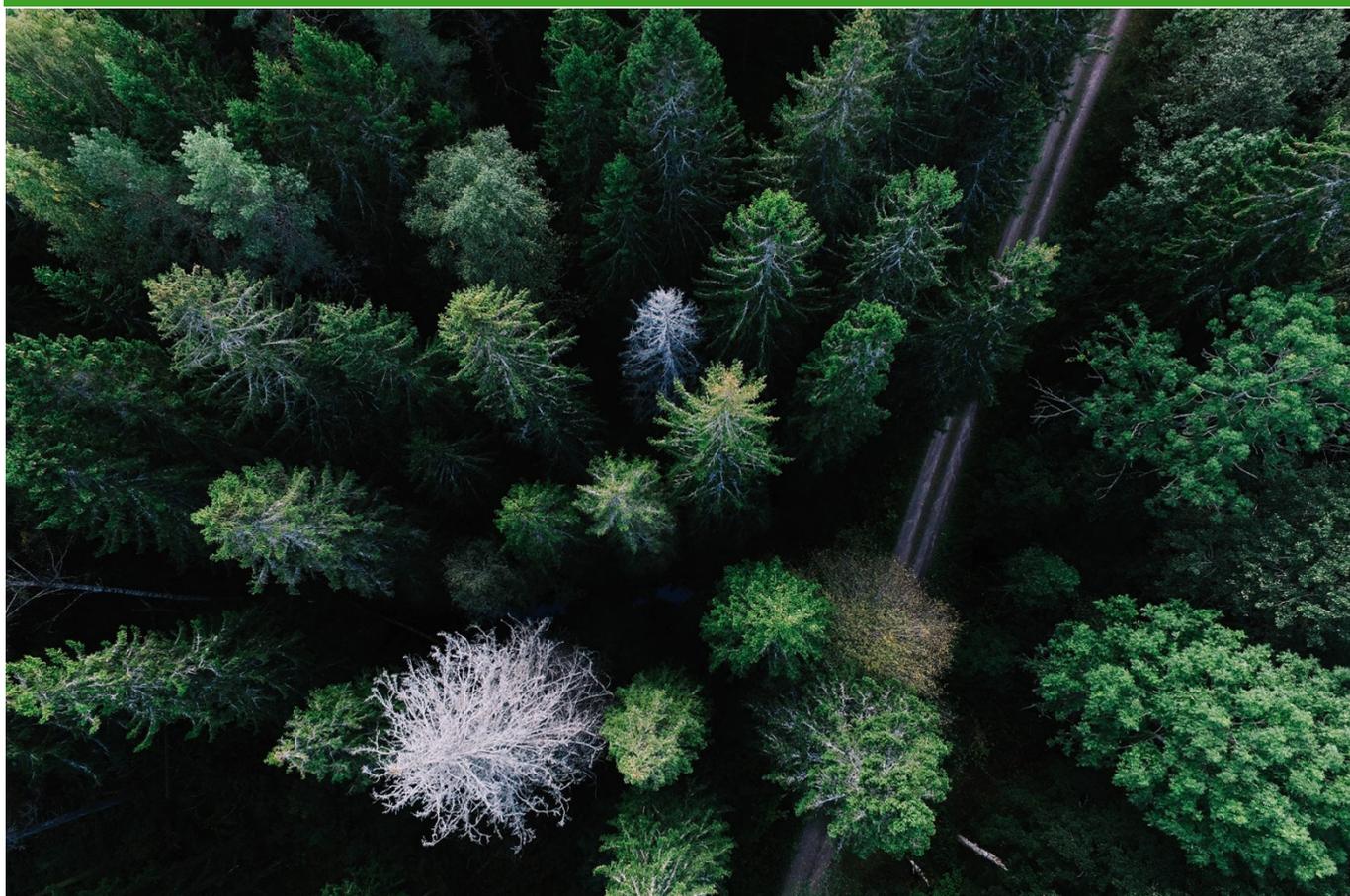


# Trade and production of plants and plant products in Sweden

A knowledge base for pest risk analysis – Update 2022

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## Summary

This report summarises the quantity of plants and plant-related products that are traded into Sweden, which serve as pathways of entry for plant pests. Furthermore, the economic value of plants and plant products is presented in terms of production value as well as the value of trade from Sweden.

In total, the volume of plants and plant material traded into Sweden was on average nearly 13 million tons per year. Of this, by far the largest part was various types of wood products, 11.3 million tons, followed by fruit and other types of plant based food, 0.7 million tons. Propagation material for different production systems was in terms of weight a small proportion of the total amount of traded plant goods into Sweden, reaching only about 43 thousand tons, it is however a rather large source of the living plant material traded. For example, an annual average of 49 million seedlings of forest trees were traded into Sweden each year.

The volume of plants and plant material traded from Sweden totaled more than 9 million tons, with an annual yearly value of over 30 billion SEK. Hence, the trade from the country was less than into the country. The trade both into and from Sweden was dominated by wood products, with a yearly average of 11.2 and 8.2 million tons respectively.

The total annual economic value of plants and plant products produced in Sweden was 57 billion SEK, which was 1.7 times the value of the trade of plants and plant products from Sweden. A great majority of the production value is associated with forest trees, 29 billion SEK, and arable plants, 22 billion SEK.

The economic value of vegetables and ornamentals and other plants produced in horticulture was approximately 2.5 billion SEK each. The estimated annual value of park- and street trees in Swedish cities, based on the cost of replacing them after 80 years, was 1.3 billion SEK. Fruits and berries constitute a minor part of plants and plant products produced, 966 million SEK.

In conclusion the amounts of trade as well as the economic value of plants and plant products quantified in this survey provides valuable information for determining pest specific risks for introduction as well as the potential impact if a species becomes established. The compilation of data also provides support for identifying potential pathways for plant pests.

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# 1 Introduction

Invasive pests are regarded as a major threat to plant production, biodiversity and other ecosystem services worldwide. Recent outbreaks of the Dutch Elm disease and Ash dieback have clearly demonstrated the consequences invasive pests can have in the Scandinavian countries. An increase in the trade of plant material combined with a rise in the incidence of invasive pests within Europe increases the threat associated with plants and plant production in Scandinavia.

Pest risk analysis (PRA) is an important tool used to analyse the risk a plant pest constitutes to a country or territory and forms an essential foundation for proper management decisions. A central part of conducting a pest risk assessment is to identify and assess the potential pathways for introduction and to analyse the potential economic consequences associated with the introduced plant pest. In order to do so, information is required on volumes of traded goods and an estimation of the economic values at risk.

Here we present a comprehensive report of i) the volumes of trade of plants and plant products that may provide pathways of introduction for invasive plant pests to Sweden and ii) the economic value of plant production and trade at risk in Sweden. The report covers the period 2017-2020 and is an update of a previous report by Widenfalk et al. (2018) covering the period 2012-2016. Hannunen et al. (2014) has written a similar report for Finland.

The report contains firstly the volume of propagation material traded to and from Sweden, such as seeds, seedlings and plants for forestry, agriculture, horticulture, including ornamental and landscaping plants. Secondly, trade to and from Sweden of other plant materials are covered such as wood, wood products, food and fodder plants traded in a form that potentially harbour living pest specimens. In that regard, impregnated wood products and processed fruits are not covered in the report.

The report also presents statistics on the production of plants and plant products within Sweden. This is first and foremost the annual production of timber and wood products as well as harvested crops from agricultural and horticultural cropping systems, e.g. cereals and vegetables. To a lesser extent the production of ornamental and landscaping plants is also covered. Based on the area and volume of plants and plant products produced in Sweden together with the sales values, the economic value of the production is reported, a figure that is associated with the economic value at risk from the consequences of damage by invasive pests. Occurrence of a regulated pest in Sweden may potentially limit our possibilities to sell its host plant, and products made of it, hence statistics on plant and plant material that are traded from Sweden are also provided in the report.

For many sectors the official statistics are rather well developed and comprehensive in Sweden. Many of the figures presented in the report were gathered directly from different databases and official sources freely available online, e.g. Statistics Sweden, Swedish Board of Agriculture and the Swedish Forest Agency, which are considered to be reliable sources. For some categories, such as the value of forest seedling production, detailed data were missing. In these cases, figures were estimated from, for example, current production figures multiplied by seedling price. These figures are thus associated with a higher degree of uncertainty.

## 2 Method

### 2.1 Included materials

This survey covers plants and plant materials produced in Sweden, as well as those traded to Sweden. More specifically it includes all plants and plant material that potentially could carry pest organisms, such as insects, mites, bacteria, viruses or fungi. Hence, all plant materials that are not processed in such a way that living organisms are unlikely to remain in the material. Materials such as impregnated wood products are thus excluded while wood products that are not treated or impregnated are included.

