



Occupational health and safety in agriculture – a brief report on organization, legislation and support in selected European countries

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Abstract

Introduction and objective. Agriculture and forestry are among the most dangerous professions in Europe, with a high level of accidents affecting the sustainability and viability of the sector. International conventions, EU directives and national legislation build the fundamental basis for prevention. The aim of the study is to describe and categorize national mechanisms of occupational safety and health (OSH) for agricultural workers in Europe, to assess the extent of implementing safety regulation, the body in charge, and to give examples of health and safety initiatives.

Materials and method. Results of a questionnaire-survey on basic safety regulations on farms sent by e-mail to the representatives of 30 participating European countries in the context of the Sacurima COST action network (CA 16123) are presented. Due to the complexity, only selected countries are described in this study highlighting the regulative bodies, occupational health services or specific training offers, as well as the complexity of the mechanisms.

Results. One of the most serious issues and deficits of EU OSH regulation is the exclusion of self-employed farmers who compose nearly 90% of the farming population. This leads to serious under-reporting of accidents, and because one of the most common measures for the performance of health and safety initiatives are the injury and ill health statistics, better registration systems are urgently needed in almost all countries as a basis for preventive efforts.

Conclusions. The results of the study provide a basis for raising awareness about the current OSH systems in Europe, and the importance of developing sector specific OSH strategies. The proposed activities should assist in tackling high accident rates and poor occupational health for self-employed farmers.

Key words

agriculture, health & safety, COST, Sacurima, Europe, social security

INTRODUCTION

Numerous studies worldwide document the high risk of occupational injuries and diseases in the agricultural sector. Eurostat statistics reported 1.5 non-fatal injuries per 100 workers and 4.1 fatal injuries per 100,000 workers overall in EU agriculture in 2013. However, these rates under-represent the true rates because the reporting of occupational injuries to self-employed workers is voluntary, and 75% of the work is performed by family labour. The under-reporting is shown in the great variation in the fatality rates between countries, ranging from 0 – 51 per 100,000 workers [1]. Even though the fatalities in European agriculture have decreased over the years, nearly 40% of agricultural workers still feel unsafe at work and claim that preventive measures are insufficient, or completely lacking. Besides acute injuries, work-related

chronic illnesses are frequent in agriculture. Agricultural work is arduous, and farmers, particularly female farmers, have reported steeply declining work ability starting in their 40ties [2]. In Finland, musculoskeletal disease (MSD) (44.6%) is the most frequent cause of disability pensions among self-employed farmers [3]. About 80% of workers in agriculture have an MSD at some time [4], with a lifetime prevalence of any form of MSD among farmers of 90.6% [5] Skin cancer is the most common malignancy in Caucasian populations, with ultraviolet radiation (UVR) being the number one carcinogen [6]. UVR as the main risk factor has led to the recognition of non-melanoma skin cancer as an occupational disease for outdoor workers in some countries, including Denmark, France, Germany, Italy and Romania. Respiratory diseases are twice as common among agricultural workers compared to other sectors [4]. Other occupational health risks include noise exposure and work strain [7].

Various preventive strategies have been developed and implemented in different countries to decrease agricultural injury and illness risks. One way to categorize these strategies

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is the 'three E's'; regulations and their enforcement, education on safe work behavior, and engineering and technological improvements [8, 9].

In 2016, the European COST Action (CA16123) with the title 'Safety Culture and Risk Management in Agriculture' (SACURIMA) (www.sacurima.eu) and the presented survey were initiated. More than 30 countries have become members and collaborate in this European network. The work is organized in different working groups and one important part is to survey how different countries handle health & safety regarding organization, legislation, and other forms of occupational health & safety support to farmers and their employees. The financial capacities in a COST Action only include tools for networking activities but no funds for research. Survey activities and analysis, so far, have been based on national resources and existing data in each country.

EU legislation to ensure the health and safety of workers is based on several directives, of which the most important is the Framework Directive 89/391/EEC covering all employed persons. Several other directives also regulate the health and safety in agricultural production. Agriculture in Europe in particular is very diverse with regard to the size of farms and employment. As many as 89.5% of all agricultural holdings are family farms with no employees, while the EU legislative directives are mandatory for employees only. In consequence, family farms are not necessarily covered by all the above-mentioned EU directives. If at all, the coverage of self-employed farmers and family workers is mainly based on national legislation. Farming is also a sector with a large seasonal fluctuation in the work force, especially during the harvesting season when both formal and informal labour forces perform the work.

