	-8	-3	-5	-5	-1	-5	2	-3	-3	-1	3	4	5	4	6	7	5	5	10	7	6	8	13	13	11	14	13	12	12	15	17	19	19	22	19	18	17	18	18	18	17	16	12	11	14	14	11	13	9	10	9	5	4	5	7	8	2	6	1	0	-6	-6	-3	-6	-6	-12	-8
2011	-4	0	-1	1	-2	-4	2	2	-4	-5	-6	-1	-1	0	3	1	4	2	7	8	6	9	13	12	5	13	12	12	12	13	16	18	15	14	14	18	19	18	15	17	16	18	19	16	15	15	16	15	15	14	15	12	13	13	14	9	6	7	7	9	9	7	3	4	6	7	4	3	4	2	3	3
2012	4	1	2	2	-3	-3	-10	-7	-4	0	3	2	2	1	5	5	6	6	1	3	6	5	8	10	11	9	10	11	19	13	10	12	13	14	14	15	17	18	15	14	18	17	17	15	16	18	16	15	15	14	13	12	10	11	11	8	6	11	8	2	5	6	7	5	6	3	-5	-6	-6	1	0	3
Average	-2	-2	-1	0	-1	-2	-1	-1	-2	-2	-1	-1	0	1	1	1	2	3	4	4	5	6	8	8	9	10	11	11	12	13	14	14	14	15	15	15	16	16	16	16	16	17	17	17	16	16	15	14	14	13	12	12	11	10	10	10	8	7	7	6	5	5	4	3	2	2	2	1	0	-1	-1	-1
By quartile																																																																								
Min. value	-11	-14	-14	-10	-7	-8	-10	-14	-11	-13	-11	-10	-10	-8	-6	-5	-3	-1	-1	-1	-3	-2	2	2	4	6	5	6	8	8	8	10	10	10	12	12	11	11	12	12	13	13	13	12	13	13	12	11	11	10	8	7	7	5	4	4	2	1	0	1	-1	-1	-3	-5	-5	-8	-6	-8	-10	-14	-12	-9
Lower	-6	-3	-2	-3	-3	-4	-3	-3	-4	-5	-3	-3	-2	-1	-1	-1	0	2	3	3	3	5	5	7	7	8	9	9	10	11	12	13	13	13	13	14	14	14	14	15	15	15	15	15	15	14	14	13	13	13	11	11	10	9	8	8	6	5	5	4	3	3	3	1	0	0	-1	-1	-2	-2	-3	-3
Median	-1	0	-1	0	-1	-2	-1	0	-1	-2	-1	0	1	1	1	2	2	3	4	4	5	6	7	8	9	10	10	11	12	13	13	14	14	15	15	15	16	16	15	16	16	17	17	16	16	15	15	15	14	13	12	12	11	10	10	10	8	8	7	7	6	5	4	3	3	3	2	2	0	0	0	0
Upper	2	2	2	2	2	1	2	2	1	1	1	2	2	3	3	4	4	5	5	5	6	7	9	10	11	12	12	13	13	15	16	16	15	16	16	17	18	18	17	17	17	18	18	19	17	17	16	15	15	14	13	13	13	12	12	11	10	9	9	9	7	7	6	5	5	5	3	4	3	2	2	3
Max. value	6	7	6	5	5	4	7	6	5	4	7	5	5	6	6	8	7	8	8	8	14	12	14	17	14	16	18	15	19	18	20	20	19	20	19	20	21	21	22	21	21	23	22	24	21	20	21	20	18	18	18	16	16	15	15	13	13	11	12	11	10	9	9	8	8	8	7	7	7	6	6	5
Range	17	21	20	16	11	13	17	20	16	17	18	15	15	14	12	13	10	9	10	10	17	14	12	15	11	10	12	9	11	9	13	10	9	9	7	8	10	10	10	9	8	10	9	11	8	8	9	10	7	8	10	9	9	10	11	9	11	10	12	10	12	10	12	14	13	16	13	16	17	20	17	15

Figure A11-21. Average temperature (ºC), for 5 or 6 day periods, their quartiles and range in Halland county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Halland** **Total precipitation , mm / 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Halmstad (Söndru** Coordinates for the places (RT90): 1317478-6285621 1340975-6289352 1327636-6276012 1340975-6276012

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	12	11	8	0	0	19	12	21	5	2	2	12	3	0	13	11	6	17	21	15	16	0	0	0	13	14	12	1	1	5	4	11	10	11	8	9
1962	13	11	18	18	38	3	17	19	42	5	0	0	10	6	0	0	3	14	27	13	12	4	1	4	6	25	4	14	29	24	3	0	4	16	7	22
1963	4	0	1	0	5	0	3	0	4	2	1	0	1	18	8	3	23	3	3	1	25	10	10	2	10	5	3	11	1	5	6	2	0	28	27	21
1964	3	3	0	1	3	43	12	0	8	1	2	1	0	2	0	1	0	0	0	8	9	0	12	12	14	12	8	2	0	0	15	16	2	15	35	4
1965	4	19	18	20	1	13	3	1	15	2	1	9	0	3	3	13	10	9	0	16	8	20	5	4	7	23	2	11	0	1	0	5	3	29	9	20
1966	18	0	3	2	3	5	20	3	14	9	29	11	8	32	14	3	27	23	4	3	14	13	21	0	19	6	2	6	13	5	11	32	0	9	9	21
1967	6	18	4	15	25	36	15	1	0	8	23	22	16	6	12	15	11	13	20	21	1	21	3	10	8	2	7	10	3	33	3	13	0	11	8	25
1968	3	25	25	24	7	23	8	6	3	10	0	0	5	2	12	26	15	13	21	23	0	2	3	4	17	20	9	11	2	1	4	18	0	27	29	28
1969	7	0	16	14	16	9	18	5	6	5	1	1	0	3	0	0	0	16	0	5	25	5	2	10	30	7	19	25	4	23	11	0	5	15	27	4
1970	17	1	1	0	0	6	19	11	3	2	2	1	18	8	4	36	10	29	18	21	2	15	37	18	1	0	13	14	15	17	4	12	0	0	12	12
1971	4	10	0	7	23	11	5	3	20	5	12	1	1	9	15	13	30	3	3	10	0	14	0	14	1	0	3	3	11	12	10	2	28	22	20	34
1972	4	1	0	8	1	7	4	18	3	0	0	1	3	17	1	0	0	21	30	25	7	8	0	12	0	0	0	12	29	45	8	9	15	8	22	28
1973	6	1	1	8	11	21	4	26	31	15	12	0	23	6	0	3	0	5	27	14	7	11	5	8	31	19	14	5	10	6	14	11	1	0	3	10
1974	1	1	52	15	11	19	2	26	14	5	11	0	0	0	0	38	1	0	0	0	0	0	1	0	11	0	0	1	9	14	11	17	9	7	24	0
1975	14	23	21	27	38	13	3	0	2	5	0	0	5	11	18	1	3	16	27	18	27	0	0	2	13	1	13	6	6	16	16	0	9	2	0	1
1976	21	21	3	33	5	7	0	9	9	0	8	1	0	1	0	0	5	16	31	4	5	1	2	3	11	1	15	0	3	14	13	0	9	17	0	0
1977	22	18	23	3	14	24	7	12	9	17	14	0	40	1	7	36	3	2	23	5	10	14	42	26	10	14	23	0	0	1	10	10	23	12	0	29
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1979	0	32	7	0	19	7	24	6	0	7	0	24	20	19	20	6	25	24	21	0	1	4	13	32	11	13	0	7	21	12	0	11	8	0	20	24
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1981	12	15	36	0	17	4	29	38	5	1	6	0	5	57	9	32	32	6	0	0	0	5	4	11	6	1	1	6	8	21	8	19	29	14	2	23
1982	22	2	0	0	26	26	1	21	4	0	0	3	23	12	27	12	0	2	0	14	3	3	3	17	26	23	0	7	11	0	1	13	69	0	3	13
1983	24	16	18	24	10	23	20	3	0	0	0	5	11	31	8	13	27	25	20	10	5	12	4	23	5	15	29	10	8	51	11	5	1	1	0	36
1984	23	26	46	14	5	7	22	21	0	0	1	4	3	1	0	0	0	10	5	8	3	5	0	0	8	5	10	7	13	11	2	22	9	2	48	29
1985	0	1	1	2	32	49	8	0	4	1	5	2	7	17	5	2	9	25	19	37	1	8	5	36	15	3	1	1	4	2	0	30	34	0	22	16
1986	5	9	31	42	28	2	2	0	1	1	0	0	20	0	1	1	35	34	1	0	10	9	20	0	0	16	18	4	27	0	6	10	0	1	0	0
1987	13	7	2	0	4	9	11	32	7	4	0	0	0	0	2	21	6	23	0	13	2	17	0	0	2	2	42	14	2	5	3	13	26	61	14	7
1988	55	38	18	4	12	33	23	35	13	11	22	14	15	12	20	34	15	9	6	14	0	10	18	0	9	0	0	12	4	9	9	8	0	3	20	24
1989	4	7	18	2	8	3	22	3	25	18	10	15	4	15	24	6	38	11	1	2	0	3	13	6	2	5	20	0	0	9	10	16	0	0	2	15
1990	0	18	33	17	51	34	16	40	16	21	9	24	19	17	5	4	9	0	5	10	11	9	0	10	0	3	17	16	7	12	12	5	0	23	15	5
1991	25	42	3	15	1	0	0	3	4	2	28	0	6	0	15	19	3	4	33	7	0	0	7	7	38	0	3	3	3	6	32	17	33	37	19	27
1992	42	21	2	10	1	2	15	15	32	3	20	2	14	7	40	18	12	9	26	0	29	9	9	31	9	21	12	0	0	1	0	0	1	0	1	0
1993	3	29	34	22	39	0	3	4	3	39	0	6	5	0	3	21	16	0	3	3	0	10	6	0	4	9	1	1	12	16	1	0	9	23	16	13
1994	14	2	32	23	20	32	13	9	0	4	12	32	21	59	30	8	36	15	15	1	20	0	0	12	0	0	0	4	7	13	19	11	13	24	34	5
1995	3	33	5	9	33	41	8	14	38	31	23	23	37	6	3	23	17	17	11	16	8	28	0	5	1	18	8	15	0	7	8	12	11	18	6	1
1996	0	4	2	0	1	0	0	0	14	21	6	3	0	1	0	0	0	23	1	1	1	0	21	2	23	4	8	51	37	12	1	14	6	30	4	8
1997	0	2	10	3	3	0	31	20	22	31	18	4	9	1	8	0	0	21	13	2	2	0	37	4	23	34	13	8	5	9	1	2	2	6	29	22
1998	23	14	11	11	12	7	26	8	57	11	17	7	50	0	10	5	3	11	32	1	17	6	6	10	10	9	5	1	12	8	8	28	16	60	12	42
1999	25	15	21	25	34	10	9	10	20	21	8	17	18	16	5	2	8	1	4	26	27	49	6	1	0	23	25	2	14	7	25	24	12	13	11	30
2000	8	11	33	2	3	44	30	32	8	1	12	13	23	23	11	0	1	22	16	0	37	11	6	3	0	0	0	12	27	24	17	21	1	1	37	31
2001	25	12	0	1	13	2	5	15	35	0	2	5	4	9	13	1	0	9	5	9	2	25	25	11	3	0	2	19	0	23	22	23	5	10	5	21
2002	3	3	2	29	40	96	38	39	20	14	27	23	15	29	0	10	1	0	0	0	1	6	5	20	33	0	6	9	18	36	1	10	41	28	9	77
2003	6	2	19	7	19	18	14	2	0	0	0	0	0	11	14	0	0	2	8	14	6	0	0	67	17	7	28	20	44	0	0	24	10	8	23	21
2004	0	6	22	14	2	48	33	8	1	1	13	2	0	0	22	36	6	12	10	9	1	1	7	0	5	2	37	1	3	7	1	5	24	38	41	11
2005	30	62	6	35	5	0	0	15	23	9	1	6	5	13	26	24	0	0	4	8	15	0	0	1	11	11	6	10	25	13	30	3	24	6	8	1
2006	1	5	17	11	2	0	8	28	3	7	2	9	12	0	0	0	0	47	13	29	11	15	0	19	0	0	1	33	27	25	2	0	0	7	11	15
2007	27	42	32	42	16	34	8	0	2	4	20	11	13	24	2	24	0	0	0	23	0	16	1	0	0	32	9	34	1	19	8	0	2	36	80	61
2008	6	32	21	14	28	30	12	4	0	3	16	39	26	15	26	15	20	5	19	4	9	2	0	1	17	0	0	4	0	1	0	2	30	20	11	15
2009	4	14	21	9	5	0	8	12	1	5	13	5	6	8	9	7	4	10	0	7	0	0	0	2	36	24	1	9	10	15	3	24	43	19	0	1
2010	11	1	0	4	0	17	18	0	3	32	8	8	2	0	1	7	3	18	5	3	0	5	3	15	4	11	31	3	7	8	1	65	43	8	2	1
2011	12	11	31	6	5	4	42	18	2	0	0	0	0	15	6	11	0	16	11	3	11	0	0	1	5	0	23	8	26	33	0	23	3	51	41	0
2012	51	15	10	18	10	0	0	0	15	31	31	6	0	11	0	17	0	0	3	31	6	4	19	8	0	19	6	13	0	10	8	25	6	18	38	14
Average	13	14	15	12	14	17	13	12	11	8	9	7	10	11	10	11	10	12	11	10	8	8	8	10	10	9	10	9	10	13	8	13	13	16	17	19
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	3	2	2	2	3	3	3	2	3	1	1	1	2	1	1	1	0	3	1	2	1	1	0	1	1	0	1	2	2	5	1	4	1	3	5	5
Median	7	11	14	9	10	10	10	9	6	4	6	4	6	7	8	8	4	11	6	8	6	6	4	5	8	5	7	7	7	10	7	11	9	12	12	15
Upper	22	20	21	18	21	26	19	21	16	11	14	11	17	15	14	18	15	19	20	15	11	11	10	12	14	16	15	12	13	16	11	19	23	24	24	27
Max. value	55	62	52	42	51	96	42	40	57	39	31	39	50	59	48	38	38	47	33	37	37	49	42	67	38	34	42	51	44	51	32	65	69	61	80	77

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	35	22	45	24	15	50	11	6	30	8	36	6	17	29	41	0	6	5	0	9	0	32	35	20	24	19	5	0	2	12	31	11	1	0	6	19
1962	23	12	19	14	19	17	13	40	23	47	59	44	17	48	18	9	4	2	4	1	4	8	3	19	1	0	23	6	5	22	1	11	20	2	1	12
1963	0	52	21	12	6	37	7	56	57	31	22	13	33	9	0	0	16	22	54	18	26	16	26	1	3	12	39	44	47	6	0	1	0	13	2	26
1964	14	37	13	4	24	17	7	5	0	37	9	19	1	8	29	37	3	2	0	47	22	9	25	0	3	0	21	14	15	21	11	44	47	19	1	15
1965	26	27	28	0	35	47	22	2	1	3	10	27	10	86	12	12	1	22	7	0	2	2	1	25	34	1	0	0	9	17	32	43	6	17	11	26
1966	4	15	50	12	6	21	34	27	37	0	1	2	23	11	40	1	0	0	31	23	3	7	24	0	9	18	12	23	3	35	7	22	4	32	24	31
1967	11	1	0	14	10	10	21	14	20	30	0	24	21	14	0	9	44	11	21	26	22	43	19	33	8	4	20	3	0	18	13	2	19	2	56	17
1968	2	26	39	9	15	4	0	0	20	48	3	24	4	0	7	5	13	16	9	35	11	33	0	22	25	19	0	4	20	25	0	0	0	8	13	14
1969	2	13	0	3	2	0	0	1	12	37	39	20	5	0	0	10	12	44	7	3	1	0	9	11	49	29	28	28	1	19	13	2	2	2	0	0
1970	44	12	47	17	23	23	17	20	2	22	1	1	20	9	42	9	0	12	36	18	1	46	9	60	57	18	26	7	16	14	14	14	4	11	0	0
1971	0	0	30	8	27	10	1	25	37	0	0	28	43	0	2	17	14	7	0	15	7	46	28	0	22	48	23	20	13	6	19	13	6	15	19	10
1972	8	20	5	6	4	24	18	10	33	11	9	0	0	19	7	4	6	0	0	0	1	7	15	3	8	68	27	14	9	29	22	25	26	0	0	0
1973	2	27	16	33	28	11	16	33	0	10	0	10	9	2	0	7	44	33	2	33	2	15	7	3	6	9	36	22	27	5	26	13	33	14	7	7
1974	19	9	20	12	9	22	22	9	14	4	2	22	22	33	12	17	17	41	26	25	2	10	17	22	3	32	37	15	14	19	17	25	32	43	25	21
1975	9	4	30	19	26	0	0	2	0	39	15	0	4	19	34	4	23	23	28	4	11	3	1	2	7	4	3	21	0	31	23	3	6	7	5	17
1976	0	1	2	28	4	27	14	1	4	9	0	2	8	21	15	7	0	7	11	11	15	25	5	3	11	7	7	1	7	46	24	22	3	6	13	24
1977	26	0	0	43	41	18	24	4	1	0	3	16	6	29	15	0	0	44	43	8	2	0	7	6	17	24	43	29	37	0	1	0	13	12	53	37
1978	18	59	18	35	8	0	52	6	8	7	11	17	24	27	69	12	28	23	13	2	2	18	8	5	8	1	10	60	15	21	1	2	23	0	7	7
1979	7	27	9	38	9	36	20	17	2	9	22	32	2	2	25	44	3	10	0	0	3	13	2	5	33	12	21	12	25	33	27	28	11	17	0	23
1980	12	24	21	29	1	0	40	24	0	21	24	28	0	31	30	9	6	7	8	32	16	10	27	53	0	3	32	55	44	11	16	49	61	23	35	21
1981	12	4	20	22	25	13	0	0	9	31	2	2	3	0	11	18	8	11	23	44	45	44	1	33	24	12	18	45	31	30	8	31	1	0	13	7
1982	9	0	4	4	0	1	0	9	36	57	52	18	24	13	0	6	5	1	0	18	10	16	15	5	5	7	26	28	40	17	5	44	42	22	20	19
1983	11	0	9	2	0	4	4	0	4	4	0	0	34	28	46	21	12	2	21	46	15	23	21	12	5	1	16	17	26	22	5	31	0	19	22	41
1984	8	2	15	9	20	11	18	5	2	3	0	33	37	31	20	23	21	12	23	26	24	34	58	9	5	1	1	9	30	5	2	17	0	25	2	11
1985	13	13	20	29	15	38	46	17	18	45	12	5	42	38	16	16	19	6	7	39	7	0	0	1	35	36	10	0	1	26	60	25	31	29	17	31
1986	17	25	3	4	47	16	2	15	7	42	11	28	14	33	24	13	1	2	2	15	0	15	20	40	26	18	17	20	23	3	33	1	11	18	7	18
1987	0	11	10	42	22	35	55	20	16	9	26	14	16	42	39	4	39	5	0	9	16	1	4	4	0	8	24	23	6	4	0	0	1	35	10	43
1988	49	20	21	36	14	54	36	0	18	15	22	11	43	1	38	0	30	43	1	53	8	3	2	17	5	2	3	5	2	38	9	11	6	23	32	19
1989	0	10	46	30	0	40	35	20	13	11	11	7	4	9	13	17	6	0	0	21	28	25	45	9	7	27	1	0	5	1	0	6	6	38	19	2
1990	52	50	1	4	9	2	6	18	16	61	14	0	3	20	2	36	63	62	52	32	13	1	0	12	20	1	18	31	5	12	2	3	4	11	7	36
1991	1	13	8	22	10	6	1	10	7	32	19	1	0	5	5	17	34	53	27	0	15	37	0	0	29	44	29	1	7	7	1	0	6	40	45	11
1992	3	1	29	12	2	23	7	4	33	11	55	28	28	5	38	1	2	0	0	4	53	19	12	26	46	2	37	23	25	22	25	2	22	13	0	0
1993	10	14	76	11	43	55	24	44	17	11	15	20	19	4	17	2	9	4	3	32	28	6	2	0	0	13	26	1	9	1	35	29	8	42	20	16
1994	0	0	0	3	0	4	1	3	30	27	3	59	53	36	44	21	0	48	41	0	0	0	9	30	4	1	42	28	3	2	14	47	24	21	5	75
1995	15	2	18	27	9	0	2	0	0	0	29	0	27	9	34	8	13	49	9	2	2	12	2	45	10	17	13	33	6	0	1	7	1	3	13	2
1996	44	19	2	1	0	14	6	0	3	0	11	31	8	1	25	0	0	43	9	7	0	6	5	52	40	22	16	14	14	7	19	2	31	8	0	4
1997	18	0	2	5	12	68	12	1	1	3	4	6	19	24	22	5	0	2	34	31	7	6	20	5	7	13	18	0	0	9	5	31	13	0	30	19
1998	14	21	46	25	23	36	13	20	29	25	34	7	0	20	78	7	0	1	0	22	42	67	68	38	8	25	8	1	13	3	10	0	27	5	52	17
1999	7	0	21	21	18	0	0	14	69	46	2	25	0	1	0	3	29	60	41	29	13	0	5	15	7	1	1	4	10	18	29	51	25	26	56	10
2000	1	21	4	5	5	8	19	8	9	7	21	28	28	8	18	0	0	5	5	26	13	2	49	42	13	15	18	15	13	12	10	13	59	5	0	19
2001	1	11	28	5	0	0	41	31	28	3	9	26	29	26	17	45	15	9	22	29	3	1	1	38	15	34	1	3	13	16	13	3	0	13	29	21
2002	45	13	1	12	55	8	9	0	29	3	1	21	0	3	0	19	7	4	11	0	8	33	25	28	0	4	19	29	25	5	7	0	0	2	0	25
2003	75	0	18	2	6	9	7	0	29	3	27	17	3	14	0	0	14	3	8	29	0	3	1	11	16	0	3	55	26	8	4	1	36	20	40	21
2004	32	76	23	40	17	7	17	0	2	36	41	46	13	0	33	34	30	5	22	7	3	26	42	14	9	2	8	12	40	22	15	1	18	19	25	12
2005	0	7	12	47	21	37	28	16	28	1	19	27	1	1	7	12	0	18	16	2	0	4	61	1	38	11	40	0	5	16	7	11	3	2	13	19
2006	0	1	7	0	3	18	38	10	36	18	9	48	25	15	0	3	0	19	54	27	0	9	33	77	7	40	36	19	21	1	38	19	76	9	2	33
2007	78	40	26	0	59	36	3	13	20	28	28	27	25	25	13	30	20	19	1	1	6	11	0	20	16	19	0	1	15	14	32	26	0	0	3	33
2008	0	47	14	43	0	0	65	40	13	18	22	30	16	36	0	1	4	22	72	3	26	29	39	34	0	28	39	19	2	15	28	5	5	18	7	0
2009	9	44	20	39	21	19	30	16	23	13	6	15	34	1	2	0	8	21	41	16	2	8	15	3	18	17	15	35	30	21	2	6	12	3	22	13
2010	0	1	16	6	9	50	13	26	53	16	50	6	0	8	42	65	3	0	0	21	0	29	36	29	29	6	29	10	32	4	9	14	2	19	3	6
2011	10	9	22	12	57	5	7	39	29	14	5	79	16	29	35	22	21	2	7	39	5	31	4	5	0	0	0	9	9	19	32	32	24	10	20	11
2012	10	29	45	35	1	29	2	31	0	1	27	14	6	18	28	23	55	50	32	12	30	7	3	18	26	23	2	1	23	4	12	5	6	4	26	42
Average	16	17	19	18	16	20	17	14	18	19	16	20	16	17	21	13	14	18	17	18	11	16	17	19	15	15	18	17	16	15	15	15	16	14	16	18
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	2	7	5	4	5	4	2	3	4	3	6	4	4	5	3	2	3	2	4	2	3	2	4	5	2	7	3	5	5	4	2	3	4	3	10
Median	10	13	18	12	11	17	13	10	16	12	11	19	16	14	17	9	8	11	9	18	7	10	9	13	9	12	18	14	13	14	12	11	7	13	13	17
Upper	18	26	26	29	23	35	24	20	29	31	24	28	25	28	34	18	20	23	27	29	15	27	25	29	24	22	27	24	25	21	24	25	24	20	24	24
Max. value	78	76	76	47	59	68	65	56	69	61	59	79	53	86	78	65	63	62	72	53	53	67	68	77	57	68	43	60	47	46	60	51	76	43	56	75

Figure A11-22. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Halland county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A12 VÄSTRA GÖTALAND COUNTY♣

In this appendix some additional figures of yield at county and farm-level are presented for some of the major crops in Västra Götaland county which are not in the main text (Section 3.4.2) as well as temperature and precipitation data for the period 1961-2012.

♣ For literature references in this Appendix see the *References* section of the main text.

A12.1 Crop yield

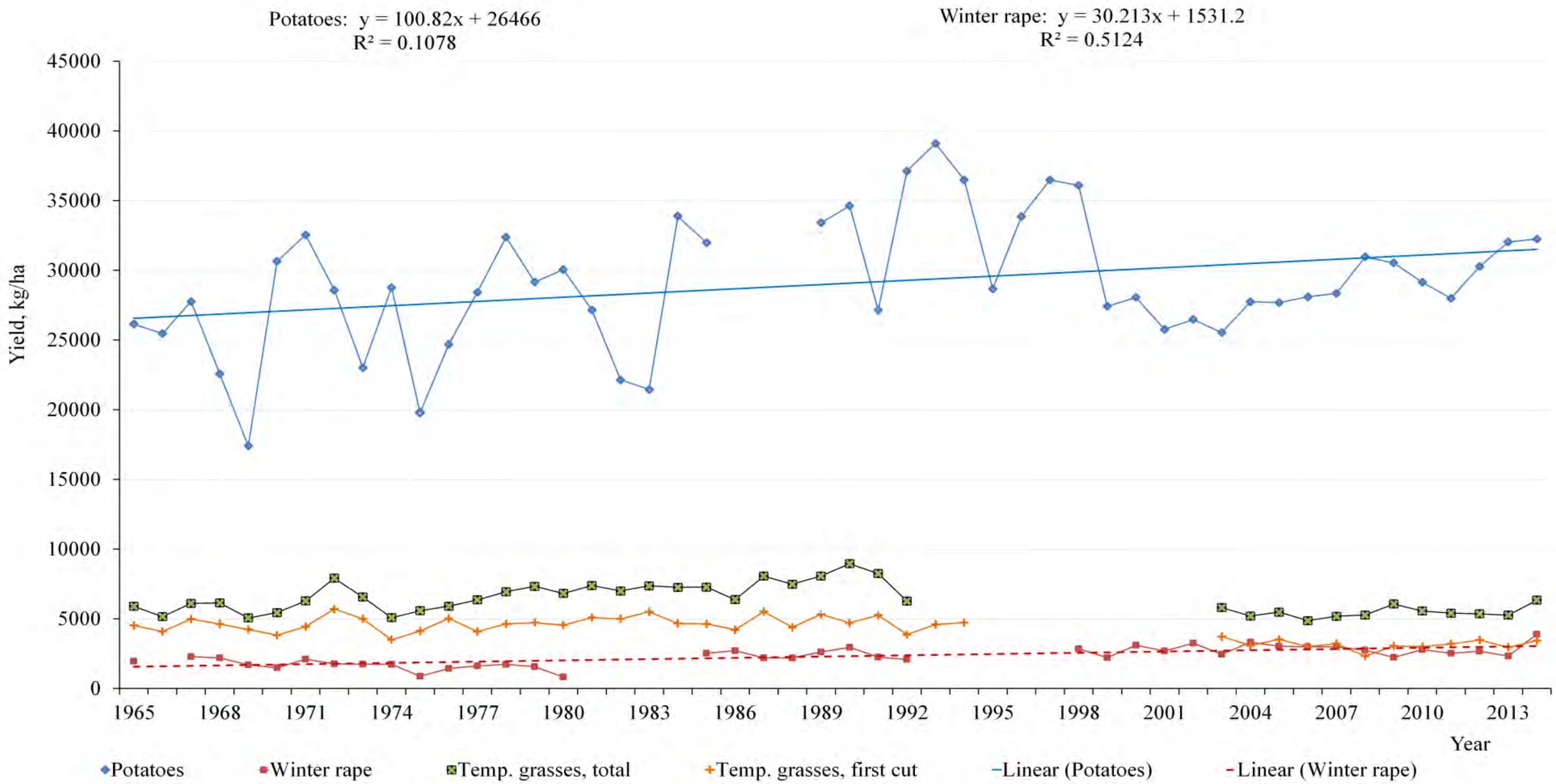


Figure A12-1. Average yield (kg/ha) per year of potatoes, winter rape and temporary grasses (total and first cut) in Västra Götaland county for the period 1965-2014, and the trend lines with respective equations for potatoes and winter rape. Yield data in the period 1965-1997 from Skaraborg county and 1998-2014 from Västra Götaland county (Jordbruksverket, 2015). The variable x in the trend line equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50.

A12.2 Yield on farms

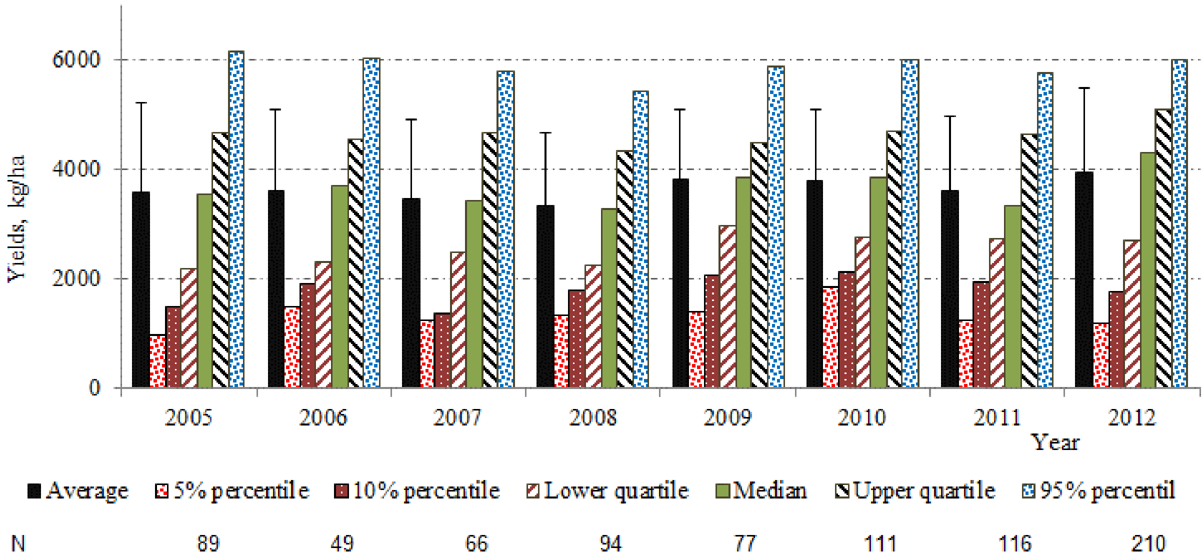


Figure A12-2. Average and estimated percentiles of spring wheat farm-level yield in Västra Götaland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

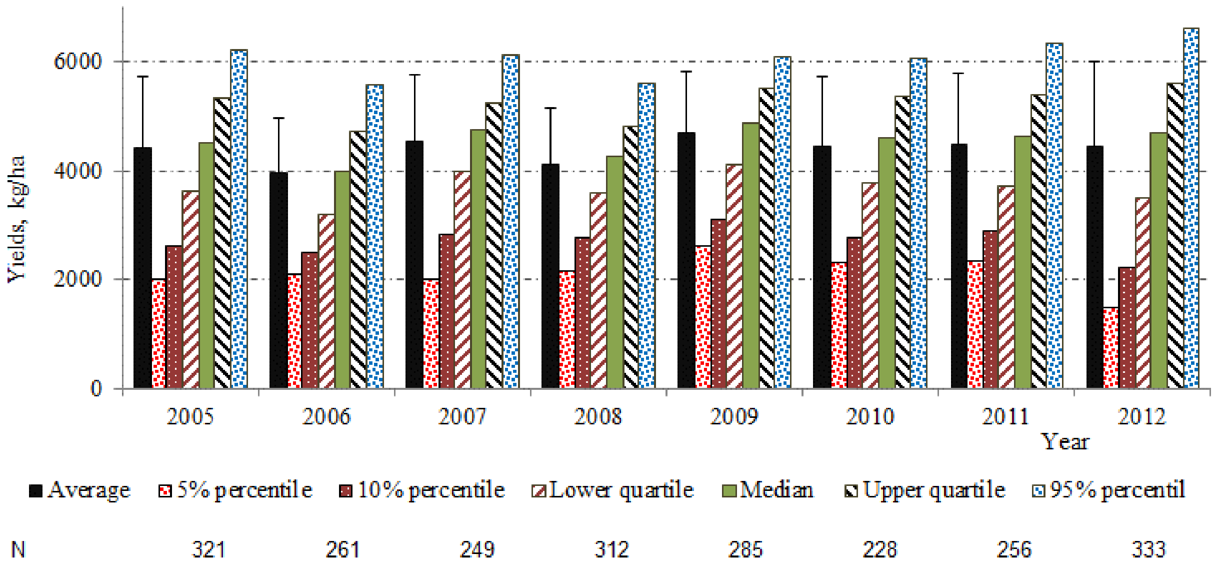
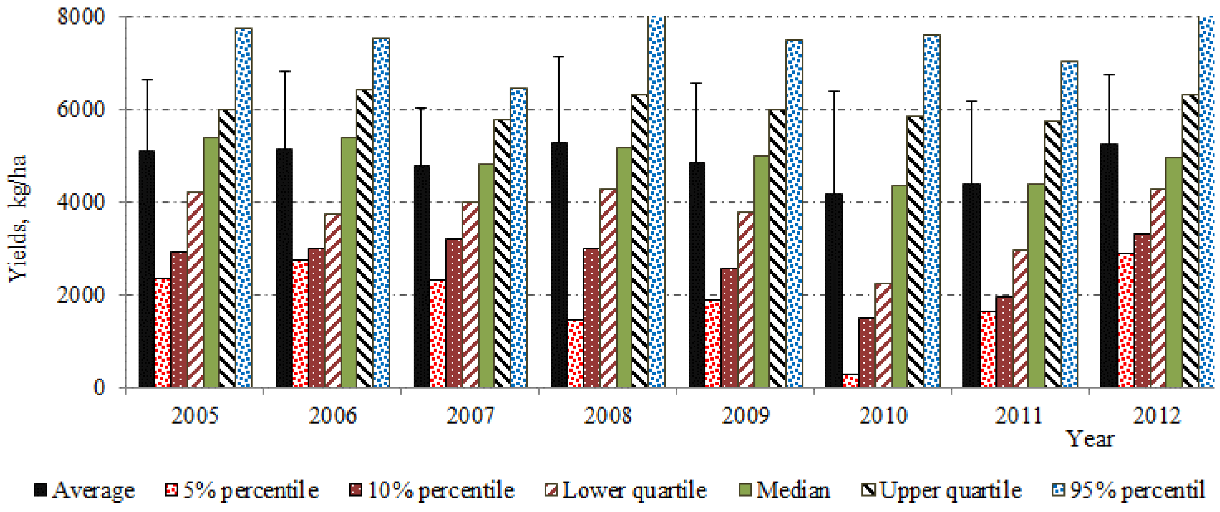
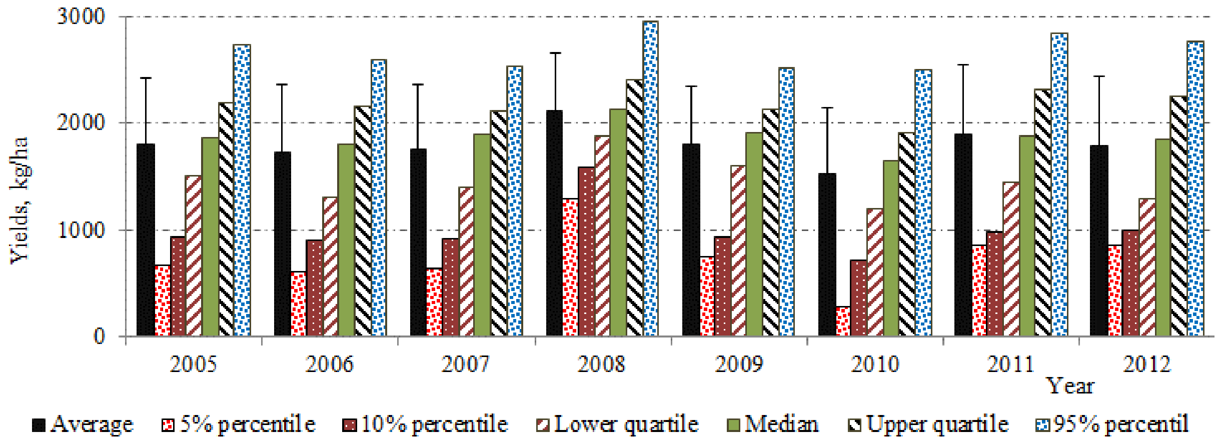


Figure A12-3. Average and estimated percentiles of spring barley farm-level yield in Västra Götaland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N 53 63 52 56 73 56 60 37

Figure A12-4. Average and estimated percentiles of rye farm-level yield in Västra Götaland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N 167 142 103 94 92 91 127 166

Figure A12-5. Average and estimated percentiles of spring rape farm-level yield in Västra Götaland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

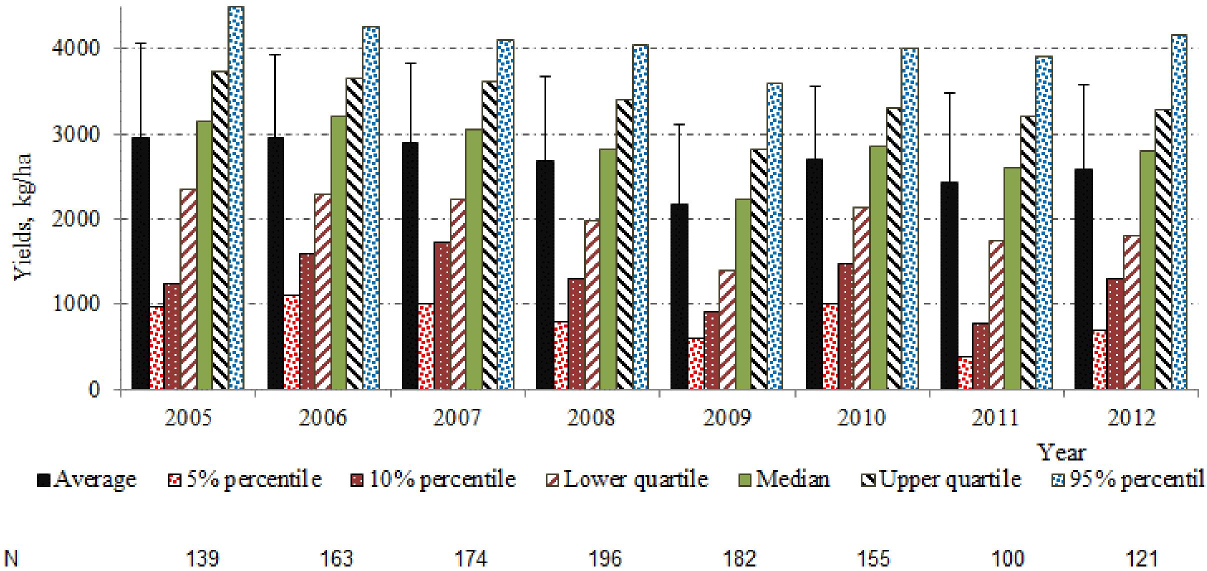


Figure A12-6. Average and estimated percentiles of winter rape farm-level yield in Västra Götaland county, 2005-2012. The error bars on the averages represent one standard deviation and ‘N’ denotes the sample size. Yield data from SCB (2014a).

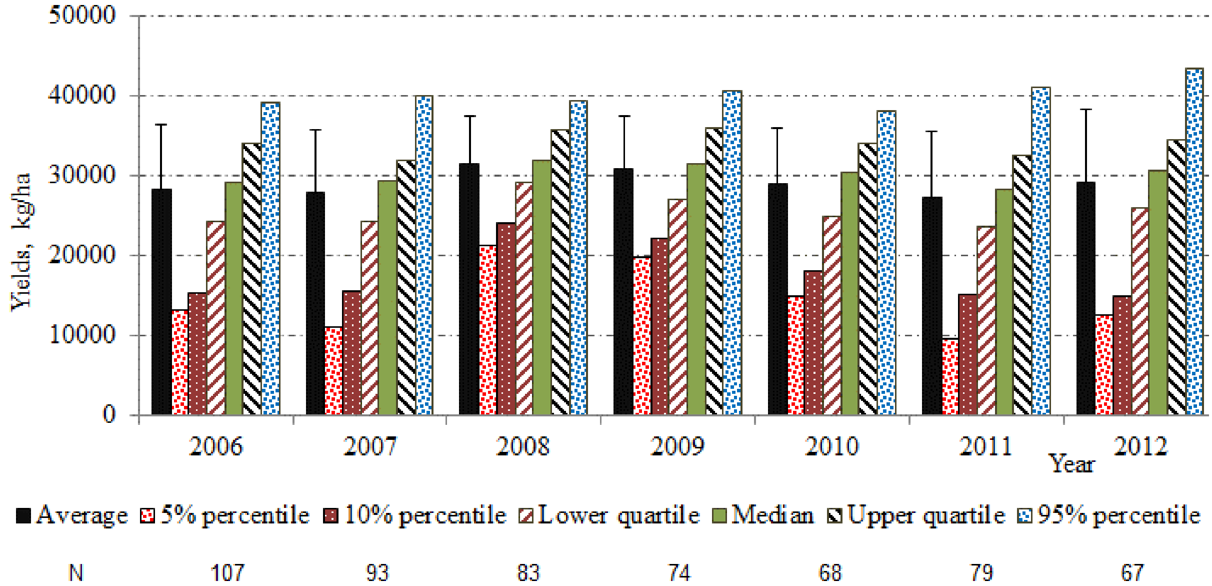
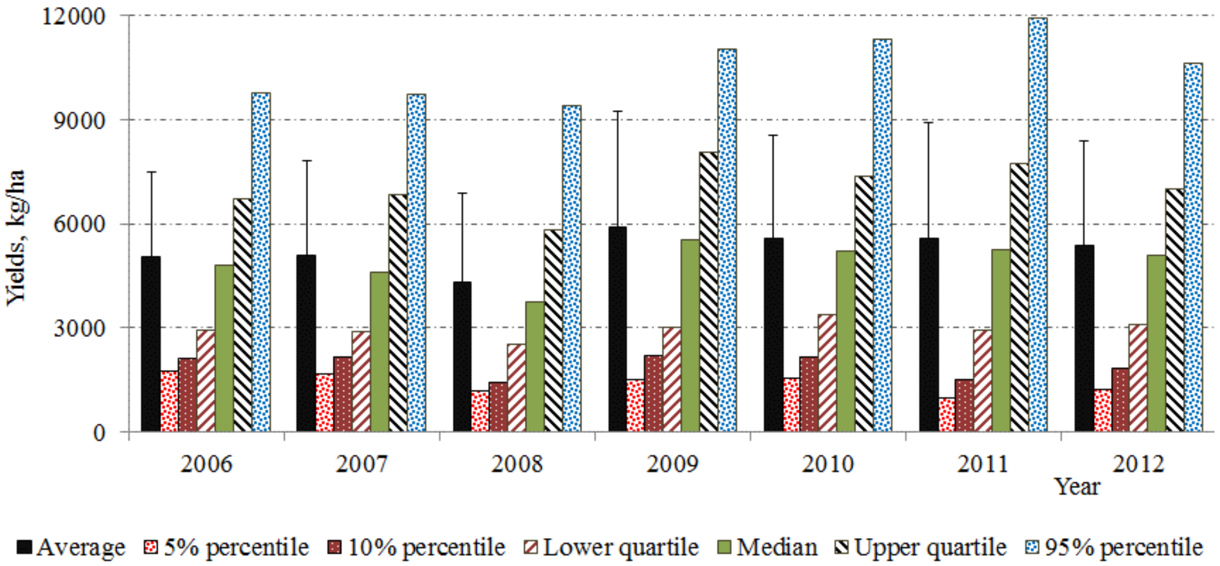


Figure A12-7. Average and estimated percentiles of potato farm-level yield in Västra Götaland county, 2006-2012. The error bars on the averages represent one standard deviation and ‘N’ denotes the sample size. Yield data from SCB (2014a).



N	108	88	101	102	110	124	103

Figure A12-8. Average and estimated percentiles of temporary grasses farm-level yield in Västra Götaland county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A12.3 Temperature and precipitation, 1961-2012

In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

County: **Västra Götaland** **Average temperature (°C) for 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Lidköping** Coordinates for the places (RT90): 1346371-6490351 1362319-6489448 1346311-6481444 1368989-6478776

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	0	-1	-2	-5	-8	-1	-2	1	2	4	1	4	3	7	5	3	4	2	0	3	7	8	11	9	9	9	9	10	11	11	18	18	15	15	13	15
1962	-3	1	0	3	2	-6	-1	1	-2	2	-2	-5	-5	-5	-9	-5	-4	0	2	2	3	6	9	6	5	8	8	9	10	9	10	15	13	14	13	13
1963	-8	-15	-12	-10	-8	-5	-8	-8	-5	-15	-5	-3	-4	-1	-5	-3	-2	-1	0	3	4	5	4	7	7	10	11	8	13	17	14	18	15	15	14	15
1964	1	-1	-2	-2	1	-1	1	0	-6	-10	-4	0	-1	0	-2	-4	-1	0	1	3	6	12	7	9	8	10	11	10	15	15	11	14	17	13	13	14
1965	-1	-5	2	1	-2	-4	-2	-1	-1	-3	-4	-11	-9	-5	1	3	0	3	4	2	5	6	7	8	8	8	10	7	9	11	14	15	14	15	14	13
1966	-11	-3	-7	-10	-6	-2	-9	-16	-16	-13	1	2	2	2	-5	2	1	-1	3	1	-5	-3	4	9	11	7	10	14	10	11	12	14	19	21	16	16
1967	-2	-7	-2	1	-7	-9	-2	-1	-3	-1	0	1	3	6	4	2	3	4	2	4	5	5	3	7	4	7	13	9	12	14	15	11	13	17	12	14
1968	-8	-13	-8	-2	0	-1	1	0	-4	-10	-9	-3	-3	-2	-2	0	5	7	3	1	5	9	11	11	9	7	8	5	9	13	17	13	18	20	15	14
1969	-5	-5	-3	0	-4	1	-3	-2	-15	-9	-4	-6	-7	-4	-8	-5	-7	-2	2	6	3	2	5	7	4	10	10	8	11	13	10	15	19	20	20	17
1970	-10	-9	-4	-11	-4	-6	-8	-8	-15	-14	-7	-10	-3	-2	-3	1	-2	-3	-4	0	1	4	5	3	6	10	13	10	9	12	13	19	15	20	18	17
1971	-6	-1	-1	0	2	-1	-1	1	2	1	0	-8	-10	-3	-1	2	0	1	3	3	4	6	4	2	7	13	14	14	8	13	18	13	13	11	13	15
1972	-4	-4	-6	-6	-1	-6	-3	-1	0	0	-3	-3	-1	-2	-2	3	3	2	3	5	6	5	4	5	13	10	8	8	12	10	13	15	13	14	12	19
1973	1	0	-1	-2	0	0	3	1	0	1	-1	-3	2	1	2	4	7	5	3	2	3	4	5	5	9	9	8	8	12	15	13	16	12	14	19	19
1974	0	0	1	1	2	2	3	-1	4	0	2	1	1	0	0	2	2	5	7	8	3	7	7	7	8	8	9	14	12	10	12	11	15	17	17	14
1975	3	-1	4	3	2	1	2	-1	-4	-1	1	0	3	3	1	-1	1	0	0	2	2	5	7	9	8	14	13	15	10	10	8	15	15	14	18	14
1976	-3	0	-4	-1	-5	-8	-6	-5	-2	-1	1	4	1	-4	-7	-4	-5	3	3	4	7	6	5	3	6	13	10	14	14	9	12	14	14	14	17	19
1977	0	-3	-2	-4	-5	-6	-3	-4	-6	-5	-5	-9	-1	1	3	3	1	-2	1	-3	1	3	5	7	10	9	9	11	13	11	13	12	19	18	16	13
1978	-2	3	-1	0	-2	-2	-2	-7	-9	-11	-4	2	1	1	2	-9	-4	5	3	5	3	4	5	3	7	8	5	10	15	18	20	15	13	14	15	14
1979	-13	-1	-3	-6	-8	-10	-7	-8	-14	-8	-5	1	1	2	-2	-7	0	3	2	3	6	3	5	5	4	5	10	13	13	14	18	15	14	16	18	13
1980	-6	-3	-2	-2	-4	-9	-11	-11	-2	-3	-9	-5	-3	0	-1	-5	-5	0	2	4	7	4	6	7	8	9	10	13	8	11	16	19	17	16	13	13
1981	-4	-5	-2	-8	0	1	2	0	-3	-4	-4	-3	-4	0	-4	-3	3	2	5	6	8	4	1	4	3	11	15	14	16	13	15	13	10	12	14	13
1982	-10	-14	-4	-9	-3	-6	-8	-1	2	-4	-4	-2	2	0	2	2	3	4	4	4	3	6	8	6	6	7	10	11	10	14	20	12	10	13	13	13
1983	3	4	3	-2	4	2	-3	-5	-5	-4	-4	-3	0	3	2	4	1	1	2	3	3	8	8	8	8	11	10	12	12	11	12	13	14	16	16	13
1984	1	-3	1	-3	-9	-2	1	-2	0	-5	-2	-1	0	0	-1	-2	-3	0	1	4	6	5	9	8	10	6	10	13	15	14	16	14	12	16	13	12
1985	-9	-14	-8	-6	-6	-6	-6	-18	-12	-15	-4	0	-2	-1	0	-2	1	-1	2	-1	2	5	3	2	3	9	12	12	12	16	17	10	11	13	17	14
1986	-6	-10	0	-7	1	-3	-5	-9	-5	-10	-12	-7	-2	1	0	2	2	3	2	1	-1	1	4	8	14	13	11	11	11	11	12	13	15	18	16	19
1987	-11	-17	-16	-8	-3	-9	-1	-1	0	-7	6	-7	-15	-9	6	-2	0	3	3	2	3	5	7	10	8	9	6	8	12	9	12	12	11	10	13	14
1988	4	0	2	2	1	0	3	1	2	-1	-2	-2	-2	-1	-4	-3	0	2	4	4	3	6	1	6	10	11	14	10	11	17	12	16	16	18	20	21
1989	3	2	4	5	3	5	5	6	3	2	2	4	3	5	4	4	4	6	0	5	12	4	5	7	10	9	9	12	16	12	10	12	15	19	19	16
1990	-2	2	4	4	3	3	6	5	2	4	7	3	2	3	4	9	7	6	6	2	7	7	11	10	16	16	11	10	10	11	14	15	16	15	15	16
1991	3	2	-1	-1	1	-3	-5	-4	-7	-3	4	-2	0	2	3	4	3	4	6	7	10	1	4	6	6	9	9	9	10	13	9	11	12	11	13	13
1992	5	2	3	0	-2	1	1	3	3	-4	3	3	4	6	1	4	4	1	3	4	4	3	5	8	9	8	11	16	18	18	19	18	16	16	16	18
1993	-3	3	2	4	2	-6	3	0	0	1	-7	-1	-2	-1	2	6	4	0	3	2	2	6	11	15	12	11	14	14	16	12	12	15	12	13	12	15
1994	-3	0	1	-3	1	-3	-6	-3	-10	-8	-7	-9	-4	3	2	0	2	4	5	4	5	5	10	11	8	13	13	9	12	10	13	12	14	11	14	17
1995	-5	-2	-2	1	0	-5	2	-1	1	3	2	1	2	2	1	2	4	1	3	3	6	2	10	3	10	9	4	7	10	17	14	13	12	13	15	18
1996	-11	0	1	-1	-4	-6	-6	-9	-5	-8	-7	1	-1	-1	-1	-1	-1	0	1	6	2	8	10	6	7	6	12	5	10	10	12	17	14	13	14	14
1997	-10	-6	0	1	-1	0	-1	3	-3	-5	5	3	5	5	4	-2	-2	5	5	3	4	4	3	7	9	7	11	11	8	10	15	18	18	14	14	16
1998	3	0	5	1	-4	-4	-3	3	4	4	6	4	-2	-4	0	3	1	7	-1	2	2	4	9	11	9	11	12	14	8	13	11	14	13	12	15	15
1999	2	-2	-6	4	4	-8	1	-8	0	-1	-1	2	2	0	-2	1	1	6	8	8	5	3	8	10	8	7	5	13	12	13	13	13	14	16	13	16
2000	3	4	2	2	-6	1	1	3	2	-2	-1	4	0	1	2	3	3	2	3	4	5	8	11	15	11	15	14	14	12	10	11	14	13	15	16	14
2001	0	2	-2	-2	1	0	-12	-1	3	1	-4	-9	-6	2	4	-4	-3	1	6	6	1	3	6	8	9	12	13	11	12	11	12	11	12	14	16	19
2002	-3	2	2	3	1	0	6	5	2	2	-1	0	0	3	2	4	1	5	7	4	7	6	10	8	10	12	14	12	15	12	17	18	14	17	15	13
2003	-11	-11	1	4	2	-2	-3	-3	-2	-4	-3	-4	-3	3	3	3	3	5	4	0	4	8	8	7	9	10	10	11	12	14	18	16	14	15	15	17
2004	-7	-2	0	-4	-7	-3	2	0	-2	0	-1	-3	-2	-2	2	6	1	4	5	5	6	10	8	9	13	16	10	12	9	11	15	14	15	11	13	15
2005	3	6	3	2	-3	-3	2	-2	-1	-2	-4	-5	-8	-2	-4	-1	2	4	7	4	7	6	6	8	10	8	10	8	12	13	11	12	13	16	17	15
2006	-4	-3	1	-5	-6	-4	-6	-2	-3	-2	-3	-5	-7	-9	-7	-2	-5	2	2	3	4	6	7	8	11	15	11	10	11	10	12	15	19	19	15	15
2007	4	6	4	2	-5	-1	2	-5	-2	0	-4	0	2	4	6	3	3	6	6	3	11	8	9	11	11	10	10	11	12	12	14	21	16	14	16	14
2008	-1	2	4	4	2	3	1	4	1	3	5	5	1	4	4	0	-3	2	5	4	5	6	9	13	11	15	12	7	12	16	19	19	12	13	13	14
2009	-7	0	1	-1	1	0	-3	-1	-5	-6	-1	-1	1	1	0	2	0	2	6	8	10	7	9	13	10	9	9	11	13	14	12	10	13	13	17	21
2010	-9	-12	-7	-2	-6	-9	-4	-5	-9	-6	-11	1	-7	-5	-2	2	2	3	4	6	5	5	5	10	6	7	9	14	13	11	15	14	13	13	15	18
2011	-3	0	-3	0	-3	-4	2	1	-8	-8	-8	-2	-1	0	1	0	5	1	6	8	7	11	12	11	5	13	12	11	12	13	16	18	14	14	14	19
2012	3	-1	2	0	-3	-3	-10	-7	-2	-1	4	3	2	1	5	5	8	7	1	2	5	4	7	9	10	9	9	11	18	14	9	12	12	14	14	16
Average	-3	-3	-1	-1	-2	-3	-2	-2	-3	-4	-2	-2	-1	0	0	0	1	2	3	4	5	5	7	8	8	10	10	11	12	13	14	14	14	15	15	15
By quartile																																				
Min. value	-13	-17	-16	-11	-9	-10	-12	-18	-16	-15	-12	-11	-15	-9	-9	-9	-7	-3	-4	-3	-5	-3	1	2	3	5	4	5	8	9	8	10	10	10	12	12
Lower	-7	-5	-3	-4	-5	-6	-5	-5	-5	-7	-5	-4	-3	-2	-2	-2	-1	1	2	2	3	4	5	6	7	8	9	9	10	11	12	13	13	13	13	14
Median	-3	-1	-1	-1	-2	-3	-2	-1	-2	-3	-3	-1	-1	0	1	2	1	2	3	4	5	5	7	8	9	9	10	11	12	12	13	14	14	14	15	15
Upper	1	1	2	2	1	0	2	1	1	0	1	1	2	2	2	3	3	4	5	5	6	6	9	10	10	11	12	13	13	14	16	16	15	16	16	17
Max. value	5	6	5	5	4	5	6	6	4	4	7	5	5	7	6	9	8	7	8	8	12	12	12	15	16	16	15	16	18	18	20	21	19	21	20	21
Range	17	23	21	16	13	15	19	23	20	20	19	15	20	15	16	18	15	10	11	11	17	14	12	14	13	12	11	11	11	10	12	12	10	11	8	9

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	16	14	15	16	16	15	14	15	13	13	13	15	15	12	13	14	11	12	12	13	11	10	10	8	5	5	4	2	3	1	1	-2	-6	-1	-5	-5
1962	13	14	13	16	15	14	14	12	13	13	13	12	13	12	9	9	10	10	12	11	6	8	8	6	6	6	2	-2	-2	-1	0	2	-1	-7	-5	-8
1963	19	14	13	15	17	15	18	17	15	14	14	13	14	13	12	12	12	9	8	7	7	9	9	7	6	6	5	2	0	3	0	-2	-4	-6	-7	4
1964	12	12	15	18	15	14	13	17	14	14	13	15	13	12	10	10	10	11	7	9	8	7	7	1	3	3	6	2	4	1	-1	4	3	-1	-1	-5
1965	12	12	13	16	17	13	12	14	13	15	16	12	13	13	10	12	13	13	11	8	8	7	6	8	5	2	-4	-6	-7	-1	-1	-2	-9	-4	-2	-6
1966	16	16	14	17	19	14	14	15	15	15	14	14	14	12	13	11	9	6	10	8	6	10	7	1	2	6	2	1	1	2	3	1	-2	-1	-4	-2
1967	15	17	15	19	15	16	18	15	15	14	16	15	14	13	12	13	10	11	11	10	10	4	8	8	6	6	5	4	4	1	5	-6	-1	-5	-3	-7
1968	19	14	13	15	15	17	17	19	14	13	17	17	18	18	10	9	9	10	7	3	8	4	7	7	0	-2	-3	-3	3	4	1	-2	-2	-1	0	-4
1969	16	14	16	17	18	21	21	20	18	18	14	14	14	15	16	10	11	9	6	12	8	10	7	6	3	4	5	4	-4	-6	-5	-5	-1	-5	-6	-3
1970	14	17	13	14	14	15	17	16	15	14	15	15	13	12	12	13	7	7	8	11	8	9	5	2	0	-3	0	3	4	1	0	4	2	4	-4	-7
1971	19	20	15	13	15	17	18	15	14	15	15	13	13	12	8	10	12	8	10	11	6	7	8	5	8	0	3	-3	-2	3	2	1	1	6	5	-1
1972	16	17	16	21	20	17	16	18	15	14	13	13	13	13	9	10	9	5	8	9	7	5	4	8	7	7	3	-1	1	4	6	5	6	4	0	0
1973	20	19	18	17	16	18	17	15	17	17	12	14	14	14	10	11	9	6	10	8	2	-1	1	5	4	5	-1	-1	0	-10	-3	-4	-1	-3	0	3
1974	14	16	14	16	15	14	14	15	14	15	15	16	15	13	13	13	10	9	8	7	3	5	5	4	3	3	6	5	1	1	2	3	0	1	6	-1
1975	17	19	17	17	16	18	20	25	20	16	16	17	16	13	12	14	12	11	11	7	5	6	7	10	8	3	4	2	-1	2	3	2	2	-2	3	4
1976	18	17	19	20	18	15	12	17	18	18	16	16	11	11	12	9	8	6	7	9	7	4	7	3	4	7	4	1	0	5	0	1	-2	-5	-5	-8
1977	16	18	15	12	14	14	16	15	15	15	12	15	14	10	9	9	9	8	6	8	8	8	11	9	7	8	6	0	1	-3	-3	-1	2	2	2	-1
1978	15	14	15	13	15	18	19	15	14	15	15	11	11	11	10	9	8	7	6	10	10	7	5	8	9	9	7	7	5	-2	-3	-5	-3	-6	-6	-13
1979	14	15	16	13	13	15	14	14	14	16	13	12	14	14	11	11	9	9	3	7	11	8	3	1	2	2	1	3	4	4	7	-1	-7	-7	-1	1
1980	16	16	15	14	16	20	18	15	16	16	13	12	13	14	12	12	12	10	8	9	6	6	2	2	-1	0	1	3	5	-6	-3	-2	4	0	1	3
1981	14	18	16	14	15	16	16	16	18	13	13	12	14	14	11	8	12	13	11	9	6	4	4	4	4	0	1	3	3	-1	0	-7	-10	-12	-6	-6
1982	14	17	20	19	18	19	24	21	15	14	13	14	12	11	13	15	11	13	11	9	7	5	8	7	5	3	6	3	6	4	1	1	-1	0	2	2
1983	14	21	20	15	18	18	16	19	16	15	17	16	16	11	13	12	10	9	9	6	9	9	6	7	7	7	0	1	-1	-2	1	-1	-3	-3	1	3
1984	13	16	16	17	16	16	18	16	16	15	17	15	11	11	10	10	10	8	10	10	8	9	8	9	8	5	3	1	4	3	3	5	0	0	2	-2
1985	16	17	17	15	14	16	14	14	16	16	14	15	13	10	12	10	7	8	15	10	8	8	7	5	3	4	-1	-2	-2	-4	0	-8	-1	-5	4	-6
1986	18	14	14	16	15	17	17	16	15	13	11	11	12	9	8	9	8	8	8	8	9	7	4	7	3	6	5	5	5	7	7	4	0	-1	-6	-5
1987	15	16	15	16	17	13	13	12	12	14	15	12	12	12	12	9	10	7	7	11	10	9	7	5	4	1	4	4	2	-1	-2	-2	0	-2	1	4
1988	18	16	17	17	17	14	14	18	16	15	14	15	13	13	12	13	12	11	9	9	8	7	2	2	1	0	3	1	-1	-4	-7	0	-1	-2	1	5
1989	17	20	14	13	20	18	14	16	16	16	15	11	13	13	10	13	15	9	8	7	6	10	10	8	7	6	7	1	-3	-1	3	-1	-8	-1	4	1
1990	14	14	15	17	16	19	19	14	17	15	15	16	13	12	12	10	8	8	9	9	10	9	1	6	2	4	5	3	-1	-1	2	2	-1	0	0	2
1991	19	21	16	15	17	18	20	17	15	15	16	15	16	12	12	12	11	10	9	10	9	6	4	5	6	3	4	-1	5	6	2	0	4	3	0	2
1992	15	18	16	17	19	16	16	17	15	15	14	14	12	11	12	11	13	10	8	7	4	2	3	0	5	3	2	2	1	2	5	2	3	3	-4	-2
1993	16	13	13	16	14	14	15	15	13	13	12	11	11	10	9	7	10	7	9	11	6	4	2	3	2	3	3	1	-2	-2	2	1	-4	2	-1	-2
1994	18	20	22	18	20	23	21	19	18	15	16	13	14	12	13	10	11	9	4	9	9	1	7	7	4	4	1	3	6	4	2	4	0	2	1	3
1995	13	16	18	17	16	20	20	17	19	20	19	12	14	14	13	10	11	8	10	13	11	11	7	7	-1	2	2	-4	3	2	-1	-1	-1	-4	-8	-7
1996	13	14	15	15	18	15	16	17	19	19	20	17	14	10	9	9	8	10	9	10	9	9	6	7	10	3	1	4	2	-1	3	2	-4	-10	-9	-4
1997	18	18	18	18	20	17	18	21	21	21	20	20	18	14	12	11	11	10	8	10	5	6	2	1	2	6	5	1	1	-2	-3	4	2	-4	0	1
1998	16	15	14	14	17	15	15	15	16	14	12	12	11	15	14	12	12	10	6	7	8	6	9	5	1	-1	1	-3	-1	-1	-2	-6	-2	3	0	2
1999	15	18	20	18	16	18	21	16	14	14	13	15	17	17	14	14	15	13	11	8	8	4	7	8	9	6	4	0	2	6	-1	3	-4	-3	0	-2
2000	17	14	14	16	17	15	16	14	17	16	14	15	11	14	10	10	9	12	13	11	10	11	11	7	7	7	6	5	7	6	7	7	7	1	-2	-3
2001	19	22	15	15	18	19	17	15	17	18	17	15	14	12	12	14	10	8	12	12	12	10	6	10	7	1	3	4	2	2	2	3	0	-1	-8	-8
2002	14	18	18	19	16	19	19	19	20	20	19	18	16	17	14	11	9	10	10	3	3	0	4	4	0	1	0	2	1	1	0	-3	-3	-3	-6	-5
2003	16	18	19	21	19	18	19	19	19	17	16	12	13	16	14	15	13	8	9	8	5	2	-1	4	7	4	3	5	2	4	5	2	2	3	-2	1
2004	14	14	15	16	16	16	19	22	19	18	14	14	15	14	14	12	11	10	9	7	4	8	9	6	5	4	5	-2	-1	1	4	4	4	1	1	1
2005	18	21	20	17	15	16	16	15	17	17	17	14	15	15	13	11	13	12	10	11	10	3	6	9	10	9	8	0	3	-2	1	2	3	-3	1	-3
2006	21	21	16	19	21	21	19	20	17	17	17	15	16	14	16	14	16	15	12	12	9	10	11	6	1	6	4	7	6	9	8	6	7	1	4	3
2007	16	16	15	17	16	15	16	20	18	15	18	11	11	13	12	10	13	11	10	7	7	7	4	6	6	3	0	3	2	2	4	4	0	0	1	4
2008	19	14	16	15	19	22	17	16	16	15	15	14	15	13	10	10	10	10	8	9	10	8	8	5	2	6	6	3	-2	4	1	1	0	3	1	-3
2009	21	15	16	17	16	16	17	20	15	16	16	15	16	15	12	12	13	11	6	6	3	5	6	4	3	5	4	7	7	5	0	3	0	-7	-4	-5
2010	20	18	21	19	17	17	16	17	18	17	15	12	11	13	14	11	12	8	10	9	4	4	2	7	7	0	3	-1	-2	-8	-8	-5	-7	-6	-12	-8
2011	19	19	15	16	17	19	19	15	15	15	16	16	16	13	14	11	12	14	14	9	6	6	6	9	9	5	1	5	6	7	3	1	3	1	3	3
2012	17	18	15	14	17	17	17	15	16	18	16	14	15	13	12	11	8	11	11	7	5	10	6	2	5	4	6	5	5	1	-9	-7	-7	0	-3	1
Average	16	17	16	16	17	17	17	17	16	16	15	14	14	13	12	11	11	10	9	9	7	7	6	6	4	4	3	2	2	1	1	0	-1	-2	-1	-2
By quartile																																				
Min. value	12	12	13	12	13	13	12	12	12	13	11	11	11	9	8	7	7	5	3	3	2	-1	-1	0	-1	-3	-4	-6	-7	-10	-9	-8	-10	-12	-12	-13
Lower	14	14	15	15	15	15	15	15	15	14	13	12	13	12	10	10	9	8	8	7	6	5	4	4	2	2	1	0	-1	-1	-1	-2	-3	-4	-5	-5
Median	16	17	15	16	16	17	17	16	16	15	15	14	14	13	12	11	11	10	9	9	8	7	6	6	5	4	3	2	2	1	1	1	-1	-1	0	-2
Upper	18	18	17	17	18	18	19	18	17	17	16	15	15	14	13	12	12	11	11	10	9	9	8	7	7	6	5	4	4	4	3	3	2	1	1	2
Max. value	21	22	22	21	21	23	24	25	21	21	20	20	18	18	16	15	16	15	15	13	12	11	11	10	10	9	8	7	7	9	8	7	7	6	6	5
Range	9	10	9	9	7	10	11	13	9	8	9	9	8	8	9	9	9	10	12	10	10	12	12	10	11	12	13	13	14	18	16	15	17	18	18	17

Figure A12-9. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Västra Götaland county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Västra Götaland** **Total precipitation , mm / 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Lidköping** Coordinates for the places (RT90) 1346371-6490351 1362319-6489448 1346311-6481444 1368989-6478776

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31
1961	8	9	2	0	0	15	8	7	1	0	2	1	2	0	3	8	1	12
1962	6	6	10	15	17	3	11	3	27	1	0	0	4	11	0	0	0	14
1963	7	0	0	0	3	1	10	0	3	0	0	0	0	3	1	0	1	2
1964	2	0	0	0	0	10	3	0	11	2	1	7	0	0	0	0	0	0
1965	2	7	6	18	5	11	2	0	2	4	0	6	0	1	1	4	1	1
1966	11	0	6	1	4	21	28	5	29	10	20	11	6	11	8	1	10	19
1967	5	4	0	7	10	35	14	0	0	3	18	16	8	6	3	6	4	10
1968	2	1	19	14	4	5	5	10	1	1	1	0	2	5	1	14	11	3
1969	3	0	24	16	20	14	11	6	3	6	7	1	0	16	0	0	0	3
1970	8	0	9	1	0	7	7	6	0	1	0	0	10	12	1	7	3	8
1971	0	5	0	4	13	8	0	1	5	5	4	3	2	6	10	17	3	3
1972	2	1	0	9	1	12	10	11	6	1	1	0	2	12	0	0	1	9
1973	4	0	4	3	9	17	1	2	15	6	2	0	2	0	0	4	0	6
1974	0	1	23	8	3	13	3	15	12	3	0	1	0	0	0	23	6	0
1975	2	13	12	23	14	9	2	0	2	0	0	0	7	9	0	0	2	15
1976	7	6	0	10	2	1	1	1	3	3	1	0	0	5	0	0	2	13
1977	22	14	20	8	9	16	8	3	3	9	11	0	16	0	12	32	4	7
1978	12	2	1	1	5	18	6	3	13	0	6	2	6	5	29	18	7	16
1979	3	3	9	0	10	13	11	0	0	10	2	0	3	4	6	0	5	17
1980	2	2	0	0	9	6	0	18	4	0	0	0	0	1	0	0	0	13
1981	1	4	11	1	1	0	7	11	7	1	6	0	4	19	10	6	17	10
1982	8	1	0	0	7	22	1	8	2	0	0	0	11	1	11	10	1	3
1983	10	4	14	18	1	25	15	3	1	0	0	2	0	3	3	12	26	8
1984	16	13	14	19	4	5	9	2	0	2	1	3	5	2	0	0	0	12
1985	1	1	1	12	31	7	4	1	0	3	7	1	6	14	3	1	16	24
1986	26	8	16	6	5	3	3	0	0	0	1	0	7	0	2	0	25	17
1987	7	7	1	3	0	2	1	16	19	0	1	0	0	0	0	7	7	14
1988	24	9	11	2	6	27	11	18	3	8	14	14	5	12	3	5	3	2
1989	0	1	5	0	1	0	16	0	8	11	6	6	4	8	7	4	15	4
1990	0	3	10	6	20	20	7	40	2	5	15	13	4	8	6	1	6	0
1991	14	33	6	2	0	0	0	10	4	1	11	1	6	0	5	5	11	1
1992	13	13	2	2	1	0	5	6	25	0	1	0	6	5	8	10	5	3
1993	1	11	32	8	22	0	0	0	2	29	0	16	0	0	0	2	3	0
1994	9	7	24	6	8	15	8	4	0	7	6	0	10	5	7	0	13	7
1995	5	14	2	3	23	8	3	0	13	12	8	12	19	3	2	5	15	11
1996	0	3	2	1	2	0	0	0	5	20	2	3	0	1	0	0	0	16
1997	0	0	6	0	7	0	1	8	14	9	23	0	4	0	1	0	1	10
1998	16	13	5	13	9	0	18	1	20	8	2	7	13	1	3	0	1	6
1999	17	13	8	5	18	18	3	4	5	9	0	15	19	9	7	8	17	5
2000	3	3	24	0	2	7	8	13	4	0	2	20	10	14	0	1	0	6
2001	18	20	0	0	11	7	4	18	3	3	5	11	3	7	19	4	0	3
2002	1	0	1	14	31	30	15	15	11	1	9	23	7	17	1	11	0	0
2003	5	3	4	3	9	4	6	0	0	0	0	0	0	6	8	0	0	0
2004	0	4	9	5	1	14	9	20	0	6	7	4	0	0	9	14	0	1
2005	3	26	4	10	1	0	0	7	18	2	1	3	0	2	14	11	0	0
2006	0	2	2	14	5	0	6	18	0	7	4	6	7	0	1	0	8	26
2007	14	22	15	24	5	14	4	4	2	1	10	12	6	17	0	16	6	0
2008	8	12	12	7	10	21	22	9	0	0	18	6	5	10	7	12	5	5
2009	0	1	2	5	4	1	5	9	2	2	7	0	6	4	6	3	11	12
2010	4	4	0	4	0	15	12	2	0	32	11	9	5	0	0	2	6	17
2011	12	10	13	1	2	0	4	17	3	0	1	0	0	13	1	8	0	8
2012	22	9	16	2	5	0	1	0	8	4	7	2	0	6	0	1	0	1
Average	7	7	8	6	8	10	7	7	6	5	5	5	5	6	4	6	5	8
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	1	1	1	2	1	2	1	1	0	1	0	0	1	0	0	0	2
Median	5	4	6	5	5	7	5	4	3	2	2	2	4	5	2	4	3	6
Upper	11	10	12	10	10	15	10	10	9	7	7	7	7	9	7	9	7	12
Max. value	26	33	32	24	31	35	28	40	29	32	23	23	19	19	29	32	26	26

Month	April						May						June					
Year / Day	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	17	12	8	0	0	0	25	9	13	2	0	7	14	12	20	8	4	19
1962	8	17	10	2	3	4	0	22	3	9	18	11	0	0	11	27	14	3
1963	3	1	15	9	1	1	5	8	4	11	6	1	3	5	1	15	13	29
1964	0	2	3	0	4	14	16	9	3	1	0	1	25	15	10	17	23	1
1965	0	7	9	16	9	3	3	12	0	6	0	2	1	13	15	23	15	14
1966	7	0	0	6	21	0	8	6	4	7	8	7	9	1	0	3	6	9
1967	18	11	2	16	3	10	6	16	16	16	6	2	7	13	0	1	10	5
1968	26	6	0	2	4	2	18	21	4	20	1	1	4	4	0	2	16	12
1969	0	1	12	11	5	7	19	11	35	50	3	13	7	0	0	2	1	2
1970	16	16	1	9	24	13	1	0	3	2	7	16	1	0	3	0	13	13
1971	9	5	0	2	1	2	0	0	4	2	1	16	0	4	6	12	10	27
1972	23	14	5	6	0	3	1	0	0	38	18	27	12	3	15	5	12	21
1973	6	4	3	10	5	3	8	12	3	2	16	4	6	3	1	0	0	5
1974	0	0	0	0	0	0	0	0	0	0	4	23	3	6	2	7	11	2
1975	6	11	8	0	2	2	8	1	3	1	4	13	16	0	0	0	0	1
1976	6	1	1	1	0	6	10	0	7	0	0	23	5	0	11	6	0	0
1977	10	14	14	8	11	12	27	5	22	0	0	0	6	10	0	0	0	10
1978	0	0	7	0	1	0	0	0	7	12	1	0	0	23	5	0	10	16
1979	14	0	2	8	24	13	7	18	0	3	23	16	0	6	6	0	29	5
1980	0	0	0	13	4	8	0	4	0	8	9	12	1	20	8	11	25	17
1981	0	0	0	2	1	4	12	4	0	2	22	20	3	14	29	19	15	28
1982	1	12	0	1	0	9	16	12	0	10	10	2	2	1	18	2	1	20
1983	18	4	1	7	8	13	0	2	19	39	11	21	18	3	1	0	0	20
1984	7	3	2	4	0	0	8	0	9	7	3	11	12	2	7	1	43	18
1985	35	21	1	9	8	17	8	4	0	1	4	8	11	23	18	7	18	26
1986	0	0	10	33	16	1	0	5	11	6	7	0	7	18	0	2	0	0
1987	0	7	2	7	0	0	1	2	20	38	4	7	6	18	22	76	15	4
1988	2	4	0	23	5	0	18	0	0	2	5	3	7	0	0	0	1	3
1989	1	4	1	2	14	8	0	6	11	0	0	22	10	18	0	0	1	10
1990	11	6	9	6	0	1	0	1	4	4	9	1	4	2	0	43	28	4
1991	17	9	1	1	1	0	28	0	6	1	0	0	29	27	40	22	17	35
1992	18	2	32	1	7	41	7	4	5	0	0	0	0	0	3	1	2	1
1993	3	6	0	1	9	0	1	5	17	0	3	9	7	0	6	14	9	4
1994	6	1	20	0	1	4	0	0	1	1	6	4	29	5	2	6	16	6
1995	3	16	4	21	1	21	0	2	10	16	8	20	22	18	27	30	18	5
1996	1	0	0	2	11	3	57	11	3	9	4	7	0	11	14	13	11	5
1997	2	3	0	1	18	7	14	45	10	1	5	7	0	0	0	8	43	30
1998	33	0	14	9	9	8	4	17	2	0	5	7	26	14	11	32	6	28
1999	1	7	29	48	3	0	0	22	11	0	19	3	20	26	14	2	11	29
2000	10	0	27	22	26	1	1	0	0	10	28	25	8	12	5	1	45	16
2001	5	12	10	24	9	10	14	1	1	28	0	27	2	11	6	7	5	18
2002	0	0	2	0	2	20	9	1	7	1	16	58	0	4	45	35	14	15
2003	6	10	3	0	0	61	19	0	14	12	20	0	0	33	18	8	28	3
2004	8	9	0	1	2	1	16	4	6	2	14	1	2	2	20	40	18	1
2005	3	14	7	0	0	4	20	5	1	12	22	21	41	9	18	11	3	0
2006	10	11	3	17	4	15	11	0	0	27	25	4	0	0	0	3	14	35
2007	0	16	0	9	3	0	0	9	20	24	7	16	13	0	1	27	28	44
2008	4	12	8	0	0	2	22	0	0	7	0	0	0	0	10	12	22	7
2009	0	5	0	0	0	1	3	7	1	12	13	7	6	9	22	14	5	0
2010	6	2	0	0	3	8	4	2	16	14	11	5	0	31	22	8	0	2
2011	8	5	4	0	0	0	1	0	21	6	15	17	0	67	4	39	15	9
2012	2	23	4	10	20	6	0	32	7	4	0	17	23	21	11	13	76	26
Average	8	7	6	7	6	7	9	7	7	9	8	10	8	10	10	12	14	13
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	0	1	1	1	0	0	1	1	1	2	1	1	1	2	4	3
Median	6	5	2	3	3	3	7	4	4	6	6	7	6	6	6	7	13	9
Upper	10	11	8	9	9	9	15	9	11	12	13	16	12	16	16	16	18	20
Max. value	35	23	32	48	26	61	57	45	35	50	28	58	41	67	45	76	76	44

Month	July						August						September					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30
1961	21	17	14	16	2	24	34	9	21	7	21	2	15	3	20	0	2	8
1962	19	6	4	12	13	10	10	49	8	40	20	23	30	13	28	1	0	2
1963	0	38	12	8	2	12	23	19	20	31	8	9	36	5	0	0	4	10
1964	10	18	16	5	22	1	4	6	0	27	5	6	0	3	28	28	0	2
1965	12	21	23	0	38	39	13	6	0	6	13	8	54	21	18	10	1	25
1966	2	22	22	0	5	9	16	19	15	0	0	0	14	4	15	0	0	0
1967	13	1	3	8	2	11	33	17	29	11	0	18	17	3	0	15	40	10
1968	0	31	9	9	13	0	0	5	11	25	0	18	2	1	5	5	8	9
1969	0	8	0	6	10	3	0	0	3	2	22	28	1	0	0	5	17	26
1970	13	33	10	6	23	26	20	4	5	21	1	1	9	9	13	11	0	5
1971	0	0	12	38	25	25	6	48	30	0	0	21	8	1	2	11	6	6
1972	8	22	12	3	5	17	5	24	7	18	4	0	0	18	28	3	1	0
1973	0	34	3	2	13	16	20	31	0	1	0	5	2	1	0	16	25	29
1974	4	1	21	8	2	10	1	6	15	6	0	7	17	19	3	2	16	30
1975	1	0	29	4	18	0	3	0	2	14	8	0	3	26	48	0	12	11
1976	0	5	11	5	0	40	10	0	0	0	0	4	2	27	15	7	0	6
1977	15	3	1	32	34	15	34	1	3	0	4	4	5	11	29	0	0	20
1978	9	6	3	18	9	5	32	9	11	5	6	19	55	16	29	2	17	11
1979	2	9	2	16	8	35	12	17	5	9	6	52	19	1	4	12	3	22
1980	5	6	7	25	0	2	43	48	0	12	20	10	4	18	15	13	3	2
1981	11	3	12	37	8	9	0	1	1	13	3	1	0	1	13	14	17	11
1982	13	0	0	1	0	0	0	1	22	29	15	2	31	11	1	6	16	3
1983	7	0	1	0	0	2	1	0	14	1	0	0	20	18	29	12	26	0
1984	9	0	15	2	14	1	17	0	7	2	0	4	9	8	19	6	32	9
1985	0	7	0	14	4	29	17	6	8	9	20	3	33	25	9	6	3	9
1986	8	13	4	5	15	6	17	12	4	33	15	35	3	10	15	1	0	2
1987	0	14	8	7	10	31	76	2	20	2	19	22	9	13	15	1	7	3
1988	46	18	33	37	12	10	11	1	23	19	7	10	65	0	4	5	11	15
1989	0	11	14	2	0	24	22	16	12	12	20	7	3	14	4	11	1	0
1990	27	16	1	3	9	5	0	14	10	25	4	5	29	25	1	13	27	21
1991	1	16	9	25	1	0	4	27	3	21	7	1	0	1	1	8	16	30
1992	9	4	30	13	0	4	8	4	15	6	23	34	17	3	13	0	1	0
1993	3	18	50	2	8	23	16	34	30	7	5	6	4	0	7	23	5	0
1994	0	0	4	1	0	5	1	5	21	17	2	26	43	23	41	17	3	27
1995	16	0	6	7	6	0	4	0	0	0	10	0	37	9	45	3	2	42
1996	13	29	0	0	0	2	1	1	1	0	30	18	2	7	41	1	0	12
1997	17	0	0	1	9	48	4	0	0	3	8	32	8	3	21	9	1	3
1998	3	7	30	6	18	24	2	11	43	13	15	16	0	21	79	2	2	2
1999	11	0	34	14	3	1	0	26	8	7	1	12	0	0	1	19	28	41
2000	1	14	30	19	15	11	13	1	11	5	7	10	8	5	0	0	0	15
2001	0	12	30	10	2	0	7	19	9	4	2	35	11	34	4	15	14	1
2002	14	3	0	6	55	11	9	5	20	2	0	8	2	1	1	7	0	0
2003	53	0	8	20	23	9	1	0	18	3	11	12	0	0	3	4	4	4
2004	25	74	20	9	14	1	46	1	0	24	9	20	1	0	35	21	6	1
2005	2	2	13	20	12	38	11	18	7	0	8	7	3	5	3	0	0	4
2006	0	6	11	0	1	17	8	10	38	18	65	15	14	8	0	3	0	12
2007	38	53	16	4	39	15	0	8	14	15	4	9	9	17	5	17	30	21
2008	12	53	8	24	2	2	43	59	27	15	2	8	19	47	0	0	0	6
2009	27	58	27	14	35	26	4	6	17	2	11	21	27	1	0	1	5	9
2010	0	0	26	19	56	40	25	27	22	5	35	19	0	1	10	17	9	0
2011	2	11	28	24	32	2	9	25	36	34	9	45	9	19	27	32	10	4
2012	9	40	9	11	1	28	3	33	0	12	13	12	1	6	11	16	52	24
Average	10	15	13	11	12	14	13	13	12	11	10	13	14	10	15	8	9	11
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	2	4	3	2	2	3	1	3	2	2	4	2	1	2	1	1	2
Median	8	8	11	8	9	10	9	7	10	8	7	10	8	8	10	6	4	8
Upper	13	19	21	16	16	24	18	19	20	18	15	19	19	18	23	13	16	16
Max. value	53	74	50	38	56	48	76	59	43	40	65	52	65	47	79	32	52	42

Month	October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	0	11	1	29	15	19	21	26	10	0	7	3	18	2	0	0	6	15
1962	18	0	4	1	1	12	0	0	15	6	15	7	0	4	14	3	7	13
1963	42	2	15	2	6	0	6	21	21	19	46	2	0	0	1	10	0	3
1964	0	30	47	30	15	0	1	0	15	13	12	4	6	12	21	5	0	9
1965	2	0	0	1	0	20	33	0	1	1	7	14	11	29	5	11	12	11
1966	25	14	8	10	12	0	19	0	6	14	0	11	3	7	8	11	6	21
1967	12	19	42	61	37	23	12	3	7	6	0	4	1	4	17	0	27	3
1968	2	5	25	15	0	64	43	5	0	1	8	10	0	0	0	5	14	12
1969	12	4	0	0	7	3	16	17	25	17	14	2	1	3	1	2	1	0
1970	21	19	6	14	2	40	17	3	19	6	22	20	3	6	3	2	0	3
1971	1	5	2	21	8	0	29	28	3	21	4	6	2	9	2	6	3	15
1972	3	1	5	6	16	9	3	15	9	8	6	7	26	26	9	1	0	0
1973	0	19	1	5	0	0	5	2	16	19	18	3	5	5	5	5	7	4
1974	33	24	3	18	20	30	3	20	24	27	5	10	5	3	3	13	8	18
1975	12	2	12	2	1	2	10	5	1	8	1	10	14	0	10	8	1	8
1976	13	9	12	37	4	5	12	12	7	4	1	23	45	10	10	2	16	25
1977	54	10	1	2	15	2	11	29	28	28	30	0	1	3	4	0	22	15
1978	3	0	1	5	2	1	18	1	9	18	3	14	0	0	14	0	6	6
1979	0	0	18	26	0	2	10	5	9	29	17	31	11	0	1	7	3	16
1980	6	13	14	7	31	21	0	2	16	26	4	11	7	16	27	9	9	8
1981	18	25	9	8	4	18	21	2	5	46	33	17	2	7	3	2	14	4
1982	0	11	14	25	7	1	5	6	8	26	39	16	4	14	16	6	3	4
1983	9	8	9	11	4	2	6	2	4	1	4	3	1	10	0	20	19	11
1984	24	10	13	15	37	7	1	16	0	5	24	5	0	10	0	13	2	6
1985	4	37	3	0	0	0	6	31	9	0	0	9	47	11	10	17	29	6
1986	3	5	1	5	7	14	12	8	6	12	14	4	36	0	13	14	16	8
1987	1	6	14	0	7	3	0	0	13	20	8	4	0	2	2	10	6	12
1988	1	20	14	0	1	35	2	1	0	6	0	13	12	1	6	8	14	13
1989	0	22	5	15	35	5	6	17	4	1	6	0	0	0	3	25	24	1
1990	11	22	0	3	0	8	5	0	20	6	7	2	0	18	3	6	6	14
1991	13	0	2	19	0	0	20	6	13	0	0	3	0	0	2	8	7	3
1992	0	6	20	30	27	11	20	1	21	10	12	4	17	1	3	3	0	0
1993	12	36	26	8	1	0	0	3	6	4	5	3	14	6	5	17	15	17
1994	21	2	0	0	8	20	2	14	21	11	0	0	6	13	5	9	1	22
1995	25	2	1	9	0	16	6	2	26	25	3	5	2	7	3	0	2	2
1996	7	1	1	2	1	26	27	24	29	14	8	7	7	0	12	21	0	2
1997	21	25	6	7	1	0	9	13	18	2	2	16	17	11	3	0	17	15
1998	0	6	13	53	16	19	2	5	3	1	14	1	27	6	13	0	16	11
1999	25	2	0	0	4	3	0	3	0	1	1	4	13	14	29	13	11	10
2000	20	29	9	1	22	42	9	20	7	15	22	10	8	22	37	4	0	34
2001	16	14	4	2	0	41	2	10	0	1	5	8	14	2	1	4	9	4
2002	14	0	15	4	13	13	0	11	35	6	16	19	5	0	0	1	0	22
2003	16	18	0	2	0	17	13	0	4	14	32	10	0	0	16	16	20	45
2004	8	17	4	13	32	7	2	3	9	10	23	20	4	0	2	4	17	2
2005	11	2	0	3	44	0	21	14	6	0	4	5	10	11	1	1	4	16
2006	7	16	0	7	38	62	1	7	17	5	17	0	28	23	16	2	0	10
2007	0	0	6	2	0	2	6	10	4	0	9	16	17	12	0	0	7	12
2008	21	6	10	10	19	20	0	18	27	8	10	9	29	4	6	4	1	0
2009	24	13	4	18	11	0	13	1	13	32	14	14	8	6	5	2	26	9
2010	0	16	1	5	32	5	11	17	25	5	26	6	7	13	3	14	5	8
2011	3	14	0	24	1	12	0	0	0	8	9	11	11	18	6	8	3	6
2012	16	9	22	33	4	3	14	7	1	0	9	34	30	6	5	3	20	20
Average	12	11	8	12	11	13	10	9	11	11	11	9	10	7	7	7	9	11
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	2	1	2	1	2	2	2	4	2	4	4	1	1	2	2	2	4
Median	11	9	5	7	6	7	6	6	9	8	8	7	7	6	5	5	6	10
Upper	18	18	13	18	16	19	15	15	18	17	16	14	14	12	11	11	15	15
Max. value	54	37	47	61	44	64	43	31	35	46	46	34	47	29	37	25	29	45

Figure A12-10. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Västra Götaland county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A13 VÄRMLAND COUNTY[♣]

For literature references in this Appendix see the *References* section of the main text.