The survey includes wood and forestry products, living plants as well as all sorts of seeds, seedlings, cuttings and other types of propagation materials. Furthermore, most plant based food items that are not dried, boiled or processed in other ways, are included in the survey. However, there are some exceptions for certain exotic fruits when the dried and the fresh fruit were grouped together, these were then still included.

### 2.2 Trade into Sweden

Most trade statistics were obtained from Statistics Sweden and based on custom reports on foreign trade (Statistics Sweden, 2021a). The custom reports are reported with Combined Nomenclature (CN) which is used by all EU countries in their foreign trade statistics and also in the EU's Common Customs Tariff. These statistics are rather reliable and detailed, however trade of small volumes of goods are not reported, especially not within the EU. Therefore, figures on traded volumes provide conservative estimates of the actual volumes. Figures are reported as mean values, as well as min and max values, for the period 2017-2020 if nothing else is stated. Each product category also contain the percent of trade that occurs within the EU.

Statistics on trade to Sweden for forestry propagation material were obtained from the Swedish Forest Agency (2021a). Data on total amounts of traded propagation material for forestry purposes, although not specified per tree species, were available from Statistics Sweden for 2017-2020.

### 2.3 Trade from Sweden

Statistics on the trade from Sweden were exclusively obtained from Statistics Sweden (2021b). Both the traded volume in tons and the value in thousand SEK (k SEK) for the different products are reported. The percent of trade to countries within EU is also presented.

### 2.4 Production, distribution and economic value

For agricultural and horticultural production, i.e., cereals and vegetables, data on the annual production volume and value were obtained from the Swedish Board of Agriculture (2021). The production value for the horticultural crops is calculated from the sum of the production of crops and the grower's price for each crop. For the agricultural crops, subsidies are included in the production value which is important to have in mind when comparing the two figures. When neither production volume nor area was available, these figures are left missing in tables without estimates.

The standing volumes of forest divided on different tree species were based on statistics from the Swedish National Forest Inventory (NFI; 2021). Production and distribution of forestry was based on yearly felling volumes (Swedish Forest Agency, 2021b) and felled areas (Swedish Forest Agency, 2021c, d). Since the felled volume was reported as a total, estimates of volumes per tree species were made. The estimates are based on annual

shares of the most common tree species processed by forest industries in Sweden, obtained from Biometria (2021). The same approach was used to estimate amount felled area for the most common tree species.

The economic value of seedlings was estimated based on the average prices of seedlings from the pricelist of one of the largest suppliers of forest seedlings in Sweden, Svenska Skogsplantor (Svenska skogsplantor, 2021).

The total value of urban trees was calculated using the same model as in Hannunen et al. (2014). The model is based on the cost of removing a damaged or dead tree and to replace it with a new one. By multiplying this cost with the number of trees, divided by an estimated rotation time for the trees, the annual value for all urban trees in Stockholm was calculated. By extrapolating the value using the proportion of the population of Stockholm to the number of people living in urban areas in Sweden the total annual value of urban trees for Sweden as a whole could be estimated. The total number of street-trees in Stockholm municipality was estimated from figures obtained from the municipality administration (Britt-Marie Alven, personal communication). Data on urban trees was not updated from the last report.

## 3 Trade into Sweden

The volume of plants and plant material traded into Sweden totaled nearly 13 million tons, on a yearly average. Of this total, by far the largest part was different types of forestry products, 11 million tons, followed by fruit and other types of plant based food. Propagation materials for different production systems were in terms of amount a small proportion of the total volume of traded goods into Sweden, reaching 43 thousand tons.

### 3.1 Propagation material

On average 43 thousand tons of propagation material for different plants were traded to Sweden on a yearly basis (Table 1). The largest proportion of propagation material was ornamentals and other plants and trees, such as berry plants, fruit trees and landscaping plants, with a yearly average of 22 thousand tons. Propagation materials for arable and vegetable crop production, and forestry had lower figures, with on average 13 thousand, 6 thousand and 2 thousand tons, respectively (Table 1). However, figures for arable and vegetable crops varied more than other categories of propagation material. This possibly reflect the variability in the domestic production of seeds and seedlings or that material for several years was traded each time.

Table 1. Annual trade of propagation material into Sweden, in tons, during 2017-2020.

Propagation material	Min	Max	Mean	Within EU
Ornamentals and other	15 952	17 103	22 303	99%
Arable crops	4 992	24 550	12 986	86%
Forestry	1 765	2 860	2 278	99%
Vegetables	2 637	9 330	5 522	65%
Sum	25 346	53 843	43 089	87%

#### 3.1.1 Forestry

Even though Sweden has a considerable domestic production of propagation material for forestry, there was still a notable trade of both seeds and seedlings into Sweden. An annual mean amount of 981 kilograms of seeds originates from outside of Sweden (Table 2). The highest proportion of seeds was Norway spruce with a yearly average of around 844 kg, followed by Scots pine with a yearly average of around 96 kg.

Table 2. Annual trade into Sweden of seeds in kilograms by tree species during 2017-2020.

Species		Min	Max	Mean
<i>Larix sibirica</i>	Siberian larch	1	25	9
<i>Larix x eurolepis</i>	Hybrid larch	5	36	15
<i>Picea abies</i>	Norway spruce	9	2 049	844
<i>Pinus sylvestris</i>	Scots pine	11	180	96
<i>Prunus avium</i>	Bird cherry	15	20	17
Sum		41	2 310	981

Most seeds were traded from Belarus, 65%, followed by Lithuania and Poland (Table 3). Seeds were also traded from Finland, Denmark and Norway. The trade of seeds into Sweden may partly originate from Swedish cones that have been sent abroad for seed extraction (Claes Uggla, The Swedish Forest Agency, personal communication).

Table 3. Country of origin for seeds of forest trees traded into Sweden during 2017-2020.

Country	% of trade
Finland	8%
Denmark	3%
Norway	1%
Belarus	65%
Lithuania	12%
Poland	10%
Sum	100%

There was also a trade of forest seedlings into Sweden. Fortynine million pieces of forest seedlings, equivalent to 13% of the domestic production during 2017-2020 (387 million pieces), were traded into Sweden (Table 4). The leading country of origin was Germany contributing with 48%, followed by the Baltic states, 32%. The remaining trade came from other Nordic or European countries (Table 5). These seedlings may originate from Swedish seeds, transported from Sweden for seedling development in for example Germany (Claes Uggla, The Swedish Forest Agency, personal communication)

Table 4. Annual trade into Sweden of seedlings, in million pieces, during 2017-2020.

Species		Min	Max	Mean
<i>Picea abies</i>	Spruce	30	48	41
<i>Pinus sylvestris</i>	Pine	3	4	4
	Softwood species	2	3	3
	Hardwood species	1	2	2
Sum		37	57	49

Table 5. Country of origin of forest plants during 2017-2020.

Country	% of trade
Germany	48%
Baltic states	32%
Nordic countries	17%
Other European Countries	3%
Sum	100%

### 3.1.2 Arable Crops

The total amount of propagation material for arable crops, such as fodder plants, oil plants and cereals, traded to Sweden was on average 13 thousand tons from 2017 to 2020, where cereal seeds constituted the largest part (Table 6). In general, more than 85% of the goods were traded from countries within the EU. However, for fodder plants this figure was slightly lower. In the group fodder plants the amount traded varied from on average 20 tons for Meadow fescue (*Festuca pratensis*) to 550 tons for English ryegrass (*Lolium perenne*) (Table 6). In general, more than 70% of the fodder-plant seeds were traded from within the EU, except for the category other clover species (*Trifolium* spp.) and Italian ryegrass (*Lolium multiflorum*). Italian ryegrass was traded into Sweden from several countries, including Denmark, 23% of the traded volume, Uruguay, 18%, USA, 17%, and the Netherlands, 16%. New Zealand contributed to the largest share of trade of other clover species than red clover, over 70% (Table 29 & 30; Appendix 1).

For oil-rich plants, Sunflower (*Helianthus annuus*) seed constituted the highest quantity of trade into Sweden, on average 2.1 thousand tons in 2017-2020. This was the highest volume for any single species of arable crop reported, apart from the category wheat and rye mixture (Table 6).

Propagation material for cereals had by far the highest proportion of traded amount to Sweden of all arable crops with an average total 2017-2020 of more than 10 thousand tons. The highest amount of cereal seeds traded to Sweden within the group was wheat and rye mixture with on average 2.7 thousand tons 2017-2020. The trade into Sweden of millets (*Panicum* spp.), rice (*Oryza sativa*) and spelt wheat (*Triticum spelta*) was minor (Table 6). Cereal seeds were almost exclusively traded from countries within the EU except for Spelt and Durum wheat with 100 and 30% traded from countries outside the EU, respectively.