On the international level, the International Labour Organization (ILO) Convention C184 on Safety and Health in agriculture from 2001 is meant to ensure decent working conditions; however, so far, only 18 countries (6 European) have ratified the convention. The policy entailed aims to prevent accidents and injuries to health arising from, linked with, or occurring in the course of work, by eliminating, minimizing or controlling hazards in the agricultural working environment. The general EU framework Directive 89/391/EEC from 1989 imposes the obligation to assess the risk, to combat it, avoid it, and give appropriate instructions to the employees; therefore, self-employed farmers may have inferior and more hazardous working conditions and may be entitled to fewer state benefits. As part of the work in the SACURIMA actions, the national framework of Occupational Safety and Health (OSH) in the member countries is under investigation.

OBJECTIVE

The aim of the study is to describe and categorize different national OSH systems in Europe, and to assess the extent of implementing safety regulation, the body in charge, and to give examples of health and safety initiatives.

MATERIALS AND METHOD

A questionnaire-survey on basic safety regulations on farms was sent by e-mail to the main representative (core

group member) of each of the 30 participating European countries in the Sacurima network. After 2 reminders, 25 of the country representatives returned the questionnaire. Descriptive statistical data on agriculture in each country and information about i) Authorities and regulations; ii) Inspections and controls on farms; iii) Injury, insurance and public health insurance; iv) Occupational health services, farm relief services and pension schemes, as well as v) extension, education, and other programmes to promote OSH, were collected. To provide diversity and different examples, and for representativeness, the following 12 countries, which all have National authorities at different levels related to health and safety at work, were selected for further analysis: Denmark, Finland, Ireland, Latvia, Lithuania, Montenegro, North Macedonia, Norway, Portugal, Slovakia, Slovenia, and Sweden. Montenegro and North Macedonia are EU candidates, while the others are full members, with the exception of Norway.

RESULTS AND DISCUSSION

Agriculture is one of the most hazardous industries worldwide when comparing farm worker disease and injury rates with other sectors. Due to inconsistencies in the collection and reporting of data, the full extent is unknown [1]. As a result of the web-based survey about regulations and controls on farms, basic information of national farm health and safety regulations was compared between 12 selected small and middle-sized SACURIMA member countries. The aim is to present the best examples from these countries to help others strengthen their preventive efforts to reduce the burden of occupational injuries and diseases in agriculture.

General situation and legal framework. The legal framework for all EU members and candidates are the EU directives, the most important of which is Directive 89/391, which obliges all employers to carry out risk assessment, document risks and inform workers about the prevention of accidents and diseases resulting from work. Although several other directives are also relevant for the agricultural sector, this directive is binding for all selected countries, with the exception of Norway. Finland, Portugal, Slovakia and Sweden have also ratified the ILO convention C184 – Safety and Health in Agriculture Convention from 2001.

EU countries hold primary responsibility for organizing and delivering health services and medical care for their citizens. In consequence, after a work place accident there should be medical treatment available. Nevertheless, gaps in the accessibility of health care and a lack of data are undermining universal health coverage across the European Union (EU) is stated in the 'State of Health in the EU Country Health Profiles and Companion Report' [10].

The answers from the questionnaire show that health and safety issues with an impact on the agricultural industry are organized and operated in different ways throughout Europe. The current survey showed that large European countries with a big agricultural sector, such as Germany, Poland, France, Italy, and Spain, often have quite complex systems with a number of national and regional regulations and organizations dealing with health and safety. For the majority of smaller countries, such as Ireland, Montenegro, Norway

and others, they often have to rely on different national systems and legislations covering the agricultural sector.

According to the statistics, agriculture is an important industry for all European countries, regardless of size, when it comes to employment as well as the economical contribution to the Gross National Product. This is partly explained by the need to achieve a certain degree of self-sufficiency in food production, as well as the role of land conservation and protection. In general, EU-28 is mainly self-sufficient in food production and is expected to remain until 2080 [11]. The largest agricultural producers are France, Germany, Italy, Spain and Poland. Approximately 20% of all food produced is wasted (EU 2019), and this means that a fifth of all expenditures and the accidents that occur are unnecessary. Further statistical figures on the agricultural sector are not presented in this study, but can be found in Eurostat, the European statistics authority (<https://ec.europa.eu/eurostat/>) and other sources.