A13.1 Crop production and yield

Table A13-1. *Annual production (metric ton) in 2010-2014 for the major crops in Värmland county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	218 500	213 800	189 900	191 200	222 800	207 240
Spring barley	32 500	29 500	43 000	43 100	35 100	36 640
Oats	26 200	34 300	32 800	27 400	28 500	29 840
Winter wheat	15 000	12 200		7 400	23 500	14 525
Potatoes	11 600	12 600	8 600	10 900	8 400	10 420
Spring wheat	4 100	8 500	11 300	12 500	11 900	9 660
Spring rape	1 200	1 800	2 800	3 300	..	2 275

* Data from Jordbruksverket (2015)

Table A13-2. *Average yield of temporary grasses, cereals and potatoes and in Värmland county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Temporary grasses	4 586	363	8
Spring barley	2 939	290	10
Oats	2 932	341	12
Winter wheat	4 083	446	11
Potatoes	23 386	2111	9

* Coefficient of variation = Standard deviation / Average

Table A13-3. *Coefficient of variation of farm-level yield for important crops in Värmland county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Temporary grasses		52	38	61	67	59	65	67	59
Spring barley	36	37	33	30	41	40	46	40	38
Oats	41	36	39	39	38	39	50	48	41
Winter wheat	28	20	32	25	35	31	44	33	31
Potatoes		45	37	42	47	42	54	48	45
Average	35	38	36	39	46	42	52	47	43

* Based on farm-level yield data from SCB (2014a).

[♣] For literature references in this Appendix see the *References* section of the main text.

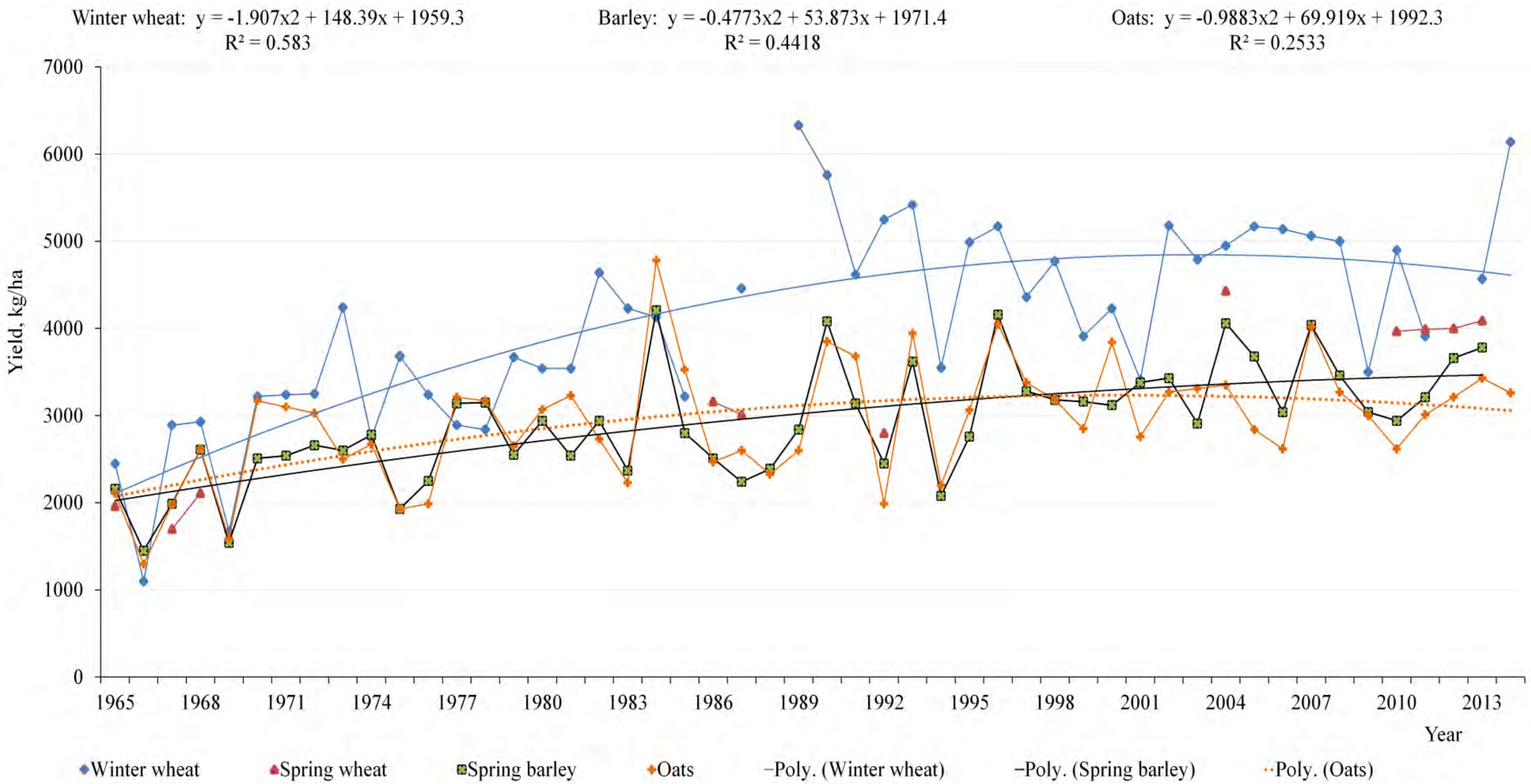


Figure A13-1. Average yield (kg/ha) per year of winter wheat, spring wheat, spring barley and oats in Värmland county for the period 1965-2014, and the trend lines with respective equations for winter wheat, barley and oats. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

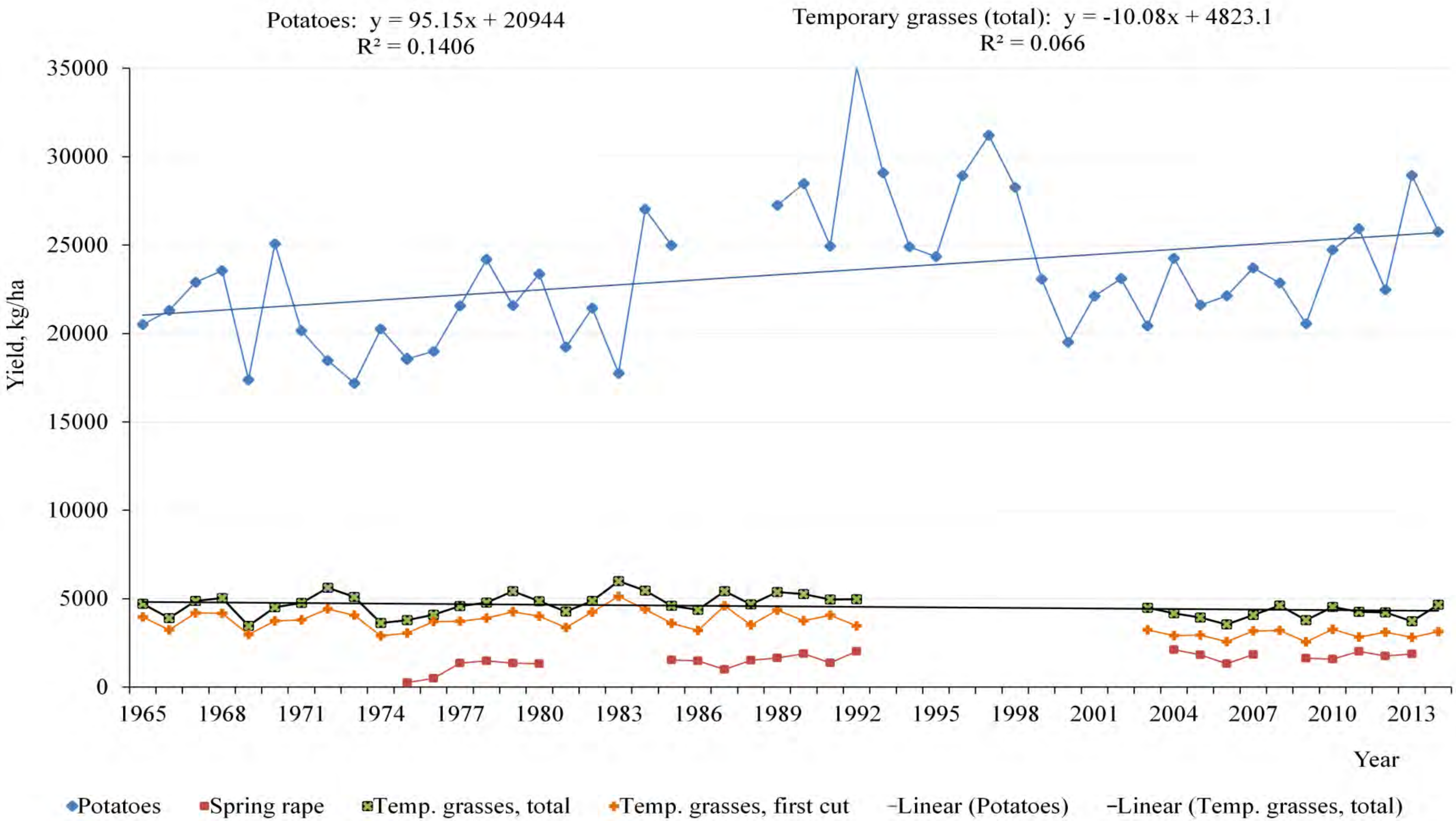


Figure A13-2. Average yield (kg/ha) per year of potatoes, winter rape and temporary grasses (total and first cut) in Värmland county for the period 1965-2014, and the trend lines with respective equations for potatoes and temporary grasses (total). The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

A13.2 Precipitation, temperature and cereal yield

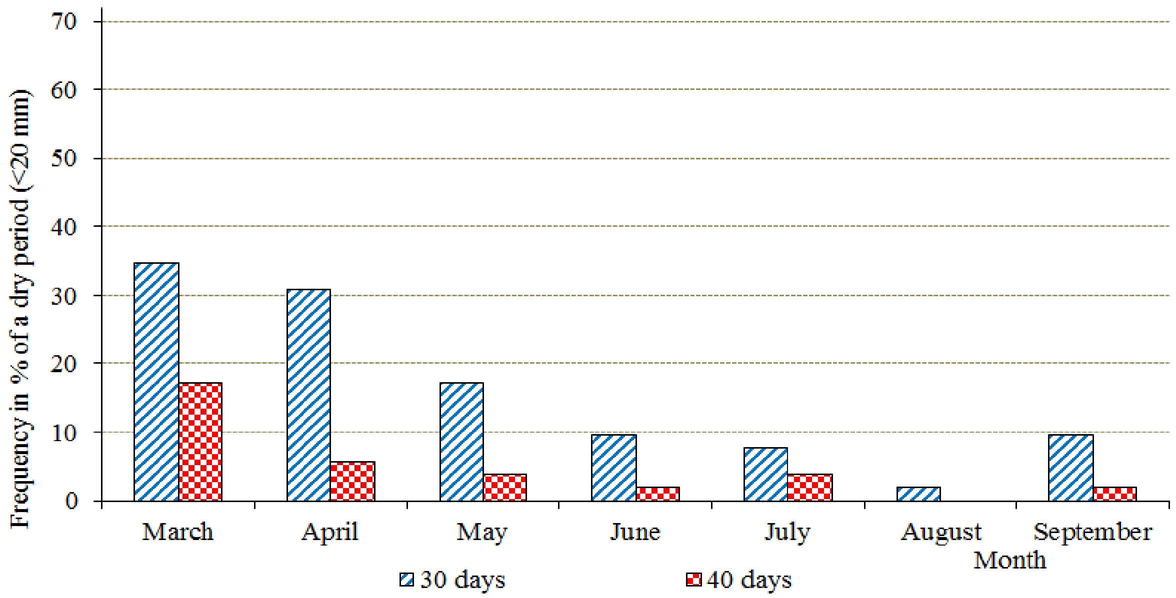


Figure A13-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Värmland county∗.

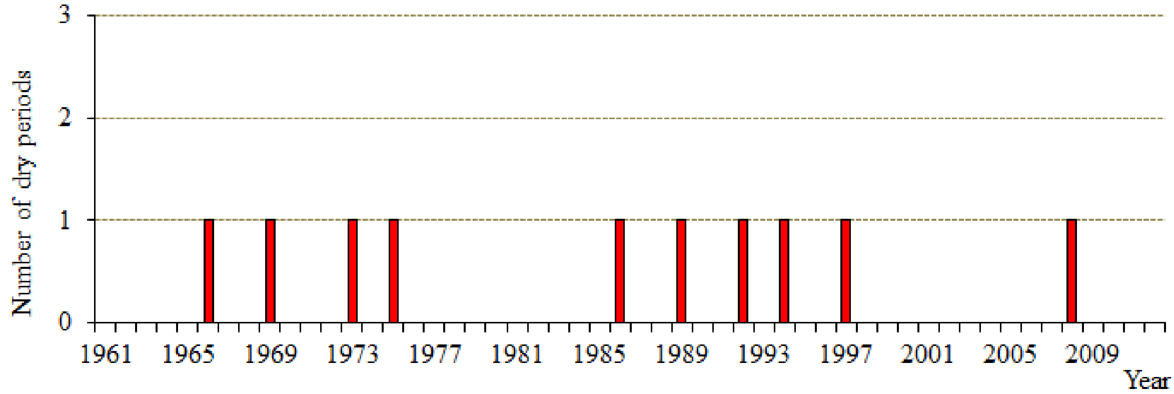


Figure A13-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 May to 31 July in Värmland county*.

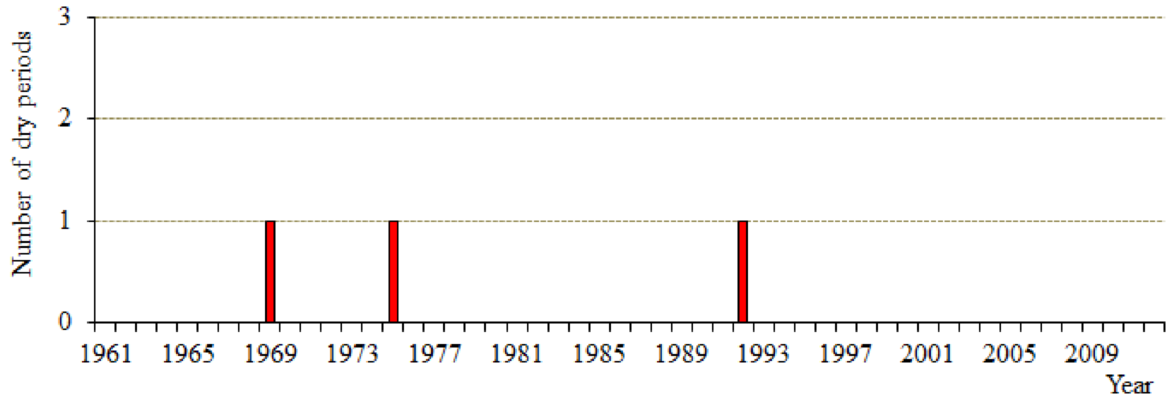


Figure A13-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 May to 31 July in Värmland county∗.

∗ The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

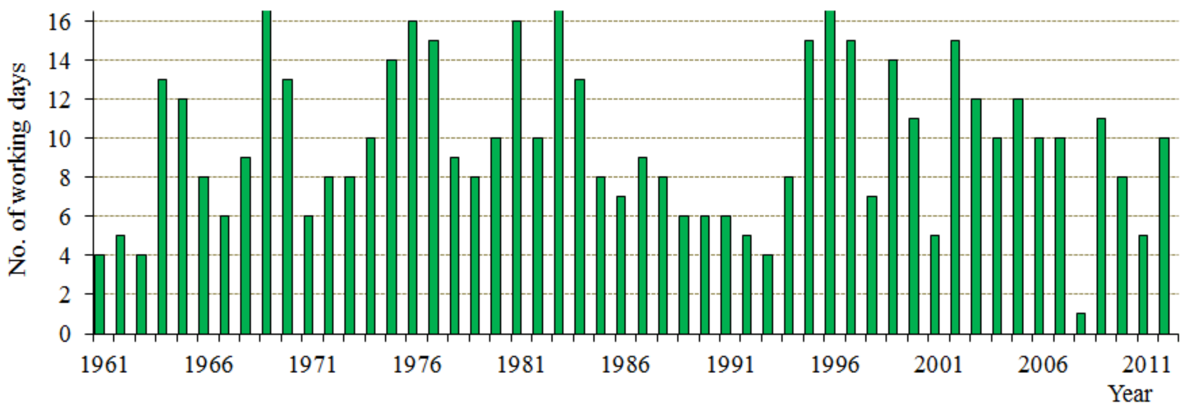


Figure A13-6. Estimated number of working days available for harvesting during the period 3-19 August in Värmland county (for definition of a working day, see Section 2.1)*.

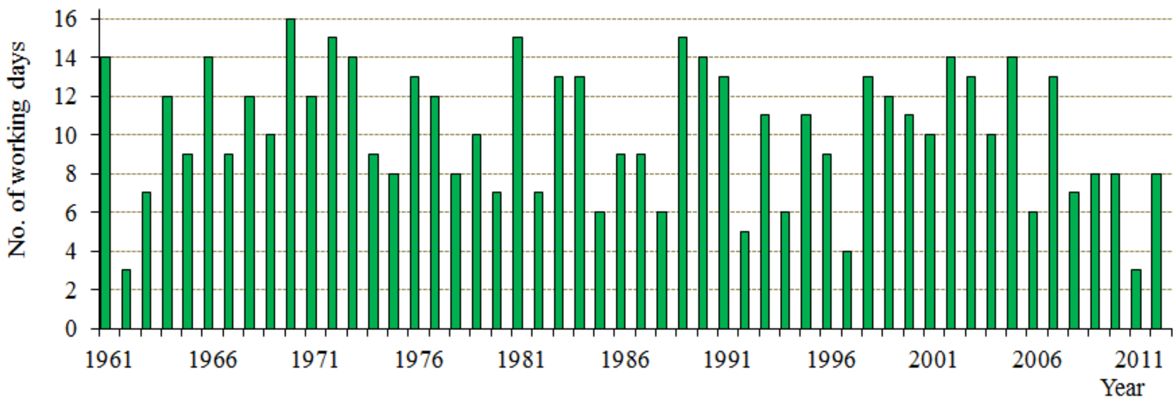


Figure A13-7. Estimated number of working days available for harvesting during the period 20 August-5 September in Värmland county (for definition of a working day, see Section 2.1)*.

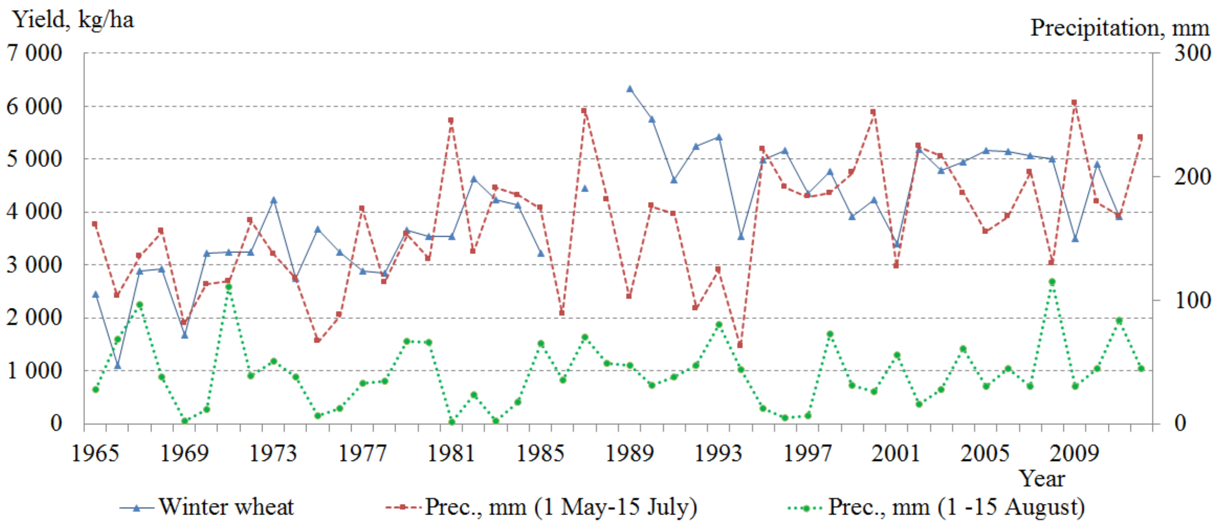


Figure A13-8. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 1-15 August in Värmland county, 1965-2012*.

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* Precipitation from Luftwebb (2014). Yield data from from Jordbruksverket (2015).

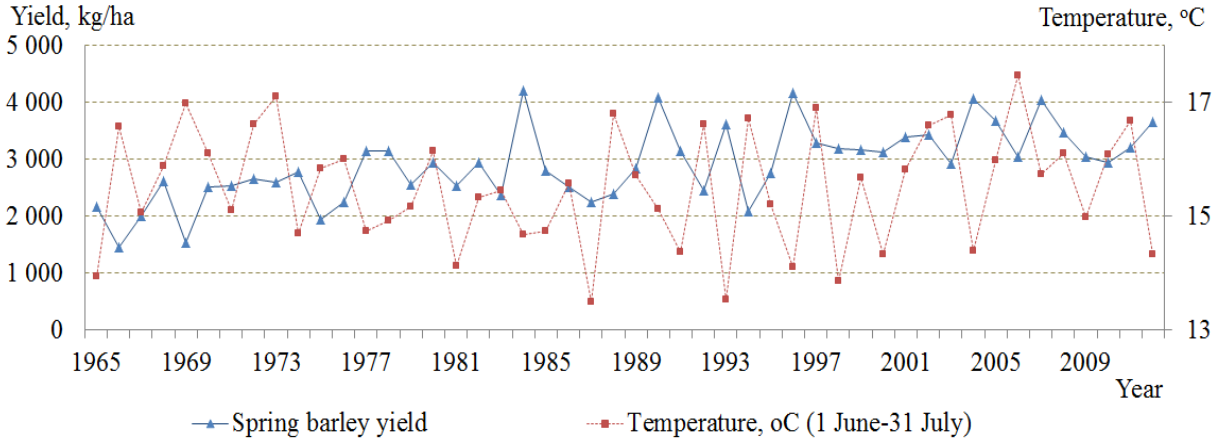


Figure A13-9. Annual spring barley yield (kg/ha) and average temperature (ºC) in the period 1 June-31 July in Värmland county, 1965-2012*.

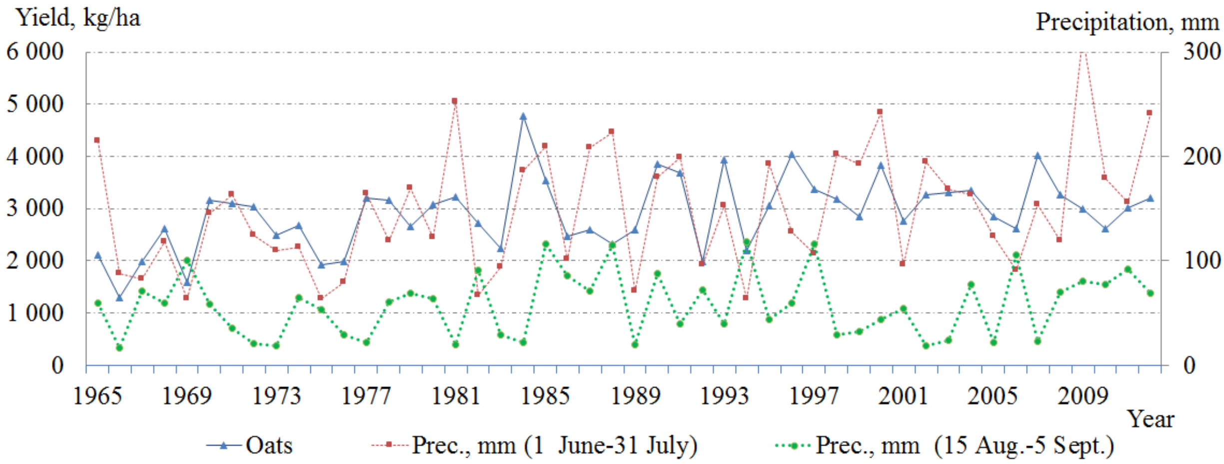
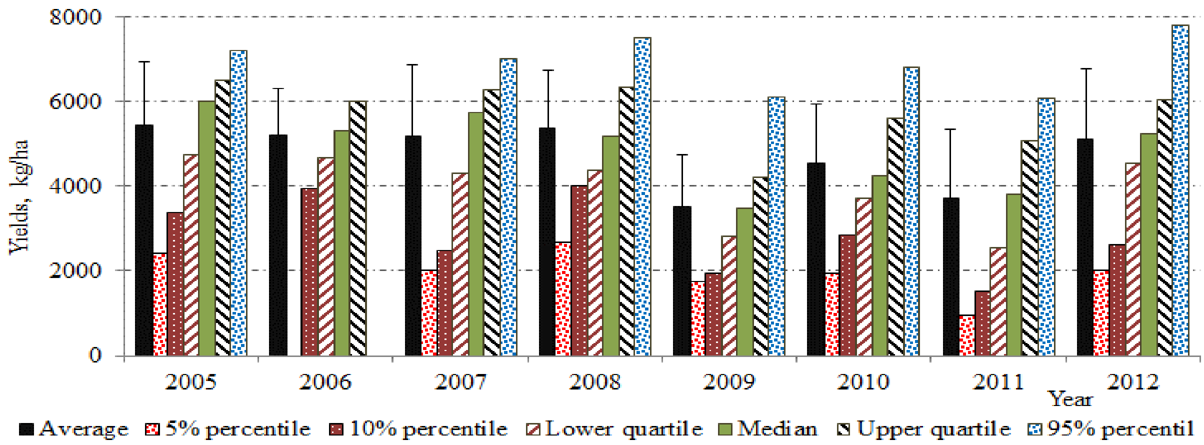


Figure A13-10. Annual oat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August -5 September in Värmland county, 1991-2012*.

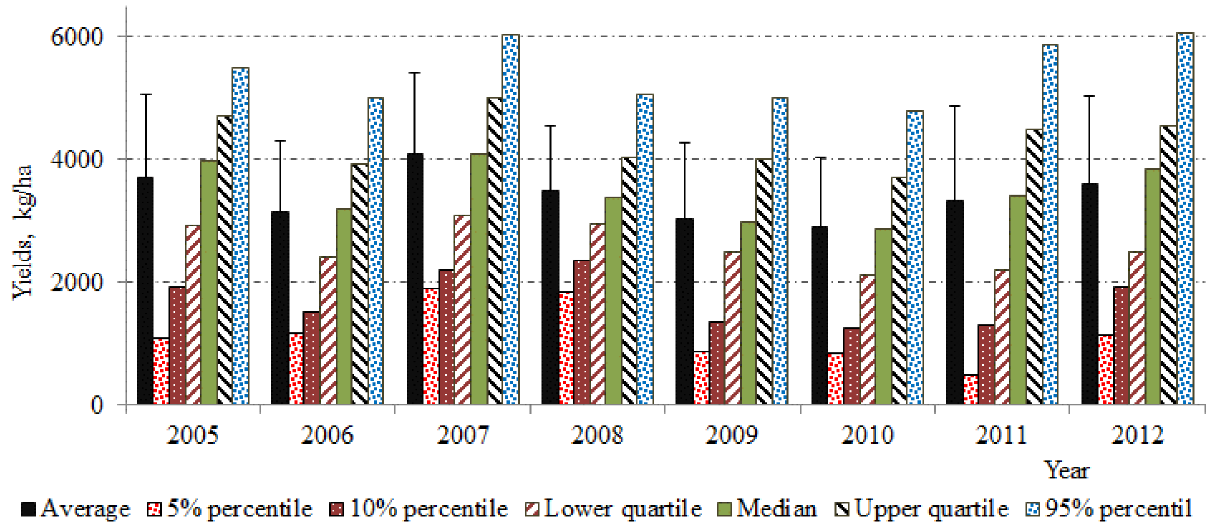
* Precipitation and temperature from Luftwebb (2014) and yields data from Jordbruksverket (2015).

A13.3 Yield on farms



N	34	43	41	32	35	38	43	14

Figure A13-11. Average and estimated percentiles of winter wheat farm-level yield in Värmland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	92	88	72	91	74	75	74	86

Figure A13-12. Average and estimated percentiles of spring barley farm-level yield in Värmland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

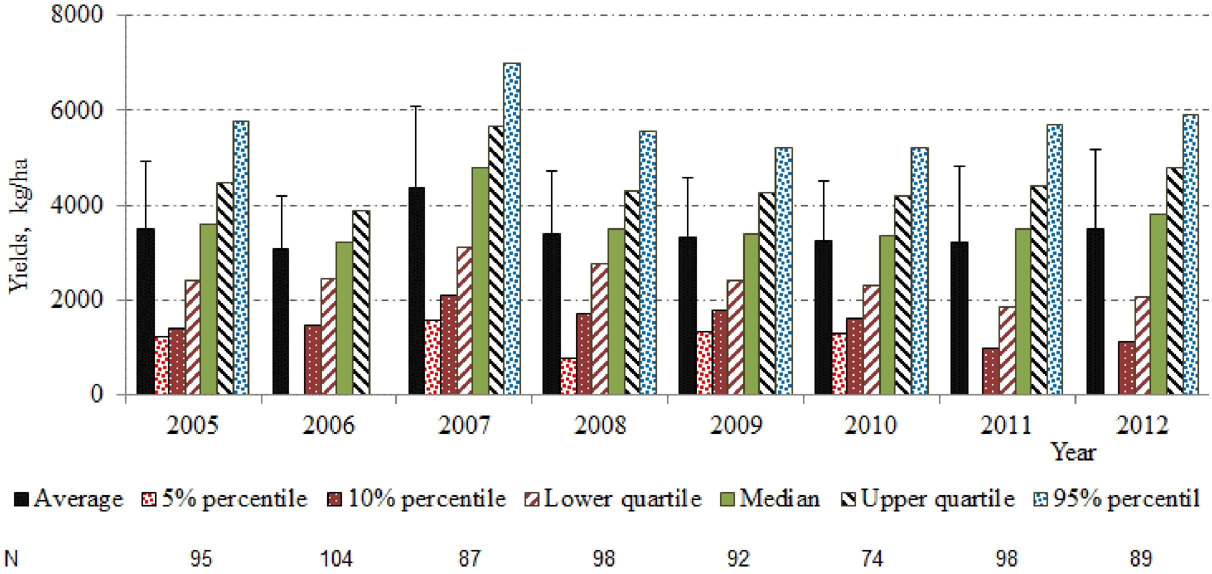


Figure A13-13. Average and estimated percentiles of oat farm-level yield in Värmland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

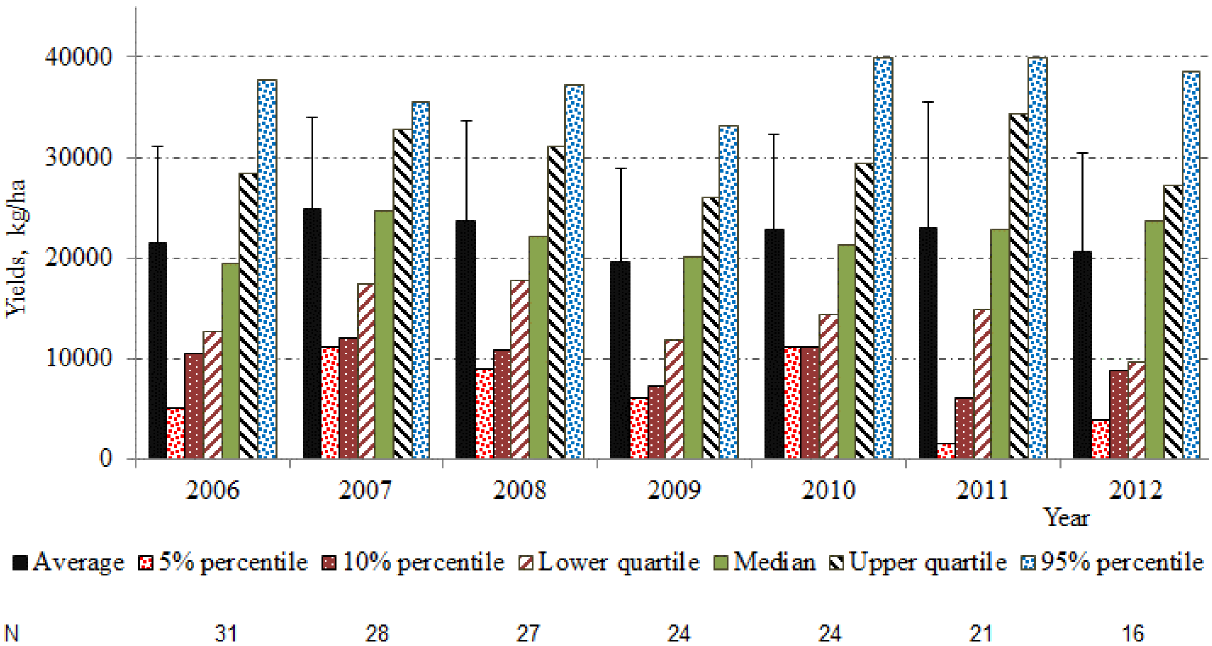
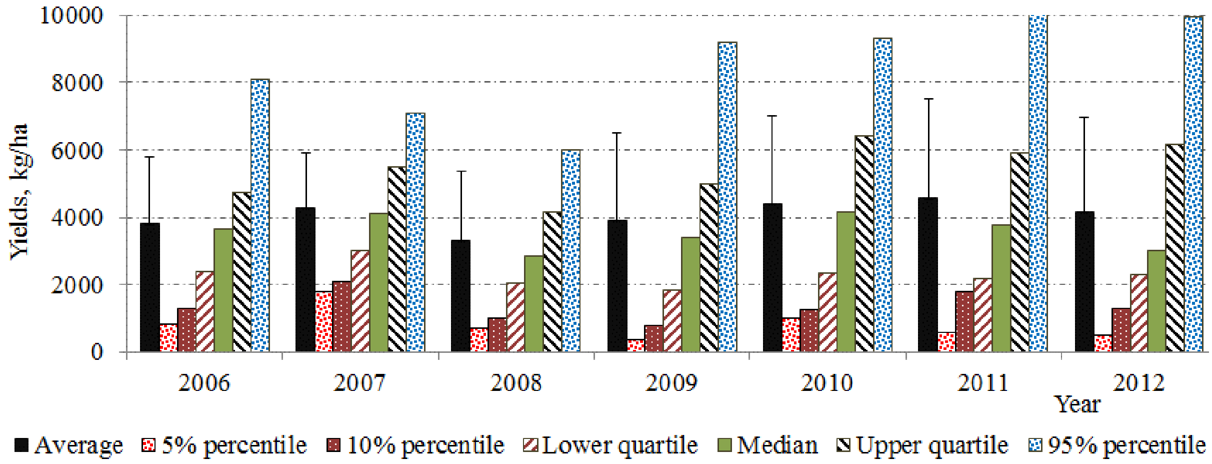


Figure A13-14. Average and estimated percentiles of potato farm-level yield in Värmland county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	36	48	51	39	40	36	38

Figure A13-15. Average and estimated percentiles of temporary grasses farm-level yield in Värmland county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A13.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

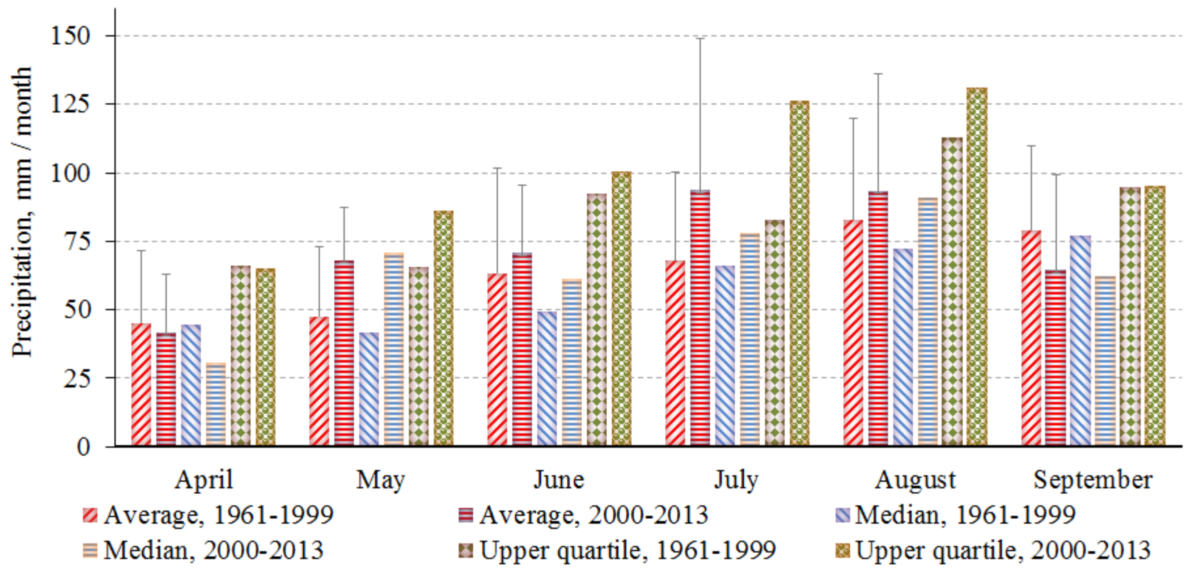


Figure A13-16. Monthly average, median and upper quartile precipitation (mm) from April to September in Värmland county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1367949-6587998 (close to Karlstad).

County: **Värmland** **Average temperature (°C) for 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Karlstad (Råtorp)** Coordinates for the places (RT90): 1367949-6587998 1387664-6589996 1364987-6611339 1393000-6614007 **Scale for the color intensity:** -30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	0	-5	-6	-6	-11	-3	-5	-1	0	2	0	3	2	5	4	2	2	1	-2	1	5	6	9	8	8	8	8	10	11	12	18	18	15	15	13	15
1962	-5	0	-2	1	-1	-10	-2	0	-4	0	-3	-6	-5	-8	-11	-5	-5	-1	2	1	3	6	7	6	4	6	9	9	9	9	10	14	12	14	13	13
1963	-12	-20	-14	-11	-11	-4	-9	-12	-7	-16	-9	-5	-8	-2	-7	-4	-3	-2	0	2	3	5	4	6	6	10	11	8	12	18	14	18	14	15	14	15
1964	1	-4	-3	-6	1	-2	-1	0	-8	-11	-4	-1	0	1	-2	-5	-2	-1	0	2	5	9	7	8	7	9	11	9	15	14	9	13	16	13	13	14
1965	-4	-8	2	1	-1	-5	-2	-2	-2	-3	-5	-13	-10	-6	-1	2	-1	2	3	1	4	5	7	8	7	8	9	6	9	11	13	15	15	14	14	14
1966	-16	-4	-8	-15	-8	-4	-14	-20	-18	-15	-2	0	1	1	-7	0	0	-1	2	1	-5	-3	3	7	8	6	10	13	9	11	11	15	19	21	17	16
1967	-4	-14	-5	0	-12	-12	-5	-3	-6	-1	0	0	1	4	3	1	2	3	1	4	5	4	2	7	3	7	11	8	11	14	15	10	14	17	12	14
1968	-13	-21	-12	-4	-3	-4	-1	-1	-7	-16	-11	-5	-5	-2	-3	-1	4	5	1	0	5	7	10	11	7	6	8	6	9	13	17	13	18	20	15	14
1969	-6	-7	-5	-1	-4	1	-7	-2	-17	-9	-6	-8	-8	-4	-9	-5	-6	-1	2	5	2	2	5	5	5	9	9	8	11	13	10	15	19	20	20	17
1970	-13	-12	-6	-11	-4	-6	-11	-11	-18	-17	-10	-12	-4	-1	-3	0	-2	-3	-3	0	1	2	4	3	6	11	13	10	9	12	14	20	15	20	18	18
1971	-8	-2	-3	-1	2	-3	-4	-2	2	0	-1	-10	-11	-3	-3	1	-1	-1	2	3	4	5	4	1	8	12	13	13	7	14	18	13	13	11	13	15
1972	-6	-7	-7	-7	-2	-8	-3	-3	0	-1	-4	-3	-2	-3	-3	1	2	1	0	3	5	5	4	4	13	9	8	9	12	10	13	15	14	14	13	21
1973	1	-2	-3	-3	0	0	2	-1	0	1	-2	-5	1	-1	2	3	6	4	2	2	3	4	5	4	8	8	8	8	12	15	13	16	12	15	20	19
1974	0	0	0	0	-1	2	2	-2	3	-1	1	0	0	-1	-1	1	1	4	6	7	2	7	7	7	7	8	10	14	12	10	12	11	16	18	17	13
1975	1	-3	2	2	2	0	-1	-4	-7	-3	0	-3	1	2	0	-1	0	0	-1	1	2	5	7	9	8	14	11	14	10	9	8	15	15	14	18	14
1976	-6	-3	-8	-4	-8	-10	-8	-6	-2	-3	0	3	0	-4	-7	-4	-5	2	2	2	7	5	5	2	6	11	10	13	14	9	12	13	13	14	16	19
1977	0	-5	-2	-4	-6	-9	-4	-5	-9	-7	-7	-9	-3	0	2	3	1	-2	0	-4	1	2	4	6	10	9	9	11	13	10	12	11	20	18	15	12
1978	-5	2	-4	0	-2	-3	-2	-9	-12	-13	-8	1	1	0	0	-10	-5	4	2	4	2	3	4	2	6	8	5	10	15	17	19	15	13	15	15	14
1979	-16	-3	-5	-8	-9	-12	-11	-9	-14	-10	-5	-1	1	1	-2	-9	-1	3	2	3	4	2	4	4	3	4	9	11	12	13	18	16	13	16	19	12
1980	-9	-4	-4	-3	-5	-12	-15	-14	-3	-3	-9	-6	-5	-1	-2	-7	-7	-1	2	3	5	4	6	8	9	8	10	13	8	11	17	20	17	16	13	13
1981	-7	-7	-3	-12	0	-1	1	-2	-5	-5	-7	-5	-6	-2	-6	-5	1	1	4	5	6	4	0	3	2	10	15	15	16	12	14	13	10	12	14	12
1982	-13	-18	-8	-11	-7	-8	-7	-4	1	-6	-6	-2	1	-2	1	1	2	3	3	2	2	6	7	6	5	7	9	10	9	14	19	12	10	12	12	13
1983	2	3	1	-6	2	1	-6	-6	-5	-5	-4	-3	-2	0	1	3	0	0	1	2	2	7	8	7	8	10	10	11	11	11	11	13	13	17	15	13
1984	0	-5	1	-7	-13	-5	1	-4	-2	-5	-3	-2	-2	-1	-2	-4	-4	-1	1	4	5	4	8	8	10	5	9	13	15	15	17	14	12	16	12	13
1985	-10	-16	-11	-7	-8	-10	-10	-20	-15	-18	-7	-1	-4	-1	0	-3	1	-2	1	-1	1	3	2	2	2	9	12	11	10	16	15	9	11	14	18	14
1986	-8	-15	-2	-12	0	-5	-7	-9	-8	-13	-13	-9	-5	1	0	0	1	2	1	0	-1	0	3	6	12	12	9	10	11	10	11	13	15	18	16	20
1987	-17	-20	-17	-11	-7	-10	-3	-4	-2	-11	-9	-8	-17	-9	-7	-3	-1	2	2	1	2	4	5	9	8	8	5	7	13	9	11	11	10	10	13	13
1988	3	-2	2	1	1	-1	2	0	1	-2	-4	-3	-4	-3	-6	-5	-1	2	3	2	1	4	1	5	8	10	14	10	10	17	11	16	15	18	20	22
1989	2	0	3	4	3	4	4	4	2	1	1	3	2	3	3	2	3	5	0	4	11	4	4	6	9	9	8	12	15	11	10	12	15	19	18	16
1990	-4	1	3	2	2	1	5	4	1	2	6	2	1	2	2	8	6	5	4	2	6	6	10	10	16	15	11	8	9	10	14	15	15	14	14	15
1991	1	1	-7	-1	-1	-3	-7	-6	-8	-4	3	-3	-1	1	2	2	2	4	6	5	8	1	4	6	8	8	8	8	9	12	8	10	11	11	13	12
1992	4	0	2	-2	-2	0	-2	1	1	-5	2	3	4	4	0	3	3	0	1	2	3	2	4	7	8	7	10	15	17	18	19	18	16	15	15	18
1993	-2	2	2	3	0	-9	3	-1	-1	-1	-10	-2	-6	-1	0	5	3	0	2	1	2	4	9	14	11	11	13	14	17	11	12	14	10	12	11	15
1994	-7	-2	0	-8	0	-6	-9	-5	-13	-10	-9	-11	-5	3	1	-2	0	2	4	3	5	3	9	9	7	12	12	9	10	9	12	12	14	11	13	17
1995	-5	-1	-3	1	-4	-12	1	-3	-1	2	1	-1	0	0	0	1	3	0	2	2	5	2	8	1	9	8	3	6	9	17	15	13	13	13	16	17
1996	-14	-2	1	-2	-6	-10	-9	-11	-7	-11	-9	1	-1	-2	-2	-2	-2	0	0	5	2	7	7	5	6	6	12	5	9	8	12	15	14	12	13	15
1997	-14	-11	-1	0	-3	0	-2	3	-4	-5	3	2	4	3	2	-4	-3	4	4	2	4	3	2	6	8	6	10	10	8	10	15	17	18	13	14	16
1998	2	-3	4	-1	-6	-6	-7	1	1	3	4	4	-4	-6	-1	2	1	6	-2	2	2	4	8	11	8	9	12	13	7	12	10	13	13	12	14	14
1999	1	-6	-9	3	3	-10	0	-11	-3	-3	-3	0	0	-1	-4	1	0	4	5	7	3	4	8	9	6	6	4	12	12	12	13	13	15	15	13	16
2000	1	3	1	1	-9	-2	-2	2	1	-5	-3	1	-1	1	1	2	2	1	1	2	4	7	10	14	9	14	13	14	11	10	11	14	14	14	15	13
2001	-1	0	-6	-7	-1	-1	-15	-4	2	0	-7	-13	-7	1	2	-5	-4	-1	5	5	0	3	5	7	7	12	13	10	11	11	12	10	11	15	16	18
2002	-9	-5	2	2	-2	-3	4	3	-1	1	-3	-2	-3	1	1	2	1	4	6	4	6	5	9	7	9	12	14	11	15	13	17	18	14	17	15	13
2003	-16	-12	0	2	1	-5	-4	-5	-2	-5	-4	-5	-5	1	3	3	2	4	3	0	3	8	8	5	7	9	9	10	11	14	17	16	14	14	15	16
2004	-6	-2	0	-7	-9	-3	0	-4	-4	-1	-2	-5	-4	-2	0	5	0	3	3	5	5	9	8	8	12	17	9	11	9	11	15	13	15	11	13	15
2005	1	5	2	2	-4	-3	1	-2	-2	-2	-6	-7	-10	-1	-6	-3	1	4	5	3	6	6	6	7	8	7	10	7	12	12	10	12	13	16	17	15
2006	-7	-3	2	-5	-5	-4	-6	-4	-9	-3	-2	-6	-8	-11	-7	-2	-6	1	1	2	3	5	6	8	9	15	10	9	10	10	12	15	19	18	15	15
2007	2	4	2	0	-11	-4	-1	-8	-5	-1	-6	-1	1	2	5	2	3	6	5	1	9	7	7	11	10	9	9	9	11	12	15	21	15	14	15	15
2008	-1	1	3	4	0	1	0	3	-1	1	4	3	0	3	3	-2	-4	2	5	3	4	6	8	12	11	14	11	5	11	15	18	19	12	13	13	15
2009	-10	-3	1	-3	1	-1	-4	-4	-9	-7	-2	-4	0	0	-1	1	-1	1	4	6	8	6	8	12	10	8	9	10	12	14	11	10	12	12	17	21
2010	-14	-19	-10	-3	-6	-10	-5	-9	-9	-8	-13	0	-8	-7	-3	1	-1	2	3	4	6	4	3	8	6	7	9	14	12	11	15	14	12	13	15	17
2011	-6	-2	-5	-2	-5	-7	1	-2	-11	-11	-11	-3	-2	0	-1	-3	4	-1	5	7	7	10	11	10	4	12	12	10	12	12	16	18	14	14	14	19
2012	1	-5	0	-3	-6	-4	-11	-6	-4	-2	3	1	0	0	5	4	7	5	0	1	5	3	6	9	9	7	9	11	18	13	8	12	13	14	14	15
Average	-5	-5	-3	-3	-4	-5	-4	-4	-5	-5	-4	-3	-3	-1	-1	-1	0	2	2	3	4	5	6	7	8	9	10	10	11	12	13	14	14	15	15	15
By quartile																																				
Min. value	-17	-21	-17	-15	-13	-12	-15	-20	-18	-18	-13	-13	-17	-11	-11	-10	-7	-3	-3	-4	-5	-3	0	1	2	4	3	5	7	8	8	9	10	10	11	12
Lower	-10	-7	-6	-7	-6	-8	-7	-6	-8	-9	-7	-6	-5	-2	-3	-3	-2	-1	1	1	2	3	4	5	6	7	9	9	9	10	11	13	13	13	13	14
Median	-5	-3	-2	-2	-3	-4	-3	-4	-4	-4	-4	-2	-2	-1	-1	1	0	2	2	2	4	4	6	7	8	9	10	10	11	12	13	14	14	14	15	15
Upper	1	0	1	1	0	-1	0	-1	-1	-1	0	0	0	1	1	2	2	4	4	4	5	6	8	9	9	11	12	12	12	14	16	16	15	16	16	17
Max. value	4	5	4	4	3	4	5	4	3	3	6	4	4	5	5	8	7	6	6	7	11	10	11	14	16	17	15	15	18	18	19	21	20	21	20	22
Range	21	26	21	19	16	16	20	25	21	21	19	17	21	16	16	18	14	9	8	12	16	13	11	13	14	13	12	10	11	10	11	12	10	11	9	9

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	16	14	16	16	15	15	14	14	13	13	12	14	13	11	12	13	10	10	11	12	10	10	10	8	4	5	3	0	1	-1	-3	-5	-7	-2	-10	-6
1962	13	15	13	15	15	14	13	12	13	13	13	12	12	12	8	9	9	9	12	10	4	7	6	4	5	5	1	-3	-4	-3	-5	0	-5	-9	-5	-12
1963	20	15	14	15	16	16	19	17	15	14	14	13	14	13	12	11	11	8	7	8	5	8	9	6	5	5	3	-1	-4	1	-1	-5	-6	-8	-10	3
1964	12	12	15	18	16	14	13	17	14	13	12	13	11	12	9	9	10	10	6	9	7	7	6	1	1	2	4	2	2	0	-2	3	2	-3	-7	-9
1965	12	12	13	17	17	13	12	13	13	15	16	12	14	13	9	11	13	12	9	7	7	5	3	9	4	0	-6	-7	-11	-2	-4	-8	-14	-7	-5	-11
1966	17	16	15	18	20	15	14	15	14	15	13	14	14	12	12	10	8	6	8	6	4	9	6	0	2	5	2	0	0	2	2	1	-3	-3	-7	-6
1967	15	17	15	18	16	16	18	14	15	15	15	15	14	13	12	12	10	10	11	8	9	3	7	7	6	6	4	2	4	1	4	-8	-3	-9	-6	-10
1968	19	14	13	15	15	17	17	19	13	12	17	16	18	18	10	8	8	9	7	1	7	4	6	5	-3	-4	-4	-7	2	2	-3	-4	-7	-2	0	-6
1969	16	14	16	17	19	20	20	20	19	18	14	14	13	15	14	9	10	8	5	10	8	10	6	5	0	3	5	2	-8	-11	-7	-8	-1	-7	-7	-3
1970	14	17	14	14	14	15	18	16	14	14	15	15	13	11	12	12	7	7	8	11	7	8	4	1	-2	-5	-2	2	4	-2	-2	2	0	2	-6	-7
1971	20	21	15	13	14	17	17	16	14	15	14	12	12	12	8	11	11	8	9	10	4	7	7	5	6	-3	1	-5	-4	3	1	-1	-3	4	3	-3
1972	17	17	18	21	20	17	17	18	15	15	12	13	13	12	9	10	9	5	8	10	7	4	2	7	6	6	2	-4	0	2	6	4	4	4	1	0
1973	21	20	17	18	16	19	17	14	16	16	11	13	14	12	9	9	7	6	9	6	0	-2	0	3	4	4	-3	-4	-2	-11	-6	-7	-3	-8	1	2
1974	14	16	15	16	15	14	14	14	14	15	15	16	15	13	12	12	10	9	7	6	3	4	4	3	2	1	6	4	-1	1	1	2	0	0	5	-3
1975	18	19	17	17	16	19	20	24	19	15	16	16	16	12	12	14	12	10	11	6	4	5	6	9	8	3	4	1	-1	2	2	0	1	-4	2	3
1976	18	17	18	19	18	14	12	17	19	18	16	15	10	10	11	8	8	5	6	8	6	3	6	2	2	7	3	-1	-3	3	-1	1	-4	-7	-8	-12
1977	16	19	14	12	13	14	17	15	15	15	12	14	14	10	8	9	9	8	5	7	7	8	10	9	6	6	5	-3	-1	-5	-6	-1	1	-1	0	-4
1978	14	14	15	12	15	18	19	15	14	15	14	10	11	11	9	9	7	6	6	9	8	6	3	5	8	8	6	6	2	-5	-5	-9	-5	-9	-7	-16
1979	13	16	16	14	14	15	14	14	14	17	13	12	13	14	10	11	9	8	2	6	10	6	2	-1	2	0	0	2	3	2	5	-4	-11	-10	-2	0
1980	16	17	16	15	16	20	18	14	16	15	13	12	14	14	11	11	12	10	8	9	6	5	0	-1	-3	-2	-2	0	2	-10	-5	-5	1	-2	0	1
1981	14	17	16	14	16	16	16	16	18	13	13	12	13	13	11	8	11	12	11	8	5	3	2	4	2	1	0	2	1	-2	-3	-10	-18	-15	-7	-7
1982	14	16	20	19	18	19	24	21	15	14	13	13	11	11	13	14	10	12	10	8	5	4	6	7	4	3	6	3	4	2	2	-1	-3	0	1	0
1983	14	21	19	14	18	18	16	19	15	15	16	15	16	11	13	13	8	8	9	4	8	8	5	7	6	7	-1	0	-2	-4	1	-4	-5	-4	-1	1
1984	13	16	16	17	15	15	18	16	16	14	16	14	10	11	10	10	10	7	10	10	7	8	6	8	8	4	1	1	3	3	3	4	-2	-1	1	-2
1985	16	17	17	15	14	16	15	14	15	16	14	14	12	10	11	9	6	7	13	10	7	7	4	2	1	2	-2	-3	-5	-6	-2	-14	-4	-8	3	-14
1986	18	14	14	16	15	17	16	15	13	12	10	10	11	8	7	8	7	6	7	6	7	6	2	7	1	5	3	4	4	6	5	2	0	-3	-9	-7
1987	15	16	15	17	18	13	13	11	12	14	13	11	12	11	11	7	9	6	5	10	9	9	7	5	1	0	3	3	1	-3	-5	-3	-4	-7	-2	1
1988	18	16	16	18	16	15	13	17	16	14	13	14	13	13	11	12	11	11	9	8	6	5	1	0	0	-2	2	-3	-5	-8	-11	-3	-5	-6	-2	2
1989	17	20	14	13	19	17	14	16	16	16	14	10	13	12	9	12	15	8	6	6	4	7	10	7	6	6	6	0	-5	-5	-2	-4	-12	-1	1	-1
1990	14	14	15	17	16	18	19	14	16	15	14	15	12	12	11	10	7	7	9	8	8	8	0	5	1	1	3	1	-3	-4	0	0	-2	-1	-3	1
1991	18	22	16	15	17	19	19	17	15	15	16	14	15	10	11	10	10	8	8	9	8	5	3	5	6	1	3	-4	4	5	0	-2	3	2	-3	0
1992	14	18	16	17	18	16	15	16	15	15	13	14	11	11	11	10	12	8	8	7	2	2	1	-2	3	2	1	0	-1	1	5	1	1	2	-5	-4
1993	16	13	14	16	15	13	15	14	12	12	11	10	10	9	8	6	9	5	8	10	4	3	1	2	0	2	3	0	-3	-5	1	-1	-8	-1	-2	-4
1994	18	20	22	19	20	22	21	17	17	14	15	13	13	12	12	9	10	6	3	9	8	-1	6	6	3	3	-1	0	4	1	2	4	-3	0	1	2
1995	13	15	18	16	15	19	19	16	17	19	18	11	14	14	12	8	10	7	9	12	8	11	7	5	-3	-1	-3	-5	3	0	-4	-1	-2	-8	-16	-16
1996	13	14	15	14	17	15	16	17	18	18	19	16	14	9	8	9	7	9	8	10	8	8	6	6	9	1	0	4	0	-4	2	3	-6	-12	-11	-5
1997	19	18	18	18	20	17	18	20	20	20	19	19	17	13	11	10	10	9	7	9	4	5	0	-1	0	4	5	1	0	-4	-5	1	2	-4	-3	-1
1998	15	15	14	14	16	15	15	14	15	14	12	11	10	14	14	12	12	9	4	6	6	3	7	3	-1	-3	0	-6	-1	-1	0	-7	-2	1	-2	1
1999	15	18	20	17	16	17	20	15	13	14	12	15	16	15	13	13	14	12	10	7	6	3	6	8	9	5	2	0	1	6	-3	1	-8	-6	-1	-4
2000	17	13	14	16	17	15	16	14	16	15	13	14	11	13	9	9	8	11	12	11	10	10	10	5	7	7	6	5	6	5	7	7	6	0	-4	-5
2001	19	22	15	15	17	18	16	14	16	17	16	15	13	12	12	14	10	6	12	11	10	7	3	8	5	0	1	2	2	2	2	1	-2	-3	-10	-12
2002	14	17	18	19	17	19	20	19	20	19	19	17	16	17	13	10	7	9	7	3	3	-1	3	2	-3	0	-4	0	-1	-1	-1	-7	-6	-6	-13	-8
2003	16	17	19	22	19	18	19	18	17	16	15	10	11	15	14	12	11	7	9	6	4	0	-3	2	6	3	2	2	0	3	5	0	0	1	-4	-3
2004	14	15	14	15	17	17	19	22	18	16	13	14	14	12	13	11	10	10	9	7	3	7	8	4	4	4	5	-5	-4	-2	2	2	1	-1	-1	-2
2005	18	22	20	17	15	16	16	15	16	16	17	14	15	14	11	11	12	11	10	10	8	2	3	7	9	9	7	-3	3	-3	0	0	1	-6	0	-3
2006	20	20	16	18	21	20	19	20	18	17	17	15	15	13	15	13	14	14	12	11	8	8	9	4	-2	3	2	6	6	8	7	6	6	-2	0	1
2007	17	15	15	16	16	15	16	19	18	15	18	9	10	13	11	8	13	10	9	6	6	5	5	6	4	1	-1	1	1	1	3	3	-5	-8	-1	3
2008	19	14	16	15	19	22	17	14	16	14	14	13	14	11	9	9	9	8	7	7	9	6	8	4	1	5	4	1	-4	3	1	0	-2	3	-1	-6
2009	20	14	15	17	15	15	17	19	14	15	15	15	15	14	11	10	12	10	4	4	2	3	5	2	2	5	3	7	6	5	-2	3	-1	-9	-6	-12
2010	19	18	20	18	16	16	16	18	19	17	15	11	9	13	13	10	10	7	9	9	3	3	-1	6	5	-3	1	-3	-3	-10	-11	-11	-10	-6	-18	-10
2011	18	19	15	16	17	20	19	15	14	15	15	15	15	12	14	10	11	13	12	7	4	6	5	8	9	5	1	3	5	6	2	-1	2	0	2	2
2012	16	18	15	14	16	17	17	14	16	17	15	13	15	11	12	10	7	10	10	5	4	8	4	1	5	2	5	5	5	0	-11	-8	-9	-2	-4	-1
Average	16	17	16	16	17	17	17	16	16	15	14	13	13	12	11	10	10	9	8	8	6	6	5	4	3	3	2	0	0	-1	-1	-2	-3	-4	-4	-4
By quartile																																				
Min. value	12	12	13	12	13	13	12	11	12	12	10	9	9	8	7	6	6	5	2	1	0	-2	-3	-2	-3	-5	-6	-7	-11	-11	-11	-14	-18	-15	-18	-16
Lower	14	15	15	15	15	15	15	14	14	14	13	12	12	11	9	9	8	7	7	6	4	3	3	2	1	1	0	-3	-3	-4	-3	-5	-5	-7	-7	-7
Median	16	17	16	16	16	17	17	16	15	15	14	14	13	12	11	10	10	8	9	8	6	6	5	5	4	3	2	0	0	0	0	-1	-3	-3	-3	-3
Upper	18	18	17	18	18	18	19	18	17	16	16	15	14	13	12	12	11	10	10	10	8	8	6	7	6	5	4	2	3	2	2	1	0	-1	0	0
Max. value	21	22	22	22	21	22	24	24	20	20	19	19	18	18	15	14	15	14	13	12	10	11	10	9	9	9	7	7	6	8	7	7	6	4	5	3
Range	9	10	9	10	7	10	11	14	8	8	9	10	8	10	8	8	9	9	11	11	10	13	13	10	12	14	14	14	17	19	18	21	24	20	23	19

Figure A13-17. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Värmland county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Värmland** **Total precipitation , mm / 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Karlstad (Råtorp** Coordinates for the places (RT90): 1367949-6587998 1387664-6589996 1364987-6611339 1393000-6614007 **Scale for the color intensity:** 0 mm 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	14	20	7	0	0	16	3	20	2	0	4	4	2	0	2	4	0	12	5	7	11	0	0	0	30	12	7	6	0	1	10	1	22	10	8	25
1962	1	10	15	20	19	9	19	10	19	1	0	0	6	9	0	0	0	25	13	21	13	1	2	1	2	28	2	13	36	5	0	3	6	24	15	4
1963	2	0	0	0	4	0	7	0	6	0	1	0	0	0	2	0	4	1	0	2	32	9	2	2	15	3	5	18	15	1	3	5	1	14	14	24
1964	0	0	0	0	0	8	4	0	8	2	0	8	1	0	0	0	0	0	0	1	7	2	0	14	18	9	8	0	0	4	27	25	10	21	26	3
1965	0	11	21	30	8	13	3	0	2	1	0	4	0	3	1	19	2	2	0	5	17	27	7	1	1	8	0	18	0	1	0	17	10	31	18	15
1966	7	1	2	1	3	30	22	6	22	9	22	17	8	12	4	0	6	23	19	0	0	0	20	0	6	7	2	6	22	4	8	0	0	0	5	9
1967	4	5	1	4	0	38	8	0	0	9	20	17	3	16	3	10	8	13	20	5	1	15	3	13	9	15	8	28	15	1	7	13	0	0	17	7
1968	2	0	21	14	7	8	11	20	3	0	5	0	5	0	0	19	23	1	31	4	0	2	1	1	19	27	9	3	2	5	11	10	0	2	10	22
1969	11	2	22	25	13	12	0	11	1	6	8	0	0	5	0	0	0	11	0	3	9	25	10	13	2	12	14	10	0	2	11	0	0	0	0	1
1970	12	0	8	1	2	11	7	8	1	0	3	0	8	15	3	9	0	6	9	13	0	13	30	13	2	0	1	6	9	18	1	2	16	0	11	9
1971	1	4	0	13	28	25	1	0	10	16	6	1	1	8	17	30	8	4	12	7	0	4	0	4	1	0	4	7	9	19	0	1	2	22	9	16
1972	1	1	0	13	11	13	15	12	10	1	0	1	4	22	0	0	0	22	33	10	6	4	0	17	0	1	0	27	23	14	11	3	21	15	9	16
1973	1	0	6	4	9	17	0	3	31	6	1	0	4	0	0	1	0	11	17	1	2	9	8	4	13	18	3	7	18	9	12	4	3	0	0	4
1974	1	6	41	2	7	16	4	12	27	1	0	0	0	0	0	20	3	0	0	0	0	0	0	0	2	0	0	0	4	19	7	10	1	9	10	14
1975	2	7	10	12	24	32	5	0	1	4	0	0	16	9	0	0	2	7	3	17	11	0	3	2	6	4	5	6	4	5	13	0	3	0	0	2
1976	8	19	6	9	0	0	0	7	3	1	13	0	0	1	0	0	1	11	14	3	2	0	0	4	12	0	11	0	0	7	4	2	17	6	1	0
1977	41	14	36	7	10	26	11	1	2	17	1	0	11	0	8	30	3	1	23	12	8	9	10	30	25	3	33	0	0	4	14	23	1	3	0	28
1978	4	4	4	6	2	26	12	1	7	0	21	3	7	6	24	6	23	14	0	0	6	0	2	0	0	0	3	8	1	0	2	15	15	1	5	25
1979	0	3	10	1	6	9	13	0	0	7	2	1	5	15	3	0	20	27	8	0	0	11	27	24	13	13	0	5	18	23	0	8	5	0	12	20
1980	1	2	0	0	8	1	0	17	8	0	0	0	0	3	1	0	0	13	0	0	0	9	0	4	0	4	0	14	7	6	6	5	2	28	22	27
1981	1	4	18	2	6	0	1	13	3	1	10	1	11	27	7	10	19	0	0	0	0	0	0	7	7	3	0	0	17	14	5	11	44	23	20	72
1982	10	0	0	0	10	16	2	26	1	0	0	2	26	9	22	14	4	0	3	33	2	1	0	11	28	26	0	11	11	5	1	3	0	11	5	14
1983	17	1	20	20	4	8	11	1	0	0	0	0	0	0	1	13	23	10	15	8	0	14	18	10	1	4	18	39	21	25	20	9	0	0	5	21
1984	21	18	19	12	1	9	21	5	0	3	3	8	1	4	0	0	0	20	7	2	1	4	0	0	9	0	10	4	7	7	25	1	17	2	41	17
1985	0	0	1	20	34	16	6	0	0	4	10	1	12	14	1	0	30	41	15	14	1	19	10	19	13	0	0	3	3	7	3	42	8	7	4	43
1986	19	12	11	9	6	7	1	0	0	0	1	0	15	0	2	0	39	21	0	0	2	54	18	3	0	10	15	6	8	2	10	15	0	2	0	0
1987	5	2	0	4	0	2	2	21	27	0	0	0	0	0	0	28	14	30	0	1	4	12	0	0	5	14	22	50	0	2	4	27	22	50	21	15
1988	27	5	14	8	11	28	32	25	9	6	9	12	20	9	0	1	3	10	3	8	0	36	2	0	12	1	0	2	3	4	27	0	0	0	3	12
1989	1	0	7	0	2	0	8	1	7	10	18	17	5	10	17	11	17	8	0	13	4	2	26	10	0	8	21	1	0	21	9	15	0	1	3	11
1990	0	6	10	10	22	38	8	12	7	5	31	27	1	9	11	1	7	0	25	14	17	10	0	3	0	0	0	2	10	4	3	0	5	70	33	4
1991	27	31	0	1	0	0	0	2	1	0	14	1	4	1	13	13	11	0	23	7	0	2	0	2	2	0	5	2	0	0	5	26	26	38	6	35
1992	3	19	1	2	1	0	6	11	14	0	5	0	10	3	11	13	6	2	27	2	14	9	22	58	11	5	9	0	2	0	3	1	4	3	1	1
1993	2	12	16	5	28	0	0	0	1	23	0	15	1	0	0	1	3	0	6	9	0	6	13	0	3	2	14	2	12	8	5	4	14	7	12	4
1994	18	20	25	7	5	14	7	6	0	0	2	0	13	6	10	0	18	17	19	2	12	0	2	18	0	0	1	0	2	7	12	3	0	7	17	8
1995	5	25	2	13	9	17	2	3	26	8	19	1	13	7	3	20	1	13	0	9	11	19	5	31	0	2	24	18	9	13	16	24	34	23	12	1
1996	1	4	2	1	2	0	3	3	2	10	2	4	0	1	0	0	0	15	0	0	0	0	7	13	34	4	16	1	5	10	1	9	12	16	20	9
1997	0	1	8	1	3	0	1	15	1	37	25	1	2	0	0	0	3	14	0	3	0	0	5	5	17	77	14	0	1	7	0	5	4	8	29	13
1998	12	5	6	17	8	1	13	3	14	10	5	5	4	3	7	0	1	6	5	0	13	14	9	12	2	20	0	0	3	8	25	23	3	28	5	29
1999	22	7	13	14	14	3	2	0	1	15	3	20	30	10	7	15	23	8	2	9	32	29	3	2	0	19	20	0	11	3	28	19	7	6	16	27
2000	11	3	8	0	2	8	5	3	8	0	15	16	13	3	0	1	0	0	8	0	6	27	36	5	4	0	0	7	30	39	7	5	3	1	32	29
2001	26	21	0	1	30	7	1	20	9	2	10	0	1	10	21	2	0	11	9	13	9	18	8	12	19	0	3	18	0	4	0	25	1	10	5	10
2002	0	0	5	17	39	26	18	14	12	7	21	10	10	19	1	18	0	1	1	1	2	0	2	28	9	0	5	0	35	35	1	4	24	39	27	15
2003	4	4	1	15	20	1	19	1	0	0	0	0	5	10	0	0	0	2	14	2	3	0	0	41	36	1	16	7	15	0	2	33	9	18	36	13
2004	5	9	16	5	5	16	11	18	3	2	7	0	0	0	22	17	0	0	8	8	0	6	1	5	8	5	3	5	4	7	0	24	8	31	34	3
2005	4	28	3	11	0	1	3	6	2	5	3	2	0	5	11	10	0	0	1	16	0	0	0	8	21	6	0	14	27	22	14	1	16	11	4	1
2006	0	4	2	17	6	0	6	21	3	6	3	15	12	3	1	0	0	27	9	18	12	8	6	9	23	0	1	37	32	8	0	0	0	9	15	30
2007	14	22	26	25	1	7	2	6	3	0	11	11	7	23	0	14	2	0	0	8	0	10	6	0	0	8	25	20	7	29	4	1	1	15	21	10
2008	20	21	28	22	16	19	36	5	0	1	3	15	8	17	4	9	6	18	1	19	6	0	0	2	14	0	5	31	0	0	0	1	5	11	14	2
2009	1	1	2	12	8	1	3	10	1	4	10	0	11	11	4	0	6	13	0	11	0	0	0	2	5	9	1	11	9	23	9	19	20	15	1	0
2010	0	1	0	4	1	14	13	0	0	21	9	15	2	0	0	2	18	13	10	8	0	2	2	7	2	0	32	18	35	7	0	9	30	13	0	7
2011	20	19	15	4	1	0	6	40	1	0	2	1	0	10	2	5	0	8	13	8	3	0	0	4	2	0	15	19	12	15	0	23	10	17	6	6
2012	36	7	7	4	2	0	0	0	7	11	10	3	0	9	0	3	0	3	1	27	5	16	9	7	4	32	9	5	0	7	18	10	12	11	32	22
Average	9	8	10	9	9	11	8	8	6	5	7	5	6	7	5	7	7	10	8	7	5	9	6	9	9	8	8	10	10	9	8	10	9	13	13	15
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	1	1	2	1	2	1	1	0	1	0	1	0	0	0	0	1	0	1	0	0	0	2	1	0	1	1	1	3	1	2	1	2	4	4
Median	4	5	7	6	6	9	5	6	3	2	4	1	4	5	1	2	3	9	6	7	2	5	2	5	5	4	5	6	7	7	5	6	5	10	11	12
Upper	14	13	15	13	11	16	11	13	8	7	10	9	10	10	7	13	9	14	14	11	9	13	9	13	13	11	14	15	15	14	11	18	15	19	20	22
Max. value	41	31	41	30	39	38	36	40	31	37	31	27	30	27	24	30	39	41	33	33	32	54	36	58	36	77	33	50	36	39	28	42	44	70	41	72

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	22	8	9	19	5	21	62	11	23	10	7	4	22	1	33	0	5	11	0	37	1	44	27	20	41	43	10	0	12	8	21	1	0	1	4	20
1962	20	11	10	8	17	12	24	48	5	12	17	31	57	22	6	4	1	2	6	0	2	1	1	38	1	0	17	3	8	2	0	8	44	3	5	2
1963	2	18	12	16	5	7	9	19	14	52	6	20	31	7	1	0	8	7	52	11	30	17	2	0	15	15	36	27	20	9	0	0	0	10	0	4
1964	9	24	4	7	26	2	3	3	2	24	12	12	0	6	29	44	3	3	0	38	46	15	35	0	1	0	16	18	8	16	14	17	31	5	0	13
1965	4	10	27	0	40	42	8	20	0	2	11	16	31	23	2	12	4	33	4	2	2	2	0	15	14	0	0	0	7	19	6	25	1	13	22	10
1966	2	9	24	6	13	11	24	12	33	0	0	0	16	6	17	0	0	1	19	6	16	14	8	2	33	2	20	5	3	16	14	28	7	22	19	28
1967	14	1	2	10	2	10	25	18	53	10	3	24	34	5	0	17	27	11	25	32	37	22	22	37	26	17	20	1	3	3	3	0	9	0	31	14
1968	0	33	4	18	9	0	0	2	36	21	0	25	13	5	18	5	10	13	7	1	16	21	10	85	57	5	0	1	18	11	1	0	0	13	18	10
1969	8	20	1	5	14	4	0	0	2	2	76	22	1	0	24	3	23	30	2	0	0	0	17	7	8	36	18	15	13	7	8	15	4	1	3	3
1970	14	18	7	7	31	29	2	1	9	45	2	2	10	31	12	19	0	7	16	21	4	19	1	21	16	14	11	25	34	16	11	6	4	2	0	2
1971	0	0	25	22	30	37	14	49	48	0	0	26	9	1	1	14	17	6	6	3	5	16	10	1	16	28	6	6	11	18	2	9	8	17	1	10
1972	4	22	0	0	2	23	9	26	4	15	4	0	1	19	32	24	1	0	3	1	9	2	10	9	8	12	13	5	11	6	31	21	12	2	0	0
1973	0	41	6	20	13	7	11	39	1	7	0	8	4	2	1	16	18	23	0	16	3	0	1	3	6	5	16	19	9	0	6	17	7	18	4	4
1974	11	7	23	12	5	3	9	6	23	2	1	24	39	14	9	6	37	40	19	21	19	17	7	9	0	32	40	59	11	11	10	7	6	26	9	17
1975	1	0	17	4	23	0	0	0	7	14	16	18	5	28	54	3	18	17	16	0	12	1	0	7	13	1	6	5	4	18	35	0	3	4	5	3
1976	0	6	21	6	4	12	10	1	1	1	0	22	6	37	29	2	0	0	10	9	10	22	8	6	25	25	12	2	3	15	51	18	6	2	2	24
1977	11	1	28	13	33	8	32	0	0	2	4	7	9	20	5	0	0	18	37	15	2	1	19	8	33	20	24	13	36	0	0	4	14	0	23	13
1978	18	18	3	5	9	3	22	2	10	8	10	13	30	26	10	3	15	8	2	1	1	12	1	1	3	1	16	12	1	9	1	1	24	0	3	2
1979	8	16	10	21	9	60	21	30	16	9	5	40	16	1	11	14	7	5	0	2	27	28	0	2	21	5	42	34	16	23	6	1	0	1	9	40
1980	6	4	4	16	3	0	50	16	0	21	18	19	7	15	31	21	5	4	9	36	3	29	31	29	0	1	22	35	5	7	1	12	22	21	9	10
1981	17	2	8	19	10	21	0	2	0	11	7	3	0	0	0	17	17	16	23	41	23	15	3	21	33	3	8	49	25	15	1	11	8	2	10	7
1982	22	2	0	6	0	3	1	3	20	36	33	5	17	17	3	17	24	6	0	7	17	26	18	9	7	7	23	24	53	14	13	15	18	15	20	2
1983	16	0	13	10	0	1	1	0	2	1	1	0	27	30	31	18	28	0	14	6	10	24	9	1	12	2	2	0	4	1	9	7	0	20	28	10
1984	6	0	37	8	29	2	10	0	7	1	0	6	14	19	26	8	50	7	35	18	16	33	30	18	5	25	0	9	26	10	2	21	0	20	17	4
1985	3	23	16	30	6	25	30	17	18	26	19	6	65	13	12	12	0	5	1	37	4	0	0	0	29	28	3	2	0	9	34	3	11	16	19	1
1986	0	17	3	12	32	10	9	18	8	30	17	34	5	26	20	3	0	10	2	7	0	14	5	33	14	16	10	34	24	7	25	2	10	15	8	20
1987	1	19	1	0	10	39	46	19	6	2	39	24	6	19	22	7	6	14	0	16	53	9	11	6	0	0	49	21	5	3	0	1	5	6	14	17
1988	49	21	47	27	23	12	16	0	32	31	31	12	41	0	5	3	17	17	0	38	6	0	0	63	1	2	1	11	1	14	18	2	7	14	9	13
1989	0	5	8	2	0	17	21	12	14	11	2	5	1	3	4	8	2	0	0	15	2	21	18	8	10	29	4	2	3	0	0	0	1	24	20	1
1990	29	14	2	3	8	9	5	9	17	37	1	8	41	11	2	30	11	4	15	22	0	3	0	22	2	0	26	13	19	2	0	6	2	7	16	24
1991	4	8	12	32	7	0	10	17	10	26	9	4	0	1	7	11	26	34	10	1	1	23	0	3	43	15	29	0	1	3	0	0	2	15	11	1
1992	22	3	30	19	2	9	15	11	22	14	9	30	20	2	14	4	1	1	0	3	14	25	16	7	27	5	27	7	27	17	24	1	5	3	0	0
1993	4	16	19	1	32	35	17	36	28	4	12	19	4	0	1	7	5	1	14	55	22	18	1	0	1	10	22	0	8	6	22	13	8	16	28	13
1994	0	1	3	2	0	10	5	12	27	48	11	38	21	36	48	7	0	25	5	4	0	0	16	28	4	5	24	5	0	0	8	27	1	25	2	27
1995	3	2	41	15	19	3	12	0	0	0	27	0	16	9	9	0	6	23	26	4	2	7	5	9	3	10	2	1	11	5	1	11	1	0	2	0
1996	32	20	2	2	3	2	5	0	0	0	28	29	2	2	37	0	0	23	11	1	11	8	2	42	33	24	17	31	7	4	22	1	3	7	0	4
1997	8	0	0	6	13	20	4	0	2	0	25	73	19	9	34	11	1	8	19	18	1	13	0	0	4	28	16	6	3	20	33	9	6	2	10	25
1998	7	5	27	9	25	15	12	10	51	10	13	6	0	21	43	5	2	7	0	9	14	27	35	24	4	8	5	0	19	3	21	0	16	0	21	19
1999	20	0	28	29	14	0	1	24	7	2	3	27	0	0	0	24	62	58	45	14	0	0	9	3	3	3	1	11	6	8	6	30	11	13	30	9
2000	19	18	58	27	20	23	15	4	7	32	2	6	4	8	0	0	0	20	19	44	21	5	26	67	22	49	25	44	29	18	7	26	43	3	0	32
2001	5	2	26	5	7	1	15	32	9	11	0	17	27	34	12	28	6	1	14	26	5	2	1	23	5	6	0	0	12	9	27	2	0	9	8	3
2002	19	7	4	9	42	4	7	0	8	0	0	15	4	1	1	13	1	0	5	1	8	2	38	2	0	13	34	8	20	17	4	0	0	0	0	18
2003	22	3	5	6	6	16	4	1	23	3	11	10	0	0	0	10	8	23	10	18	0	1	0	15	36	2	10	12	22	15	1	0	20	11	20	30
2004	23	13	17	5	5	0	57	2	3	40	6	28	4	0	44	27	11	3	23	24	2	6	41	2	2	6	5	8	21	16	4	1	7	3	22	2
2005	4	3	12	27	19	12	13	16	0	0	16	2	3	7	9	1	0	5	21	1	1	7	43	1	25	10	10	0	12	2	14	10	0	6	6	14
2006	0	5	7	1	3	22	4	4	36	21	45	17	22	6	0	1	0	11	30	30	0	10	38	53	3	8	17	18	37	4	31	30	9	1	0	19
2007	22	26	15	14	12	14	3	10	18	9	0	5	9	26	5	25	11	21	1	0	15	1	0	10	17	17	1	1	13	19	43	14	0	0	13	13
2008	8	28	11	21	13	5	36	50	30	27	11	11	21	30	0	2	0	12	31	13	8	11	8	14	0	21	24	12	2	16	30	9	7	13	2	0
2009	28	70	39	39	37	37	0	10	20	2	16	24	39	2	0	8	1	13	17	26	4	6	8	1	14	8	16	36	33	12	10	7	8	2	16	14
2010	1	0	24	7	23	64	13	20	11	11	36	30	1	0	18	35	25	0	0	21	0	16	1	10	27	8	20	2	1	4	7	7	3	14	1	3
2011	7	19	17	24	24	3	11	53	21	26	12	37	16	26	23	46	7	2	12	16	0	16	0	17	3	1	0	2	8	10	7	28	23	3	5	14
2012	13	30	27	34	6	26	11	33	0	10	28	30	1	6	12	24	35	43	24	15	15	54	1	28	23	9	8	5	4	22	6	4	13	2	14	22
Average	11	12	15	13	14	14	14	14	14	14	13	17	15	12	15	12	11	13	13	15	10	13	11	16	14	12	15	13	13	10	12	9	9	9	10	12
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	3	2	4	5	5	3	4	2	2	2	2	6	4	2	2	3	1	3	2	2	1	2	1	2	3	3	5	2	4	4	2	1	1	2	2	3
Median	8	8	12	9	11	10	11	10	10	10	10	16	10	8	10	8	6	8	10	15	5	13	8	9	11	8	16	8	11	9	7	7	6	6	9	10
Upper	19	19	24	19	23	21	18	19	22	25	17	25	22	21	25	17	17	19	19	22	15	21	18	22	25	18	23	19	20	16	21	15	11	15	18	18
Max. value	49	70	58	39	42	64	62	53	53	52	76	73	65	37	54	46	62	58	52	55	53	54	43	85	57	49	49	59	53	23	51	30	44	26	31	40

Figure A13-18. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Värmland county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A14 ÖREBRO COUNTY[♣]

A14.1 Crop production and yield

Table A14-1. *Annual production (metric ton) in 2010-2014 for the major crops in Örebro county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses		113 800	131 600	123 500	150 200	129 775
Spring barley	45 700	60 500	65 800	92 600	71 600	67 240
Oats	42 900	66 600	56 200	68 200	60 600	58 900
Winter wheat	51 300	53 500	56 500	28 500	87 700	55 500
Spring wheat	31 000	35 800	30 800	50 200	37 000	36 960
Potatoes	13 100	18 300	11 900	13 200	14 700	14 240
Triticale					6 900	6 900
Spring rape	5 100	6 300	5 900	5 700	1 900	4 980

* Data from Jordbruksverket (2015)

Table A14-2. *Average yield of cereals, potatoes and spring rape in Örebro county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Spring barley	3 773	296	8
Oats	3 651	315	9
Winter wheat	4 880	313	6
Spring wheat	4 293	330	8
Potatoes	25 304	2 586	10
Spring rape	1 794	190	11

* Coefficient of variation = Standard deviation / Average

Table A14-3. *Coefficient of variation of farm-level yield for important crops in Örebro county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Spring barley	25	29	19	28	25	31	26	35	27
Oats	29	34	21	28	29	35	23	33	29
Winter wheat	25	20	19	25	25	28	32	24	25
Spring wheat	25	25	27	31	31	27	28	38	29
Spring rape	28	30	27	35	33	43	26	34	32
Average	26	28	23	30	29	33	27	33	

* Based on farm-level yield data from SCB (2014a).

[♣] For literature references in this Appendix see the *References* section of the main text.

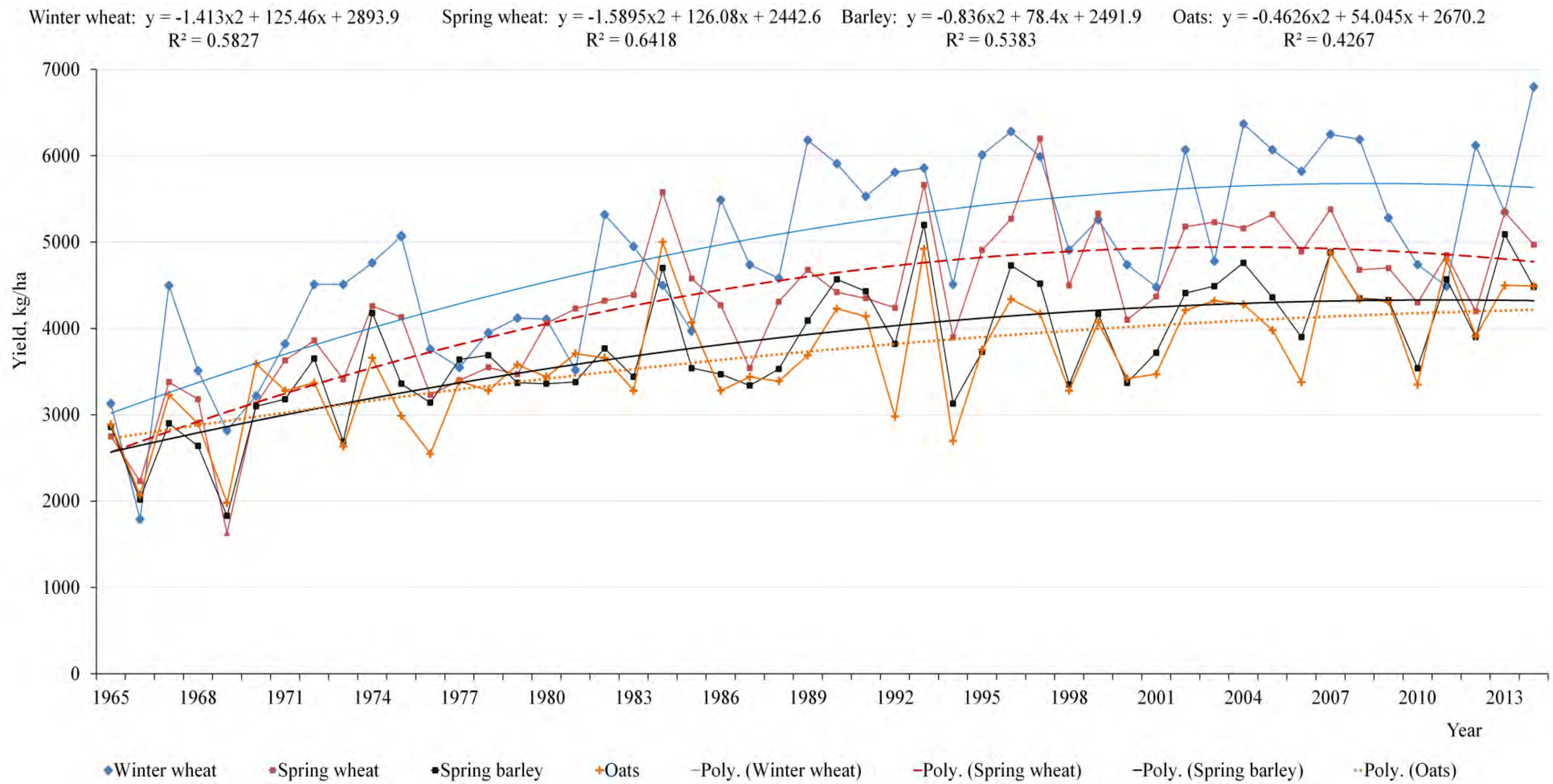


Figure A14-1. Average yield (kg/ha) per year of winter wheat, spring wheat, spring barley and oats in Örebro county for the period 1965-2014, and the trend lines with respective equations for winter wheat, barley and oats. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

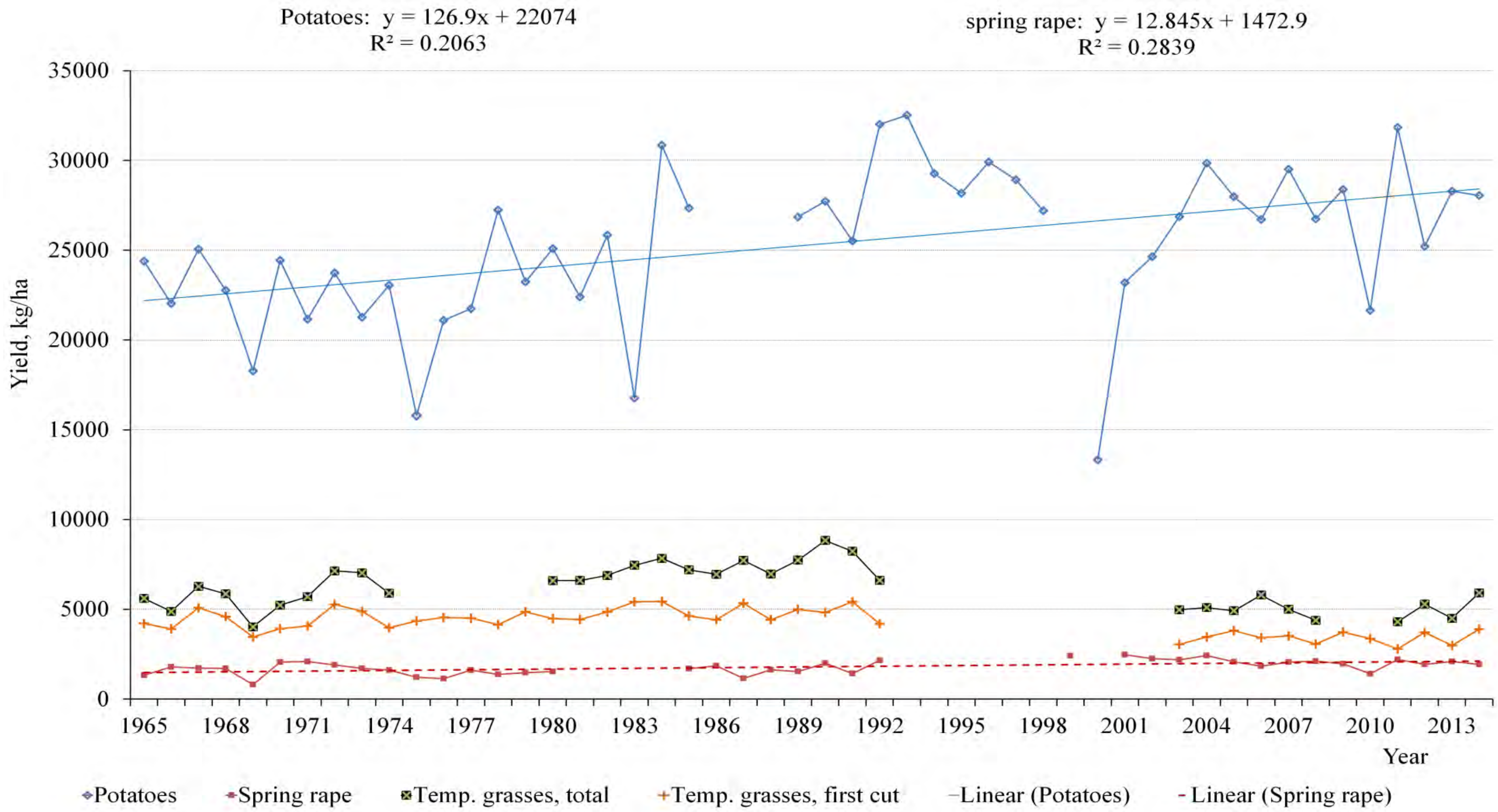


Figure A14-2. Average yield (kg/ha) of potatoes, spring rape and temporary grasses (total and first cut) in Örebro county for the period 1965-2014, and the trend lines with respective equations for potatoes and spring rape. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

A14.2 Precipitation, temperature and cereal yield

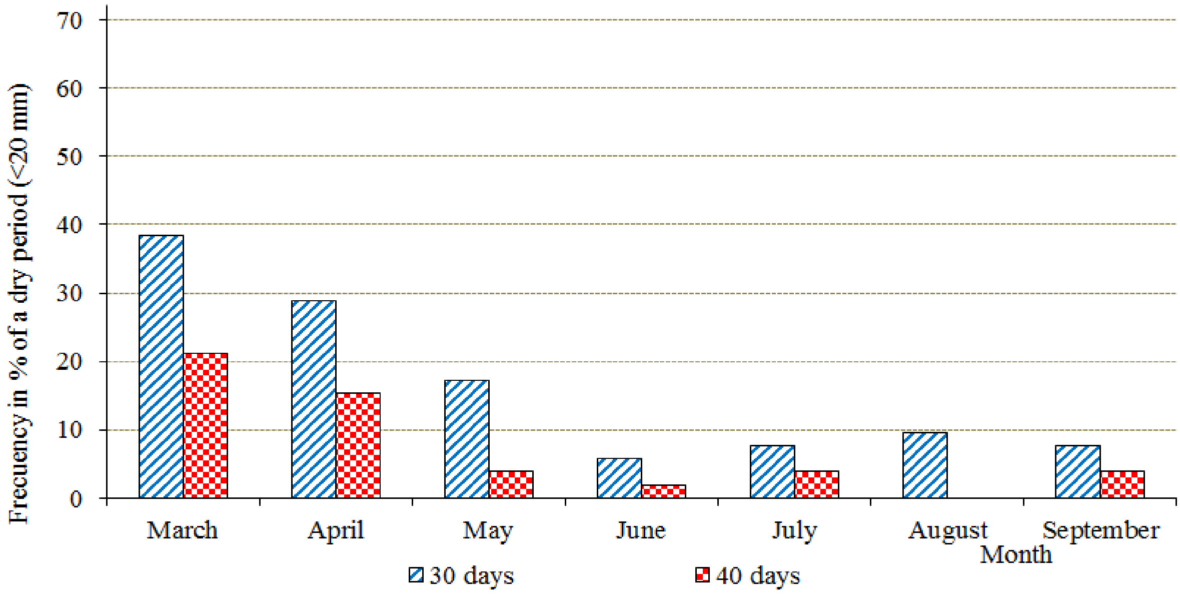


Figure A14-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Örebro county∗.