Table 6. Annual trade into Sweden of propagation materials of arable crops, in tons, during 2017-2020.

Arable crops		Min	Max	Mean	Within EU
<b>Fodder plants</b>					
<i>Festuca pratensis</i>	Meadow fescue	3	53	20	100%
<i>Festuca rubra</i>	Red fescue	307	1189	319	98%
<i>Festuca</i> spp.	Fescue	27	43	35	95%
<i>Lolium multiflorum</i>	Italian ryegrass	52	175	97	62%
<i>Lolium perenne</i>	English ryegrass	385	720	591	83%
<i>Lupinus</i> spp.	Lupin	25	58	46	97%
<i>Medicago sativa</i>	Lucerne	115	199	164	100%

Arable crops		Min	Max	Mean	Within EU
<i>Poa pratensis</i>	Kentucky bluegrass	63	202	136	71%
<i>Trifolium pratense</i>	Red clover	16	29	22	72%
<i>Trifolium</i> spp.	Other clover	67	206	156	28%
	Other fodder plants	629	843	603	98%
	Various <i>Poaceae</i> and <i>Vicia</i> species	135	252	180	90%
<b>Oil-rich plants</b>					
<i>Brassica napus</i> subsp. <i>oleifera</i>	Rape and turnip rape	308	501	394	96%
<i>Glycine max</i>	Soybean	22	314	167	100%
<i>Helianthus annuus</i>	Sunflower seed	414	3 591	2 112	98%
<i>Linum usitatissimum</i>	Flaxseed	0	10	6	100%
<i>Sesamum indicum</i>	Sesame	7	11	9	100%
<i>Sinapis</i> spp.	Mustard	18	41	26	63%
<b>Cereals</b>					
<i>Avena sativa</i>	Oat	61	2 971	1 108	97%
<i>Hordeum vulgare</i>	Barley	228	2 294	1 395	99%
<i>Oryza sativa</i>	Rice	2	25	7	100%
<i>Panicum</i>	Millets	2	13	8	100%
<i>Secale cereale</i>	Rye	1 485	2 974	1 951	100%
<i>Triticum aestivum</i>	Wheat	100	548	289	100%
<i>Triticum durum</i>	Durum wheat	121	365	249	70%
<i>Triticum spelta</i>	Spelt wheat	0	1	0.25	0%
<i>Zea mays</i>	Maize	127	227	187	100%
	Wheat and rye mixture	262	6 695	2 709	99%
Sum		4 992	24 550	12 986	86%

### 3.1.3 Vegetables

Almost all vegetable propagation material used in Sweden, except for potatoes and onions, is traded into Sweden (Eva Anflo, The Federation of Swedish Farmers, personal communication). Still, the largest amounts of vegetable propagation material traded to Sweden, in terms of weight, were seed onions and seed potatoes. This is largely due to the weight of individual items. The yearly average of traded seed onions and seed potatoes was 1.6 and 2.4 tons respectively during the period 2017-2020 (Table 7). The total weight traded to Sweden of vegetable seeds, excluding beetroot (*Beta vulgaris* subsp. *vulgaris* var. *conditiva*), pea (*Pisum sativum*), sweet corn (*Zea mays* var. *saccharata*) and common bean (*Phaseolus vulgaris*), was 371 tons (Table 7). Most of the vegetable seeds were traded from within the EU. However, less than half of the beetroot, 23% of the sweet corn and none of the common bean trade was from EU-countries (Table 7). Beetroot seeds and sweet corn were traded to Sweden mainly from USA and Germany, while Sweet corn seeds was traded

mainly from Denmark and Germany (Appendix 1; Table 31). Common bean was traded from several countries such as Austria, Germany, Portugal, USA and Denmark (Appendix 1; Table 33).

Table 7. The annual quantity of vegetable propagation materials traded into Sweden, in tons, during 2017-2020.

Vegetable		Min	Max	Mean	Within EU
<i>Allium cepa</i> Ceba Group	Onion	697	2 487	1 685	100%
<i>Beta vulgaris</i> subsp. <i>vulgaris</i> var. <i>conditiva</i>	Beetroot seeds	2	18	10	46%
<i>Phaseolus vulgaris</i>	Common bean	43	108	66	0%
<i>Pisum sativum</i>	Pea	296	2 334	1 000	90%
<i>Solanum tuberosum</i>	Potato	1 389	3 713	2 374	100%
<i>Zea mays</i> var. <i>Saccharata</i>	Sweet corn	4	37	16	23%
	Various vegetable seeds	206	633	371	95%
Sum		2 637	9 330	5 522	65%

### 3.1.4 Ornamentals and other berry and open field plants

The trade of propagation material for ornamentals and other berry and open field plants to Sweden totaled 22 thousand tons, and included both seedlings, cuttings, onions, tubers, rhizomes and seeds (Table 8). Hence, the weight of different types of traded goods depends on both the traded amount as well as a considerable difference in weight of different items, such as different seeds and seedlings.

The trade of fruit trees and berry bushes to Sweden totaled 1 197 tons on average. Of this the weight of pineapple plants were reported separately in the statistics from Statistics Sweden and were equivalent to 12 tons.

Propagation material for open field plants, kitchen and strawberry plants and various trees and bushes totaled 12.4 thousand tons. The goods included seedlings, small plants and cuttings. Among the propagation materials for open field plants reported separately, roses were on average 716 tons and rhododendron and azaleas 566 tons (Table 8).

Propagation material for ornamental plants is exclusively traded to Sweden. More than 8 thousand tons was traded to Sweden on a yearly basis during the period 2017-2020. This included both onions, cuttings and to a minor extent seeds. Tulip onions and other onions and tubers were the most traded ornamental propagation materials with a total of 7.6 thousand tons (Table 8). Seeds for ornamental plants totaled 140 tons (Table 8).

Most of the propagation material for the production of ornamental plants was traded to Sweden from countries within the EU, very often close to a 100%. Still, most of the material originates from outside the EU, from countries such as Ethiopia, Israel, Kenya, and is only traded via EU countries, most commonly Holland and Germany (Eva Anflo, The Federation of Swedish Farmers, personal communication).

Table 8. Annual trade into Sweden of propagating materials for ornamentals and other plants, in tons, during 2017-2020.

<b>Ornamentals and other berry and open field plants</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Within EU</b>
<b>Fruit and berries</b>				
Fruit trees and berry bushes	976	1 588	1 197	99%
Pineapple plants	7	22	12	100%
<b>Open field</b>				
Kitchen and strawberry plants	856	1 221	1 037	100%
Roses	637	783	716	100%
Rhododendron and azalea	560	610	566	100%
Cuttings and seedlings of trees and bushes	852	1 528	1 192	100%
Other open field plants	4 821	1 197	8 910	100%
<b>Ornamentals</b>				
Tulip bulbs	3 597	4 085	3 775	100%
Pot plant cuttings and grafts	262	709	414	100%
Narcissus bulbs	510	643	595	100%
Cuttings and grafts	60	761	482	99%
Hyacinthus bulbs	448	649	545	100%
Flower seeds	42	231	140	99%
Gladiolus bulbs	13	21	17	100%
Other tubers, corms, bulbs and rhizomes	2 311	3 055	2 705	87%
Sum	15 952	17 103	22 303	99%

### 3.2 Other plant products and plant materials

Other types of plants and plant products traded into Sweden were categorized into wood products, food products (fruit and berries, vegetables and arable crops) and ornamental plants for direct sale.

Among other plant materials traded into Sweden, the category “wood products” was the most dominating in terms of weight, with 11.3 million tons in total (Table 9). The second largest category by weight was “Fruit and berries”, with a yearly average of 682 thousand tons.

Table 9. Annual trade of other plant products and plant materials into Sweden, in tons, during 2017-2020.

<b>Other plant products and plant materials</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Within EU</b>
Wood products	7 862 241	14 507 066	11 258 614	61%
Fruit and berries	608 713	771 376	681 507	80%
Vegetables	389 078	455 997	425 212	95%
Arable crops	103 280	627 336	395 586	83%

Other plant products and plant materials	Min	Max	Mean	Within EU
Ornamentals and other	56 519	86 499	70 753	91%
Sum	9 019 831	16 448 274	12 831 672	82%

### 3.2.1 Wood products

Among the 11.3 million tons of wood products traded into Sweden the largest proportions in terms of weight were different qualities of sawn timber and roughly sawn wood of spruce, pine and birch, all in amounts of a million ton or more (Table 10). Softwood chips and saw dust also constituted a large proportion of the wood products, 1.6 million tons.