Legislation and authorities. The presence of occupational safety and health regulation demonstrates the OSH importance for all society and plays a powerful role in gaining standards and practice adoption [12]. The 12 European countries included in the sample all have in common a National Work Environment Legislation and Authority/Ministry, although there are also differences, such as to what extent the legislation applies to self-employed (farmers) and employees (farm workers). For instance, Denmark and Sweden have legislation that only partly applies to self-employed farmers. It is mandatory for self-employed farmers in these countries to follow legislation regarding machinery and dangerous substances. On the other hand, health and safety legislation in Finland, Lithuania and North Macedonia applies only to the employed farm workers and not to self-employed farmers. There are also differences in relation to inspections of health and safety on farms. In Denmark, Finland, Montenegro, North Macedonia and Slovenia, there are no inspections at all on farms with self-employed farmers (Tab. 1).

Occupational injuries on farms are treated by the public health care system in all of the countries under study, and all, excepting Slovenia, have a public occupational injury insurance system that covers both self-employed farmers and farm workers.

Pension and farm relief worker systems. All the included countries have a national pension system for self-employed farmers and farm workers with a 'normal' retirement age – 65–67 years (Tab. 2). A farm relief worker system for self-employed farmers is available in about half of the countries which allows a self-employed farmer to receive assistance to overcome a temporary disability from injury, or illness or during a vacation. Countries with such a system have different kinds of practical solutions and different rules for compensation from either the government or an insurance company.

Occupational health service and follow-up. A specific occupational health service for agriculture is not common, only 4 out of the 12 countries have some kind of specialized preventive health service for people working in the agricultural industry. Three of them are running in the Nordic countries, Denmark, Finland and Norway. Sweden used to have this

Table 1. Examples of 12 European countries with a National Authority/Ministry with regard to coverage of regulations and inspections and issues of relevance for health & safety in agriculture: a) Regulations, b) Inspections

Country	Regulations apply to both self-employed farmers & employees	Inspections on farms with & without employees
Denmark	Yes (partly for farmers)	No, only employees
Finland	No, only employees	No, only farms with employees
Ireland	Yes	Yes
Latvia	Yes	Yes
Lithuania	No, only employees	Yes
Montenegro	Yes	No, only farms with employees
North Macedonia	No, only employees	No, only farms with employees
Norway	Yes	Yes
Portugal	Yes	Yes
Slovakia	Yes	Yes
Slovenia	Yes	No, only farms with employees
Sweden	Yes (partly for farmers)	Yes

Table 2. Examples of 12 European countries with a National Work Environment Authority/Ministry and issues of relevance for agriculture: Farm relief worker system, Occupational health service and d) National system for health & safety education.

Country	A farm relief worker system available for self-employed farmers?	A specific occupational health service for agriculture?	A national system for education in health & safety?
Denmark	Yes	Yes	No
Finland	Yes	Yes	Yes
Ireland	Yes	No	Yes
Latvia	No	No	No
Lithuania	No	No	Partly
Montenegro	Yes	No	No
North Macedonia	No	Partly	No
Norway	Yes	Yes	Partly
Portugal	Yes	No	No
Slovakia	No	No	No
Slovenia	No	No	No
Sweden	Partly	No	Partly

service, but it disappeared when they joined EU in 1995. North Macedonia has a preventive programme aimed at health and work ability assessment of agricultural workers. It covers preventive medical examinations and questionnaires to collect data on health status and occupational hazards in order to plan and implement preventive activities.

Education and training in health and safety. Another area of interest was whether there were national systems for farmer's or farm worker's education in health and safety in agriculture. Most countries replied that they do not to have any specific system; however, in most countries there is some kind of health and safety education at agricultural schools and at universities with agricultural programmes. Some countries have special curricula for teaching and training health and safety at agricultural schools, but in most cases these issues are integrated in other study items which makes an evaluation difficult.

Specific health and safety programs. The final question on the questionnaire was related to national health and safety initiatives and programmes for the agricultural sector. All 12 countries reported different kinds of activities, but in most cases these were initiatives over a limited period of time and run as projects with quite small budgets. A few major programmes were identified, such as the Swedish 'Safe Farmers Common Sense' [13], and a comprehensive Norwegian approach. In Norway, the Food Branding Foundation ('Matmerk') is responsible for the Norwegian Agricultural Quality System (hereafter KSL, 2019), offering a quality system to which all registered farmers have access [14]. About 37,000 Norwegian farmers are certified in accordance with the system. By volume, 99% of all dairy production is certified according to this standard. KSL encompasses all relevant regulations for agriculture including OSH (ibid).