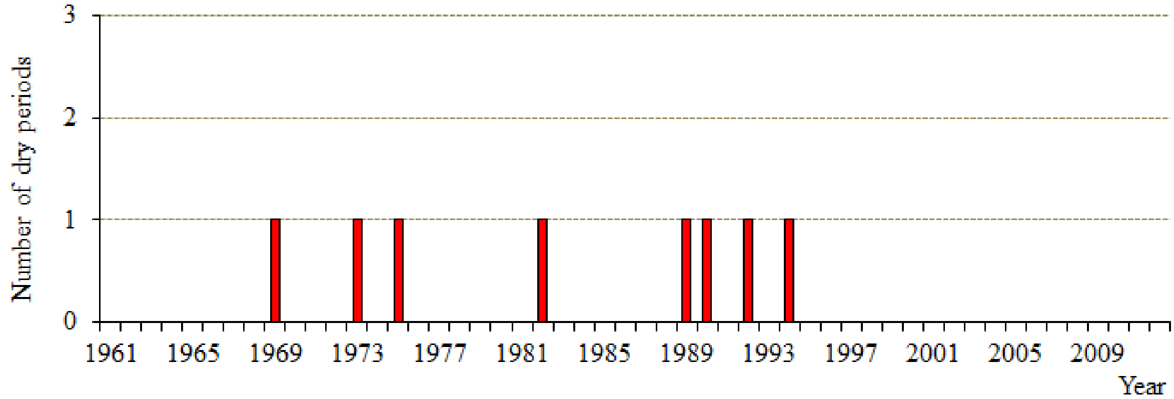


Figure A14-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 May to 31 July in Örebro county*.

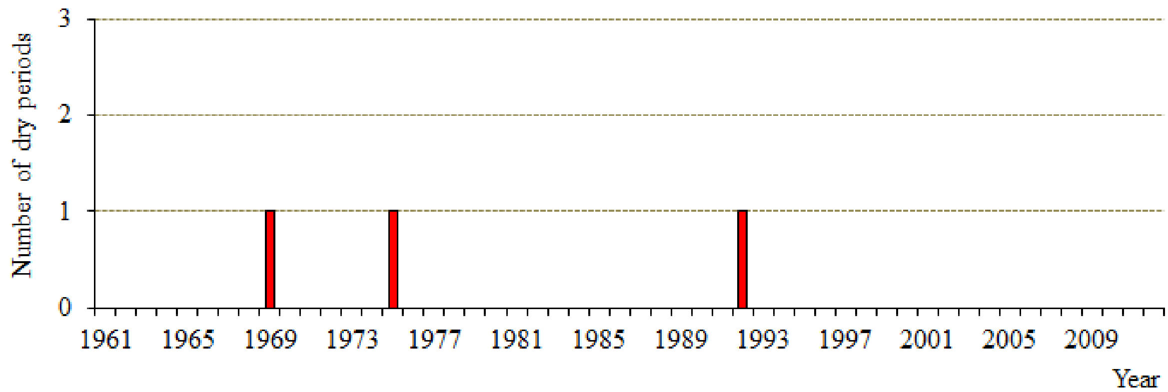


Figure A14-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 May to 31 July in Örebro county∗.

∗ The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

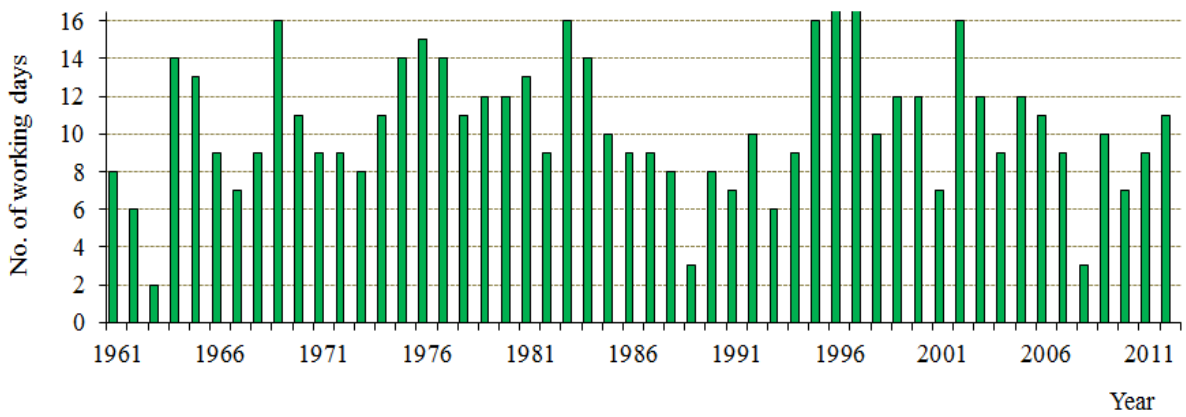


Figure A14-6. Estimated number of working days available for harvesting during the period 3-19 August in Örebro county (for definition of a working day, see Section 2.1)*.

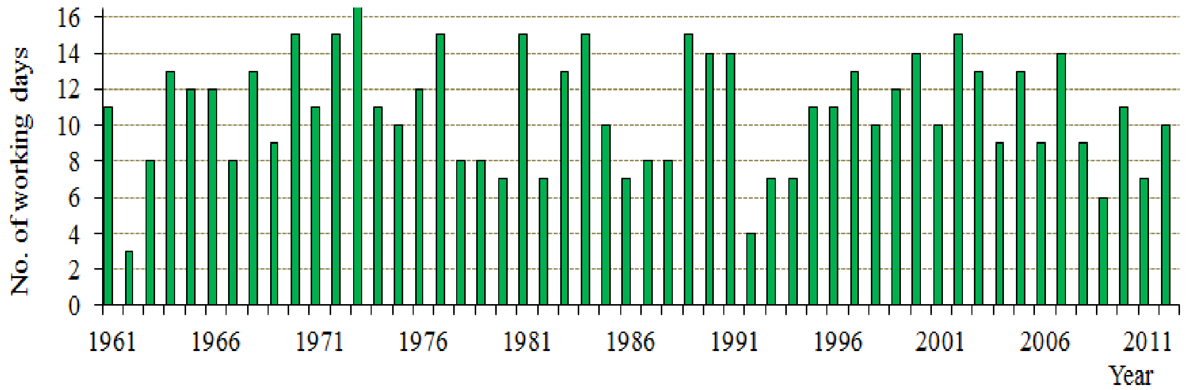


Figure A14-7. Estimated number of working days available for harvesting during the period 20 August-5 September in Örebro county (for definition of a working day, see Section 2.1)*.

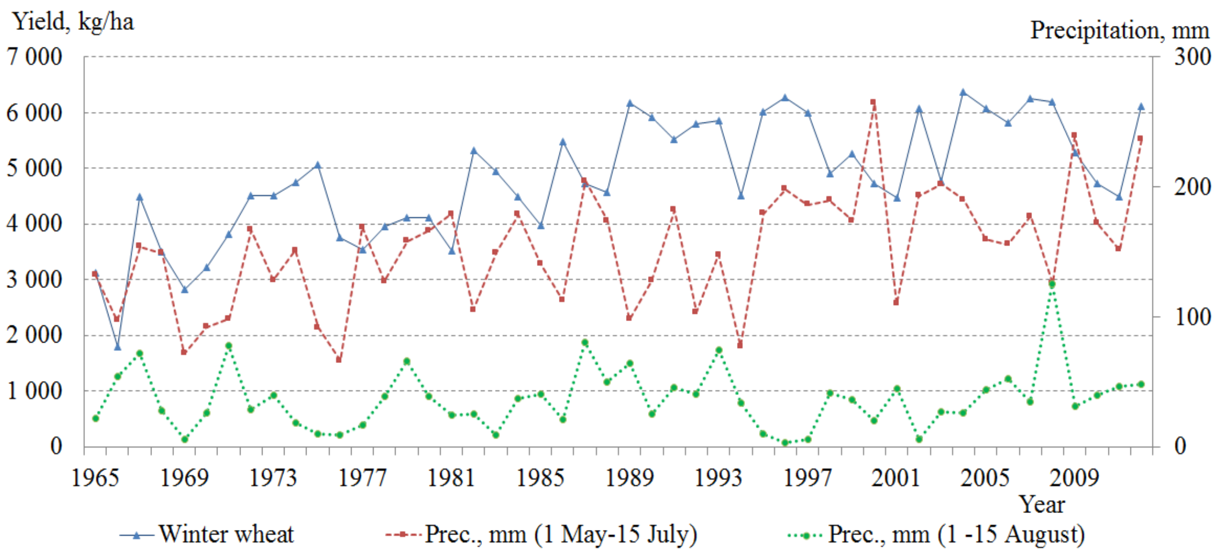


Figure A14-8. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 1-15 August in Örebro county, 1965-2012*.

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* Precipitation from Luftwebb (2014). Yield data from from Jordbruksverket (2015).

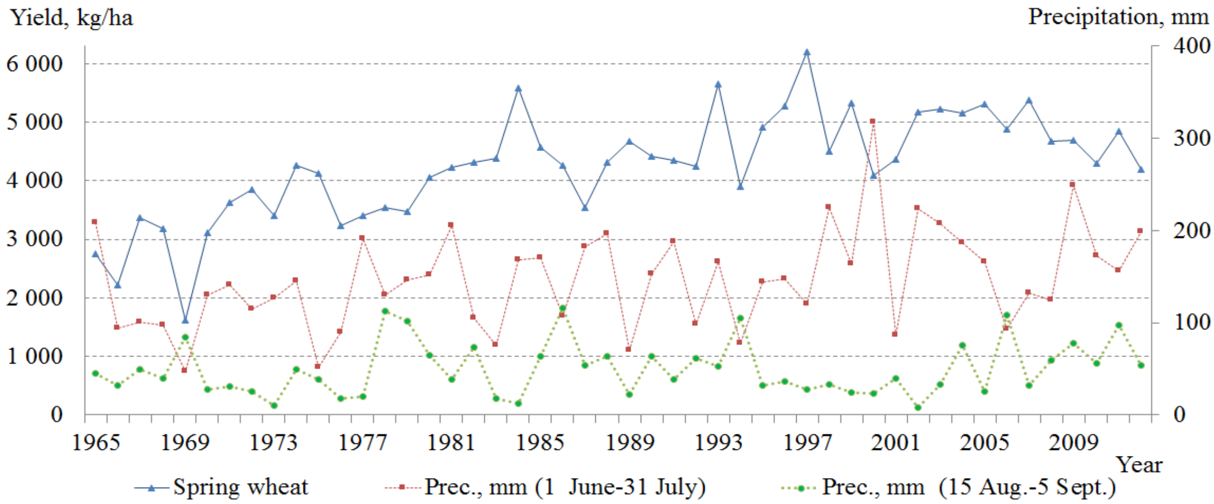


Figure A14-9. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August -5 September in Örebro county, 1991-2012∗.

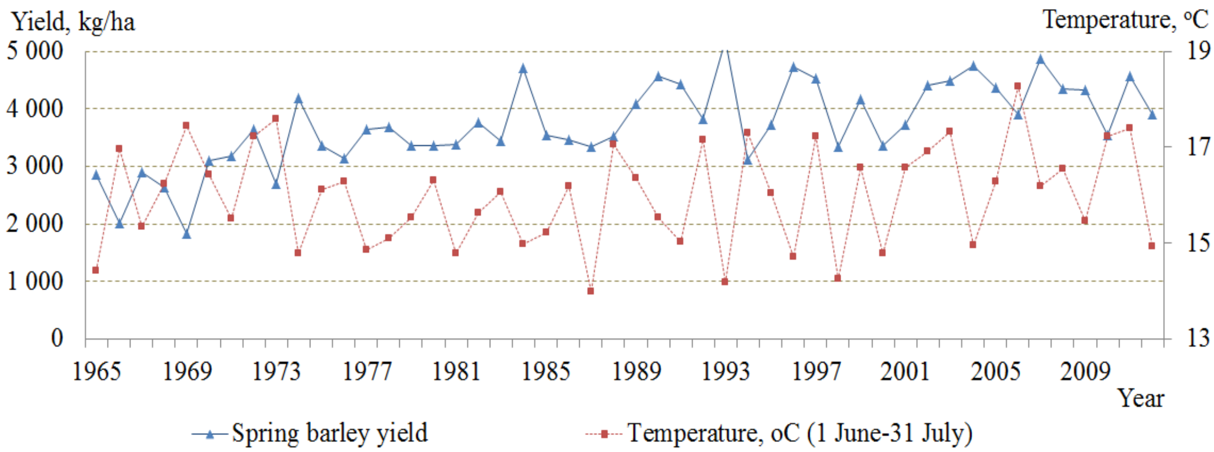


Figure A14-10. Annual spring barley yield (kg/ha) and average temperature (ºC) in the period 1 June-31 July in Örebro county, 1965-2012*.

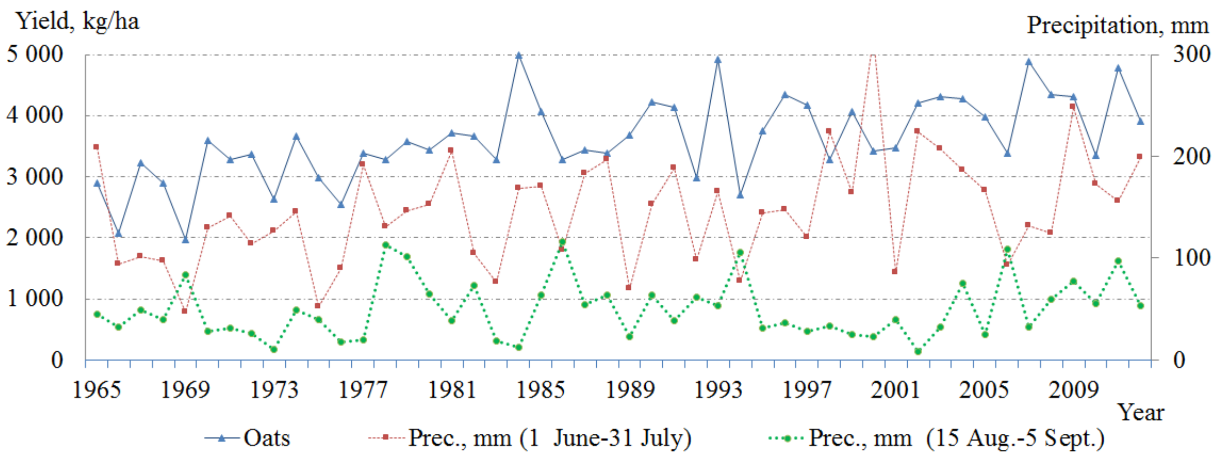
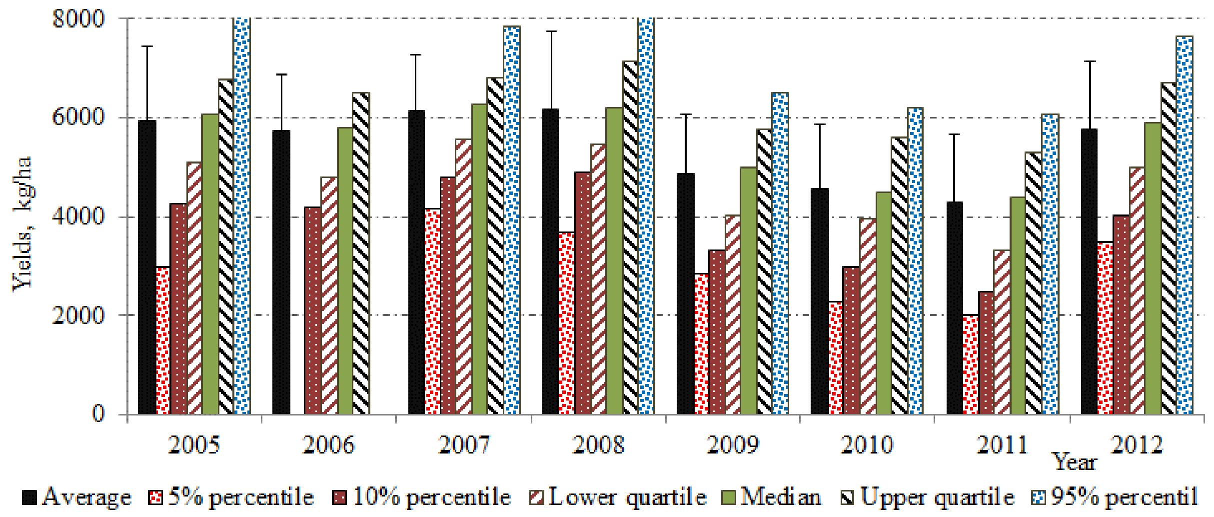


Figure A14-11. Annual oat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August-5 September in Örebro county, 1991-2012*.

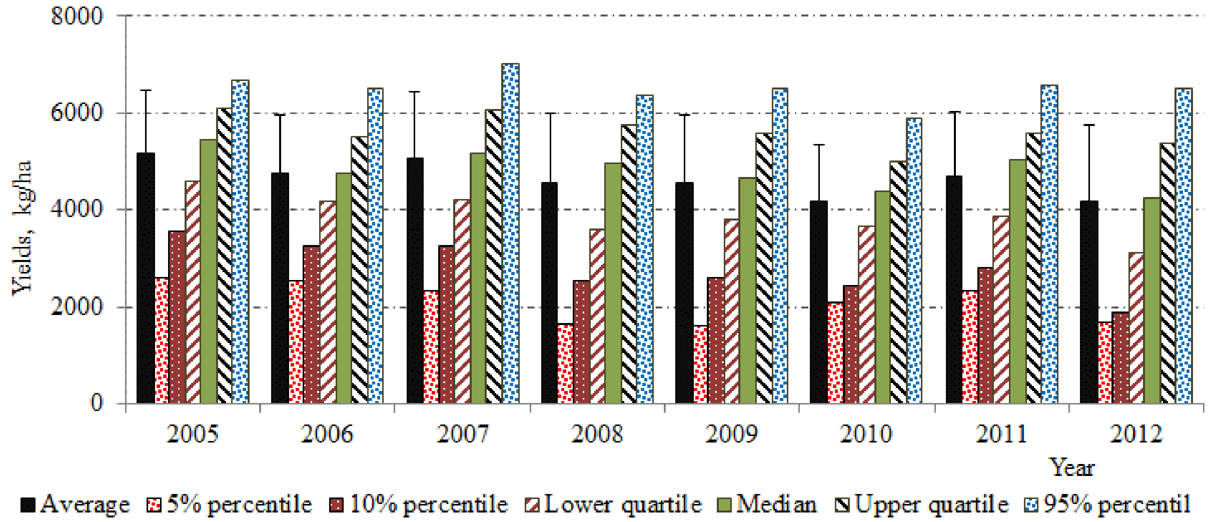
∗ Precipitation and temperature from Luftwebb (2014) and yields data from Jordbruksverket (2015).

A14.3 Yield on farms



N	90	95	104	96	87	105	106	81

Figure A14-12. Average and estimated percentiles of winter wheat farm-level yield in Örebro county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N	94	63	53	55	69	89	90	84

Figure A14-13. Average and estimated percentiles of spring wheat farm-level yield in Örebro county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

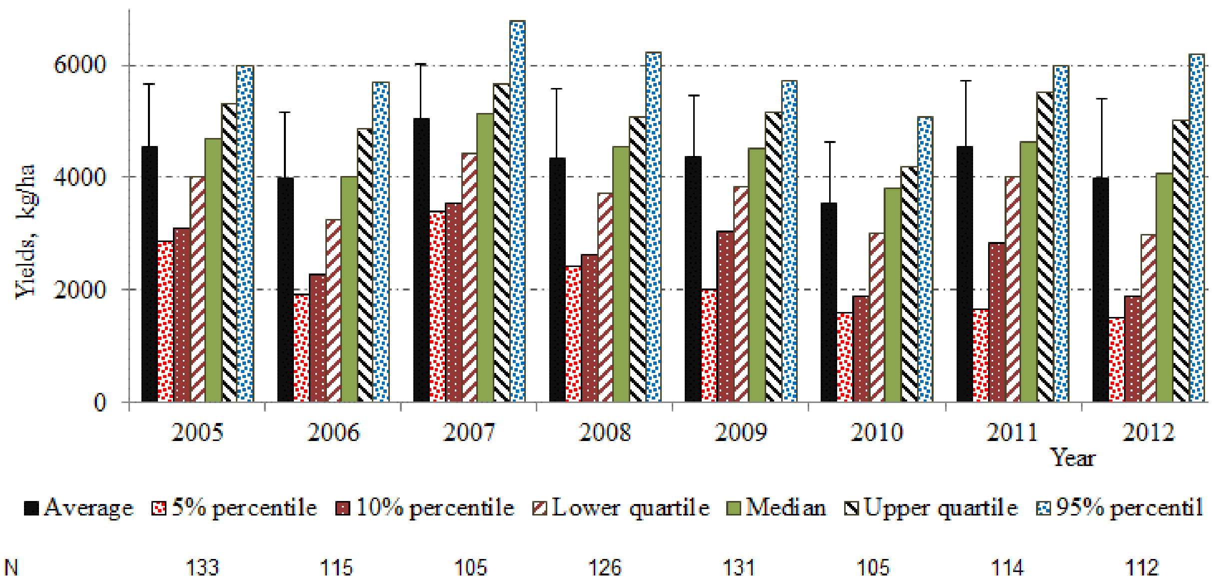


Figure A14-14. Average and estimated percentiles of spring barley farm-level yield in Örebro county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

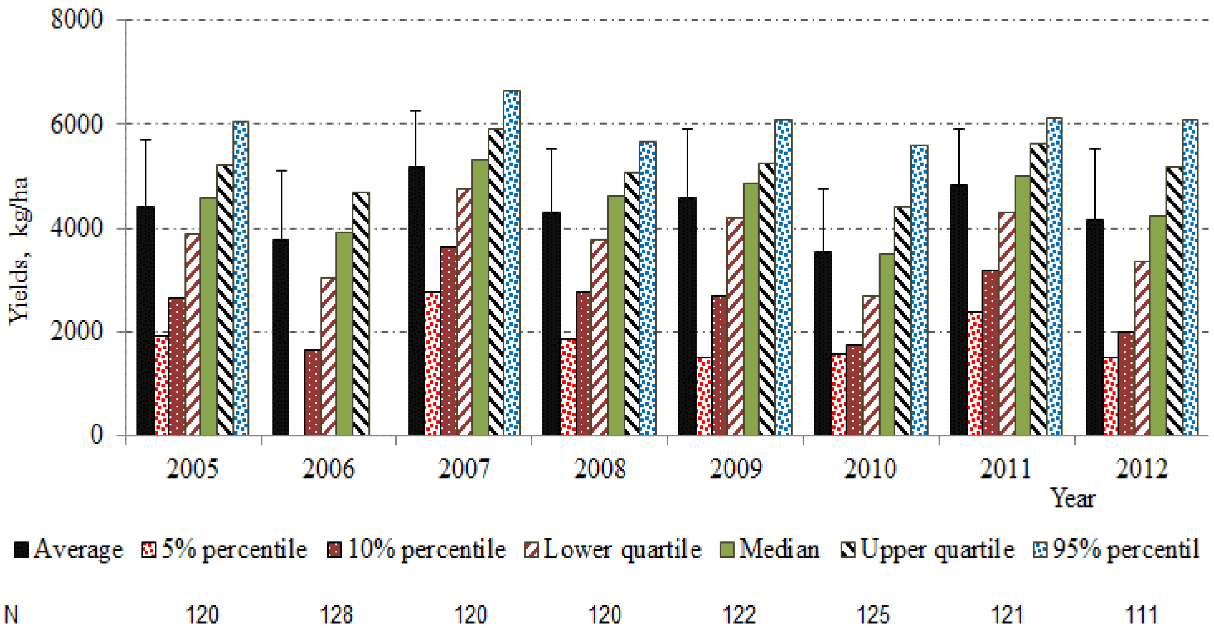


Figure A14-15. Average and estimated percentiles of oat farm-level yield in Örebro county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

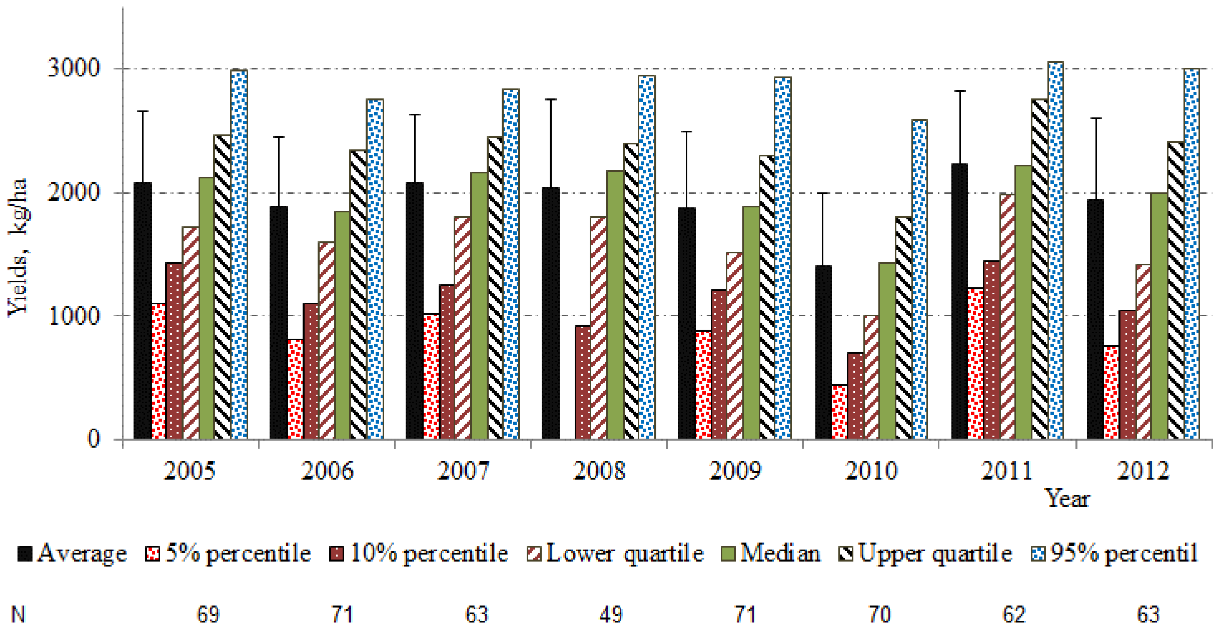


Figure A14-16. Average and estimated percentiles of spring rape farm-level yield in Örebro county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A14.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

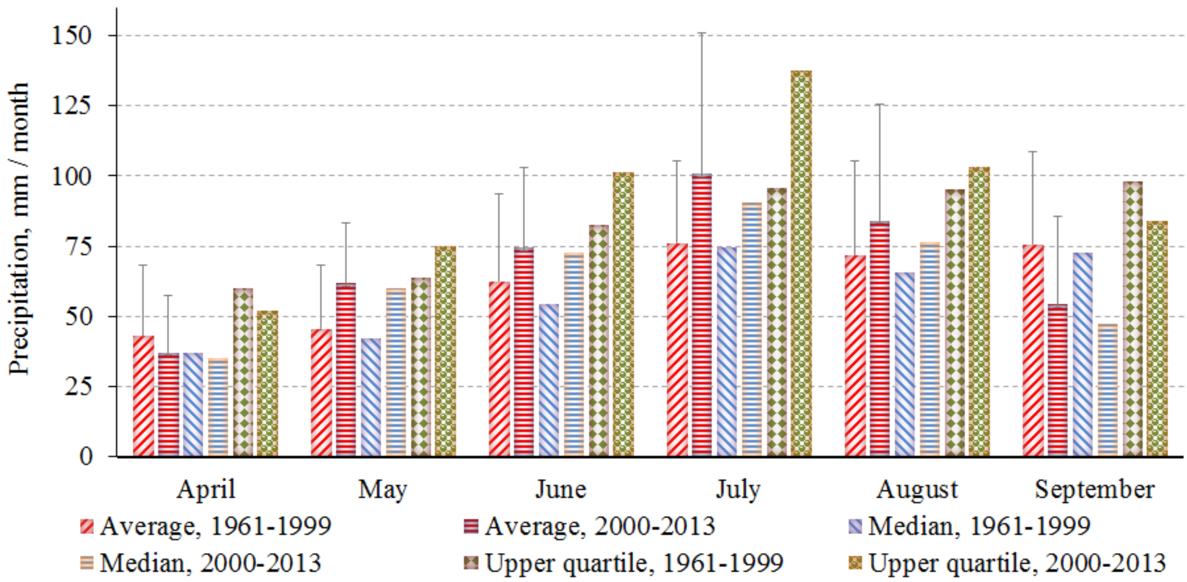


Figure A14-17. Monthly average, median and upper quartile precipitation (mm) from April to September in Örebro county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1464401-6573553 (close to the city of Örebro).

County: **Örebro** | **Average temperature (°C) for 5 or 6 day periods** | Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Örebro (Västra Mark)** | Coordinates for the places (RT90): 1464401-6573553 | 1482376-6580658 | 1463701-6561982 | 1481042-6571320 | **Scale for the color intensity:** -30 °C | 0 °C | 30 °C

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	0	-3	-3	-6	-10	-1	-4	-1	2	4	1	4	4	7	5	3	3	2	-1	2	7	8	9	8	8	8	9	10	11	12	19	18	16	15	14	16
1962	-3	1	0	1	-1	-9	-2	1	-4	-1	-3	-6	-6	-6	-9	-4	-4	-1	3	2	4	6	8	6	4	7	9	10	10	9	10	16	13	16	14	14
1963	-10	-15	-13	-10	-7	-5	-8	-9	-5	-15	-7	-3	-4	-2	-6	-4	-2	-3	0	3	4	5	4	8	7	11	12	10	14	17	15	18	14	15	14	15
1964	1	-3	-3	-3	2	-2	-1	0	-9	-10	-3	-1	-1	1	-2	-4	-2	-1	1	3	6	11	7	8	8	10	11	10	16	15	10	14	17	14	14	15
1965	-2	-8	2	1	-1	-4	-2	-1	-2	-3	-5	-13	-10	-5	0	2	0	3	4	1	4	5	7	8	7	8	10	7	9	11	14	15	15	16	15	14
1966	-14	-4	-7	-14	-8	-3	-14	-17	-17	-13	-2	0	1	2	-7	1	0	-1	3	1	-5	-3	3	9	10	6	11	14	10	11	12	15	19	21	17	17
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1973	1	1	-1	-2	1	0	2	0	0	1	-3	-5	1	1	3	3	7	4	3	2	3	4	5	5	8	9	8	8	13	16	14	17	13	14	20	20
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1992	4	1	3	-2	-2	2	-1	2	1	-4	3	4	4	5	1	4	3	0	2	3	4	2	3	8	9	8	11	17	18	18	19	18	17	16	16	19
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2007	3	5	2	1	-8	-4	1	-8	-4	-2	-7	-1	1	3	6	3	3	7	6	2	11	8	8	12	10	10	10	11	13	12	15	21	16	15	16	15
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2011	-5	-1	-5	0	-3	-4	2	-1	-11	-11	-10	-2	-2	0	1	-1	4	0	6	8	8	11	13	11	4	13	13	11	13	13	17	19	15	14	15	20
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Average	-4	-4	-2	-2	-3	-4	-3	-3	-4	-4	-3	-2	-2	0	-1	0	1	2	3	3	4	5	7	8	8	10	11	11	12	13	14	15	15	15	15	16
By quartile																																				
Min value	-15	-20	-18	-14	-11	-12	-15	-18	-17	-18	-12	-13	-15	-10	-9	-9	-7	-3	-2	-3	-5	-3	1	2	2	5	4	5	6	8	8	10	10	10	12	13
Lower	-8	-6	-5	-6	-6	-7	-6	-6	-6	-8	-7	-5	-4	-2	-2	-3	-1	0	1	2	3	4	4	6	6	8	9	9	10	11	12	13	13	14	14	14
Median	-4	-2	-1	-2	-2	-4	-2	-2	-3	-3	-3	-1	-2	0	0	1	1	2	3	3	4	5	7	8	8	9	11	11	12	12	14	14	15	15	15	15
Upper	1	1	2	1	1	-1	1	-1	0	-1	0	1	1	2	2	3	3	4	5	4	6	7	8	10	10	12	12	13	13	14	17	16	16	17	17	17
Max value	4	6	5	5	4	4	6	5	3	4	8	4	5	7	6	9	9	7	7	8	11	11	13	15	17	16	14	17	18	19	21	21	21	21	20	22
Range	19	26	22	19	15	17	20	23	20	22	20	17	20	17	15	19	16	10	10	12	16	14	12	13	15	11	11	12	12	10	13	12	11	11	9	9

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	17	14	16	17	16	15	15	15	14	14	13	16	14	11	13	14	10	11	11	12	12	10	10	8	4	5	3	1	2	0	-2	-3	-8	-1	-7	-6
1962	13	15	12	15	15	14	14	13	13	13	13	12	12	12	9	9	9	9	12	10	5	8	7	5	5	5	2	-2	-4	-2	-1	1	-4	-10	-6	-9
1963	20	16	14	16	17	16	19	17	15	14	14	13	14	13	12	11	11	9	7	7	6	8	9	7	4	5	3	1	-3	1	0	-3	-4	-7	-7	3
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1966	17	17	15	18	20	15	15	15	15	15	13	14	14	12	12	11	9	5	9	6	5	9	6	0	2	5	1	0	0	2	3	1	-2	-2	-6	-4
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1974	15	15	15	16	15	14	15	15	14	15	15	16	15	13	12	13	10	9	7	6	3	4	4	3	2	2	6	5	0	1	1	2	0	0	6	-3
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1981	14	18	17	15	17	17	16	16	18	13	13	11	13	14	10	7	12	13	11	9	6	3	3	3	2	0	0	2	1	-2	-1	-8	-13	-14	-6	-6
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1987	16	17	15	16	18	13	13	11	13	14	14	12	12	12	11	8	9	7	6	10	9	8	7	4	3	0	3	3	2	-2	-3	-2	-2	-5	-1	2
1988	19	17	17	18	17	15	14	17	16	15	14	14	14	13	12	13	11	11	8	9	6	6	2	1	1	-2	3	-2	-2	-7	-9	-2	-3	-4	0	2
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1991	19	22	17	16	17	19	20	17	15	15	16	15	16	10	11	11	11	9	9	9	8	6	3	6	6	2	3	-2	5	5	1	0	4	2	-2	0
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1996	12	14	16	14	18	16	16	17	19	19	20	16	14	9	8	9	7	9	9	10	8	8	5	5	9	2	0	4	1	-3	2	3	-5	-10	-9	-4
1997	20	18	17	17	20	18	19	21	20	20	19	21	18	14	11	10	11	9	7	9	4	5	0	1	0	4	5	1	0	-4	-4	1	1	-4	-3	-1
1998	16	15	15	14	17	15	15	15	15	14	13	11	11	14	14	12	12	9	5	6	7	4	8	4	0	-3	0	-5	-2	-1	-1	-6	-2	3	-2	1
1999	16	19	21	17	16	18	21	15	13	14	12	15	16	16	12	14	14	12	10	7	7	4	6	7	9	6	4	0	0	6	-2	1	-6	-5	-1	-4
2000	17	14	15	16	17	15	16	14	17	15	13	14	11	13	9	8	8	12	12	12	10	10	10	5	6	6	5	5	6	6	7	7	6	0	-3	-4
2001	20	22	16	15	19	19	16	15	16	17	17	15	14	12	12	14	10	6	12	11	11	7	2	8	6	0	2	3	2	2	2	3	0	-2	-10	-11
2002	14	17	18	20	17	20	19	19	21	20	19	18	16	16	14	10	7	9	7	3	2	-1	3	3	-2	0	-4	0	0	0	-1	-6	-4	-3	-11	-8
2003	16	18	20	22	20	19	19	18	18	17	16	11	12	15	14	13	12	8	9	6	5	1	-2	3	7	3	1	3	0	4	5	1	0	2	-3	-1
2004	14	15	14	16	17	18	19	22	18	17	13	14	15	13	14	12	11	10	8	7	3	7	8	5	5	4	5	-4	-4	-2	3	4	3	0	-1	-1
2005	18	21	20	17	15	16	16	15	16	17	17	14	15	15	11	11	13	12	11	11	9	3	4	7	9	9	8	-2	2	-2	0	1	3	-5	0	-3
2006	21	21	17	18	21	21	19	20	18	18	17	16	16	13	15	13	15	15	12	11	9	9	10	4	-1	4	2	6	5	8	7	7	7	0	3	3
2007	17	15	15	17	16	16	17	19	18	15	19	10	11	13	11	10	13	10	9	7	6	6	5	6	5	1	-1	2	1	0	3	4	-2	-4	0	4
2008	19	14	16	15	19	22	17	15	16	15	14	13	14	12	9	9	10	9	7	8	10	7	8	3	2	5	5	1	-4	4	1	1	-1	3	-1	-3
2009	20	15	16	18	17	16	18	20	15	15	16	15	16	15	12	12	12	10	5	5	2	4	5	4	3	5	3	7	6	5	0	3	-1	-8	-6	-9
2010	20	19	22	20	17	17	17	18	20	17	15	12	10	13	13	11	11	8	9	8	4	3	1	6	6	-1	2	-2	-2	-10	-10	-7	-8	-5	-15	-7
2011	19	20	16	17	18	20	19	15	15	15	16	16	15	13	14	11	11	14	13	8	5	6	6	8	9	6	2	4	5	6	3	0	2	1	2	3
2012	17	18	15	15	17	17	17	15	16	17	15	14	15	12	13	11	8	11	10	7	5	9	5	1	5	2	6	5	5	0	-10	-8	-8	-1	-4	0
Average	17	17	16	17	17	17	17	17	16	16	15	14	14	13	11	11	10	9	9	8	7	6	5	5	4	3	2	1	1	0	0	-1	-2	-3	-3	-3
By quartile																																				
Min value	12	12	12	12	14	13	13	11	13	13	10	10	10	9	7	6	7	5	2	2	0	-2	-2	-2	-3	-4	-6	-6	-9	-10	-10	-13	-13	-14	-15	-15
Lower	14	15	15	15	16	15	15	15	14	14	13	13	12	11	10	9	9	8	7	7	5	4	3	3	2	1	0	-2	-2	-3	-2	-4	-4	-6	-6	-7
Median	16	17	16	17	17	17	17	16	16	15	14	14	14	13	11	11	10	9	9	8	7	6	5	5	4	3	3	1	0	0	0	0	-2	-2	-2	-3
Upper	19	18	17	18	18	19	19	18	17	17	16	15	15	14	12	12	12	10	10	10	8	8	7	7	6	5	4	3	3	3	2	2	1	0	0	1
Max value	22	22	23	22	21	23	23	25	21	20	20	21	18	18	15	14	15	15	14	13	12	11	10	9	9	9	8	7	6	8	7	7	7	5	6	4
Range	10	10	11	10	7	10	11	14	8	8	9	11	8	9	8	8	9	10	12	11	11	13	12	11	12	13	13	13	16	19	17	19	20	19	21	19

Figure A14-18. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Örebro county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Örebro** **Total precipitation , mm / 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Örebro (Västra Mark)** Coordinates for the places (RT90): 1464401-6573553 1482376-6580658 1463701-6561982 1481042-6571320

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	18	8	6	0	1	13	7	7	0	0	2	2	2	0	2	5	0	16	12	9	7	0	0	0	32	23	9	13	0	4	4	5	14	8	5	15
1962	4	7	11	17	30	8	20	7	15	3	0	0	6	9	0	1	1	20	13	21	5	7	10	0	1	13	3	15	16	7	0	2	10	24	8	9
1963	7	0	1	1	3	1	12	0	8	0	0	0	1	1	2	0	4	1	1	0	18	10	2	4	13	7	0	11	13	1	10	7	5	11	18	38
1964	0	0	0	0	0	4	10	1	10	7	0	5	0	0	0	0	0	0	0	1	7	0	0	15	17	8	13	0	0	4	23	8	9	6	22	1
1965	4	7	14	16	10	18	5	0	3	9	1	6	0	2	0	6	1	0	0	1	14	15	9	2	0	3	0	7	0	1	2	13	4	23	12	16
1966	11	1	6	1	2	28	25	9	10	10	18	16	3	11	7	0	12	17	12	0	0	2	14	0	6	7	0	5	10	12	7	0	0	0	7	13
1967	7	7	0	1	0	32	12	0	0	8	19	15	1	9	2	7	8	9	5	12	0	14	6	13	9	15	15	14	19	3	8	16	0	0	12	6
1968	1	0	10	12	9	6	11	10	2	0	2	0	6	2	0	10	10	1	18	1	0	1	3	0	22	26	5	15	3	5	3	6	0	4	7	9
1969	3	1	21	13	8	6	4	13	2	8	8	0	0	7	0	0	0	8	1	2	14	32	2	7	2	7	22	12	0	0	6	2	0	0	0	0
1970	17	0	9	1	1	9	4	5	1	0	1	0	11	13	1	9	0	5	19	15	0	8	21	15	3	0	0	3	8	7	2	0	25	0	8	1
1971	2	3	0	8	16	11	0	1	6	12	2	1	2	4	8	20	3	5	2	7	0	7	0	1	3	0	3	4	2	11	1	6	7	24	5	7
1972	1	0	0	11	2	10	7	9	6	2	4	0	3	7	0	0	1	23	24	14	12	3	3	6	0	1	0	27	17	23	14	6	10	6	10	10
1973	1	0	0	8	10	11	1	5	26	8	3	0	2	0	0	0	0	5	9	1	1	14	5	4	11	16	2	6	10	3	10	3	1	0	0	5
1974	1	2	31	2	5	8	4	14	11	2	0	0	0	0	0	24	14	0	0	0	0	0	2	0	0	0	0	0	3	16	6	8	5	15	13	14
1975	1	4	4	26	16	11	8	0	0	5	0	0	3	8	5	0	3	14	7	21	14	0	1	0	3	1	20	17	7	11	15	0	3	0	0	3
1976	12	12	4	10	0	0	0	6	4	0	6	1	0	2	1	1	1	8	13	7	1	1	0	10	10	0	3	0	0	5	2	3	16	5	3	0
1977	23	21	31	4	5	28	7	3	2	22	3	0	8	0	10	26	2	2	16	13	3	7	6	18	12	3	18	0	0	11	10	10	0	2	0	29
1978	4	2	1	1	4	20	11	2	9	0	13	2	9	5	19	12	8	23	0	1	5	0	3	0	0	0	6	5	0	0	1	18	16	1	1	41
1979	1	1	16	0	10	14	10	0	0	6	0	0	5	6	1	0	12	15	5	0	4	5	22	20	7	20	0	4	30	10	0	22	5	0	17	8
1980	1	2	0	0	9	1	0	14	6	0	0	0	1	5	0	1	0	18	2	1	0	20	3	9	0	3	0	18	12	8	7	3	8	18	48	26
1981	0	3	15	2	2	0	2	12	3	1	7	1	8	23	6	9	16	0	0	0	0	0	1	10	17	1	0	0	9	13	2	10	32	13	29	25
1982	9	0	0	0	11	18	0	21	1	0	0	1	18	7	14	14	0	0	4	20	5	1	0	17	17	10	0	7	10	4	5	4	0	3	2	29
1983	16	4	14	18	4	12	11	0	0	0	0	0	2	8	10	8	25	7	23	7	0	0	18	15	0	1	26	26	4	18	23	9	2	1	1	16
1984	15	22	10	10	2	21	15	20	0	1	3	4	4	1	0	0	0	11	7	0	1	3	0	0	4	1	3	6	7	13	8	3	19	6	58	25
1985	0	2	0	17	24	15	5	5	0	5	7	0	8	13	1	0	7	20	12	11	2	21	10	24	12	0	0	1	2	4	2	23	16	13	0	30
1986	18	6	12	5	2	6	3	0	0	1	5	0	7	0	2	0	29	23	1	0	6	36	41	5	0	6	22	6	5	0	9	24	0	0	0	9
1987	5	3	0	1	0	1	1	18	18	0	0	0	0	0	0	15	3	18	0	0	5	9	0	0	2	14	17	44	0	2	10	11	24	33	20	4
1988	21	6	10	3	17	25	17	19	7	8	12	19	9	10	0	0	3	10	3	7	1	22	3	0	12	1	0	3	3	10	36	14	0	0	17	8
1989	1	0	6	0	1	0	8	0	7	11	20	14	6	6	11	9	18	7	0	6	1	3	11	6	0	9	14	0	0	30	5	19	0	0	2	8
1990	0	5	13	8	17	24	5	22	4	6	19	24	3	9	11	1	9	0	19	9	8	7	0	3	0	0	1	3	6	2	1	0	3	44	15	14
1991	17	26	1	2	0	0	0	3	4	0	12	2	3	1	6	8	9	2	8	6	0	1	0	1	6	0	6	10	2	0	17	27	22	28	10	36
1992	11	18	0	1	1	0	8	3	21	0	5	0	9	1	10	5	5	3	32	3	17	12	13	41	5	3	7	0	8	0	0	0	4	7	2	1
1993	2	10	15	3	26	0	3	0	1	24	0	10	2	0	0	3	3	1	7	12	0	2	8	0	5	8	4	1	12	9	2	2	21	11	18	17
1994	13	11	16	6	6	16	5	12	1	0	4	0	9	8	12	1	11	12	14	0	15	0	2	11	0	0	0	2	4	9	15	2	1	9	20	3
1995	2	20	3	8	8	14	2	7	23	9	8	3	10	5	2	14	2	11	0	11	3	36	2	25	0	1	27	34	12	2	0	28	14	23	7	2
1996	0	5	3	1	2	0	1	1	4	9	1	4	0	1	0	0	0	28	0	0	0	0	11	6	23	5	21	2	6	8	0	4	9	11	24	9
1997	0	0	4	0	5	0	0	12	3	20	22	1	2	1	0	0	3	11	0	4	0	3	9	12	17	58	9	0	4	10	0	8	7	11	36	19
1998	10	4	6	14	7	1	17	2	12	11	3	5	7	8	8	1	1	4	5	0	7	10	5	12	5	12	0	2	3	10	37	14	3	25	0	17
1999	18	14	8	5	19	2	1	0	2	12	2	15	20	9	0	7	14	5	1	9	31	33	2	3	1	21	4	0	17	2	17	14	12	3	26	18
2000	5	2	13	0	0	7	4	2	4	0	10	5	15	4	0	1	0	0	3	0	8	20	15	5	2	0	0	5	29	18	10	12	6	1	34	36
2001	19	15	0	0	15	7	3	22	8	1	7	1	4	4	12	3	0	6	8	10	8	18	7	5	14	0	4	18	0	6	0	14	1	8	5	9
2002	0	0	0	9	37	27	17	17	13	5	14	15	11	20	3	15	0	1	0	1	11	0	2	35	15	0	9	0	19	20	1	2	34	25	22	15
2003	1	2	2	6	13	3	16	0	0	0	0	0	0	5	1	0	0	2	7	6	1	0	0	36	24	1	5	6	16	0	2	30	17	18	43	5
2004	0	5	13	7	2	16	6	22	0	2	7	3	0	0	15	13	1	0	4	4	0	5	8	1	9	2	5	3	7	6	0	23	11	16	42	3
2005	3	25	2	10	0	1	1	4	10	6	3	0	0	1	12	13	0	0	1	9	3	0	0	1	26	5	2	3	24	16	22	5	9	12	7	3
2006	0	3	1	13	3	0	0	28	0	7	8	4	10	1	2	0	2	19	8	12	3	13	6	9	6	0	1	26	44	15	2	0	0	3	18	29
2007	14	19	19	28	2	5	4	7	4	1	7	10	5	16	0	9	5	0	0	7	0	8	2	0	0	6	17	13	5	25	1	4	1	27	25	10
2008	13	16	13	12	8	16	19	5	0	0	2	15	9	9	7	6	9	1	2	16	6	0	0	1	3	0	16	20	2	0	0	1	6	12	9	10
2009	4	0	0	6	9	1	3	20	0	0	8	0	7	10	2	3	9	12	0	7	0	0	0	0	4	16	1	6	11	7	9	17	32	21	0	0
2010	1	1	0	9	0	17	16	1	0	26	12	12	7	0	0	1	14	6	5	5	3	1	9	6	0	3	44	17	41	5	0	8	16	9	0	2
2011	14	14	13	1	2	0	3	31	2	1	1	0	0	9	1	16	0	6	6	8	0	0	0	0	1	0	5	13	7	11	0	13	24	20	25	2
2012	31	2	12	4	1	1	0	0	6	6	18	2	0	3	0	1	0	5	5	21	11	20	13	6	1	40	10	2	2	6	17	15	8	24	36	26
Average	7	7	8	7	7	10	7	8	5	5	6	4	5	5	4	6	5	8	7	6	5	8	6	8	7	7	8	9	9	8	7	10	9	11	14	13
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	0	1	2	1	2	1	0	0	1	0	1	1	0	0	0	1	1	1	0	0	0	0	1	0	0	2	2	3	1	3	1	2	2	4
Median	4	3	6	5	4	8	5	5	4	3	3	1	4	5	1	3	3	6	5	6	3	4	3	5	5	3	4	5	6	7	4	8	7	9	10	9
Upper	13	10	13	10	10	16	11	13	8	8	8	5	8	9	7	9	9	13	9	10	7	13	9	12	12	9	14	14	12	11	10	14	16	19	22	18
Max. value	31	26	31	28	37	32	25	31	26	26	22	24	20	23	19	26	29	28	32	21	31	36	41	41	32	58	44	44	44	30	37	30	34	44	58	41

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	25	16	9	19	6	18	27	6	24	10	14	2	13	3	21	0	0	11	0	14	2	31	15	8	17	28	15	0	3	9	20	2	0	0	4	11
1962	31	8	6	18	13	7	16	34	4	24	17	26	54	24	16	1	1	0	12	0	1	1	0	19	1	0	11	3	11	2	0	3	15	1	7	4
1963	1	16	17	15	3	13	20	14	17	41	6	13	42	9	1	0	10	8	46	7	19	5	2	0	15	15	23	17	19	17	0	0	0	12	0	4
1964	8	21	11	5	44	4	6	2	0	15	13	6	0	1	21	56	1	5	0	19	37	27	7	0	0	0	11	15	8	10	9	10	20	2	0	7
1965	11	12	28	0	38	50	11	10	0	3	3	7	32	22	3	14	1	41	1	0	1	4	0	10	17	0	0	0	3	20	12	35	4	12	10	12
1966	1	16	13	0	25	10	25	12	17	0	0	0	32	2	25	1	1	2	16	16	14	18	4	1	26	8	5	5	1	8	8	17	12	17	12	29
1967	23	0	13	18	1	4	9	15	48	12	0	22	16	12	0	38	36	8	6	22	23	45	14	21	17	2	15	2	1	0	4	1	3	0	26	7
1968	0	38	7	13	12	0	0	3	24	19	0	19	2	2	8	7	8	10	4	0	16	15	2	72	38	5	0	1	10	10	0	0	0	11	11	13
1969	6	13	0	5	14	0	0	0	5	1	45	37	1	0	5	0	16	18	14	2	0	0	7	6	11	24	17	15	17	3	6	8	2	2	1	4
1970	19	14	3	4	36	18	15	4	7	18	2	0	8	7	19	4	0	14	18	21	0	17	1	14	16	9	10	29	25	14	6	8	2	3	0	1
1971	0	0	27	15	20	30	8	39	31	0	0	23	8	6	1	14	7	2	11	2	3	11	11	3	19	24	6	7	8	9	1	8	6	8	1	11
1972	9	33	1	0	1	15	6	10	13	18	7	0	0	18	44	32	2	2	1	0	9	9	10	8	9	9	5	9	17	5	16	19	7	0	0	0
1973	0	54	6	13	26	7	11	27	2	6	0	3	2	1	0	7	22	18	0	20	3	0	1	2	6	3	16	18	16	1	1	14	8	10	8	1
1974	18	15	36	2	5	6	4	3	12	5	0	16	28	11	0	3	20	22	35	17	14	21	20	21	3	21	27	45	6	9	6	5	8	19	3	18
1975	5	0	7	8	11	0	0	0	10	17	6	10	6	20	41	1	8	13	4	1	10	0	0	7	6	2	3	5	1	11	15	1	5	10	14	3
1976	0	3	14	6	7	30	7	2	0	1	0	12	5	23	45	0	1	0	9	9	3	3	2	5	16	25	6	0	2	10	52	21	8	5	12	18
1977	20	1	51	23	32	11	14	0	2	4	5	8	3	10	12	0	0	14	35	14	1	0	6	1	24	17	22	14	27	1	1	9	15	0	22	8
1978	11	19	9	6	5	2	32	4	4	5	15	39	55	18	9	1	13	10	0	1	0	9	4	0	1	0	10	14	5	12	2	0	12	0	5	1
1979	8	18	9	14	14	31	16	48	2	3	5	46	48	1	5	13	2	7	0	0	16	17	0	1	8	8	13	34	21	16	4	5	1	7	4	28
1980	7	3	6	23	4	0	19	20	1	19	25	19	2	15	41	12	2	6	2	18	24	10	32	25	0	2	13	46	4	9	2	10	18	24	9	9
1981	20	2	6	35	18	13	0	24	0	24	9	6	0	0	0	14	8	7	13	22	13	18	1	18	30	1	6	37	23	17	0	15	3	2	16	8
1982	10	4	0	35	0	13	0	7	17	32	15	9	17	10	1	8	4	5	0	10	14	24	10	5	5	5	13	10	31	22	5	21	24	6	5	1
1983	15	0	8	1	0	1	4	0	5	1	0	0	18	38	36	32	25	0	14	10	10	14	5	1	6	2	4	1	1	1	6	8	0	20	19	11
1984	12	0	14	7	13	2	31	3	3	2	2	7	2	18	20	11	48	9	32	11	13	23	40	13	1	13	0	9	16	3	1	14	0	22	7	6
1985	4	19	16	21	4	23	25	4	11	2	8	2	52	15	7	8	0	2	0	41	5	0	0	0	15	16	2	2	1	22	32	11	4	10	16	4
1986	6	15	10	4	24	5	4	11	6	39	33	39	5	19	18	2	0	4	1	3	0	4	5	17	11	6	10	12	13	4	24	0	12	17	5	12
1987	3	15	5	0	12	46	39	23	19	1	28	21	4	12	30	8	5	9	0	4	31	6	3	4	0	0	24	20	5	8	0	1	3	5	15	19
1988	25	12	33	27	14	11	22	1	27	15	19	7	23	0	2	3	12	13	0	14	1	0	0	44	2	3	0	14	0	9	9	3	1	17	11	17
1989	0	3	8	2	0	23	31	12	21	13	4	3	3	3	3	11	1	1	2	7	5	19	34	13	12	18	3	1	2	0	0	0	1	15	14	1
1990	22	14	3	19	10	9	2	9	15	26	3	2	32	19	3	19	38	7	16	15	0	2	0	15	3	0	16	12	15	7	0	13	0	3	7	12
1991	2	9	7	26	3	2	9	28	9	19	17	2	0	1	1	6	21	38	6	1	2	17	0	2	18	8	11	0	1	1	0	0	2	13	7	5
1992	27	6	35	11	1	5	10	14	17	5	10	33	14	1	6	2	3	2	0	5	32	19	16	12	25	5	23	9	18	11	16	1	6	2	0	0
1993	3	22	11	0	26	32	14	38	22	2	23	21	6	0	14	18	3	0	8	22	20	15	2	0	0	6	14	1	4	5	16	5	6	14	20	12
1994	0	0	13	3	0	12	12	7	14	18	21	21	46	26	41	20	0	30	9	3	0	0	7	15	4	3	16	4	0	0	6	25	1	15	0	21
1995	12	0	18	30	9	1	7	1	2	0	11	0	21	5	10	0	0	62	8	2	1	6	1	8	9	4	14	5	6	4	1	7	1	0	2	1
1996	43	30	3	8	6	0	3	0	0	0	11	25	1	3	64	0	0	12	4	0	9	13	0	30	30	25	29	35	4	13	13	0	3	6	0	4
1997	7	0	0	3	6	23	5	0	1	1	15	7	6	7	25	12	1	7	21	15	4	9	1	0	5	25	24	2	9	18	40	5	9	1	11	20
1998	15	17	28	14	20	33	3	16	22	7	10	17	0	22	33	7	4	4	0	5	19	30	13	22	2	3	5	1	8	2	28	3	10	0	16	22
1999	8	0	32	25	10	0	1	33	2	4	2	19	0	0	2	4	72	40	20	7	0	0	4	8	1	4	1	6	3	6	14	26	24	12	18	14
2000	16	14	82	46	32	29	13	1	6	6	3	9	5	5	0	0	0	5	19	26	37	0	24	57	15	33	14	27	29	19	5	18	37	3	0	38
2001	3	0	29	12	6	0	8	29	8	8	1	17	13	30	20	13	6	3	11	23	2	1	1	34	16	3	0	0	6	11	17	4	0	7	10	3
2002	28	3	3	16	73	4	1	0	5	0	0	5	3	1	1	15	0	1	6	1	12	1	26	3	0	3	36	6	15	10	3	0	0	1	0	17
2003	24	3	8	2	29	27	2	1	24	5	10	18	0	1	0	10	3	13	34	14	0	2	0	15	13	2	3	8	34	15	2	0	14	9	28	35
2004	14	11	38	25	3	0	16	0	10	32	5	26	13	0	38	15	8	3	17	16	3	16	32	5	2	1	10	13	21	12	3	0	3	3	29	1
2005	6	1	19	21	54	7	6	34	3	0	18	7	0	5	4	1	0	8	9	2	0	2	49	1	19	6	6	1	3	6	12	12	1	9	4	13
2006	0	8	5	1	12	17	4	0	49	14	61	25	9	7	0	1	0	11	13	14	0	15	38	45	4	4	17	13	26	0	24	14	9	1	0	10
2007	10	24	9	7	5	9	10	11	13	14	0	7	11	16	3	16	20	15	1	0	10	1	1	6	11	15	1	0	11	12	24	21	0	0	6	12
2008	4	36	8	24	2	13	44	57	25	24	9	18	9	54	0	1	0	4	29	5	8	5	7	20	0	15	27	10	5	6	25	11	15	5	2	0
2009	30	64	20	28	7	20	0	5	27	3	23	21	31	3	0	2	2	7	11	18	6	14	6	2	11	2	13	29	17	16	7	6	13	2	17	10
2010	0	0	28	8	27	75	10	18	12	12	25	19	0	1	11	25	5	0	0	13	0	5	8	4	13	22	23	7	8	7	7	3	3	14	1	4
2011	3	13	12	16	23	3	4	37	5	54	8	10	26	19	16	31	5	1	5	17	0	19	0	16	0	0	0	3	7	12	5	19	7	15	3	7
2012	3	29	19	10	1	12	2	44	2	5	31	17	1	4	11	10	40	37	9	15	24	32	0	8	12	7	3	1	4	44	17	5	14	3	17	17
Average	11	13	15	13	15	14	11	14	12	12	11	14	14	11	14	10	9	11	10	10	9	11	9	13	10	9	12	11	11	10	10	9	7	8	9	11
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	3	2	6	4	4	3	4	2	3	2	2	6	2	1	1	1	1	3	1	2	1	2	1	2	2	2	4	2	3	4	2	1	1	2	2	4
Median	8	12	10	12	10	11	9	9	9	7	9	12	7	7	8	7	3	7	8	10	5	9	4	8	10	5	11	7	8	9	6	6	4	6	7	10
Upper	18	17	19	21	23	21	16	23	18	18	17	21	21	18	21	14	10	13	15	16	14	17	11	18	16	15	16	15	17	13	16	14	12	12	15	15
Max. value	43	64	82	46	73	75	44	57	49	54	61	46	55	54	64	56	72	62	46	41	37	45	49	72	38	33	36	46	34	44	52	35	37	24	29	38

Figure A14-19. Average precipitation (°C) for 5 or 6 day periods and their quartiles in Örebro county, 1961-2012. Precipitation data from Luftwebb (2014)

APPENDIX A15 VÄSTMANLAND COUNTY♣

A15.1 Crop production and yield

Table A15-1. *Annual production (metric ton) in 2010-2014 for the major crops in Västmanland county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Spring barley	59 600	67 400	70 000	94 900	76 300	73 640
Winter wheat	50 200	72 800	53 500	16 600	121 200	62 860
Oats	36 600	55 200	59 200	78 800	55 300	57 020
Spring wheat	30 300	22 800	26 400	51 200	35 400	33 220
Spring rape	4 900	7 500	8 600	9 700	1 700	6 480

* Data from Jordbruksverket (2015)

Table A15-2. *Average yield of major crops in Västmanland county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Spring barley	3 876	313	8
Winter wheat	4 788	380	8
Oats	3 713	340	9
Spring wheat	3 936	348	9
Spring rape	1 784	198	11

* Coefficient of variation = Standard deviation / Average

Table A15-3. *Coefficient of variation of farm-level yield for important crops in Västmanland county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Spring barley	30	31	24	24	27	35	26	38	29
Winter wheat	29	26	24	27	28	30	28	28	27
Oats	37	36	27	32	28	40	27	37	33
Spring wheat	34	35	26	40	33	34	29	33	33
Spring rape	29	36	30	24	35	41	22	33	31
Average	32	33	26	29	30	36	26	34	

* Based on farm-level yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

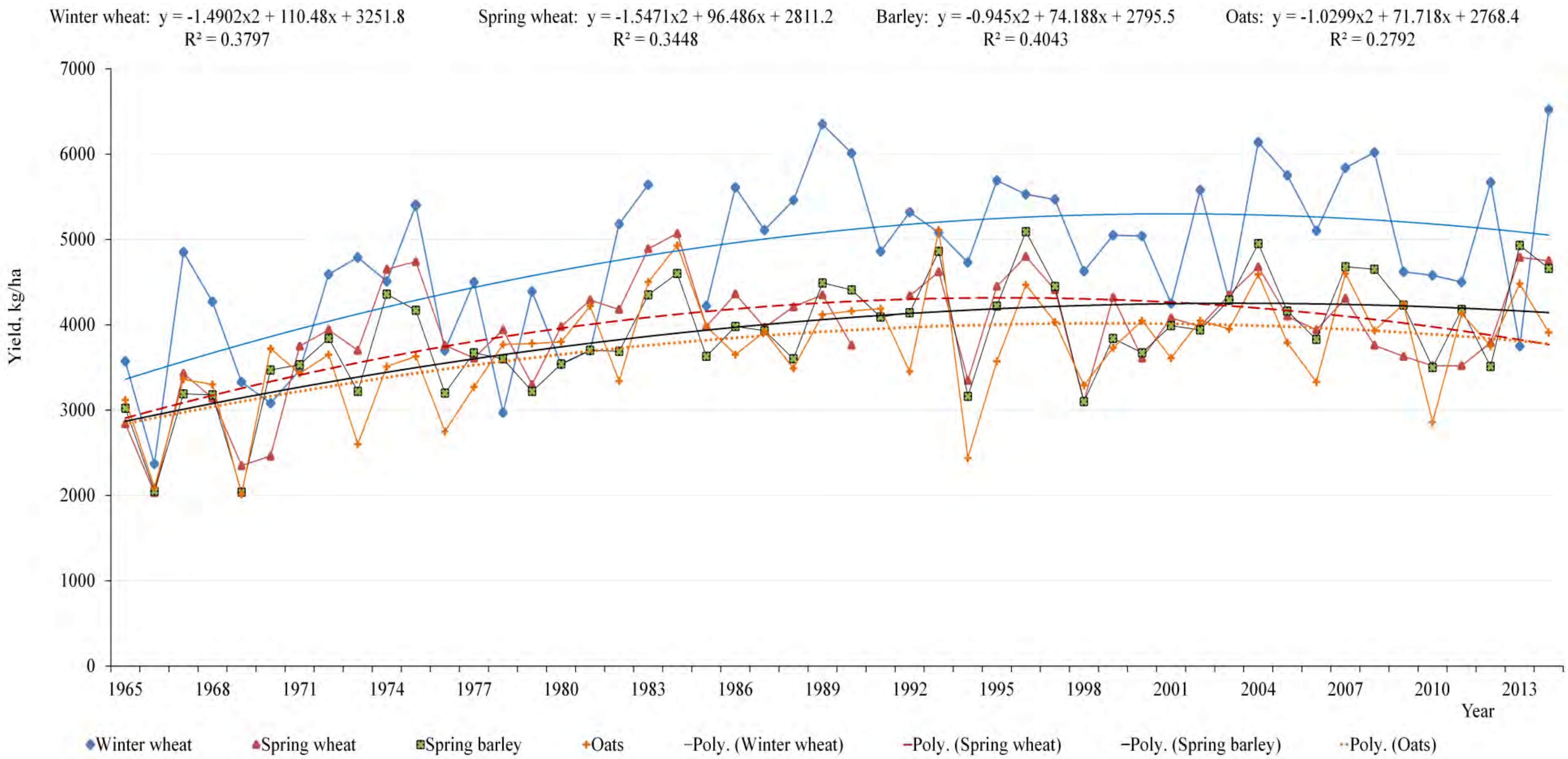

Figure A15-1. Average yield (kg/ha) per year of winter wheat, spring wheat, spring barley and oats in Västmanland county for the period 1965-2014, and their trend lines with respective equations. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

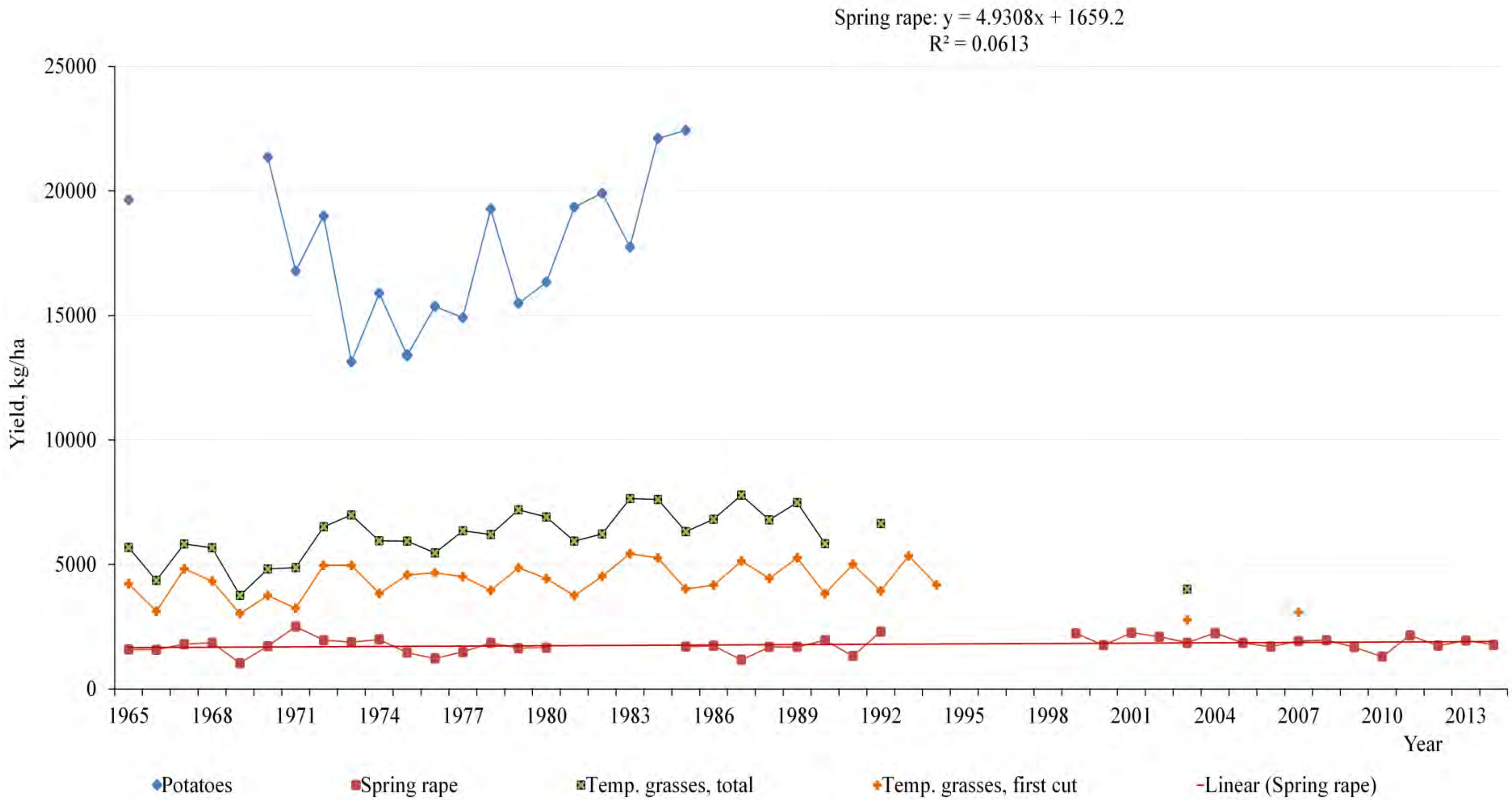

Figure A15-2. Average yield (kg/ha) of potatoes, spring rape and temporary grasses (total and first cut) in Västmanland county for the period 1965-2014, and the trend line with respective equation for spring rape. The variable x in the equation is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

A15.2 Precipitation, temperature and cereal yield

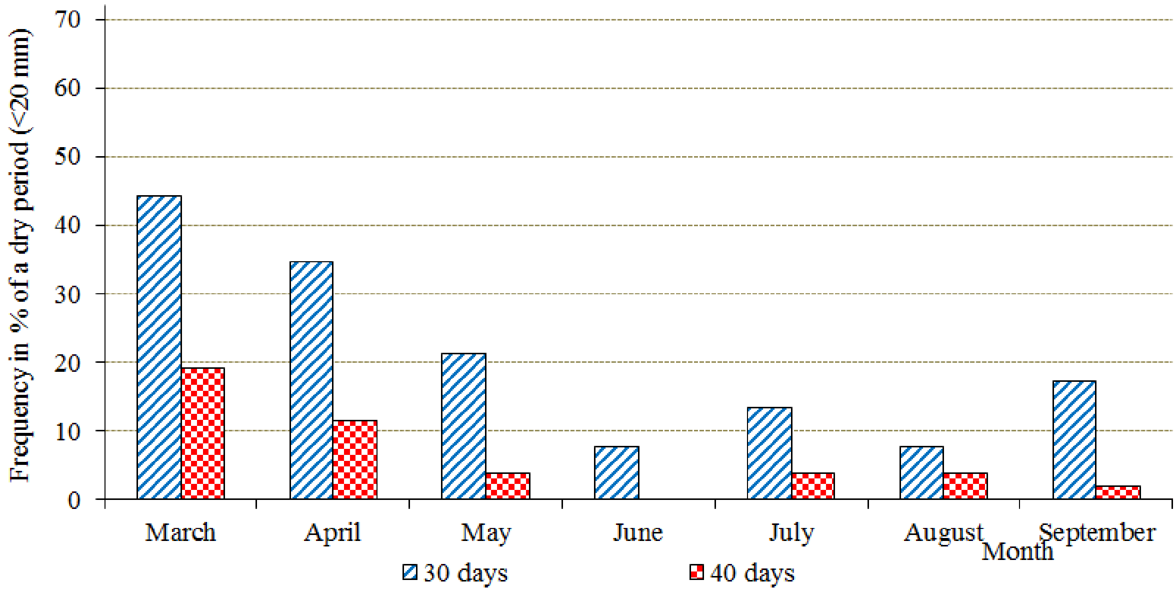

Figure A15-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Västmanland county*.

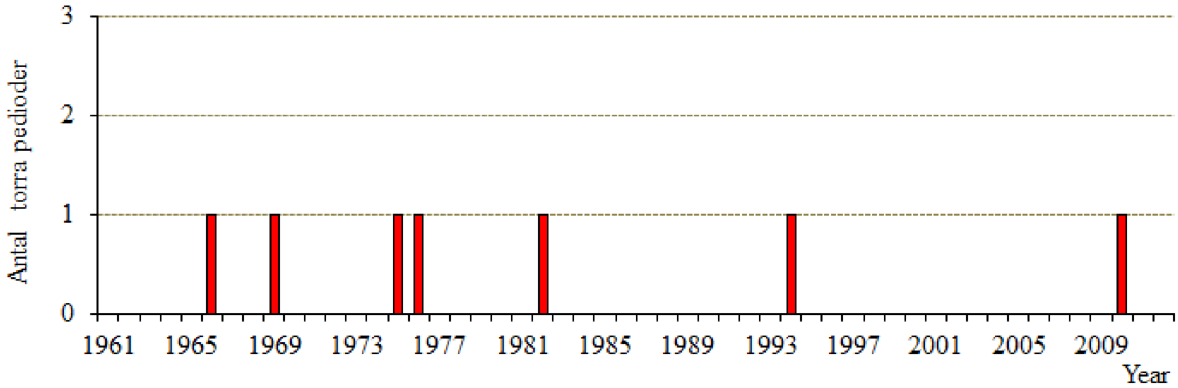

Figure A15-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 May to 31 July in Västmanland county*.

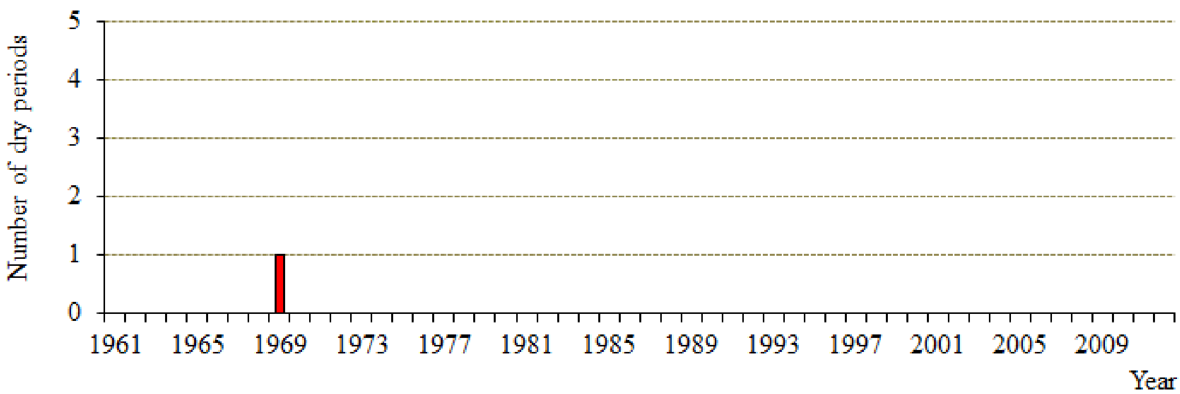

Figure A15-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 May to 31 July in Västmanland county*.

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* The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

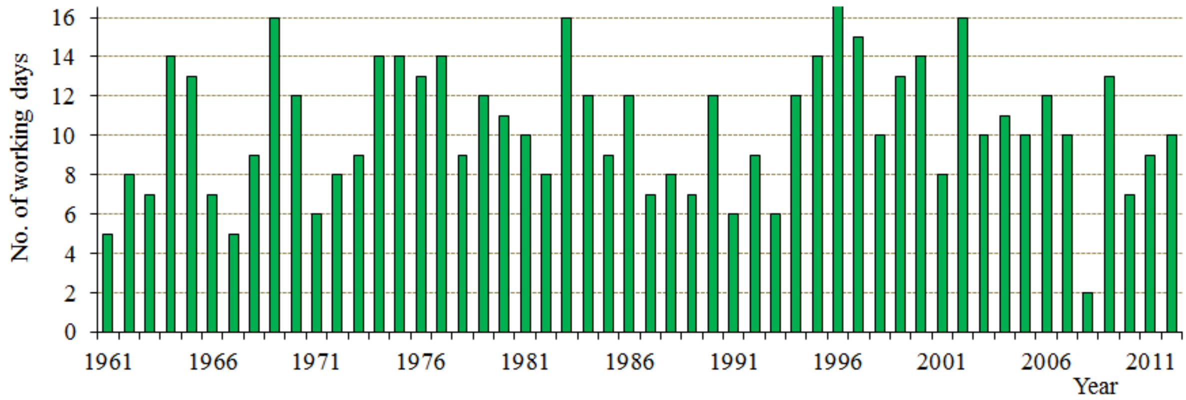

Figure A15-6. Estimated number of working days available for harvesting during the period 3-19 August in Västmanland county (for definition of a working day, see Section 2.1)*.

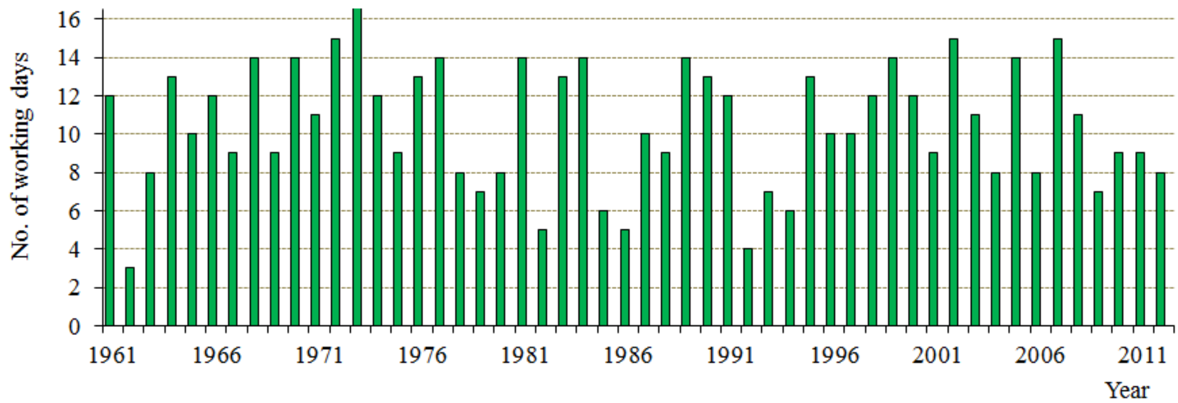

Figure A15-7. Estimated number of working days available for harvesting during the period 20 August-5 September in Västmanland county (for definition of a working day, see Section 2.1)*.

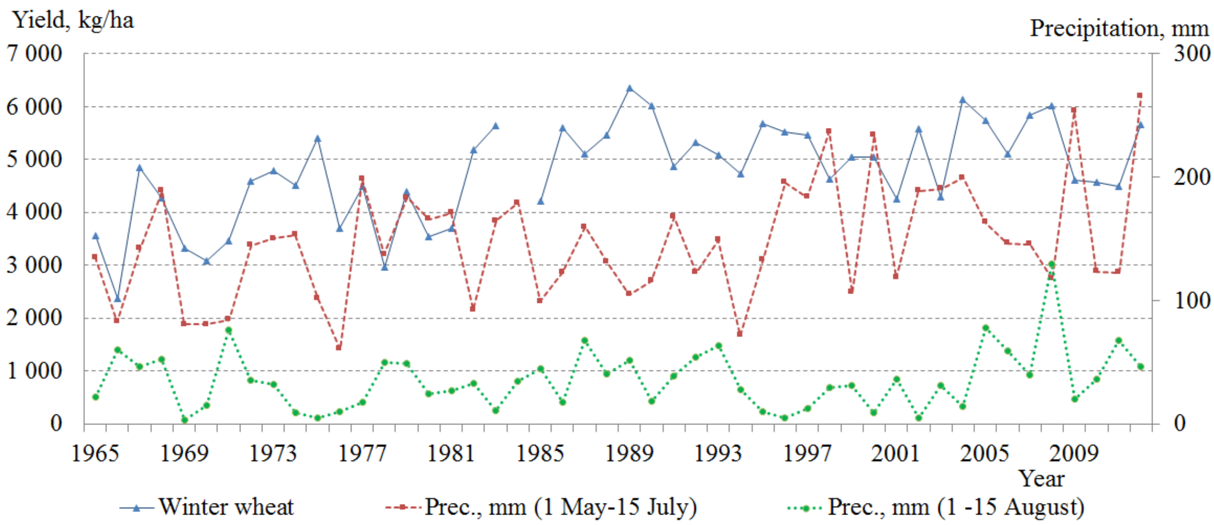

Figure A15-8. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 1 May-15 July and 1-15 August in Västmanland county, 1965-2012∗.

∗ Precipitation from Luftwebb (2014). Yield data from from Jordbruksverket (2015).

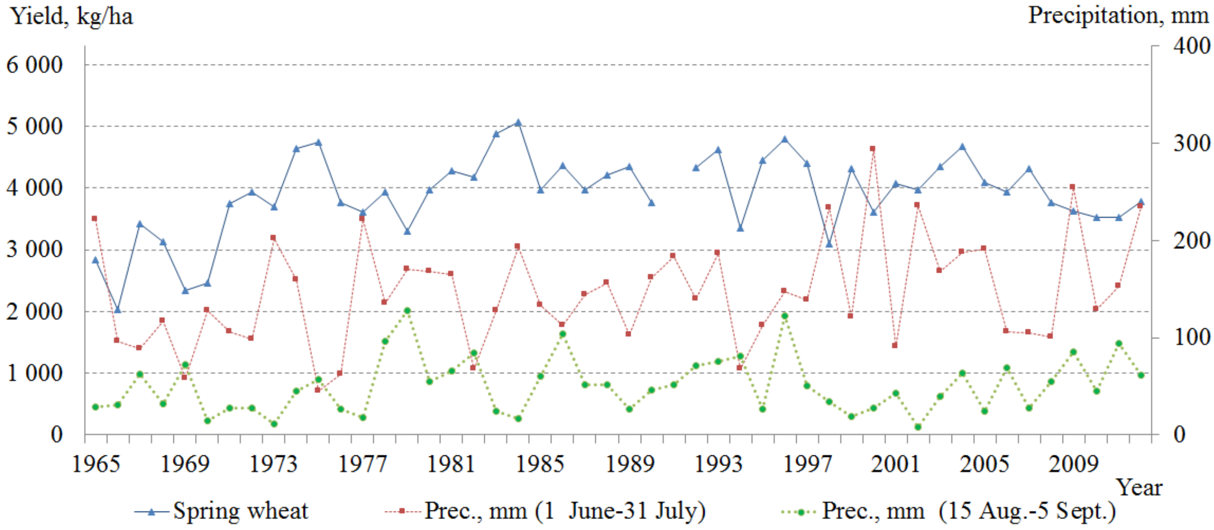

Figure A15-9. Annual spring wheat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August -5 September in Västmanland county, 1991-2012*.

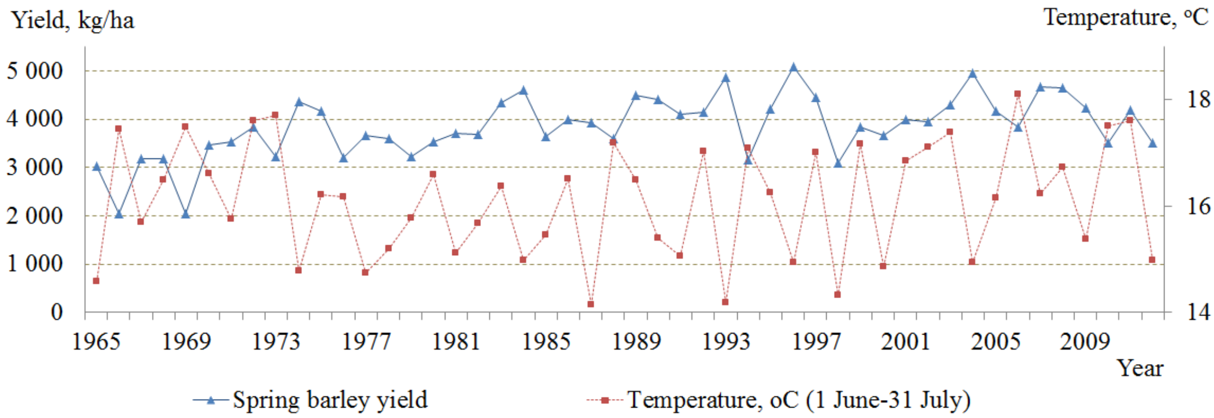

Figure A15-10. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Västmanland county, 1965-2012*.

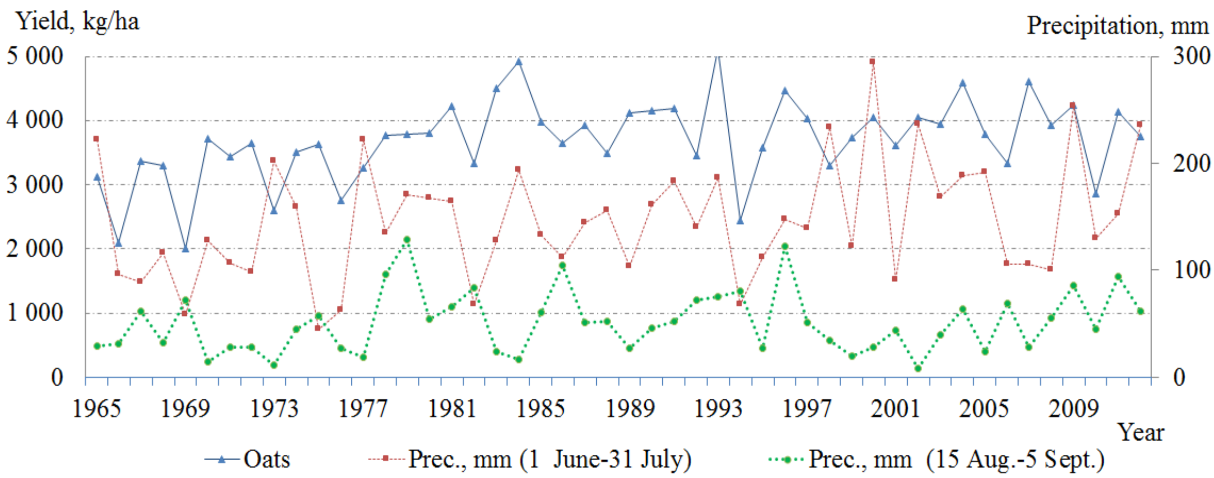

Figure A15-11. Annual oat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 15 August -5 September in Västmanland county, 1991-2012*.