On average, 61% of the wood products were traded from within the EU. The proportion of sawn timber and sawn wood of spruce traded from within EU was only 4%. Sawn spruce was mainly traded from Norway (96% of the total trade to Sweden; Appendix 1; Table 34).

Table 10. Annual trade of wood products into Sweden, in tons, during 2017-2020.

Wood products	Min	Max	Mean	Within EU
<b>Sawn wood</b>				
<i>Acer</i> spp. Maple	117	245	157	40%
<i>Betula</i> spp. Birch	1 041	1 917	1 420	78%
<i>Fagus sylvatica</i> European beech	1 283	2 198	1 749	35%
<i>Fraxinus</i> spp. Ash	2 043	3 529	2 508	61%
<i>Picea abies</i> Norway spruce	131 812	170 740	145 974	4%
<i>Pinus sylvestris</i> Scots pine	74 695	107 545	88 473	32%
<i>Prunus</i> spp. Cherry	40	74	52	34%
<i>Quercus</i> spp. Oak	16 662	22 687	19 956	59%
Other softwood	9 967	11 245	10 803	66%
Other hardwood	2 192	3 777	2 955	18%
Tropical species	473	1 008	691	53%
<b>Veneer sheets</b>				
Softwood	2 195	2 881	2 467	100%
Tropical tree species	342	802	540	99%
Other tree species	3 585	5 670	4 583	58%
<b>Saw dust and waste wood</b>				
Softwood chips and saw dust	1 328 127	1 880 162	1 610 367	72%
Hardwood chips and saw dust	115 485	286 760	177 026	38%
Saw dust	25 737	64 687	43 628	9%
Wood waste	606 000	985 821	734 563	35%
Wood pellets	119 249	435 570	301 759	43%

Wood products		Min	Max	Mean	Within EU
Wood waste and scrap, agglomerated		143 917	364 889	222 334	34%
<b>Sawn timber</b>					
<i>Betula</i> spp.	Birch	0	795	213	94%
<i>Picea abies</i>	Norway spruce	292 081	534 731	435 806	4%
<i>Pinus sylvestris</i>	Scots pine	246 774	337 005	305 133	29%
	Other softwood	11 355	68 763	28 450	90%
<b>Roughly sawn wood</b>					
<i>Betula</i> spp.	Birch	1 145 864	2 418 246	1 986 888	76%
<i>Eucalyptus</i>	Eucalyptus	0	2 434	610	100%
<i>Fagus sylvatica</i>	European beech	97 247	154 640	126 888	100%
<i>Picea abies</i>	Norway spruce	365 715	645 053	544 709	23%
<i>Pinus sylvestris</i>	Scots pine	2 502 043	4 286 244	3 467 686	58%
<i>Populus</i> spp.	Poplar and aspen	55 427	178 185	112 484	64%
<i>Quercus</i> spp.	Oak	22 367	34 103	27 562	100%
	Other tree species	94 259	777 804	308 872	100%
	Other softwood	218 052	395 144	272 663	82%
	Tropical tree species	36	382	194	93%
<b>Fuelwood</b>					
	Fuelwood from softwood	32 429	82 841	52 265	88%
	Fuelwood from hardwood	14 625	20 748	17 857	38%
<b>Other products</b>					
	Pallet and pallet collars	157 696	182 192	169 861	42%
	Box pallets and similar	6 201	10 552	8 424	58%
	Packing cases, boxes, crates and similar	9 143	12 303	10 854	40%
	Cable drums	5 059	8 331	6 198	64%
	Hoopwood; split poles; piles, pickets and stakes of softwood	666	938	793	70%
	Hoopwood; split poles; piles, pickets and stakes of hardwood	98	359	242	84%
	Railroad ties from softwood	2	2 314	1 450	100%
	Railroad ties from hardwood	0	22	7	75%
	Excelsior	57	426	298	68%
<b>Sum</b>					
		7 862 241	14 507 066	11 258 614	61%

### 3.2.2 Food products

In total 396 thousand tons of arable food crops were traded to Sweden on a yearly basis 2017-2020 (Table 11). The most commonly traded crops by weight were cereals, first and foremost wheat and mixed grain, almost 200 thousand tons, as well as corn and barley, around 70 thousand tons each. Other cereals such as oats, Triticale and rye were traded in weights of between 22 thousand and 8 thousand tons. Fodder plants were traded to Sweden to a lesser extent than most cereals (Table 11).

In general, 86% of the arable crops were traded to Sweden from countries within the EU (Table 11). However, Canary-seed and Quinoa were to a larger extent traded from countries outside the EU, 100 and 42%, respectively.

Table 11. Annual trade of arable crops into Sweden, in tons, during 2017-2020.

Arable crops		Min	Max	Mean	Within EU
<b>Cereals</b>					
<i>Avena sativa</i>	Oats	317	49 496	21 648	98%
<i>Chenopodium quinoa</i>	Quinoa	638	801	743	58%
<i>Fagopyrum esculentum</i>	Buckwheat	215	251	238	97%
<i>Hordeum vulgare</i>	Barley	31 139	108 508	68 870	99%
<i>Panicum</i>	Millet	231	349	283	84%
<i>Phalaris canariensis</i>	Canary-seed	27	100	52	0%
<i>Secale cereale</i>	Rye	5 285	10 991	8 376	95%
<i>Sorghum</i>	Sorghum	2	11	6	98%
<i>Triticale</i>	Triticale	36	41 192	12 818	100%
<i>Triticum durum</i>	Durum wheat	704	14 343	9 490	100%
<i>Zea mays</i>	Corn	36 263	126 097	73 087	71%
	Wheat and mixed grain	27 449	270 282	197 845	91%
	Other cereals	76	1 012	346	100%
<b>Fodder plants</b>					
	Forage products	884	3 651	1 665	91%
	Swedes, mangolds and fodder roots	14	252	121	98%
Sum		103 280	627 336	395 586	83%

Among the 425 thousand tons of vegetables traded to Sweden, tomato was the single most traded crop by weight, 86 thousand tons (Table 12). This was almost double the weight of the second most commonly traded vegetable potato, 48 thousand tons.

Most of the vegetables were traded to Sweden from countries within the EU, very often above 90%. However, it is obvious for some vegetables, such as avocado, that they were traded via other EU countries and originates in other parts of the world such as South America. However, this cannot be traced in the available data.

Table 12. Annual trade to Sweden of vegetables and mushrooms, in tons, during 2017-2020.

<b>Vegetables</b>		<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Within EU</b>
<i>Allium cepa</i> <i>Aggregatum</i> -gruppen	Scallion	642	802	696	93%
<i>Allium cepa</i> <i>Cepa</i> Group	Onion	22 719	26 668	24 580	94%
<i>Allium sativum</i>	Garlic	3 315	3 984	3 527	94%
<i>Allium</i> spp.	Leek and other Allium	6 918	8 414	7 603	99%
<i>Apium graveolens</i> var. <i>dulce</i>	Celery	1 203	1 698	1 449	100%
<i>Apium graveolens</i> var. <i>Rapaceum</i>	Celeriac	1 050	1 478	1 283	100%
<i>Armoracia rusticana</i>	Horseradish	32	127	66	72%
<i>Asparagus officinalis</i>	Asparagus	2 820	3 459	3 172	100%
<i>Beta vulgaris</i> och <i>Plein Blanc Amélioré</i>	Chard and cardoon	132	179	156	92%
<i>Brassica oleracea</i> <i>Botrytis</i> Group	Cauliflower and broccoli	10 649	12 230	11 450	100%
<i>Brassica oleracea</i> <i>Capitata</i> Group	Red and white cabbage	21 577	24 141	22 408	94%
<i>Brassica oleracea</i> <i>Gemmifera</i> Group	Brussels sprouts	1 171	1 562	1 339	100%
<i>Brassica oleracea</i> <i>Gongylodes</i> Group, <i>B. oleracea</i> <i>Sabellica</i> Group	Kale	7 714	10 534	9 563	99%
<i>Capparis spinosa</i>	Capers	3	15	9	75%
<i>Capsicum annum</i>	Sweet peppers	29 409	31 958	30 568	94%
<i>Capsicum</i> and <i>Pimenta</i>	Fruit from Capsicum and Pimenta	1 483	2 136	1 716	89%
<i>Cucumis sativus</i>	Cucumber	34 473	38 139	36 997	98%
<i>Cucurbita pepo</i>	Zucchini/Courgette	6 367	7 125	6 662	95%
<i>Cucurbita</i> spp.	Pumpkin/Squash	1 693	2 521	2 145	79%
<i>Cynara cardunculus</i>	Globe artichoke	294	472	361	100%
<i>Daucus carota</i> subsp. <i>sativus</i> , <i>Brassica rapa</i>	Carrot and garden turnip	9 070	14 401	12 244	95%
<i>Foeniculum vulgare</i>	Fennel	1 357	1 500	1 430	100%
<i>Ipomoea batatas</i>	Sweet potato	4 569	4 741	4 643	89%
<i>Lactuca</i> spp.	Lettuce	6 658	9 909	8 618	100%
<i>Lactuca</i> spp.	Other lettuce	2 469	2 613	2 549	100%
<i>Cichorium intybus</i> var. <i>foliosum</i>	Rose salad	310	366	330	100%
<i>Persea americana</i>	Avocado	20 253	21 937	21 021	97%
<i>Phaseolus</i> , <i>Vigna</i>	Beans	1 072	1 286	1 163	96%
<i>Pisum sativum</i>	Peas	828	1 103	995	100%
<i>Solanum lycopersicon</i>	Tomato	83 324	88 103	85 719	99%
<i>Solanum melongena</i>	Eggplant	5 048	6 183	5 513	93%
<i>Solanum tuberosum</i>	Potato	39 805	53 388	47 900	92%
<i>Spinacia oleracea</i>	Spinach	1 837	2 517	2 265	100%