Finland has a Farmers' Social Insurance Institution (Maatalousyrittäjien eläkelaitos, abbrev. to MELA) which administers an accident insurance (workers' compensation) scheme which started in 1982. This insurance is mandatory for all farms with at least 5 hectares (12.4 acres) of farmland and/ or in some cases forestland. Smaller farms may obtain this insurance voluntarily. Self-employed owner-operators of the farm, their spouses, and salaried family members are covered (salaried non-family workers are insured by other workers' compensation insurance carriers). Premiums and benefits are based on the size of the farm operation and each family member's contribution to farm work [2]. The MELA webpage offers information, including brochures on health and safety relevant issues in Finnish and Swedish. Similar systems to those in Finland exist in Germany (SVLFG), France (MSA), Poland (KRUS) and Greece.

In Ireland, the Agriculture and Food Development Authority (TEAGASC) has a strong focus on health and safety. On their webpage they offer daily news, provide information and offer webinars and courses on various topics. Social media channels, such as twitter, facebook or youtube are also used to spread information [15].

In Denmark, the leading agricultural knowledge and innovation centre SEGES offers consultancy services to farmers which include health and safety topics. Farmers own SEGES and it provides professional knowledge for the benefit of all farmers and the farming industry, and it is part of the Danish Agriculture & Food Council [16].

The importance of the extension engagement is recognized in the literature, but the presence is variable through Europe, and the suggestion is to provide more opportunities and different organizational structures for OSH extension engagement [12].

General discussion. One of the most serious issues and deficits of the EU OSH regulation is the exclusion of self-employed farmers who compose nearly 90% of the farming population. Several countries have realized this problem and offer services for the self-employed as well as family members, but in most cases it is neither compulsory nor based on national legislation. Different bodies, such as health authorities, insurances, companies/research institutions or branding initiatives, offer health and safety services and education for the agricultural sector. The current study has provided examples from 12 selected countries of different services and offers. This small selection already gives a good insight into the possibilities and variation within Europe.

In all the selected countries, occupational risk assessment for employees is carried out according to EU Directive 89/391, but this is often not the case for self-employed farmers as they are not included.

One of the questions in the survey investigated whether there are inspections on farms with and without employees. In 7 of the countries, everyone working in agriculture is included, in 2 countries self-employed farmers are only partly included, and in 3 countries not at all. For Montenegro, it was stated that everyone on farms have to follow the regulations, but there is no control for the self-employed. For instance, according to Eurostat data from 2010, there were about 100,000 people working in Montenegrin agriculture, but only 760 were non-family; therefore, less than 1% of the workers are within an inspection system. In this context, attention should be drawn to the Norwegian system where HSE is included in a general quality programme with regular audits to ensure both product quality and the HSE of farmers and their employees, a system which is not based on external control by the authorities. However, this might be due to Norway having high involvement from interest organizations in policy development, including agricultural policy [17]. This complex interplay between actors may have allowed for establishing both targeted and time-limited programmes, as well as establishing the Norwegian Agricultural Quality System. The agreed upon role this quality system has achieved with the formalized cooperation with the labour inspectorate and food safety authority, as well as actors throughout the value chain, exemplifies how high involvement across actors may enable changes that in the long-run ensure a continuous focus on managing OHS on the farm [13]. Moreover, the Norwegian case is also indicative of how legislation, audits and control powers, are embedded in specific contexts, (regional and country specific), entailing and transforming into different systems and practices.

It is recommended that the examples of those countries including the self-employed, e.g. Ireland, Latvia, Montenegro, Norway, Portugal, Slovakia, and Slovenia, and partly Denmark and Sweden, should be followed by other countries. This is because the risks of occupational injuries and diseases are the same whether you are the farm owner or an employee. To tackle the challenges of appropriate and on-time development of actions for occupational health and safety there is a need for an appropriate overview of law enforcement and reporting of occupational injuries. To provide farmers and farm workers with professional help in carrying out the complex risk assessments in different areas, the question of establishing professional occupational health services in agriculture has to be raised once again.