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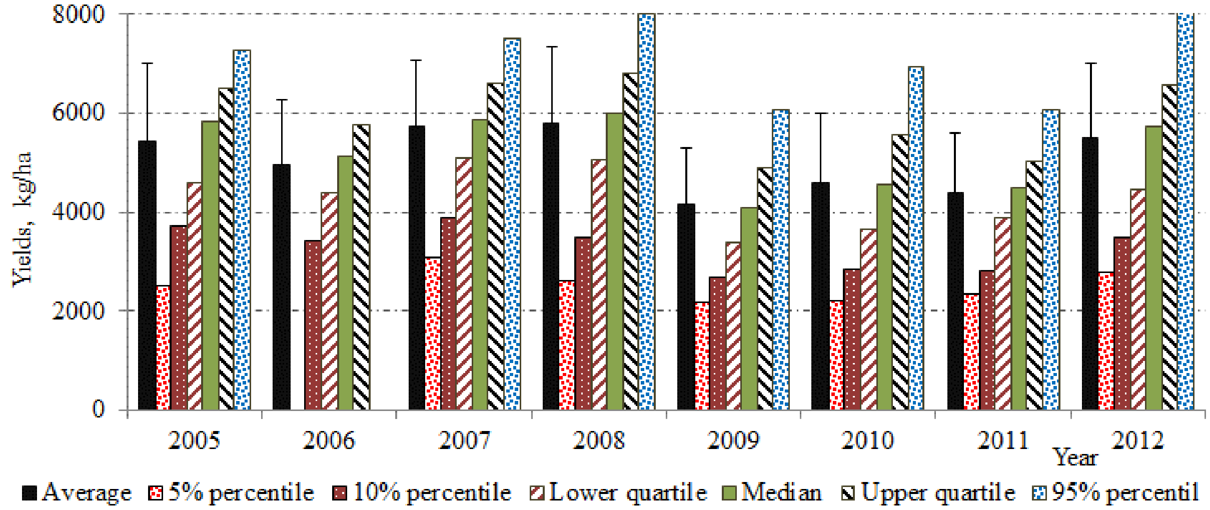
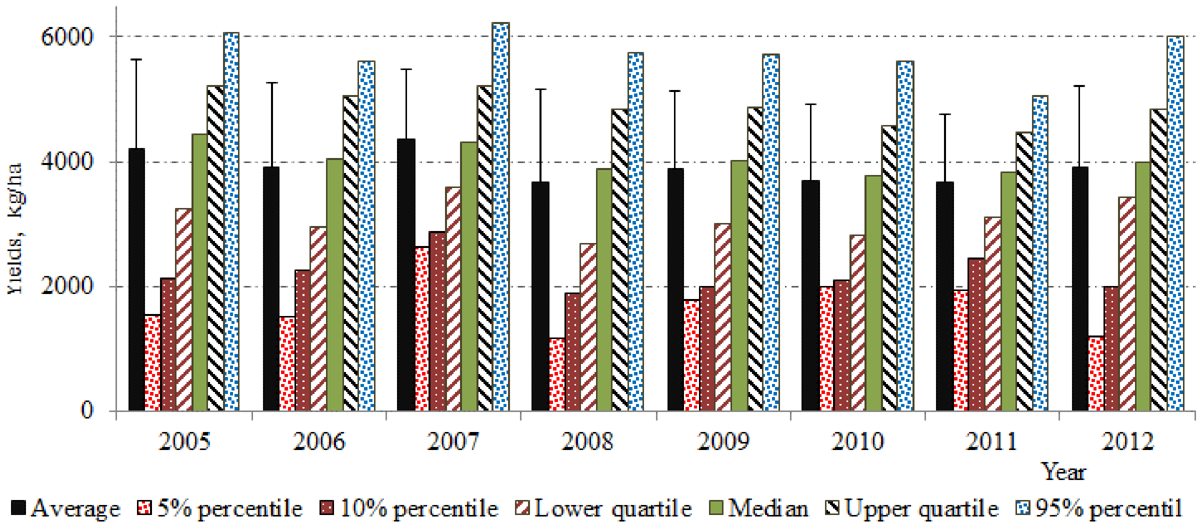
* Precipitation and temperature from Luftwebb (2014) and yields data from Jordbruksverket (2015).

A15.3 Yield on farms



N 123 142 144 119 108 92 121 95

Figure A15-12. Average and estimated percentiles of winter wheat farm-level yield in Västmanland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N 145 87 67 80 69 106 84 96

Figure A15-13. Average and estimated percentiles of spring wheat farm-level yield in Västmanland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

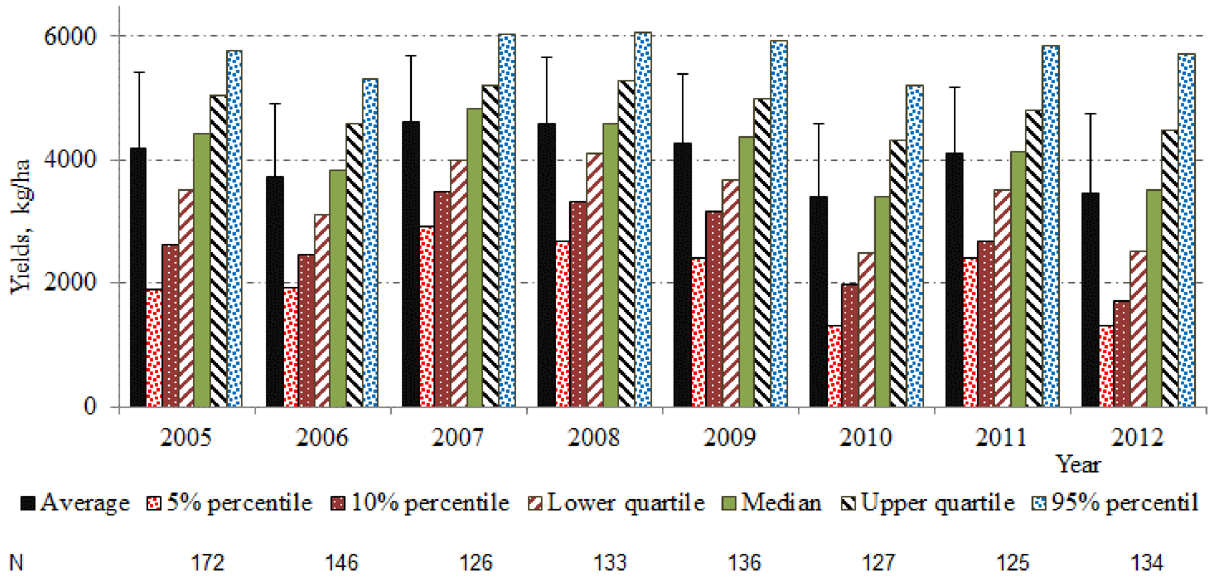


Figure A15-14. Average and estimated percentiles of spring barley farm-level yield in Västmanland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

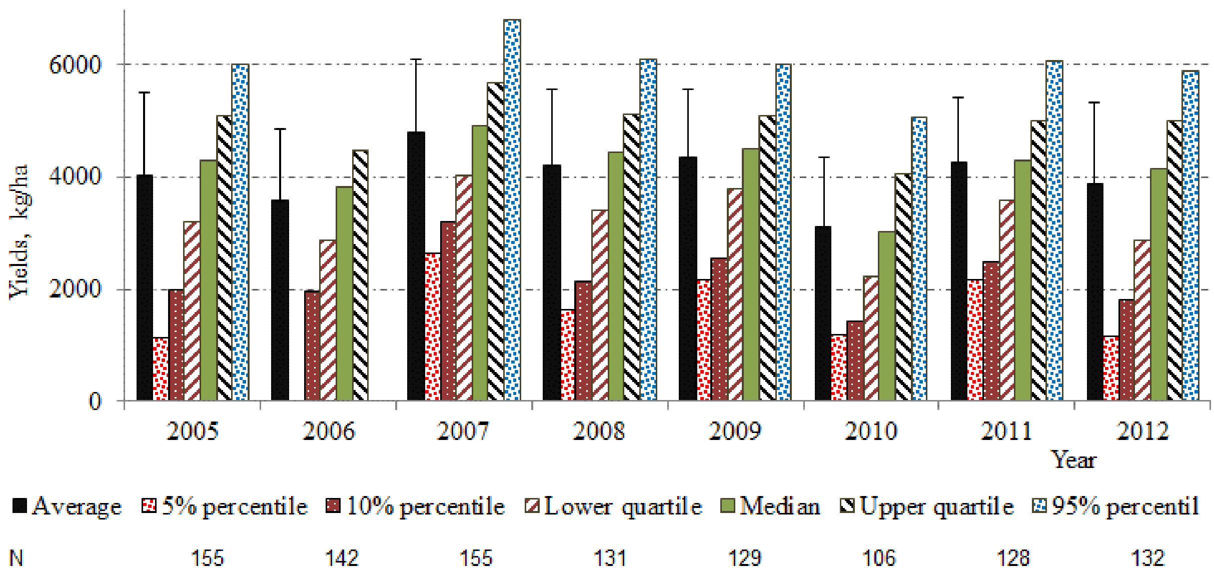


Figure A15-15. Average and estimated percentiles of oat farm-level yield in Västmanland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

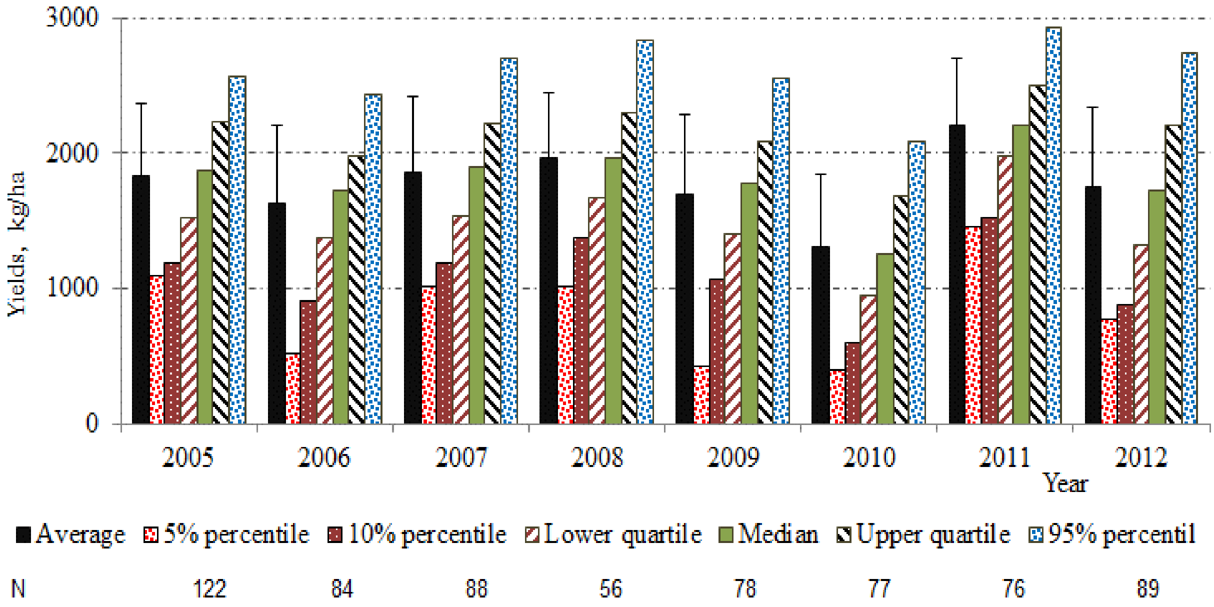


Figure A15-16. Average and estimated percentiles of spring rape farm-level yield in Västmanland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A15.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

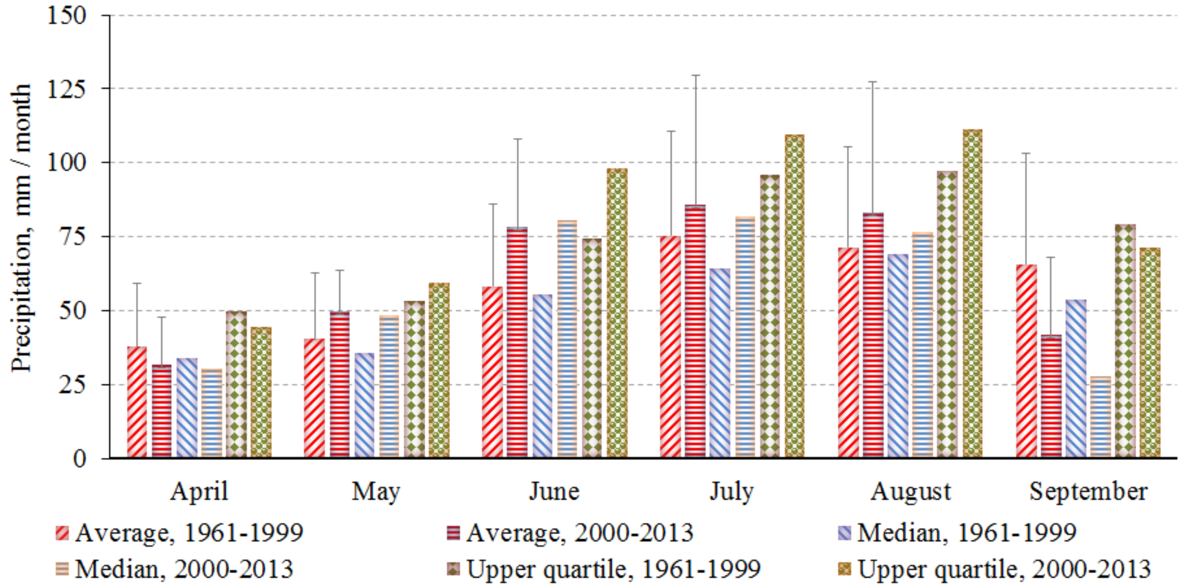


Figure A15-17. Monthly average, median and upper quartile precipitation (mm) from April to September in Västmanland county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1541876-6609123 (close to the city of Västerås).

County: **Västmanland** **Average temperature (°C) for 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Västerås (Notudden)** Coordinates for the places (RT90): 1541876-6609123 1527731-6622011 1525064-6607337 1537069-6604669

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March						April					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30
1961	0	-4	-4	-5	-10	-2	-4	-2	1	3	0	3	4	7	4	2	2	2	0	2	6	7	9	8
1962	-3	0	-1	1	-3	-9	-3	0	-4	-2	-4	-5	-6	-7	-9	-4	-4	-1	3	2	4	7	8	5
1963	-10	-15	-12	-9	-6	-5	-8	-11	-6	-15	-8	-4	-2	-2	-6	-5	-3	-4	0	3	4	5	4	8
1964	1	-4	-3	-3	2	-2	-1	0	-10	-9	-3	-1	-1	1	-2	-4	-2	-1	1	2	6	11	7	8
1965	-2	-8	1	1	-1	-4	-2	-1	-2	-4	-5	-12	-9	-5	0	2	0	3	4	1	3	5	7	7
1966	-14	-4	-7	-14	-9	-4	-16	-17	-17	-13	-3	-1	0	2	-8	1	0	-1	3	0	-6	-3	3	9
1967	-1	-10	-6	0	-12	-12	-3	-1	-4	-1	1	0	2	5	4	2	2	4	2	4	6	5	3	8
1968	-15	-18	-13	-4	0	-4	0	-2	-6	-12	-10	-1	-3	-1	-3	0	5	7	3	1	6	9	12	10
1969	-8	-7	-5	-1	-4	0	-5	-2	-16	-9	-7	-9	-8	-3	-8	-6	-6	-1	3	7	3	1	5	7
1970	-13	-14	-5	-11	-5	-6	-9	-9	-16	-19	-11	-12	-3	0	-2	1	-1	-2	-3	1	2	4	5	4
1971	-7	-2	-1	-1	2	-3	-2	-2	2	0	-2	-10	-11	-3	-2	1	-1	0	2	3	4	6	3	2
1972	-5	-9	-8	-6	0	-7	-3	-2	0	-1	-2	-2	-1	-3	-1	1	3	1	1	3	5	5	4	5
1973	1	3	-1	-1	1	0	2	-1	-1	1	-4	-7	1	0	2	2	7	4	3	2	3	4	4	4
1974	0	0	0	0	-1	2	2	-2	3	0	2	0	0	-1	-2	1	1	4	6	8	2	6	6	7
1975	1	-3	2	2	1	1	0	-1	-6	-2	1	0	2	3	0	-2	0	0	-1	1	2	5	7	9
1976	-6	-3	-8	-4	-7	-11	-6	-6	-3	-2	0	3	0	-4	-7	-6	-5	3	2	3	6	7	5	2
1977	0	-4	-1	-3	-6	-5	-4	-4	-9	-7	-6	-8	-3	1	3	3	2	-2	1	-3	2	2	5	7
1978	-5	1	-3	0	-2	-3	-2	-7	-12	-11	-7	1	1	0	0	-9	-5	4	1	4	3	3	4	2
1979	-12	-5	-4	-8	-8	-12	-10	-9	-13	-11	-4	1	1	2	-2	-7	-1	2	2	3	4	3	5	6
1980	-6	-3	-3	-2	-4	-14	-14	-13	-4	-2	-7	-5	-4	-1	-2	-8	-7	-1	2	4	7	5	6	6
1981	-7	-6	-3	-10	-1	0	1	-2	-4	-4	-6	-6	-5	-1	-6	-4	2	1	4	7	7	4	0	3
1982	-12	-15	-5	-8	-8	-7	-7	-4	1	-6	-6	-2	1	-2	1	1	2	4	5	3	1	6	7	6
1983	1	3	2	-5	2	1	-7	-7	-5	-3	-2	-4	-3	-1	0	2	0	0	1	3	2	7	8	6
1984	0	-5	1	-6	-11	-5	1	-4	-2	-7	-3	-2	-1	-1	-3	-5	-6	-1	1	4	6	5	8	9
1985	-10	-15	-10	-7	-8	-11	-11	-17	-14	-19	-11	-2	-5	-2	1	-3	1	-1	2	-1	1	4	3	2
1986	-8	-11	-1	-12	-1	-4	-7	-10	-7	-12	-13	-6	-3	2	0	1	2	3	2	0	-1	1	4	8
1987	-15	-21	-18	-10	-6	-10	-1	-5	-1	-7	-6	-8	-14	-8	-7	-2	0	2	2	1	3	5	6	10
1988	3	-2	1	0	1	-2	1	1	1	-3	-5	-3	-4	-3	-5	-5	-1	2	4	2	2	6	1	6
1989	2	1	3	4	3	4	5	4	2	1	1	3	2	2	4	3	3	5	-1	4	11	4	5	9
1990	-4	1	2	2	2	1	4	4	1	2	7	2	1	2	1	9	6	6	4	2	6	7	10	11
1991	1	1	-6	-2	0	-1	-6	-5	-7	-5	3	-2	-1	1	2	2	2	4	8	6	9	0	4	5
1992	4	0	3	-3	-3	2	-2	0	0	-4	2	3	4	5	1	4	3	0	2	2	4	2	2	8
1993	-3	2	2	3	0	-6	4	1	0	-2	-7	-2	-4	0	1	6	4	0	2	1	2	5	10	14
1994	-5	-2	0	-7	0	-5	-9	-6	-12	-9	-7	-9	-6	3	2	-1	1	2	4	4	5	4	9	11
1995	-5	-3	-2	1	-2	-10	1	-2	0	2	1	0	2	1	1	1	4	0	3	1	5	3	8	2
1996	-15	-2	1	-2	-5	-7	-7	-14	-8	-10	-9	1	-1	-1	-2	-2	-2	0	1	5	2	9	8	6
1997	-9	-7	-1	0	-2	1	-2	2	-4	-5	4	2	5	4	3	-3	-3	5	5	2	2	3	3	6
1998	2	-2	4	0	-4	-6	-7	1	1	3	4	4	-3	-6	-3	2	0	5	-2	1	2	4	8	12
1999	1	-6	-9	3	3	-11	2	-11	-2	-2	-2	-2	0	-1	-3	1	1	5	6	9	4	4	8	9
2000	0	3	1	1	-9	-1	-1	2	2	-5	-4	2	-1	1	1	2	3	2	2	3	4	8	10	13
2001	0	1	-4	-5	-1	-1	-15	-2	2	1	-7	-12	-7	1	3	-4	-3	0	6	6	1	4	6	9
2002	-8	-2	3	2	-2	-4	4	4	0	1	-3	-2	-2	2	1	2	0	5	5	3	6	4	11	8
2003	-16	-9	-1	3	1	-5	-4	-8	-2	-5	-4	-5	-4	2	4	4	3	5	2	0	4	8	7	5
2004	-8	-3	-1	-5	-11	-5	0	-3	-3	0	-2	-4	-3	-2	0	5	0	4	2	5	6	10	6	8
2005	1	5	3	2	-3	-3	1	-3	-2	-2	-6	-8	-11	-2	-6	-4	3	3	7	4	7	4	5	8
2006	-8	-4	1	-6	-6	-1	-5	-4	-5	-3	-2	-6	-6	-10	-6	-3	-6	0	1	3	4	6	7	8
2007	2	4	1	0	-9	-5	0	-9	-5	-2	-7	-2	1	3	6	3	2	6	6	2	10	8	8	11
2008	-1	1	3	4	0	1	1	3	-1	1	5	3	0	4	3	0	-4	3	6	3	4	6	9	13
2009	-10	-3	2	-3	0	-2	-5	-3	-7	-6	-3	-2	-1	0	0	1	-1	1	6	7	8	6	9	12
2010	-12	-18	-10	-3	-6	-11	-4	-6	-7	-9	-14	0	-6	-5	-2	1	0	2	3	5	6	5	4	10
2011	-6	-1	-6	0	-3	-5	1	-2	-11	-12	-11	-2	-2	0	0	-2	4	0	5	8	7	10	12	10
2012	1	-5	0	-2	-4	-5	-12	-8	-3	-3	3	1	0	0	5	4	8	6	1	1	6	4	6	10
Average	-5	-4	-2	-3	-3	-4	-3	-4	-4	-5	-4	-3	-2	0	-1	0	0	2	3	3	4	5	6	8
By quartile																								
Min. value	-16	-21	-18	-14	-12	-14	-16	-17	-17	-19	-14	-12	-14	-10	-9	-9	-7	-4	-3	-3	-6	-3	0	2
Lower	-8	-7	-5	-5	-6	-6	-7	-7	-7	-9	-7	-5	-4	-2	-3	-3	-2	0	1	1	2	4	4	6
Median	-5	-3	-1	-2	-2	-4	-2	-3	-4	-3	-4	-2	-2	0	0	1	0	2	2	3	4	5	6	8
Upper	0	0	1	0	0	-1	1	-1	0	-1	0	0	0	2	2	2	3	4	4	4	6	7	8	9
Max. value	4	5	4	4	3	4	5	4	3	3	7	4	5	7	6	9	8	7	8	9	11	11	12	14
Range	20	26	22	18	15	17	21	21	20	22	21	17	19	17	15	18	15	10	10	12	16	14	12	13

Month	May						June						July						August					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	31
1961	9	8	8	10	12	11	19	19	16	14	14	16	17	15	16	17	15	15	15	15	14	14	13	16
1962	4	7	9	11	10	10	10	16	13	16	15	13	13	15	12	15	16	15	14	13	14	13	14	13
1963	8	11	13	10	13	17	15	18	13	16	14	15	20	16	15	16	18	16	19	17	15	15	14	14
1964	8	10	12	11	15	15	10	14	17	14	14	16	13	13	16	19	16	16	13	17	14	15	13	13
1965	7	8	9	7	9	11	13	15	14	16	16	14	12	12	14	16	17	14	13	14	13	16	16	13
1966	10	6	11	15	11	11	13	16	20	22	18	17	17	17	16	18	21	16	16	16	15	16	13	14
1967	2	7	12	8	12	14	15	11	13	18	13	15	16	18	16	19	16	17	19	15	16	15	15	15
1968	7	8	9	4	8	12	18	14	19	21	17	15	20	14	13	15	15	18	18	19	14	13	17	16
1969	4	11	10	8	10	13	9	16	19	20	20	20	16	16	17	18	20	21	20	20	19	18	15	15
1970	6	10	12	11	10	13	15	20	15	21	18	19	15	18	15	15	14	16	18	16	15	15	15	15
1971	8	14	14	14	5	14	18	13	14	12	15	16	20	21	15	14	15	18	19	16	14	15	14	13
1972	13	8	7	9	12	11	13	17	16	16	14	22	19	18	19	21	20	17	17	18	16	15	13	13
1973	8	9	9	7	13	15	14	16	13	14	21	20	22	21	18	18	16	18	18	14	17	17	11	13
1974	6	7	9	14	11	10	12	12	15	18	17	14	15	14	15	16	16	13	15	15	14	16	15	16
1975	8	14	12	15	10	9	8	16	15	15	18	13	17	19	17	18	18	20	21	26	18	15	16	15
1976	5	11	12	15	14	8	12	13	14	13	17	20	17	15	18	21	18	15	14	17	18	18	17	16
1977	10	10	10	11	12	10	12	13	21	17	15	13	15	17	13	11	14	15	18	15	14	14	12	14
1978	6	6	4	9	15	19	20	16	12	14	16	14	15	14	14	12	15	20	19	14	13	16	15	10
1979	4	5	11	14	13	15	18	17	15	16	19	14	13	15	16	15	15	15	14	15	15	18	14	13
1980	7	9	10	12	7	12	18	20	16	16	14	14	16	16	16	15	17	20	19	14	16	15	13	12
1981	2	11	13	15	17	13	16	15	11	13	14	14	15	19	17	15	17	18	17	17	19	13	13	11
1982	6	8	10	10	10	16	21	11	9	13	13	13	14	17	20	20	19	18	23	21	16	14	13	14
1983	7	10	10	13	13	12	12	14	15	17	16	14	15	22	20	16	17	18	17	21	15	16	17	17
1984	11	6	10	15	15	15	18	13	12	16	13	13	13	17	17	17	15	16	19	17	15	15	16	13
1985	3	8	12	12	9	17	15	10	11	15	19	16	16	18	18	16	14	17	15	15	16	16	15	15
1986	13	13	11	12	13	12	14	13	17	19	16	20	20	15	14	17	16	18	18	16	13	13	10	10
1987	10	9	6	8	12	8	11	13	11	10	14	15	16	17	15	16	19	13	13	11	13	14	14	12
1988	10	11	13	12	10	17	11	15	15	17	20	22	19	18	18	18	18	16	14	17	16	15	14	15
1989	11	10	9	14	17	12	11	13	15	18	19	17	18	20	15	13	20	19	15	17	17	17	15	11
1990	18	16	11	8	10	11	15	14	15	14	16	17	15	15	15	15	16	18	20	14	17	16	14	15
1991	6	8	10	8	10	13	9	11	13	12	14	13	19	22	17	16	17	19	20	18	15	16	17	15
1992	9	8	11	17	17	18	18	18	17	16	15	19	14	17	16	17	20	17	17	17	15	15	14	14
1993	12	13	14	15	16	10	12	15	10	12	12	15	16	15	16	17	16	15	16	15	13	13	11	11
1994	7	12	12	9	11	9	13	12	15	11	14	18	18	20	23	18	20	23	22	18	17	14	14	13
1995	10	7	4	7	9	17	17	15	14	14	17	17	14	16	19	16	17	20	19	16	19	20	19	12
1996	6	6	11	5	11	10	14	17	15	14	13	16	13	14	17	14	18	16	16	16	19	19	20	17
1997	8	7	11	11	8	9	15	18	19	13	14	16	21	18	17	17	20	17	19	20	18	20	19	21
1998	8	11	12	14	7	12	10	14	14	12	12	15	15	16	15	15	17	16	15	15	15	14	13	11
1999	6	5	6	13	13	14	15	15	17	18	14	17	17	19	22	18	17	18	21	15	13	14	12	15
2000	10	14	13	14	12	11	12	14	15	14	16	13	17	15	15	16	17	15	16	15	17	16	13	15
2001	9	13	12	10	11	10	13	12	13	15	16	20	21	22	16	16	19	20	16	15	16	17	17	15
2002	9	11	14	11	14	13	18	18	15	19	14	14	15	17	19	20	17	20	19	19	21	20	19	18
2003	6	11	11	11	13	15	18	17	14	14	15	16	16	18	19	22	20	20	20	18	17	17	16	11
2004	13	16	9	12	8	11	16	13	15	12	13	15	15	15	14	16	17	17	19	22	18	17	13	14
2005	9	7	11	9	13	12	10	12	13	17	18	14	18	21	20	17	16	16	16	15	16	16	17	14
2006	10	15	11	8	11	10	13	15	20	20	16	16	21	21	17	18	20	21	19	20	18	18	17	16
2007	9	10	10	11	13	12	15	21	15	14	16	16	17	15	16	18	17	16	17	20	19	16	19	10
2008	12	14	10	6	11	16	18	20	12	14	14	16	19	14	17	16	19	21	16	15	17	15	14	13
2009	10	10	9	11	13	15	11	9	11	12	17	21	19	15	17	18	17	16	18	20	15	15	16	15
2010	7	7	11	16	13	12	15	14	13	14	16	19	21	20	23	21	17	18	17	18	20	17	16	12
2011	4	12	13	12	13	13	17	20	16	14	15	20	18	20	16	17	19	20	19	16	15	16	16	16
2012	9	8	11	11	17	13	8	13	14	14	14	15	17	18	16	15	17	17	17	15	16	17	15	14
Average	8	10	10	11	12	13	14	15	15	15	16	16	17	17	17	17	17	17	17	17	16	16	15	14
By quartile																								
Min. value	2	5	4	4	5	8	8	9	9	10	12	13	12	12	12	11	14	13	13	11	13	13	10	10
Lower	6	8	9	9	10	11	12	13	13	14	14	14	15	15	15	15	16	16	16	15	15	15	13	13
Median	8	10	11	11	12	12	14	15	15	15	15	16	16	17	16	17	17	17	17	16	16	16	15	14
Upper	10	11	12	14	13	15	17	17	16	17	17	18	19	19	18	18	19	19	19	18	17	17	16	15
Max. value	18	16	14	17	17	19	21	21	21	22	21	22	22	22	23	22	21	23	23	26	21	20	20	21
Range	15	11	10	12	12	11	13	11	12	12	9	9	10	10	11	11	7	10	10	14	8	7	9	11

Month	September						October						November						December					
Year / Day	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	14	11	13	14	11	11	11	12	12	10	10	8	5	5	3	1	2	0	-3	-4	-9	-2	-8	-6
1962	12	12	9	9	10	10	12	10	5	7	8	5	5	5	2	-2	-4	-2	-1	1	-4	-10	-6	-10
1963	15	13	12	11	12	9	7	7	5	8	9	6	4	5	3	0	-4	1	0	-2	-4	-7	-7	3
1964	12	12	9	10	10	11	7	9	8	7	6	1	3	1	4	1	1	-1	-2	3	2	-2	-3	-9
1965	14	13	10	12	13	12	8	8	6	6	5	9	5	1	-6	-7	-10	-3	-3	-5	-12	-6	-5	-8
1966	14	12	12	10	9	5	9	6	4	9	7	-1	2	5	1	0	0	2	3	1	-2	-3	-6	-3
1967	14	13	11	12	11	9	12	8	10	3	7	8	6	6	3	2	4	1	4	-8	-5	-10	-7	-11
1968	18	18	9	8	8	8	8	2	7	3	5	4	-2	-2	-4	-6	2	2	-3	-4	-5	-1	0	-5
1969	13	15	15	9	9	9	6	10	8	10	5	5	1	3	5	2	-6	-8	-8	-11	-2	-6	-9	-3
1970	14	11	12	13	7	6	8	11	7	9	3	1	-2	-4	-1	1	4	-3	-2	3	1	2	-5	-7
1971	13	12	8	10	12	7	8	10	5	7	5	6	6	-3	1	-5	-4	3	1	-1	-2	3	3	-1
1972	12	14	9	10	9	5	8	10	7	4	2	6	5	6	3	-3	1	3	6	4	4	4	1	0
1973	14	12	8	9	7	7	10	6	1	-1	0	4	3	4	-4	-4	-3	-9	-6	-8	-2	-8	-1	3
1974	15	14	12	12	10	9	7	6	3	4	4	4	2	1	6	5	1	2	0	2	0	0	5	-4
1975	16	12	13	14	12	10	11	6	5	4	5	8	8	2	4	2	-3	1	2	0	0	-4	1	2
1976	10	11	11	8	7	5	6	8	5	4	5	3	1	6	3	-1	-3	2	0	1	-2	-6	-7	-11
1977	15	10	7	8	9	8	5	7	7	7	10	8	7	6	5	-3	0	-3	-4	-1	1	1	0	-3
1978	12	11	10	10	7	7	6	9	8	7	3	4	7	8	6	6	2	-4	-5	-8	-5	-8	-8	-16
1979	14	14	10	11	9	9	3	6	10	6	2	0	1	1	1	2	3	2	5	-4	-11	-9	-2	0
1980	14	14	12	11	11	10	8	9	6	6	1	-1	-3	-1	-3	0	3	-9	-5	-5	2	-2	0	2
1981	13	14	10	7	12	13	12	9	6	3	2	3	1	0	0	1	1	-2	-1	-8	-13	-14	-5	-6
1982	11	10	12	14	11	11	10	8	6	3	7	7	4	3	6	3	4	3	1	-1	-3	-1	1	0
1983	17	11	13	13	9	9	9	5	8	9	5	7	6	6	-1	0	-2	-4	0	-3	-5	-3	-1	1
1984	11	12	10	10	11	7	12	10	7	8	6	7	8	4	2	-1	2	3	3	4	-2	-1	1	-2
1985	13	11	11	10	7	6	14	10	7	6	4	3	2	3	-1	-3	-3	-4	-3	-14	-5	-9	3	-12
1986	11	9	8	8	7	6	8	6	7	6	3	7	2	5	4	4	4	7	5	2	-1	-3	-7	-7
1987	12	12	11	7	9	7	6	10	10	8	7	4	4	-1	2	3	2	-1	-3	-3	-3	-5	-2	0
1988	14	14	11	12	11	11	9	9	6	6	2	0	0	-2	2	-3	-2	-7	-10	-3	-4	-4	-2	1
1989	13	13	11	13	15	10	7	6	4	7	10	7	6	6	6	0	-5	-4	0	-4	-13	-2	1	-1
1990	13	12	10	10	7	7	9	8	8	8	1	5	1	4	3	1	-2	-3	1	1	-2	-1	-3	1
1991	16	10	10	11	11	9	9	9	8	6	3	5	6	2	3	-2	4	5	1	0	2	1	-2	-1
1992	12	10	11	10	12	9	7	7	2	2	2	-2	3	2	2	1	-2	2	5	1	1	2	-4	-1
1993	10	9	7	6	9	6	8	10	4	3	1	4	0	2	2	-1	-3	-3	1	0	-5	1	-2	-3
1994	13	12	12	11	11	8	3	9	8	0	6	6	4	3	-2	0	5	2	1	4	-2	-1	2	2
1995	14	14	12	9	11	8	9	13	8	11	7	6	-3	-1	-1	-4	3	-2	-5	-2	-2	-7	-15	-14
1996	14	9	8	9	6	8	9	11	7	8	5	5	8	2	-1	4	0	-3	2	3	-6	-10	-10	-4
1997	18	14	11	10	11	9	7	8	4	5	0	1	0	4	5	1	0	-4	-4	0	1	-3	-3	-1
1998	10	14	15	12	12	9	4	5	7	4	8	4	0	-3	-1	-5	-1	0	0	-5	-2	2	-3	1
1999	17	16	12	14	13	12	10	7	7	4	6	7	8	6	4	0	-1	5	-2	0	-6	-5	-1	-4
2000	11	13	9	8	7	12	12	12	10	10	10	5	7	7	6	5	6	6	6	7	6	0	-3	-4
2001	14	12	13	14	10	6	12	12	10	8	3	8	5	-1	2	2	1	2	2	2	0	-2	-11	-11
2002	17	16	13	10	6	8	6	3	3	-1	3	2	-2	0	-4	0	0	0	-1	-6	-3	-3	-12	-8
2003	12	15	14	13	12	8	9	5	5	1	-2	3	6	3	1	3	0	4	5	1	0	1	-4	-2
2004	15	13	14	11	11	10	8	7	3	7	8	4	4	4	5	-4	-5	-3	2	3	2	0	-2	-2
2005	15	15	11	11	13	12	10	11	10	3	3	6	9	8	7	-2	2	-2	0	0	2	-5	0	-3
2006	16	13	15	13	15	15	12	11	9	8	9	3	-2	3	2	6	5	8	7	6	6	-1	2	2
2007	11	12	11	9	13	10	9	7	5	6	5	6	4	1	-1	1	1	-1	3	4	-3	-5	-1	3
2008	14	12	9	9	9	9	7	7	10	7	9	4	1	4	5	1	-4	3	1	1	-1	2	-1	-5
2009	16	15	12	11	12	10	5	5	2	3	5	4	3	5	2	7	6	5	-1	3	-1	-9	-7	-10
2010	10	12	13	10	11	8	8	8	4	3	0	6	5	-2	2	-2	-2	-10	-11	-8	-8	-5	-16	-7
2011	15	13	14	11	11	14	12	8	5	6	6	8	9	5	2	3	5	6	2	-1	2	0	2	2
2012	15	12	13	11	8	10	10	6	5	9	4	0	5	1	5	5	5	0	-10	-9	-8	-2	-4	0
Average	14	13	11	11	10	9	9	8	6	6	5	4	3	3	2	0	0	0	0	-1	-3	-3	-3	-3
By quartile																								
Min. value	10	9	7	6	6	5	3	2	1	-1	-2	-2	-3	-4	-6	-7	-10	-10	-11	-14	-13	-14	-16	-16
Lower	12	12	10	9	9	7	7	6	5	4	3	3	1	1	0	-2	-2	-3	-3	-4	-5	-6	-6	-7
Median	14	12	11	10	11	9	8	8	7	6	5	5	4	3	2	0	0	0	0	0	-2	-3	-3	-3
Upper	15	14	13	12	12	10	10	10	8	8	7	6	6	5	4	2	3	3	2	2	0	0	0	0
Max. value	18	18	15	14	15	15	14	13	12	11	10	9	9	8	7	7	6	8	7	7	6	4	5	3
Range	9	9	8	8	9	10	11	11	11	12	12	11	12	13	13	14	16	18	18	21	19	18	21	20

Figure A15-18. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Västmanland county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Västmanland** | **Total precipitation , mm / 5 or 6 day periods** | Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Västerås (Notudden)** | Coordinates for the places (RT90): 1541876-6609123 1527731-6622011 1525064-6607337 1537069-6604669

Scale for the color intensity: 0 mm | 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	17	7	5	0	1	9	6	9	1	0	1	2	0	0	3	5	1	13	7	9	7	0	0	1	27	22	5	23	3	14	2	9	13	13	10	12
1962	3	5	15	12	28	4	16	6	15	6	0	0	3	5	0	1	0	12	15	21	5	7	2	1	1	10	0	14	11	6	2	4	9	10	8	9
1963	8	1	2	2	3	2	12	0	6	0	1	0	1	0	2	0	6	0	1	0	16	7	4	4	10	13	1	5	6	1	11	1	3	5	12	48
1964	0	0	0	0	0	3	6	4	6	4	0	5	0	0	0	0	0	0	0	1	3	0	0	12	17	10	23	0	0	2	18	7	7	5	25	2
1965	4	7	13	15	16	16	8	0	5	9	1	2	0	1	0	5	1	0	1	1	10	12	10	4	0	1	1	7	0	0	4	16	9	15	6	17
1966	7	2	9	3	4	28	17	7	3	7	21	10	2	7	7	0	10	17	17	1	0	0	12	0	2	3	0	2	11	6	4	0	0	0	4	8
1967	9	5	2	1	0	25	14	0	0	7	19	13	1	9	2	9	3	14	2	9	0	11	5	14	12	7	17	26	13	3	3	15	0	0	10	5
1968	1	1	7	12	13	7	15	10	1	0	3	0	4	3	0	10	10	0	17	2	0	0	6	0	30	22	8	20	7	8	2	3	0	6	5	10
1969	2	1	23	8	5	6	0	13	2	9	12	1	1	6	0	0	0	9	1	1	12	38	3	6	0	11	19	15	0	0	2	2	0	0	0	0
1970	25	0	10	1	2	11	3	5	2	0	2	0	15	18	0	10	0	5	25	11	0	8	23	10	3	0	0	1	10	1	3	0	25	0	11	3
1971	4	1	0	6	18	12	2	1	6	11	6	2	2	0	2	19	3	4	1	7	0	6	0	0	1	0	3	4	4	7	1	0	6	20	9	3
1972	1	0	1	11	3	9	8	10	7	4	6	1	1	2	0	0	0	32	19	11	9	3	4	4	0	0	0	25	11	29	17	1	2	6	8	3
1973	2	0	1	12	9	12	1	6	31	13	2	0	1	0	0	0	0	5	9	4	1	10	2	3	9	16	2	6	5	2	20	10	1	0	1	14
1974	1	2	32	1	4	7	5	14	10	1	0	0	0	0	0	12	14	0	0	0	1	0	3	0	0	0	0	0	6	15	14	13	2	7	8	15
1975	1	4	2	19	9	2	7	0	1	5	0	0	4	5	7	1	3	17	10	21	6	0	4	1	3	0	33	11	11	7	10	0	5	0	0	6
1976	12	8	2	12	0	0	1	7	3	0	3	2	1	3	1	0	2	5	11	6	0	0	2	10	12	1	3	0	0	11	2	4	14	5	3	0
1977	12	14	28	4	4	25	4	3	1	22	2	1	6	0	9	31	3	3	12	14	6	9	6	19	10	3	15	0	0	10	12	9	0	9	0	33
1978	5	2	1	1	3	19	8	2	8	0	6	1	14	9	16	11	8	20	0	3	6	0	4	0	0	0	9	7	0	0	4	15	16	0	1	55
1979	5	0	16	1	12	13	9	0	0	2	0	0	2	7	0	0	9	14	6	0	3	7	24	16	9	22	0	4	29	13	0	38	6	1	7	6
1980	1	2	0	0	13	0	0	9	5	0	0	0	1	7	0	1	0	16	1	0	0	17	4	12	0	3	0	6	10	7	24	0	8	9	56	32
1981	0	3	15	3	4	0	3	9	2	2	5	1	9	25	5	9	15	0	0	0	1	0	1	21	18	1	0	0	7	12	2	9	32	1	24	40
1982	11	0	0	0	8	16	0	22	1	0	0	1	20	4	16	16	0	0	2	25	2	1	0	20	10	8	0	3	10	3	5	2	1	4	4	23
1983	21	1	10	14	3	10	7	1	0	0	0	0	0	15	15	5	22	3	17	4	0	0	13	17	0	0	13	16	0	12	22	22	2	0	6	23
1984	17	19	7	8	2	19	15	15	0	1	3	3	7	1	0	0	0	10	10	0	0	4	0	0	2	1	2	5	10	9	17	6	17	6	46	31
1985	2	1	0	14	34	19	8	7	1	5	4	1	8	14	0	0	6	20	6	7	7	19	4	19	14	0	0	0	1	0	0	19	20	7	2	10
1986	17	6	6	5	5	6	3	0	1	1	8	0	7	0	1	0	23	24	2	0	3	20	17	11	0	4	25	4	4	1	5	36	0	2	1	12
1987	3	5	0	3	1	0	0	12	14	0	0	0	0	0	0	13	2	15	0	0	3	5	1	0	3	13	13	41	0	0	4	6	19	21	14	6
1988	14	2	13	5	15	24	15	16	6	7	12	17	7	7	0	0	3	8	4	5	6	22	1	0	8	1	0	7	1	14	17	17	0	1	5	17
1989	1	0	8	0	1	0	2	1	4	10	14	11	6	6	11	7	15	4	1	8	0	7	12	6	0	6	14	0	0	24	7	22	0	5	1	10
1990	0	4	11	12	14	21	4	11	7	3	17	25	7	7	10	1	6	0	17	8	3	4	0	3	0	0	5	5	6	2	2	0	6	21	14	10
1991	17	21	1	2	0	1	0	2	6	1	8	2	5	1	12	8	11	1	3	3	0	4	0	4	11	0	9	7	4	1	18	34	15	19	10	26
1992	3	13	0	0	1	0	11	2	19	1	6	0	9	1	8	5	4	2	24	2	16	10	13	38	4	3	5	0	11	0	1	0	31	2	1	0
1993	1	7	11	3	12	0	4	0	0	17	0	2	3	0	0	3	3	3	6	17	0	3	6	0	1	0	1	0	22	7	6	8	25	18	15	9
1994	9	9	15	5	5	14	2	3	0	0	3	0	9	5	9	1	14	13	13	1	10	1	7	12	0	0	0	2	3	14	10	6	1	10	14	4
1995	2	20	4	6	9	13	1	9	22	8	6	1	6	5	2	20	1	14	0	13	2	43	2	25	0	1	26	23	9	0	2	14	16	21	9	0
1996	0	5	2	2	2	0	0	0	2	4	1	6	0	2	1	0	0	22	0	0	0	0	8	4	22	4	19	1	8	12	0	2	8	18	23	10
1997	0	0	4	0	4	0	0	16	1	11	16	0	2	2	0	0	2	9	1	13	1	3	4	11	13	56	6	2	5	4	0	0	23	18	29	14
1998	16	2	4	23	10	2	9	3	8	5	4	5	6	7	6	5	2	8	2	0	3	12	2	14	8	14	1	3	7	13	31	12	9	23	2	16
1999	14	14	8	6	19	1	5	1	2	12	4	12	21	8	1	5	17	10	1	9	22	41	1	6	2	14	0	0	9	2	7	18	9	2	18	7
2000	4	1	4	0	1	7	1	1	4	0	12	2	21	3	1	1	0	0	2	0	7	8	11	0	3	2	0	3	25	19	10	11	9	2	27	38
2001	24	11	0	0	18	4	5	21	7	1	4	0	3	3	16	4	2	6	4	12	1	9	7	4	14	0	8	20	0	4	0	7	2	13	16	2
2002	2	0	0	8	36	18	13	14	12	4	12	11	10	22	1	18	1	1	1	2	2	0	1	26	14	0	3	6	3	4	0	6	40	24	37	15
2003	1	2	3	9	17	3	21	0	0	0	0	0	0	2	0	0	0	2	11	6	2	0	0	32	28	3	4	2	20	1	2	33	11	20	40	4
2004	2	4	11	10	0	15	4	18	1	2	10	3	0	0	13	18	1	0	1	1	0	3	15	0	7	1	7	12	6	7	0	42	7	9	30	13
2005	4	22	1	14	0	1	1	3	11	11	3	2	0	0	9	13	0	0	0	9	2	0	1	0	25	6	0	7	10	16	33	5	20	10	13	5
2006	1	1	0	11	3	0	0	25	1	5	9	5	20	1	3	0	1	23	10	9	6	12	2	20	4	0	1	21	40	16	1	1	1	2	23	28
2007	11	16	22	30	5	2	5	3	6	2	4	9	3	14	0	8	2	0	0	4	0	16	2	0	0	11	14	8	3	22	0	1	6	16	17	12
2008	12	17	11	17	8	13	17	5	0	0	1	13	7	13	10	5	1	1	1	22	8	0	0	2	3	0	14	22	2	0	0	2	8	9	7	18
2009	4	1	0	8	16	2	2	20	0	0	12	1	8	11	2	2	3	7	0	5	0	0	0	1	9	12	2	6	8	7	16	17	44	11	0	0
2010	2	0	0	8	0	22	12	1	0	25	9	13	7	0	0	1	16	8	2	6	7	2	18	3	0	2	29	2	28	16	0	3	26	12	0	1
2011	12	17	14	1	3	0	3	30	1	1	1	0	0	7	0	11	0	7	7	6	0	0	0	0	1	0	11	12	6	8	0	2	20	24	24	1
2012	30	1	10	4	1	1	1	1	7	10	19	3	0	1	0	1	0	5	6	20	9	18	4	4	1	36	11	1	1	8	28	8	10	37	32	22
Average	7	6	7	7	8	9	6	7	5	5	6	4	5	5	4	6	5	8	6	7	4	8	5	8	7	7	7	8	8	8	8	10	11	10	13	14
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	1	1	2	1	1	1	1	0	1	0	1	1	0	0	0	1	1	1	0	0	1	0	0	0	0	2	2	1	1	2	2	2	3	4
Median	4	2	4	5	4	6	4	5	3	3	4	1	3	3	1	3	2	6	2	5	2	4	4	4	3	2	3	5	6	7	4	7	8	8	9	10
Upper	12	7	11	11	12	15	9	11	7	7	9	5	7	7	8	9	7	13	10	9	6	11	7	13	11	10	13	12	10	12	13	15	16	16	19	17
Max. value	30	22	32	30	36	28	21	30	31	25	21	25	21	25	16	31	23	32	25	25	22	43	24	38	30	56	33	41	40	29	33	42	44	37	56	55

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	20	20	6	16	18	14	13	14	17	21	8	1	7	2	18	0	0	13	0	11	1	31	14	8	16	13	7	0	2	8	19	2	0	1	3	12
1962	18	7	5	23	11	3	9	55	2	9	28	21	37	16	13	0	1	0	12	0	0	1	0	21	1	0	10	5	6	0	0	1	10	1	1	4
1963	1	20	13	8	1	5	4	11	18	37	3	16	19	11	1	0	11	5	33	5	22	3	1	0	9	14	20	15	11	19	0	0	0	14	0	2
1964	5	22	7	3	25	5	8	3	0	30	8	7	0	1	16	46	1	9	0	14	46	19	10	0	0	0	8	10	14	17	9	9	19	2	0	8
1965	13	11	36	0	33	63	11	9	2	4	3	11	11	34	2	17	2	51	1	1	1	4	0	9	13	0	0	1	2	17	12	32	4	12	10	7
1966	6	17	20	3	14	21	32	13	16	0	0	0	31	3	19	1	1	0	16	14	11	16	4	0	28	9	3	6	5	11	6	34	20	21	13	32
1967	21	0	11	19	3	2	12	13	21	14	1	33	15	28	0	31	40	5	7	28	17	36	11	14	20	7	19	3	1	2	12	2	3	0	19	10
1968	0	57	12	12	8	1	0	5	47	21	0	11	0	5	3	5	9	7	13	0	16	11	2	65	34	4	0	2	10	11	0	0	0	10	14	15
1969	8	20	1	12	12	0	0	0	3	0	22	48	2	0	11	3	19	16	11	0	0	0	6	5	12	28	18	12	19	3	8	8	3	3	0	5
1970	14	7	1	6	37	20	6	5	4	4	3	1	7	10	17	9	0	4	25	19	0	19	2	13	12	12	8	38	17	10	3	5	1	4	0	3
1971	0	1	26	18	21	2	16	28	32	1	0	23	5	5	1	14	9	3	9	5	3	10	11	2	14	20	6	3	7	8	1	10	8	8	1	6
1972	17	25	1	0	0	18	16	7	12	20	8	0	0	17	19	42	4	1	3	0	6	10	8	7	10	6	7	7	14	5	9	12	5	0	0	0
1973	0	51	13	49	30	14	7	21	3	4	0	3	5	4	0	8	8	20	0	15	1	0	0	5	6	2	13	15	21	0	1	9	11	16	8	1
1974	13	32	28	3	6	18	4	0	5	6	0	16	22	9	0	2	20	17	39	13	3	21	18	17	7	22	27	24	9	8	6	3	10	19	2	13
1975	4	0	12	3	5	1	0	1	3	17	7	23	9	15	34	1	6	16	2	1	8	1	0	9	5	1	3	4	2	11	17	2	3	4	11	1
1976	1	3	3	5	2	22	9	2	0	0	1	20	6	16	67	0	1	0	9	8	1	0	1	7	15	25	12	1	3	9	50	22	9	4	4	13
1977	37	1	60	24	29	9	12	1	5	3	4	9	3	8	9	0	0	23	40	14	1	0	6	2	21	14	12	9	26	3	1	8	12	0	19	8
1978	8	18	5	7	7	0	33	5	13	6	13	27	51	12	9	1	12	2	0	0	0	11	4	1	2	1	9	9	4	10	5	0	1	0	2	2
1979	12	21	16	19	21	23	13	35	0	15	9	63	41	7	5	12	2	6	0	1	13	15	0	2	7	3	6	35	20	22	1	1	1	6	7	26
1980	5	3	3	24	3	0	7	17	1	17	16	18	4	12	43	10	7	7	3	22	28	13	36	27	0	0	15	52	5	11	4	2	18	24	7	8
1981	19	2	5	24	3	4	0	23	4	49	10	6	0	0	0	11	7	6	6	22	10	25	2	26	20	0	7	30	23	18	1	13	3	2	19	13
1982	14	5	0	4	0	7	1	15	17	29	21	17	18	9	1	10	1	3	0	2	12	19	9	3	4	3	11	9	30	25	4	15	22	6	3	1
1983	18	0	30	1	0	3	3	0	8	1	0	0	23	47	61	56	23	1	9	11	6	13	4	0	6	2	8	0	2	1	7	5	0	18	14	8
1984	7	0	21	6	34	3	23	6	5	0	2	10	4	11	21	23	53	8	25	10	15	22	39	14	1	15	0	10	16	2	1	12	2	24	9	5
1985	4	4	20	18	8	22	24	10	12	7	11	4	39	21	5	8	0	2	0	39	7	1	0	0	18	12	3	0	1	30	26	12	2	6	13	3
1986	4	14	13	2	19	6	8	8	2	24	33	40	7	12	15	3	1	5	0	2	0	9	4	17	9	7	8	9	13	2	19	1	12	12	8	15
1987	3	16	2	0	7	47	25	30	13	1	30	20	1	19	19	5	4	3	0	2	26	9	7	4	0	2	19	16	8	11	0	1	1	2	9	17
1988	20	18	5	33	12	10	18	2	20	13	25	6	7	0	2	1	7	15	0	12	1	0	0	46	11	0	0	8	0	8	9	3	0	13	4	17
1989	0	5	10	2	0	41	29	6	16	16	7	2	1	0	5	9	1	0	1	2	5	11	28	22	14	7	3	2	5	2	0	2	1	16	13	1
1990	29	12	4	20	22	22	0	5	13	9	4	0	33	22	2	21	37	4	18	11	0	4	0	16	5	0	13	16	13	8	0	12	1	4	8	11
1991	2	3	8	42	5	0	6	26	8	24	21	7	0	2	3	5	18	30	5	1	8	11	0	2	21	6	13	0	3	1	0	1	2	11	9	4
1992	30	10	24	9	0	30	8	17	29	6	12	36	18	0	3	5	3	2	0	5	18	19	12	8	23	6	27	15	19	10	15	1	4	2	0	0
1993	8	21	7	0	38	30	8	34	22	10	40	22	4	0	6	5	3	0	9	23	20	15	4	0	0	7	16	1	3	8	12	5	11	13	23	5
1994	0	0	6	1	0	14	5	14	10	6	15	19	41	23	42	20	0	22	12	3	1	0	6	18	7	2	14	2	0	0	5	26	0	13	0	17
1995	12	0	2	32	5	0	4	4	3	0	11	0	16	6	1	1	1	41	6	1	3	6	1	7	6	2	8	3	7	5	1	6	1	0	3	1
1996	34	30	4	9	7	1	5	0	0	0	53	69	0	3	32	0	0	15	4	0	4	6	0	26	23	22	26	44	3	11	12	1	3	0	1	4
1997	14	0	0	1	13	27	10	1	2	3	13	9	26	5	18	10	0	20	18	18	9	9	2	0	4	25	22	1	10	12	24	3	4	2	10	22
1998	19	48	30	13	12	18	3	6	20	7	13	16	0	12	21	10	2	5	0	3	18	23	11	20	3	5	4	1	6	2	29	7	7	1	16	19
1999	6	0	12	27	14	1	1	29	1	6	0	14	0	0	2	2	46	35	15	8	0	0	5	8	0	6	1	7	2	4	11	29	28	10	20	10
2000	13	10	63	52	38	22	1	2	6	7	5	11	5	4	0	0	0	2	14	17	28	0	20	57	12	17	12	38	30	30	2	15	30	0	0	41
2001	4	5	23	16	2	0	12	19	6	14	4	17	9	20	31	12	0	1	9	30	3	3	0	34	4	4	0	0	3	11	13	3	0	12	12	5
2002	30	2	4	21	55	2	0	0	5	0	0	5	3	0	2	16	1	1	3	2	10	1	28	6	0	2	31	8	17	8	3	0	0	0	0	13
2003	12	3	8	10	20	6	2	0	29	4	15	19	1	0	0	12	1	12	36	2	0	1	0	12	9	2	2	11	30	14	4	0	19	5	29	31
2004	16	13	30	25	4	0	6	1	7	22	4	28	9	0	31	16	20	3	12	10	1	12	27	4	1	2	6	23	15	6	4	0	2	2	21	1
2005	1	5	9	35	46	10	10	57	11	0	19	5	0	5	2	0	0	7	1	1	0	1	44	1	15	5	6	1	5	4	11	10	3	7	8	13
2006	1	7	2	1	4	36	3	0	56	19	30	10	10	7	0	1	0	9	13	11	4	21	36	41	7	3	19	28	28	0	20	13	6	1	0	9
2007	13	14	10	5	5	8	10	5	24	9	0	3	16	7	4	16	12	11	2	0	11	0	2	9	14	26	3	1	11	15	28	32	0	0	5	9
2008	5	20	7	9	7	8	48	54	27	24	15	9	7	16	0	0	0	4	38	3	13	5	5	26	0	16	26	11	6	6	32	12	17	7	2	0
2009	27	81	13	19	16	10	1	1	19	5	36	20	25	4	0	6	2	13	11	17	9	21	4	2	7	3	16	23	18	12	3	4	21	4	11	12
2010	0	0	5	8	34	41	10	23	3	19	15	11	0	0	7	20	4	0	0	17	1	10	2	5	12	27	22	6	5	7	7	1	2	13	2	8
2011	0	2	10	29	38	2	1	65	2	47	9	14	24	20	16	20	4	0	14	14	0	21	1	15	0	0	0	4	5	9	5	21	9	24	2	6
2012	4	43	24	16	2	9	6	37	3	5	23	33	1	3	11	10	30	39	6	2	29	25	0	6	6	2	4	1	3	35	17	4	12	4	12	17
Average	11	14	13	14	15	13	10	14	12	12	12	16	12	10	12	10	8	10	10	9	9	10	8	13	10	8	11	11	10	10	9	8	7	7	8	10
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	3	2	5	3	4	2	3	2	3	4	3	6	1	2	2	1	1	2	1	2	1	1	1	2	3	2	4	2	3	4	1	1	1	1	1	4
Median	8	9	9	11	9	9	8	7	8	7	9	12	7	7	5	8	2	5	7	7	5	10	4	8	7	5	8	7	7	8	6	5	3	5	8	8
Upper	17	20	20	22	22	21	12	22	18	19	16	21	18	15	19	14	10	15	13	14	13	19	11	18	14	13	16	15	16	12	12	12	11	12	12	13
Max. value	37	81	63	52	55	63	48	65	56	49	53	69	51	47	67	56	53	51	40	39	46	36	44	65	34	28	31	52	30	35	50	34	30	24	29	41

Figure A15-19. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Västmanland county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A16 DALARNA COUNTY♣

A16.1 Crop production and yield

Table A16-1. *Annual production (metric ton) in 2010-2014 for the major crops in Dalarna county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses		134 000	116 500	101 800	176 200	132 125
Spring barley	22 300	27 500	22 500	30 100	27 500	25 980
Potatoes	21 600	28 900	21 200	28 900	23 600	24 840
Oats	8 900	13 200	12 900	14 700	15 300	13 000
Winter wheat	5 000	9 200	8 500		16 700	9 850
Spring wheat		4 400	4 700	7 800	6 800	5 925

* Data from Jordbruksverket (2015)

Table A16-2. *Average yield for main cereals and potatoes in Dalarna county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Spring barley	2 938	227	8
Potatoes	22 253	1 833	8
Oats	3 037	256	8
Winter wheat	3 597	457	13

* Coefficient of variation = Standard deviation / Average

Table A16-3. *Coefficient of variation of farm-level yield for important crops in Dalarna county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Spring barley	32	33	22	34	27	47	30	41	33
Potatoes		40	39	39	60	36	39	52	40
Oats	31	42	24	38	32	35	29	37	34
Winter wheat	22	34	25	28	54	50	33	30	35
Spring wheat	28	42	25	51	40	43	34	39	38
Average	28	38	27	38	43	42	33	40	

* Based on farm-level yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

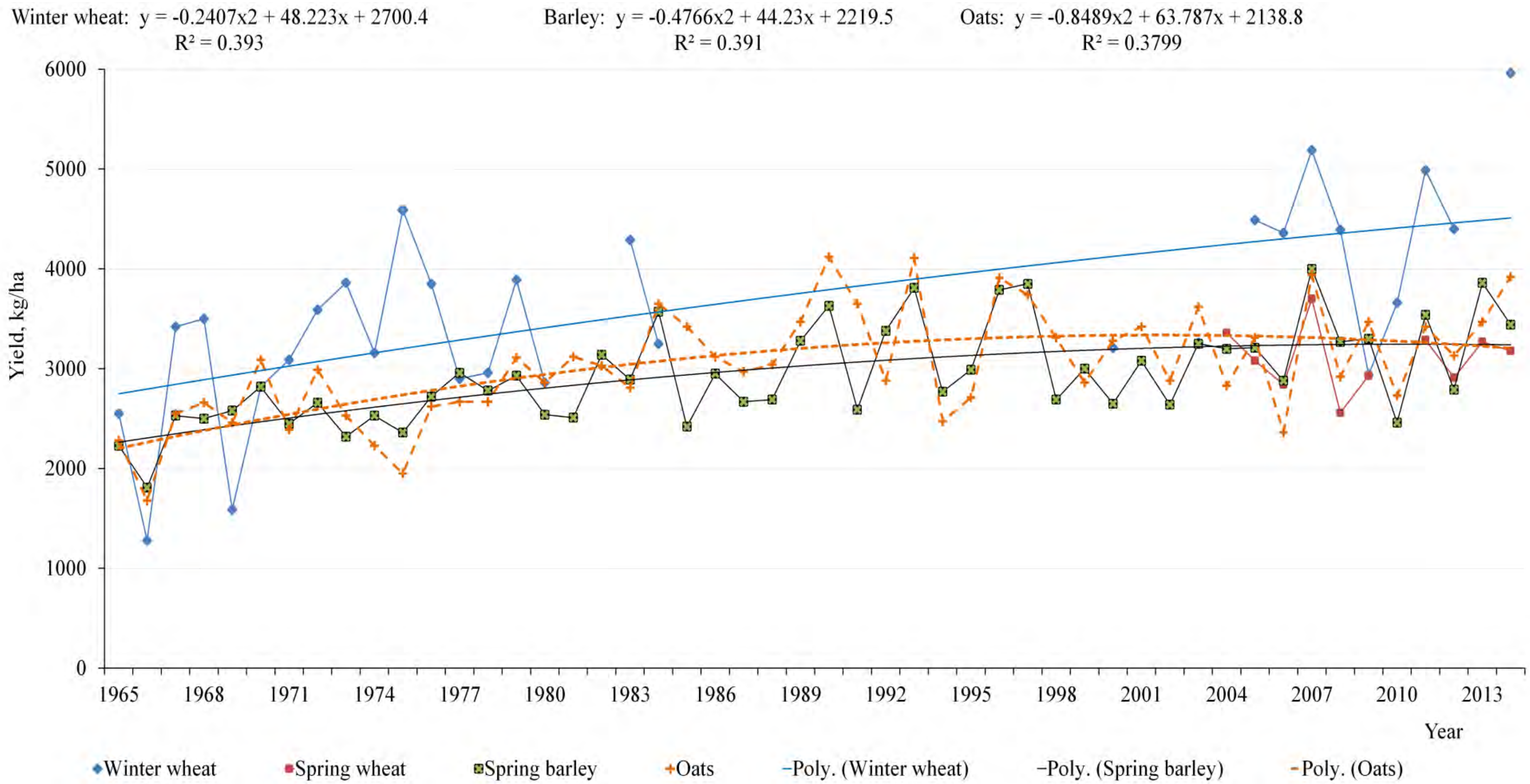


Figure A16-1. Average yield (kg/ha) per year of winter wheat, spring wheat, spring barley and oats in Dalarna county for the period 1965-2014, and the trend lines with respective equations for winter wheat, barley and oats. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

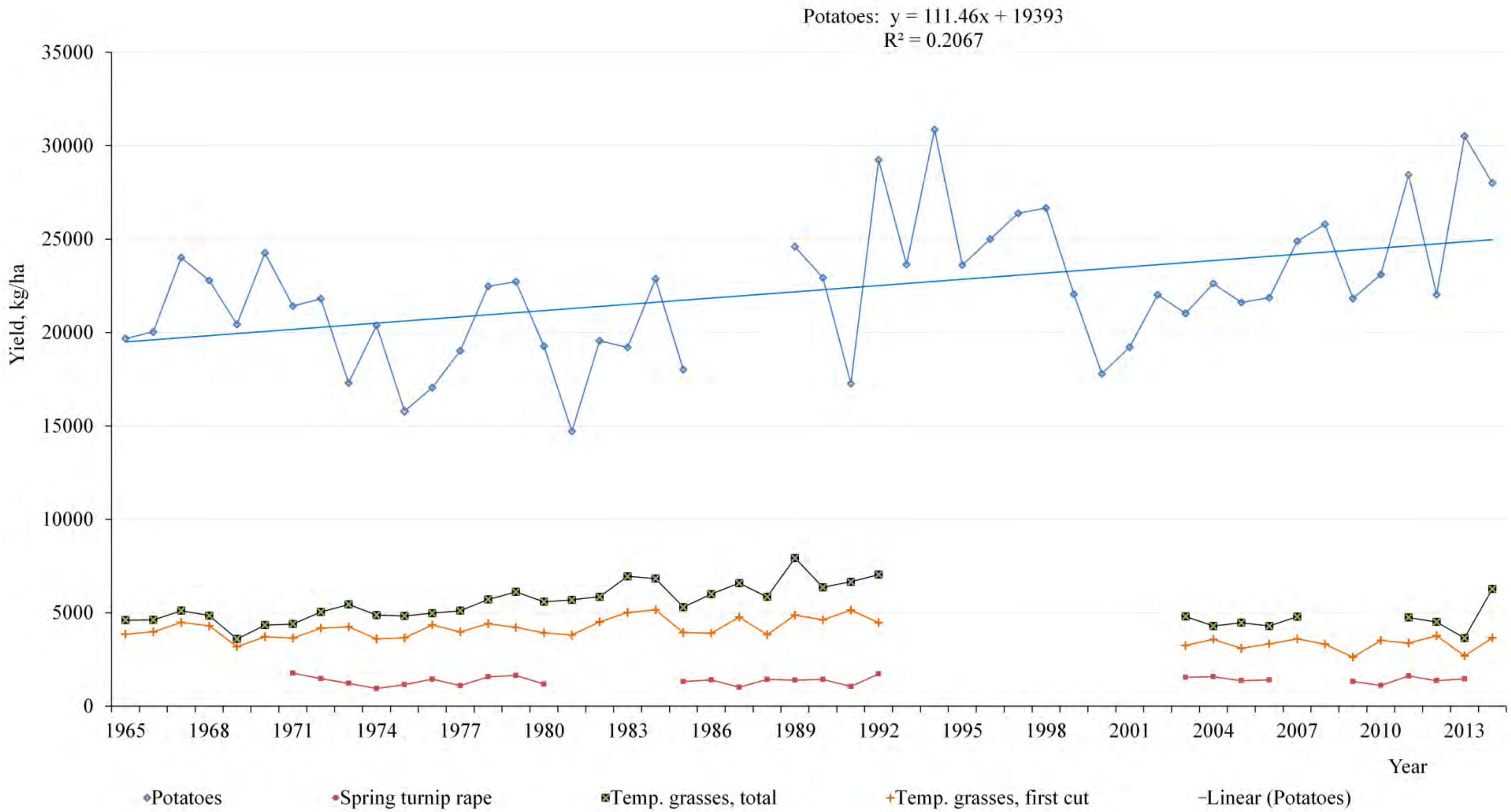


Figure A16-2. Average yield (kg/ha) of potatoes, spring turnip rape and temporary grasses (total and first cut) in Dalarna county for the period 1965-2014, and the trend line with respective equation for potatoes. The variable x in the equation is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

A16.2 Precipitation, temperature and cereal yield

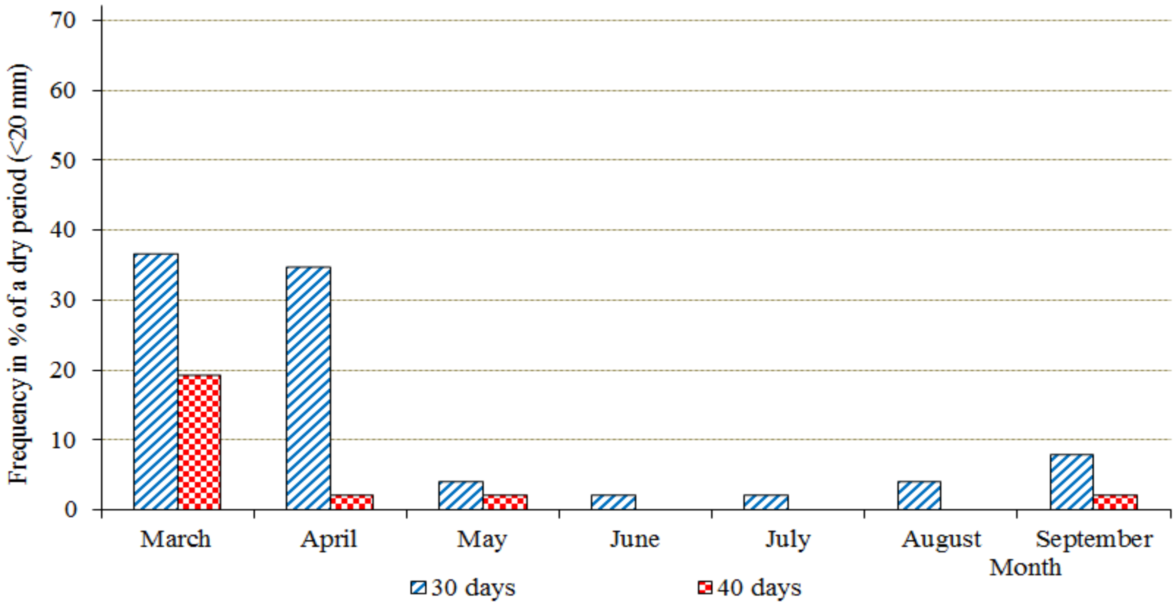


Figure A16-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Dalarna county∗.

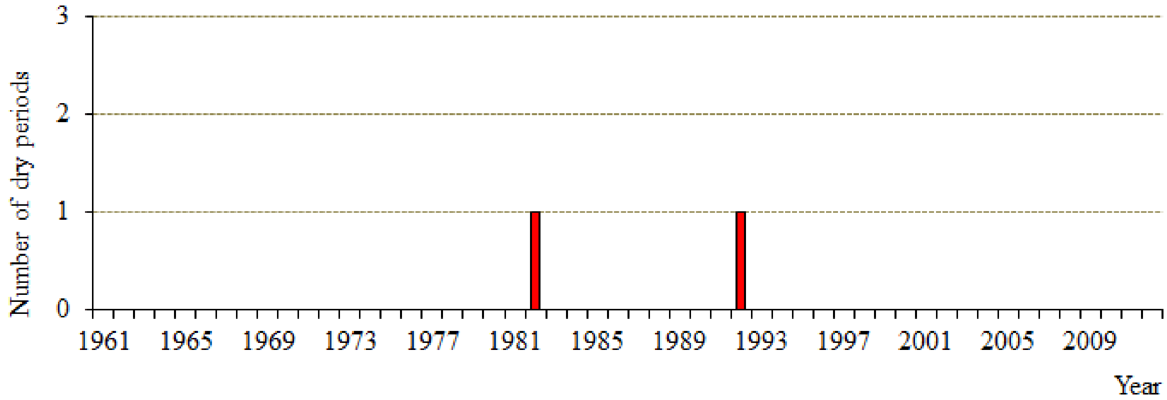


Figure A16-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 1 June to 10 August in Dalarna county*.

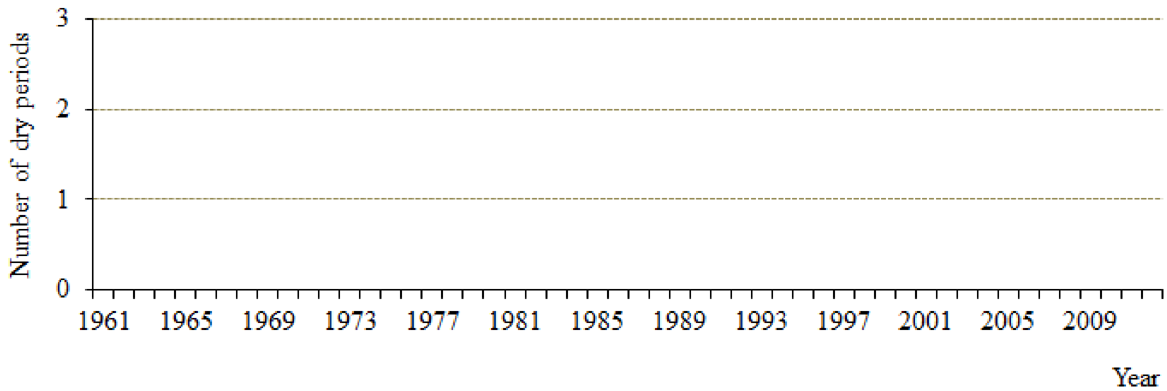


Figure A16-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 1 June to 10 August in Dalarna county∗.

∗ The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

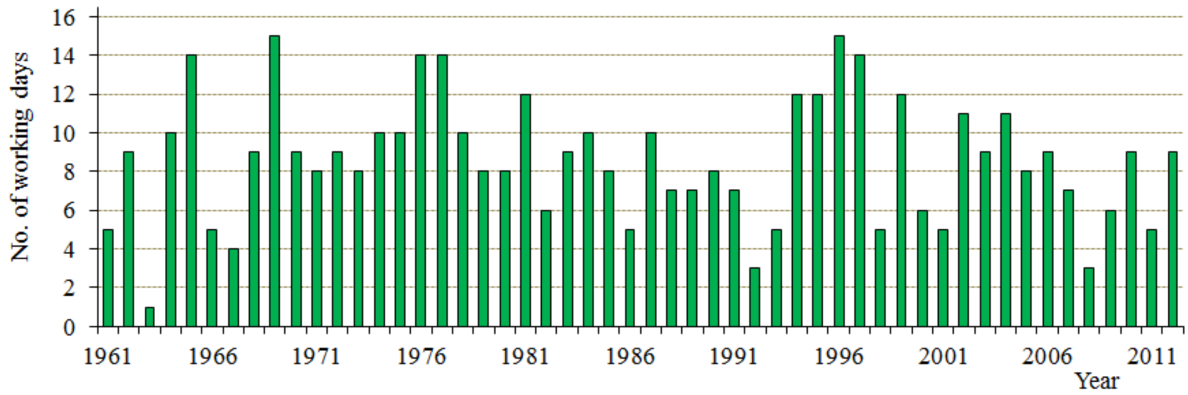


Figure A16-6. Estimated number of working days available for harvesting during the period 5-19 August in Dalarna county (for definition of a working day, see Section 2.1)*.

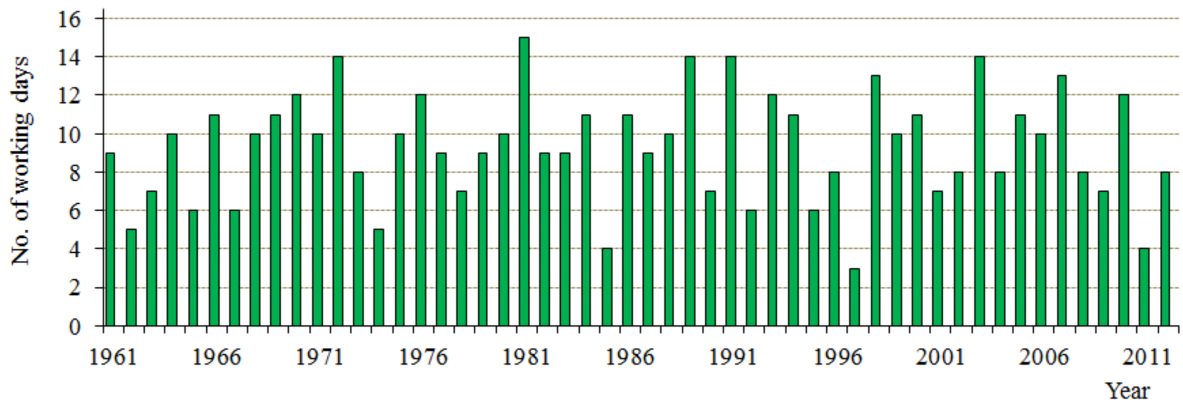


Figure A16-7. Estimated number of working days available for harvesting during the period 25 August-8 September in Dalarna county (for definition of a working day, see Section 2.1)*.

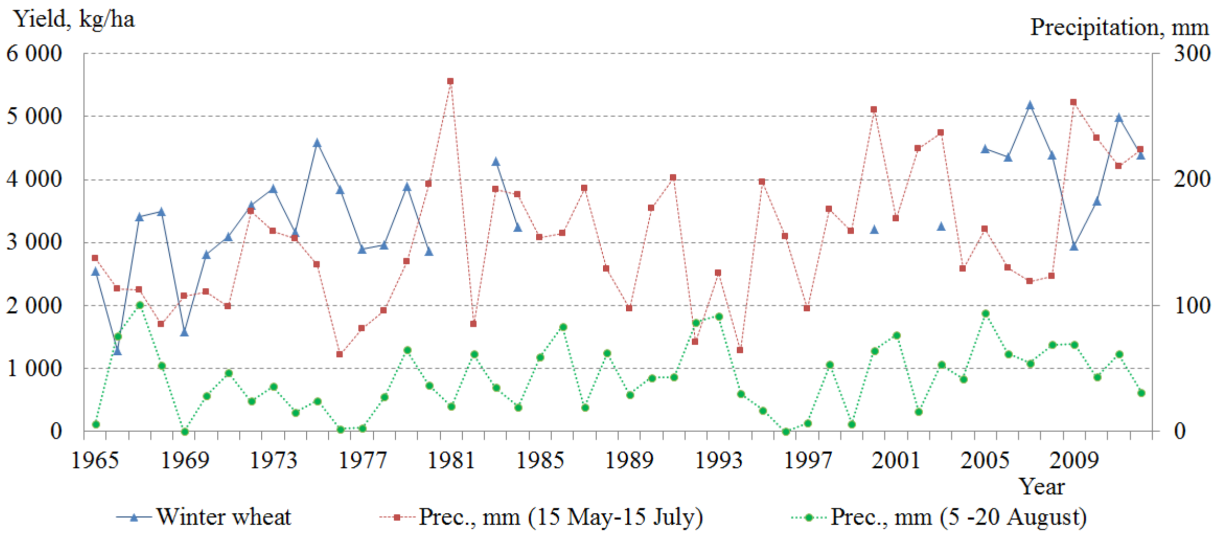


Figure A16-8. Annual winter wheat yield (kg/ha) and precipitation (mm) in the periods 15 May-15 July and 5-25 August in Dalarna county, 1965-2012*.

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* Precipitation from Luftwebb (2014). Yield data from from Jordbruksverket (2015).

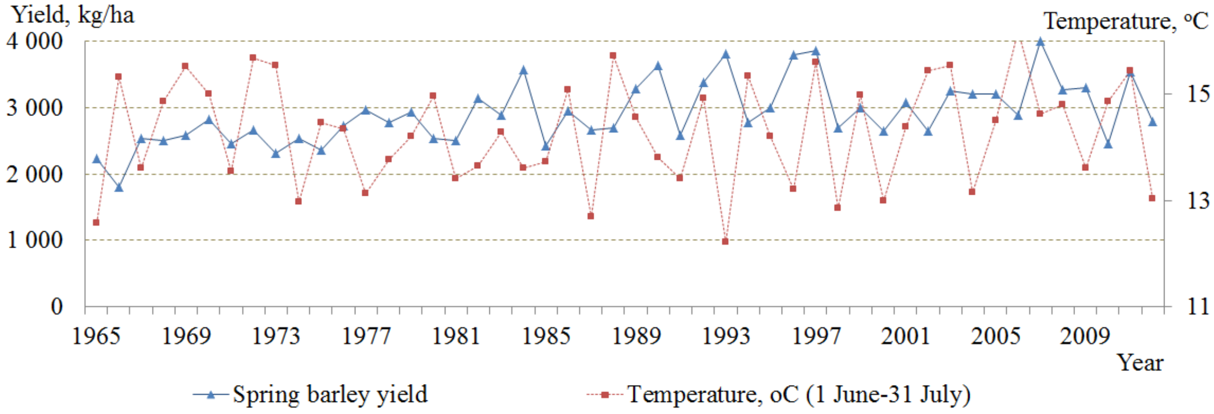

Figure A16-9. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Dalarna county, 1965-2012∗.

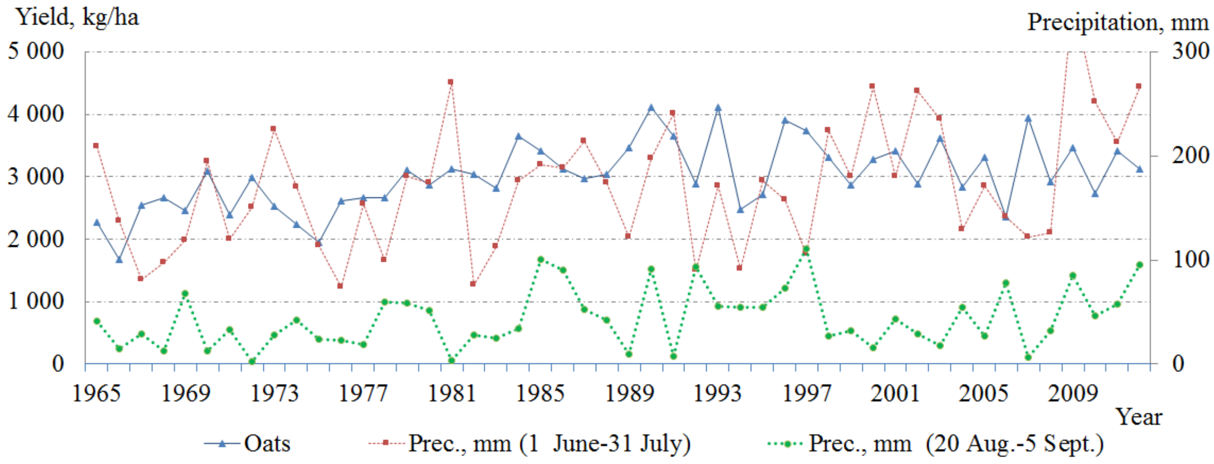

Figure A16-10. Annual oat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 20 August-5 September in Dalarna county, 1991-2012*.

∗ Precipitation and temperature from Luftwebb (2014). Yield data from from Jordbruksverket (2015).

A16.3 Yield on farms

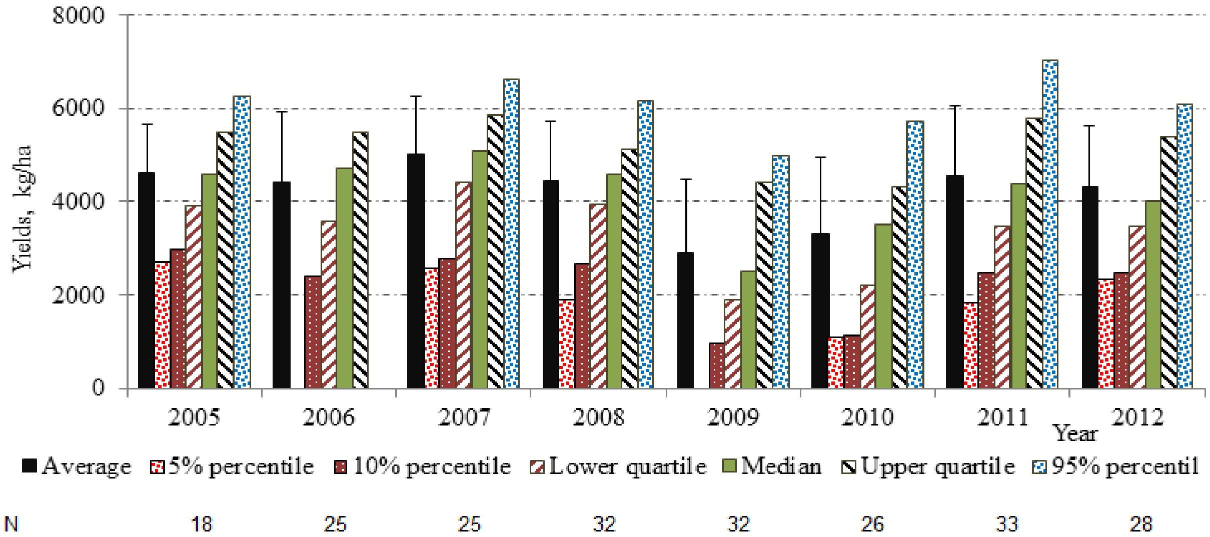

Figure A16-11. Average and estimated percentiles of winter wheat farm-level yield in Dalarna county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

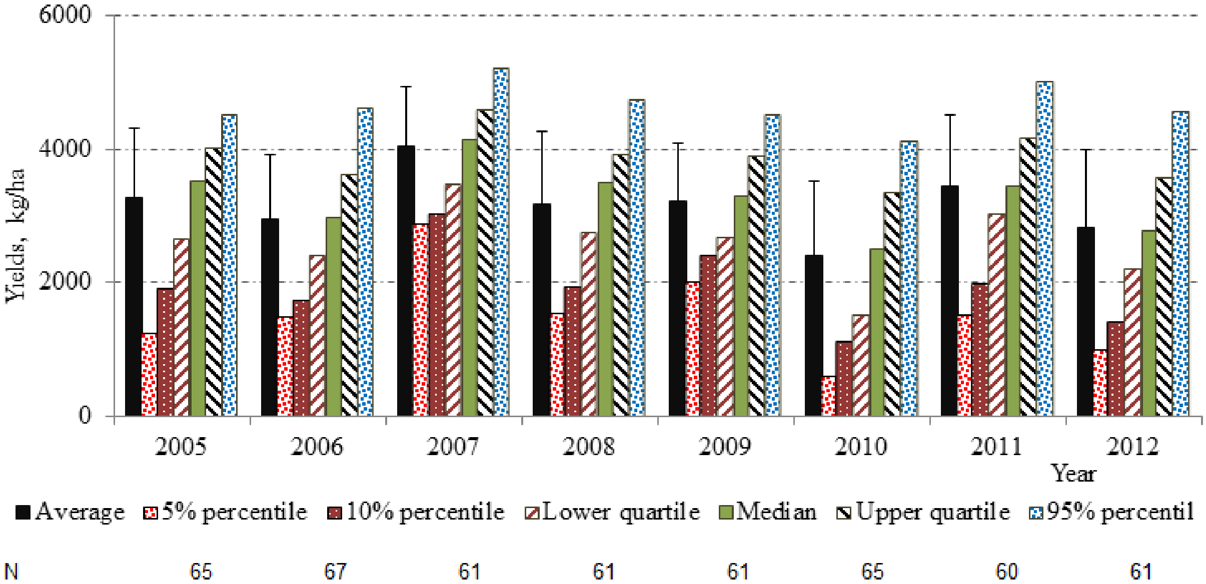

Figure A16-12. Average and estimated percentiles of spring barley farm-level yield in Dalarna county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

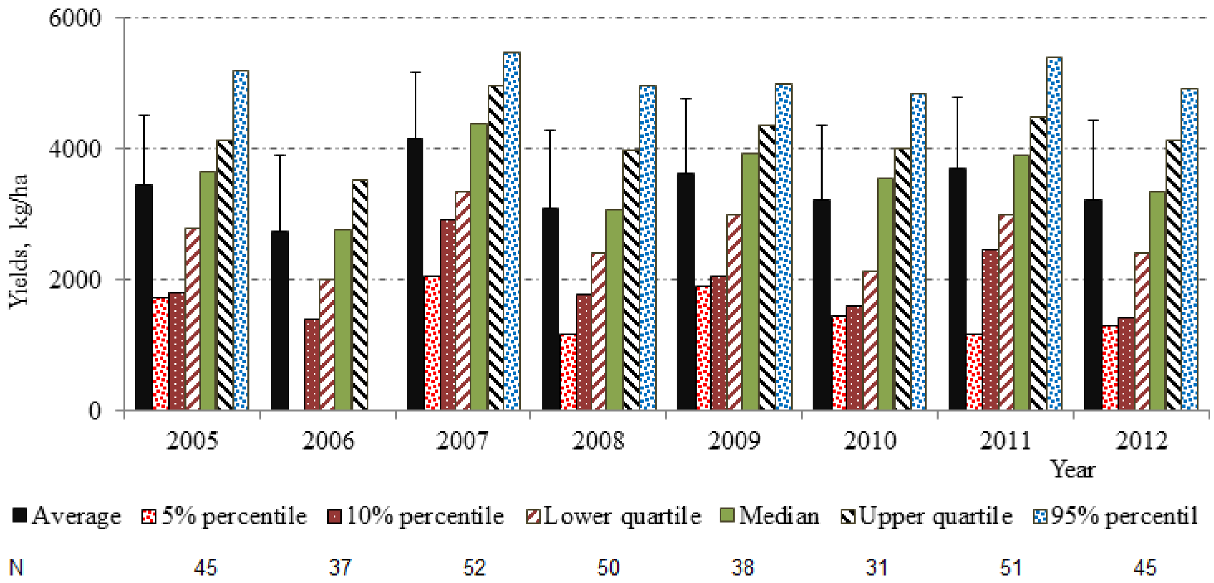

Figure A16-13. Average and estimated percentiles of oat farm-level yield in Dalarna county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

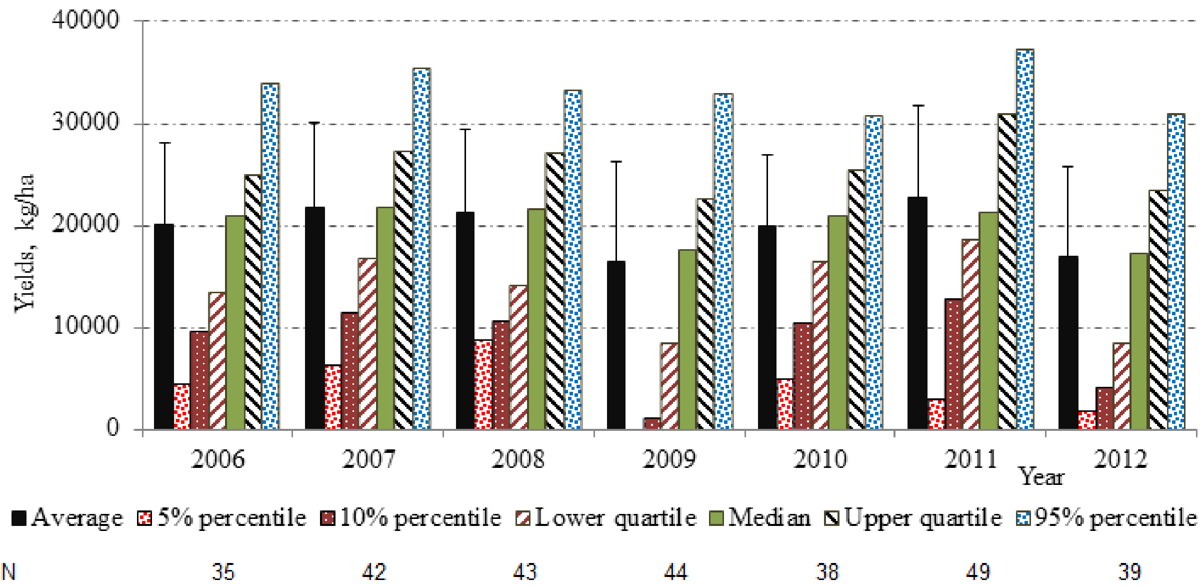

Figure A16-14. Average and estimated percentiles of potato farm-level yield in Dalarna county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A16.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

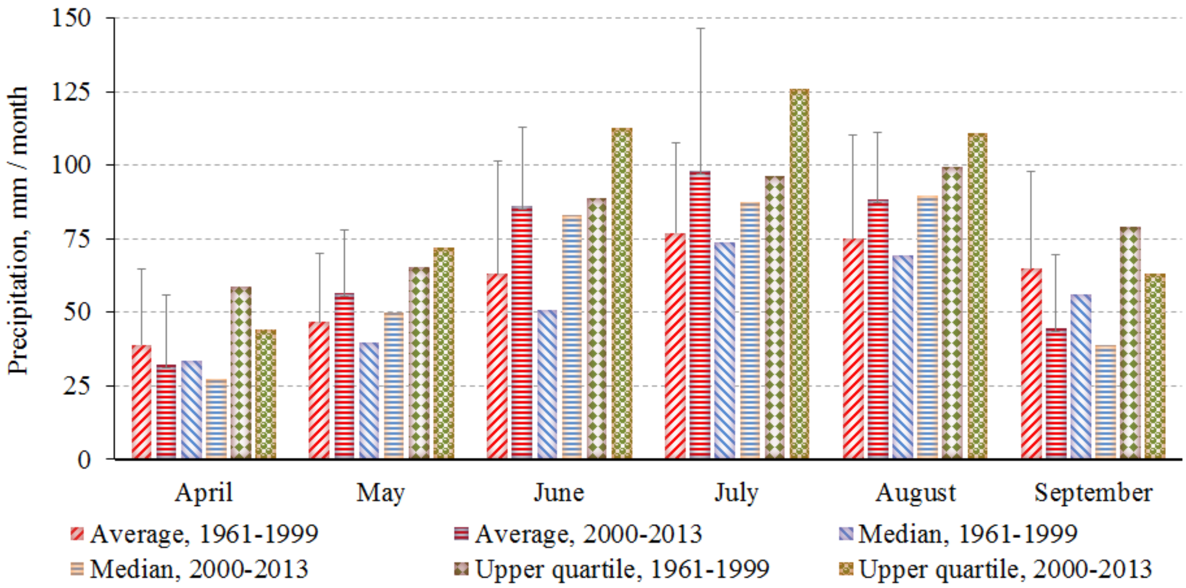

Figure A16-15. Monthly average, median and upper quartile precipitation (mm) from April to September in Dalarna county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1431802-6765800 (close to the town of Mora).