<b>Vegetables</b>		<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Within EU</b>
<i>Zea mays var. Saccharata</i>	Sweet corn	2 349	3 121	2 794	98%
	Other vegetables	14 773	18 294	16 548	97%
	Head lettuce	23 788	27 851	26 038	100%
	Other edible roots	5 719	6 502	6 232	99%
	Olives	195	364	261	98%
	Leguminous vegetables	39	121	70	76%
<b>Mushrooms</b>					
<i>Agaricus</i>	Agaricus group	11 403	12 686	12 268	100%
<i>Cantharellaceae</i>	Chanterelle	151	344	225	100%
<i>Tuber</i>	Truffle	5	6	5	84%
	Other mushrooms	392	1 019	631	99%
Sum		389 078	455 997	425 212	95%

In total, 681 thousand tons of fruits and berries were traded to Sweden on a yearly basis (Table 13). Of the fruits traded, bananas constituted the largest weight with almost 195 thousand tons traded to Sweden each year on average. Bananas were followed by apples and oranges with yearly traded weights of approximately 85 and 76 thousand tons, respectively (Table 13)

Many of the fruits were traded directly to Sweden from outside the EU. For example, only 17% of the bananas and 67% of the clementines were traded from countries within the EU (Table 13). However, a large proportion of the fruits are probably traded from countries outside of the EU and then traded via other EU countries.

Table 13. Annual trade of fruit and berries into Sweden, in tons, during 2017-2020.

<b>Fruit and berries</b>		<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Within EU</b>
<b>Nuts</b>					
<i>Cocos nusifera</i>	Coconut	296	673	568	57%
<i>Bertholletia excelsa</i>	Brazil nut	175	229	194	90%
<i>Anacardium occidentale</i>	Cashew nut	2 824	11 318	7 244	18%
<i>Prunus amygdalus</i>	Almond	5 242	6 824	6 291	47%
<i>Corylus</i>	Hazel nut	1 160	1 254	1 195	68%
<i>Juglans</i>	Walnut	2 562	3 028	2 775	70%
<i>Castanea</i>	Chestnut	105	212	148	84%
<i>Pistacia</i>	Pistachio nut	383	489	443	53%
<i>Macadamia</i>	Macadamia nut	20	32	26	81%
<i>Pecan</i>	Pecan nut	197	259	230	80%

<b>Fruit and berries</b>		<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Within EU</b>
<i>Pinus</i>	Pine nut	131	225	177	90%
	Other nuts	388	501	467	99%
<b>Fruit</b>					
<i>Citrus aurantifolia, Citrus latifolia</i>	Lime	5 504	6 926	5 967	96%
<i>Actinidia deliciosa</i>	Kiwi fruit	8 664	9 327	8 984	96%
<i>Ananas comosus</i>	Pineapple	7 552	8 966	8 272	79%
<i>Carica papaya</i>	Papaya	225	323	279	85%
<i>Citrullus lanatus</i>	Water melon	35 269	64 572	44 725	94%
<i>Citrus × Sinensis</i>	Orange	71 133	84 730	76 123	73%
<i>Citrus × aurantium Amara</i>	Bitter orange	312	1 405	976	89%
<i>Citrus × aurantium Paradisi</i>	Grapefruit	4 689	6 494	5 843	69%
<i>Citrus clementina hort. ex Tanaka, Citrus reticulata Unshiu</i>	Monreal clementine and satsumas	8 186	11 857	10 584	80%
<i>Citrus limon, Citrus limonum</i>	Lemon	22 589	25 950	24 303	93%
<i>Citrus reticulata Clementina</i>	Clementine	32 343	41 537	35 828	80%
<i>Citrus reticulata Tangerina</i>	Tangerine	4 547	8 049	6 697	64%
<i>Cucumis melo</i>	Melon	21 507	33 013	28 444	94%
<i>Cydonia oblonga</i>	Quince	131	342	231	25%
<i>Diospyros kaki</i>	American persimmon	1 613	2 394	1 983	96%
<i>Durio</i>	Durian	10	37	23	83%
<i>Ficus carica</i>	Fig	649	910	745	96%
<i>Malus</i>	Apple	79 670	88 600	85 352	86%
<i>Musa</i>	Bananas	187 383	211 319	194 868	17%
<i>Musa</i>	Cooking bananas	308	2 328	1 588	92%
<i>Phoenix dactylifera</i>	Date	3 434	3 434	3 434	29%
<i>Prunus</i>	Cherry	2 828	3 393	3 102	63%
<i>Prunus armeniaca</i>	Apricots	1 715	2 439	2 170	97%
<i>Prunus cerasus</i>	Sour cherry	1	39	16	94%
<i>Prunus persica</i>	Peach	5 434	6 447	5 915	98%
<i>Prunus persica var. Nucipersica, var. Nectarina</i>	Nectarine	12 525	18 739	15 572	99%
<i>Prunus</i>	Plum	4 004	4 646	4 292	97%
<i>Psidium guajava, Mangifera indica, Garcinia mangostana</i>	Guava, mango and mangosteen	5 847	6 574	6 115	93%

Fruit and berries		Min	Max	Mean	Within EU
<i>Pyrus</i>	Pear	25 664	30 642	28 476	97%
	Table grapes	15 672	20 910	18 117	89%
	Wine grapes	4 231	9 469	7 056	100%
	Other fruits	9 335	10 600	10 011	76%
	Tangelo, Ortanique tangor and similar citrus hybrids	189	2 968	1 183	16%
	Other citrus	922	1 632	1 237	99%
	Tamarind, cashew apple, lychee, jackfruit, sapodilla plums, passionfruit, carambola and pitahaya	857	1 413	1 120	81%
<b>Berries</b>					
<i>Fragaria × ananassa</i>	Strawberry and wild strawberry	6 723	7 672	7 397	100%
<i>Prunus spinosa</i>	Blackthorn	0	5	2	38%
<i>Ribes nigrum</i>	Blackcurrant	0	2	1	80%
<i>Ribes Rubrum</i> Group	Redcurrant	18	26	23	100%
<i>Ribes Rubrum</i> Group, <i>R. uva-crispa</i>	Whitecurrant and gooseberry	0	12	8	100%
<i>Rubus idaeus</i>	Raspberry	1 451	1 886	1 631	100%
<i>Vaccinium macrocarpon</i> , <i>V. corymbosum</i>	Cranberry, high blueberry	767	1 599	1 114	100%
<i>Vaccinium myrtillus</i>	Blueberry	584	1 338	848	100%
<i>Vaccinium</i> spp.	Other <i>Vaccinium</i> species	72	90	83	96%
<i>Vaccinium vitis-idaea</i>	Lingonberry	409	1 046	727	100%
	<i>Rubus</i> species of the Blackberry Group	262	322	289	100%
Sum		608 713	771 376	681 507	80%

### 3.2.3 Flowering plants, other living plants and other plant products

Some plants and plant products are traded to Sweden for direct sale, i.e. they are not further grown at plant nurseries before being sold to end consumers. Seedlings and small plants for direct sale are also included in this group of materials. Moreover, materials such as lichens and fungal mycelium are also reported here.

On average 71 thousand tons of plant materials for direct sale were traded into Sweden each year (Table 14). Almost 100 % of these traded plants and plant material comes from countries within the EU. However, most of the indoor plants and cut flowers or their propagation materials originates in countries outside EU but are traded via, and sometimes further grown in, other EU countries.