Specific examples in more detail. In North Macedonia, the State Labour Inspectorate is responsible for supervising the application of laws and other regulations in this field. However, due to a lack of capacity of the inspectorate there is a serious insufficiency of the system for registering, reporting, collecting and processing data about occupational injuries in North Macedonia [18]. To overcome this, national policies require changes in the structure and amount of data included in the reports on occupational injuries, as well as in the injuries records, which points to the necessity to create a single information system for reporting and recording occupational injuries [19], which should also support the authorities in overcoming the challenge of non-reporting. For example,

in 2016, the rate of occupational injuries in the Republic of North Macedonia was 123.5 per 100,000 employees, compared to the same rate in 2015 when it amounted to 173.1 per 100,000. Compared to the data on the number of registered occupational injuries per 100,000 employees in the European region and in the European Union, it is worth mentioning that in North Macedonia these indicators show values that are 10 times lower [20]. These inconsistencies are not unique to North Macedonia, similar inconsistencies were found by [1]; thus, all countries need to improve reporting, monitoring the response system for occupational injuries, which should also include minor injuries and diseases, as an important measure for effective preventive efforts.

One of the major contents of the Framework Directive 89/391/EEC is to carry out risk assessment. As farming is very complex there is no 'one form fits all' approach to this, and the farmer has no competence of his/her own for the task; therefore, he/she needs competent guidance, primarily from skilled occupational hygienists. Farmers are asked to judge what may be dangerous on their farm, but that is by far not sufficient. Also very complex is the estimation of the individual workload of different tasks. Musculoskeletal problems, for example, are very common in farmers and farm workers and assessing and preventing musculoskeletal disorders at least has to be guided by skilled ergonomists. The Norwegian quality control system offers some guidance (in Norwegian) to carry out risk assessment with forms to fill in for different production areas [21].

The Irish Health and Safety authority also offers several guidelines for risk assessment on their webpage and refers to farmers with 3 or less full-time employees [22]. The following link is for Farm Contractors and other Agri-Business with usually more than 3 employees: <https://besmart.ie/supported-business-types/sector/2>

The Swedish initiative 'Safe farmer's common sense' with a budget of 65 million SEK, to-date is the biggest intervention programme for occupational injury prevention in Swedish agriculture. A related initiative can be found in New Zealand called 'FarmSafe'. During the five-year project phase in Sweden, nearly 150 supervisors were trained and the aim was to reach 75% of the target group and reduce the number of injuries by 50%. While the outreach was rated as successful, the reduction in injuries was hard to measure, partly due to under-registration. In an evaluation of the programme it was shown that only 7% of the actual occupational injuries in 2013 were shown in the official statistics [23].

One of the most common measures for the performance of health and safety initiatives are the injury and ill health statistics. Overall, there seems to be a large under-reporting of accidents due to a number of reasons, for example, differences in farm structures, the reference population, unofficial employment or varying exclusion/inclusion criteria [1]. Fatal accidents are mostly recorded while minor injuries or work related illnesses are seldom visible in statistics [24]. Therefore, better registration systems are urgently needed in almost all countries as a basis for preventive efforts that at present are by far not insufficient. This will enable the reduction of the identified services coverage gap. Although fatalities in agriculture have decreased drastically over the past decades, the remaining numbers and also the unknown numbers should be prevented to support the sustainability of the sector. Usage of objective data is an important element in the communication of accurate and

contemporary OSH messages that aim to prevent accidents in agriculture [25].

Limitations. The questionnaire was sent to the representatives of all 30 participating European countries in the SACURIMA network and covered a broad set of topics, including regulation and control, insurance, training and support functions. In most cases, only one key informant answered the questionnaire. It is not known how the key informants ensured the validity of the answers, as it could not be expected that one person would have the necessary information across all these topics. The responding countries might have collaborated on completing the questionnaire, based on the shared expertise the representatives possess and collecting necessary information elsewhere. Others might have answered due solely to own knowledge, hence the answers could have been biased towards own expertise. Hence, some variation could be expected across countries regarding in how much detail they would be able to answer. This is supported by the fact that the time needed for answering the questionnaire differed greatly – between 1 – 40 hours. There were also 5 countries that did not respond to the questionnaire survey. If these countries share similarities in, for instance, regulation, this could lead to a bias in the overall understanding of how OHS are organized across the European countries.

CONCLUSIONS

The study aimed to describe and categorize existing OSH systems in Europe, and to assess the extent of implementing safety regulation, the body in charge, and to give examples of health and safety initiatives. The study has shown that there are many different kinds of regulative frameworks for farmers in Europe. One of the most serious issues and deficits of EU OSH regulation is the exclusion of self-employed farmers who compose nearly 90% of the farming population. This leads to serious under-reporting of accidents, and because one of the most common measures for the performance of health and safety initiatives are the injury and ill health statistics, better registration systems are urgently needed in almost all countries as a basis for evaluating preventive efforts. Additionally, there is a need to aim at a change in the thinking of the promotion of a real safety culture, instead of only following regulations.

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