County: **Dalarna**
Location: **Mora**

Average temperature (°C) for 5 or 6 day periods

Coordinates for the places (RT90): 1431802-6765800 1410342-6767414 1410342-6755408 1439689-6755408

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31
1961	-2	-12	-10	-8	-16	-7	-11	-8	-3	2	-3	2	2	5	2	-1	0	-1
1962	-7	-3	-6	-3	-7	-14	-5	-2	-7	-4	-6	-9	-9	-12	-14	-8	-7	-4
1963	##	-20	-16	-13	-8	-5	-13	-21	-12	-18	-9	-6	-7	-5	-10	-7	-5	-5
1964	-2	-10	-6	-8	-1	-4	-5	-2	-11	-13	-6	-2	-2	1	-4	-8	-6	-4
1965	-6	-13	0	-3	-5	-8	-3	-3	-5	-5	-7	-18	-11	-6	-4	1	-4	0
1966	##	-6	-13	-21	-13	-10	-20	-20	-22	-16	-7	-6	-1	0	-11	0	-3	-5
1967	-6	-19	-8	-5	-24	-18	-8	-3	-9	-4	-1	-1	-2	3	2	-1	-1	2
1968	##	-24	-16	-7	-6	-10	-7	-7	-11	-15	-14	-3	-4	-3	-5	-5	3	5
1969	-9	-11	-11	-3	-7	-2	-13	-4	-21	-14	-11	-13	-8	-6	-13	-10	-7	-2
1970	##	-19	-9	-15	-9	-9	-13	-13	-21	-21	-13	-14	-7	-2	-5	0	-2	-5
1971	##	-4	-4	-3	0	-8	-3	-4	0	-2	-5	-13	-14	-3	-5	-1	-4	-3
1972	##	-11	-12	-11	-5	-11	-7	-7	-2	-5	-6	-3	-4	-5	-2	1	2	-1
1973	1	2	-4	-3	-1	-2	0	-6	-3	-2	-9	-10	-2	-5	0	1	4	3
1974	-3	-2	-1	-3	-6	0	0	-5	0	-4	-1	-2	-3	-6	-6	-1	0	2
1975	-2	-7	-2	-1	-1	-2	-5	-6	-10	-7	-3	-6	0	0	-2	-3	-2	-2
1976	##	-7	-11	-7	-14	-15	-8	-9	-4	-5	-2	1	-2	-7	-12	-7	-9	1
1977	-1	-8	-6	-7	-9	-14	-8	-8	-13	-10	-10	-9	-5	-1	1	2	0	-4
1978	##	-2	-9	-1	-4	-7	-4	-14	-20	-15	-12	1	0	-1	-2	-13	-8	3
1979	##	-9	-9	-13	-10	-19	-17	-10	-15	-14	-5	-2	0	1	-4	-11	-3	1
1980	##	-9	-10	-7	-8	-19	-22	-21	-6	-4	-12	-6	-7	-3	-4	-11	-10	-4
1981	##	-11	-7	-16	-4	-4	-2	-6	-8	-9	-11	-7	-10	-6	-10	-5	-1	0
1982	##	-20	-8	-10	-10	-11	-8	-8	1	-10	-9	-4	-2	-5	0	0	1	2
1983	-1	0	-3	-12	0	-3	-11	-11	-6	-7	-7	-7	-3	-4	-2	1	-2	-2
1984	-4	-13	-3	-15	-19	-11	-1	-6	-7	-8	-5	-4	-4	-2	-6	-7	-9	-4
1985	##	-19	-15	-8	-14	-16	-15	-23	-15	-21	-12	-3	-7	-2	0	-7	-1	-2
1986	##	-20	-5	-16	-7	-7	-9	-9	-14	-16	-15	-8	-5	0	-1	-1	0	1
1987	##	-25	-26	-18	-9	-12	-4	-8	-7	-14	-9	-12	-20	-12	-9	-5	-2	1
1988	0	-4	0	-2	-1	-3	0	-3	-1	-5	-9	-7	-6	-6	-8	-7	-2	0
1989	-2	-3	1	1	-1	2	3	1	0	-3	-2	1	0	1	2	-1	1	3
1990	-8	-2	-2	-2	-2	-4	3	2	-1	-1	4	0	-2	-1	-3	7	5	4
1991	-4	-4	-14	-6	-2	-3	-11	-14	-12	-6	1	-5	-4	-1	0	0	1	3
1992	1	-6	1	-4	-8	0	-5	-3	-5	-7	-1	1	2	4	-1	2	1	-2
1993	-3	-1	-1	0	-3	-10	2	-1	-3	-4	-12	-4	-9	-1	-1	3	1	-3
1994	##	-8	-4	-16	-4	-10	-13	-11	-16	-15	-15	-13	-10	1	0	-5	-3	0
1995	-9	-3	-6	0	-6	-17	-2	-5	-5	-2	-3	-5	-3	-2	-2	-1	1	-2
1996	##	-4	0	-5	-11	-12	-12	-16	-10	-13	-11	-1	-2	-2	-5	-5	-4	-3
1997	##	-9	-2	-2	-4	0	-4	0	-8	-9	1	0	3	3	0	-6	-5	3
1998	0	-2	2	-4	-7	-9	-12	-2	-2	2	2	2	-7	-8	-3	0	1	4
1999	-1	-10	-13	2	0	-15	0	-16	-6	-5	-5	-5	-3	-3	-7	0	-3	3
2000	-5	1	-3	0	-11	-5	-6	0	-1	-10	-8	-1	-4	-1	-3	0	0	0
2001	-4	-2	-8	-12	-3	-4	-20	-9	0	-1	-12	-20	-12	0	0	-10	-9	-3
2002	##	-9	-2	0	-8	-11	2	-1	-4	-3	-6	-5	-6	-1	-3	0	-1	3
2003	##	-10	-2	1	-1	-9	-6	-7	-3	-7	-8	-7	-7	1	2	2	2	3
2004	-9	-4	-2	-10	-12	-6	-4	-6	-4	-1	-4	-8	-6	-2	-2	3	-2	2
2005	-3	2	1	1	-5	-3	0	-3	-4	-6	-10	-9	-13	-2	-9	-7	2	2
2006	##	-9	1	-7	-6	-1	-7	-7	-10	-6	-2	-8	-9	-15	-9	-3	-8	-3
2007	0	0	-2	-4	-13	-8	-3	-12	-7	-5	-10	-3	-1	1	4	0	0	4
2008	-3	-1	0	0	-3	-2	-4	0	-4	-1	2	-1	-2	1	1	-4	-8	0
2009	##	-7	0	-6	-1	-8	-11	-11	-15	-10	-4	-6	-2	-1	-3	0	-3	-1
2010	##	-24	-16	-6	-7	-13	-9	-9	-12	-11	-17	-4	-9	-5	-3	0	-3	0
2011	-8	-6	-11	-5	-5	-9	-4	-7	-15	-14	-12	-3	-3	-2	-4	-6	2	-3
2012	-3	-11	-3	-6	-10	-7	-16	-8	-6	-4	0	-2	-2	-1	3	2	6	4
Average	-9	-8	-6	-6	-7	-8	-7	-7	-8	-8	-7	-5	-5	-2	-3	-3	-2	0
By quartile																		
Min. value	##	-25	-26	-21	-24	-19	-22	-23	-22	-21	-17	-20	-20	-15	-14	-13	-10	-5
Lower	##	-11	-10	-10	-9	-11	-11	-10	-12	-13	-11	-8	-7	-5	-5	-6	-4	-3
Median	-9	-8	-5	-5	-6	-8	-6	-7	-6	-7	-7	-5	-4	-2	-3	-1	-2	0
Upper	-3	-3	-2	-2	-3	-4	-3	-3	-3	-4	-3	-2	-2	0	0	0	1	2
Max. value	1	2	2	2	0	2	3	2	1	2	4	2	3	5	4	7	6	5
Range	23	27	28	22	24	21	25	25	23	23	21	22	23	20	17	20	16	10

Month	April						May						June					
Year / Day	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	-4	0	2	4	7	7	7	7	7	9	10	9	17	17	13	13	12	13
1962	0	-1	1	4	5	4	3	4	7	7	8	7	8	13	10	13	12	11
1963	-2	0	2	4	3	6	6	9	10	8	11	15	13	17	11	13	11	14
1964	-2	0	4	9	5	7	6	8	10	8	14	12	6	12	16	12	12	13
1965	3	-1	2	3	5	6	6	7	6	4	8	9	12	14	12	13	13	12
1966	0	0	-7	-5	1	7	7	4	8	12	8	9	10	14	19	20	16	15
1967	0	2	4	2	1	5	1	6	8	6	10	12	13	8	13	17	11	13
1968	0	-3	4	6	10	10	4	5	7	4	7	11	16	12	18	19	15	12
1969	1	5	1	0	3	4	2	7	9	7	9	13	8	15	17	19	18	17
1970	-5	-1	1	3	3	2	5	8	10	10	8	11	13	18	13	19	17	17
1971	0	2	3	4	2	0	7	11	11	11	4	12	16	11	12	9	13	14
1972	-2	2	2	3	3	2	10	6	6	8	11	8	11	15	12	14	12	20
1973	0	0	2	2	3	2	6	7	6	6	10	14	12	14	11	13	19	17
1974	3	4	0	5	5	8	4	6	9	13	11	8	10	9	14	17	16	12
1975	-4	-1	-1	3	5	6	6	12	9	13	8	7	7	15	13	12	15	12
1976	0	1	5	5	3	0	4	11	10	12	13	8	11	11	12	13	15	18
1977	-3	-7	0	1	3	4	6	7	7	8	11	9	10	10	19	16	13	11
1978	0	3	1	1	1	0	4	5	3	8	13	17	18	14	11	14	15	12
1979	1	1	2	1	3	3	2	3	9	10	11	12	17	16	15	14	18	11
1980	1	2	5	3	4	6	8	7	9	11	6	11	16	19	14	15	12	13
1981	3	4	4	2	-2	1	-1	9	11	13	15	11	14	13	9	10	13	10
1982	3	0	-1	5	5	4	4	6	7	8	8	14	18	9	7	10	10	13
1983	0	2	0	5	6	6	6	8	9	9	11	11	9	13	13	15	14	11
1984	-1	3	4	2	6	8	8	4	9	12	13	14	16	12	11	15	11	12
1985	0	-3	1	3	1	0	1	6	9	10	6	15	13	8	11	14	18	15
1986	0	-1	-4	-2	2	5	10	10	9	10	11	10	13	13	16	18	15	18
1987	1	0	2	2	4	9	7	6	4	7	11	7	10	11	9	9	13	13
1988	3	1	-2	3	-2	3	6	9	11	9	9	16	10	15	14	16	19	20
1989	-3	2	9	3	1	4	9	6	7	11	15	8	8	12	13	17	16	15
1990	-1	0	4	5	8	9	15	13	9	6	6	10	13	13	14	12	13	15
1991	5	5	7	-1	3	4	6	7	8	7	7	10	7	9	11	11	12	12
1992	-2	0	1	0	1	6	7	6	8	15	15	17	17	17	16	12	13	16
1993	1	-1	1	3	7	12	10	9	10	13	15	8	10	12	7	9	10	14
1994	3	1	4	2	7	8	6	10	10	6	9	8	11	10	12	9	11	16
1995	-1	-1	3	1	5	-1	7	5	1	4	8	15	15	13	13	12	15	14
1996	-1	4	1	7	3	4	4	4	9	2	9	8	12	15	13	11	12	14
1997	3	0	2	2	1	5	6	5	9	8	5	9	13	16	17	11	12	14
1998	-4	-1	-1	2	6	9	6	10	11	13	5	11	8	12	13	11	13	14
1999	3	6	1	2	6	7	4	3	3	12	12	11	14	12	15	15	13	15
2000	-2	0	3	5	7	9	7	12	11	13	10	9	9	12	13	12	14	12
2001	4	2	-2	1	4	6	6	11	11	8	9	9	10	9	10	13	14	18
2002	3	3	4	4	10	6	8	10	13	9	12	11	16	18	14	16	13	12
2003	1	-2	3	7	6	3	4	8	9	9	10	12	16	15	12	12	13	14
2004	1	3	4	8	6	6	10	14	7	9	7	10	14	11	13	9	12	14
2005	5	3	6	3	4	7	6	5	8	4	11	10	8	10	11	16	16	13
2006	-2	1	2	3	4	6	8	13	8	6	9	8	11	14	18	18	14	14
2007	4	0	8	5	7	9	9	8	7	9	11	10	15	20	12	13	14	14
2008	3	0	1	4	7	11	9	12	7	3	9	14	18	18	9	12	12	14
2009	4	4	5	4	8	11	9	7	7	9	11	14	10	9	10	9	16	20
2010	1	3	5	2	3	7	4	5	8	13	11	10	13	12	11	11	14	16
2011	4	6	6	9	11	9	3	10	11	9	11	11	15	18	14	12	12	18
2012	-1	-1	3	1	4	7	5	6	7	9	15	11	7	12	12	12	13	13
Average	0	1	2	3	4	6	6	8	8	9	10	11	12	13	13	13	14	14
By quartile																		
Min. value	-5	-7	-7	-5	-2	-1	-1	3	1	2	4	7	6	8	7	9	10	10
Lower	-1	-1	1	2	3	4	4	6	7	7	8	9	10	11	11	11	12	12
Median	0	0	2	3	4	6	6	7	9	9	10	11	12	13	13	13	13	14
Upper	3	3	4	4	6	7	7	10	10	11	11	12	15	15	14	15	15	15
Max. value	5	6	9	9	11	12	15	14	13	15	15	17	18	20	19	20	19	20
Range	11	14	16	14	13	13	15	11	12	13	11	11	12	13	12	11	10	10

Month	July						August						September					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30
1961	15	13	15	15	13	14	12	12	12	12	10	12	11	9	10	11	9	9
1962	12	14	11	12	13	12	12	11	11	11	11	10	10	9	7	8	7	8
1963	18	13	12	14	15	14	17	15	13	14	12	12	12	11	9	9	9	6
1964	11	10	14	17	14	13	11	15	12	12	10	11	10	10	7	7	9	8
1965	10	10	11	16	16	12	11	12	11	14	13	11	12	12	8	9	11	10
1966	14	14	13	17	19	13	13	14	11	13	10	13	12	8	9	7	6	3
1967	13	16	13	17	14	16	17	12	14	12	13	13	12	11	11	9	8	7
1968	20	13	11	13	13	16	16	16	10	10	15	14	15	15	7	5	4	6
1969	13	13	14	16	18	18	19	19	17	16	13	13	10	13	12	7	6	5
1970	13	16	13	13	12	14	16	15	13	13	14	13	11	8	10	9	5	5
1971	19	18	13	11	12	15	16	15	12	13	12	10	9	11	6	9	9	5
1972	17	17	17	20	17	15	15	16	13	13	10	11	11	11	6	9	7	4
1973	20	18	15	16	14	16	16	13	15	14	8	11	12	9	7	6	5	3
1974	14	13	13	14	14	11	12	12	12	13	14	14	13	11	9	10	8	7
1975	16	18	16	16	15	17	19	22	15	12	13	12	13	9	11	11	9	7
1976	15	15	17	18	16	11	11	15	16	15	14	13	7	7	8	5	5	2
1977	15	17	12	10	11	14	16	13	14	12	9	12	13	8	5	8	7	6
1978	13	13	14	10	14	18	17	12	11	14	11	9	10	9	9	8	4	3
1979	11	15	15	13	13	14	12	13	13	15	12	10	11	13	8	9	6	7
1980	15	15	14	14	15	18	16	13	15	14	11	10	12	13	9	9	9	9
1981	13	18	16	13	15	17	15	16	18	11	11	10	11	12	8	6	9	10
1982	13	15	18	18	15	17	22	17	12	12	11	12	8	8	11	11	8	10
1983	13	21	18	12	16	16	15	19	12	13	14	14	14	8	11	11	6	6
1984	12	17	16	16	13	14	18	15	14	13	14	11	8	11	8	8	8	5
1985	15	16	16	13	13	14	14	13	14	15	12	12	10	8	9	6	5	5
1986	18	13	13	15	13	16	15	12	12	11	8	8	9	6	4	6	5	4
1987	14	15	13	16	18	12	12	9	11	13	11	9	10	10	9	6	7	6
1988	18	16	16	17	16	13	12	15	14	13	12	12	12	12	9	10	9	8
1989	17	19	13	11	18	16	13	15	15	14	13	9	11	10	8	10	13	7
1990	13	13	14	16	14	17	18	13	15	14	11	13	11	10	9	7	5	4
1991	17	21	15	14	15	18	19	15	12	14	14	13	13	8	9	8	8	5
1992	11	16	14	15	17	14	13	14	13	13	11	12	9	9	8	8	10	6
1993	15	12	14	15	15	13	14	14	11	11	10	9	9	8	5	4	8	4
1994	17	20	21	17	19	21	20	15	15	11	12	10	10	10	8	6	8	4
1995	11	14	17	14	14	19	18	13	16	17	15	9	12	11	9	7	8	5
1996	12	13	14	13	17	13	13	15	16	18	17	14	11	7	6	7	6	7
1997	19	17	17	17	18	16	17	20	17	18	16	18	16	11	9	8	9	6
1998	14	14	14	13	16	14	14	13	13	11	11	10	9	13	13	10	10	6
1999	14	17	20	15	15	16	18	13	11	12	9	13	16	14	10	12	11	10
2000	15	12	13	14	15	14	15	12	15	12	11	13	9	12	6	7	7	10
2001	19	21	13	13	16	16	13	13	14	16	15	13	11	10	10	12	8	4
2002	13	15	17	18	15	18	17	18	18	18	18	16	14	14	12	8	5	6
2003	15	15	18	21	19	18	17	16	15	15	13	9	10	12	13	10	9	6
2004	13	13	12	14	15	16	18	20	16	13	11	12	13	11	11	10	9	8
2005	17	19	19	16	14	14	14	14	14	14	15	12	12	12	9	9	10	10
2006	19	19	15	16	19	18	17	18	16	15	15	14	13	11	13	11	14	12
2007	16	14	14	14	15	14	15	19	16	14	16	8	8	11	9	5	11	6
2008	17	12	15	13	18	20	14	12	14	13	12	11	12	9	7	7	8	7
2009	19	12	15	16	14	14	16	17	12	13	13	13	14	12	10	10	10	8
2010	18	17	18	17	14	16	15	17	18	13	13	9	8	11	11	8	8	4
2011	17	18	13	15	16	19	18	14	13	14	13	14	13	11	12	8	9	12
2012	16	16	14	13	15	16	15	13	15	15	12	11	13	9	10	8	5	7
Average	15	15	15	15	15	15	15	15	14	13	12	12	11	10	9	8	8	6
By quartile																		
Min. value	10	10	11	10	11	11	11	9	10	10	8	8	7	6	4	4	4	2
Lower	13	13	13	13	14	14	13	13	12	12	11	10	10	9	8	7	6	5
Median	15	15	14	15	15	16	15	15	14	13	12	12	11	11	9	8	8	6
Upper	17	17	16	16	16	17	17	16	15	14	14	13	13	12	10	10	9	8
Max. value	20	21	21	21	19	21	22	22	18	18	18	18	16	15	13	12	14	12
Range	10	10	10	11	7	10	11	13	8	8	10	10	9	9	9	8	9	11

Month	October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	9	11	8	7	8	6	1	3	1	-1	-1	-5	-10	-13	-12	-3	-13	-9
1962	10	7	2	5	5	2	2	3	-1	-6	-10	-8	-5	-3	-12	-14	-11	-18
1963	5	5	2	5	7	4	2	3	0	-5	-11	0	-3	-6	-6	-11	-12	0
1964	3	8	6	5	3	-1	1	-1	1	-2	-3	-7	-3	0	-2	-9	-9	-14
1965	5	6	5	3	2	6	2	-2	-9	-9	-17	-4	-9	-11	-20	-14	-11	-14
1966	6	2	1	7	5	-2	-1	3	0	-5	-2	0	0	0	-6	-8	-9	-8
1967	10	5	7	0	3	5	4	5	1	0	2	0	1	-12	-8	-14	-10	-15
1968	5	0	3	1	3	0	-7	-9	-12	-11	-1	-1	-10	-7	-11	-4	-3	-8
1969	3	9	5	9	3	2	-5	-1	1	-3	-12	-15	-11	-14	-3	-13	-11	-4
1970	6	9	6	6	1	-2	-7	-8	-5	0	2	-7	-6	1	-5	-2	-6	-9
1971	5	7	2	5	3	3	3	-7	-3	-11	-10	1	-2	-5	-6	0	-1	-6
1972	6	9	5	3	-1	4	2	3	1	-7	-2	-1	4	-2	1	1	-2	-2
1973	8	4	-1	-4	-3	1	2	2	-8	-8	-6	-15	-10	-11	-7	-15	-5	-1
1974	5	4	1	3	1	1	-1	-3	3	0	-4	-1	-4	-2	-3	-5	2	-7
1975	8	4	2	2	2	6	6	-1	2	-1	-4	0	-1	-3	-4	-8	-2	-1
1976	3	5	2	2	3	0	-1	4	-2	-4	-6	-1	-4	0	-5	-9	-15	-19
1977	2	4	5	6	9	7	5	3	3	-6	-5	-8	-9	-2	-1	-4	-4	-8
1978	4	6	6	4	1	2	4	4	3	2	-2	-9	-8	-17	-10	-12	-9	-23
1979	1	6	7	4	0	-3	-1	-3	-5	-1	-3	-2	1	-10	-18	-15	-6	-1
1980	6	7	4	2	-3	-6	-5	-4	-6	-5	-2	-17	-8	-9	-2	-5	-4	-2
1981	10	5	4	0	-1	1	-1	-1	-3	0	-2	-7	-6	-15	-21	-20	-11	-9
1982	9	5	2	0	2	4	2	1	3	0	0	-1	-3	-5	-10	-4	-1	-5
1983	7	3	5	6	3	5	4	5	-3	-2	-5	-8	-2	-7	-6	-5	-5	-2
1984	9	8	4	6	2	5	7	0	-2	-4	-1	0	1	0	-4	-3	-2	-5
1985	12	8	5	5	2	2	-2	0	-5	-8	-8	-9	-6	-18	-8	-12	-1	-23
1986	7	4	6	4	0	5	0	2	1	2	1	4	1	-2	-4	-7	-12	-12
1987	4	8	7	7	4	3	2	-3	1	1	0	-7	-7	-5	-5	-9	-5	-4
1988	7	6	3	3	-1	-3	-2	-3	-1	-6	-2	-11	-12	-6	-7	-11	-6	-3
1989	5	3	1	3	7	4	4	4	3	-1	-8	-5	-4	-7	-17	-7	-5	-9
1990	7	5	7	6	-2	2	-1	1	0	-2	-9	-7	-1	-6	-5	-3	-4	-3
1991	6	6	5	3	2	2	3	-1	0	-9	2	3	-1	-2	-2	-3	-8	-3
1992	6	5	-1	-2	-3	-5	-1	-1	-1	-2	-4	-2	2	-2	-3	0	-8	-4
1993	6	6	0	0	-2	1	-3	0	1	-5	-4	-7	-2	-5	-11	-3	-8	-9
1994	1	7	5	-2	3	3	1	1	-5	-4	1	0	-3	1	-6	-3	-2	-2
1995	6	11	6	9	6	3	-5	-4	-4	-8	0	-5	-8	-4	-2	-10	-20	-21
1996	6	8	5	6	5	3	4	-3	-4	0	-5	-10	-1	0	-11	-15	-12	-8
1997	5	5	3	3	-2	-1	-3	1	2	0	-3	-7	-9	-2	-1	-4	-8	-5
1998	2	5	4	0	4	2	-3	-5	-3	-9	-1	-2	-1	-8	-3	0	-6	-4
1999	8	4	4	2	3	5	6	4	2	-3	1	4	-5	-7	-13	-11	-4	-8
2000	11	10	8	8	6	1	4	5	4	3	3	3	4	4	3	-3	-7	-8
2001	9	10	7	5	1	6	2	-4	0	1	0	0	0	-4	-5	-4	-13	-17
2002	4	1	1	-4	0	0	-7	-2	-9	-1	-3	-4	-3	-10	-9	-9	-17	-11
2003	7	3	2	0	-4	0	3	0	0	-2	-4	1	2	0	-2	-2	-6	-7
2004	7	5	2	5	5	1	2	2	3	-7	-7	-8	-2	0	-2	-3	-7	-5
2005	8	8	7	0	-1	4	7	7	4	-3	0	-5	-2	-3	0	-10	-4	-6
2006	9	9	7	5	6	0	-4	-1	-3	2	3	6	5	4	4	-4	-2	-1
2007	7	5	3	4	4	4	2	-1	-2	-1	-2	-4	-1	1	-11	-11	-6	1
2008	6	5	7	4	6	1	-2	1	0	-2	-5	1	-3	-4	-5	1	-5	-12
2009	1	2	-1	1	2	1	1	1	-1	4	4	3	-5	1	-3	-13	-10	-15
2010	7	7	2	3	-4	3	2	-5	-3	-9	-7	-14	-15	-13	-15	-9	-22	-10
2011	10	5	2	4	4	6	8	2	0	-2	2	2	0	-5	-1	-1	-3	-1
2012	8	4	2	5	1	-2	2	-1	3	3	3	-3	-15	-11	-13	-4	-7	-3
Average	6	6	4	3	2	2	1	0	-1	-3	-3	-4	-4	-5	-6	-7	-7	-8
By quartile																		
Min. value	1	0	-1	-4	-4	-6	-7	-9	-12	-11	-17	-17	-15	-18	-21	-20	-22	-23
Lower	5	4	2	1	0	0	-1	-2	-3	-6	-5	-7	-7	-8	-10	-11	-10	-10
Median	6	5	4	4	2	2	2	0	0	-2	-2	-3	-3	-5	-5	-6	-6	-7
Upper	8	8	6	5	4	4	3	3	1	0	0	0	-1	-1	-3	-3	-4	-3
Max. value	12	11	8	9	9	7	8	7	4	4	4	6	5	4	4	1	2	1
Range	12	11	10	13	13	12	15	16	17	16	21	23	21	23	25	21	24	24

Figure A16-16. Average temperature (ºC), for 5 or 6 day periods, their quartiles and range in Dalarna county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Dalarna**
Location: **Mora**

Total precipitation , mm / 5 or 6 day peri Update colour for precipitation

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Coordinates for the places (RT90): 1431802-6765800 1410342-6767414 1410342-6755408 1439689-6755408

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	12	12	6	0	0	9	3	15	1	0	1	2	0	0	6	16	0	0	10	4	8	0	0	3	16	17	14	5	0	10	16	2	12	5	13	19
1962	0	7	8	10	18	8	6	5	15	5	0	0	8	9	0	0	0	26	17	16	6	1	4	0	0	23	1	17	18	13	0	2	9	13	12	3
1963	3	0	0	3	1	0	8	0	3	1	2	0	1	0	1	0	11	1	2	1	33	5	2	2	16	8	4	16	5	1	2	6	12	16	21	38
1964	0	0	0	0	0	8	3	1	10	3	0	10	1	0	0	0	0	0	0	1	1	1	0	10	6	5	4	0	3	8	32	12	5	14	36	2
1965	0	9	19	16	18	13	4	0	5	2	0	4	0	1	0	18	1	1	1	2	6	23	11	11	0	3	4	15	0	3	3	9	13	20	19	13
1966	1	0	2	4	2	33	17	8	3	7	29	11	6	8	11	0	7	25	47	3	0	0	7	0	0	2	0	9	22	1	9	1	0	0	9	4
1967	15	3	1	0	1	23	11	1	0	8	18	15	0	11	3	8	3	14	8	1	0	8	0	7	3	2	16	22	26	10	7	12	0	1	6	10
1968	2	1	10	5	16	4	10	11	2	0	2	0	4	0	0	16	13	0	20	1	0	1	0	0	29	29	15	3	3	2	11	11	0	5	5	29
1969	10	2	31	18	6	4	0	14	7	6	7	1	0	5	0	0	0	11	1	8	13	16	1	16	0	9	9	18	1	3	14	2	0	3	1	2
1970	1	1	8	1	2	7	3	6	3	1	4	1	9	23	1	10	0	10	5	13	0	15	16	18	2	0	2	4	11	18	9	6	0	0	15	4
1971	5	3	0	4	21	19	1	1	3	16	14	1	3	3	10	22	4	8	10	7	0	10	2	1	3	0	3	29	1	15	1	0	0	19	6	10
1972	1	0	1	10	10	13	11	10	7	2	1	2	5	1	0	0	0	21	27	3	5	0	2	13	0	1	0	14	17	26	4	8	30	7	6	6
1973	0	0	1	6	9	5	0	4	17	18	3	0	2	1	0	2	0	4	15	0	2	25	2	6	21	15	4	33	13	9	13	9	2	0	1	11
1974	1	6	21	1	5	14	4	13	21	4	0	0	0	0	0	15	4	0	0	2	0	0	1	0	10	0	0	0	5	20	11	9	5	8	5	19
1975	3	5	14	9	8	18	6	0	0	8	0	0	3	4	0	0	3	11	6	7	11	0	2	3	2	3	7	20	19	2	5	0	10	9	5	7
1976	13	9	1	12	0	1	0	2	3	0	9	0	0	5	3	0	1	1	3	3	1	0	5	3	13	0	7	2	0	2	1	2	20	12	2	0
1977	36	7	31	5	1	17	3	1	1	24	4	0	3	0	8	16	2	0	13	17	8	14	2	21	10	2	34	0	0	0	13	18	1	2	1	34
1978	6	2	2	5	3	33	12	0	2	0	4	3	13	4	11	2	11	8	0	7	9	0	5	0	0	0	13	10	4	1	1	14	10	0	3	14
1979	1	2	13	0	8	4	13	2	0	5	1	1	1	18	2	0	15	12	15	0	3	3	26	19	15	4	0	6	17	14	0	8	6	2	14	19
1980	3	4	0	0	8	1	0	9	4	0	0	0	0	6	2	1	0	21	0	0	0	14	1	7	0	7	0	14	9	15	20	3	8	22	48	25
1981	1	3	19	2	1	0	1	6	3	1	12	3	8	27	9	6	22	0	0	0	0	0	0	19	9	17	0	0	19	13	8	9	34	8	24	##
1982	24	0	0	0	7	10	2	34	1	0	0	3	14	3	17	13	3	0	0	35	0	1	0	4	26	27	0	3	13	20	1	1	1	2	6	7
1983	9	1	17	15	2	9	5	2	0	0	0	0	0	8	0	2	14	9	19	3	0	10	17	6	7	2	8	49	14	32	31	7	1	0	5	36
1984	9	10	19	8	1	14	16	22	0	3	4	1	1	9	0	0	0	22	7	0	2	2	1	0	10	1	9	6	2	19	22	0	16	7	37	26
1985	1	0	2	15	28	15	9	1	0	6	11	5	10	5	3	0	14	13	19	9	1	32	0	18	27	0	0	0	7	16	0	35	13	10	5	12
1986	33	3	8	9	13	6	3	1	0	0	1	0	12	0	2	1	28	15	3	0	5	35	23	14	0	4	16	7	5	9	25	58	0	4	0	13
1987	5	5	0	2	1	4	0	15	28	0	0	0	0	0	0	21	6	24	0	0	5	11	2	1	12	19	23	31	0	3	16	31	12	54	18	14
1988	15	1	4	9	10	42	19	16	7	13	9	18	19	2	0	2	5	13	9	6	2	27	0	0	15	0	0	2	3	21	22	1	0	7	10	17
1989	1	0	7	4	2	0	5	1	6	10	19	25	4	9	13	7	10	6	0	5	5	34	38	18	1	4	20	2	0	9	9	19	1	4	13	13
1990	3	3	12	10	11	34	3	4	8	4	26	9	3	13	9	1	5	0	64	2	9	5	2	5	0	0	0	2	16	7	5	0	5	42	33	7
1991	17	36	1	0	0	0	2	4	3	2	6	3	5	2	15	10	13	1	14	4	2	0	0	2	0	0	17	4	1	1	2	47	33	45	11	25
1992	0	4	2	2	1	0	4	8	21	0	3	0	8	3	5	4	7	10	38	2	15	3	19	57	8	1	11	0	14	0	1	0	7	1	0	0
1993	3	7	8	3	5	0	0	0	0	16	0	10	1	0	0	0	2	1	2	5	0	4	11	0	8	11	10	2	5	23	11	8	22	17	2	3
1994	22	24	20	7	6	19	3	2	1	0	0	0	9	7	2	1	7	13	15	0	4	0	3	14	0	0	0	0	4	3	16	8	3	8	12	4
1995	2	17	2	11	13	16	4	1	17	4	10	1	6	8	5	15	2	11	1	7	24	24	9	13	1	2	18	21	19	18	15	26	11	24	35	0
1996	0	4	3	1	2	0	2	4	3	4	2	5	0	0	1	0	0	7	0	0	0	0	20	5	21	2	34	3	5	18	2	2	16	25	15	6
1997	1	1	6	2	2	1	0	12	4	21	10	1	0	1	0	1	2	12	3	2	1	0	3	1	21	88	5	1	10	8	0	1	16	4	18	8
1998	12	5	9	3	11	0	12	6	2	1	2	1	3	0	9	0	1	11	0	2	6	9	2	12	15	9	0	1	6	3	19	23	2	30	2	23
1999	7	5	9	11	10	2	3	0	1	12	3	20	32	5	2	4	12	11	1	13	36	21	2	1	1	12	7	1	6	6	37	27	9	9	2	29
2000	8	2	0	2	0	12	1	1	3	0	11	7	20	1	3	1	0	1	36	0	7	22	39	6	5	2	0	5	28	38	7	1	2	2	36	43
2001	19	16	1	1	20	6	1	14	7	2	4	0	1	8	48	5	1	6	8	12	5	3	10	15	14	0	0	12	0	2	9	32	0	27	19	4
2002	0	0	1	10	32	31	14	10	9	1	13	2	5	5	0	22	0	0	1	0	4	0	0	42	6	0	2	3	29	7	0	28	25	25	21	39
2003	3	3	3	16	12	5	15	2	0	0	0	0	2	3	0	0	0	1	10	2	1	0	0	19	12	4	13	5	32	2	5	49	19	27	31	8
2004	3	8	12	15	2	14	6	3	3	3	5	5	0	0	7	17	5	0	3	1	0	6	9	13	15	1	9	6	3	3	1	16	3	15	21	17
2005	7	14	3	6	1	1	3	5	4	5	3	2	0	3	9	8	0	0	1	8	1	0	0	12	9	9	4	20	22	17	35	1	19	4	16	1
2006	1	3	2	18	5	0	3	23	1	7	0	5	17	0	2	0	1	42	10	9	8	1	2	10	7	0	4	12	17	15	1	1	0	17	21	27
2007	8	11	23	20	0	4	2	6	6	3	6	8	3	14	0	11	0	0	0	2	0	3	2	0	1	7	25	7	3	20	0	0	17	6	24	6
2008	15	22	20	22	8	10	12	5	0	0	5	12	6	12	9	5	2	8	4	30	5	0	0	1	10	0	12	33	2	0	0	4	22	10	12	12
2009	3	0	0	13	27	0	2	18	0	7	13	1	6	14	3	0	7	14	0	7	6	1	0	1	13	12	1	3	8	8	19	5	79	29	1	0
2010	1	0	0	4	1	9	18	5	0	21	8	15	1	0	0	2	15	21	7	6	4	2	0	2	14	4	62	7	23	6	0	3	69	29	6	16
2011	15	17	9	2	4	0	11	24	1	2	2	0	0	15	0	5	0	3	12	2	1	1	0	0	9	1	25	21	8	31	0	18	29	17	31	9
2012	30	4	4	4	2	3	2	1	2	6	5	4	0	7	0	1	0	4	2	11	16	22	13	8	37	21	20	9	1	1	17	4	26	16	8	15
Average	8	6	8	7	7	10	6	7	5	5	6	4	5	5	5	6	5	9	9	5	5	8	6	9	9	8	9	10	10	11	10	12	13	13	14	16
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	1	2	1	1	2	1	1	0	1	0	0	0	0	0	0	1	1	1	0	0	0	1	1	0	0	2	2	3	1	2	1	4	5	5
Median	3	3	4	5	5	7	3	4	3	3	3	2	3	4	2	2	2	8	5	3	4	3	2	6	9	3	6	6	6	9	8	8	9	9	12	12
Upper	12	8	12	10	10	14	10	10	6	7	9	5	7	8	7	10	7	13	13	7	7	14	9	13	14	9	14	15	17	17	16	16	18	20	21	20
Max. value	36	36	31	22	32	42	19	34	28	24	29	25	32	27	48	22	28	42	64	35	36	35	39	57	37	88	62	49	32	38	37	58	79	54	48	120

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	3	12	11	23	9	24	42	11	36	11	18	12	11	1	23	0	8	12	0	23	7	30	11	16	17	15	2	0	8	4	20	3	2	0	0	22
1962	34	1	16	11	19	5	11	25	2	4	32	16	43	6	1	5	1	1	6	0	0	4	1	20	10	0	6	6	1	0	0	3	40	2	3	3
1963	2	38	14	14	6	2	11	31	37	18	8	12	31	5	1	0	8	7	33	7	20	6	0	1	12	12	28	23	7	11	0	0	0	8	0	2
1964	6	16	3	28	29	8	15	2	7	13	4	26	0	7	12	39	15	2	0	25	41	5	21	0	1	0	8	14	10	7	13	12	18	4	0	9
1965	7	14	22	0	28	61	12	5	0	1	19	12	11	56	4	25	5	47	1	0	3	2	0	5	22	0	1	1	4	20	10	12	2	10	25	16
1966	14	10	35	9	27	20	53	44	32	0	0	0	14	9	23	1	2	0	12	7	9	24	9	1	39	6	4	8	2	6	11	35	21	18	13	19
1967	14	1	3	14	5	7	13	8	78	14	0	13	16	5	0	20	14	2	5	26	21	8	5	25	32	6	22	1	0	1	6	1	5	1	30	14
1968	0	8	9	7	13	1	0	2	36	13	0	6	7	13	4	3	14	11	13	0	10	20	4	53	56	0	0	2	6	2	0	1	0	20	7	14
1969	25	37	3	11	19	4	0	0	0	0	47	20	1	0	22	1	25	15	5	2	0	0	9	3	23	21	12	16	0	3	9	3	5	4	2	5
1970	21	13	11	27	59	30	0	6	11	12	0	3	9	17	11	18	0	8	41	23	2	14	1	5	17	13	10	19	25	2	4	1	4	0	2	3
1971	0	0	16	17	16	33	9	19	28	0	0	18	15	3	1	12	24	2	8	3	0	12	12	1	5	18	13	4	10	20	1	6	5	8	3	6
1972	21	36	1	5	12	15	16	12	5	8	2	0	0	28	16	0	2	1	3	0	11	2	7	2	9	4	8	1	24	6	15	13	7	2	1	0
1973	0	63	6	53	31	36	9	16	0	20	1	8	19	6	2	16	6	13	0	8	1	0	0	5	2	1	9	14	0	0	3	15	15	15	12	1
1974	23	19	29	14	6	21	10	1	8	7	1	24	17	14	8	4	24	28	25	19	9	11	14	8	1	26	27	11	4	13	9	4	1	12	2	19
1975	0	0	55	2	22	0	0	1	8	16	7	12	4	20	42	5	16	14	8	1	11	2	1	12	8	0	3	10	3	11	17	1	1	1	5	0
1976	1	10	10	8	5	5	29	1	0	1	3	20	1	34	28	0	1	0	3	6	23	7	4	4	31	20	21	0	4	11	38	17	6	5	9	7
1977	8	1	3	20	48	5	36	1	1	2	9	6	4	24	9	0	0	14	37	7	3	2	5	3	17	7	20	4	32	2	0	9	7	0	14	7
1978	9	24	6	7	11	0	30	3	11	13	23	9	28	9	1	2	13	2	1	1	1	7	1	3	8	1	20	2	1	10	8	0	5	1	4	5
1979	5	25	19	37	19	27	17	32	23	10	2	38	19	3	11	6	4	0	0	2	21	18	0	4	17	6	36	23	8	9	2	0	2	3	10	26
1980	3	3	26	8	7	0	31	14	8	16	30	15	6	6	18	11	5	4	8	24	5	67	16	22	0	0	24	31	6	0	1	1	15	11	5	12
1981	24	0	16	3	4	19	1	0	4	15	3	1	0	0	0	12	10	18	32	30	13	17	0	26	6	1	2	17	29	33	4	7	4	1	13	14
1982	26	6	0	20	6	1	0	26	14	22	12	5	11	15	12	30	30	10	0	1	5	14	16	3	3	4	15	16	49	11	4	17	7	5	11	0
1983	12	0	6	14	0	1	2	0	26	9	1	0	24	49	44	39	21	2	6	4	9	21	3	0	1	5	3	1	2	1	7	5	0	9	14	10
1984	0	0	53	7	4	3	11	3	16	1	0	11	23	3	17	5	80	7	75	13	13	21	18	26	3	6	0	6	17	9	1	15	1	17	10	4
1985	9	7	38	23	17	20	34	12	8	39	26	12	62	62	5	19	3	6	7	15	10	2	0	0	38	17	2	1	1	16	28	3	4	9	13	0
1986	12	17	8	7	35	10	21	23	8	53	62	26	2	23	35	3	8	9	1	2	1	10	6	13	9	14	15	15	14	7	31	6	13	16	9	28
1987	4	8	1	0	25	30	34	16	0	3	27	23	2	25	15	11	11	2	0	18	38	10	5	19	0	5	26	23	10	2	0	3	0	3	12	11
1988	16	15	16	49	5	17	6	0	38	25	15	5	22	0	12	2	17	14	1	25	7	0	2	17	3	0	0	2	0	10	13	1	2	7	2	16
1989	0	0	26	1	2	33	43	12	12	6	4	3	2	0	7	15	3	1	0	9	0	4	3	24	10	24	3	1	1	0	1	3	1	17	16	0
1990	38	21	1	6	10	28	2	8	6	29	11	23	58	25	2	22	10	5	13	4	0	6	0	20	8	0	26	9	10	3	0	2	1	2	13	19
1991	0	17	15	27	12	7	7	15	5	24	6	1	0	2	9	11	29	35	20	2	0	13	2	1	35	7	15	0	1	1	1	1	2	15	5	1
1992	6	12	30	17	8	9	14	14	55	19	20	26	47	1	4	15	9	5	1	1	12	13	17	14	17	5	20	14	22	12	20	0	3	4	0	0
1993	9	14	11	7	33	35	16	23	32	37	21	31	3	0	2	0	15	0	14	48	30	23	3	0	1	10	17	3	11	3	17	9	9	19	7	12
1994	0	3	2	18	1	15	2	9	0	21	34	16	5	35	34	13	0	24	3	3	1	0	12	25	11	4	17	2	0	0	5	21	1	17	1	33
1995	13	1	17	25	7	4	5	10	7	0	21	1	32	9	5	0	27	1	14	3	1	10	2	9	6	3	1	0	12	13	0	7	0	0	0	1
1996	27	25	11	2	1	26	7	0	0	0	21	52	0	2	9	0	0	18	11	2	8	23	1	24	19	17	7	49	7	6	18	3	9	1	1	0
1997	31	1	0	0	5	21	5	0	6	0	31	56	23	5	18	6	1	9	28	24	4	5	3	0	6	38	19	2	7	19	23	4	19	2	8	26
1998	8	31	30	21	10	26	11	8	29	17	14	13	0	15	42	3	1	15	1	4	19	28	28	16	1	7	2	1	13	2	4	0	3	0	8	12
1999	12	0	21	22	12	0	8	6	0	0	2	30	1	0	2	16	29	20	32	11	2	0	9	3	4	1	0	11	6	11	5	44	8	15	15	7
2000	9	21	63	53	25	4	6	9	14	42	6	8	1	9	1	0	0	15	16	22	37	3	17	57	17	37	14	34	25	20	1	25	22	3	0	28
2001	8	22	32	18	3	6	18	40	9	28	3	17	23	53	21	11	1	2	13	30	5	1	0	27	3	16	0	0	5	9	26	5	0	5	9	6
2002	40	4	3	16	61	0	11	4	12	0	0	23	6	8	3	8	13	2	7	0	8	3	25	3	0	9	27	1	14	17	7	1	0	0	0	4
2003	18	13	28	3	6	29	4	0	46	8	11	7	0	0	2	6	12	14	5	1	0	2	1	14	29	1	5	8	20	14	2	0	11	2	5	13
2004	24	4	15	9	3	0	23	3	3	37	6	34	14	0	14	16	8	9	15	5	0	8	24	0	1	2	7	6	16	7	7	2	9	4	15	1
2005	7	6	13	39	19	12	8	91	3	0	19	2	7	3	9	5	0	1	14	1	1	7	41	5	11	9	7	0	8	3	9	8	0	8	4	16
2006	1	13	3	0	10	47	2	2	47	13	40	25	13	3	0	1	4	10	16	26	0	37	20	64	1	2	14	26	22	2	18	16	6	1	0	10
2007	11	15	11	12	3	17	4	16	30	9	0	1	6	15	11	19	2	19	1	0	13	3	1	3	18	13	1	0	14	25	33	12	0	0	8	11
2008	10	2	17	28	3	7	42	12	24	33	3	11	18	6	0	0	0	10	37	13	2	3	11	6	0	11	8	8	2	21	26	11	12	10	4	0
2009	7	64	38	42	58	9	0	10	29	30	18	26	41	1	1	4	1	2	13	15	10	3	4	4	13	12	19	16	24	15	8	8	14	5	3	9
2010	7	0	67	13	16	26	7	8	12	24	39	7	0	0	10	23	54	0	0	5	0	20	0	8	7	8	13	1	1	1	4	0	6	16	5	7
2011	6	21	21	22	40	0	12	21	16	25	15	25	18	18	21	27	6	2	18	7	0	4	0	12	4	0	0	9	4	20	4	13	14	5	1	3
2012	15	93	18	15	9	30	11	19	1	11	33	61	1	1	11	12	17	27	14	1	11	29	3	25	10	5	8	5	4	8	5	10	11	2	7	16
Average	12	15	18	16	16	15	14	13	16	15	14	16	14	13	12	10	12	10	12	10	9	11	8	13	12	9	11	9	10	9	10	8	7	7	7	10
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	4	2	6	7	5	4	5	2	4	3	2	6	2	2	2	2	2	2	1	2	1	3	1	3	3	1	3	1	2	2	2	1	1	2	2	2
Median	9	12	15	14	11	11	11	9	10	13	10	13	10	6	9	6	8	7	8	6	6	7	4	7	8	6	8	6	7	8	6	4	5	4	5	8
Upper	17	21	26	22	22	26	17	16	28	22	21	24	20	17	17	16	15	14	15	18	11	17	12	20	17	13	19	15	14	13	15	12	10	10	11	15
Max. value	40	93	67	53	61	61	53	91	78	53	62	61	62	62	44	39	80	47	75	48	41	67	41	64	56	38	36	49	49	33	38	44	40	20	30	33

Figure A16-17. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Dalarna county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A17 GÄVLEBORG COUNTY♣

A17.1 Crop production and yield

Table A17-1. *Annual production (metric ton) in 2010-2014 for the major crops in Gävleborg county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses		161 500	130 900	178 700	184 100	163 800
Spring barley	20 800	23 700	22 800	33 600	30 700	26 320
Oats	7 000	9 900	8 800	10 400	9 200	9 060
Spring wheat		3 200	4 300	5 300	6 200	4 750
Potatoes	5 000	4 200	3 300	4 100	3 400	4 000

* Data from Jordbruksverket (2015)

Table A17-2. *Average yield for some of the major crops in Gävleborg county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Temp. grasses (total)	5 000	253	5
Spring barley	2 585	214	8
Oats	2 493	302	12
Potatoes	17 392	1 724	10

* Coefficient of variation = Standard deviation / Average

Table A17-3. *Coefficient of variation of farm-level yield for temporary grasses (total), spring barley and oats in Gävleborg county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Temporary grasses		44	46	52	65	49	77	53	56
Spring barley	36	38	27	30	32	42	33	39	35
Oats	50	55	35	36	32	43	39	48	42
Average	43	46	36	39	43	45	50	47	

* Based on farm-level yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

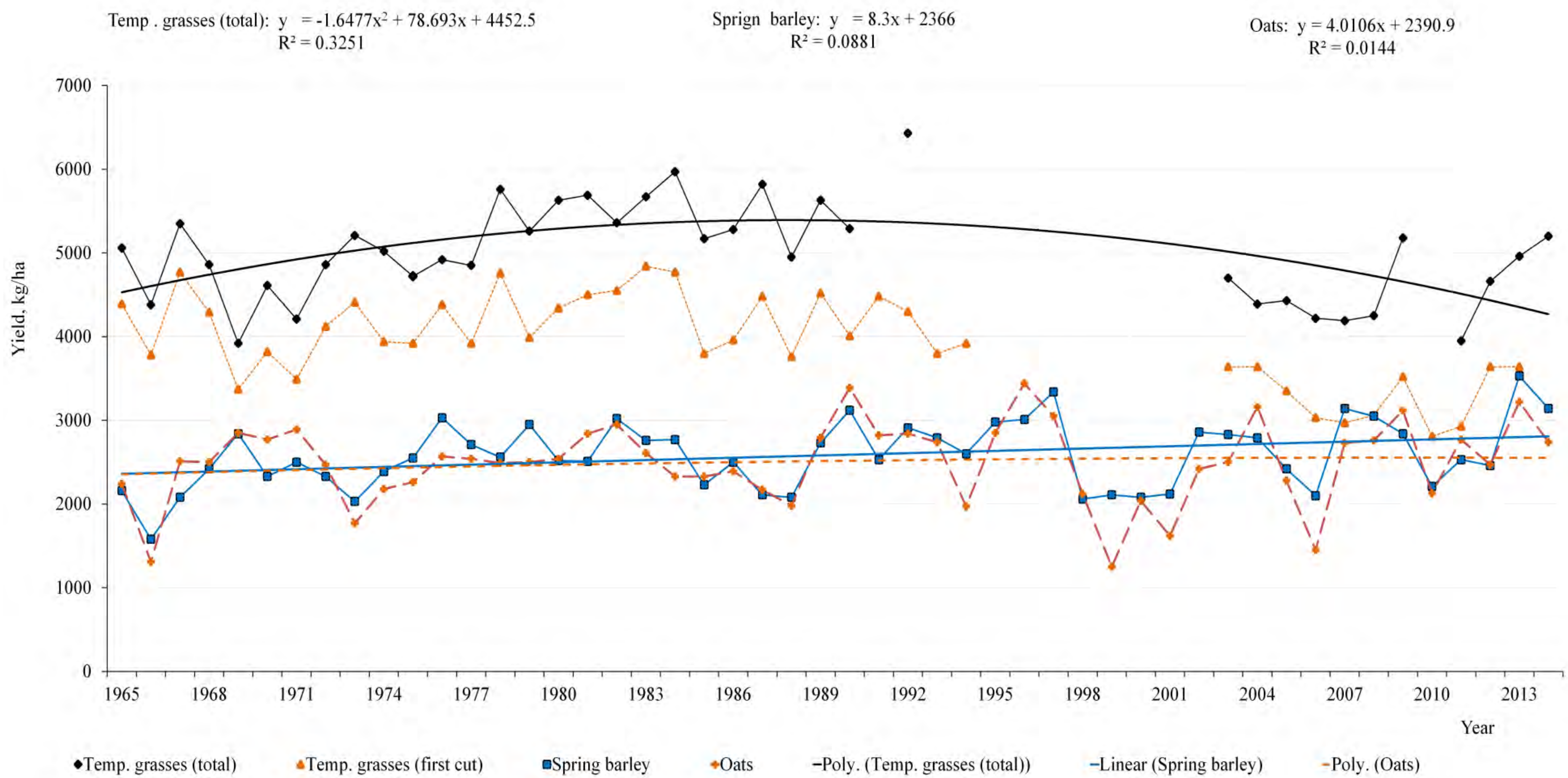

Figure A17-1. Average yield (kg/ha) per year of temporary grasses (total and first cut), spring barley and oats in Gävleborg county for the period 1965-2014, and the trend lines with respective equations for temporary grasses (total) and barley and oats. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

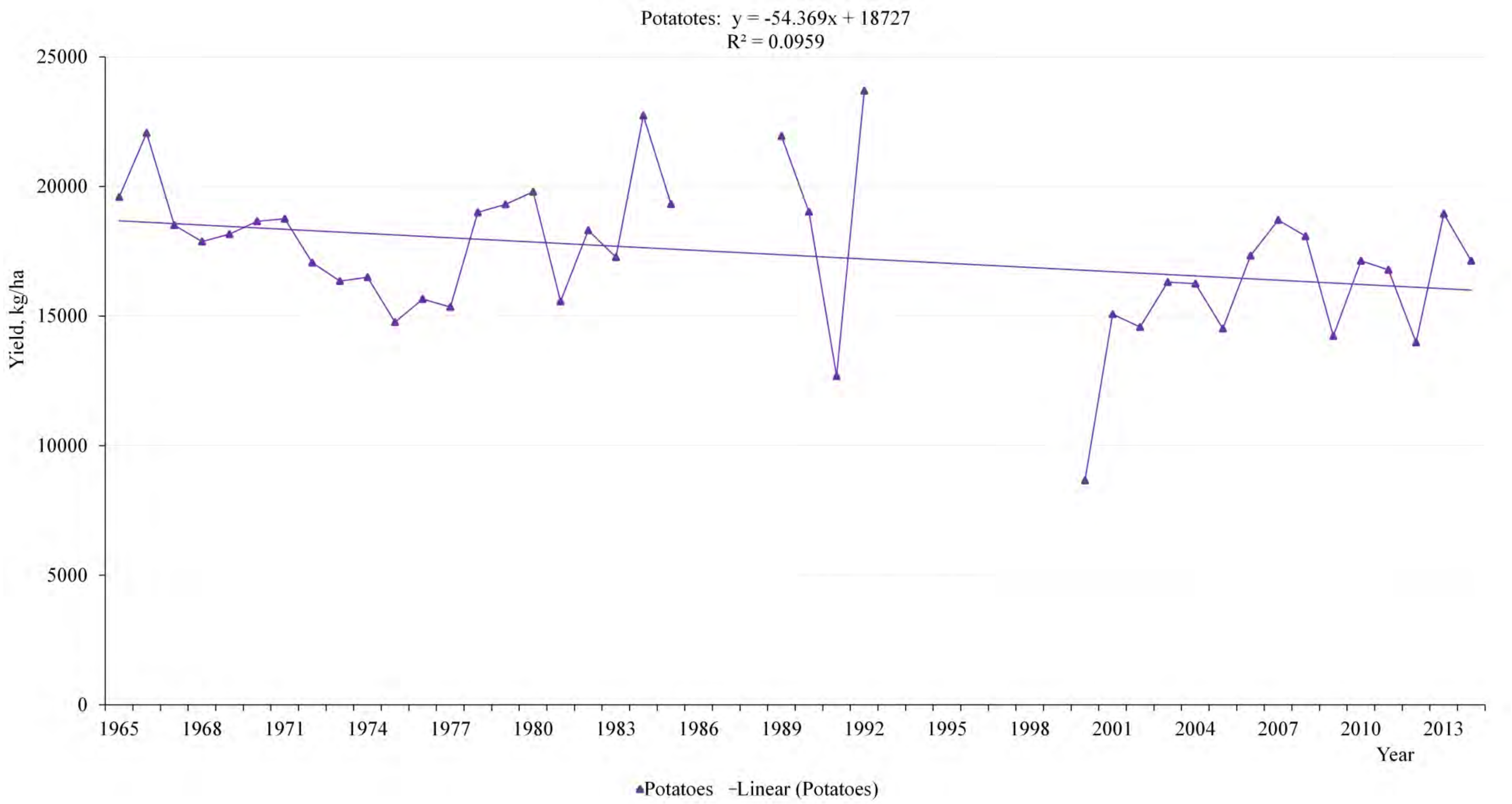

Figure A17-2. Average yield (kg/ha) of potatoes in Gävleborg county for the period 1965-2014, and its trend line with respective equation. The variable x in the equation is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

A17.2 Precipitation, temperature and cereal yield

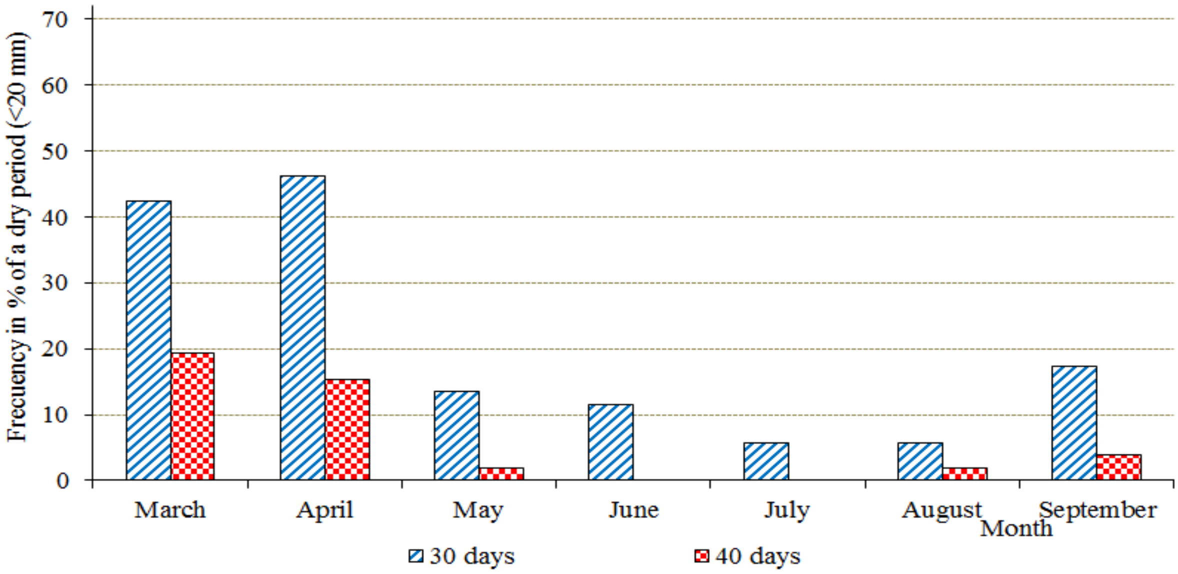

Figure A17-3. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Gävleborg county∗.

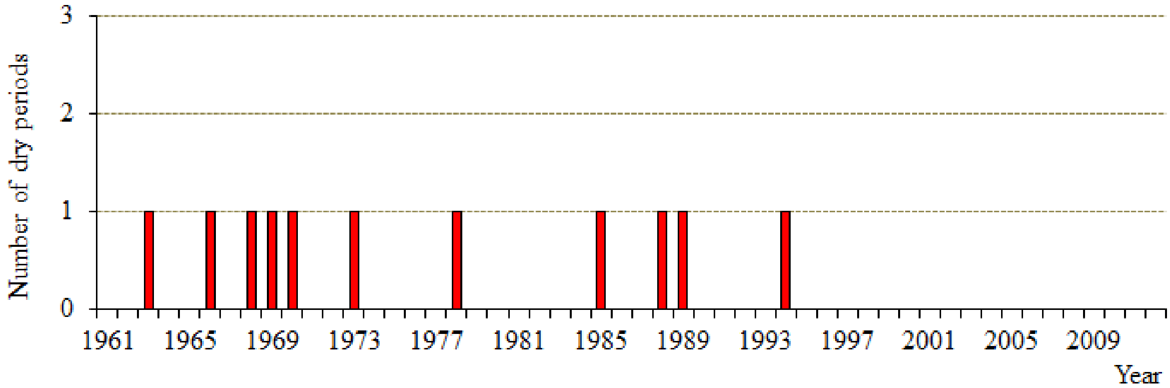

Figure A17-4. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 15 May to 31 July in Gävleborg county*.

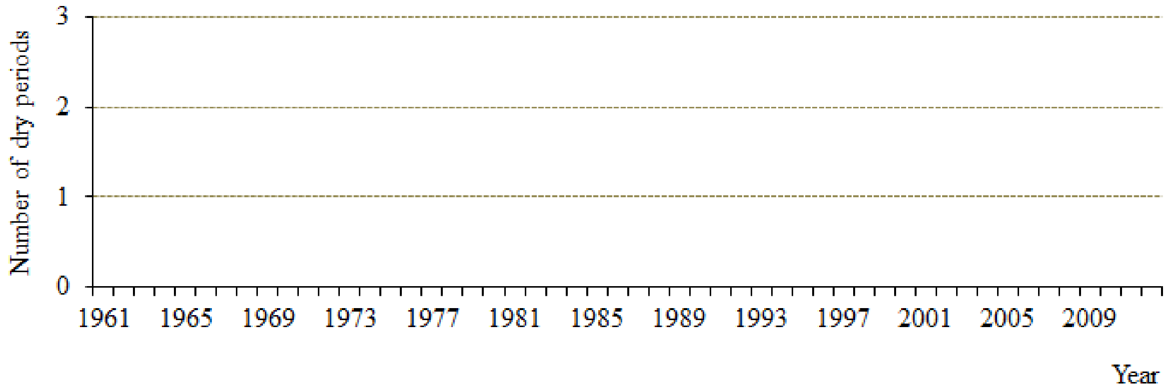

Figure A17-5. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 15 May to 31 July in Gävleborg county∗.

∗ The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

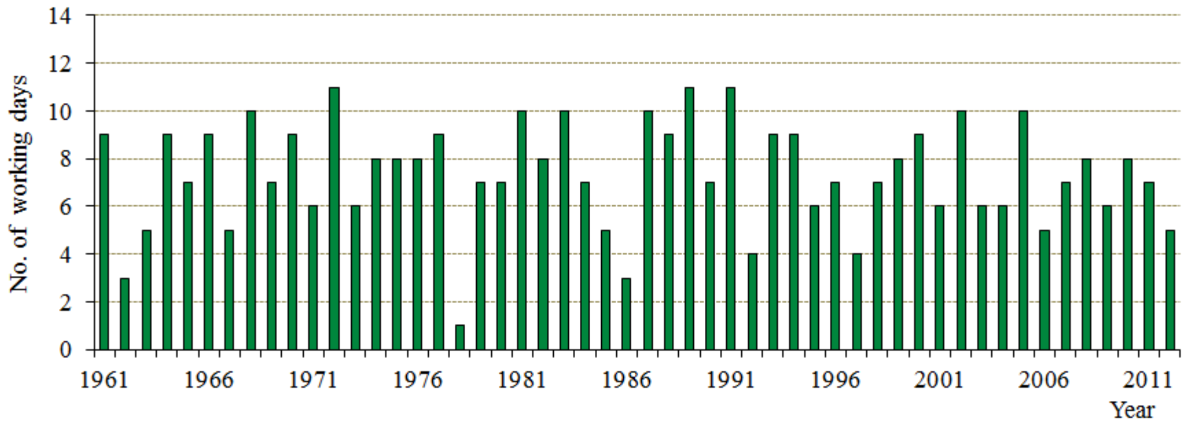

Figure A17-6. Estimated number of working days available for harvesting during the period 25 August-8 September in Gävleborg county (for definition of a working day, see Section 2.1)*.

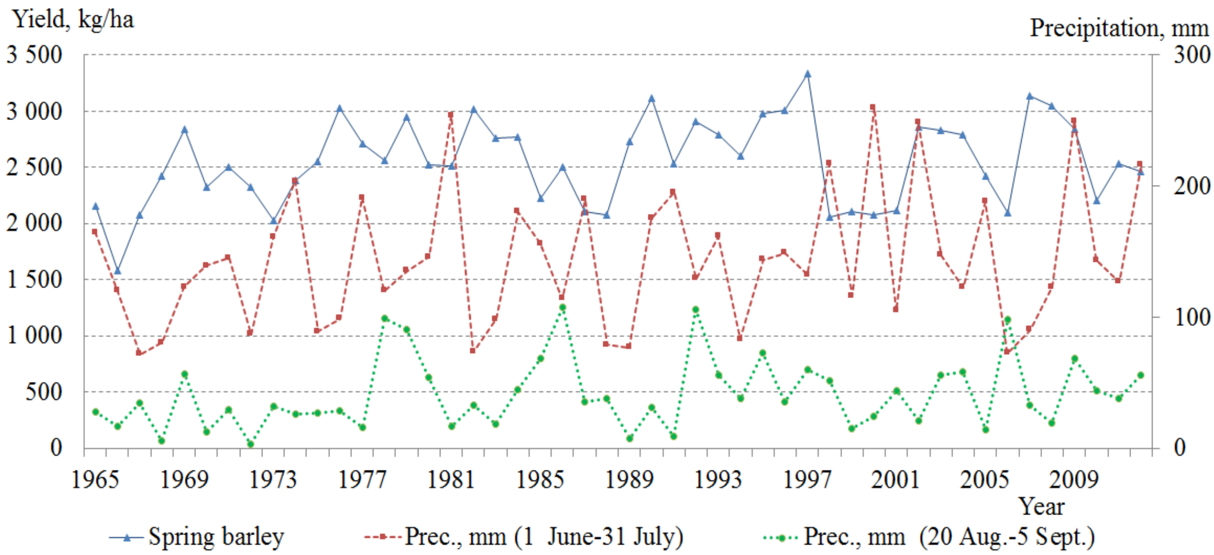

Figure A17-7. Annual spring barley yield (kg/ha) and precipitation (mm) in the periods 1 June-31 July and 20 August–5 September in Gävleborg county, 1965-2012*.

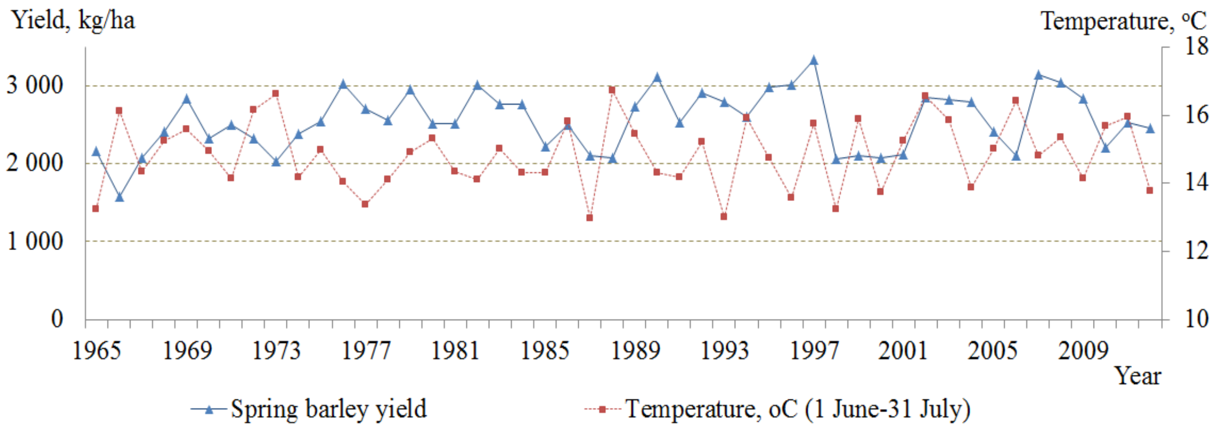

Figure A17-8. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Gävleborg county, 1965-2012*.

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* Precipitation and temperature from Luftwebb (2014). Yield data from from Jordbruksverket (2015).

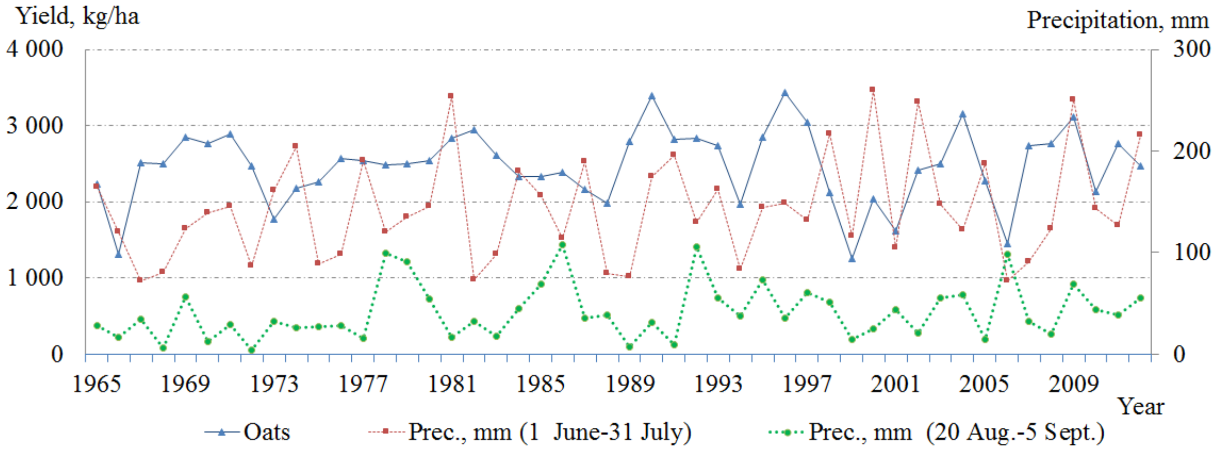

Figure A17-9. Annual oat yield (kg/ha) and precipitation (mm) in the period 1 June-31 July and 20 August-5 September in Gävleborg county, 1991-2012∗.

A17.3 Yield on farms

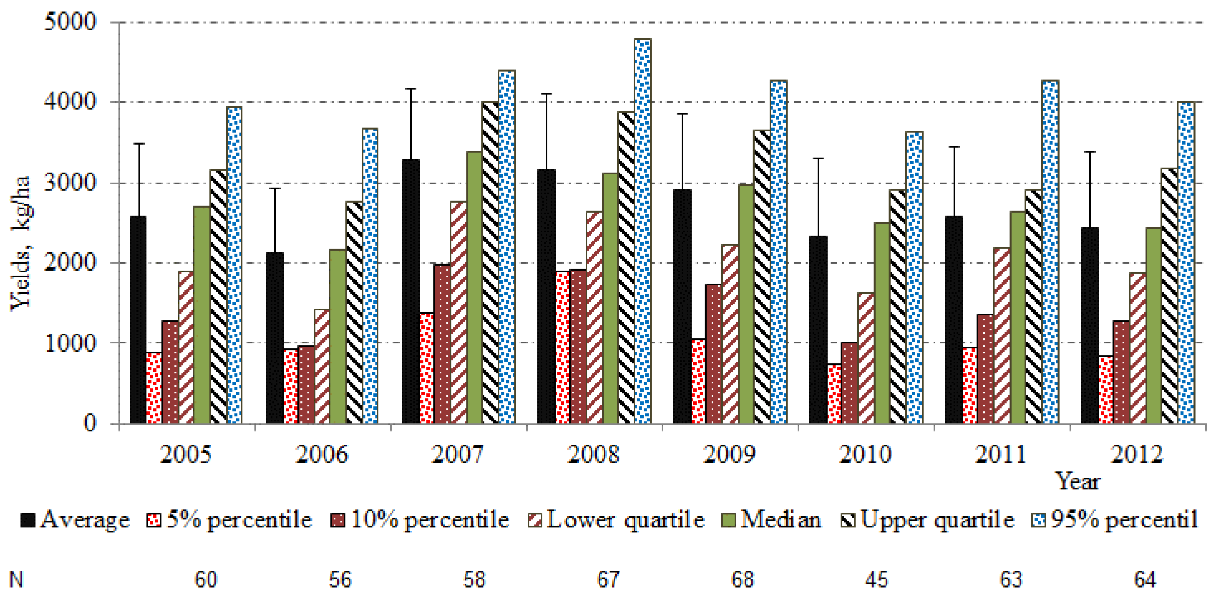

Figure A17-10. Average and estimated percentiles of spring barley farm-level yield in Gävleborg county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

∗ Precipitation from Luftwebb (2014). Yield data from from Jordbruksverket (2015).

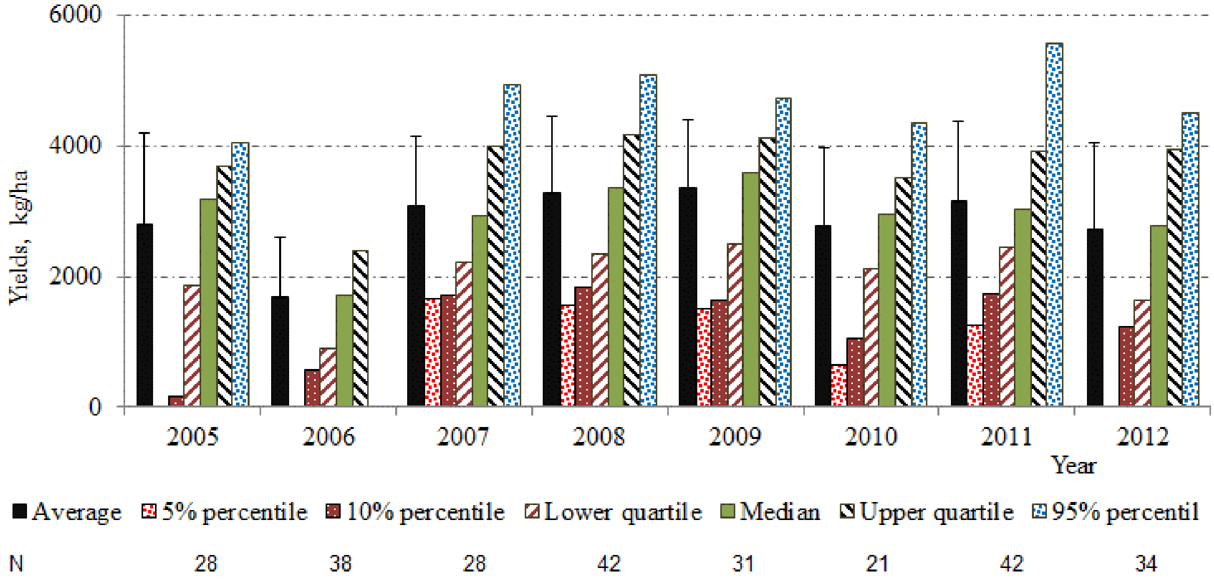

Figure A17-11. Average and estimated percentiles of oat farm-level yield in Gävleborg county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

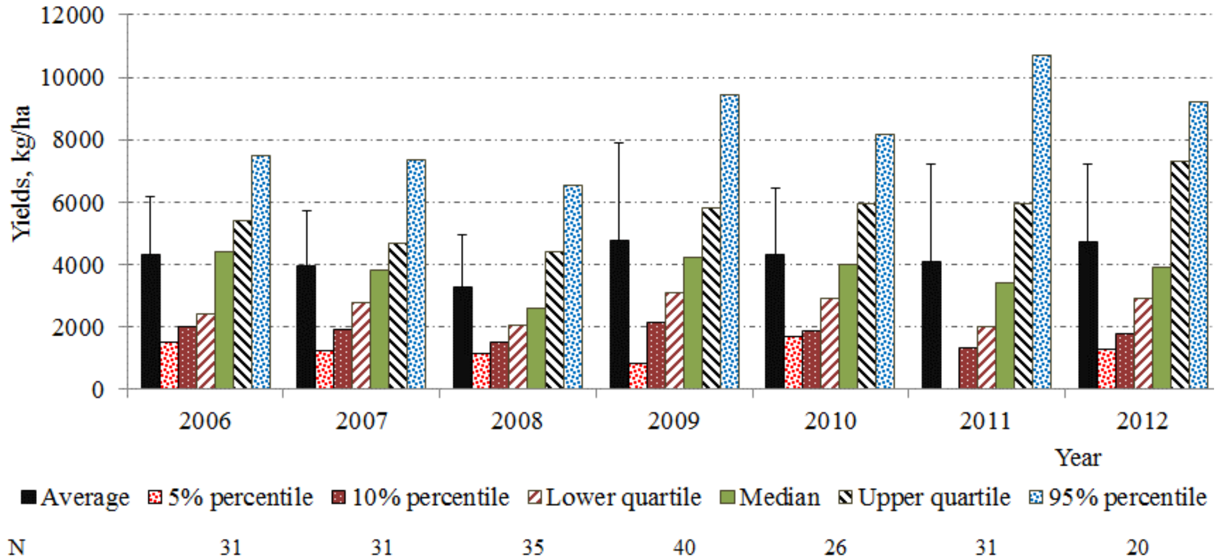

Figure A17-12. Average and estimated percentiles of temporary grasses farm-level yield in Gävleborg county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A17.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

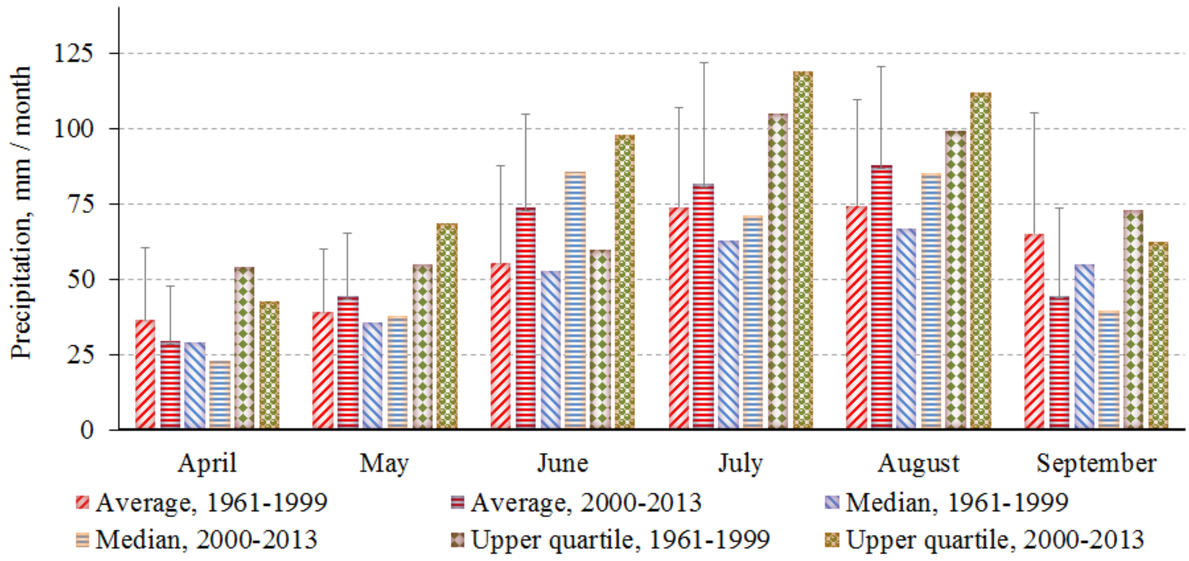

Figure A17-13. Monthly average, median and upper quartile precipitation (mm) from April to September in Gävleborg county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1532028-6803570 (close to the town of Bollnäs).