Table 14. Annual trade of flowering and other living plants into Sweden, in tons, during 2017-2020.

		Min	Max	Mean	Within EU
<b>Cut flower</b>					
<i>Rosa</i>	Roses	4 461	5 023	4 699	100%

		Min	Max	Mean	Within EU
<i>Dianthus caryophyllus</i>	Carnations	341	660	495	99%
<i>Gladiolus</i>	Irises	27	109	53	100%
<i>Krysantemum</i>	Chrysanthemums	463	1 009	677	100%
<i>Lilium</i>	Lilies	169	340	252	100%
<i>Orchidaceae</i>	Orchids	42	193	121	99%
<i>Ranunculus</i>	Ranunculus	75	138	120	100%
	Other cut flowers	3 140	6 408	4 370	99%
<b>Indoor plants</b>					
	Flowering plants	13 977	16 615	15 155	99%
	Pot plants and cactuses	11 191	14 763	13 061	100%
	Pot plants – cuttings	262	709	414	100%
	Orchids, hyacinth, narcissus, and tulips in growth or in flower	2 092	3 426	2 625	100%
	Chicory plants and roots	105	668	400	100%
	Other bulbs, tubers, tuberous roots, corms, crowns and rhizomes, in growth or in flower	1 273	1 790	1 583	100%
	Other bulbs, tubers, tuberous roots, corms, crowns and rhizomes, idle	1 038	1 265	1 122	68%
<b>Other</b>					
	Open field plants, trees and bushes	15 019	27 333	21 005	100%
	Christmas trees	2 215	3 884	3 195	100%
	Softwood branches	175	809	602	100%
	Foliage, branches and other parts of plants	396	1 187	716	98%
	Reindeer lichen	40	61	53	0%
	Fungal mycelium	0	55	16	100%
	Mosses and other lichens	18	54	19	29%
<b>Sum</b>		<b>56 519</b>	<b>86 499</b>	<b>70 753</b>	<b>91%</b>

## 4 Trade from Sweden

The amount of plants and plant products traded from Sweden totaled more than 9.5 million tons, with an annual yearly value of over 34 billion SEK. Hence, trade from the country was less than trade into the country, which was 12.8 million tons. Similar as for the trade into Sweden, the trade from Sweden was dominated by wood products, with a yearly average of 8.3 million tons.

### 4.1 Propagation material

In total, 33 thousand tons of propagation materials were traded from Sweden, with a total value of around 340 million SEK (Table 15). The amount of propagation material traded from Sweden was slightly less than the amount traded into Sweden, which was 43 thousand tons (Table 1). Two thirds of the value of traded propagation materials to Sweden, 228 million SEK, came from trade with propagation materials for arable crops.

#### 4.1.1 Forestry

Between the years 2017 to 2020 the trade from Sweden of seeds for forest trees was on average two tons (Table 15). The weight of seedlings traded from Sweden was on average of 892 tons. The total traded weight of seeds and seedlings was on average 894 tons. The total traded value of forestry propagation material was on average 29 million SEK (Table 15).

Table 15. Annual trade of forestry propagation materials from Sweden, amount in tons and value in k SEK, during 2012-2016.

Forestry	Min	Max	Mean	Within EU	Value, k SEK
Seedlings	673	993	892	67%	21 138
Seeds	1	3	2	71%	7 910
Sum	674	996	894	69%	29 048

#### 4.1.2 Arable crops

Among propagation materials for arable crops the most traded crops from Sweden by weight were oats and barley cereals, with average traded weights of close to five thousand tons on average (Table 16). As for the trade into Sweden, there was also a considerable variation in trade of arable crops from Sweden, especially for cereals and oil plants. On average, the trade from Sweden of propagation materials for arable crops, 24 thousand tons, was larger than trade to Sweden, 13 thousand tons. The value of the trade of propagation materials for arable plants from Sweden totaled on average 228 million SEK per year.

Table 16. Annual trade of propagation materials of arable crops from Sweden, amount in tons and value in k SEK, during 2017-2020.

Arable crops		Min	Max	Mean	Within EU	Value, k SEK
<b>Cereals</b>						
<i>Avena sativa</i>	Oat	1 194	13 836	4 967	86%	11 690
<i>Hordeum vulgare</i>	Barley	894	12 045	4 877	69%	14 290
<i>Oryza sativa</i>	Rice	0	0	0	0%	3
<i>Panicum</i>	Millet	0	0	0	0%	2
<i>Secale cereale</i>	Rye	0	130	55	85%	378
<i>Sorghum</i>	Sorghum	0	0	0	0%	6
<i>Triticum aestivum</i>	Wheat	421	3 943	2 229	92%	9 157
<i>Triticum durum</i>	Durum wheat	0	77	39	0%	146
<i>Triticum spelta</i>	Spelt wheat	0	84	29	0%	117
<i>Zea mays</i>	Maize	0	63	7	98%	54
	Wheat and rye mixture	1 197	8 646	4 417	85%	11 804
<b>Oil-rich plants</b>						
<i>Brassica napus</i> subsp. <i>oleifera</i>	Rape and turnip rape	14	4 434	1 251	97%	10 156
<i>Glycine max</i>	Soybean	0	0	0	0%	0
<i>Helianthus annuus</i>	Sunflower seed	300	894	527	10%	4 988
<i>Linum usitatissimum</i>	Flaxseed	6	166	52	97%	90
<i>Papaver</i>	Poppy	0	1	0	0%	16
<i>Sesamum indicum</i>	Sesame	0	4	3	100%	104
<i>Sinapis</i> spp.	Mustard	0	0	0	0%	6
	Other oil-rich plants	0	3	1	33%	8 460
<b>Fodder plants</b>						
<i>Festuca pratensis</i>	Meadow fescue	404	604	484	95%	13 436
<i>Festuca rubra</i>	Red fescue	1 255	1 900	2 130	83%	39 523
<i>Festuca</i> spp.	Fescue	333	480	383	94%	8 283
<i>Lolium multiflorum</i>	Italian ryegrass	0	21	9	70%	212
<i>Lolium perenne</i>	English ryegrass	175	743	326	83%	7 321
<i>Lupinus</i> spp.	Lupin	0	0	0	0%	1
<i>Medicago sativa</i>	Lucerne	5	178	54	92%	393
<i>Poa pratensis</i>	Kentucky bluegrass	28	137	70	58%	2 569
<i>Trifolium pratense</i>	Red clover	195	359	274	93%	12 449
<i>Trifolium</i> spp.	Other clover	225	351	275	75%	15 462
	Other fodder plants	219	436	316	73%	9 159
	Various <i>Poaceae</i> and <i>Vicia</i> species	465	1 189	706	96%	20 342

Arable crops		Min	Max	Mean	Within EU	Value, k SEK
<b>Other arable plants</b>						
<i>Beta vulgaris</i> ssp. <i>vulgaris</i> var. <i>altissima</i>	Sugar beet	0	58	15	32%	8 553
	Other arable plants	175	2 180	886	88%	18 646
Sum		7 505	52 962	24 382	56%	227 816

### 4.1.3 Vegetables

In economic terms the trade from Sweden of propagation materials for vegetables was mostly in the form of the class “Other vegetable seeds” (Table 17), with a yearly average value of 34.6 million SEK corresponding to an amount of 2 thousand tons. The combined value of all other vegetable propagation materials traded from Sweden was 15.4 million SEK.

Table 17. Annual trade of propagation materials of vegetables from Sweden, amount in tons and value in k SEK, during 2017-2020.

Vegetables		Min	Max	Mean	Within EU	Value, k SEK
<i>Allium cepa</i> Ceba Group	Onion	56	258	116	90%	2 062
<i>Beta vulgaris</i> subsp. <i>vulgaris</i> var. <i>conditiva</i>	Beetroot seeds	3	40	13	100%	2 549
<i>Phaseolus vulgaris</i>	Common bean	265	433	336	100%	857
<i>Pisum sativum</i>	Pea	1 311	2 463	1 910	93%	5 711
<i>Solanum tuberosum</i>	Potato	1	16	10	90%	526
<i>Zea mays</i> var. <i>saccharata</i>	Sweet corn	7	16	10	100%	3 680
	Other vegetable seeds	1 705	2 236	2 020	100%	34 619
Sum		3 348	5 800	4 508	96%	50 004

### 4.1.4 Other plants

Propagation materials for other plants were mostly for ornamental plants and different open field plants. The value of the trade from Sweden totaled 43 million SEK. Flower seeds and kitchen herbs & strawberry plants were the groups with highest annual trade value, 9 million and 6 million SEK, respectively. Also ornamental cuttings and grafts, with an annual trade value of 4 million SEK constituted a large share of the total value.