County: **Gävleborg**

Location: **Bollnäs**

Average temperature (°C) for 5 or 6 day periods

Coordinates for the places (RT90): 1532028-6803570 1551743-6800763 1531733-6791425 1555745-6783421

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	-1	-9	-4	-5	-11	-4	-7	-5	0	4	0	3	4	6	3	0	1	1	-1	1	3	6	6	6	7	6	7	9	10	9	15	17	14	13	13	13
1962	-3	-1	-3	-2	-6	-11	-4	0	-5	-4	-4	-5	-7	-9	-9	-5	-4	-2	1	0	2	4	6	4	3	4	7	7	8	8	8	13	10	14	14	12
1963	-11	-13	-13	-9	-3	-4	-9	-16	-10	-14	-8	-4	0	-3	-8	-6	-5	-6	-2	1	2	4	2	6	5	8	11	9	10	14	13	15	12	12	11	14
1964	-1	-6	-4	-2	1	-2	-3	-1	-10	-10	-4	-1	-2	3	-3	-6	-5	-4	-1	0	4	8	4	7	5	7	10	9	13	12	7	11	15	13	13	14
1965	-3	-10	1	-1	-2	-6	-2	-1	-3	-3	-5	-14	-9	-5	0	2	-3	1	4	-1	3	4	5	5	6	7	6	5	8	9	11	13	12	14	14	14
1966	-18	-5	-11	-16	-12	-10	-21	-18	-20	-13	-8	-6	-3	0	-12	0	-3	-4	1	0	-7	-7	1	7	7	3	8	12	9	9	10	14	18	20	17	15
1967	-2	-12	-8	-4	-19	-15	-5	-2	-5	-3	0	0	0	4	3	1	1	3	1	2	5	2	1	6	1	6	8	6	10	11	13	10	12	17	13	13
1968	-18	-17	-13	-5	-3	-8	-5	-5	-7	-12	-11	1	-2	-2	-4	-3	4	5	1	-1	5	6	9	10	4	6	7	3	6	10	15	12	18	18	16	14
1969	-8	-10	-8	-2	-6	-1	-8	-3	-17	-13	-11	-13	-7	-4	-9	-7	-5	0	2	6	1	0	2	3	1	7	8	6	8	11	8	14	15	18	17	19
1970	-11	-16	-7	-12	-7	-6	-10	-11	-18	-20	-13	-12	-6	-1	-3	0	-3	-3	-5	0	1	4	2	2	4	7	8	10	8	10	13	17	12	18	17	17
1971	-9	-1	-1	-1	1	-7	-1	-4	0	-1	-6	-12	-12	-2	-4	-1	-3	-3	0	2	3	5	0	0	7	11	11	9	3	10	15	11	12	11	13	15
1972	-7	-11	-10	-9	-4	-8	-5	-5	-2	-5	-3	-3	-3	-7	0	2	3	-1	-1	2	3	4	3	3	8	5	5	7	9	8	10	15	12	15	13	19
1973	3	5	-1	-2	1	-1	1	-3	-1	-1	-6	-9	0	-2	2	1	5	4	2	1	2	3	3	3	7	6	8	5	9	14	13	14	12	13	20	19
1974	-3	-1	-1	-1	-3	0	0	-4	1	-1	1	0	-2	-3	-3	-1	1	3	4	6	0	6	5	7	3	5	8	12	10	8	11	11	15	18	17	13
1975	0	-6	0	0	0	0	0	-1	-7	-3	1	0	2	2	0	-2	1	0	-2	0	0	3	6	7	7	11	9	12	8	8	7	15	13	14	15	12
1976	-8	-6	-11	-6	-11	-14	-6	-7	-3	-4	-1	2	-1	-5	-9	-8	-8	2	0	1	5	6	3	0	3	10	11	12	13	9	10	10	13	12	15	17
1977	0	-5	-4	-5	-8	-9	-7	-5	-12	-8	-8	-7	-4	1	2	2	1	-3	-1	-6	0	1	4	5	6	7	8	8	10	9	10	12	18	16	12	12
1978	-8	-1	-5	-1	-4	-5	-3	-11	-17	-13	-10	1	0	0	-2	-11	-8	3	0	3	2	0	1	1	4	4	4	9	12	16	17	15	11	13	15	13
1979	-16	-7	-6	-11	-9	-18	-15	-9	-13	-10	-4	-1	1	2	-2	-10	-2	1	1	1	1	1	2	4	3	4	10	12	11	14	16	16	14	14	19	13
1980	-10	-6	-7	-5	-6	-18	-17	-17	-6	-2	-7	-3	-5	-2	-3	-10	-8	-3	2	3	6	4	5	5	7	8	9	10	6	10	15	19	15	16	13	13
1981	-9	-8	-5	-12	-3	-1	0	-4	-5	-5	-9	-6	-9	-6	-10	-4	0	0	3	5	5	4	-1	1	0	9	9	12	16	12	15	14	10	11	14	11
1982	-13	-16	-4	-8	-8	-9	-6	-6	1	-6	-5	-2	-2	-3	0	1	2	4	4	0	0	5	6	5	5	6	8	6	9	15	18	9	8	10	10	13
1983	0	1	-1	-9	0	-2	-10	-8	-4	-2	-3	-4	-3	-3	1	1	-1	-1	0	2	0	5	4	4	6	9	9	10	12	10	10	13	15	15	14	13
1984	-3	-11	-2	-10	-14	-9	0	-4	-5	-6	-4	-3	-2	-2	-4	-6	-8	-4	0	3	5	4	7	8	8	4	9	13	13	13	16	12	11	15	13	13
1985	-11	-16	-13	-7	-12	-14	-14	-18	-14	-21	-12	-1	-7	-2	1	-6	0	-1	0	-3	1	3	2	1	1	5	10	10	4	16	12	8	10	14	19	16
1986	-11	-15	-4	-15	-8	-6	-9	-9	-10	-13	-14	-4	-3	0	0	0	1	2	1	0	-3	-2	2	5	11	12	9	11	12	12	13	13	16	19	15	19
1987	-16	-22	-22	-13	-5	-10	0	-8	-5	-10	-7	-10	-16	-10	-7	-5	-2	2	2	-1	3	3	4	9	7	6	4	7	10	6	10	12	9	9	13	13
1988	0	-3	0	-1	0	-2	0	-1	0	-4	-10	-6	-5	-4	-6	-5	-2	1	3	1	0	3	-1	4	7	8	11	10	10	16	10	14	14	15	19	22
1989	-2	0	2	2	1	3	4	2	1	-1	-1	1	1	2	3	1	2	3	-2	3	6	3	3	6	10	9	9	12	16	10	10	13	13	17	18	17
1990	-8	-1	-2	-3	-2	-4	4	3	0	0	5	0	-1	1	-2	9	5	5	0	1	5	5	9	10	15	13	9	7	8	11	13	12	13	12	14	16
1991	-2	-2	-10	-4	2	0	-7	-9	-9	-7	1	-3	-2	0	0	1	0	4	5	5	9	-1	3	5	6	7	9	7	8	11	7	10	11	12	14	13
1992	2	-3	3	-3	-3	3	-2	-1	-4	-4	0	2	3	5	0	3	1	-2	-1	1	2	1	0	6	9	7	9	14	14	17	16	16	16	14	12	17
1993	-2	1	1	1	-1	-6	3	2	0	-3	-9	-3	-5	-1	2	4	3	-1	2	-1	0	3	9	12	10	10	10	14	14	8	10	12	9	11	11	14
1994	-9	-6	-2	-11	-2	-7	-13	-10	-12	-10	-11	-9	-8	2	1	-4	-2	0	3	2	4	3	8	9	7	10	8	6	8	9	11	11	14	10	12	17
1995	-6	-2	-4	1	-4	-14	0	-2	-3	1	-1	-2	-1	-1	0	0	3	-1	1	0	4	2	5	1	8	5	2	6	8	15	14	14	13	14	16	15
1996	-15	-3	0	-2	-9	-7	-9	-14	-9	-12	-12	0	-1	0	-4	-2	-3	-1	0	4	1	8	4	4	4	4	8	3	9	10	14	15	14	11	12	14
1997	-7	-7	-2	-1	-2	1	-2	0	-6	-7	1	0	4	5	2	-4	-3	4	4	0	2	2	2	4	6	5	10	8	6	8	13	17	17	11	13	15
1998	1	-1	2	-2	-5	-7	-10	-1	-1	2	3	2	-5	-8	-3	1	1	4	-4	-1	0	2	6	9	6	10	11	13	5	10	8	12	14	12	11	14
1999	0	-9	-11	3	0	-14	1	-16	-4	-4	-5	-4	-2	-2	-5	1	-1	4	3	6	1	3	5	6	4	4	4	11	13	12	14	14	16	16	13	15
2000	-4	2	-1	0	-11	-3	-4	1	1	-7	-6	0	-3	-1	-2	1	1	1	-1	1	2	6	8	7	8	12	10	13	11	10	10	12	14	12	16	13
2001	-2	0	-6	-10	-1	-3	-15	-7	1	1	-11	-19	-10	0	0	-8	-6	-1	5	3	-1	2	4	7	7	11	10	8	9	8	10	12	11	14	15	19
2002	-10	-4	0	0	-8	-11	2	-1	-2	-2	-5	-4	-4	0	-2	2	0	4	3	3	4	3	11	7	8	10	13	10	12	12	16	19	15	18	14	14
2003	-20	-10	-2	1	0	-8	-5	-6	-2	-4	-6	-5	-5	2	2	3	3	4	1	-1	3	7	5	3	5	10	10	9	10	13	14	14	12	12	14	15
2004	-7	-3	-1	-7	-10	-5	-3	-5	-2	1	-2	-5	-4	-1	-1	3	-2	3	1	4	5	7	5	7	10	12	6	10	7	10	15	11	13	11	13	14
2005	-1	2	2	2	-4	-3	1	-3	-3	-4	-8	-10	-13	-2	-8	-7	2	2	7	4	6	2	3	6	6	5	9	6	13	11	9	11	11	16	17	13
2006	-10	-8	1	-6	-4	2	-6	-6	-5	-4	-1	-8	-8	-13	-8	-2	-6	-2	-2	2	3	4	5	6	9	12	8	6	10	8	12	13	18	18	16	14
2007	1	1	-1	-3	-11	-6	-1	-12	-6	-4	-10	-3	-1	2	5	2	0	4	5	1	8	6	8	9	7	9	8	10	12	10	13	18	13	13	14	15
2008	-2	1	1	2	-2	-1	-2	1	-3	1	3	0	-2	2	1	-2	-7	1	3	0	2	4	7	11	10	12	7	5	9	13	18	17	11	14	14	13
2009	-12	-4	1	-6	-1	-4	-9	-9	-11	-10	-4	-4	-2	-1	-2	1	-3	0	4	3	5	4	8	10	10	9	8	9	12	15	10	8	10	11	16	20
2010	-12	-20	-14	-5	-7	-12	-8	-7	-10	-10	-17	-4	-7	-3	-1	0	-2	0	1	3	4	4	4	7	5	6	9	14	11	10	12	11	12	12	14	16
2011	-8	-3	-9	-3	-4	-5	-2	-5	-12	-14	-12	-2	-1	-1	-2	-4	3	-2	4	5	6	9	12	8	3	10	8	10	13	12	15	17	14	12	14	19
2012	-1	-8	-3	-4	-6	-6	-13	-7	-5	-3	1	-1	-1	0	3	3	7	5	0	0	4	2	4	8	6	7	8	10	13	11	7	11	12	13	13	14
Average	-6	-6	-4	-4	-5	-6	-5	-6	-6	-6	-5	-4	-3	-1	-2	-2	-1	1	1	2	3	3	4	6	6	8	8	9	10	11	12	13	13	14	14	15
By quartile																																				
Min. value	-20	-22	-22	-16	-19	-18	-21	-18	-20	-21	-17	-19	-16	-13	-12	-11	-8	-6	-5	-6	-7	-7	-1	0	0	3	2	3	3	6	7	8	8	9	10	11
Lower	-10	-10	-7	-7	-8	-9	-9	-9	-10	-10	-9	-6	-6	-3	-4	-5	-3	-1	0	0	1	2	2	4	4	6	8	7	8	9	10	11	12	12	13	13
Median	-7	-5	-3	-3	-4	-6	-5	-5	-5	-4	-5	-3	-3	-1	-2	0	-1	1	1	1	3	4	4	6	6	7	8	9	10	10	13	13	13	14	14	14
Upper	-1	-1	0	-1	-2	-2	0	-1	-2	-2	-1	0	-1	1	1	1	1	3	3	3	5	5	6	7	8	10	10	11	12	12	15	15	15	16	16	16
Max. value	3	5	3	3	2	3	4	3	1	4	5	3	4	6	5	9	7	5	7	6	9	9	12	12	15	13	13	14	16	17	18	19	18	20	20	22
Range	23	27	25	19	21	21	26	22	21	25	23	21	21	19	17	20	15	11	11	13	15	15	13	12	15	10	11	12	13	11	11	10	11	12	10	10

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	15	13	15	16	14	14	14	14	14	13	12	14	12	11	11	13	11	10	10	11	10	8	9	6	3	4	3	1	2	-3	-5	-7	-10	0	-8	-7
1962	13	15	11	13	14	14	13	13	13	12	13	12	11	11	9	9	9	9	10	9	4	5	8	3	4	4	1	-4	-8	-3	0	1	-7	-10	-8	-12
1963	17	14	14	15	16	14	18	16	14	14	13	13	14	13	11	11	11	8	6	6	4	6	7	6	3	3	1	-2	-8	0	1	-2	-3	-6	-7	1
1964	12	11	14	16	14	14	12	16	12	12	11	11	11	10	8	9	10	10	6	8	7	6	5	2	3	0	2	-1	-1	-4	-2	1	-1	-6	-4	-11
1965	11	12	12	16	16	14	12	13	12	14	14	13	13	13	10	10	11	11	7	7	6	5	5	7	3	1	-8	-7	-13	-3	-5	-8	-16	-10	-9	-10
1966	15	15	15	18	20	15	14	14	12	14	11	14	13	10	10	9	8	5	7	4	3	7	6	-1	1	4	1	-2	-1	1	1	1	-4	-6	-6	-3
1967	14	17	14	18	14	17	18	13	14	13	14	14	14	12	12	11	10	8	11	7	8	2	4	6	5	5	3	1	3	0	2	-8	-7	-12	-8	-13
1968	19	13	12	14	14	17	17	17	12	11	16	15	16	16	8	7	6	7	7	2	4	2	3	1	-4	-6	-8	-8	0	0	-5	-4	-7	-2	-2	-6
1969	14	14	15	16	18	18	18	18	18	17	14	14	12	14	13	8	8	7	5	10	6	9	4	4	-2	0	2	-1	-8	-10	-8	-11	-2	-9	-10	-4
1970	13	16	14	13	13	15	16	15	14	14	14	14	13	10	12	11	7	5	7	10	8	8	2	0	-5	-5	-3	0	3	-3	-4	3	-1	-1	-5	-6
1971	19	18	14	12	14	16	19	16	13	15	13	11	11	12	7	10	10	7	6	7	4	6	3	5	4	-5	0	-8	-7	2	-1	-2	-4	1	1	-2
1972	19	18	18	20	18	15	16	17	15	14	12	11	12	13	8	10	9	5	7	9	6	4	0	4	3	3	2	-5	0	1	5	0	2	2	0	0
1973	22	19	16	17	17	17	17	14	16	15	10	12	12	11	7	7	6	5	10	6	1	-1	-2	3	2	3	-6	-7	-5	-10	-9	-10	-5	-12	-5	1
1974	14	14	15	16	15	12	14	14	13	15	15	15	14	12	10	11	9	8	7	5	2	4	3	2	1	-1	4	0	-2	1	-2	-1	-2	-2	3	-5
1975	16	17	17	16	17	19	19	22	16	14	15	13	15	11	12	12	11	9	9	4	4	4	3	7	6	2	4	0	-3	1	0	-2	-2	-5	0	0
1976	14	14	17	17	17	12	13	16	16	16	15	14	9	9	9	6	7	3	4	7	3	3	4	1	0	5	1	-1	-3	0	-1	1	-3	-7	-11	-17
1977	15	16	12	10	13	14	16	14	13	12	11	13	14	9	6	9	8	7	3	5	6	7	9	7	6	5	4	-4	-4	-5	-5	-1	0	-2	-2	-5
1978	14	14	13	12	14	18	18	13	11	15	13	10	12	11	9	9	5	5	5	6	7	6	2	3	6	5	4	3	0	-6	-5	-14	-7	-9	-8	-21
1979	12	14	15	15	14	15	14	14	15	16	14	12	12	13	9	9	7	7	2	6	7	4	2	-1	0	0	-3	0	-1	-1	2	-6	-14	-12	-5	0
1980	15	15	14	14	16	19	19	13	15	14	12	11	12	14	11	11	10	10	7	8	5	4	0	-3	-2	-2	-4	-3	0	-12	-6	-7	-1	-4	-3	-2
1981	14	18	17	14	16	18	17	17	17	12	12	11	12	12	8	7	11	11	11	7	5	2	0	2	0	0	-2	0	-1	-5	-3	-12	-15	-16	-8	-7
1982	13	16	19	19	16	18	21	18	14	14	13	13	10	9	11	12	10	10	9	6	4	1	4	5	3	2	4	1	2	1	-1	-3	-7	-4	-1	-3
1983	14	21	19	14	17	15	16	19	13	14	14	15	16	10	12	12	7	8	7	4	7	8	5	6	4	5	-2	-1	-4	-6	-1	-5	-6	-3	-4	-1
1984	13	18	17	16	14	15	19	17	14	15	15	12	9	12	11	9	10	6	11	9	5	7	4	6	8	1	0	-3	-1	1	2	2	-2	-2	-1	-5
1985	15	16	17	15	14	15	15	14	15	16	14	13	11	10	10	9	6	5	13	9	6	6	5	4	0	2	-2	-6	-5	-6	-4	-14	-5	-12	-1	-18
1986	18	15	13	16	15	17	16	14	12	12	10	9	10	7	7	8	5	5	8	5	7	6	2	6	1	3	2	3	2	5	1	-1	-4	-5	-10	-10
1987	15	16	14	15	18	13	13	11	12	13	12	10	11	11	9	7	8	6	6	9	9	7	6	4	4	-1	1	2	1	-4	-2	-3	-3	-6	-3	-3
1988	19	18	17	19	17	16	13	16	14	14	13	13	14	14	11	11	10	9	8	7	4	5	1	-1	-1	-3	0	-4	-1	-8	-10	-4	-5	-7	-5	-1
1989	18	18	14	13	18	18	14	16	16	16	13	11	12	11	11	12	15	9	7	5	3	5	8	5	5	5	4	1	-6	-3	0	-6	-15	-6	-4	-6
1990	15	15	15	15	15	17	19	14	17	16	13	14	12	12	10	9	7	5	8	6	8	7	2	4	1	4	1	-1	-7	-4	2	-5	-3	-1	-2	0
1991	18	21	16	15	15	18	20	17	14	15	16	15	15	9	9	9	9	7	7	7	7	4	2	3	5	1	2	-5	3	4	0	0	0	-1	-5	-1
1992	12	16	15	15	17	15	15	15	14	14	12	12	10	9	10	9	11	8	7	6	0	-1	-2	-4	0	0	1	-1	-5	1	3	-1	-1	2	-5	0
1993	14	14	15	16	16	14	15	15	13	12	11	10	10	9	6	6	9	6	7	7	2	2	0	4	-1	1	2	-3	-3	-5	0	-2	-8	-1	-5	-5
1994	15	20	22	17	19	22	21	16	16	13	14	13	12	11	10	8	10	7	3	8	7	0	5	5	4	1	-5	-3	3	1	-2	2	-2	-1	0	0
1995	12	15	15	15	15	19	17	14	16	18	15	10	13	12	11	8	9	7	7	12	7	10	6	4	-4	-2	-1	-7	1	-5	-7	-2	-1	-6	-17	-17
1996	13	13	15	13	16	14	15	15	16	19	17	16	13	9	7	7	7	8	7	9	5	7	5	4	3	-1	-3	1	-3	-8	1	1	-8	-12	-11	-6
1997	19	16	16	17	19	17	17	20	16	18	17	18	16	12	10	10	10	8	6	5	3	4	-2	2	-1	2	3	0	0	-6	-7	-1	0	-2	-6	-4
1998	14	15	15	14	16	15	15	14	14	13	12	10	10	13	13	11	10	7	4	6	5	2	6	4	-2	-4	-2	-8	0	-1	1	-6	-2	1	-8	-3
1999	16	17	20	17	16	16	18	13	12	13	10	14	17	15	11	12	11	10	9	5	6	3	4	6	7	5	4	-1	0	5	-3	-6	-10	-9	-4	-6
2000	15	13	14	15	16	14	15	14	15	13	12	14	10	13	7	8	7	10	11	11	8	8	7	2	5	5	4	3	4	4	4	5	4	-2	-6	-7
2001	19	20	15	14	17	17	14	14	15	17	15	14	13	12	12	13	9	6	10	10	7	6	1	6	3	-4	1	2	1	1	1	-1	-2	-2	-11	-14
2002	15	17	18	18	16	19	17	18	19	19	19	17	15	15	12	9	5	7	3	2	2	-3	1	1	-6	-1	-7	0	-1	-2	-2	-7	-4	-6	-15	-10
2003	15	16	18	21	20	19	18	16	16	16	15	10	11	13	14	11	11	7	8	4	4	1	-3	0	5	1	1	0	-4	2	3	1	-1	-1	-5	-3
2004	14	14	13	15	16	16	18	21	16	14	12	13	15	12	12	11	10	8	8	5	2	6	6	2	3	3	4	-5	-6	-8	-1	1	1	-1	-6	-4
2005	17	20	19	17	15	15	15	15	14	16	15	13	13	13	10	10	10	11	9	9	8	1	0	6	8	8	5	-3	0	-3	-1	-2	1	-8	-3	-3
2006	19	21	16	15	19	17	18	18	18	17	17	16	14	12	14	11	15	12	11	10	8	6	6	1	-3	0	-1	3	4	6	6	5	5	-1	2	1
2007	17	14	15	16	15	15	17	19	17	15	16	9	9	11	10	7	12	8	8	5	3	5	5	5	3	0	-1	-1	0	-3	1	2	-8	-6	-3	2
2008	16	13	16	15	18	19	14	13	15	14	12	12	13	10	8	8	8	8	7	6	8	5	8	2	-1	2	0	-1	-4	1	-1	-3	-4	1	-4	-8
2009	18	13	16	16	16	16	16	19	14	14	14	15	15	14	11	11	10	9	3	3	1	2	3	3	3	3	0	6	5	4	-3	2	-2	-11	-8	-12
2010	20	19	20	20	16	17	16	17	19	14	15	10	9	12	12	9	9	6	8	8	4	3	-3	4	3	-3	-1	-5	-5	-11	-13	-11	-13	-6	-16	-7
2011	16	18	15	16	17	18	18	16	14	15	14	15	14	12	13	9	10	12	11	6	3	5	5	7	8	4	2	0	3	3	1	-2	0	0	-2	0
2012	16	16	15	14	16	17	16	14	15	15	13	12	13	10	11	9	6	8	8	6	4	6	3	-1	3	0	4	4	4	-1	-13	-8	-10	-3	-5	-2
Average	16	16	16	16	16	16	16	16	15	15	14	13	12	12	10	10	9	8	7	7	5	5	3	3	2	1	0	-1	-1	-2	-2	-3	-4	-5	-5	-6
By quartile																																				
Min. value	11	11	11	10	13	12	12	11	11	11	10	9	9	7	6	6	5	3	2	2	0	-3	-3	-4	-6	-6	-8	-8	-13	-12	-13	-14	-16	-16	-17	-21
Lower	14	14	14	14	15	15	15	14	13	13	12	11	11	10	9	8	7	6	6	5	4	3	2	2	0	-1	-2	-4	-4	-5	-4	-6	-7	-8	-8	-8
Median	15	16	15	15	16	16	16	15	14	14	14	13	12	12	10	9	9	8	7	7	5	5	4	4	3	1	1	-1	-1	-1	-1	-2	-3	-5	-5	-4
Upper	17	18	17	17	17	18	18	17	16	16	15	14	14	13	12	11	10	9	9	9	7	6	5	5	4	4	3	1	1	1	1	1	-1	-1	-3	-1
Max. value	22	21	22	21	20	22	21	22	19	19	19	18	17	16	14	13	15	12	13	12	10	10	9	7	8	8	5	6	5	6	6	5	5	2	3	2
Range	11	10	11	11	7	10	9	11	8	8	9	10	8	9	8	7	10	9	11	10	10	13	12	11	14	14	13	13	19	19	19	19	21	18	19	23

Figure A17-14. Average temperature (ºC), for 5 or 6 day periods, their quartiles and range in Gävleborg county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Gävleborg** **Total precipitation , mm / 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Bollnäs** Coordinates for the places (RT90): 1532028-6803570 1551743-6800763 1531733-6791425 1555745-6783421

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31
1961	17	9	4	0	1	6	5	12	1	0	0	1	0	0	7	6	0	1
1962	1	4	8	4	24	12	8	3	19	12	0	0	12	4	1	0	1	17
1963	3	0	5	1	1	1	15	0	1	1	4	0	0	1	1	0	19	0
1964	0	0	0	0	0	9	5	7	7	4	0	10	1	0	0	0	0	0
1965	0	10	9	12	25	11	8	0	13	7	1	2	0	0	0	12	0	1
1966	2	0	6	1	2	29	9	8	2	6	24	9	4	9	22	0	21	34
1967	26	1	2	0	2	16	12	1	0	5	22	13	0	4	3	8	1	6
1968	1	6	4	3	15	4	11	11	2	0	1	0	5	6	1	13	11	1
1969	4	1	20	11	4	5	1	21	10	9	6	0	1	2	0	0	0	12
1970	4	4	11	2	1	7	1	10	0	0	2	1	24	32	1	11	0	16
1971	2	1	0	1	23	18	1	5	2	7	18	12	7	0	2	17	4	6
1972	1	0	0	9	10	11	7	9	5	6	1	2	3	0	0	0	0	34
1973	0	1	0	11	8	6	6	1	20	19	5	0	3	1	0	4	0	5
1974	1	2	19	3	4	15	4	23	11	0	0	0	0	0	0	7	10	0
1975	3	5	9	12	5	8	4	0	1	4	0	0	1	4	0	0	2	9
1976	20	9	3	14	0	0	2	2	6	0	3	1	2	9	12	0	6	1
1977	21	7	33	5	1	27	0	2	1	19	8	3	2	0	9	14	5	0
1978	4	0	1	2	4	31	12	2	4	0	3	0	18	18	5	3	6	14
1979	4	3	21	0	9	16	6	0	1	2	0	0	1	6	6	1	6	7
1980	5	3	1	0	17	0	0	2	1	0	0	0	3	10	1	1	0	20
1981	1	1	15	6	4	1	4	9	3	7	12	2	2	34	8	13	15	0
1982	38	1	0	0	6	7	0	29	0	0	0	1	12	2	22	13	0	0
1983	9	1	15	13	2	14	7	2	1	0	0	0	0	17	0	3	22	6
1984	8	6	7	20	3	21	15	9	0	1	5	0	1	4	1	0	1	16
1985	14	2	1	14	27	15	13	4	5	7	5	4	13	11	6	1	2	18
1986	30	6	10	10	12	10	2	0	0	0	7	0	9	0	1	0	21	11
1987	10	14	3	2	2	4	0	11	28	0	1	0	0	0	0	23	4	13
1988	14	4	11	5	10	31	10	19	3	8	12	25	17	6	1	1	7	6
1989	2	0	7	1	2	1	2	1	2	5	20	28	0	1	7	6	15	4
1990	1	2	12	11	7	28	1	0	11	3	27	12	2	12	9	0	4	0
1991	7	33	6	1	0	4	2	5	15	1	4	4	5	1	8	7	18	1
1992	0	4	1	0	0	0	6	3	19	1	4	0	6	0	5	1	8	11
1993	1	5	6	4	3	0	0	0	0	14	0	5	3	0	0	3	2	2
1994	8	20	17	4	4	22	4	2	1	0	0	0	4	6	11	0	4	5
1995	6	18	5	5	22	7	5	0	11	2	7	1	6	7	3	19	12	9
1996	1	3	5	2	1	0	1	3	2	1	0	2	0	1	3	1	0	18
1997	0	1	4	1	1	0	0	20	4	12	11	0	0	0	0	1	3	9
1998	33	10	4	2	9	1	14	3	4	1	5	1	5	0	6	1	1	9
1999	3	5	11	5	14	3	6	2	2	11	6	16	22	13	1	4	10	12
2000	8	0	0	3	1	8	1	0	2	0	15	2	29	0	2	2	0	1
2001	21	20	1	0	12	7	24	17	5	3	8	0	4	6	31	3	3	3
2002	1	0	0	6	36	30	8	8	7	2	10	6	2	5	1	18	8	0
2003	2	5	3	15	7	11	17	0	0	0	0	0	0	1	0	0	0	2
2004	2	3	13	7	0	11	1	0	3	2	3	17	0	0	6	24	11	0
2005	12	10	2	7	1	1	0	2	16	6	12	1	0	1	10	6	0	0
2006	5	0	0	10	1	1	4	17	2	6	4	6	21	1	2	0	0	35
2007	7	8	21	13	2	1	5	3	3	11	4	3	2	14	0	9	0	0
2008	17	12	14	15	6	6	16	7	0	1	4	11	12	8	20	10	2	2
2009	2	0	3	13	31	0	0	22	0	1	13	5	6	11	1	2	9	11
2010	11	1	0	3	0	28	19	4	0	25	7	11	5	0	0	1	3	16
2011	8	15	5	6	3	0	8	24	3	2	1	0	0	8	1	9	0	3
2012	24	2	4	4	8	2	7	0	2	2	1	3	0	2	1	1	0	5
Average	8	5	7	6	8	10	6	7	5	5	6	4	5	5	5	5	5	8
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	1
Median	4	3	5	4	4	7	5	3	2	2	4	1	2	2	1	2	3	5
Upper	11	8	11	10	10	15	9	9	6	7	8	5	6	8	6	9	8	12
Max. value	38	33	33	20	36	31	24	29	28	25	27	28	29	34	31	24	22	35

Month	April						May						June					
Year / Day	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	2	5	7	0	0	0	17	38	3	2	0	5	7	3	7	9	12	19
1962	9	11	5	3	3	1	2	25	0	11	16	16	0	0	6	3	10	11
1963	3	0	19	3	5	2	10	7	0	5	0	1	2	3	3	15	13	32
1964	0	1	0	1	0	7	5	4	4	0	0	8	16	10	5	4	29	3
1965	0	0	4	14	14	24	0	2	1	13	1	1	3	2	9	11	15	10
1966	10	5	2	0	3	0	1	2	0	4	15	3	8	0	0	0	3	4
1967	2	4	0	14	1	3	4	5	15	24	17	22	6	9	3	0	2	6
1968	18	2	0	0	0	0	21	24	14	15	5	4	5	4	0	3	2	44
1969	2	3	16	23	0	11	0	6	17	17	0	3	6	3	0	1	0	8
1970	12	10	1	13	14	19	4	0	0	0	11	7	8	0	2	0	5	1
1971	1	6	0	14	1	1	1	0	0	13	0	6	11	0	1	27	11	5
1972	16	2	4	3	4	6	1	0	0	16	9	20	4	1	11	2	1	2
1973	7	3	4	29	2	6	8	9	1	49	3	2	16	16	1	0	0	2
1974	0	8	2	0	4	0	0	0	0	0	7	24	5	9	0	2	10	29
1975	7	16	4	0	2	0	0	0	28	6	32	1	3	0	17	9	9	23
1976	7	5	1	0	0	2	4	0	3	1	1	1	0	14	33	8	4	0
1977	8	30	8	19	3	14	9	4	15	0	0	1	15	8	1	9	7	23
1978	0	6	5	0	7	0	0	0	14	7	1	0	1	13	4	0	11	28
1979	30	0	2	3	33	24	12	11	0	2	5	8	0	6	2	4	7	7
1980	1	3	0	26	0	14	0	4	0	0	0	10	26	2	21	12	35	10
1981	0	0	0	0	4	24	23	5	0	0	16	8	13	3	33	4	26	##
1982	0	23	3	2	0	6	10	17	1	2	6	8	8	5	1	6	11	16
1983	22	10	1	1	18	3	6	0	10	31	7	21	16	4	1	0	7	20
1984	6	0	2	3	3	0	4	4	1	5	9	12	3	1	10	11	56	15
1985	16	7	0	28	0	10	43	0	0	0	11	8	1	28	8	0	1	2
1986	7	0	12	34	14	16	0	0	17	9	2	5	4	41	0	7	0	3
1987	0	0	1	0	2	1	6	9	13	30	0	1	10	12	12	45	11	25
1988	7	4	2	32	1	0	4	0	0	3	4	20	11	0	0	0	0	2
1989	3	8	1	37	31	18	3	6	16	2	0	20	12	16	4	2	4	6
1990	48	3	1	7	2	4	0	0	1	0	17	3	9	0	1	19	16	7
1991	3	3	4	9	0	1	4	0	40	13	2	1	11	18	14	48	6	44
1992	29	3	9	3	21	31	5	6	9	1	16	1	2	0	36	5	2	0
1993	1	5	0	6	7	0	6	1	3	4	2	6	19	3	25	6	4	2
1994	21	1	8	1	3	6	0	0	0	3	5	6	12	12	1	9	18	3
1995	0	0	17	34	2	29	0	8	31	24	16	3	7	7	13	21	41	0
1996	1	0	0	0	31	3	24	9	24	2	6	6	0	0	9	28	3	9
1997	1	4	1	0	3	3	5	56	2	2	0	5	0	3	25	6	25	5
1998	0	2	3	19	0	7	20	9	0	0	6	8	13	12	17	19	6	13
1999	1	8	33	45	2	5	3	1	0	0	0	7	16	24	2	3	15	4
2000	10	0	10	17	33	5	4	2	0	9	40	28	5	3	3	4	15	60
2001	6	12	0	9	17	6	24	0	0	18	1	4	5	9	2	5	1	2
2002	0	0	4	0	0	14	4	0	0	1	10	0	0	3	27	13	30	47
2003	16	6	13	0	0	29	11	1	7	5	10	3	5	44	18	29	5	15
2004	2	0	0	4	18	0	8	1	3	8	9	1	0	0	3	11	15	8
2005	0	3	0	0	1	4	8	19	1	16	9	10	33	18	26	13	15	5
2006	10	5	3	1	1	27	1	0	8	4	18	25	4	0	0	3	4	15
2007	0	1	0	5	1	1	5	3	10	14	1	14	0	0	26	7	2	3
2008	3	44	7	0	0	1	1	0	4	22	1	0	0	3	18	3	7	33
2009	0	7	7	0	0	2	12	3	2	2	5	3	13	7	68	6	2	0
2010	14	8	1	0	0	1	4	2	19	24	24	8	0	1	64	19	6	3
2011	17	6	0	2	0	0	2	2	16	12	3	20	0	0	37	17	7	0
2012	0	3	2	20	8	5	20	22	16	12	2	2	49	4	13	6	8	21
Average	7	6	4	9	6	8	7	6	7	9	7	8	8	7	12	9	11	15
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	0	1	0	0	0	1	1	0	0	1	1	2	2	1	1	3	3	3
Median	3	4	2	3	2	4	4	2	3	5	5	6	6	3	7	6	7	7
Upper	10	7	6	15	7	11	9	8	14	13	11	10	12	10	18	12	15	21
Max. value	48	44	33	45	33	31	43	56	40	49	40	28	49	44	68	48	56	111

Month	July						August						September					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30
1961	5	7	12	17	21	25	42	7	45	39	19	4	5	0	28	0	2	2
1962	17	0	16	13	9	3	16	19	1	4	22	22	32	9	0	2	0	0
1963	1	14	10	6	5	0	3	24	21	17	7	6	22	15	4	0	6	2
1964	5	18	0	14	9	7	19	0	8	44	2	17	0	6	7	55	10	10
1965	8	8	39	0	12	47	20	7	1	0	8	8	13	63	7	16	2	39
1966	14	13	44	14	3	18	57	25	28	0	0	0	17	9	22	0	0	1
1967	17	5	3	7	10	5	5	5	20	10	3	19	13	9	0	13	30	4
1968	0	11	3	1	7	0	0	6	92	19	0	2	4	6	13	6	30	6
1969	35	37	1	8	21	3	0	0	0	0	30	22	5	1	17	6	19	19
1970	18	12	10	13	43	25	0	15	3	5	1	5	7	7	9	10	3	3
1971	0	1	24	25	19	21	9	29	34	1	0	21	8	6	3	15	10	3
1972	14	24	1	7	14	5	38	6	12	2	4	0	0	14	11	0	8	1
1973	0	9	4	40	40	32	1	8	0	6	1	12	20	7	3	7	1	18
1974	15	58	36	7	5	28	8	2	13	5	1	10	15	13	2	2	12	18
1975	0	0	19	3	5	2	1	3	10	19	12	10	5	21	31	2	5	12
1976	2	5	6	17	0	9	19	0	0	1	8	20	1	35	49	0	3	0
1977	21	0	15	29	58	5	17	5	4	3	8	7	0	28	8	0	0	8
1978	5	38	6	6	7	0	71	2	6	3	19	20	60	3	1	1	18	2
1979	14	27	30	21	6	10	8	29	2	3	1	73	17	2	8	4	3	1
1980	0	0	6	35	1	0	15	33	1	10	38	7	10	8	19	7	13	9
1981	39	0	12	9	2	1	1	1	13	49	10	7	0	0	1	10	13	8
1982	15	1	0	6	6	0	5	38	15	28	17	7	9	10	6	16	11	9
1983	20	0	6	8	0	15	1	0	19	7	3	2	14	57	89	49	17	0
1984	4	0	38	25	3	13	7	5	9	1	3	23	19	5	24	33	105	11
1985	4	1	22	20	19	51	26	24	6	43	16	11	42	88	5	13	0	4
1986	7	6	19	3	24	1	14	20	6	69	57	42	8	16	28	2	13	6
1987	6	23	1	0	20	26	32	23	0	5	23	9	3	17	15	7	11	4
1988	17	5	8	29	1	6	6	0	29	14	30	4	4	0	24	1	7	11
1989	0	0	16	1	0	16	37	3	7	8	4	3	1	0	14	7	1	1
1990	32	18	7	25	31	12	1	7	15	8	14	2	15	71	8	17	37	6
1991	1	10	14	18	12	0	7	17	4	25	7	1	1	3	6	11	26	29
1992	10	10	25	13	3	23	6	8	28	24	34	20	52	0	13	9	7	5
1993	13	16	4	6	30	35	12	26	29	28	35	18	3	1	6	1	6	0
1994	0	0	0	7	1	21	17	5	21	1	24	9	4	39	29	38	1	28
1995	14	0	0	31	8	2	10	6	22	0	30	5	38	16	12	0	19	1
1996	26	34	11	12	4	13	5	0	0	0	19	14	3	2	4	0	0	18
1997	17	2	0	0	3	45	4	0	1	0	25	28	7	10	13	5	1	16
1998	7	29	28	20	8	45	9	7	29	11	14	38	0	6	18	7	0	37
1999	15	3	10	16	9	0	18	21	0	0	1	14	0	0	10	8	17	27
2000	11	10	59	58	32	1	1	3	21	15	13	9	3	5	1	0	0	4
2001	4	18	17	28	2	12	9	28	9	14	3	28	13	68	38	6	1	2
2002	16	0	7	30	71	2	0	0	9	0	3	16	2	1	5	13	2	1
2003	7	5	4	0	4	11	13	0	45	12	30	22	4	0	0	3	6	19
2004	27	8	12	32	5	1	22	4	1	16	10	43	6	0	14	10	6	11
2005	0	9	7	17	37	7	8	75	2	2	12	2	1	0	4	3	0	1
2006	2	5	1	2	6	30	22	0	46	8	57	22	19	9	0	0	4	18
2007	6	20	10	3	1	13	2	6	14	8	0	12	20	15	4	9	4	18
2008	5	1	32	11	8	2	52	10	30	29	3	11	5	18	0	1	0	11
2009	1	61	19	25	42	5	4	5	14	22	31	15	23	0	1	3	1	6
2010	5	0	8	3	28	5	7	32	0	16	36	8	0	0	5	16	42	0
2011	1	5	8	27	24	1	8	25	9	23	17	6	15	16	15	19	5	1
2012	7	62	25	4	4	14	7	23	0	6	6	47	2	0	3	10	18	25
Average	10	13	14	15	14	13	14	12	14	13	15	15	11	14	13	9	11	10
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	1	4	6	4	2	4	3	1	2	3	6	3	1	4	1	1	2
Median	7	8	10	13	8	8	8	6	9	8	11	11	6	7	8	6	6	6
Upper	15	18	19	25	21	21	18	23	21	19	23	20	15	16	16	11	13	16
Max. value	39	62	59	58	71	51	71	75	92	69	57	73	60	88	89	55	105	39

Month	October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	0	10	2	38	7	9	7	19	5	1	3	6	9	4	2	0	2	14
1962	3	0	1	6	0	8	2	0	8	11	0	0	5	1	24	5	4	4
1963	50	5	21	5	0	1	9	20	16	18	3	4	1	1	3	16	0	0
1964	0	11	41	9	10	0	1	0	4	5	11	7	4	5	20	4	0	3
1965	0	0	1	2	0	6	32	0	11	6	7	19	20	29	3	13	13	15
1966	6	11	8	23	12	0	36	1	1	7	3	3	11	29	41	18	9	24
1967	5	35	18	11	7	19	24	10	19	1	0	0	10	8	2	0	20	16
1968	17	4	13	20	1	29	64	1	0	1	6	3	0	0	0	16	10	29
1969	12	0	0	0	3	8	32	30	7	13	1	6	10	1	4	4	1	1
1970	26	22	0	15	4	10	12	26	8	26	24	1	4	1	4	4	1	5
1971	7	3	1	6	18	1	2	13	8	10	13	9	1	5	6	10	3	2
1972	1	0	14	23	9	1	15	1	9	0	17	4	4	7	3	0	0	0
1973	1	4	0	0	0	3	1	2	13	15	0	1	1	11	29	8	13	0
1974	41	24	12	35	23	40	15	18	25	14	5	26	10	4	7	23	1	10
1975	4	5	3	1	2	13	7	0	1	6	0	7	20	0	2	1	2	1
1976	2	6	24	0	1	15	26	27	25	0	4	10	64	27	18	13	0	5
1977	43	9	5	1	3	0	21	7	15	8	54	2	4	8	2	0	11	8
1978	2	0	0	11	0	2	12	0	13	0	4	17	8	1	9	2	8	7
1979	1	1	18	23	0	4	11	12	12	41	8	14	0	1	5	5	12	21
1980	4	20	16	50	20	17	0	1	15	38	5	2	7	1	19	11	11	14
1981	8	31	9	14	5	33	7	0	5	18	35	35	6	30	9	2	30	28
1982	0	2	8	13	6	6	2	0	10	9	39	20	3	25	14	8	5	0
1983	6	6	2	7	2	1	1	5	6	2	1	4	7	5	0	18	15	13
1984	23	20	11	14	22	17	2	3	0	7	24	6	1	7	0	25	6	2
1985	0	28	7	1	0	1	22	9	10	4	2	34	31	2	2	6	10	1
1986	1	2	1	4	6	11	10	10	11	8	10	4	34	2	7	12	8	31
1987	0	1	22	6	7	3	0	1	27	17	9	8	0	6	1	3	7	12
1988	0	16	2	0	3	10	20	0	2	0	3	15	11	11	1	5	5	10
1989	1	1	0	1	2	22	15	9	2	0	1	3	1	10	5	11	9	0
1990	14	3	0	11	0	34	17	0	17	7	13	0	0	5	1	2	5	11
1991	14	0	0	10	4	1	12	3	8	0	0	0	2	3	0	7	5	3
1992	0	3	60	35	11	24	14	6	38	17	17	9	13	0	2	4	0	0
1993	7	28	17	16	2	0	0	11	11	2	12	1	12	5	14	24	5	4
1994	8	4	5	0	5	37	20	5	15	1	0	0	2	17	0	9	0	27
1995	7	2	1	6	2	5	10	2	1	5	11	10	0	4	0	0	1	0
1996	4	5	7	12	0	19	24	12	12	50	3	8	9	4	11	0	4	9
1997	18	29	9	5	1	1	1	39	27	0	20	15	13	1	10	2	6	31
1998	2	1	14	33	20	24	10	4	2	3	3	2	22	3	12	6	8	6
1999	38	24	4	3	5	9	0	2	0	14	2	3	2	41	32	11	9	6
2000	8	8	36	0	8	47	17	31	10	37	52	20	0	15	24	6	0	29
2001	8	35	7	1	0	27	1	14	0	4	1	5	10	2	0	7	13	31
2002	6	13	12	4	22	5	1	18	16	26	20	19	6	1	0	0	0	8
2003	30	2	0	16	2	13	15	0	2	13	31	20	5	0	7	4	6	10
2004	4	4	0	28	15	0	1	2	4	7	9	4	12	3	7	1	9	1
2005	4	0	0	3	41	2	12	2	14	1	4	2	13	18	1	9	7	28
2006	10	13	0	33	43	61	3	1	13	14	13	0	10	13	2	0	0	3
2007	6	0	6	1	0	2	15	15	9	0	7	16	28	30	0	0	5	8
2008	58	9	3	7	0	12	0	5	7	5	8	11	28	7	19	5	5	0
2009	11	12	14	21	8	6	14	8	11	15	16	12	4	3	15	30	4	23
2010	0	3	0	8	0	5	14	18	14	6	7	16	7	2	2	32	16	25
2011	12	4	0	11	0	8	1	0	0	6	0	18	3	18	8	24	0	6
2012	6	2	36	28	2	19	8	1	4	1	3	46	18	31	18	8	11	7
Average	10	9	9	12	7	13	12	8	10	10	11	10	10	9	8	8	6	11
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	2	1	3	0	2	2	1	4	1	2	2	2	2	1	2	1	2
Median	6	5	6	8	3	8	10	4	10	7	6	7	7	5	5	6	5	7
Upper	12	13	14	17	8	19	16	12	14	14	13	15	12	12	12	12	9	15
Max. value	58	35	60	50	43	61	64	39	38	50	54	46	64	41	41	32	30	31

Figure A17-15. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Gävleborg county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A18 VÄSTERNORRLAND COUNTY♣

A18.1 Crop production and yield

Table A18-1. *Annual production (metric ton) in 2010-2014 for the major crops in Västernorrland county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	154 100	137 600	136 100	137 700	137 600	140 620
Spring barley	7 500	6 100	5 000	8 600	8 200	7 080

* Data from Jordbruksverket (2015)

Table A18-2. *Average yield of temporary grasses (total) and spring barley in Västernorrland county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Temp. grasses (total)	4 307	231	5
Spring barley	2 207	231	10

* Coefficient of variation = Standard deviation / Average

Table A18-3. *Coefficient of variation of temporary grasses (total) and spring barley in Västernorrland county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Temporary grasses		32	41	38	63	53	60	52	48
Spring barley	34	46	28	26	37	40	42	68	40
Average	34	39	35	32	50	47	51	60	

* Based on farm-level yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

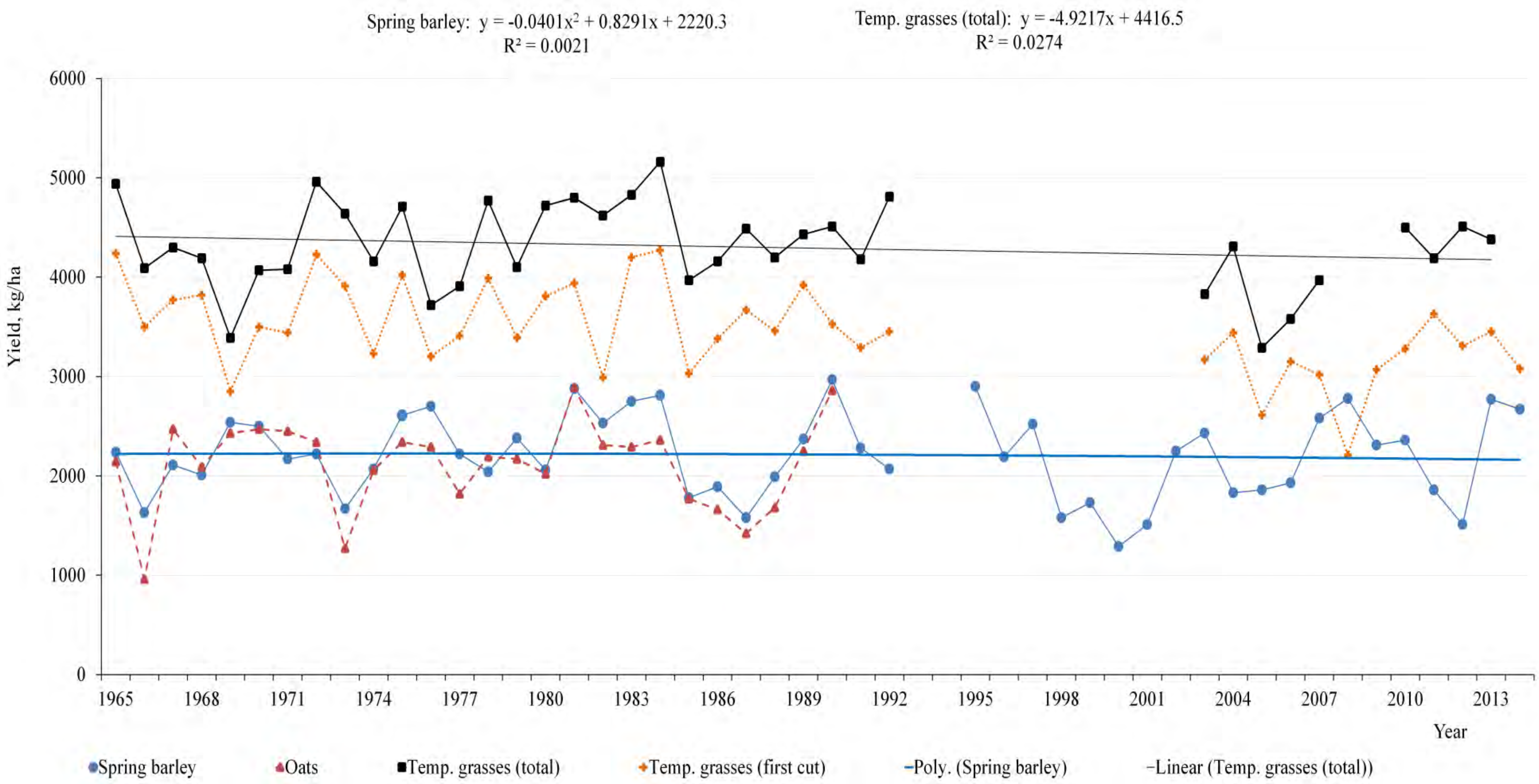

Figure A18-1. Average yield (kg/ha) per year of spring barley, oats and temporary grasses (total and first cut) in Västernorrland county for the period 1965-2014, and the trend lines with respective equations for temporary grasses (total) and barley. The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

A18.2 Precipitation, temperature and cereal yield

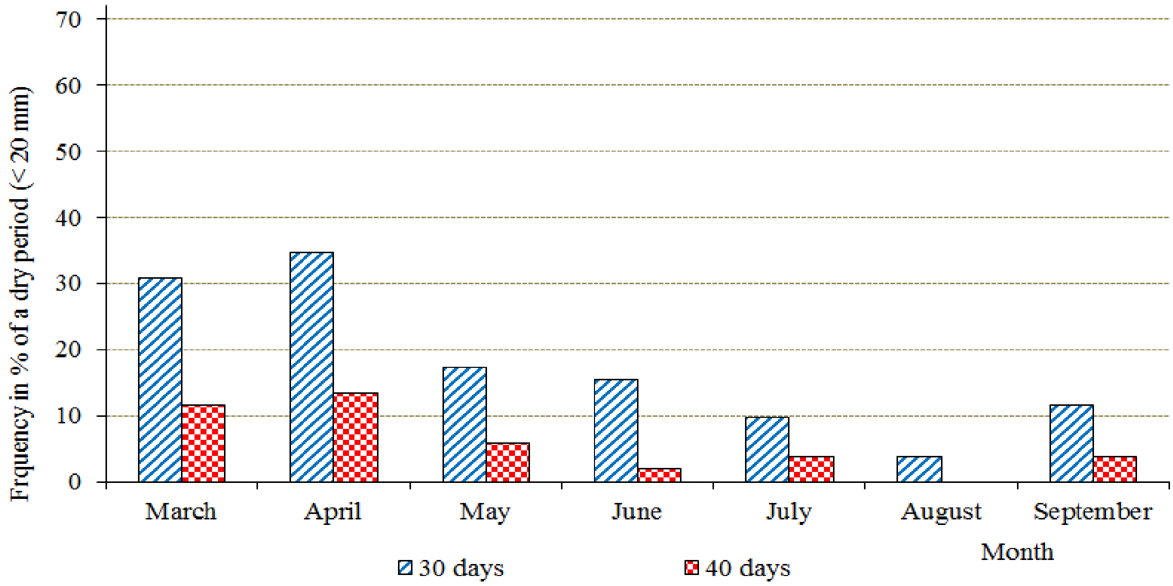

Figure A18-2. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Västernorrland county*.

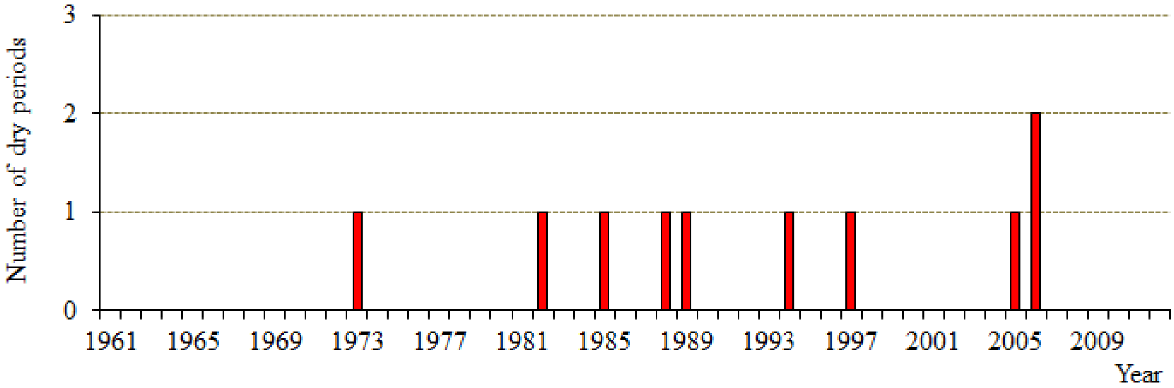

Figure A18-3. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 1 June-10 August in Västernorrland county*.

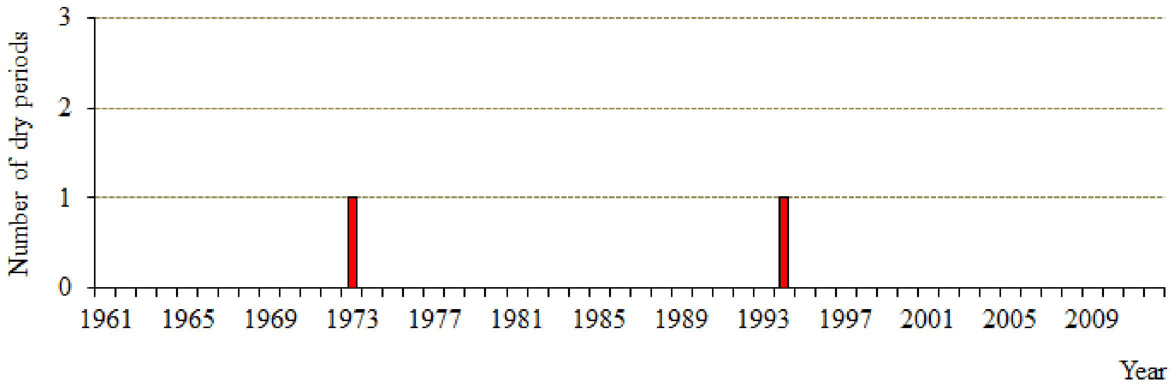

Figure A18-4. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 1 June to 10 August in Västernorrland county*.

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* The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

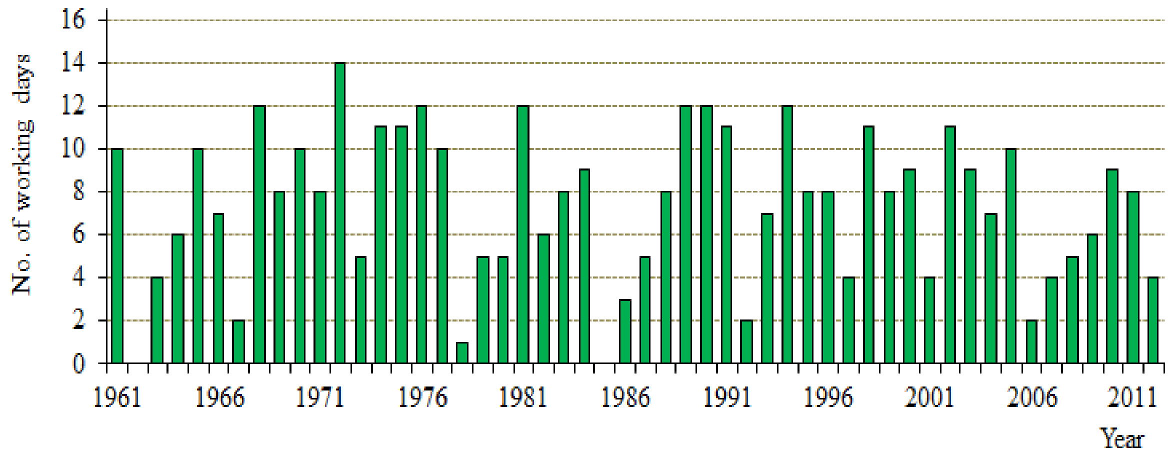


Figure A18-5. Estimated number of working days available for harvesting during the period 25 August-8 September in Västernorrland county (for definition of a working day, see Section 2.1)*.

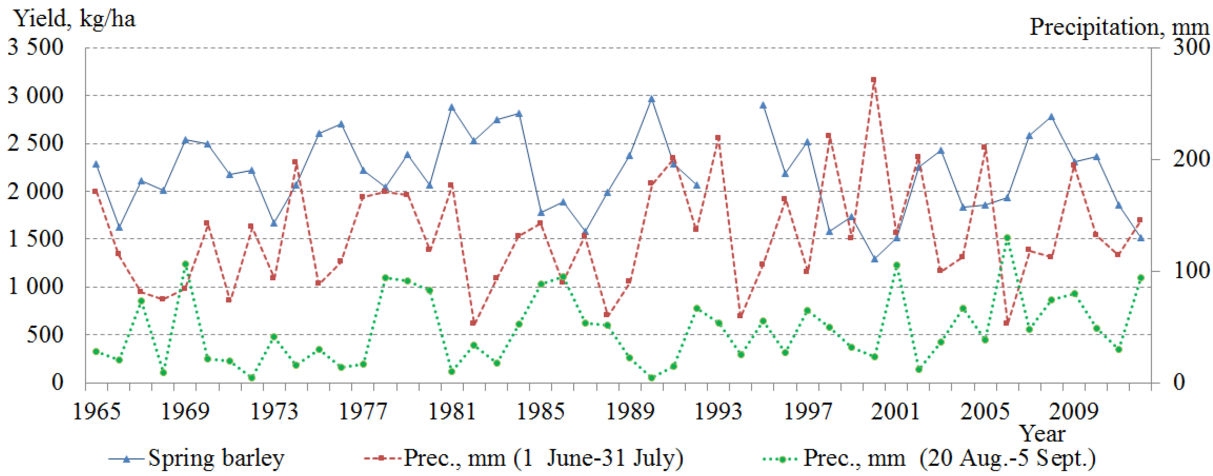


Figure A18-6. Annual spring barley yield (kg/ha) and precipitation (mm) in the periods 1 June-31 July and 20 August–5 September in Västernorrland county, 1965-2012*.

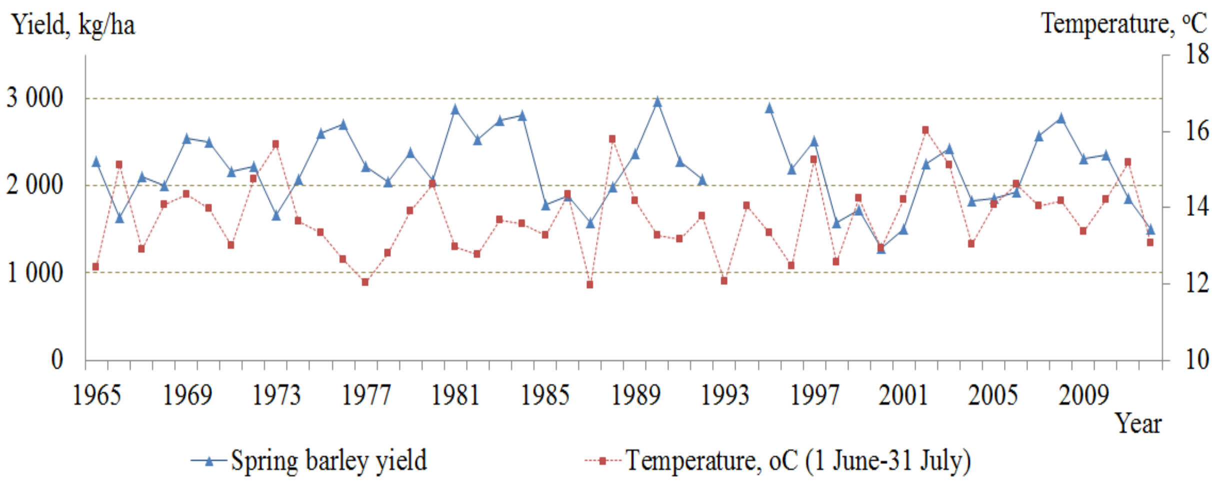
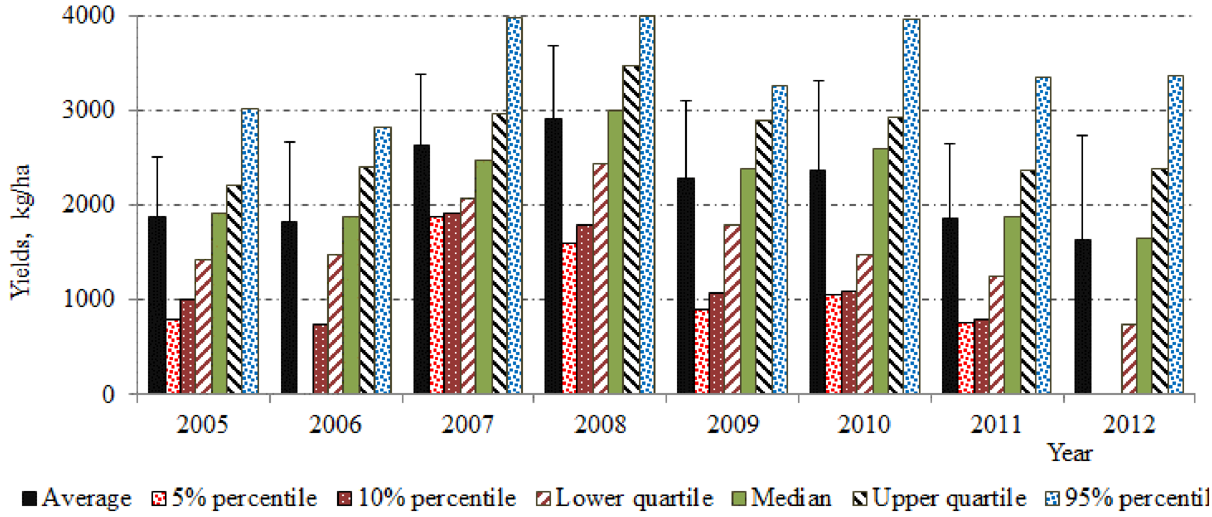


Figure A18-7. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Västernorrland county, 1965-2012*.

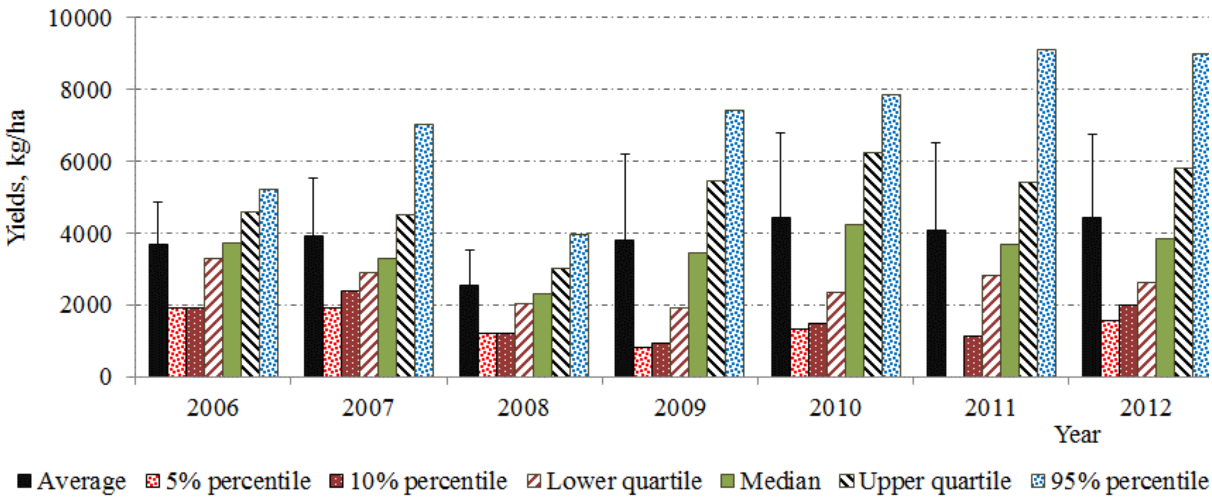
∗ Precipitation and temperature from Luftwebb (2014). Yield data from from Jordbruksverket (2015).

A18.3 Yield on farms



N 36 34 31 37 24 28 30 37

Figure A18-8. Average and estimated percentiles of spring barley farm-level yield in Västernorrland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N 27 21 25 30 35 29 32

Figure A18-9. Average and estimated percentiles of temporary grasses farm-level yield in Västernorrland county, 2006-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A18.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

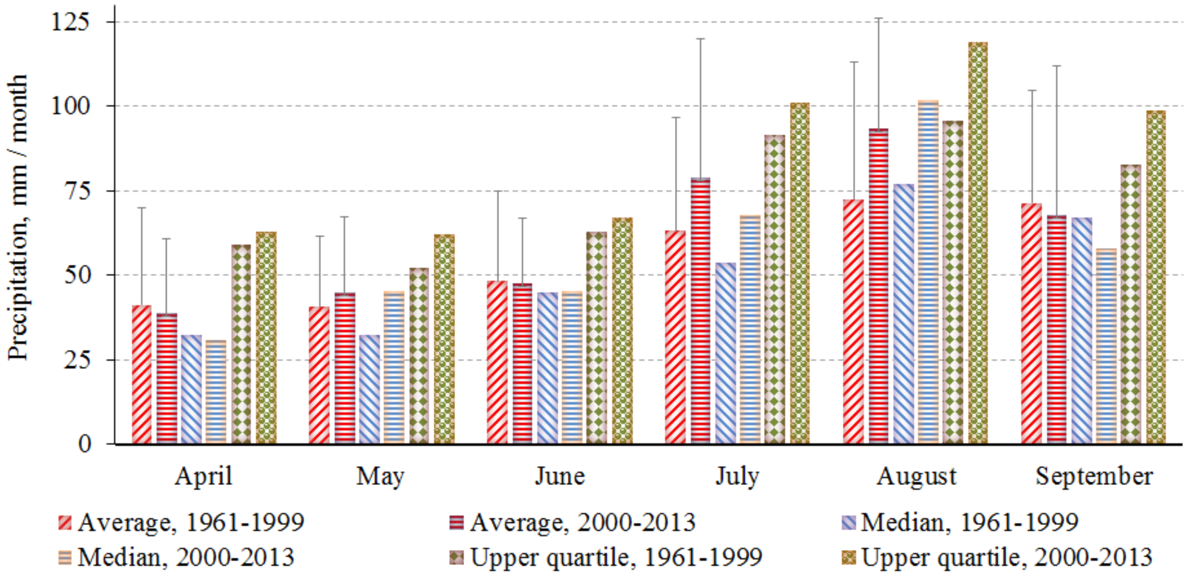


Figure A18-10. Monthly average, median and upper quartile precipitation (mm) from April to September in Västernorrland county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1610974-6948898 (close to the city of Härnösand).

County: **Västernorrland**

Location: **Härnösand (Sälsten)**

Average temperature (°C) for 5 or 6 day periods

Coordinates for the places (RT90): 1610974-6948898 1589094-6958172 1583758-6947500 1602434-6946166

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	-2	-8	-7	-10	-14	-5	-8	-7	-2	3	0	2	2	4	1	-2	-1	-1	-2	0	0	4	4	5	5	5	6	8	8	9	14	17	14	12	12	12
1962	-4	-3	-2	-7	-10	-14	-7	-2	-8	-6	-7	-7	-13	-11	-12	-7	-6	-5	0	-1	1	3	4	3	2	4	6	6	7	8	7	12	9	13	13	12
1963	-11	-14	-15	-10	-3	-5	-13	-16	-11	-13	-9	-4	2	-5	-9	-8	-8	-8	-3	1	1	3	2	5	5	7	9	8	10	13	14	14	10	10	10	14
1964	-4	-5	-3	-1	0	-5	-6	-2	-13	-11	-6	-3	-3	3	-4	-7	-6	-5	-1	-1	3	4	3	5	4	5	8	7	12	10	7	9	13	12	12	13
1965	-5	-15	-2	-4	-4	-6	-4	-2	-4	-4	-6	-15	-10	-6	1	0	-5	-2	2	-2	1	2	4	5	3	5	5	3	6	7	9	13	10	12	12	12
1966	-21	-6	-17	-17	-12	-16	-25	-20	-22	-14	-11	-8	-6	-4	-14	-2	-5	-6	0	-1	-7	-8	0	5	4	1	6	8	7	8	9	13	17	19	16	14
1967	-2	-14	-12	-5	-24	-20	-8	-3	-5	-4	-1	-1	-2	2	1	0	-1	2	-1	2	3	0	0	4	1	4	5	5	9	10	13	8	11	14	11	11
1968	-15	-19	-16	-7	-4	-10	-10	-11	-8	-13	-13	3	-3	-2	-5	-5	0	3	0	-2	4	4	6	7	3	4	5	3	4	9	13	11	16	15	16	13
1969	-7	-10	-11	-3	-6	-4	-10	-4	-18	-16	-14	-15	-8	-6	-10	-9	-6	-1	2	4	0	-1	1	2	0	5	4	5	7	9	8	13	14	16	16	17
1970	-10	-19	-10	-14	-7	-8	-9	-13	-17	-21	-15	-14	-5	-1	-5	-2	-6	-3	-6	0	0	2	0	1	3	7	6	7	5	9	12	16	12	17	15	15
1971	-11	-2	0	-3	0	-11	-2	-6	-2	-1	-10	-14	-16	-4	-7	-3	-5	-6	-2	1	2	2	-1	-1	4	8	9	5	3	10	14	10	11	10	12	13
1972	-5	-12	-11	-11	-6	-10	-7	-7	-4	-8	-2	-6	-5	-10	1	1	2	-1	-2	1	2	3	3	1	5	4	4	6	8	6	8	12	11	13	12	18
1973	2	4	0	-2	0	-3	0	-5	-4	-3	-8	-10	-1	-1	3	-1	4	3	1	1	2	2	1	1	5	4	7	6	8	11	11	12	10	12	18	18
1974	-9	-1	0	-2	-3	-1	-5	-5	-1	-3	-2	-1	-2	-4	-5	-3	0	1	3	3	0	5	3	5	2	4	7	10	8	8	10	9	15	18	16	12
1975	-1	-10	-4	-3	-1	0	2	1	-8	-3	-1	3	-1	0	0	-2	0	-1	-2	1	0	2	4	5	6	9	7	10	7	6	7	13	11	13	14	12
1976	-9	-11	-12	-7	-11	-13	-11	-9	-4	-5	-2	0	-2	-6	-11	-8	-8	0	-1	0	3	4	3	-1	1	6	8	11	12	8	9	9	12	11	13	15
1977	0	-7	-6	-7	-12	-11	-7	-7	-19	-10	-7	-8	-6	0	1	0	1	-5	-2	-6	0	0	2	3	4	4	5	8	9	7	9	9	15	14	11	11
1978	-12	-3	-7	-2	-5	-9	-4	-14	-22	-14	-12	-1	0	0	-5	-13	-9	1	-1	2	1	-1	-2	0	3	2	3	9	10	14	15	11	11	11	13	12
1979	-19	-12	-8	-12	-10	-21	-15	-12	-15	-10	-5	0	0	1	-3	-12	-2	0	0	0	-1	0	1	2	2	3	8	9	8	11	14	15	13	13	17	13
1980	-12	-9	-9	-5	-8	-18	-18	-20	-11	-7	-9	-3	-7	-5	-5	-13	-10	-4	1	3	4	2	3	5	6	5	8	9	5	8	15	17	13	14	11	13
1981	-11	-9	-5	-13	-5	0	-3	-5	-8	-7	-11	-7	-11	-10	-13	-6	-2	-3	2	4	3	3	-2	0	-1	7	7	9	13	10	12	12	9	10	13	10
1982	-16	-19	-3	-12	-7	-12	-11	-10	-2	-6	-6	-5	-4	-4	-2	0	1	3	3	-1	0	4	4	4	4	5	7	5	7	12	16	7	7	10	9	13
1983	-1	-2	-3	-11	-3	-6	-14	-9	-6	-2	-3	-3	-6	-6	-2	-1	-2	-2	-1	1	-1	2	3	3	4	7	7	9	11	9	10	12	13	14	13	12
1984	-5	-13	-3	-12	-18	-12	-1	-6	-5	-6	-5	-3	-4	-3	-6	-8	-8	-6	-1	2	3	3	5	7	7	4	7	12	12	14	15	11	10	15	12	12
1985	-13	-18	-11	-9	-15	-17	-16	-20	-17	-23	-15	-3	-9	-3	-1	-7	-2	-3	-2	-4	-1	2	2	1	1	4	8	7	2	12	11	8	9	13	17	14
1986	-16	-19	-5	-19	-10	-7	-10	-10	-9	-14	-14	-4	-4	-4	-1	0	0	0	0	0	-4	-3	1	3	7	8	6	7	9	10	11	12	14	17	14	18
1987	-18	-28	-24	-15	-5	-13	-1	-11	-8	-12	-8	-11	-17	-10	-8	-5	-3	0	0	-1	2	1	2	6	5	5	3	6	9	5	9	10	9	8	12	11
1988	-3	-7	-2	-3	-1	-3	-3	-2	-1	-7	-14	-7	-7	-5	-6	-8	-2	0	2	0	-2	2	-1	3	5	7	9	8	9	12	8	13	12	14	18	21
1989	-4	-2	-2	1	-2	1	3	0	-2	-3	-4	0	-1	0	0	-2	0	0	-2	0	3	3	2	5	8	6	7	10	14	8	9	11	11	16	15	16
1990	-10	-4	-5	-7	-4	-7	1	2	-1	-3	4	-1	-3	-1	-2	5	1	3	-1	1	3	4	6	8	14	10	8	7	7	9	10	12	12	10	13	15
1991	-1	-4	-10	-8	3	-1	-8	-12	-12	-11	-2	-5	-3	-1	-2	-1	-1	3	3	3	7	-2	1	5	5	4	7	5	7	9	7	10	8	11	12	12
1992	0	-6	2	-7	-6	4	-3	-1	-4	-5	-1	0	1	3	-1	2	0	-2	-4	0	1	0	-1	3	6	6	7	12	12	15	14	16	16	13	11	14
1993	-3	0	-5	-1	-4	-8	1	1	1	-5	-10	-3	-5	-2	2	2	2	-2	0	-2	0	2	7	8	7	9	7	12	11	6	8	10	8	10	9	13
1994	-10	-8	-5	-14	-4	-9	-17	-17	-15	-12	-13	-12	-10	-1	-1	-5	-4	-2	1	1	2	2	4	6	5	8	6	4	7	7	10	10	12	9	10	15
1995	-9	-4	-5	1	-5	-13	-2	-2	-4	0	-3	-3	-5	-2	0	0	2	-2	0	-1	2	1	3	0	6	4	1	4	7	12	12	12	12	14	15	13
1996	-11	-3	-1	-2	-10	-6	-8	-16	-8	-13	-13	-1	-2	-1	-5	-4	-4	-3	-1	2	0	4	3	2	3	4	7	2	7	9	12	13	12	9	11	12
1997	-4	-7	-5	-4	-3	-1	-2	-3	-9	-7	0	-2	2	3	1	-5	-4	1	1	-1	0	1	1	3	4	4	7	6	5	7	12	15	16	11	12	15
1998	0	-2	0	-6	-5	-7	-11	-5	-3	1	0	0	-8	-11	-5	0	0	1	-6	-3	-2	1	4	6	5	7	9	10	4	7	7	11	12	11	11	13
1999	-1	-9	-12	0	-4	-17	-1	-16	-5	-4	-5	-3	-6	-4	-6	0	-3	2	2	4	0	2	2	5	3	2	3	9	10	10	11	11	16	14	12	15
2000	-5	1	-4	-1	-12	-3	-4	-1	-1	-8	-5	-1	-4	-4	-3	0	0	0	-3	0	1	4	6	5	7	10	9	8	9	8	8	11	12	11	13	14
2001	-1	-1	-2	-7	-2	-3	-16	-8	-1	1	-13	-17	-14	-2	-2	-9	-7	-2	3	2	-2	1	3	4	6	10	9	7	7	6	9	10	11	14	15	17
2002	-5	2	1	-2	-12	-12	-1	-2	-2	-3	-4	-4	-4	-4	-4	0	-2	3	1	2	3	2	9	5	7	9	10	9	9	11	16	17	15	16	14	13
2003	-21	-13	-5	-2	-2	-10	-9	-7	-3	-2	-5	-4	-7	0	2	3	3	3	0	-2	2	5	3	1	3	6	7	8	8	11	10	12	11	11	14	15
2004	-10	-4	-1	-9	-12	-7	-5	-9	-3	1	-3	-7	-5	-1	-2	1	-3	1	0	2	3	4	3	5	7	11	4	8	7	9	12	10	11	10	12	14
2005	-2	-3	-1	0	-6	-3	0	-4	-4	-6	-10	-10	-11	-4	-10	-7	1	1	5	3	3	2	3	4	4	4	7	5	10	9	8	10	11	14	15	12
2006	-8	-12	-2	-5	-5	2	-8	-5	-4	-5	0	-8	-10	-14	-8	-2	-6	-4	-3	1	1	2	4	3	6	11	7	5	8	8	10	12	15	15	13	14
2007	-1	-1	-3	-4	-12	-8	-2	-14	-9	-7	-9	-3	-3	0	4	1	-1	2	-4	0	7	4	5	7	5	6	5	8	10	10	12	16	11	12	14	14
2008	-1	1	-1	1	-3	-3	-3	0	-3	0	2	-2	-3	1	0	-3	-7	0	1	-1	0	3	5	7	9	11	6	4	8	11	16	14	10	13	13	12
2009	-11	-4	-2	-5	-2	-4	-11	-12	-12	-13	-4	-6	-3	-2	-3	1	-4	-2	2	0	2	2	5	7	8	8	8	8	10	13	10	8	11	10	15	19
2010	-12	-18	-12	-5	-6	-13	-9	-7	-11	-14	-20	-6	-8	-2	-2	-3	-4	-1	-1	1	4	2	3	4	4	4	8	14	11	8	11	10	11	11	12	14
2011	-9	-5	-11	-5	-5	-3	-3	-7	-13	-17	-12	-2	0	-2	-4	-3	1	-3	2	4	5	6	8	7	3	8	7	9	10	9	12	15	13	12	13	17
2012	-1	-8	-5	-2	-6	-4	-16	-8	-6	-4	-1	-2	-1	-1	2	1	6	4	-1	-1	3	1	2	6	5	5	6	7	11	10	7	10	12	13	13	12
Average	-7	-8	-6	-6	-6	-8	-7	-7	-7	-7	-7	-5	-5	-3	-3	-3	-2	-1	0	0	1	2	3	4	5	6	7	7	8	9	11	12	12	13	13	14
By quartile																																				
Min. value	-21	-28	-24	-19	-24	-21	-25	-20	-22	-23	-20	-17	-17	-14	-14	-13	-10	-8	-6	-6	-7	-8	-2	-1	-1	1	1	2	2	5	7	7	7	8	9	10
Lower	-11	-12	-10	-9	-10	-12	-11	-11	-11	-12	-11	-7	-7	-4	-6	-6	-5	-3	-2	-1	0	1	1	3	3	4	6	5	7	8	9	10	11	11	12	12
Median	-6	-7	-5	-5	-5	-7	-7	-7	-6	-6	-6	-3	-4	-2	-3	-2	-2	-1	0	0	1	2	3	4	5	5	7	8	8	9	11	12	12	13	13	13
Upper	-2	-3	-2	-2	-3	-3	-2	-3	-3	-3	-2	-1	-2	-1	0	0	0	1	1	2	3	3	4	5	6	8	8	9	10	11	13	13	13	14	15	15
Max. value	2	4	2	1	3	4	3	2	1	3	4	3	2	4	4	5	6	4	5	4	7	6	9	8	14	11	10	14	14	15	16	17	17	19	18	21
Range	24	32	26	20	26	25	28	22	23	26	24	20	20	18	18	18	15	12	10	11	15	14	10	9	14	10	9	12	12	10	9	10	10	11	9	10

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	13	13	14	17	13	13	14	13	13	13	11	12	11	9	10	12	10	9	9	10	9	8	9	5	3	3	3	1	2	-3	-5	-8	-12	0	-9	-9
1962	13	15	11	12	13	13	11	12	13	12	12	11	10	10	9	8	9	8	9	7	4	4	8	3	3	3	1	-5	-10	-3	2	2	-10	-11	-8	-14
1963	16	13	13	14	14	14	17	15	13	14	13	13	14	12	10	10	9	7	6	5	3	4	6	5	2	2	-1	-2	-12	-1	0	-3	-3	-6	-9	-4
1964	11	11	14	15	14	13	12	17	12	11	10	10	11	10	7	7	9	8	6	8	6	5	5	3	2	-2	1	-2	-2	-5	-2	-2	-3	-7	-1	-12
1965	10	12	12	16	16	14	12	11	12	13	13	13	13	13	9	10	10	11	6	6	5	4	6	4	3	2	-8	-9	-14	-5	-7	-9	-19	-11	-12	-11
1966	15	14	14	17	18	14	14	14	12	13	11	13	12	10	8	8	7	3	6	4	3	5	5	-2	0	2	0	-5	-3	0	1	0	-5	-6	-6	-3
1967	12	15	13	16	14	15	17	12	14	12	14	13	13	11	12	10	10	8	10	6	6	2	3	4	3	5	2	0	2	1	1	-8	-10	-15	-12	-14
1968	17	13	12	14	13	16	15	15	11	11	15	13	15	15	7	6	4	6	6	1	2	1	0	-2	-6	-11	-13	-6	-3	-4	-2	-2	-6	-5	-4	-6
1969	13	13	14	15	17	17	17	17	17	17	14	14	11	12	10	8	7	6	4	7	5	6	3	2	-3	0	0	-2	-8	-10	-8	-14	-3	-14	-12	-5
1970	13	14	13	14	13	14	15	14	14	15	14	13	12	9	10	10	6	5	6	7	6	7	0	-1	-7	-6	-2	0	2	-3	-5	1	1	-2	-5	-8
1971	18	16	12	12	13	15	16	15	12	14	13	11	11	11	8	9	9	5	5	6	3	4	2	4	3	-7	-1	-9	-9	0	-1	-3	-5	-3	-1	-2
1972	20	17	18	17	16	15	15	16	14	13	11	11	11	11	8	9	8	4	6	8	5	3	1	2	2	2	-1	-5	-3	-1	2	-3	1	0	-4	0
1973	19	18	17	19	17	17	16	13	15	14	10	11	11	9	6	7	5	4	10	4	0	-1	-2	2	0	2	-7	-8	-5	-9	-10	-12	-7	-11	-7	-1
1974	14	14	14	15	14	12	14	12	14	14	13	14	14	12	10	10	8	8	7	6	2	3	2	2	0	1	1	-3	-5	0	-1	-5	-5	-3	0	-8
1975	14	15	15	14	16	17	17	20	15	13	13	11	13	10	11	10	9	7	8	3	6	4	1	5	4	2	1	-2	-5	1	0	-4	-3	-7	-1	-2
1976	12	13	15	15	16	11	12	16	16	15	14	13	8	8	8	5	6	2	5	6	2	4	3	0	-1	2	-2	-2	-4	-2	-1	1	-4	-5	-11	-20
1977	15	16	11	10	11	13	15	13	14	11	10	12	13	8	5	9	8	7	2	4	4	7	6	5	5	4	2	-4	-6	-4	-3	-1	-1	-1	-3	-6
1978	13	13	13	11	13	16	17	13	11	14	13	10	12	11	9	9	4	4	4	5	7	5	1	2	4	3	2	0	-3	-10	-7	-15	-9	-10	-11	-23
1979	11	14	15	15	14	15	13	14	15	16	13	11	11	11	8	8	7	6	3	4	4	3	2	0	-1	-1	-1	0	-3	-3	-1	-6	-16	-13	-6	0
1980	14	15	14	14	16	19	19	13	14	13	13	11	11	14	11	10	10	11	7	7	5	3	0	-4	-4	-2	-6	-4	-3	-15	-6	-9	-5	-5	-8	-4
1981	12	17	16	14	15	16	15	16	16	11	12	10	11	11	9	7	9	10	10	6	5	2	0	0	-2	-1	-3	0	-2	-7	-4	-12	-15	-17	-11	-8
1982	13	15	17	17	14	16	17	16	14	13	11	12	10	9	9	10	9	9	9	5	2	0	3	3	2	-1	3	0	0	-1	-4	-4	-8	-7	-1	-5
1983	13	19	17	12	16	14	14	17	12	12	12	13	13	10	11	11	6	6	6	4	5	6	4	4	3	3	-3	-3	-6	-12	-3	-8	-9	-5	-5	-3
1984	13	15	16	15	15	14	18	16	13	14	14	11	8	11	10	8	8	5	9	8	4	5	4	3	5	0	-1	-7	-2	-1	1	1	-1	-2	-1	-6
1985	14	15	17	14	13	14	15	15	15	15	14	12	10	10	10	8	6	5	9	7	6	6	7	2	-1	2	-2	-7	-7	-11	-7	-16	-6	-18	-6	-20
1986	16	14	12	15	13	16	15	12	11	10	9	8	9	7	7	7	4	4	6	5	5	5	2	5	0	2	0	1	1	3	-3	-3	-6	-8	-11	-11
1987	13	15	13	15	17	13	13	11	11	12	10	9	10	11	9	6	8	6	6	8	8	6	5	4	4	-2	1	2	1	-5	2	-5	-5	-8	-4	-7
1988	18	17	17	20	16	15	13	15	13	13	12	13	13	13	11	10	9	8	7	6	3	4	1	-2	-1	-2	-1	-5	-2	-11	-9	-5	-6	-8	-9	-2
1989	16	15	14	12	17	17	15	15	15	15	12	10	11	10	10	10	12	8	7	4	2	2	6	4	4	4	3	-1	-7	-3	2	-8	-16	-10	-3	-9
1990	13	14	14	15	15	16	18	13	16	15	13	13	11	12	9	9	7	4	6	5	6	6	3	3	1	5	0	-1	-9	-4	2	-8	-5	-3	-2	0
1991	16	20	15	15	15	17	19	17	13	15	15	14	14	8	8	7	8	5	6	6	5	3	1	2	4	1	0	-5	1	1	-1	-2	-2	-2	-6	-2
1992	12	14	14	12	15	14	15	13	13	13	11	12	10	8	10	9	10	7	6	5	0	-3	-6	-6	-3	-2	1	-2	-6	0	2	-8	-4	1	-6	0
1993	13	12	15	15	16	14	15	14	13	12	11	10	9	8	6	5	8	5	7	5	1	2	-1	3	0	0	2	-3	-3	-7	0	-3	-9	-2	-6	-8
1994	14	17	19	16	17	20	19	16	15	12	14	12	11	10	10	6	9	7	2	6	4	-1	4	2	2	-1	-8	-6	1	0	-4	1	-2	0	-2	-4
1995	11	12	13	14	14	18	17	13	15	17	13	9	13	11	9	8	8	6	6	10	6	8	4	3	-3	-2	0	-8	0	-6	-6	-4	-1	-6	-18	-16
1996	13	13	14	13	15	14	14	15	16	17	15	16	12	8	8	8	8	9	7	7	4	5	4	3	1	-1	-4	-1	-4	-9	0	-1	-9	-11	-14	-7
1997	18	15	16	18	19	17	18	19	14	16	16	16	16	12	10	9	10	7	5	4	3	3	-2	3	-1	1	1	-1	-1	-5	-6	-2	-1	-1	-6	-6
1998	14	15	15	13	15	14	15	14	13	12	12	11	10	12	13	10	9	6	5	6	4	2	5	3	-4	-4	-1	-8	-1	-1	-1	-7	-4	1	-8	-3
1999	15	15	18	16	15	14	17	12	12	13	11	14	15	13	11	11	9	9	8	4	5	2	4	4	5	4	4	-3	1	3	-4	-9	-12	-9	-4	-5
2000	14	13	14	14	16	15	15	13	14	13	12	14	10	11	8	8	8	9	11	10	7	8	6	2	5	5	4	2	3	3	2	4	3	-3	-5	-9
2001	17	18	15	14	15	16	13	14	14	16	15	14	13	12	12	12	9	5	9	10	6	7	1	4	1	-3	0	1	0	2	1	-2	0	-3	-12	-15
2002	14	16	18	18	17	18	16	17	19	19	19	16	14	14	12	8	5	7	3	2	3	-3	1	2	-6	-2	-8	-1	-3	-2	-2	-7	-3	-5	-16	-12
2003	16	15	18	21	19	19	18	16	16	16	15	10	11	13	12	10	8	5	6	4	4	2	-3	1	4	0	-3	-2	-5	1	1	0	-1	-4	-9	-4
2004	13	13	14	15	16	17	18	21	15	14	12	13	14	12	11	9	10	8	8	4	2	5	5	3	3	3	3	-5	-8	-9	-2	-1	0	-1	-7	-4
2005	16	19	17	16	15	15	14	15	14	14	14	12	12	12	9	9	8	8	8	7	7	2	0	5	6	6	4	-4	-1	-3	-3	-3	1	-7	-2	-5
2006	17	19	14	14	16	16	19	19	18	17	17	15	15	13	13	12	13	10	10	9	6	5	3	-1	-3	2	1	2	3	3	2	2	2	-1	3	0
2007	17	13	15	15	15	15	16	18	16	15	16	9	9	10	9	7	9	7	7	5	2	5	5	4	2	-1	-1	-1	-2	-4	0	1	-8	-1	-1	0
2008	16	13	14	14	18	18	14	13	15	14	13	11	12	10	8	8	9	8	7	6	7	4	6	1	2	3	-1	-2	-4	-2	-1	-6	-3	0	-5	-3
2009	17	12	14	15	15	15	16	18	14	12	14	14	14	13	11	11	9	8	3	3	1	2	2	2	3	2	0	5	4	1	-3	2	-2	-11	-10	-12
2010	17	17	18	18	15	16	16	16	17	13	14	9	10	12	12	9	8	6	8	7	3	3	-1	3	2	-2	-2	-5	-7	-12	-12	-11	-15	-7	-19	-8
2011	16	18	15	15	17	18	17	15	13	15	14	15	14	12	12	10	9	12	9	6	3	4	3	4	5	4	2	2	2	2	0	-3	0	-1	-4	-1
2012	15	16	14	14	15	16	15	14	15	15	12	12	12	9	10	8	6	7	7	6	4	4	2	-1	3	0	2	1	4	-1	-13	-7	-8	-3	-6	-3
Average	14	15	15	15	15	15	16	15	14	14	13	12	12	11	9	9	8	7	7	6	4	4	3	2	1	0	-1	-3	-3	-3	-2	-4	-5	-6	-7	-7
By quartile																																				
Min. value	10	11	11	10	11	11	11	11	11	10	9	8	8	7	5	5	4	2	2	1	0	-3	-6	-6	-7	-11	-13	-9	-14	-15	-13	-16	-19	-18	-19	-23
Lower	13	13	14	14	14	14	14	13	13	12	12	11	10	10	8	8	7	5	6	4	3	2	1	1	-1	-2	-2	-5	-5	-6	-4	-8	-8	-9	-9	-9
Median	14	15	14	15	15	15	15	15	14	14	13	12	11	11	10	9	8	7	6	6	4	4	3	3	2	1	0	-2	-3	-3	-1	-3	-5	-5	-6	-5
Upper	16	16	16	16	16	17	17	16	15	15	14	13	13	12	11	10	9	8	8	7	6	5	5	4	3	3	1	0	0	0	0	-1	-2	-2	-4	-3
Max. value	20	20	19	21	19	20	19	21	19	19	19	16	16	15	13	12	13	12	11	10	9	8	9	5	6	6	4	5	4	3	2	4	3	1	3	0
Range	9	9	8	11	8	9	8	10	8	9	10	8	8	8	8	8	9	10	9	9	10	11	15	11	13	17	17	14	18	18	15	20	22	19	23	23

Figure A18-11. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Västernorrland county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Västernorrland** | **Total precipitation , mm / 5 or 6 day periods** | Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Location: **Härnösand (Sälsten)** | Coordinates for the places (RT90): 1610974-6948898 1589094-6958172 1583758-6947500 1602434-6946166