Table 18. Annual trade of propagation material for other plants from Sweden, weight in tons and value in k SEK, during 2017-2020.

Ornamentals and other berry and open field plants	Min	Max	Mean	Within EU	Value, k SEK
<b>Fruit and berry berries</b>					
Fruit trees and berry bushes	8	73	31	9%	665
Pinapple plants	0	6	2	17%	123
<b>Open field</b>					
Kitchen herbs and strawberry plants	124	1 195	628	44%	5 872
Roses	15	73	38	97%	1 493
Rhododendron and azalea	0	18	8	100%	283

<b>Ornamentals and other berry and open field plants</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Within EU</b>	<b>Value, k SEK</b>
Cuttings and seedlings of trees and bushes	3	92	33	12%	755
Other	992	4 112	2 635	67%	18 300
<b>Ornamentals</b>					
Tulip bulbs	26	37	33	41%	1 075
Pot and plant cuttings and grafts	2	27	10	69%	523
Daffodil bulbs	14	29	21	37%	377
Cuttings and grafts	2	453	137	29%	3 998
Hyacinth bulbs	0	1	<1	100%	14
Flower seeds	428	609	506	96%	8 990
Iris bulbs	2	4	3	56%	145
Other tubers, corms, bulbs and rhizomes	0	126	38	22%	371
Sum	1 616	6 855	4 123	53%	42 984

## 4.2 Other plant products and plant materials

The annual weight of other plant products and materials traded from Sweden totaled 9.5 million tons, to a total value of over 34 billion SEK. Most of this trade was in the form of different wood products. Trade of plant based food products totaled 1.2 million tons annually to a value of 3.6 billion SEK, while only a very minor part, 4.3 thousand tons to a value of 61 million SEK, was trade of flowering plants, other living plants and other plant products.

### 4.2.1 Wood products

The trade from Sweden of wood and wood products had by far the highest value of all surveyed groups of plant materials, with an average yearly total value of 31 billion SEK and an average yearly traded weight of 8.3 million tons (Table 19). Trade of wood products from Sweden was dominated by sawn spruce and pine, both in terms of amount and value, with a yearly amount of around 3.5 million tons each, and an economic value at around 16 and 12 billion SEK, respectively. Together this constituted 90% of the value of all wood products. The total weight of wood products traded from Sweden was less than the total traded weight to Sweden, which was approximately 11 million tons. However, trade to Sweden of sawn spruce and pine by weight was around 30 times greater than corresponding trade to Sweden. The trade from Sweden of roughly sawn wood, "sawdust and waste wood" and sawn timber was only around a fifth, a third, and a half, respectively, of the corresponding trade to Sweden.

Table 19. Annual trade of wood and wood products from Sweden, amount in tons and value in k SEK, during 2017-2020.

Wood and wood products		Min	Max	Mean	Within EU	Value, k SEK
<b>Fuelwood</b>						
	Fuelwood from softwood	5 645	29 553	12 527	94%	13 135
	Fuelwood from hardwood	6 794	14 330	10 158	1%	19 008
<b>Roughly sawn wood</b>						
<i>Betula</i> spp.	Birch	11 702	27 070	18 154	94%	21 932
<i>Fagus sylvatica</i>	European beech	784	8 846	5 339	47%	6 672
<i>Picea abies</i>	Norway spruce	140 371	187 067	167 584	8%	103 348
<i>Pinus sylvestris</i>	Scots pine	47 392	151 205	78 348	48%	126 193
<i>Quercus</i> spp.	Oak	281	1 265	697	61%	2 035
	Other tree species	233	626	394	3%	1 432
	Other softwood	17 188	47 243	26 598	60%	34 469
	Tropical tree species	6	23	12	13%	260
<b>Veneer sheets</b>						
	Softwood	13 418	23 672	19 287	93%	182 993
	Tropical tree species	11	53	26	99%	4 029
	Other tree species	6	69	30	85%	1 648
<b>Sawdust and waste wood</b>						
	Softwood chips and saw dust	128 780	233 462	179 398	25%	140 831
	Hardwood chips and saw dust	147	12 656	3 436	94%	3 466

Wood and wood products		Min	Max	Mean	Within EU	Value, k SEK
	Saw dust	30 786	64 340	42 595	35%	33 979
	Wood waste	21 154	243 569	99 937	22%	65 911
	Wood pellets	115 449	199 650	151 720	80%	242 785
	Wood waste and scrap, agglomerated	43 497	52 225	48 039	84%	75 228
<b>Sawn wood</b>						
<i>Acer</i> spp.	Maple	0	0	0	0%	14
<i>Betula</i> spp.	Birch	1 291	2 880	1 843	22%	8 259
<i>Fagus sylvatica</i>	European beech	4 361	5 811	5 016	0%	9 125
<i>Fraxinus</i> spp.	Ash	10	189	116	0%	619
<i>Picea abies</i>	Norway spruce	3 219 627	3 824 864	3 447 908	64%	15 967 055
<i>Pinus sylvestris</i>	Scots pine	3 034 149	4 127 190	3 372 780	40%	12 019 039
<i>Populus</i> spp.	Aspen and poplar	3	130	42	0%	252
<i>Prunus</i> spp.	Cherry	0	1	0.5	100%	7
<i>Quercus</i> spp.	Oak	1 538	4 367	3 202	18%	25 486
	Other softwood	70 903	126 153	92 964	88%	482 716
	Other hardwood	9 284	14 990	12 088	13%	46 242
	Tropical tree species	72	344	193	13%	4 490
<b>Sawn timber</b>						
<i>Picea abies</i>	Norway spruce	46 040	208 642	113 557	77%	96 070
<i>Pinus sylvestris</i>	Scots pine	133 277	161 130	145 823	85%	379 804
	Other softwood	71 762	128 406	98 601	13%	106 507
<b>Other products</b>						
	Pallets and pallet collars	85 345	106 906	93 895	72%	377 722
	Box pallets and similar	10 626	20 370	15 250	63%	90 331
	Packing cases, boxes, crates and similar	2 613	3 677	3 050	78%	63 582
	Cable drums	5 097	6 762	6 032	81%	46 692
	Hoopwood; split poles; piles, pickets and stakes of softwood	3 577	5 859	4 737	18%	21 696
	Hoopwood; split poles; piles, pickets and stakes of hardwood	3	139	78	1%	448
	Railroad ties from softwood	0	27	7	93%	38
	Railroad ties from hardwood	0	19	5	90%	65
	Excelsior	55	319	156	11%	1 676

Wood and wood products	Min	Max	Mean	Within EU	Value, k SEK
Sum	7 283 277	10 046 149	8 281 735	49%	30 827 973

## 4.2.2 Food products

A total of 1.2 million tons of plant based food products were traded from Sweden on a yearly basis (Table 20) at an average annual value of approximately 3.6 billion SEK. Cereals, and thus arable crops, dominated the trade of plant based food products from Sweden with a yearly average of around 1.1 million tons and a yearly value of almost 2.3 billion SEK. This is more than the yearly average of 396 thousand tons of arable crops that was traded into Sweden (Table 11). Vegetables were traded from Sweden with a total value of around 540 million SEK.

Fruits and berries at an amount of approximately 49 thousand tons were traded from Sweden on a yearly basis (Table 20), to an average value of approximately 521 million SEK. Nuts at an amount of 2 thousand tons were traded to an average value of 207 million SEK.

Table 20. Annual trade food products from Sweden, amount in tons and value in k SEK, during 2017-2020.