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March						April					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30
1961	28	8	2	1	1	14	4	20	1	3	1	0	2	4	2	2	1	3	1	3	8	0	0	0
1962	0	11	19	13	20	7	9	7	18	25	0	1	2	1	0	0	5	24	16	13	19	2	12	1
1963	2	2	4	1	1	1	12	1	1	2	3	0	2	4	1	2	24	0	3	0	24	4	0	6
1964	0	0	0	0	0	1	7	18	11	7	0	4	1	4	0	0	0	0	0	3	1	3	0	8
1965	2	8	20	36	23	16	7	1	20	7	2	1	0	1	0	20	7	3	2	3	3	32	1	16
1966	1	1	1	0	4	35	7	6	8	7	20	6	4	3	2	6	58	50	16	5	1	1	6	0
1967	34	2	9	1	2	13	17	3	0	9	17	24	3	7	4	14	3	15	1	4	0	15	2	2
1968	2	2	11	4	18	4	7	5	2	1	3	0	4	3	2	24	18	4	25	0	0	0	11	0
1969	4	1	18	14	1	9	4	31	14	7	3	0	2	0	0	0	0	25	1	5	20	12	0	23
1970	29	2	6	1	2	3	7	5	3	1	4	1	20	44	1	8	1	26	12	9	0	14	21	5
1971	0	6	7	4	27	31	4	9	8	14	17	2	5	2	8	17	13	5	5	1	1	21	4	5
1972	0	1	2	11	8	10	14	12	5	7	4	0	4	1	0	0	0	35	16	9	9	1	4	19
1973	1	4	0	15	9	4	2	1	31	8	0	3	6	3	0	6	4	2	17	4	1	72	4	14
1974	1	7	27	5	9	18	13	22	30	1	1	0	0	0	3	7	5	0	0	11	1	2	7	0
1975	4	10	20	3	8	14	6	0	9	7	0	2	2	4	0	0	0	8	2	5	0	1	4	3
1976	23	12	3	23	1	2	8	9	6	0	8	2	4	8	6	0	8	3	5	2	1	3	3	4
1977	31	0	34	2	7	36	4	5	1	12	25	0	7	0	11	13	6	2	14	11	18	24	10	25
1978	7	3	1	1	3	37	15	0	1	2	3	2	23	11	5	0	8	15	0	2	9	7	12	0
1979	0	1	18	0	10	6	10	1	4	2	0	3	3	12	12	1	12	21	16	1	2	4	23	15
1980	4	6	3	1	8	2	1	1	6	0	0	0	18	5	2	0	1	28	2	13	1	10	1	16
1981	2	4	35	9	3	3	22	12	5	4	14	1	2	47	11	6	18	0	0	0	3	0	2	16
1982	23	2	3	0	6	6	1	27	0	0	0	3	18	10	55	19	2	0	0	23	4	1	0	4
1983	16	3	14	8	9	12	11	2	2	0	0	0	0	9	2	1	52	11	22	17	1	8	26	4
1984	12	4	21	10	2	22	27	16	0	1	7	0	0	7	3	1	2	24	1	0	3	6	9	0
1985	4	3	1	7	44	20	12	11	6	6	13	5	17	6	4	1	2	19	15	11	1	2	2	4
1986	2	2	14	16	18	13	2	0	0	0	8	0	11	1	2	0	33	22	9	0	1	15	16	36
1987	14	6	0	2	15	9	2	8	48	1	1	0	0	0	0	5	6	32	0	0	1	1	3	1
1988	18	2	3	7	14	57	29	27	10	7	9	27	29	9	5	1	8	6	5	1	1	8	0	0
1989	4	5	21	1	4	3	2	1	5	10	27	54	0	10	16	19	23	10	0	7	13	18	36	28
1990	2	5	28	21	25	37	4	0	25	10	0	22	2	4	5	0	11	0	26	0	1	4	2	9
1991	25	16	1	0	0	4	6	6	4	2	6	1	5	5	9	14	33	0	6	2	2	6	0	2
1992	1	8	4	8	1	0	1	8	19	1	0	1	3	0	7	5	7	6	8	3	1	12	31	69
1993	2	10	14	5	6	0	1	1	0	17	0	1	4	0	0	1	4	3	3	0	0	5	4	0
1994	8	23	20	7	18	66	4	2	1	0	0	0	11	6	5	1	19	17	34	4	2	0	4	4
1995	6	27	6	7	41	7	5	1	15	5	7	5	7	19	4	46	10	6	0	1	10	52	3	6
1996	2	1	7	2	2	0	0	5	7	0	1	4	2	1	2	3	0	15	2	0	0	0	25	0
1997	1	3	3	8	0	1	0	23	9	14	14	7	0	0	1	1	9	20	15	2	8	0	10	0
1998	69	24	14	3	0	1	27	14	5	5	9	3	17	1	11	2	0	8	0	1	6	36	0	5
1999	8	0	7	15	31	2	14	1	3	17	5	28	30	11	0	3	3	13	0	0	46	49	12	5
2000	13	1	6	5	3	17	1	2	4	2	17	2	28	7	1	2	0	2	26	0	8	6	32	4
2001	34	24	0	0	20	5	8	8	8	2	4	0	3	10	17	0	4	7	17	23	3	5	6	2
2002	3	1	2	18	21	18	25	6	2	2	9	5	1	6	2	28	2	0	1	0	6	0	1	23
2003	2	4	14	15	9	11	23	1	0	0	0	0	1	2	0	0	0	7	25	7	36	0	1	15
2004	1	6	14	2	0	27	8	2	5	1	8	3	0	0	5	37	17	1	6	3	0	0	12	4
2005	21	20	2	14	0	4	2	7	8	14	3	0	0	7	7	9	4	0	0	13	5	0	1	0
2006	9	0	0	22	6	13	3	14	1	11	1	5	22	2	1	1	0	36	16	10	7	3	0	38
2007	17	19	35	11	2	3	3	4	3	8	5	3	1	24	2	24	0	0	0	1	0	9	0	1
2008	9	24	23	22	15	7	6	8	0	0	5	13	14	21	25	10	2	3	3	36	6	0	0	0
2009	0	3	1	24	15	2	2	32	0	2	14	6	8	20	0	2	3	8	6	11	4	1	0	1
2010	7	0	0	5	1	35	23	4	2	5	6	24	3	0	1	10	5	10	11	10	1	2	0	7
2011	12	31	11	6	5	0	10	16	5	8	2	0	0	8	1	4	1	2	6	21	0	3	4	1
2012	67	4	3	18	9	13	5	1	7	13	8	5	0	1	1	1	1	9	5	13	7	22	13	12
Average	11	7	10	8	10	13	9	8	7	6	6	5	7	7	5	7	9	11	8	6	6	10	7	9
By quartile																								
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	2	2	2	2	3	3	1	1	1	1	0	1	1	1	1	1	2	1	1	1	1	0	1
Median	4	4	6	7	6	8	6	6	5	4	4	2	3	4	2	2	4	7	5	3	2	4	4	4
Upper	16	8	18	14	15	17	12	12	8	8	8	5	9	9	5	10	10	17	15	10	7	12	11	14
Max. value	69	31	35	36	44	66	29	32	48	25	27	54	30	47	55	46	58	50	34	36	46	72	36	69

Month	May						June						July						August					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	31
1961	26	20	0	1	4	1	3	1	6	11	4	38	51	1	14	7	39	21	61	7	7	10	15	16
1962	5	5	0	14	14	6	3	3	5	7	9	30	10	0	22	4	16	4	22	34	4	1	22	35
1963	14	15	0	2	0	0	1	0	4	9	7	27	0	9	14	22	4	0	2	20	14	43	4	9
1964	5	17	9	0	2	4	4	14	7	8	23	8	12	18	1	6	10	13	16	0	4	65	13	21
1965	0	3	2	17	1	0	2	0	8	17	14	12	2	7	54	0	5	49	26	1	1	3	24	3
1966	7	5	1	5	26	2	18	2	0	0	17	0	22	2	22	3	7	20	31	27	19	2	0	0
1967	1	3	32	30	31	20	6	20	0	0	2	6	8	8	6	13	4	7	2	15	31	12	9	30
1968	18	17	17	3	5	0	1	14	0	2	1	24	0	5	6	2	17	2	0	0	63	26	0	0
1969	0	8	17	7	0	1	6	1	1	1	0	13	16	23	2	6	13	1	0	0	0	0	79	23
1970	2	0	0	2	11	20	10	2	1	0	6	2	28	5	22	6	37	23	0	15	3	1	2	7
1971	1	0	0	34	1	4	2	3	2	18	9	4	0	4	8	3	8	12	5	16	16	3	0	7
1972	4	0	0	18	31	24	5	3	9	1	9	0	9	41	0	45	13	3	43	4	5	8	3	0
1973	5	16	2	21	4	4	24	5	2	0	0	1	0	3	5	30	17	7	11	12	0	9	2	9
1974	0	0	0	0	12	21	2	8	0	0	15	27	5	20	35	8	16	60	7	6	6	6	7	3
1975	3	0	21	12	30	10	8	0	17	3	8	23	0	0	7	0	19	4	1	0	8	0	21	2
1976	7	0	2	0	0	0	0	8	24	4	9	8	1	7	8	13	2	23	22	0	0	0	0	13
1977	1	4	30	0	0	1	18	26	11	2	1	20	13	0	28	22	21	5	16	6	4	7	7	7
1978	1	0	7	5	1	0	0	11	6	0	37	37	3	52	13	7	6	0	16	4	6	16	32	22
1979	30	1	0	8	7	8	0	8	3	7	2	10	13	42	41	8	29	6	3	19	29	4	2	72
1980	0	12	0	0	4	9	36	3	0	6	29	22	0	2	3	17	0	0	28	41	11	10	54	14
1981	15	1	0	0	6	5	18	15	1	5	24	63	26	0	5	2	11	6	13	0	45	19	5	5
1982	11	15	3	1	9	20	0	3	10	1	6	3	20	1	0	1	8	0	1	9	63	30	9	11
1983	0	0	21	27	13	27	3	8	0	0	6	18	21	4	10	17	0	4	4	0	3	12	3	3
1984	4	6	1	5	1	5	5	1	23	6	13	24	2	0	22	21	4	9	2	9	12	2	0	6
1985	44	0	0	0	23	13	3	16	11	4	2	1	0	0	19	32	21	34	19	20	4	10	24	15
1986	0	0	21	10	15	8	0	14	2	6	0	5	6	5	28	1	18	5	34	15	5	67	44	24
1987	9	1	22	22	0	3	7	28	5	39	10	6	5	13	2	0	8	9	45	14	0	7	6	37
1988	8	0	0	3	6	15	4	0	0	2	1	0	23	9	6	6	7	3	18	6	23	16	35	12
1989	1	19	16	6	3	13	25	17	1	1	6	0	2	7	3	0	0	27	27	6	16	1	17	4
1990	0	0	0	0	27	6	1	2	4	14	4	22	20	31	6	18	47	7	5	8	1	26	1	2
1991	1	0	46	11	1	6	10	4	28	45	13	40	0	10	16	28	6	1	4	3	8	9	9	4
1992	12	7	8	1	4	0	2	0	14	13	1	3	5	12	32	14	14	27	2	17	76	36	23	19
1993	4	0	15	2	0	16	26	1	8	28	9	4	9	7	2	2	70	53	22	27	37	17	27	18
1994	0	0	3	4	1	11	7	4	3	8	20	8	1	3	1	0	0	4	4	0	10	2	13	11
1995	3	3	8	21	16	4	8	0	3	5	5	1	37	7	0	24	15	0	11	4	3	0	37	13
1996	21	7	6	6	22	5	1	2	7	60	16	4	28	26	7	5	1	6	8	0	0	0	9	18
1997	2	25	3	1	2	1	0	1	12	5	39	1	8	3	0	0	4	26	1	0	0	2	12	40
1998	15	0	3	3	7	8	10	12	12	39	4	4	13	17	49	12	19	29	3	3	24	21	30	20
1999	2	0	0	0	2	10	26	14	5	6	17	16	9	7	3	17	9	1	7	42	0	2	2	28
2000	1	0	0	15	18	27	14	2	5	7	17	26	9	8	83	54	44	3	3	21	17	14	3	20
2001	20	0	0	20	5	7	11	9	4	1	3	1	14	16	16	41	10	8	19	37	4	8	1	80
2002	7	0	0	1	2	1	0	8	13	7	8	67	18	7	13	19	41	0	1	0	6	1	0	9
2003	4	4	18	12	6	4	11	16	0	29	5	13	2	0	0	0	7	15	23	0	97	7	17	18
2004	11	12	10	4	10	4	1	4	8	8	9	12	14	5	9	20	18	5	1	0	1	36	10	50
2005	24	13	15	30	13	5	23	14	36	1	4	5	0	2	3	33	48	41	13	68	15	8	21	15
2006	1	0	9	6	8	42	5	1	0	7	6	6	1	13	8	2	2	4	0	2	14	4	14	50
2007	2	3	16	5	3	8	0	0	27	2	1	4	1	37	17	8	2	20	4	10	14	5	3	32
2008	2	0	0	0	1	0	1	13	16	6	12	0	1	2	46	5	6	4	8	11	20	27	7	44
2009	5	7	1	4	5	2	3	5	24	2	0	0	2	63	2	24	63	5	15	3	20	14	35	14
2010	7	2	3	13	1	24	1	11	21	21	3	7	1	0	25	10	23	10	15	43	1	0	35	14
2011	1	5	35	9	6	29	1	0	17	9	14	2	14	1	15	20	19	2	30	43	20	27	15	3
2012	23	20	13	13	3	1	40	3	9	3	0	31	9	18	16	2	2	12	25	28	0	1	6	62
Average	8	5	8	8	8	9	8	7	8	9	9	14	10	11	15	13	16	12	13	13	15	13	15	19
By quartile																								
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	0	0	1	1	2	1	1	2	2	2	3	1	2	3	2	5	3	3	1	3	2	3	7
Median	4	2	3	5	5	6	4	4	6	6	7	7	8	7	9	8	11	6	9	8	8	8	9	14
Upper	11	8	15	13	12	13	11	12	12	9	13	22	14	14	22	20	19	20	22	19	19	16	22	23
Max. value	44	25	46	34	31	42	40	28	36	60	39	67	51	63	83	54	70	60	61	68	97	67	79	80

Month	September						October						November						December					
Year / Day	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	0	1	43	0	2	7	0	10	3	56	24	9	5	27	8	1	3	15	30	2	1	2	0	26
1962	61	10	0	5	1	0	3	0	0	8	1	13	5	2	18	8	2	0	9	1	30	12	1	1
1963	20	17	1	0	11	6	24	13	16	11	3	2	2	17	32	34	2	1	0	4	2	34	1	2
1964	0	16	11	35	8	7	0	41	36	1	15	0	0	4	10	6	6	14	13	12	15	7	13	8
1965	1	39	43	21	1	13	1	1	5	9	0	17	42	0	4	3	4	39	27	11	1	23	27	28
1966	21	14	42	1	3	5	8	8	7	18	29	0	38	5	3	7	2	7	26	52	44	55	43	38
1967	34	6	0	4	1	11	14	24	22	10	24	25	44	14	30	1	0	0	16	4	10	1	32	30
1968	9	3	6	6	27	8	27	2	12	16	6	32	41	0	0	1	7	4	0	0	0	21	7	27
1969	4	0	36	3	23	14	22	0	0	2	3	6	20	30	16	7	3	8	11	1	8	4	9	2
1970	13	11	29	22	1	0	29	23	0	31	9	22	24	17	21	39	21	0	9	1	3	0	1	3
1971	13	4	1	10	38	1	5	3	0	17	16	2	2	22	6	8	14	16	2	4	11	8	20	0
1972	1	17	15	2	5	0	1	1	9	14	15	3	16	7	14	1	20	12	11	12	5	1	0	0
1973	30	12	11	7	0	12	2	15	0	1	1	4	2	5	13	24	5	1	7	7	30	16	19	1
1974	6	14	1	9	33	23	46	24	4	10	7	17	12	41	47	11	6	31	28	2	4	24	1	10
1975	7	9	32	4	9	15	15	0	0	5	1	14	8	0	0	16	0	19	25	10	11	1	1	5
1976	1	40	16	0	8	0	0	15	7	0	1	8	27	24	17	1	9	30	69	25	5	19	0	5
1977	2	16	5	0	0	21	44	5	6	3	6	1	56	10	21	1	24	0	3	11	2	0	16	26
1978	40	18	1	10	27	2	6	15	0	15	1	8	7	0	20	2	3	1	5	0	6	16	3	11
1979	17	12	32	2	3	3	1	7	33	27	0	15	32	14	27	42	2	17	1	8	5	3	14	26
1980	14	3	44	16	12	6	2	55	21	52	3	29	0	2	31	21	7	2	6	5	10	6	17	10
1981	0	0	0	1	4	18	16	32	9	20	10	41	17	0	2	31	44	25	12	9	5	0	26	37
1982	14	20	14	10	21	3	1	2	11	19	7	5	7	1	8	13	25	33	6	20	14	13	7	2
1983	12	30	75	71	9	1	19	10	10	24	4	5	1	0	2	6	8	3	8	13	0	10	21	16
1984	46	16	25	5	66	3	24	61	18	33	34	33	6	1	0	3	37	24	2	12	0	35	7	2
1985	49	33	5	9	0	1	9	28	20	0	0	6	36	29	2	1	2	13	39	1	4	7	20	3
1986	27	21	44	2	6	8	8	9	0	9	7	16	14	24	16	10	20	1	58	3	4	14	7	20
1987	11	28	16	35	19	7	0	4	26	24	15	11	3	2	44	49	27	3	3	10	7	6	6	28
1988	4	1	85	4	15	19	1	18	2	0	3	0	6	0	2	0	11	4	9	6	3	5	14	16
1989	1	2	0	12	1	2	0	1	0	4	2	3	23	15	10	0	2	7	4	12	15	14	10	0
1990	2	52	6	51	14	0	11	0	0	0	0	68	28	2	3	11	14	1	1	0	4	2	7	36
1991	2	14	12	19	31	12	19	2	0	14	4	4	28	6	19	0	2	1	0	4	0	10	12	7
1992	25	8	28	7	8	12	0	7	35	14	6	9	24	20	51	38	31	28	23	0	6	3	0	0
1993	9	2	2	0	12	0	8	50	27	0	5	5	0	16	13	2	9	1	38	14	4	46	12	7
1994	0	30	27	11	1	16	13	2	24	0	6	41	19	19	22	4	0	2	1	29	0	20	2	21
1995	5	8	8	3	10	0	10	3	3	5	5	7	2	2	1	3	22	6	0	3	0	0	0	0
1996	0	2	4	6	0	44	18	1	4	28	1	27	35	7	3	27	26	19	17	8	24	1	7	3
1997	13	8	13	7	1	15	9	21	2	7	0	0	1	54	37	0	16	15	6	3	27	1	9	25
1998	0	9	15	13	3	24	2	2	19	22	37	66	3	13	6	2	5	3	1	1	7	5	17	14
1999	1	1	4	12	14	22	17	40	7	0	6	7	5	3	0	12	4	19	2	25	3	19	14	9
2000	1	24	1	0	0	2	16	6	63	2	14	86	38	25	18	54	50	28	4	16	45	5	1	17
2001	24	##	45	0	0	7	15	27	3	4	0	30	1	2	5	8	5	18	11	7	0	9	8	10
2002	3	0	3	25	3	3	2	9	14	2	17	28	2	23	7	12	11	6	9	1	0	0	0	18
2003	2	0	0	1	20	18	42	1	0	2	1	13	29	0	1	17	14	22	5	0	11	9	2	13
2004	7	0	18	23	4	9	12	3	1	10	26	1	4	1	2	3	4	7	10	8	3	1	13	4
2005	2	1	8	2	1	2	8	2	2	1	14	12	17	4	4	1	8	3	9	9	3	10	8	24
2006	65	4	0	0	1	38	39	29	0	70	28	46	11	4	31	21	35	4	18	10	6	2	1	12
2007	13	17	13	11	4	8	3	2	10	1	0	5	12	24	11	2	15	10	40	35	0	0	4	15
2008	23	0	0	3	0	12	80	12	3	17	6	2	1	10	20	2	6	24	31	8	29	9	8	0
2009	30	2	2	4	5	0	33	18	3	13	9	3	24	11	25	35	34	21	7	8	9	16	12	21
2010	0	0	15	36	34	0	0	4	0	11	1	19	17	19	11	3	7	4	8	2	5	30	2	26
2011	11	43	16	24	10	9	1	10	0	17	0	12	2	2	0	11	2	12	8	48	18	28	3	11
2012	26	3	7	9	11	30	11	12	45	31	1	25	12	3	10	3	4	20	17	24	48	15	17	21
Average	14	15	17	11	10	10	13	13	10	14	8	17	16	11	14	12	12	12	14	10	10	12	10	13
By quartile																								
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	2	2	2	1	2	2	2	0	2	1	4	3	2	3	2	3	2	4	2	3	2	2	3
Median	9	10	12	6	5	7	9	8	5	10	5	10	12	6	11	7	7	7	9	8	5	8	7	11
Upper	21	17	27	12	14	14	18	19	16	18	14	25	25	19	20	16	20	19	18	12	11	16	14	22
Max. value	65	127	85	71	66	44	80	61	63	70	37	86	56	54	51	54	50	39	69	52	48	55	43	38

Figure A18-12. Average precipitation (°C) for 5 or 6 day periods and their quartiles in Västernorrland county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A19 JÄMTLAND COUNTY♣

A19.1 Crop production and yield

Table A19-1. *Annual production (metric ton) in 2010-2014 for the major crops in Jämtland county and their average*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses		143 300	128 700		119 700	130 567
Spring barley	4 400	5 900	3 900	6 700	5 900	5 360

* Data from Jordbruksverket (2015)

Table A19-2. *Average spring barley yield in Jämtland county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Spring barley	2 425	353	15

* Coefficient of variation = Standard deviation / Average

Table A19-3. *Coefficient of variation of farm-level yield for spring barley in Jämtland county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Spring barley	24	46	25	21	34	40	32	63	24

* Based on farm-level yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

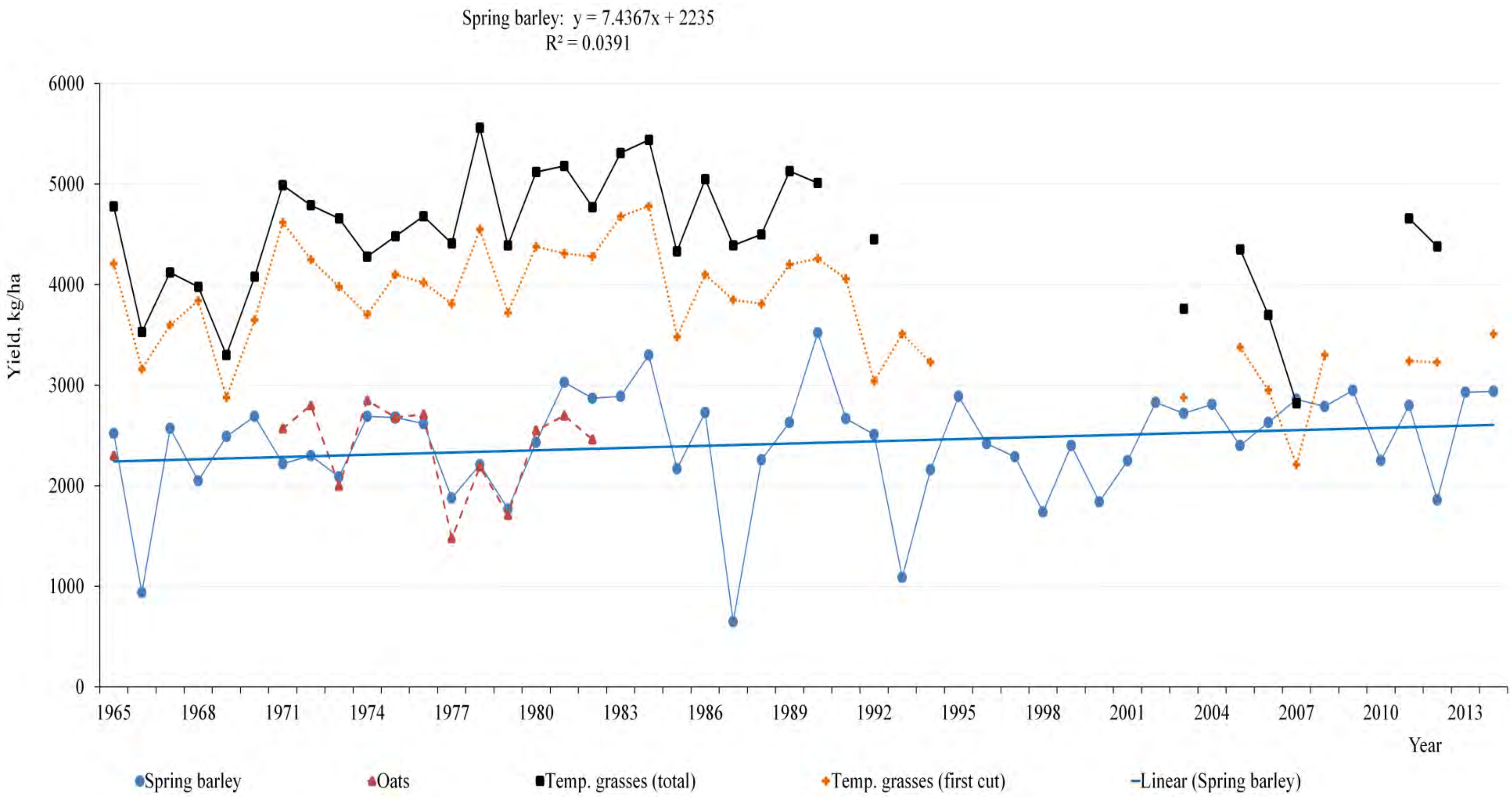


Figure A19-1. Average yield (kg/ha) per year of spring barley, oats and temporary grasses (total and first cut) in Jämtland county for the period 1965-2014, and the trend line with respective equation for barley. The variable x in the equation is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

A19.2 Precipitation, temperature and cereal yield

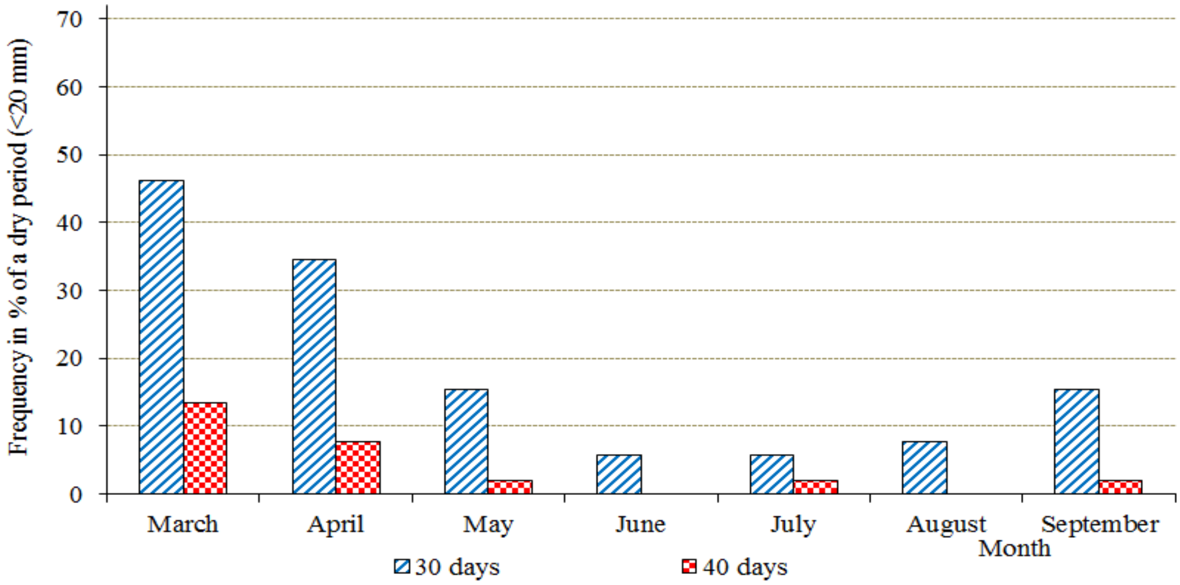


Figure A19-2. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Jämtland county*.

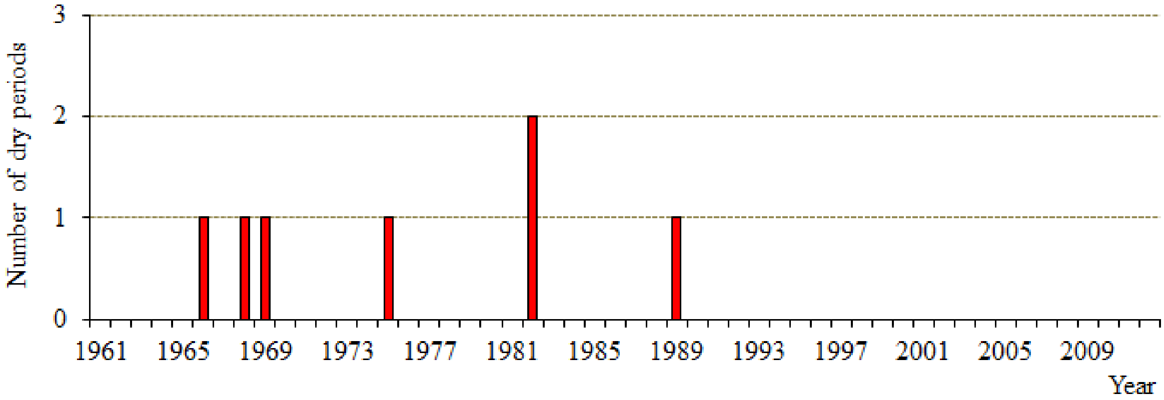


Figure A19-3. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 1 June-10 August in Jämtland county*.

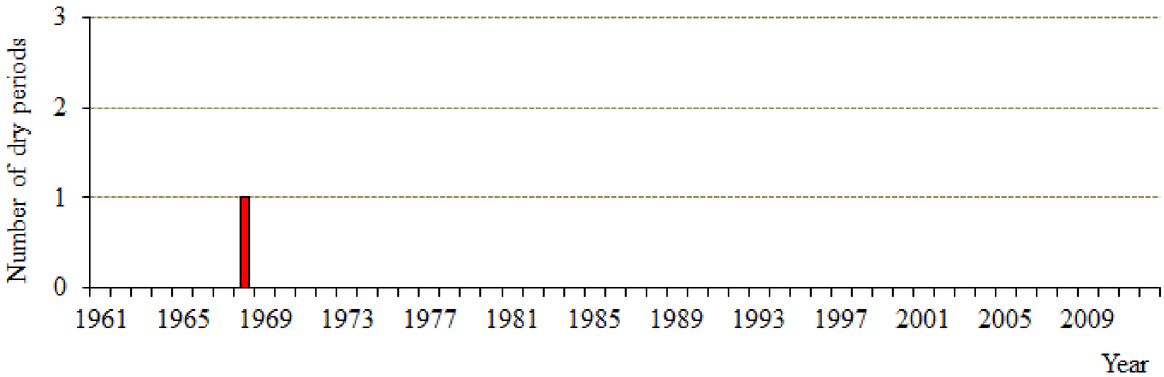


Figure A19-4. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 1 June-10 August in Jämtland county*.

* The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

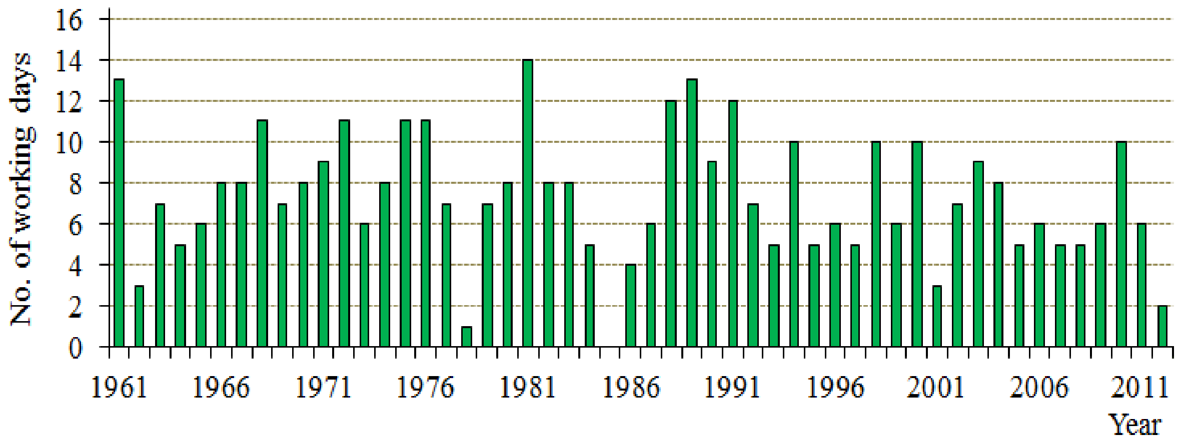


Figure A19-5. Estimated number of working days available for harvesting during the period 25 August-8 September in Jämtland county (for definition of a working day, see Section 2.1)*.

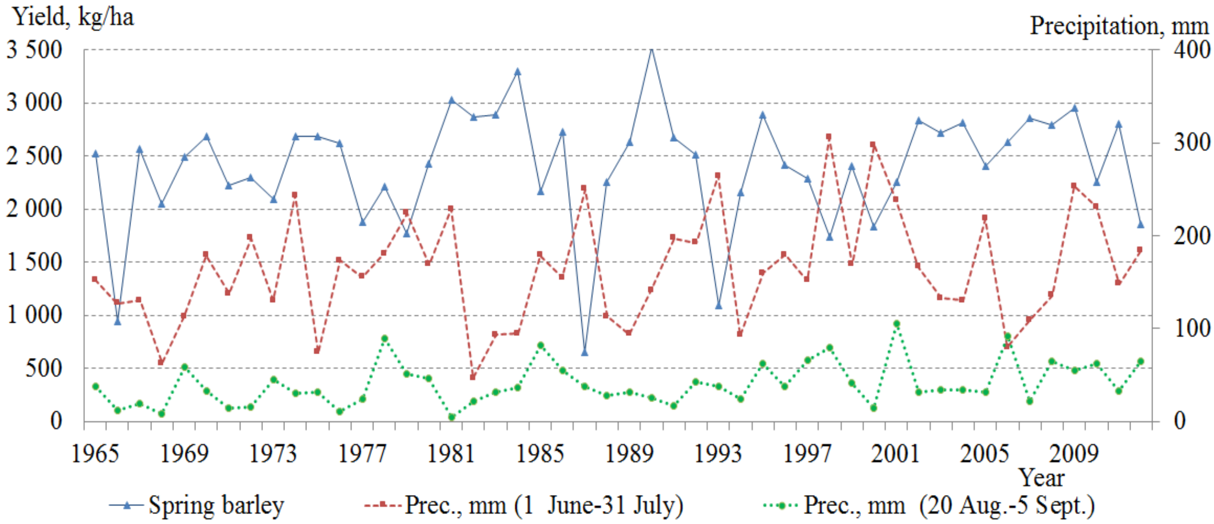


Figure A19-6. Annual spring barley yield (kg/ha) and precipitation (mm) in the periods 1 June-31 July and 20 August–5 September in Jämtland county, 1965-2012*.

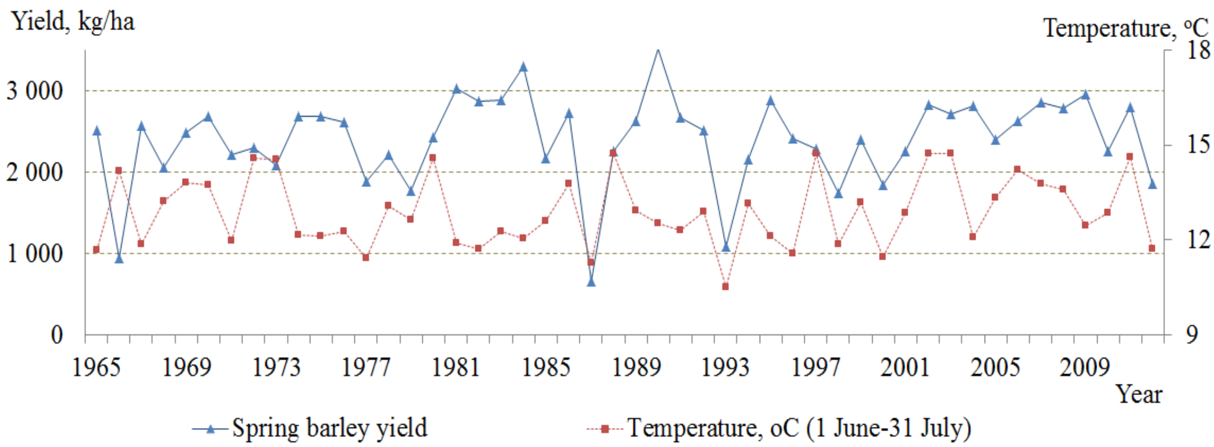


Figure A19-7. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Jämtland county, 1965-2012*.

* Precipitation and temperature from Luftwebb (2014). Yield data from from Jordbruksverket (2015).

A19.3 Yield on farms

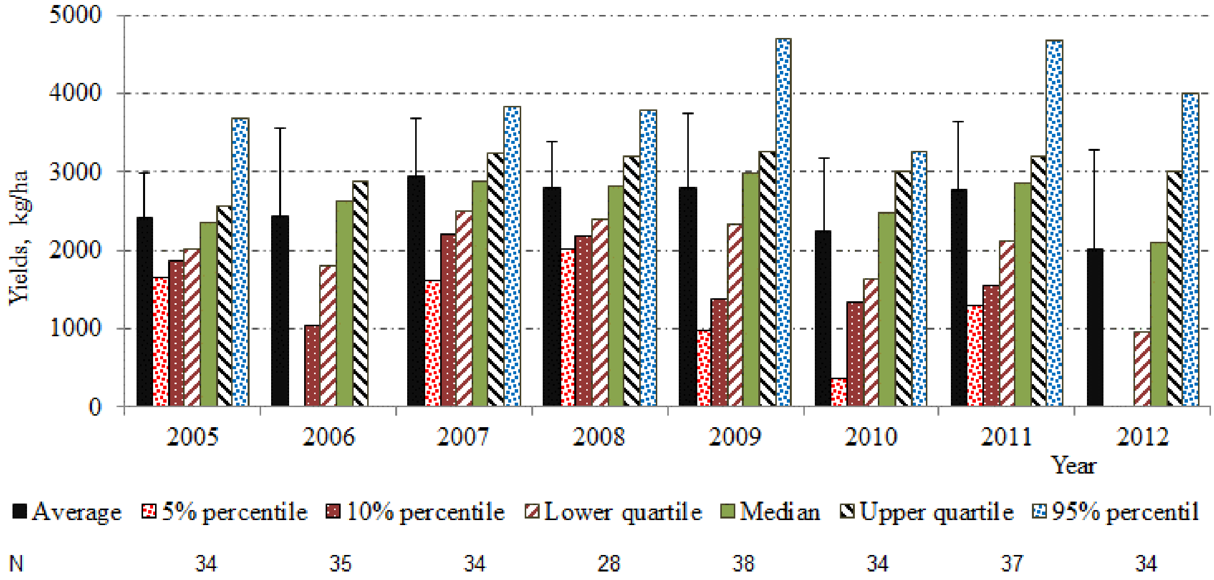


Figure A19-8. Average and estimated percentiles of spring barley farm-level yield in Jämtland county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A19.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

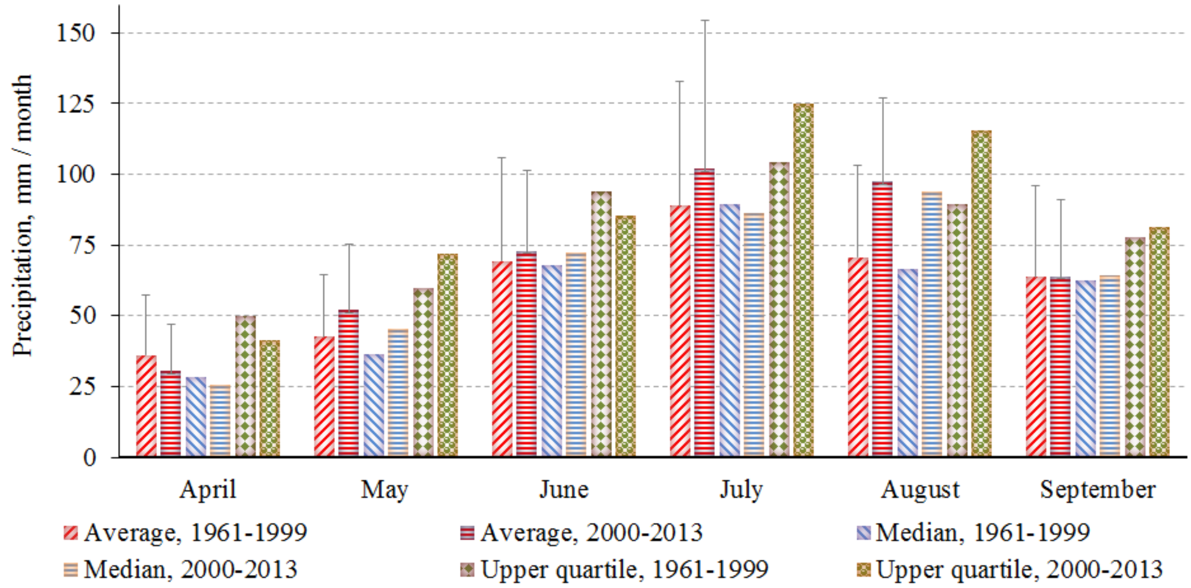


Figure A19-9. Monthly average, median and upper quartile precipitation (mm) from April to September in Jämtland county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1444299-7007752 (close to the city of Östersund).

County: **Jämtland** **Average temperature (°C) for 5 or 6 day periods** Data from 4 place Update temperatur colour ounty (*http://luftweb.smhi.se/*)

Place: **Östersund (Östra Odensala)** Coordinates for the places (RT90): 1444299-7007752 1469037-7006195 144 5-6992855 **Scale for the color intensity:** -30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	-4	-13	-7	-10	-15	-6	-11	-9	-2	3	-2	2	2	4	-1	-3	-2	-3	-4	-2	0	2	5	5	6	5	6	7	7	9	17	17	11	11	10	10
1962	-4	-3	-5	-10	-12	-15	-7	-3	-9	-6	-7	-8	-14	-11	-12	-6	-6	-5	-2	-2	0	4	5	2	1	4	5	7	7	6	5	10	8	11	11	8
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1966	-21	-9	-22	-15	-12	-16	-24	-18	-25	-13	-12	-10	-5	-1	-13	-1	-7	-7	-1	-1	-8	-7	-1	6	5	3	7	11	6	7	8	14	19	20	15	13
1967	-6	-15	-9	-5	-23	-19	-7	-3	-4	-6	-3	-2	-1	2	1	-2	-3	1	-2	1	3	-2	-1	3	0	5	4	4	9	11	13	7	12	14	9	10
1968	-19	-18	-16	-8	-2	-8	-10	-10	-7	-11	-12	2	-3	-3	-5	-6	0	3	-2	-4	2	4	5	8	2	3	4	4	4	9	15	10	14	16	15	10
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1970	-13	-20	-12	-16	-10	-9	-10	-14	-17	-21	-14	-12	-7	-3	-6	-1	-4	-4	-7	-1	-1	3	0	0	4	9	8	7	7	10	12	19	9	16	17	16
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1974	-10	-3	-2	-3	-4	-3	-5	-8	-3	-4	-1	-2	-4	-5	-5	-4	-2	1	4	1	-2	3	4	7	3	5	10	13	10	6	8	8	15	18	13	11
1975	-1	-10	-4	-6	-4	-3	2	0	-9	-4	-1	0	-3	-2	-3	-4	-2	-3	-4	-1	-2	2	4	3	4	10	8	9	5	4	6	13	9	11	11	10
1976	-10	-10	-12	-8	-12	-13	-6	-11	-5	-6	-3	-1	-2	-8	-14	-7	-7	-1	-2	0	3	2	2	-2	2	8	8	13	14	9	8	9	11	13	12	13
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1987	-18	-29	-25	-14	-4	-12	0	-11	-9	-8	-8	-11	-20	-10	-6	-6	-4	0	2	-1	2	0	2	6	5	4	3	6	8	6	9	11	10	9	11	10
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1994	-12	-10	-6	-15	-5	-12	-17	-16	-14	-12	-12	-11	-10	-1	-2	-7	-5	-1	2	1	3	0	6	5	6	9	7	3	6	6	10	9	9	7	8	13
1995	-11	-4	-6	0	-5	-13	-3	-3	-4	-2	-5	-4	-6	-4	-1	-1	1	-3	-2	-2	3	0	3	-2	4	4	0	3	7	14	13	12	11	13	12	10
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2007	-1	-2	-5	-6	-12	-8	-2	-16	-9	-6	-12	-4	-2	-1	3	-2	0	2	2	-1	6	2	5	6	6	6	5	7	9	11	16	18	9	12	14	13
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2011	-9	-6	-12	-5	-3	-3	-3	-6	-14	-14	-12	-1	0	-2	-4	-3	-1	-4	3	3	4	5	9	6	3	10	8	8	10	8	11	18	13	12	10	17
2012	-3	-10	-3	-3	-10	-9	-21	-8	-5	-4	-1	-2	-1	-1	1	0	4	2	-3	-3	2	0	3	5	3	5	6	7	12	8	6	10	9	11	13	11
Average	-9	-9	-7	-7	-8	-9	-8	-8	-8	-8	-7	-5	-6	-3	-4	-4	-3	-1	-1	0	1	2	3	4	5	6	7	7	8	9	11	12	11	12	12	13
By quartile																																				
Min. value	-23	-29	-25	-19	-23	-23	-24	-24	-25	-21	-23	-22	-20	-13	-14	-15	-11	-7	-7	-8	-8	-7	-3	-2	-2	2	0	2	2	4	5	6	5	7	8	8
Lower	-12	-13	-12	-10	-12	-13	-11	-12	-11	-12	-12	-9	-8	-5	-6	-6	-6	-3	-2	-2	0	0	1	2	3	4	5	5	6	7	8	9	9	10	11	10
Median	-7	-8	-5	-6	-6	-9	-6	-7	-6	-7	-7	-4	-5	-3	-3	-2	-3	-1	-1	0	1	2	3	4	4	6	7	7	8	9	10	11	10	12	12	13
Upper	-3	-3	-3	-3	-4	-4	-2	-3	-3	-4	-3	-2	-2	-1	-1	0	-1	1	2	1	3	3	5	6	6	8	8	9	10	11	13	14	13	14	14	15
Max. value	2	4	2	0	2	3	2	2	1	3	3	2	2	4	3	5	4	3	4	4	6	8	9	9	12	13	12	14	16	17	17	19	19	20	19	20
Range	25	34	27	19	25	26	26	27	26	24	26	24	21	17	17	20	15	11	11	12	14	15	12	11	14	11	12	12	14	13	12	13	14	13	11	12

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	12	12	14	16	11	13	12	12	11	11	9	12	9	8	9	11	10	8	9	9	9	5	7	4	1	2	2	1	2	-5	-7	-8	-14	0	-9	-11
1962	11	12	11	11	11	12	11	11	10	11	11	9	8	8	7	7	7	7	9	7	2	4	7	1	1	2	-1	-6	-10	-3	3	1	-13	-13	-6	-13
1963	16	12	11	12	13	14	16	15	12	13	12	11	12	11	8	8	10	6	4	5	2	4	7	5	0	0	-3	-5	-12	-2	0	-2	-3	-9	-8	-1
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1968	18	11	11	14	12	13	13	13	9	9	16	14	14	14	6	5	1	5	4	0	0	-1	1	-3	-9	-12	-16	-9	-4	-4	-3	-4	-7	-11	-4	-9
1969	11	12	11	14	15	17	19	19	19	17	12	11	9	11	8	7	5	4	2	7	5	6	2	1	-4	-2	-2	-4	-9	-12	-9	-12	-3	-17	-16	-4
1970	12	15	11	13	12	14	16	11	12	13	12	11	9	7	10	8	4	5	5	6	6	6	0	-3	-9	-7	-7	-2	1	-5	-5	2	0	-1	-5	-8
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1972	18	16	15	16	14	15	14	16	13	12	9	10	10	9	6	7	6	4	5	7	5	2	-1	1	2	1	-3	-5	-3	0	1	-4	0	0	-4	-1
1973	20	19	15	16	15	14	14	11	13	13	7	10	9	7	5	6	3	2	8	2	-1	-2	-4	1	0	0	-8	-8	-5	-10	-10	-12	-9	-11	-9	-1
1974	12	12	12	14	12	10	12	11	13	11	12	13	13	10	9	9	8	6	4	4	1	2	0	0	-3	-2	-2	-5	-8	-2	-3	-4	-7	-5	0	-10
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1990	12	12	12	14	13	16	16	12	16	13	10	12	10	10	8	7	4	4	6	4	7	5	1	1	0	4	-1	-3	-11	-3	1	-10	-3	-2	-1	-2
1991	15	19	14	14	13	18	19	15	12	13	14	11	12	7	7	6	7	4	4	7	3	2	2	0	2	-1	-1	-7	3	2	-1	0	-1	-3	-7	-2
1992	10	12	12	12	14	12	13	12	11	12	10	10	9	8	10	7	9	6	5	5	-2	-6	-8	-8	-4	-3	-1	-4	-8	-3	0	-10	-4	0	-7	-1
1993	11	10	14	14	15	13	13	14	11	10	9	8	8	7	5	4	7	5	5	2	-2	0	-2	3	-2	-3	1	-6	-6	-8	-3	-5	-12	-4	-9	-13
1994	14	18	19	14	17	20	19	13	13	10	12	9	10	9	7	4	8	5	0	5	3	-2	3	1	1	-3	-9	-5	1	1	-5	0	-2	-2	-1	-5
1995	9	11	13	12	12	18	16	11	15	14	11	7	12	10	8	7	6	4	5	10	5	7	3	2	-4	-3	-1	-8	0	-7	-5	-6	0	-6	-17	-14
1996	12	13	12	11	16	11	13	16	16	17	15	14	10	6	6	8	6	7	5	7	3	4	3	2	0	-3	-6	-3	-6	-12	-2	-2	-10	-13	-14	-8
1997	17	14	17	17	19	15	16	18	13	17	14	15	15	10	8	7	8	7	4	3	1	1	-3	1	-2	-1	-1	-1	-4	-8	-7	-1	-1	-2	-7	-10
1998	12	13	13	12	15	13	13	11	12	10	10	9	10	13	12	9	8	4	4	5	3	0	3	2	-6	-7	-3	-9	-1	-2	-1	-8	-6	1	-11	-5
1999	13	13	17	14	13	12	16	10	10	11	9	12	14	13	12	10	8	8	6	3	3	1	1	4	5	4	3	-4	1	2	-4	-12	-16	-9	-4	-9
2000	14	10	12	12	14	15	14	11	13	10	10	14	8	10	7	9	9	10	10	10	6	7	5	-1	3	2	1	0	0	1	1	2	0	-8	-7	-13
2001	15	18	13	11	14	13	11	12	12	15	14	12	11	10	10	11	7	4	8	9	6	5	0	3	1	-4	-1	1	-1	0	-1	-3	1	-2	-14	-19
2002	13	15	17	16	15	17	16	18	17	19	19	14	13	12	11	8	4	6	2	0	1	-5	-2	1	-8	-4	-11	-3	-6	-4	-3	-7	-5	-5	-15	-14
2003	15	13	17	22	18	18	16	14	14	14	13	8	10	13	11	8	6	4	5	3	2	1	-4	0	2	-1	-4	-3	-6	-1	-1	0	-3	-3	-9	-6
2004	13	12	11	14	15	15	18	20	14	12	10	11	13	10	8	8	9	7	6	3	2	3	3	2	2	2	2	-6	-8	-11	-2	0	1	-2	-8	-4
2005	18	20	16	16	13	13	12	13	12	13	14	11	12	11	8	8	9	9	8	8	7	1	-2	5	7	5	2	-4	0	-5	-5	-5	1	-8	-4	-10
2006	18	17	12	13	17	17	18	17	16	15	15	14	12	10	13	11	12	10	8	7	6	3	0	-4	-4	1	-2	0	2	2	2	1	1	-1	3	1
2007	16	12	15	12	15	13	14	18	15	14	15	7	8	8	8	4	9	5	7	4	1	4	4	4	1	-2	-3	-1	-4	-5	-3	-2	-10	-2	-1	-2
2008	16	12	13	12	16	20	12	12	12	12	11	10	10	8	6	6	8	6	4	5	6	4	5	0	1	2	-2	-2	-6	-3	-6	-12	-8	-2	-5	-3
2009	18	11	14	14	13	14	15	18	11	11	13	13	13	11	10	9	8	6	1	1	-1	2	0	1	1	0	-3	3	2	-1	-5	1	-3	-14	-13	-17
2010	17	15	15	16	13	15	15	16	16	12	11	8	8	11	11	8	6	4	7	6	2	2	-2	3	2	-5	-5	-9	-11	-16	-17	-13	-14	-10	-24	-9
2011	15	19	13	15	16	17	17	13	12	13	13	14	12	11	11	7	8	11	9	4	2	4	4	4	5	4	0	1	2	1	0	-4	-2	-3	-4	-3
2012	14	15	13	11	13	14	13	12	14	14	10	10	10	8	9	7	4	6	6	4	2	2	1	-3	1	-1	2	1	2	-4	-14	-12	-15	-4	-10	-4
Average	14	14	13	14	14	14	14	14	13	13	11	11	10	9	8	7	7	6	6	5	3	3	1	1	0	-1	-2	-4	-4	-5	-4	-5	-6	-7	-8	-8
By quartile																																				
Min. value	8	9	9	9	11	9	10	9	9	9	7	7	6	5	4	4	1	1	0	0	-2	-6	-8	-8	-9	-12	-16	-10	-15	-17	-17	-18	-22	-20	-24	-26
Lower	12	12	12	12	13	13	12	12	11	11	10	9	9	8	7	6	6	4	4	3	2	1	0	0	-2	-3	-4	-6	-6	-8	-6	-9	-9	-10	-11	-12
Median	13	14	13	14	14	14	14	13	12	12	11	11	10	10	8	7	7	6	5	5	3	3	1	1	1	-1	-1	-3	-4	-3	-3	-4	-5	-6	-7	-7
Upper	15	16	15	15	15	16	16	15	14	14	12	12	12	11	10	8	8	7	8	7	5	4	3	3	2	2	0	-1	0	-1	-1	-2	-2	-2	-4	-3
Max. value	20	20	19	22	19	20	20	21	19	19	19	15	15	14	13	11	12	11	10	10	9	7	7	5	7	5	3	3	3	2	3	2	1	1	3	1
Range	12	11	10	13	8	10	10	12	10	10	12	9	10	8	9	7	11	9	10	10	11	13	15	13	16	17	19	13	18	19	20	20	23	20	27	27

Figure A19-10. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Jämtland county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Jämtland** **Total precipitation , mm / 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Place: **Östersund (Östra Odensala)** Coordinates for the places (RT90): 1444299-7007752 1469037-7006195 1442357-6994189 1465035-6992855

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	8	1	5	0	0	10	5	15	4	2	0	1	3	6	12	3	6	8	1	1	6	0	0	0	13	7	4	1	3	12	3	7	18	12	9	41
1962	1	5	15	5	16	7	4	6	3	11	1	0	1	0	2	1	4	20	7	12	10	0	6	0	2	6	3	12	7	1	1	4	4	5	17	40
1963	0	4	4	0	1	0	9	0	1	1	5	0	1	2	1	0	30	1	2	0	20	1	1	4	13	6	3	8	1	12	0	0	1	13	27	20
1964	0	0	0	1	4	3	3	6	11	3	0	2	1	1	1	0	0	0	0	2	2	0	0	8	5	13	2	0	0	5	5	14	16	20	30	11
1965	4	8	9	9	14	5	9	1	14	11	1	0	1	1	0	16	2	3	1	1	1	17	0	12	0	0	0	9	0	0	1	3	9	19	17	7
1966	1	0	0	1	1	35	7	8	5	7	19	6	1	8	5	9	29	19	32	11	0	0	6	1	1	3	3	10	20	1	8	2	1	0	4	1
1967	13	7	11	0	3	4	5	18	0	5	5	5	4	2	6	10	4	13	1	4	0	7	1	1	0	1	33	26	17	16	3	7	0	2	11	21
1968	3	6	5	2	11	7	8	6	2	1	3	0	5	2	1	7	4	4	24	0	0	0	5	0	26	16	28	2	2	0	3	8	0	6	6	20
1969	6	1	16	6	3	12	3	9	5	3	0	0	3	2	0	0	0	14	2	6	6	7	0	16	0	13	8	4	0	9	4	1	1	2	5	7
1970	11	1	10	1	1	2	3	6	4	2	3	5	6	18	1	7	0	17	10	17	0	10	14	5	0	0	0	3	8	14	7	6	1	0	4	4
1971	2	4	6	1	14	12	4	14	2	4	17	0	3	1	9	11	9	5	1	1	1	12	8	2	6	1	0	21	0	5	1	1	14	31	6	16
1972	0	1	0	5	1	4	6	1	3	10	1	0	2	1	1	0	3	20	17	3	4	2	5	16	3	0	0	17	15	18	1	7	54	13	3	3
1973	1	3	0	6	3	1	2	3	14	7	2	2	3	3	1	4	2	2	16	6	6	54	4	1	3	11	8	17	7	3	12	10	7	0	1	9
1974	1	1	4	2	3	5	9	10	22	0	4	0	0	0	0	11	0	0	2	11	6	0	2	0	2	0	0	0	4	12	4	11	2	3	14	19
1975	17	7	17	3	7	12	3	2	1	7	0	16	7	1	0	1	1	8	3	6	7	0	1	25	2	0	2	32	39	5	5	0	32	6	2	4
1976	14	7	8	21	1	3	3	2	0	0	7	10	3	2	2	2	2	5	5	3	7	2	1	3	5	0	9	2	0	0	0	10	41	8	7	9
1977	24	1	21	3	4	11	3	1	1	16	11	2	5	0	2	1	5	6	13	7	8	10	2	20	2	11	25	0	0	1	19	14	14	0	2	16
1978	9	5	2	3	2	24	9	1	0	3	1	1	17	4	16	0	3	5	1	4	11	4	6	0	0	3	7	14	3	0	1	36	10	1	27	41
1979	0	1	11	1	6	7	8	1	2	1	1	2	6	8	5	3	12	5	7	1	4	9	16	10	14	0	2	10	11	13	3	15	7	11	7	21
1980	1	1	5	1	4	2	0	2	6	0	0	1	4	3	0	0	0	20	3	7	6	18	1	3	0	13	0	6	1	9	34	8	0	9	25	34
1981	4	6	14	3	3	5	8	10	5	2	7	1	1	32	10	1	14	0	0	1	2	0	1	13	1	0	0	0	9	10	10	22	9	25	8	71
1982	13	2	4	0	3	7	0	25	1	0	2	1	11	2	22	5	1	1	0	10	4	1	2	2	7	16	2	1	5	36	0	1	1	1	0	1
1983	9	12	3	8	10	19	3	1	0	0	0	0	2	16	5	1	19	6	23	21	0	4	25	6	0	1	7	27	7	31	5	2	1	0	2	26
1984	5	4	13	3	1	5	8	9	0	1	8	0	3	13	0	1	0	20	2	0	3	2	4	0	3	1	1	14	6	4	12	1	9	3	36	12
1985	5	0	5	8	19	13	14	2	15	5	7	5	10	2	6	1	3	14	8	8	1	2	2	7	28	0	0	0	19	16	0	22	15	10	9	12
1986	3	2	8	8	12	5	1	0	1	0	3	1	7	1	0	0	7	7	15	0	0	2	12	27	0	0	2	11	8	8	0	22	1	23	1	1
1987	4	5	0	1	6	13	3	13	26	0	9	0	0	0	1	7	1	15	0	1	1	2	16	1	17	11	21	29	0	4	11	29	6	38	42	22
1988	8	2	5	6	4	28	13	10	6	10	14	19	19	4	6	3	2	7	2	3	5	9	0	0	4	0	0	4	4	20	15	0	0	6	6	5
1989	6	9	14	4	2	8	6	3	4	5	9	23	0	13	6	8	4	9	0	3	7	5	12	23	2	25	16	7	3	11	5	20	0	0	9	7
1990	1	3	19	21	14	14	2	2	6	5	2	15	4	3	7	1	4	2	19	4	4	5	1	12	0	0	0	0	20	8	6	0	0	9	12	6
1991	10	10	0	0	7	4	2	2	1	6	1	5	2	1	8	5	17	6	5	1	4	2	0	0	0	0	43	8	1	3	6	6	33	45	24	30
1992	4	13	7	5	1	0	0	7	17	6	1	5	4	2	8	6	7	2	23	1	1	10	10	51	9	6	3	2	1	1	1	0	8	18	1	12
1993	0	5	6	9	10	1	7	3	0	15	0	1	8	1	1	4	1	0	1	2	0	3	0	0	16	4	34	11	0	19	39	2	2	23	15	2
1994	8	16	12	9	11	19	1	1	0	0	0	0	5	3	1	1	15	5	17	0	3	0	1	5	0	0	0	7	1	9	6	17	6	11	18	13
1995	12	19	4	3	7	4	6	1	10	2	3	3	1	3	4	24	20	7	2	7	0	29	8	6	6	3	19	15	14	6	34	7	12	34	3	2
1996	0	0	2	0	1	0	1	4	5	2	0	6	1	0	0	3	1	10	0	0	0	2	22	1	23	7	7	2	11	3	8	8	16	43	15	23
1997	0	2	3	3	0	4	1	20	18	6	2	1	4	1	2	2	7	18	13	8	7	1	11	2	13	22	7	1	1	2	0	1	13	13	44	3
1998	9	12	14	1	1	7	9	10	10	9	6	5	7	1	11	1	0	5	0	5	7	5	0	20	1	1	1	4	7	6	10	10	27	56	2	15
1999	3	1	5	9	20	4	11	4	7	12	3	17	16	8	1	3	2	7	1	4	26	30	0	7	1	2	0	0	3	22	30	23	1	20	2	19
2000	8	2	9	3	6	20	2	2	9	5	11	3	10	6	0	4	1	3	25	0	7	18	15	7	1	0	0	1	20	29	11	3	5	4	10	44
2001	8	13	2	0	6	5	2	6	2	5	1	0	2	5	22	1	7	3	5	23	4	0	11	8	15	0	0	19	3	8	8	16	13	2	1	3
2002	3	0	3	13	12	16	12	4	2	1	5	1	3	3	3	28	3	1	1	0	0	0	4	16	5	0	9	0	10	0	0	15	23	26	16	28
2003	5	13	12	14	17	5	9	0	2	0	0	0	0	0	0	0	0	5	13	2	15	1	0	12	0	3	11	15	20	5	13	2	0	37	10	3
2004	0	2	4	3	0	11	7	3	3	2	4	4	1	0	3	11	5	1	1	1	1	0	7	2	1	5	4	5	3	1	3	5	11	6	14	25
2005	19	23	4	7	4	5	7	5	2	6	2	1	1	9	3	4	6	0	4	6	5	0	0	3	18	26	3	9	14	8	27	7	27	7	13	5
2006	3	0	0	9	5	2	1	13	1	3	1	1	10	1	0	2	0	37	8	14	6	2	0	16	0	0	12	10	16	36	4	3	1	8	15	0
2007	16	11	16	13	2	8	4	3	1	7	2	3	1	7	5	21	0	0	2	1	0	11	2	0	1	1	24	7	12	3	0	0	18	0	6	3
2008	5	10	15	18	11	7	4	6	0	4	5	12	9	7	14	6	1	1	9	26	4	0	0	0	10	1	12	5	15	0	1	21	17	9	24	7
2009	7	4	2	7	15	0	6	32	0	9	13	5	1	8	1	2	5	4	9	5	3	0	0	5	3	3	2	4	4	23	8	22	47	4	2	2
2010	4	0	0	1	4	15	10	8	1	8	6	13	0	1	2	6	4	9	6	1	1	1	0	17	1	4	48	15	2	26	2	15	5	63	3	45
2011	4	12	11	5	18	1	9	13	1	1	0	0	0	1	0	4	6	3	2	14	2	1	6	0	1	0	37	5	5	39	0	18	37	8	18	0
2012	42	5	8	14	5	1	1	1	5	7	11	6	1	1	2	4	1	6	10	4	2	11	4	11	15	12	13	22	1	0	32	7	8	19	2	3
Average	7	5	7	5	6	8	5	6	5	5	4	4	4	4	4	5	5	7	7	5	4	6	5	8	6	5	9	9	7	10	8	9	12	14	12	15
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	3	1	2	4	2	2	1	1	1	0	1	1	1	1	1	2	1	1	1	0	0	1	1	0	0	2	1	2	1	2	1	3	3	3
Median	5	4	5	3	4	5	5	4	3	4	2	1	3	2	2	3	3	5	4	4	4	2	2	5	2	2	3	7	5	8	5	7	8	9	9	11
Upper	9	8	11	8	11	12	8	9	6	7	6	5	6	6	6	6	7	10	10	7	6	9	7	12	9	7	12	14	11	14	11	15	16	20	16	21
Max. value	42	23	21	21	20	35	14	32	26	16	19	23	19	32	22	28	30	37	32	26	26	54	25	51	28	26	48	32	39	39	39	36	54	63	44	71

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	30	5	14	37	38	10	61	4	3	6	7	7	2	4	34	0	7	9	0	5	9	18	8	5	7	8	2	3	0	7	16	14	1	1	3	14
1962	22	9	15	1	23	1	22	20	6	1	22	23	42	12	0	7	1	0	2	0	1	10	1	3	2	1	9	4	0	3	2	8	15	11	1	0
1963	0	10	17	19	5	0	11	13	19	20	4	10	19	3	3	1	5	9	12	5	5	5	3	2	1	20	27	19	1	1	1	3	0	12	0	7
1964	21	37	3	12	11	18	32	5	1	46	21	36	0	20	15	24	6	5	1	19	21	1	8	0	1	3	6	7	8	4	8	7	1	11	1	3
1965	2	13	20	0	9	53	11	3	0	6	19	13	6	16	13	27	3	5	0	4	7	9	1	7	21	0	1	2	2	13	12	4	2	11	16	18
1966	21	17	44	1	3	24	60	41	10	4	0	0	12	7	13	4	4	6	3	3	2	12	17	1	19	2	0	2	2	2	9	22	22	13	14	12
1967	22	21	11	8	10	16	12	4	46	7	6	6	7	1	0	2	0	2	7	6	17	17	7	22	22	13	10	4	1	1	20	4	15	4	30	13
1968	0	0	0	4	3	11	0	0	24	2	0	1	6	8	4	8	15	3	14	14	11	12	5	12	24	0	0	0	6	1	0	0	0	17	2	22
1969	15	29	9	20	18	3	0	0	1	4	38	13	8	4	33	0	18	7	23	1	1	2	3	10	13	15	17	4	2	6	6	1	1	0	3	1
1970	36	16	19	10	33	44	0	15	1	1	0	8	25	5	16	37	3	4	28	14	2	31	6	15	16	16	10	11	12	0	1	3	4	1	2	3
1971	2	8	18	2	19	19	3	20	15	2	0	9	6	4	2	14	49	1	15	5	1	20	18	2	9	16	6	4	6	18	2	4	7	6	10	0
1972	32	32	19	24	7	2	7	3	2	7	7	1	8	22	14	1	6	0	4	0	5	11	9	0	11	3	14	0	25	11	4	12	1	1	1	0
1973	0	13	7	40	24	6	10	7	0	9	1	5	39	16	14	5	1	5	5	14	0	2	2	3	2	11	6	25	2	2	12	9	23	19	8	4
1974	4	43	44	21	11	67	14	10	5	12	9	19	3	11	2	3	15	32	16	17	2	2	5	6	4	20	28	0	1	19	17	3	2	21	3	12
1975	0	3	8	0	11	3	3	0	9	2	17	4	10	6	26	6	12	15	8	8	2	3	2	11	5	0	0	15	1	6	12	14	8	2	14	11
1976	0	4	14	31	6	44	9	1	3	1	1	5	4	19	14	0	3	0	0	16	21	4	0	3	18	7	14	1	3	2	21	7	4	5	3	1
1977	14	0	11	34	19	13	14	8	0	1	6	12	6	2	6	0	0	16	15	4	9	6	6	3	15	10	12	3	5	1	1	5	2	3	11	18
1978	3	47	4	8	3	0	26	4	9	7	21	23	45	7	6	4	18	0	3	6	0	9	2	5	10	1	17	1	5	2	5	0	6	8	2	2
1979	2	27	50	26	44	11	1	6	12	3	7	29	15	12	18	7	11	8	1	12	27	14	0	3	12	13	18	20	5	12	2	2	3	7	6	14
1980	2	21	13	21	2	0	18	23	2	7	24	14	9	10	11	14	12	2	1	18	3	40	1	27	1	2	18	6	2	3	8	5	12	1	8	10
1981	20	1	26	10	8	20	10	1	41	11	4	0	0	0	1	4	4	14	12	33	6	11	1	28	7	0	2	15	36	19	2	6	1	0	11	25
1982	29	2	1	5	5	0	0	18	16	21	8	6	8	5	14	14	15	5	0	0	1	7	6	4	3	1	13	5	12	7	2	4	14	6	5	1
1983	17	1	8	18	0	14	5	0	16	7	3	3	25	36	63	39	12	5	18	1	8	19	4	4	2	3	4	6	9	2	8	11	3	3	16	13
1984	0	1	8	6	4	5	19	16	12	3	1	10	26	8	32	13	57	3	28	25	12	26	14	27	17	5	0	0	19	13	1	8	0	12	3	2
1985	7	1	24	11	36	32	11	45	7	11	25	14	43	25	2	5	0	7	10	14	14	1	0	5	8	34	2	1	5	5	34	0	3	3	13	6
1986	13	28	24	4	30	8	23	18	9	32	14	26	15	22	15	8	8	9	6	4	1	9	1	11	6	15	5	7	6	2	48	2	4	10	7	7
1987	13	22	0	0	39	28	51	17	2	20	8	23	8	23	31	29	6	4	0	4	20	6	5	4	2	6	12	18	6	1	5	17	5	9	12	17
1988	14	21	5	20	7	13	12	0	32	18	19	5	3	5	59	8	20	9	1	17	6	0	4	5	5	0	2	1	3	6	5	5	3	9	3	11
1989	1	1	16	1	0	33	38	6	25	4	29	2	1	2	1	6	5	3	1	4	0	3	3	1	11	13	8	0	2	5	5	19	5	15	6	0
1990	13	27	7	7	38	16	10	8	2	35	3	4	19	22	21	25	8	2	3	2	0	0	0	18	15	1	12	7	3	1	2	1	2	3	5	23
1991	0	4	17	23	9	1	4	4	9	12	8	7	2	17	9	9	23	6	13	3	0	16	9	2	13	3	8	0	7	2	5	1	2	6	13	5
1992	2	16	50	39	29	17	9	20	26	13	17	23	2	0	11	2	9	4	0	8	15	4	3	6	20	11	17	12	17	8	17	3	5	3	1	1
1993	27	35	5	2	47	65	12	19	30	18	8	15	14	4	1	0	14	0	6	57	23	3	8	1	0	2	5	0	4	1	9	7	6	25	2	6
1994	0	1	14	0	0	6	10	0	6	0	9	16	0	14	32	10	1	10	12	1	24	0	3	29	21	11	10	2	5	3	3	9	0	5	4	18
1995	20	7	0	24	15	1	6	1	27	0	30	19	13	6	2	6	9	0	9	7	5	9	2	9	7	1	3	4	27	5	0	3	2	2	1	0
1996	31	5	9	2	5	14	26	0	0	0	11	26	1	2	1	0	0	22	10	3	2	23	1	21	30	1	0	21	25	6	5	13	16	2	6	1
1997	20	4	0	5	6	43	5	6	0	7	38	23	4	11	20	7	4	7	9	12	6	7	3	0	1	35	4	0	8	13	5	1	7	1	4	11
1998	34	39	47	9	13	43	11	8	20	30	60	19	0	5	24	15	0	17	1	10	9	8	23	35	4	3	5	0	13	0	0	0	8	6	10	6
1999	10	9	28	12	15	0	0	13	0	0	5	34	3	8	2	21	15	8	17	33	4	1	3	6	4	0	0	12	3	24	2	20	0	22	3	5
2000	7	28	52	##	31	0	5	40	21	9	6	0	7	13	0	0	0	4	8	10	29	0	14	42	11	12	12	28	14	15	4	15	25	4	3	12
2001	48	47	16	67	10	7	34	22	8	10	1	75	29	49	34	1	2	5	16	18	1	5	0	20	8	14	13	4	5	7	10	2	0	12	3	5
2002	9	10	4	21	15	1	3	0	23	16	0	23	8	1	11	9	10	3	3	2	4	6	14	14	0	13	8	6	5	7	3	0	0	1	0	11
2003	17	16	0	5	7	23	10	0	69	9	13	17	3	1	1	2	53	13	4	1	0	4	1	11	14	0	0	15	9	11	9	1	8	9	3	5
2004	19	8	10	21	6	3	6	1	0	23	5	23	6	2	30	15	35	13	7	3	0	4	18	1	16	1	11	6	13	2	16	5	9	1	11	3
2005	0	4	14	50	58	5	11	58	18	3	9	9	14	5	15	9	1	3	11	8	2	1	12	5	6	1	8	6	9	1	3	8	4	9	6	14
2006	4	19	16	1	0	8	2	0	31	16	17	35	40	1	1	1	8	26	21	15	1	66	35	42	11	1	13	10	14	5	6	7	7	10	4	12
2007	3	21	7	9	2	38	7	5	28	1	3	8	11	20	5	10	3	5	4	2	10	6	0	9	16	18	8	12	8	12	19	7	0	0	3	11
2008	5	1	27	20	4	0	28	9	21	34	2	52	11	0	0	0	0	2	22	11	2	4	4	1	2	6	6	5	8	19	25	8	9	4	7	0
2009	14	27	13	60	44	11	4	7	24	34	22	5	28	10	6	4	5	1	16	12	8	7	3	0	9	11	7	10	20	7	0	1	13	6	9	14
2010	2	3	30	26	23	14	6	24	1	5	53	10	0	0	14	28	42	0	1	1	2	4	1	14	1	10	7	0	3	1	1	4	4	17	5	24
2011	2	6	3	19	33	4	19	35	10	40	7	6	20	17	19	17	3	10	2	7	0	0	0	9	4	2	0	7	2	17	6	29	8	28	2	12
2012	13	29	23	1	3	46	10	8	0	18	14	41	10	2	10	27	1	15	7	22	9	29	3	9	7	3	10	0	2	4	4	12	7	13	7	12
Average	12	15	16	18	16	17	14	11	13	12	13	16	12	10	14	10	11	7	8	10	7	10	6	10	9	8	8	7	8	7	8	7	6	8	6	9
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	2	4	7	4	5	3	5	1	2	3	4	6	3	3	2	2	2	3	1	3	1	3	1	3	4	1	3	1	2	2	2	2	2	3	3	2
Median	11	12	14	11	10	11	10	7	9	7	8	12	8	7	12	7	6	5	7	7	4	6	3	6	8	4	8	5	5	5	5	5	4	6	4	9
Upper	20	27	21	23	26	23	18	18	21	18	19	23	16	16	20	14	14	9	13	14	9	12	8	14	15	13	12	10	9	11	10	9	8	11	9	13
Max. value	48	47	52	101	58	67	61	58	69	46	60	75	45	49	63	39	57	32	28	57	29	66	35	42	30	35	28	28	36	24	48	29	25	28	30	25

Figure A19-11. Average precipitation (°C) for 5 or 6 day periods and their quartiles in Jämtland county, 1961-2012. Precipitation data from Luftwebb (2014).

Appendix A19. Jämtland county

APPENDIX A20 VÄSTERBOTTEN COUNTY♣

A20.1 Crop production and yield

Table A20-1. *Annual production (metric ton) in 2010-2014 for the major crops in Västerbotten county*.*

Crop	Year					Average,
	2010	2011	2012	2013	2014	ton
Temporary grasses	166 300	166 500	177 000	157 100	179 000	169 180
Spring barley	19 400	20 500	13 700	26 600	24 000	20 840
Potatoes	6 400	7 100	5 500	6 700	5 400	6 220

* Data from Jordbruksverket (2015)

Table A20-2. *Average temporary grasses (total) and spring barley yield in Västerbotten county in the period 1965-2014, standard deviation of the difference from the calculated trend and coefficient of variation (%), based on data from Jordbruksverket (2015).*

Crop	Average yield, kg/ha	Standard deviation from the trend yield	Coefficient of variation*, %
Temporary grasses (total)	3 978	275	7
Spring barley	2 243	358	16

* Coefficient of variation = Standard deviation / Average

Table A20-3. *Coefficient of variation for the main crops in Västerbotten county, 2005-2012*.*

Crop / Year	2005	2006	2007	2008	2009	2010	2011	2012	Average
Temporary grasses		57	37	56	44	53	64	49	51
Spring barley	50	53	27	36	5	48	62	102	48
Potatoes		38	37	37	42	39	41	41	39
Average	50	49	34	43	30	47	56	64	

* Based on farm-level yield data from SCB (2014a).

♣ For literature references in this Appendix see the *References* section of the main text.

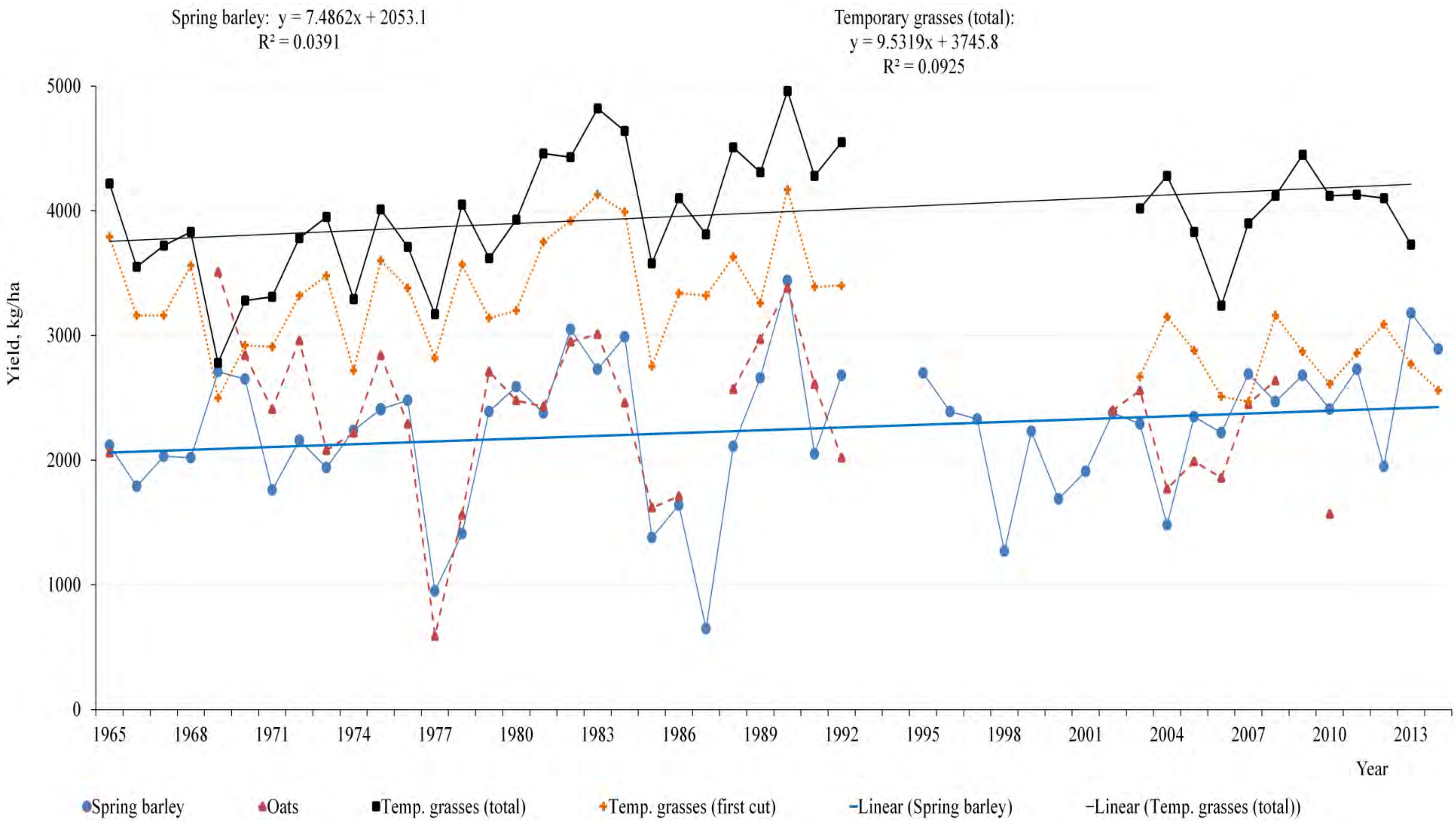

Figure A20-1. Average yield (kg/ha) per year of spring barley, oats, and temporary grasses (total and first cut) in Västerbotten county for the period 1965-2014, and the trend line with respective equation for barley and temporary grasses (total). The variable x in the equations is defined as x=year -1964, i.e. x takes the values x=1, 2, ..., 50. Yield data from Jordbruksverket (2015).

A20.2 Precipitation, temperature and cereal yield

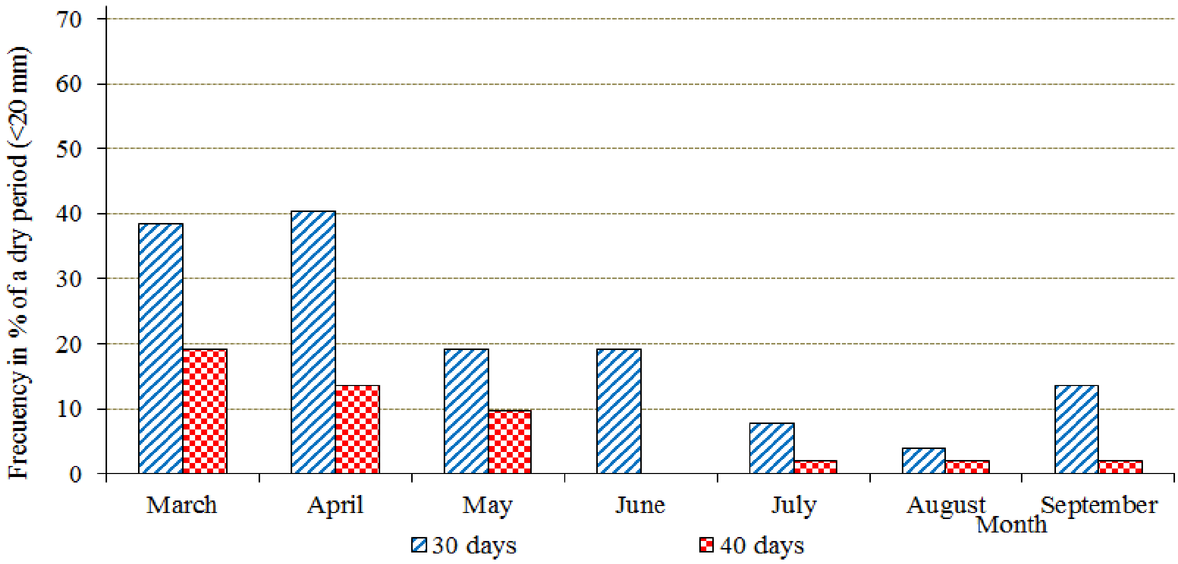

Figure A20-2. Frequency (%) of a dry period (<20 mm precipitation) lasting 30 or 40 days starting in a certain month in Västerbotten county*.

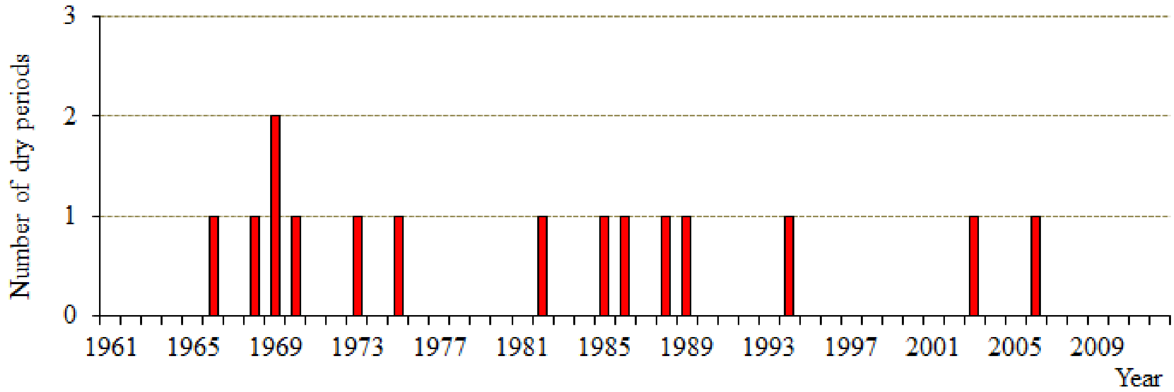

Figure A20-3. Occurrence (no./year) of a 30-day dry period (<20 mm precipitation) within 1 June-10 August in Västerbotten county*.

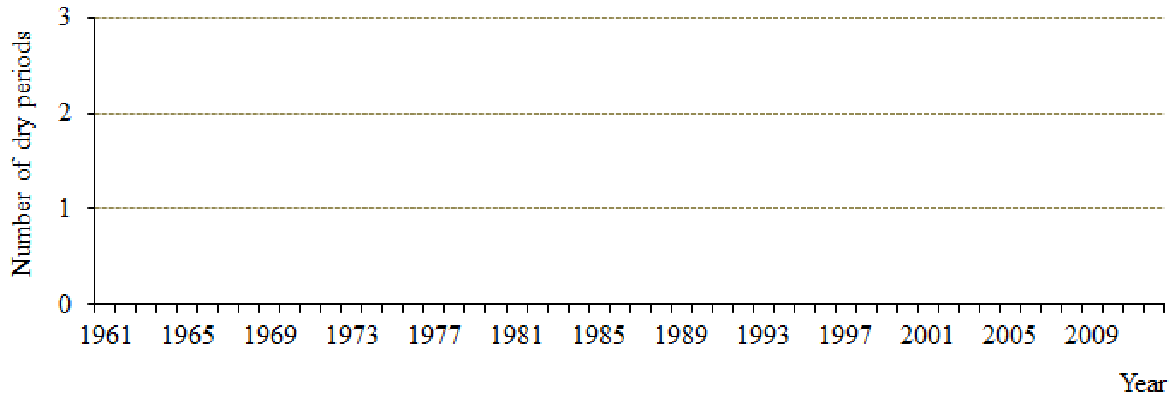

Figure A20-4. Occurrence (no./year) of a 40-day dry period (< 20 mm precipitation) within 1 June-10 August in Västerbotten county*.

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* The figure is based on daily precipitation for the period 1961-2012 (Luftwebb 2014).

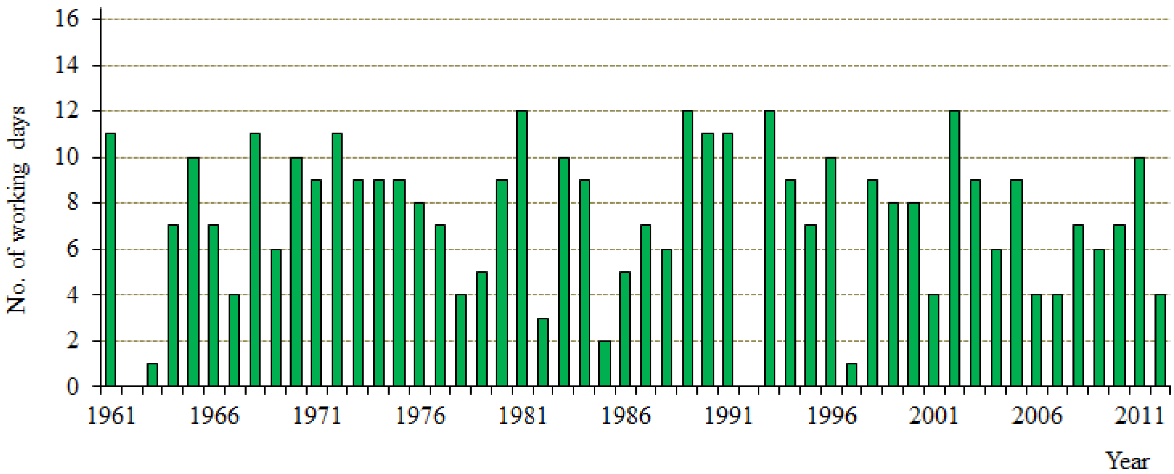

Figure A20-5. Estimated number of working days available for harvesting during the period 25 August-8 September in Västerbotten county (for definition of a working day, see Section 2.1)*.

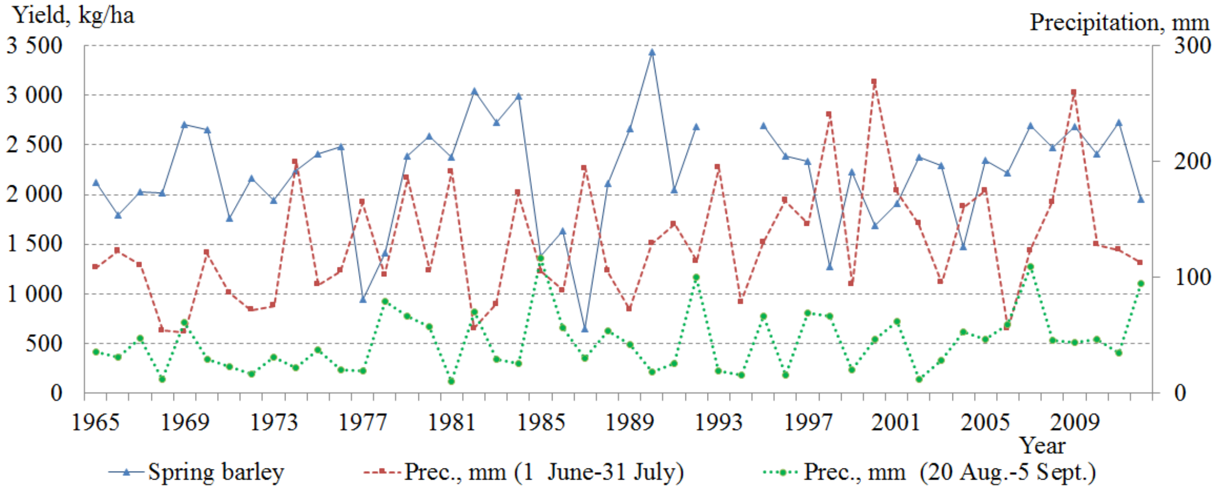

Figure A20-6. Annual spring barley yield (kg/ha) and precipitation (mm) in the periods 1 June-31 July and 20 August–5 September in Västerbotten county, 1965-2012*.

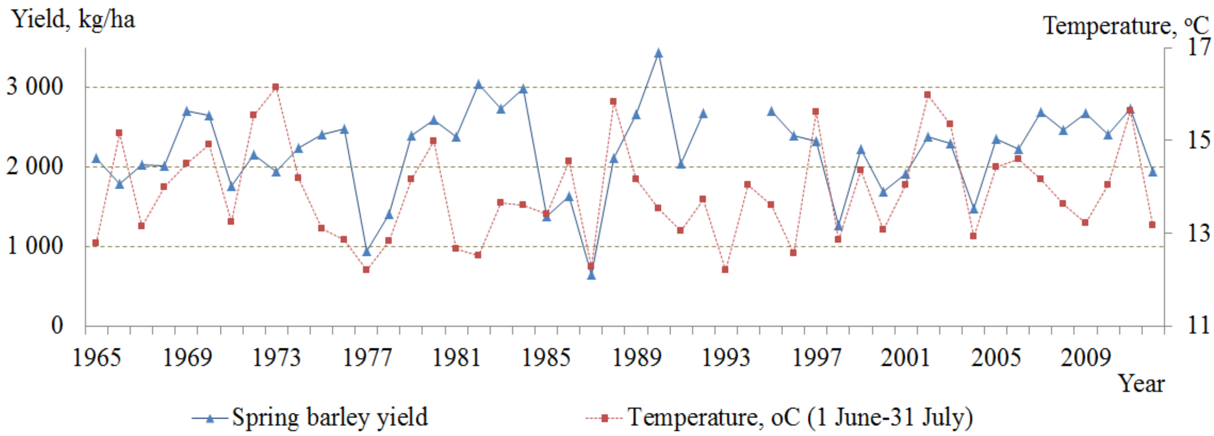

Figure A20-7. Annual spring barley yield (kg/ha) and average temperature (°C) in the period 1 June-31 July in Västerbotten county, 1965-2012*.

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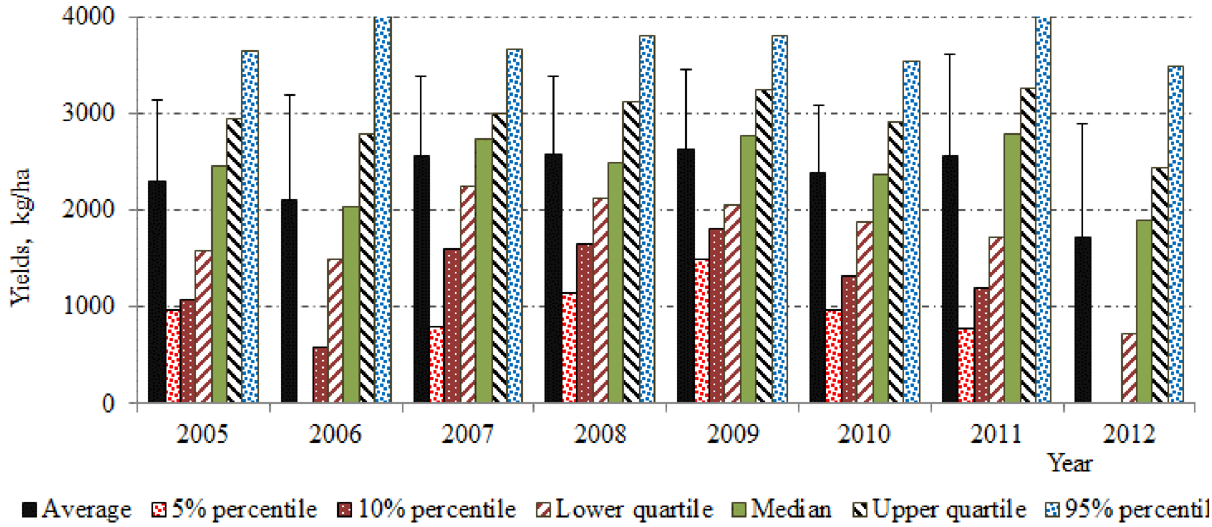
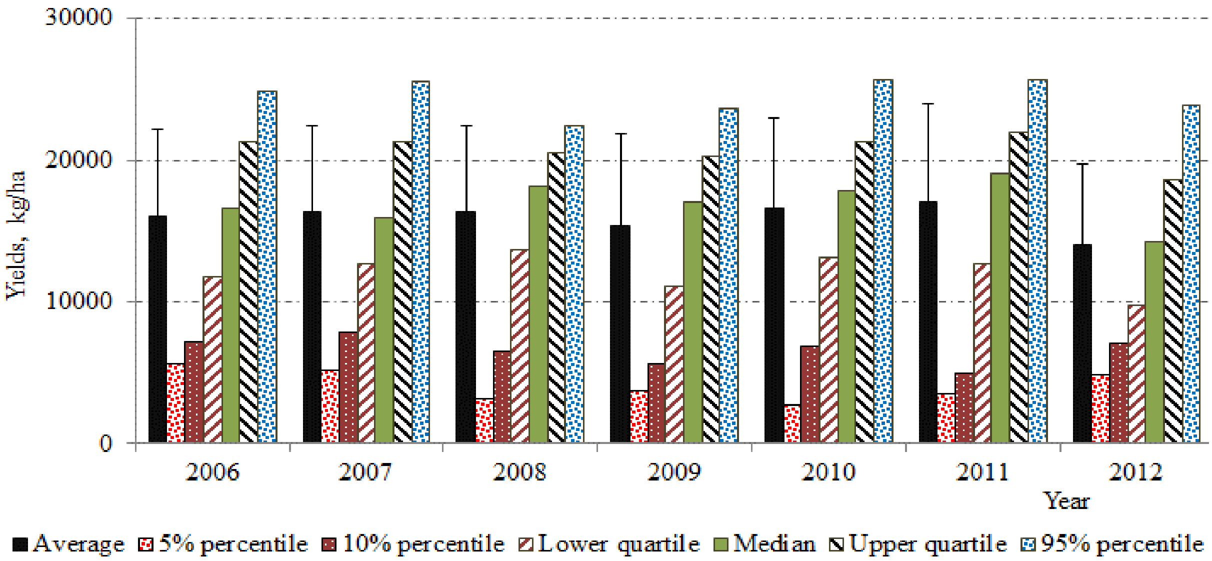
* Precipitation and temperature from Luftwebb (2014). Yield data from from Jordbruksverket (2015).

A20.3 Yield on farms



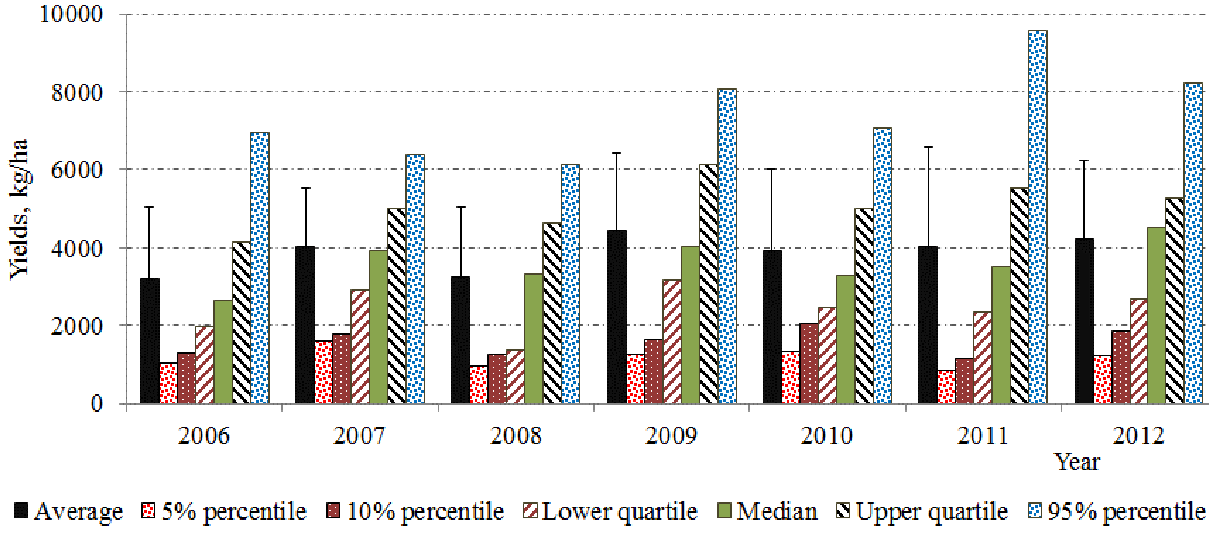
N 47 58 47 43 42 56 54 58

Figure A20-8. Average and estimated percentiles of spring barley farm-level yield in Västerbotten county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N 30 31 30 30 28 28 25

Figure A20-9. Average and estimated percentiles of potato farm-level yield in Västerbotten county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).



N 33 29 22 39 42 37 42

Figure A20-10. Average and estimated percentiles of temporary grasses (total) farm-level yield in Västerbotten county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A20.4 Temperature and precipitation, 1961-2012

In the below figure is presented a monthly precipitation comparison for some months between the periods 1961-1999 and 2001-2013. In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

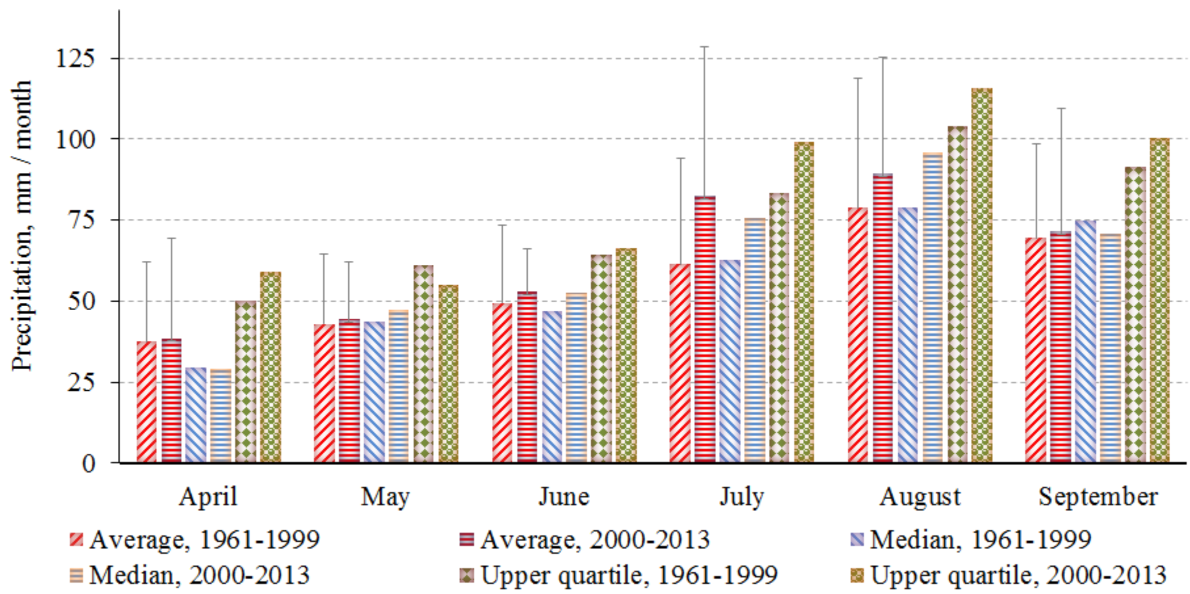


Figure A20-11. Monthly average, median and upper quartile precipitation (mm) from April to September in Västerbotten county for the periods 1961-1999 and 2000-2013. The error bars on the averages represent one standard deviation. Weather data from LuftWebb (2014), coordinates RT90: 1720478-7088475 (close to the city of Umeå).

County: **Västerbotten** **Average temperature (°C) for 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Place: **Umeå (Berghem)** Coordinates for the places (RT90): 1720478-7088475 1701148-7103574 1695812-7084899 1707818-7076895

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year / D	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	-3	-11	-11	-11	-13	-6	-9	-7	-3	3	1	2	1	3	0	-4	-3	-2	-4	-1	-1	3	3	4	5	5	6	8	7	9	16	17	15	12	12	12
1962	-7	-4	-3	-9	-12	-12	-8	-2	-10	-10	-10	-9	-16	-13	-14	-9	-9	-8	0	0	1	3	4	3	2	5	6	7	7	8	6	12	9	12	13	13
1963	-11	-15	-16	-13	-6	-6	-12	-15	-12	-14	-12	-3	2	-9	-12	-10	-10	-9	-3	1	1	3	2	4	5	7	9	7	10	15	13	13	9	9	9	16
1964	-2	-3	-4	-3	-2	-9	-10	-5	-18	-13	-8	-3	-5	2	-7	-9	-7	-5	-1	-2	1	3	2	4	4	5	6	7	12	10	7	8	11	11	13	12
1965	-6	-16	-2	-4	-6	-11	-6	-4	-6	-5	-7	-16	-11	-8	1	-2	-6	-3	-1	-3	0	2	5	6	3	6	4	3	5	6	10	15	11	12	12	12
1966	-24	-5	-19	-17	-13	-20	-27	-25	-24	-14	-13	-10	-9	-6	-18	-3	-7	-6	1	-1	-7	-7	0	5	4	1	7	9	6	9	9	13	17	19	17	15
1967	-5	-17	-18	-4	-23	-25	-13	-6	-5	-6	-1	-2	-4	1	0	-1	-3	1	-1	2	3	0	-1	4	0	4	5	5	9	12	14	8	12	14	12	12
1968	-13	-23	-18	-13	-7	-11	-15	-15	-6	-15	-16	3	-3	-3	-7	-7	-2	2	1	-2	3	3	6	5	3	4	4	3	3	10	14	11	15	14	16	13
1969	-7	-11	-15	-8	-8	-5	-11	-6	-19	-17	-15	-15	-8	-6	-10	-9	-5	-1	1	2	0	-1	2	1	1	5	5	5	7	9	9	13	13	16	15	18
1970	-10	-17	-12	-13	-4	-10	-8	-17	-18	-20	-17	-14	-4	-1	-5	-4	-6	-3	-5	0	-1	2	-1	1	3	8	6	6	6	10	13	17	12	16	15	16
1971	-13	-3	1	-5	0	-13	-5	-9	-1	-4	-14	-18	-19	-7	-10	-4	-7	-5	-1	1	1	1	-2	-2	4	8	8	5	3	12	14	9	11	11	13	14
1972	-7	-11	-8	-11	-3	-16	-11	-8	-4	-8	-1	-9	-8	-13	-1	1	1	-1	-4	1	3	3	2	0	6	4	4	7	8	6	9	12	12	13	13	20
1973	2	2	-2	-3	-1	-3	-1	-8	-5	-4	-13	-14	-2	-4	1	-3	2	1	0	0	1	1	1	1	4	4	6	6	9	11	12	12	10	13	19	17
1974	-8	-1	-1	-3	-4	-4	-5	-6	-4	-3	-2	-1	-3	-3	-5	-5	-1	0	3	2	-1	3	2	6	2	5	8	10	8	7	9	10	16	20	16	12
1975	-1	-12	-10	-6	-1	-2	2	-1	-13	-6	-1	2	-2	-1	0	-3	0	-1	-1	1	-1	2	4	4	6	10	7	12	8	6	7	13	11	12	14	12
1976	-11	-17	-13	-11	-11	-13	-17	-6	-4	-3	-2	-1	-4	-7	-12	-11	-8	-1	-3	-1	3	3	3	-2	1	6	9	13	13	9	9	8	13	12	13	15
1977	0	-8	-7	-7	-16	-9	-7	-7	-20	-12	-8	-10	-9	0	1	1	0	-7	-4	-7	0	0	1	2	4	4	4	7	8	7	9	9	16	14	10	11
1978	-15	0	-9	-3	-6	-12	-9	-15	-24	-16	-11	-1	0	0	-6	-14	-10	1	-2	2	0	-1	-2	-1	2	2	5	11	12	13	14	10	12	10	14	14
1979	-19	-10	-7	-10	-12	-21	-13	-14	-20	-10	-6	0	-1	0	-3	-13	-3	1	0	0	-2	-2	2	2	1	3	7	8	9	11	14	14	13	12	17	13
1980	-11	-8	-8	-6	-9	-19	-20	-19	-14	-9	-8	-4	-8	-7	-7	-12	-11	-3	1	2	3	1	3	5	5	5	7	8	5	9	17	16	12	15	13	14
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1982	-17	-18	-7	-9	-9	-16	-9	-12	-2	-4	-4	-6	-5	-5	-3	0	1	3	3	-1	0	3	3	4	2	5	6	4	7	11	15	6	6	9	9	13
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Averag	-8	-8	-7	-7	-7	-9	-9	-9	-9	-8	-8	-6	-6	-4	-4	-4	-3	-2	-1	0	1	1	2	4	4	6	6	7	8	9	11	12	12	13	13	14
By quartile																																				
Min. val	-24	-29	-22	-22	-23	-25	-27	-25	-24	-23	-19	-18	-19	-15	-18	-14	-11	-9	-6	-7	-7	-7	-3	-2	-1	1	1	2	0	5	6	6	6	9	9	11
Lower	-12	-13	-10	-11	-10	-13	-12	-14	-13	-13	-12	-9	-9	-6	-7	-7	-6	-4	-2	-1	-1	0	1	2	3	4	5	5	7	8	9	10	11	11	12	12
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Month	July						August						September						October						November						December					
Year / D	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
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2010	17	17	18	17	15	17	16	17	17	11	12	9	9	12	11	10	8	5	8	8	2	3	-1	2	2	-4	-3	-7	-9	-13	-9	-10	-14	-8	-17	-10
2011	16	19	15	16	18	18	16	13	13	15	15	15	13	13	13	10	9	11	9	6	3	5	3	4	6	5	2	3	2	2	1	-2	-1	1	-2	-2
2012	15	17	14	15	14	16	15	13	16	15	12	12	12	8	10	9	6	7	8	6	4	3	1	-2	3	-2	2	2	5	-2	-12	-6	-6	-5	-12	-6
Averag	15	15	15	15	15	16	16	15	14	14	13	12	11	11	9	8	8	6	6	5	4	3	2	1	1	0	-1	-3	-4	-4	-3	-5	-6	-7	-7	-8
By quartile																																				
Min. val	11	11	11	10	12	12	10	11	10	10	9	8	7	6	4	4	3	1	2	0	-1	-4	-8	-8	-10	-14	-13	-12	-16	-15	-13	-18	-20	-19	-19	-20
Lower	13	13	14	14	14	15	14	13	13	12	11	10	10	9	8	7	6	5	5	4	2	2	0	0	-1	-2	-3	-5	-8	-7	-5	-9	-9	-10	-11	-11
Median	14	15	15	15	15	15	16	15	14	13	13	12	11	11	9	9	8	6	6	5	4	3	2	2	1	0	-1	-3	-4	-4	-2	-4	-5	-6	-6	-6
Upper	16	16	16	16	16	17	17	17	15	15	14	13	13	12	11	10	9	8	8	7	6	5	4	3	3	3	1	-1	0	1	0	-1	-2	-2	-3	-3
Max. va	22	20	19	22	20	20	20	20	19	19	19	16	16	14	13	12	12	11	11	10	9	8	8	5	7	5	4	3	5	3	2	2	2	2	2	0
Range	11	8	8	12	8	8	10	9	9	8	10	8	9	8	9	9	9	10	9	10	10	13	17	13	17	19	18	15	21	18	16	21	22	21	21	21

Figure A20-12. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Västerbotten county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Västerbotten** **Total precipitation , mm / 5 or 6 day periods** Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Place: **Umeå (Berghem)** Coordinates for the places (RT90): 1720478-7088475 1701148-7103574 1695812-7084899 1707818-7076895

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March					
Year / Da	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31
1961	23	5	1	1	1	13	6	33	3	0	1	1	1	6	3	5	6	9
1962	0	9	33	18	12	7	15	11	18	38	0	0	1	3	0	1	1	10
1963	0	2	10	1	3	1	9	0	1	2	1	0	0	4	0	2	5	4
1964	0	0	0	1	4	2	10	28	6	3	0	3	1	1	0	0	0	0
1965	9	5	29	15	22	11	8	2	13	5	2	0	0	2	0	38	5	6
1966	0	1	1	1	2	20	2	1	6	9	15	7	0	14	0	2	33	48
1967	24	3	11	3	0	5	15	3	0	9	12	26	6	11	13	8	6	15
1968	2	3	9	5	12	8	10	1	2	0	1	0	10	1	4	22	12	10
1969	8	1	8	8	3	26	5	10	9	6	4	0	1	1	0	0	0	28
1970	38	1	1	0	2	1	9	1	6	2	6	1	17	42	2	8	1	18
1971	0	7	5	15	26	38	6	5	21	9	16	0	0	11	9	5	15	3
1972	0	1	1	13	7	7	4	11	10	0	2	0	0	0	0	0	1	21
1973	1	1	0	8	9	9	3	3	49	5	1	2	12	4	0	5	11	5
1974	5	5	26	8	9	20	12	15	26	3	2	0	1	0	0	5	1	0
1975	5	15	30	4	17	10	4	0	6	7	0	0	1	6	0	0	0	6
1976	1	18	9	23	1	5	14	15	6	0	13	3	6	4	4	0	7	17
1977	25	0	20	5	15	41	15	9	1	13	18	0	5	2	7	17	0	6
1978	8	9	1	6	8	42	6	0	0	0	5	2	14	1	15	0	12	25
1979	0	5	13	1	10	2	15	3	0	1	1	3	2	8	10	2	16	26
1980	4	2	2	2	4	3	0	1	12	0	0	3	6	0	2	1	0	22
1981	2	5	39	13	1	7	2	16	3	2	10	0	0	20	12	2	22	0
1982	10	1	3	0	9	2	1	5	5	0	0	3	9	1	20	10	1	1
1983	26	8	18	7	3	6	4	4	0	0	0	0	1	0	11	9	22	14
1984	12	11	22	8	2	21	25	12	2	1	4	0	3	2	0	1	0	15
1985	5	2	0	0	7	8	11	5	0	0	8	3	8	7	8	0	1	11
1986	0	1	15	4	30	13	1	1	0	0	3	2	9	1	2	0	56	23
1987	0	1	0	3	7	3	2	6	34	2	1	1	0	1	0	5	10	34
1988	20	1	11	8	28	22	31	27	22	21	8	14	12	10	19	1	6	6
1989	2	12	15	9	8	0	3	0	24	16	22	35	4	14	21	11	18	15
1990	1	7	43	22	24	33	9	15	14	36	0	23	2	6	4	1	28	1
1991	35	11	6	1	0	4	1	1	4	11	4	0	6	17	8	19	25	1
1992	7	23	14	0	0	0	2	8	7	0	3	0	11	2	18	11	4	3
1993	4	17	22	13	3	1	0	2	0	5	1	3	10	1	2	1	2	9
1994	4	14	23	7	28	15	1	5	0	0	0	0	15	17	2	3	19	8
1995	8	23	8	5	26	12	15	2	16	7	13	7	5	34	10	31	3	14
1996	0	2	4	2	1	0	1	3	7	0	1	7	1	1	2	1	1	9
1997	3	7	6	7	0	2	0	9	11	5	13	9	4	0	1	1	7	24
1998	36	11	18	3	1	1	16	17	6	11	26	4	9	2	20	3	1	19
1999	7	0	3	29	21	5	37	8	6	23	3	17	19	6	0	6	5	14
2000	14	2	1	3	1	26	0	10	11	5	14	8	18	9	8	3	0	3
2001	23	35	0	0	14	5	13	8	9	5	6	1	3	9	5	0	1	7
2002	3	4	3	12	9	6	19	26	2	4	34	4	14	7	6	26	1	0
2003	2	10	14	12	26	4	15	1	0	0	0	0	1	9	1	0	0	2
2004	0	10	11	1	0	32	15	0	1	1	18	6	4	0	5	29	16	1
2005	19	25	6	17	2	5	5	9	3	28	2	0	2	3	1	6	1	1
2006	6	0	0	8	8	4	4	16	3	6	0	1	5	2	0	1	1	33
2007	16	25	14	9	1	6	6	3	2	10	3	2	1	21	4	19	0	0
2008	2	20	31	37	19	10	21	6	0	0	5	18	7	24	3	7	2	7
2009	0	8	4	16	4	1	21	22	0	1	8	0	9	5	1	3	1	5
2010	5	0	0	6	5	30	14	3	0	1	5	30	6	5	5	13	5	19
2011	3	35	10	11	7	0	15	1	1	6	3	0	0	15	3	1	2	3
2012	65	4	3	22	4	7	4	5	16	22	11	8	0	0	0	5	9	4
Average	9	8	11	8	9	11	9	8	8	7	6	5	5	7	5	7	8	11
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	2	2	2	3	3	2	1	0	1	0	1	1	0	1	1	3
Median	4	5	8	7	7	6	7	5	5	3	3	2	4	4	3	3	3	9
Upper	12	11	16	12	13	14	15	11	11	9	10	6	9	9	8	8	11	17
Max. value	65	35	43	37	30	42	37	33	49	38	34	35	19	42	21	38	56	48

Month	April						May						June					
Year / Da	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	0	0	12	0	0	0	7	20	0	4	8	4	3	1	4	17	9	18
1962	13	15	19	3	8	2	4	1	0	13	22	11	6	7	17	7	6	14
1963	2	0	24	4	0	2	16	12	0	15	0	0	5	0	3	21	7	2
1964	0	4	12	1	3	8	8	9	6	2	5	2	4	12	16	13	10	13
1965	5	3	9	13	1	2	0	1	10	29	1	2	0	0	5	15	14	6
1966	21	2	0	1	4	2	17	5	0	0	16	0	31	3	0	1	10	2
1967	0	6	0	10	4	3	2	2	28	28	35	5	9	14	0	2	8	6
1968	27	0	0	0	22	1	15	30	23	2	1	0	2	7	0	1	3	18
1969	2	5	9	10	0	16	0	11	20	7	0	1	0	0	1	2	1	13
1970	9	9	0	28	16	3	4	0	0	2	8	8	4	4	1	0	1	2
1971	5	1	1	27	0	0	1	1	1	19	1	1	5	0	2	17	4	7
1972	10	19	24	1	5	26	5	0	0	15	24	25	4	0	9	4	20	2
1973	38	3	8	35	4	25	17	8	5	4	11	4	23	8	3	0	0	2
1974	0	0	3	3	4	0	1	0	0	0	5	20	6	17	0	1	27	26
1975	6	6	0	0	7	10	7	0	17	19	17	1	11	0	45	6	1	2
1976	10	2	4	1	6	2	15	0	1	0	0	0	1	9	0	1	2	20
1977	11	7	18	9	20	26	1	9	50	0	1	3	17	16	3	6	2	34
1978	0	1	13	9	2	0	0	0	6	3	0	3	2	15	1	0	31	12
1979	10	5	1	2	8	25	21	2	2	2	13	6	1	17	6	3	0	8
1980	1	12	0	15	0	8	0	10	0	0	4	1	3	1	1	1	27	36
1981	0	1	8	0	1	0	3	0	0	0	2	2	5	6	2	2	19	44
1982	0	9	7	0	0	3	10	10	1	2	13	23	1	1	7	1	16	1
1983	5	13	1	2	2	3	1	0	14	37	8	7	10	2	1	3	1	16
1984	0	1	3	4	2	0	7	2	0	2	4	15	1	0	7	10	22	33
1985	1	6	0	4	8	1	38	5	1	1	16	4	7	19	8	6	4	0
1986	9	2	0	5	13	24	0	0	17	7	12	23	1	10	2	2	4	1
1987	0	3	5	0	1	0	5	3	14	11	0	3	11	31	6	59	3	7
1988	5	5	2	1	0	0	5	0	0	3	8	4	21	1	0	1	5	0
1989	0	6	8	6	35	13	2	19	11	1	0	21	18	13	2	4	8	5
1990	12	0	0	9	2	7	0	2	1	4	14	13	3	0	5	10	2	19
1991	10	4	3	3	0	0	16	4	28	20	2	4	12	0	33	35	16	18
1992	3	5	1	14	21	29	16	14	4	0	0	0	1	0	7	10	3	4
1993	1	2	0	1	10	0	4	0	12	2	0	29	25	2	2	9	9	5
1994	20	9	0	1	2	5	0	0	2	3	3	5	21	6	2	13	24	2
1995	0	0	10	50	6	0	5	0	10	29	11	12	33	2	0	10	4	2
1996	0	0	0	13	6	2	12	7	1	7	24	7	1	5	10	39	7	3
1997	22	8	3	0	17	0	4	10	7	4	2	9	0	0	9	6	41	2
1998	0	0	1	24	1	13	15	16	0	3	17	6	8	18	28	42	2	0
1999	0	1	21	25	5	1	6	1	0	0	3	16	18	7	1	8	14	11
2000	56	0	12	6	30	3	0	0	0	21	11	27	17	3	14	11	23	13
2001	14	23	1	7	11	6	9	0	0	52	2	12	15	20	21	1	1	2
2002	1	1	4	0	1	9	8	0	3	6	0	1	2	6	1	15	9	30
2003	23	2	0	0	2	5	1	3	13	11	10	10	11	12	7	10	0	3
2004	1	1	1	0	6	0	14	2	8	8	13	3	3	7	13	9	6	25
2005	1	17	3	0	1	0	18	14	3	14	7	3	14	3	26	11	13	8
2006	13	29	21	6	0	0	2	0	11	2	18	23	10	0	0	15	11	0
2007	0	3	0	1	1	1	1	4	20	15	5	1	0	0	19	1	11	7
2008	9	14	13	0	0	0	1	1	1	2	0	0	0	31	8	2	27	0
2009	9	15	3	3	0	6	11	16	0	0	4	2	5	4	30	1	0	1
2010	3	8	0	3	0	8	3	1	15	7	10	14	4	3	14	33	3	2
2011	5	4	0	1	1	0	1	6	7	15	6	15	1	1	2	11	32	2
2012	13	17	11	25	18	17	29	15	11	8	1	0	19	9	3	11	0	22
Average	8	6	6	7	6	6	7	5	7	9	8	8	8	7	8	10	10	10
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	0	1	0	1	1	0	1	0	0	2	1	2	2	1	1	1	2	2
Median	5	4	3	3	3	2	5	2	3	4	5	4	5	4	4	7	7	6
Upper	10	9	10	10	8	8	13	9	12	14	12	12	12	10	9	11	15	16
Max. value	56	29	24	50	35	29	38	30	50	52	35	29	33	31	45	59	41	44

Month	July						August						September					
Year / Da	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30
1961	43	12	23	6	25	11	61	13	15	13	1	17	2	0	20	1	2	3
1962	9	0	10	10	18	8	13	22	18	1	14	20	58	24	0	10	0	0
1963	0	8	14	18	5	0	2	31	10	27	37	14	23	20	1	0	5	36
1964	14	14	1	0	3	3	23	1	1	35	24	22	0	16	4	18	7	12
1965	4	16	25	0	0	23	2	12	5	4	31	4	0	29	10	16	2	5
1966	4	10	19	5	2	37	28	18	7	1	0	0	31	11	28	3	4	6
1967	23	7	3	14	5	18	8	90	26	8	9	16	23	2	0	1	0	6
1968	0	4	3	8	6	2	1	0	77	19	0	1	11	7	8	5	18	6
1969	8	14	0	10	2	0	0	0	0	2	19	32	10	2	25	5	21	41
1970	24	3	21	24	24	13	0	17	9	14	4	3	22	26	10	37	3	0
1971	1	1	18	3	13	16	12	18	1	1	1	10	12	2	2	10	47	3
1972	2	11	9	2	8	1	19	2	4	10	2	0	14	41	35	1	7	1
1973	1	0	7	15	12	4	20	32	0	10	2	1	28	10	16	1	0	9
1974	12	11	50	22	2	25	5	7	20	19	3	3	16	16	1	9	26	54
1975	0	6	6	1	17	0	3	1	42	2	26	5	7	10	33	5	13	10
1976	3	3	1	23	2	41	4	0	0	1	7	9	5	37	25	0	6	0
1977	7	0	24	24	23	7	8	4	3	7	4	12	3	15	15	0	0	11
1978	1	24	5	8	3	0	3	4	3	19	16	36	27	21	13	30	5	1
1979	12	11	47	13	64	2	16	11	38	5	8	31	28	7	24	4	2	1
1980	0	4	2	25	4	3	14	6	5	17	10	44	4	16	26	10	7	7
1981	45	1	5	9	26	29	3	0	7	25	2	8	0	0	0	0	5	22
1982	21	0	0	1	8	0	0	5	20	11	31	29	11	23	30	7	22	4
1983	8	0	6	19	1	11	5	1	7	5	2	2	26	14	27	60	5	4
1984	16	1	30	11	11	31	9	3	8	11	7	9	10	14	33	1	27	6
1985	1	0	14	8	7	31	28	41	25	1	48	17	52	17	4	11	0	2
1986	9	8	18	4	26	6	24	22	7	2	17	18	22	13	38	8	13	9
1987	9	8	1	0	39	21	66	9	1	10	3	22	5	34	11	9	42	17
1988	8	5	13	6	11	36	45	19	27	27	25	14	14	1	16	8	14	18
1989	1	2	6	1	0	12	7	16	43	7	36	2	3	1	2	21	4	1
1990	25	26	11	14	11	3	12	13	3	24	12	5	2	14	19	56	9	5
1991	0	9	8	12	3	1	8	14	3	33	20	5	1	17	13	5	28	8
1992	5	12	27	11	21	14	3	9	68	14	11	46	44	14	10	5	6	3
1993	20	25	5	3	32	57	25	38	25	19	13	3	3	5	2	2	19	0
1994	0	0	2	1	1	8	8	2	1	0	2	14	0	38	24	5	0	12
1995	52	7	0	11	6	2	10	4	0	0	52	9	6	2	1	1	9	2
1996	39	27	12	5	2	15	6	0	7	1	0	15	1	7	7	0	0	46
1997	35	19	0	0	0	33	5	1	0	0	8	42	20	12	20	7	4	1
1998	21	12	29	19	16	45	25	17	20	39	44	23	0	16	9	9	0	1
1999	9	6	6	5	4	4	1	24	0	2	1	17	2	5	0	2	0	12
2000	9	24	65	47	38	6	9	32	30	9	36	6	5	57	2	0	1	3
2001	8	12	26	41	12	17	23	20	9	4	4	48	10	66	71	0	2	6
2002	29	2	10	7	28	8	2	0	4	0	0	12	1	2	1	4	8	5
2003	13	2	0	2	23	12	35	0	72	9	7	20	1	0	0	2	25	26
2004	24	4	15	31	20	3	2	1	2	43	8	32	14	0	30	24	26	10
2005	0	1	7	37	36	18	16	49	26	6	21	25	1	3	15	6	1	3
2006	2	13	3	0	0	0	2	0	7	38	1	10	49	19	0	0	8	35
2007	0	12	4	20	3	45	8	2	12	17	15	80	13	8	21	28	4	12
2008	7	14	7	6	52	9	0	19	18	36	19	15	11	0	0	3	1	0
2009	2	109	5	21	61	21	5	3	11	20	2	13	28	5	0	3	6	2
2010	9	1	7	3	10	38	34	28	1	0	32	15	0	0	31	14	27	0
2011	7	0	28	9	29	2	15	28	3	15	30	3	2	56	45	19	23	10
2012	6	7	14	7	8	5	16	6	0	1	15	70	10	2	17	14	1	44
Average	12	10	13	12	15	15	13	14	14	12	14	18	13	15	15	10	10	10
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	2	4	3	3	3	3	2	2	2	2	5	2	2	2	1	2	2
Median	8	7	8	8	11	10	8	9	7	9	9	14	10	12	13	5	6	6
Upper	17	12	18	18	24	21	19	19	20	19	22	23	22	19	25	10	15	12
Max. value	52	109	65	47	64	57	66	90	77	43	52	80	58	66	71	60	47	54

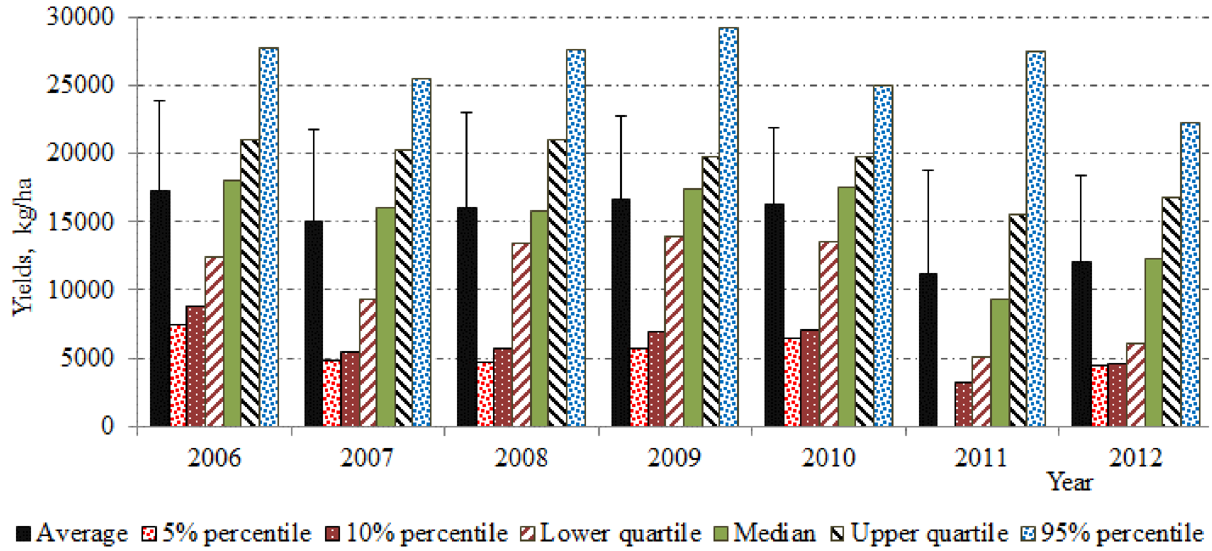
Month	October						November						December					
Year / Da	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	0	6	5	47	21	12	6	8	9	2	3	37	20	7	1	1	1	17
1962	3	0	1	5	2	19	6	4	17	9	2	0	9	4	14	2	0	0
1963	21	10	13	11	5	1	3	26	28	33	0	2	0	3	2	18	0	10
1964	1	6	36	0	20	0	2	5	12	1	12	19	14	21	28	3	4	10
1965	0	2	3	5	0	39	34	1	5	3	4	25	17	3	1	16	9	20
1966	9	3	6	8	19	0	18	8	7	9	3	36	36	38	18	47	53	34
1967	20	15	30	9	34	37	35	25	43	1	5	3	13	10	8	1	5	27
1968	21	1	16	1	18	27	45	0	0	0	10	4	0	1	0	9	11	41
1969	7	1	0	1	9	11	2	40	11	10	6	9	25	1	5	3	19	2
1970	1	41	2	45	6	6	5	5	20	29	26	1	9	2	2	2	4	5
1971	2	8	1	27	5	3	7	28	12	2	4	15	1	8	10	6	26	1
1972	1	1	2	10	25	17	21	17	22	1	8	20	24	11	5	0	0	0
1973	4	18	0	2	2	0	2	10	2	40	6	6	14	7	1	30	13	1
1974	31	26	1	3	11	23	16	32	35	7	11	24	22	5	15	22	7	13
1975	15	4	0	4	4	13	12	0	0	19	1	29	20	4	3	3	7	6
1976	0	18	2	0	6	9	12	25	12	5	4	24	26	15	1	7	1	7
1977	21	6	8	10	9	2	37	18	19	0	7	1	1	2	1	0	13	13
1978	9	8	0	20	3	11	9	0	31	11	3	1	0	1	7	10	1	5
1979	0	8	31	19	0	1	19	16	7	41	4	23	17	3	9	8	15	39
1980	8	45	27	52	2	20	0	1	12	19	14	1	11	3	9	13	15	10
1981	32	24	13	28	24	26	28	0	8	35	44	10	21	17	11	2	16	25
1982	1	1	9	17	15	3	9	0	15	20	23	22	7	2	20	20	7	1
1983	32	5	21	31	4	6	3	1	2	13	7	8	6	3	1	7	16	28
1984	21	31	2	41	17	30	9	0	0	1	39	26	3	18	1	22	13	4
1985	6	42	21	0	0	10	29	46	1	0	3	4	27	0	6	6	25	2
1986	9	16	2	6	22	23	9	41	14	15	26	3	29	8	5	4	9	9
1987	0	13	27	31	6	6	3	1	24	78	27	5	6	13	9	2	4	23
1988	1	23	3	0	1	3	4	1	1	1	4	1	4	7	5	2	15	15
1989	0	4	11	12	16	0	33	17	10	0	13	14	3	12	5	9	9	0
1990	26	7	0	0	0	29	49	1	1	13	5	2	1	0	4	6	14	37
1991	23	3	0	23	1	5	31	22	17	0	7	4	0	1	3	17	15	5
1992	0	6	52	12	7	16	29	19	40	13	23	25	25	5	7	10	0	0
1993	10	38	27	2	0	2	0	13	22	1	9	2	37	20	1	54	10	5
1994	7	6	10	0	16	32	2	14	12	8	10	0	1	47	0	15	1	13
1995	8	2	2	10	6	13	4	0	3	1	16	6	0	3	1	5	4	0
1996	17	2	3	17	0	35	38	8	2	25	41	21	29	7	26	1	9	2
1997	15	5	9	13	0	1	2	32	31	1	4	8	6	3	12	0	2	6
1998	0	1	36	18	27	48	3	22	17	3	3	4	1	0	14	3	11	5
1999	18	34	30	0	7	8	18	5	0	13	9	28	4	9	4	25	24	13
2000	9	4	29	2	18	45	25	22	24	26	33	32	10	18	41	3	9	18
2001	17	26	6	2	0	14	1	4	6	2	19	29	10	6	0	9	5	3
2002	11	6	3	3	20	18	0	22	1	10	6	4	1	0	0	5	0	11
2003	28	4	1	5	2	13	22	0	2	5	5	18	2	0	12	10	4	11
2004	13	1	1	3	20	7	9	1	6	0	5	8	4	8	2	11	28	3
2005	1	4	2	5	6	10	14	15	3	0	8	8	2	2	5	5	22	13
2006	61	22	2	12	23	35	17	3	49	22	49	6	16	23	12	6	0	11
2007	4	5	5	2	1	9	16	34	6	3	13	2	37	31	0	0	5	15
2008	45	12	5	32	7	2	1	10	10	1	8	21	15	6	32	18	9	0
2009	16	27	2	9	6	1	6	10	17	25	39	30	7	9	13	7	13	26
2010	0	4	9	18	9	17	11	18	2	1	5	4	5	2	2	25	3	7
2011	6	13	0	27	1	12	2	2	1	5	2	8	21	46	29	22	6	12
2012	45	10	16	26	2	36	10	7	11	3	9	2	13	16	33	16	4	33
Average	13	12	10	13	9	15	14	13	13	11	12	12	12	9	9	10	10	12
By quartile																		
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	4	2	2	2	3	3	1	2	1	4	3	2	2	1	3	4	3
Median	9	6	5	10	6	11	9	9	10	5	8	8	10	6	5	7	9	10
Upper	20	18	16	19	17	23	22	22	17	16	15	22	21	12	12	16	14	15
Max. value	61	45	52	52	34	48	49	46	49	78	49	37	37	47	41	54	53	41

Figure A20-13. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Västerbotten county, 1961-2012. Precipitation data from Luftwebb (2014).

APPENDIX A21 NORRBOTTEN COUNTY*

In this appendix an additional figure of farm-level yield for potatoes is presented which is not in the main text (Section 3.4.4) as well as temperature and precipitation data for the period 1961-2012.

A21.1 Yield on farms



N	31	32	31	34	29	31	28

Figure A21-1. Average and estimated percentiles of potato farm-level yield in Norrbotten county, 2005-2012. The error bars on the averages represent one standard deviation and 'N' denotes the sample size. Yield data from SCB (2014a).

A21.2 Temperature and precipitation, 1961-2012

In the following two pages are depicted temperature and precipitation data aggregated into 5- or 6-day periods for the years1961-2012.

* For literature references in this Appendix see the *References* section of the main text.

County: **Norrbotten**
Location: **Gällivare**

Average temperature (°C) for 5 or 6 day periods

Coordinates for the places (RT90): 1711776-7456772 1733163-7455743 1710486-7446405 1733163-7450407

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Scale for the color intensity: -30 °C 0 °C 30 °C

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	-7	-22	-18	-13	-13	-11	-16	-14	-7	-4	-1	-3	-1	-3	-4	-11	-6	-7	-8	-6	-6	0	-1	0	1	2	4	6	5	8	17	16	12	10	10	9
1962	-9	-10	-8	-15	-20	-10	-10	-10	-12	-18	-8	-9	-15	-17	-15	-12	-10	-10	-4	-2	-1	3	3	0	0	3	3	8	7	6	2	9	8	12	13	12
1963	-10	-17	-18	-14	-8	-7	-14	-13	-12	-20	-16	-4	-1	-10	-12	-15	-13	-11	-5	-1	0	0	0	5	3	9	12	9	10	15	13	9	3	7	9	17
1964	-6	-1	-6	-3	-6	-11	-12	-12	-23	-17	-11	-13	-6	-2	-11	-10	-10	-6	-5	-5	-2	2	-2	1	1	3	6	5	11	7	5	6	10	11	13	11
1965	-12	-22	-9	-10	-14	-17	-7	-8	-13	-8	-10	-16	-15	-14	-4	-8	-11	-8	-7	-9	0	2	3	4	2	3	0	-1	2	3	7	14	10	11	12	12
1966	-26	-9	-16	-19	-19	-25	-28	-21	-24	-16	-17	-18	-14	-10	-20	-7	-13	-11	-2	-4	-10	-9	-4	3	1	-3	6	8	5	6	7	13	18	22	11	11
1967	-14	-17	-20	-7	-20	-26	-18	-11	-4	-11	-8	-5	-6	-1	-4	-5	-5	-2	-3	0	2	-4	-3	2	-1	4	4	4	5	12	13	6	11	12	11	10
1968	-21	-24	-19	-19	-11	-19	-21	-18	-9	-16	-22	0	-4	-7	-13	-12	-7	-2	-4	-6	2	1	1	2	-1	0	0	1	1	8	13	9	10	10	13	13
1969	-10	-13	-23	-14	-17	-15	-20	-10	-24	-25	-17	-14	-10	-10	-12	-11	-5	-7	-5	-1	-3	-4	1	0	-1	2	3	3	5	6	6	10	10	13	17	18
1970	-15	-20	-19	-18	-10	-9	-15	-16	-19	-20	-22	-15	-6	-4	-9	-7	-7	-6	-9	-3	-4	-3	-4	-2	3	8	3	4	4	11	13	18	10	14	17	17
1971	-15	-8	-5	-19	-5	-20	-9	-15	-5	-10	-19	-25	-25	-10	-12	-9	-13	-7	-4	-1	-1	-2	-6	-5	0	5	4	2	1	11	13	6	11	13	11	15
1972	-6	-12	-14	-20	-9	-16	-17	-17	-13	-8	-5	-11	-10	-13	-6	0	-3	-4	-6	0	1	1	-3	-4	2	1	2	8	6	4	10	11	12	14	14	21
1973	-3	-4	-5	-8	-13	-12	-7	-18	-7	-12	-15	-20	-9	-7	-2	-10	-3	-1	-2	-3	-4	-1	-1	-1	2	2	3	4	5	7	12	9	8	12	17	15
1974	-10	-4	-4	-8	-11	-16	-13	-12	-11	-5	-5	0	-7	-4	-10	-9	-3	-2	2	-1	-3	0	1	4	-1	2	8	9	8	5	6	9	15	21	13	10
1975	-5	-20	-19	-14	-6	-6	-1	-4	-17	-10	1	-1	-8	-4	0	-5	-4	-4	-4	-6	-5	-1	3	3	3	7	7	9	7	2	5	9	7	11	11	9
1976	-15	-27	-18	-17	-15	-18	-22	-10	-8	-2	-7	-7	-9	-9	-14	-9	-8	-4	-7	-3	2	1	1	-4	0	5	8	12	12	8	5	7	13	11	11	12
1977	-8	-8	-16	-14	-26	-17	-14	-14	-17	-20	-13	-11	-12	-5	-1	-2	-4	-13	-7	-10	-3	-3	-4	1	3	1	2	4	5	4	7	10	14	11	5	8
1978	-18	-5	-13	-12	-19	-24	-14	-14	-20	-16	-14	-3	-3	-4	-10	-18	-13	-1	-4	0	-2	-4	-3	-2	-1	-1	4	11	11	8	10	8	10	9	15	16
1979	-20	-18	-16	-10	-17	-27	-16	-19	-20	-12	-10	-6	-4	-4	-7	-18	-9	-1	-2	-4	-7	-4	2	2	1	3	3	5	8	10	10	11	12	11	18	13
1980	-22	-13	-13	-10	-19	-22	-31	-27	-19	-8	-10	-4	-15	-8	-8	-11	-10	-6	-2	-1	0	1	2	3	4	2	4	4	4	10	16	15	10	18	14	14
1981	-18	-15	-9	-20	-11	-4	-12	-13	-17	-13	-17	-16	-15	-18	-20	-13	-11	-4	2	2	0	0	-6	-4	-4	4	8	13	15	7	7	7	6	7	13	9
1982	-22	-21	-11	-5	-16	-17	-10	-17	-3	-3	-2	-10	-10	-7	-9	-1	-1	-1	-2	-4	-3	1	3	1	1	4	3	3	6	8	12	3	4	7	6	13
1983	-7	-8	-9	-17	-9	-16	-22	-11	-10	-4	-4	-12	-12	-15	-5	-6	-4	-5	-3	1	-5	2	5	2	2	8	7	8	8	8	8	9	13	10	10	11
1984	-14	-22	-5	-16	-17	-19	-9	-12	-2	-7	-11	-1	-10	-7	-7	-10	-9	-10	-6	0	0	0	2	5	7	0	7	12	10	17	17	7	9	13	11	11
1985	-14	-23	-16	-13	-28	-21	-25	-26	-21	-24	-21	-9	-15	-7	-5	-10	-3	-4	-5	-6	-3	-3	-2	-2	0	5	5	3	0	7	6	8	12	12	16	13
1986	-21	-20	-16	-23	-19	-11	-15	-10	-7	-16	-16	-10	-12	-6	-3	-3	-1	-1	-1	-3	-7	-7	0	3	5	4	6	7	10	7	13	15	14	16	13	14
1987	-30	-33	-15	-10	-10	-21	-7	-17	-14	-19	-15	-14	-20	-12	-10	-9	-8	-4	0	-5	0	-4	-2	2	2	3	2	5	6	8	10	7	8	11	14	10
1988	-16	-14	-7	-13	-5	-18	-15	-5	-6	-18	-21	-16	-13	-12	-10	-13	-3	-3	0	-6	-8	-4	-6	2	2	5	7	2	6	9	6	11	9	16	17	19
1989	-6	-9	-14	-7	-8	-1	-2	-12	-9	-7	-14	-7	-7	-2	-1	-6	-5	-6	-4	1	2	3	1	3	5	3	6	7	12	6	7	12	11	14	12	16
1990	-11	-9	-17	-21	-15	-13	-1	-2	-6	-5	-1	-7	-8	-10	-10	0	-3	-2	-8	-5	3	3	4	5	6	3	5	3	6	9	7	13	11	9	17	11
1991	-11	-19	-14	-4	0	-9	-16	-17	-22	-21	-6	-14	-11	-9	-12	-9	-7	-1	-4	2	3	-5	-1	3	2	1	5	3	4	6	6	11	8	12	13	14
1992	-11	-16	-9	-10	0	1	-8	-5	-9	-8	-4	-4	-4	0	-2	0	-6	-7	-8	-4	-4	-4	-4	1	4	3	5	6	10	15	15	15	18	10	9	13
1993	-3	-6	-11	-11	-17	-11	-1	-6	-1	-15	-15	-6	-6	-9	-6	-3	-7	-8	-6	-7	-3	-3	3	6	6	7	3	9	8	4	6	5	7	9	10	13
1994	-19	-12	-13	-20	-14	-22	-23	-19	-12	-6	-10	-14	-11	-5	-6	-7	-9	-6	1	0	1	-1	1	4	3	8	3	1	5	4	8	8	10	9	11	12
1995	-12	-8	-9	-3	-8	-14	-10	-10	-16	-3	-7	-7	-9	-5	-1	-4	-4	-6	-5	-4	1	0	-1	-3	0	0	-1	3	6	9	11	13	12	12	13	9
1996	-10	-9	-3	-10	-13	-6	-14	-18	-15	-16	-12	-4	-6	-3	-9	-8	-7	-7	-2	-1	-1	-2	-1	-1	0	0	4	1	6	7	9	11	9	9	11	11
1997	-11	-12	-11	-14	-5	-7	-5	-18	-15	-11	-5	-8	-4	0	-6	-8	-14	-7	-6	-10	-5	-3	-2	-2	2	4	6	2	2	5	8	17	15	11	11	14
1998	-9	-7	-14	-12	-8	-13	-25	-20	-14	-11	-9	-4	-19	-18	-13	-4	0	-3	-7	-9	-8	-2	3	3	4	3	6	7	2	3	6	7	10	8	12	15
1999	-6	-12	-23	-9	-18	-24	-14	-26	-9	-8	-13	-9	-13	-8	-9	-2	-6	-3	-2	-1	-4	2	4	3	-2	0	3	6	10	7	7	11	16	12	13	18
2000	-9	-4	-8	-9	-16	-12	-9	-7	-5	-15	-13	-9	-11	-10	-6	-5	-4	-2	-9	0	-1	1	2	1	4	5	2	10	9	7	9	9	9	8	12	15
2001	-8	-8	-5	-6	-9	-8	-18	-18	-5	-5	-23	-17	-16	-9	-7	-14	-12	-9	-5	-2	-7	-4	3	5	4	6	5	6	3	4	8	11	10	13	17	16
2002	-9	-1	-1	-14	-28	-21	-13	-6	-7	-7	-11	-12	-13	-12	-9	-3	-6	1	-1	1	0	-2	7	5	5	5	10	5	6	15	15	18	15	13	10	12
2003	-21	-19	-15	-15	-15	-21	-18	-12	-5	1	-2	-5	-12	-2	-1	-2	0	-2	-6	-3	1	6	0	-2	1	4	8	8	10	8	9	9	7	10	15	15
2004	-21	-13	-10	-12	-11	-14	-14	-18	-7	-4	-11	-18	-12	-4	-6	-3	-6	-5	-4	0	0	5	0	5	6	10	1	5	5	7	8	6	10	9	13	12
2005	-6	-11	-8	-6	-12	-9	-5	-10	-14	-10	-14	-16	-13	-9	-18	-12	-2	-1	2	0	-1	-2	1	4	0	2	3	4	9	6	7	8	15	14	12	11
2006	-10	-16	-5	-18	-10	-6	-18	-13	-10	-15	-3	-17	-23	-15	-5	-3	-8	-10	-7	-1	0	1	3	6	7	11	3	3	8	7	8	9	15	14	14	12
2007	-9	-11	-18	-10	-19	-15	-13	-18	-19	-16	-17	-8	-9	-5	-2	-2	-1	1	0	-6	4	1	2	2	2	3	3	5	7	9	16	14	9	8	14	11
2008	-9	-6	-7	-3	-9	-11	-11	-8	-6	-6	-8	-13	-12	-9	-3	-8	-15	-5	-2	-5	-5	-1	1	6	7	5	1	0	5	9	14	8	8	12	11	11
2009	-14	-12	-11	-11	-6	-8	-8	-20	-19	-22	-7	-12	-8	-6	-6	-3	-9	-8	-5	-3	0	-3	3	4	7	4	7	11	9	10	6	7	10	8	15	17
2010	-19	-16	-8	-9	-12	-17	-17	-14	-10	-19	-25	-19	-9	-6	-11	-12	-9	-6	-2	1	3	-1	0	0	0	3	7	14	8	8	8	7	10	10	11	12
2011	-17	-14	-16	-15	-14	-7	-11	-19	-21	-25	-20	-3	-3	-3	-10	-6	-5	-8	0	0	3	3	5	4	1	6	7	6	9	7	10	19	14	11	12	18
2012	-6	-12	-13	-9	-14	-14	-28	-19	-10	-10	-9	-10	-6	-4	-3	-5	-2	-2	-8	-6	0	-2	1	3	0	3	4	6	8	7	7	6	10	10	12	10
Average	-13	-13	-12	-12	-13	-14	-14	-14	-12	-12	-11	-10	-10	-8	-8	-7	-7	-5	-4	-3	-2	-1	0	2	2	4	5	6	7	8	9	10	11	12	13	13
By quartile																																				
Min. value	-30	-33	-23	-23	-28	-27	-31	-27	-24	-25	-25	-25	-25	-18	-20	-18	-15	-13	-9	-10	-10	-9	-6	-5	-4	-3	-1	-1	0	2	2	3	3	7	5	8
Lower	-18	-18	-16	-16	-17	-19	-18	-18	-17	-16	-16	-14	-13	-10	-10	-10	-9	-7	-6	-5	-4	-3	-2	0	0	2	3	3	5	6	7	7	9	10	11	11
Median	-11	-12	-13	-12	-13	-14	-14	-14	-11	-11	-11	-9	-10	-7	-7	-8	-6	-5	-4	-3	-1	-1	1	2	2	3	4	5	6	7	8	9	10	11	12	12
Upper	-9	-8	-8	-9	-9	-9	-9	-10	-7	-7	-7	-5	-6	-4	-4	-3	-4	-2	-2	0	1	1	3	4	4	5	6	8	9	9	12	12	13	13	14	15
Max. value	-3	-1	-1	-3	0	1	-1	-2	-1	1	1	0	-1	0	0	0	0	1	2	2	4	6	7	6	7	11	12	14	15	17	17	19	18	22	18	21
Range	28	32	22	21	28	27	30	25	23	26	26	25	23	19	20	19	14	14	12	12	13	15	13	10	11	13	13	15	15	15	15	16	15	15	13	13

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	12	13	18	19	15	13	14	13	11	11	9	11	7	5	4	7	9	8	7	6	5	5	6	1	-1	-2	-3	-5	-2	-10	-16	-11	-16	-2	-15	-20
1962	13	14	12	10	11	11	8	11	10	11	9	9	6	7	5	5	5	5	8	7	-1	-1	1	-2	0	-3	-4	-8	-9	-7	-7	-6	-18	-26	-11	-14
1963	12	10	13	13	12	14	16	15	10	12	11	10	11	11	8	5	10	6	3	3	-1	-1	5	-3	-4	-7	-10	-9	-11	-9	-7	-8	-7	-17	-11	-5
1964	10	11	13	14	16	12	11	16	9	9	10	8	8	6	4	3	4	3	5	5	2	1	2	3	-1	-8	-4	-2	-9	-14	-12	-6	-7	-14	-7	-11
1965	8	10	10	13	15	12	10	8	10	11	11	13	11	10	5	6	6	8	2	0	0	-3	7	0	-1	-3	-7	-11	-23	-14	-11	-9	-23	-15	-20	-16
1966	12	12	14	14	15	15	14	12	10	9	8	9	5	6	3	4	1	-2	-2	-1	-2	-1	-1	-8	-4	-4	-6	-6	-10	-2	-2	-7	-15	-13	-11	-11
1967	12	15	10	15	12	13	15	9	13	12	12	12	11	10	11	7	7	4	6	0	2	-2	-10	-3	-1	0	-2	-6	-5	-2	-6	-13	-22	-20	-22	-20
1968	15	10	10	12	11	13	12	9	8	11	13	9	12	10	4	0	-2	2	2	-3	-4	-6	-11	-12	-16	-7	-7	-2	-8	-9	-2	-4	-1	-11	-6	-11
1969	12	13	12	15	14	17	17	18	16	15	10	11	7	9	5	3	3	2	0	4	1	4	0	-3	-13	-4	-5	-7	-11	-19	-10	-14	-9	-19	-21	-11
1970	17	14	13	14	13	15	16	12	12	14	11	9	9	4	8	6	3	3	3	3	1	4	-4	-9	-11	-13	-15	-5	-2	-8	-14	-5	-5	-2	-9	-14
1971	17	13	10	10	11	15	15	13	11	11	10	10	7	10	4	7	2	2	1	0	-5	-1	-5	3	-2	-17	-11	-19	-18	-5	-6	-8	-11	-10	-14	-3
1972	23	19	17	14	12	14	16	15	12	12	9	8	7	8	8	4	5	2	5	4	2	-1	-3	-7	-9	-8	-9	-7	-12	-6	-8	-9	-8	-6	-1	-4
1973	18	19	17	18	18	14	11	11	13	12	6	9	7	6	2	5	1	0	4	-3	-5	-10	-8	-3	0	-5	-22	-17	-11	-8	-19	-24	-14	-15	-21	-5
1974	10	15	14	14	14	13	13	9	12	12	11	12	11	9	6	8	5	7	3	1	-2	-1	-5	-2	-7	-2	-12	-11	-9	-6	-8	-9	-8	-10	-5	-17
1975	11	12	11	8	12	16	15	13	9	9	7	7	9	7	9	7	5	4	4	1	5	1	2	-8	-5	1	-3	-9	-10	-5	-6	-13	-8	-19	-12	-12
1976	10	14	14	15	14	9	10	14	17	11	11	10	4	3	3	4	4	0	1	-1	-7	-1	0	-8	-10	-4	-12	-2	-12	-12	-5	-2	-13	-15	-14	-24
1977	14	17	9	10	12	14	14	14	13	9	8	9	9	5	2	4	2	4	-2	-3	-4	-1	1	2	2	-3	-5	-9	-14	-11	-3	-9	-6	-5	-15	-17
1978	16	13	11	9	14	17	12	11	7	11	12	9	10	10	5	4	1	0	0	-4	3	0	-4	-3	-1	1	-1	-10	-12	-19	-21	-8	-21	-20	-20	-21
1979	11	16	16	15	13	14	10	13	14	16	11	8	6	10	5	5	4	4	2	1	-5	-5	-4	-7	-4	-6	-9	-4	-8	-12	-9	-14	-16	-13	-3	-6
1980	16	13	13	13	15	20	18	9	12	13	10	8	8	9	6	7	3	6	4	5	2	-3	-9	-12	-3	-7	-20	-14	-13	-15	-10	-18	-21	-12	-16	-12
1981	10	15	14	13	14	16	12	11	12	10	8	8	9	8	5	3	3	8	8	3	2	-3	-4	-5	-10	-5	-11	-4	-8	-12	-11	-17	-20	-27	-24	-16
1982	15	13	14	16	11	14	12	11	12	12	10	10	7	5	4	5	4	5	7	1	-2	-5	-2	0	-5	-2	-3	-5	-9	-12	-2	-10	-18	-14	-6	-7
1983	13	17	12	10	14	15	14	13	7	10	9	7	10	9	8	9	4	0	-2	2	0	3	0	-5	-5	-2	-8	-9	-16	-22	-6	-16	-15	-9	-16	-14
1984	9	13	13	13	12	13	17	15	10	9	8	5	4	7	9	5	3	0	7	4	0	-3	-5	-5	-4	-9	-8	-14	-13	-13	-5	-6	-7	-13	-4	-9
1985	11	16	16	13	14	13	12	14	14	10	10	9	8	8	9	5	4	2	3	4	1	0	4	-5	-7	-3	-10	-8	-9	-20	-22	-18	-8	-20	-23	-20
1986	10	13	13	14	13	16	14	11	9	8	7	5	7	6	5	2	0	-1	3	-2	4	2	-1	1	-5	-5	-12	-3	-5	-3	-15	-11	-17	-25	-19	-17
1987	11	13	11	18	14	9	13	10	8	8	7	7	6	9	6	4	4	4	5	6	6	6	2	1	-1	-7	-9	-4	-13	-13	-6	-16	-17	-16	-10	-16
1988	14	16	17	21	15	14	12	13	11	8	11	11	12	12	6	4	5	4	5	4	2	2	-3	-9	-9	-9	-3	-10	-10	-19	-9	-11	-13	-14	-18	-13
1989	12	12	13	9	14	14	17	15	13	12	8	7	8	6	7	8	8	4	1	0	-2	-7	-1	-4	0	0	-3	-2	-11	-8	-2	-13	-26	-19	-12	-1
1990	12	14	11	14	15	15	15	12	14	14	10	10	8	9	5	6	3	1	3	2	2	2	2	-1	-2	-3	-12	-9	-21	-11	-5	-10	-8	-2	-6	-4
1991	13	16	14	15	12	15	17	14	11	12	14	11	9	5	4	4	3	1	1	2	4	-2	-3	-3	-2	-4	-9	-17	-10	-3	-3	-5	-4	-7	-12	-8
1992	9	10	13	11	14	13	12	9	8	10	8	9	7	6	9	8	8	6	4	1	-8	-13	-13	-15	-12	-10	-3	-6	-15	-10	-2	-8	-9	-4	-3	-4
1993	14	10	17	15	16	14	14	12	13	11	7	7	6	4	3	2	2	3	3	-2	-4	-8	-5	-1	-2	-3	-1	-7	-12	-14	-7	-7	-19	-13	-10	-19
1994	12	14	15	13	15	17	19	14	12	10	11	8	9	6	6	2	6	2	-3	4	-1	-4	0	-1	-5	-11	-9	-10	-7	-4	-5	-5	-5	-5	-5	-11
1995	10	10	10	14	11	16	15	10	13	12	11	7	12	6	5	6	5	1	1	6	2	1	-5	-5	-7	-5	-5	-13	-8	-17	-7	-13	-4	-16	-24	-22
1996	12	12	13	12	15	13	13	17	17	13	12	13	9	5	4	5	6	5	4	5	0	0	1	-1	-9	-5	-7	-11	-8	-16	-2	-9	-14	-15	-22	-10
1997	14	15	18	18	17	14	16	17	9	14	13	12	12	10	7	5	5	4	3	1	-1	-2	-5	-1	-9	-8	-7	-6	-14	-11	-17	-5	-5	-2	-12	-16
1998	11	16	16	13	15	14	13	11	10	9	11	8	9	11	6	4	6	0	2	2	0	-3	-2	0	-13	-12	-12	-17	-3	-3	-8	-15	-6	-7	-19	-14
1999	14	12	16	16	13	10	11	8	8	8	8	10	13	11	10	7	5	5	3	0	2	-1	0	0	0	2	-2	-6	-2	-5	-13	-17	-19	-15	-6	-8
2000	11	10	14	16	17	15	13	11	11	11	10	13	7	6	6	8	7	6	8	8	4	5	2	-5	-1	-2	1	-5	-7	-1	-3	-5	-7	-10	-13	-21
2001	14	17	15	12	12	12	10	13	12	13	12	11	10	11	11	10	5	0	1	2	4	2	-4	-3	-5	-12	-8	-9	-5	-1	-4	-8	-1	-12	-20	-23
2002	14	15	16	16	15	14	12	16	15	16	16	12	9	9	8	4	2	2	-1	1	-1	-10	-7	-6	-10	-9	-7	-11	-13	-14	-9	-9	-9	-13	-23	-21
2003	17	14	17	20	18	18	16	13	14	12	11	6	7	11	10	5	5	0	3	2	0	-1	-5	-3	0	-1	-5	-10	-15	-8	-4	-6	-5	-15	-20	-13
2004	15	13	14	14	15	16	17	18	9	9	9	10	13	7	3	4	7	6	5	0	0	-2	-1	-4	1	-2	-4	-17	-17	-16	-11	-8	-8	-5	-10	-7
2005	19	19	15	17	11	12	12	14	13	12	13	10	10	7	5	4	6	8	8	7	6	0	-7	-1	3	-2	-3	-8	-3	-11	-14	-11	-7	-8	-9	-19
2006	16	18	13	12	13	14	17	16	16	13	14	13	12	9	8	10	3	0	2	3	2	-2	-8	-10	-11	-10	-6	-4	0	-1	-5	-5	-6	-14	-4	-5
2007	16	11	15	13	14	14	13	17	15	12	10	5	4	6	6	4	6	4	5	3	-1	0	4	2	-3	-6	-9	-11	-5	-10	-9	-8	-6	2	-4	-7
2008	15	12	13	14	14	15	9	11	12	10	11	7	6	6	4	5	7	4	0	1	2	-2	1	-4	-5	-4	-8	-8	-9	-11	-8	-16	-11	-3	-11	-1
2009	12	10	15	13	15	16	17	18	12	8	12	12	12	10	9	6	6	4	-2	-3	-5	-1	-3	-4	-1	-6	-6	-1	-3	-8	-9	-1	-10	-16	-16	-18
2010	15	15	14	14	12	15	15	16	14	8	8	6	7	10	9	7	4	4	5	7	-1	1	-1	-5	-3	-13	-12	-16	-16	-14	-10	-14	-17	-15	-13	-18
2011	13	19	13	16	16	16	15	9	10	11	12	13	9	12	11	6	5	6	5	1	1	4	-1	1	2	1	-1	-3	-3	-6	-2	-7	-7	-4	-6	-7
2012	12	13	14	13	11	14	13	11	15	12	9	9	9	5	8	6	3	2	6	4	2	-3	-6	-7	-1	-7	-4	-5	-1	-12	-16	-11	-12	-12	-28	-15
Average	13	14	14	14	14	14	14	13	12	11	10	9	9	8	6	5	4	3	3	2	0	-1	-2	-4	-4	-5	-7	-8	-10	-10	-8	-10	-11	-12	-13	-13
By quartile																																				
Min. value	8	10	9	8	11	9	8	8	7	8	6	5	4	3	2	0	-2	-2	-3	-4	-8	-13	-13	-15	-16	-17	-22	-19	-23	-22	-22	-24	-26	-27	-28	-24
Lower	11	12	13	13	12	13	12	11	10	9	9	8	7	6	4	4	3	1	1	0	-1	-3	-5	-6	-8	-8	-10	-11	-13	-14	-11	-13	-16	-15	-19	-17
Median	13	13	14	14	14	14	14	13	12	11	10	9	9	8	6	5	4	4	3	2	0	-1	-2	-3	-4	-5	-7	-8	-10	-10	-7	-9	-9	-13	-12	-13
Upper	15	16	15	15	15	15	16	15	13	12	11	11	10	10	8	7	6	5	5	4	2	1	1	-1	-1	-2	-4	-5	-6	-6	-5	-7	-7	-7	-7	-7
Max. value	23	19	18	21	18	20	19	18	17	16	16	13	13	12	11	10	10	8	8	8	6	6	7	3	3	2	1	-1	0	-1	-2	-1	-1	2	-1	-1
Range	15	10	9	13	7	11	10	10	10	9	10	8	9	9	9	10	12	10	11	11	14	19	20	18	19	19	22	18	23	21	21	23	24	29	27	23

Figure A21-2. Average temperature (°C), for 5 or 6 day periods, their quartiles and range in Norrbotten county, 1961-2012. Temperature data from Luftwebb (2014).

County: **Norrbotten**

Location: **Gällivare**

Total precipitation , mm / 5 or 6 day periods

Data from 4 places close to each other in the county (*http://luftweb.smhi.se/*)

Coordinates for the places (RT90): 1711776-7456772 1733163-7455743 1710486-7446405 1733163-7450407

Scale for the color intensity: 0 mm 100 mm

Month	January						February						March						April						May						June					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	28	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30
1961	13	0	5	2	0	15	3	22	2	7	0	3	1	3	3	2	6	3	0	1	5	0	0	0	7	8	1	6	12	1	5	22	8	24	25	54
1962	7	5	17	12	1	3	6	3	4	13	0	2	0	0	1	0	0	1	9	20	15	0	1	0	10	0	0	4	6	10	1	12	6	4	29	2
1963	1	2	1	2	9	3	8	0	0	1	2	0	3	1	0	1	0	1	1	1	16	5	0	2	10	3	0	6	1	11	0	0	44	5	5	1
1964	0	2	0	3	2	2	12	12	5	3	0	4	2	0	0	0	0	0	0	4	15	16	2	9	2	1	3	2	0	24	1	6	17	20	3	11
1965	9	0	21	18	11	4	8	10	14	7	1	0	2	2	2	36	3	9	10	0	3	12	1	0	0	10	4	20	0	1	2	0	2	29	4	15
1966	0	1	0	1	4	3	2	1	0	8	15	6	3	17	0	3	7	12	23	2	1	2	2	2	4	2	0	14	18	1	22	1	3	2	26	5
1967	9	5	6	7	0	0	5	5	0	7	8	16	12	9	5	5	1	23	1	0	1	1	13	2	0	0	2	9	4	0	0	7	0	1	7	14
1968	2	1	4	4	4	13	1	1	4	1	0	1	2	11	4	3	10	7	33	0	0	0	12	1	1	21	15	0	0	0	0	7	4	2	30	21
1969	8	1	7	7	4	20	6	7	5	2	1	0	3	3	1	0	0	17	6	0	0	0	1	18	0	22	17	5	0	5	4	1	8	0	0	1
1970	17	1	1	1	1	3	16	2	8	6	5	3	8	14	3	9	4	1	8	4	0	18	10	10	8	0	2	5	4	1	3	2	9	0	0	2
1971	0	5	0	10	16	3	6	1	18	20	7	0	0	0	2	6	6	0	2	0	2	35	0	1	0	1	0	23	0	0	3	6	3	1	4	0
1972	0	0	1	5	3	6	1	3	5	0	1	0	1	2	4	0	0	13	2	8	19	0	5	15	4	0	0	1	13	18	1	11	17	2	21	1
1973	3	1	0	3	13	14	2	5	27	2	0	3	12	0	0	0	8	4	12	22	0	3	9	20	11	9	20	4	5	0	8	7	13	0	2	17
1974	2	1	14	9	7	18	6	28	14	5	1	0	0	0	0	4	0	0	1	0	0	3	2	0	2	0	0	1	5	21	11	32	3	1	2	26
1975	2	7	17	5	18	4	2	0	2	4	0	0	4	7	0	1	0	6	5	4	0	1	2	7	11	0	8	13	14	13	9	1	22	3	0	0
1976	3	6	3	22	3	7	9	2	3	2	3	5	6	1	4	0	4	5	3	5	0	10	0	0	8	1	2	1	0	6	5	2	0	2	7	5
1977	10	1	7	3	4	40	8	1	0	4	10	2	7	7	2	13	3	3	3	6	21	7	24	6	0	2	35	5	0	2	13	8	38	15	2	8
1978	8	3	3	3	4	17	3	0	1	2	4	9	6	0	2	0	14	10	0	1	16	1	0	1	0	0	2	0	4	0	0	15	1	3	16	5
1979	0	9	9	3	10	0	15	12	0	0	8	5	4	14	7	1	9	14	1	4	3	0	0	14	7	0	3	17	20	14	3	2	8	9	9	9
1980	1	0	5	3	4	2	3	1	12	0	0	2	6	0	0	1	1	27	2	5	0	6	2	1	2	24	0	3	1	12	6	7	0	3	12	11
1981	3	5	14	4	2	3	3	7	2	1	3	0	0	17	1	3	20	0	0	4	8	2	1	0	6	3	0	0	1	12	7	26	9	11	3	24
1982	4	7	4	0	3	3	2	2	2	3	0	2	2	1	9	8	1	0	5	20	7	0	0	2	11	30	3	0	5	24	0	1	2	2	13	5
1983	14	4	10	10	4	9	7	4	0	0	0	0	0	0	0	0	12	20	13	6	0	4	1	2	2	0	17	8	14	4	2	2	2	0	3	33
1984	4	6	20	1	3	7	15	9	0	0	1	11	2	2	0	0	3	13	0	0	16	7	4	0	8	1	0	4	5	0	4	0	4	4	21	34
1985	6	2	3	0	0	5	2	4	0	0	4	1	4	4	7	0	1	15	0	0	0	2	2	2	5	0	0	0	4	13	3	20	13	9	7	7
1986	0	0	14	2	21	8	0	1	0	4	0	1	7	2	1	0	21	9	20	0	0	3	4	6	1	1	2	17	10	14	9	2	1	0	1	1
1987	1	1	1	0	8	1	9	9	17	0	6	0	0	0	0	6	9	29	0	0	1	0	3	1	5	0	10	32	0	0	27	35	1	15	12	6
1988	9	2	3	4	7	16	11	11	11	4	2	8	10	2	9	3	2	8	5	1	5	4	0	0	10	0	0	21	8	5	7	0	2	7	7	21
1989	2	19	18	5	4	6	5	2	10	7	1	18	4	7	15	2	6	19	0	2	4	3	21	36	1	18	13	2	1	23	20	11	0	5	23	4
1990	1	16	19	5	20	14	16	4	17	29	0	3	3	3	1	9	12	1	0	2	1	5	0	1	0	0	2	1	7	0	21	0	6	6	3	27
1991	22	13	0	0	1	3	0	0	1	8	6	0	3	27	3	30	3	10	5	2	3	4	0	0	0	5	1	10	9	6	4	2	34	20	29	15
1992	4	8	6	0	0	0	7	3	7	1	0	6	1	1	13	7	5	13	4	2	2	5	13	24	18	12	0	1	0	0	0	0	15	5	0	18
1993	2	10	21	19	1	1	0	3	1	2	1	2	9	4	7	3	10	11	0	0	0	5	7	0	3	5	13	16	0	6	15	2	5	14	4	17
1994	1	16	18	7	3	2	1	3	0	0	3	0	9	17	5	2	7	5	9	15	2	3	5	1	0	0	10	7	4	5	13	30	1	13	9	4
1995	1	2	3	4	26	10	13	2	10	6	16	6	3	27	7	14	2	5	0	1	0	24	8	0	7	2	9	27	6	24	26	26	0	12	16	21
1996	0	2	2	0	1	1	1	0	6	1	2	14	1	0	0	0	6	15	1	0	5	36	10	5	4	13	3	8	8	3	9	6	23	30	1	12
1997	4	3	8	18	1	4	1	15	11	6	18	4	4	1	9	3	2	25	2	4	8	0	19	1	6	3	4	3	1	5	1	0	6	0	6	2
1998	14	11	14	6	1	3	4	17	4	13	9	13	1	1	15	5	2	16	2	0	0	5	6	16	0	35	2	0	6	7	2	39	16	21	1	12
1999	3	1	2	30	8	1	23	2	5	9	2	5	7	9	0	10	1	8	1	2	19	17	0	3	0	1	0	1	21	30	4	7	1	16	26	1
2000	16	5	6	1	0	24	5	15	8	3	6	14	6	7	4	8	0	9	23	2	13	7	10	7	1	0	2	10	27	24	8	4	29	4	26	41
2001	10	8	0	0	4	7	6	8	6	10	3	4	5	4	2	0	0	4	18	15	0	0	6	19	0	0	0	23	11	1	8	18	30	7	1	6
2002	3	12	12	6	0	0	6	21	4	2	22	2	4	1	0	25	3	0	7	0	7	0	4	12	2	0	7	2	0	0	9	0	16	22	9	23
2003	3	6	7	21	10	4	9	2	1	0	0	0	0	10	1	0	0	5	10	2	8	0	0	11	4	2	19	8	21	5	11	3	5	2	6	0
2004	1	5	15	4	0	13	11	0	1	5	8	5	0	5	9	10	7	5	0	1	1	0	1	0	8	1	4	3	4	12	12	1	13	6	4	51
2005	26	10	10	17	4	11	1	11	0	16	0	1	0	5	0	2	5	4	2	18	7	1	0	0	26	4	3	11	21	10	25	10	8	23	13	8
2006	5	0	3	7	21	1	4	3	0	2	1	0	0	1	0	1	2	2	6	19	11	8	0	3	0	0	25	5	34	13	4	1	3	21	20	0
2007	9	22	5	20	2	5	14	1	2	5	3	5	2	5	3	10	0	0	3	6	2	2	5	0	4	25	15	23	8	0	0	0	7	3	5	19
2008	2	15	11	29	11	5	12	2	1	1	21	2	8	19	5	9	2	9	26	1	13	0	0	0	18	6	3	15	2	5	3	9	13	10	73	11
2009	0	0	2	9	5	0	9	16	1	2	7	1	4	3	0	0	0	9	7	6	1	1	0	7	1	11	0	1	8	23	9	2	33	0	0	0
2010	3	0	0	2	1	30	9	4	0	2	5	4	4	3	1	9	1	12	1	8	2	1	0	6	21	1	21	3	33	1	14	1	9	37	0	30
2011	2	14	3	8	8	10	13	6	4	1	4	0	1	4	1	1	1	0	1	3	2	1	3	1	1	4	0	15	16	20	11	14	0	40	37	6
2012	18	6	3	4	5	4	2	1	6	24	7	7	0	3	1	4	1	9	0	12	4	1	12	10	19	9	10	13	1	1	7	18	7	29	2	11
Average	5	5	7	7	6	7	7	6	5	5	4	4	4	6	3	5	4	9	6	5	5	5	4	5	5	6	6	8	8	8	7	8	10	10	11	13
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	1	1	2	2	1	2	2	1	1	1	0	0	1	1	0	0	1	3	1	0	0	0	0	0	0	0	0	2	1	1	2	1	2	2	2	3
Median	3	4	5	4	4	4	6	3	3	3	2	2	3	3	2	3	3	8	2	2	2	3	2	2	4	1	2	5	5	5	5	5	7	5	6	10
Upper	9	8	12	9	8	10	9	9	7	7	7	5	6	7	5	8	6	13	7	6	8	6	6	8	8	8	10	14	12	13	11	11	14	15	17	20
Max. value	26	22	21	30	26	40	23	28	27	29	22	18	12	27	15	36	21	29	33	22	21	36	24	36	26	35	35	32	34	30	27	39	44	40	73	54

Month	July						August						September						October						November						December					
Year / Day	5	10	15	20	25	31	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31	5	10	15	20	25	30	5	10	15	20	25	31
1961	7	20	8	26	62	24	46	11	7	2	3	7	1	1	10	13	3	3	0	1	28	22	11	14	16	3	5	2	7	6	8	11	4	2	2	8
1962	19	10	0	8	16	6	12	23	23	0	16	11	11	39	10	5	0	0	0	1	1	2	6	12	4	1	17	23	3	0	10	12	6	0	0	0
1963	1	11	29	39	11	0	5	0	7	4	55	12	20	1	7	10	1	34	3	9	0	8	5	6	7	12	15	24	3	0	0	7	4	4	1	17
1964	17	15	14	0	3	11	27	7	1	26	49	25	6	19	12	1	7	5	0	3	4	3	16	1	4	8	9	9	20	16	15	13	7	2	1	10
1965	7	17	22	0	17	15	14	42	2	8	5	9	0	14	6	18	2	0	1	17	19	4	0	35	8	0	1	1	1	15	17	7	0	5	1	9
1966	13	9	11	4	1	7	17	22	1	1	2	5	15	5	28	10	2	0	30	2	8	6	17	1	8	12	2	4	2	21	18	11	5	42	11	15
1967	14	4	35	14	8	14	8	52	15	12	3	6	34	1	1	2	2	2	32	6	15	8	7	36	26	20	33	2	0	1	16	2	3	1	2	5
1968	12	3	1	8	4	2	1	1	17	14	0	0	5	8	5	4	9	1	22	8	9	14	4	7	21	0	0	9	15	1	1	2	1	22	5	21
1969	16	27	9	0	0	1	5	1	0	18	3	29	4	3	2	2	18	15	0	4	3	5	4	7	0	10	14	12	1	4	22	3	1	1	6	1
1970	19	12	12	5	15	8	0	18	18	7	8	10	20	23	15	5	2	1	0	15	6	31	1	1	0	2	13	10	10	0	14	6	2	1	1	3
1971	2	3	7	2	30	3	10	16	18	0	0	8	2	1	6	2	4	1	0	7	5	32	14	3	13	8	6	4	7	10	3	8	8	0	28	3
1972	4	23	27	3	2	0	10	6	3	9	13	0	2	23	13	6	16	0	0	9	18	10	16	6	18	29	29	6	2	22	18	2	10	0	0	1
1973	6	0	6	25	9	15	6	14	7	13	2	4	7	7	7	1	0	11	3	2	3	3	5	0	9	27	0	1	10	3	13	7	0	18	9	8
1974	32	26	49	12	20	24	63	25	16	7	0	3	10	19	0	3	14	41	8	9	1	2	4	5	2	7	14	1	2	25	14	3	9	16	5	4
1975	0	1	3	1	23	0	3	3	44	2	16	5	1	12	17	11	10	12	15	3	2	5	3	17	7	0	0	7	2	21	10	4	6	0	1	17
1976	0	9	4	30	5	36	2	0	11	3	0	4	8	18	7	0	1	0	0	13	1	3	9	4	4	11	0	3	4	19	19	10	1	4	0	5
1977	15	1	7	56	42	8	4	10	0	5	23	14	4	10	2	1	2	25	11	6	5	19	2	4	16	12	11	13	3	7	0	2	2	5	13	12
1978	5	5	30	32	0	2	0	5	2	24	22	53	22	11	19	30	3	1	13	17	2	8	1	2	3	0	6	12	7	1	0	0	1	3	1	0
1979	5	1	24	32	11	5	35	1	13	2	14	17	20	2	1	14	6	3	1	26	19	1	1	4	14	8	9	16	5	12	17	1	4	18	6	16
1980	1	8	9	0	6	3	11	18	2	4	3	8	11	18	3	1	0	8	12	20	11	20	0	0	2	5	10	10	14	8	10	3	0	7	4	8
1981	57	5	14	15	39	40	23	9	5	25	1	1	5	0	0	0	8	29	24	7	24	7	10	7	20	0	3	15	14	5	18	5	8	0	2	5
1982	15	5	8	22	3	3	0	40	28	12	11	23	13	23	9	4	27	2	0	0	1	7	14	4	5	2	16	13	9	5	0	3	19	13	7	2
1983	16	0	4	42	0	23	7	0	4	3	6	16	18	51	10	29	11	0	27	3	30	14	9	10	9	1	1	11	4	1	7	1	0	5	16	32
1984	1	1	15	7	10	18	11	5	6	7	21	30	0	15	14	0	8	1	11	17	1	12	8	8	7	8	0	0	11	18	2	10	4	17	10	0
1985	2	0	23	22	20	18	29	37	31	3	39	35	48	13	12	19	1	5	12	15	4	0	3	7	18	36	1	0	2	4	2	0	3	2	9	2
1986	14	23	15	8	27	2	34	10	1	13	2	14	4	12	9	1	6	5	0	8	1	5	13	16	4	37	6	12	14	6	0	2	6	5	5	7
1987	2	32	0	0	3	7	47	7	3	16	27	10	7	14	10	8	7	3	0	15	11	18	4	4	0	11	8	21	16	2	7	6	6	5	4	2
1988	23	11	23	4	7	39	24	3	7	28	21	12	2	4	13	4	12	26	3	13	2	0	2	21	6	2	6	1	3	0	1	2	3	0	9	12
1989	5	6	24	5	0	36	32	11	4	13	6	1	5	1	1	20	5	0	1	0	18	1	20	1	8	14	7	0	2	7	3	3	2	7	11	0
1990	13	40	33	7	24	0	26	6	4	35	7	7	0	4	10	10	2	2	18	16	9	3	0	1	7	4	1	13	4	4	9	1	5	9	13	15
1991	1	0	36	15	7	2	8	61	11	28	2	5	3	7	12	9	30	0	8	17	3	40	2	1	31	15	15	0	20	0	1	1	0	9	1	3
1992	12	6	22	12	20	23	16	7	33	10	2	28	39	11	8	19	10	0	0	12	4	0	0	3	11	9	15	16	11	13	26	0	7	7	1	0
1993	28	5	6	23	18	38	17	9	52	40	7	1	13	0	0	0	5	1	8	0	17	1	0	2	0	5	9	0	3	1	37	29	4	48	11	12
1994	0	3	9	13	3	1	29	0	2	1	8	19	0	13	3	0	1	22	2	0	5	0	11	17	3	3	9	2	1	1	9	17	0	14	1	9
1995	14	7	0	10	35	1	1	3	2	0	6	46	4	6	1	0	12	1	11	7	4	19	7	17	5	7	20	2	6	0	1	0	0	1	4	1
1996	10	19	37	5	15	13	23	0	2	2	1	32	1	6	8	0	0	20	29	3	0	18	9	19	10	9	0	8	29	19	11	1	8	4	1	2
1997	21	47	0	7	14	14	4	5	4	0	8	7	4	12	20	5	1	0	6	4	5	9	2	2	0	8	10	1	1	12	14	21	17	0	1	3
1998	9	17	34	34	9	26	27	15	2	14	30	7	0	11	20	18	0	10	0	12	32	4	26	29	3	11	14	1	1	2	4	0	1	2	5	3
1999	35	19	7	35	28	5	11	36	2	9	2	5	0	13	0	4	0	10	14	18	6	0	5	8	38	6	9	9	12	7	1	3	0	10	10	9
2000	30	28	25	44	21	3	5	17	2	25	4	7	2	21	0	0	0	1	4	6	29	1	13	16	32	10	13	5	11	9	14	8	14	2	5	7
2001	28	6	27	36	2	7	12	51	15	21	1	6	7	26	28	0	2	1	20	12	5	3	1	4	4	10	8	3	13	20	8	2	0	5	9	2
2002	31	7	26	8	31	13	0	1	12	5	3	15	12	2	3	4	8	3	0	2	0	2	9	17	1	1	5	1	1	3	2	0	0	11	0	9
2003	4	1	24	4	13	34	10	4	9	11	14	5	3	0	2	6	20	5	31	4	2	0	4	14	23	0	2	1	0	9	4	1	15	8	4	16
2004	12	27	30	39	9	20	1	8	23	43	44	11	13	4	11	24	62	8	14	7	0	1	19	6	7	0	11	1	1	2	0	2	2	14	17	3
2005	7	4	2	19	56	32	23	20	9	12	31	40	15	43	10	1	1	2	4	5	2	4	6	2	10	12	12	1	17	6	1	2	20	12	29	5
2006	12	31	18	3	0	0	1	0	6	4	0	17	13	4	7	7	13	13	13	20	2	2	6	2	9	2	27	24	37	7	33	15	6	2	8	9
2007	8	15	37	23	2	57	17	4	6	23	11	7	5	1	39	41	4	2	1	9	5	7	1	6	5	39	10	5	8	3	14	17	1	1	0	6
2008	10	18	14	8	39	6	0	1	42	22	4	13	14	0	0	1	3	4	20	4	6	16	6	0	1	6	2	4	20	24	12	7	28	7	4	1
2009	1	29	5	5	7	24	1	8	16	3	3	25	38	20	2	1	8	1	1	15	4	5	2	6	2	12	7	16	28	11	2	0	3	2	12	8
2010	8	12	14	12	36	13	29	2	9	0	15	5	5	0	29	1	20	0	0	0	2	21	4	30	7	14	5	0	2	1	3	3	11	15	2	1
2011	1	10	3	12	24	32	1	11	1	44	19	14	20	21	41	15	29	37	26	37	0	27	2	10	16	2	0	1	16	11	16	11	21	11	9	12
2012	9	1	54	5	1	30	11	2	0	9	5	76	12	2	33	34	1	26	35	24	4	2	1	29	16	8	12	3	4	3	8	12	20	6	1	25
Average	12	12	17	15	16	15	15	13	11	12	12	15	10	11	10	8	8	8	10	9	8	9	7	9	10	9	9	7	8	8	9	6	6	8	6	7
By quartile																																				
Min. value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower	4	4	7	5	3	3	4	3	2	3	2	5	3	2	2	1	1	1	0	3	2	2	2	2	4	2	2	1	2	2	2	2	1	2	1	2
Median	10	9	14	11	11	12	11	8	6	9	6	10	6	10	8	4	5	3	5	8	4	5	5	6	7	8	9	4	6	6	8	3	4	5	4	6
Upper	16	19	26	23	23	24	24	18	16	19	16	18	14	18	13	12	11	10	14	15	10	14	10	15	15	12	13	12	13	12	15	9	8	11	9	11
Max. value	57	47	54	56	62	57	63	61	52	44	55	76	48	51	41	41	62	41	35	37	32	40	26	36	38	39	33	24	37	25	37	29	28	48	29	32

Figure A21-3. Average precipitation (ºC) for 5 or 6 day periods and their quartiles in Norrbotten county, 1961-2012. Precipitation data from Luftwebb (2014).

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