Food products	Min	Max	Mean	Within EU	Value, k SEK	
<b>Fruit and berries</b>						
Fruit	34 473	59 445	45 682	89%	427 398	
Berries	1 957	5 754	3 726	31%	93 682	
Nuts	1 598	3 598	2 484	71%	207 402	
<b>Vegetables</b>						
<i>Allium cepa</i> <i>Aggregatum</i> -gruppen	Scallions	1	3	2	50%	40
<i>Allium cepa</i> <i>Cepa</i> -gruppen	Onion	139	358	257	78%	3 410
<i>Allium sativum</i>	Garlic	15	23	20	79%	910
<i>Allium</i> spp.	Leek and other Allium	56	71	60	50%	1 220
<i>Apium graveolens</i> var. <i>dulce</i>	Celery	2	9	6	92%	227
<i>Apium graveolens</i> var. <i>rapaceum</i>	Celeriac	2	9	6	55%	121
<i>Armoracia rusticana</i>	Horseradish	2	4	3	31%	388
<i>Asparagus officinalis</i>	Asparagus	4	26	10	58%	435
<i>Beta vulgaris</i> och <i>Plein blanc Amélioré</i>	Chard and cardoon	3	10	5	100%	206
<i>Brassica oleracea</i> <i>Botytis</i> group	Cauliflower and broccoli	281	622	415	97%	7 348
<i>Brassica oleracea</i> <i>Capitata</i> Group	Red and white cabbage	127	405	210	92%	3 157
<i>Brassica oleracea</i> <i>Gemmifera</i> Group	Brussel sprouts	0	2	1	100%	15
<i>Brassica oleracea</i> <i>Gongylodes</i> Group, <i>B. oleracea</i> <i>Sabellica</i>	Kale	91	149	125	96%	3 530
<i>Capsicum annuum</i>	Sweet peppers	114	436	319	96%	6 531
<i>Capsicum</i> and <i>Pimenta</i>	Bell peppers	13	38	26	75%	750
<i>Cucumis sativus</i>	Cucumber	106	143	125	66%	3 622
<i>Cucurbita pepo</i>	Courgette	10	43	27	83%	447

Food products		Min	Max	Mean	Within EU	Value, k SEK
<i>Cucurbita spp.</i>	Pumpkin/Squash	2	18	7	62%	122
<i>Cynara cardunculus</i>	Artichoke	0	5	2	83%	173
<i>Daucus carota subsp. Sativus, Brassica rapa</i>	Carrot and garden turnip	1 002	4 254	2 911	96%	17 879
<i>Foeniculum vulgare</i>	Fennel	41	116	68	98%	1 401
<i>Lactuca sativa</i>	Head lettuce	2 937	3 602	3 240	100%	121 650
<i>Lactuca spp.</i>	Lettuce	170	1 553	786	96%	17 662
<i>Lactuca spp.</i>	Other lettuce	1 840	2 080	1 913	99%	43 587
<i>Cichorium intybus var. Foliosum</i>	Rose sallad	0	4	2	31%	55
<i>Olea europea</i>	Olives	12	58	28	70%	1 781
<i>Phaseolus, Vigna</i>	Beans	159	3 585	1 271	99%	4 625
<i>Pisum sativum</i>	Peas	17	1 842	599	64%	3 095
<i>Solanum lycopersicon</i>	Tomato	270	1 255	700	90%	18 184
<i>Solanum melongena</i>	Aubergine	4	55	23	71%	403
<i>Solanum tuberosum</i>	Potato	6 328	10 330	7 731	63%	43 194
<i>Spinacia oleracea</i>	Spinach	133	663	415	86%	11 866
<i>Zea mays var. Saccharata</i>	Sweet corn	1	14	5	50%	69
	Other edible roots	242	427	328	62%	2 656
	Other leguminous vegetables	16	72	32	97%	435
	Other vegetables	2 987	5 650	4 317	100%	219 117
<b>Mushrooms</b>						
<i>Agaricus</i>	Agaricus group	24	106	51	72%	2 513
<i>Boletales</i>	Boletus	0	4	1	0%	86
<i>Cantharellaceae</i>	Chantarelle	81	167	114	22%	12 334
	Other mushrooms	26	47	35	65%	2 552
<b>Arable crops</b>						
<i>Avena sativa</i>	Oats	131 736	268 390	184 212	77%	146 085
<i>Chenopodium quinoa</i>	Quinoa	170	199	191	54%	6 114
<i>Fagopyrum esculentum</i>	Buckwheat	33	64	47	77%	1 072
<i>Hordeum vulgare</i>	Barley	218 607	427 859	345 631	89%	650 493
<i>Panicum</i>	Milletts	37	63	44	81%	607
<i>Secale cereale</i>	Rye	6 224	59 814	57 117	33%	64 391
<i>Sorghum</i>	Sorghum	0	9	2	100%	341
<i>Triticale</i>	Triticale	93	834	577	13%	2 660
<i>Triticum durum</i>	Durum wheat	50	415	194	9%	982

Food products		Min	Max	Mean	Within EU	Value, k SEK
<i>Zea mays</i>	Corn	221	598	485	57%	5 966
	Wheat and mixed grain	408 825	1 048 608	485 811	70%	1 311 586
	Other cereals	23 448	52 956	37 475	100%	71 559
Fodder plants	Hay, clover, lupines and similar forage products	10 388	22 384	15 589	0%	32 646
	Swedes, mangolds and fodder roots	0	1 225	686	0%	1 166
Sum		855 118	1 990 473	1 206 149	57%	3 581 846

### 4.2.3 Flowering plants, other living plants and other plant products

Flowering plants, other living plants, such as Christmas trees, and other products, such as lichens, constituted a very minor part of the plant material traded from Sweden. Together the trade totaled 4.2 thousand tons to a value of 61 million SEK, on an average annual basis (Table 21). The largest volumes traded from Sweden was for open field plants, trees and bushes with an annual mean of 4 025 tons and a value of approximately 55 million SEK. Christmas trees was the second most traded group at a value of 2.6 million SEK. It may be noted that the trade to Sweden of Christmas trees was 3 195 tons, i.e. there is about eighteen times as much trade to Sweden as it is trade from Sweden.

Table 21. Annual trade of flowering plants, other living plants and other plant products from Sweden, amount in tons and value in k SEK, during 2017-2020.

Other plant and plant materials	Min	Max	Mean	Within EU	Value, k SEK
Open field plants, trees and bushes	1 073	8 429	4 025	49%	55 380
Christmas trees	50	277	178	60%	2 683
Softwood branches	4	9	5	87%	202
Foliage, branches and other parts of plants	31	43	38	16%	2 144
<i>Cladonia rangiferina</i> Reindeer lichen	0	1	<1	0%	62
Mosses and other lichens	4	38	19	40%	626
Fungal mycelium	1	11	4	77%	63
Sum	1 163	8 808	4 269	47%	61 160

## 5 Production and economic value

The production of plants and plant materials were dominated by forestry and forest trees, with a total standing volume of 3.5 billion m<sup>3</sup> on an area of approximately 28 million ha (National Forest Inventory, 2021). Arable plant products were produced at an annual average weight of 13 million tons and vegetables at an average weight of more than 175 thousand tons. The total area used annually for production of vegetables and arable crops was 2.1 million ha. Production of fruits and berries as well as ornamental plants was very minor in terms of area and quantity produced, however the economic value was relatively high.

The annual economic value of plants and plant products from Sweden totaled 57 billion SEK, which was nearly 1.7 times the value of the trade of plants and plant products from Sweden. Most of the production value was related to forestry, just over 29 billion SEK, and arable plants at 22.4 billion SEK.

The economic value of the production of vegetables, ornamentals and other plants equaled approximately 2.5 billion SEK each. Fruits and berries constituted a rather small part of plants and plant products produced with an annual average value of a little less than 1 billion SEK.

### 5.1 Forestry

Sweden is covered by approximately 28 million ha of forest – defined as a tree height of at least 5 m and with a crown coverage of at least 10% (UN:s Food and Agriculture Organizations, FAO, definition [FRA, 2012]). Of the total area of forest, 23 million ha are defined as productive forests (Swedish National Forest Inventory, 2021).

Swedish forests are dominated by two tree species, Norway spruce and Scots pine, which together constitutes 80% of the standing volume of 1.4 billion m<sup>3</sup> standing wood each (Table 22). The next most common after pine and spruce is birch (*Betula pendula* and *B. pubescens* together), which has a standing volume on 429 million m<sup>3</sup> standing wood. Other relatively common tree species such as alder, aspen, oak and contorta pine each have an average standing volume of around 50 million m<sup>3</sup> standing wood.

Table 22. Annual standing volume of forest trees, in million cubic meter standing volume, during 2016-2020<sup>1</sup>.

Species		Standing volume, M m <sup>3</sup> standing wood
<i>Acer platanoides</i>	Norway maple	3
<i>Alnus</i> spp.	Alder	59
<i>Betula</i> spp.	Birch	429
<i>Carpinus betulus</i>	Hornbeam	1
<i>Fagus sylvatica</i>	European beech	23
<i>Fraxinus excelsior</i>	Ash	5
<i>Larix</i> spp.	Larch	3
<i>Picea abies</i>	Norway spruce	1 413
<i>Pinus contorta</i>	Contorta pine	46
<i>Pinus sylvestris</i>	Scots pine	1 390
<i>Populus tremula</i>	Aspen	60
<i>Prunus avium</i>	Wild cherry	1
<i>Quercus</i> spp.	Oak	43
<i>Salix caprea</i>	Willow	17
<i>Sorbus acuparia</i>	Rowan	7
<i>Tilia</i> spp.	Lime	1
<i>Ulmus</i> spp.	Elm	2
	Other hardwoods	5
Sum		3 505

The average yearly harvested volume of forest trees in Sweden totaled, 89 million m<sup>3</sup> standing wood to a value of 29.4 billion SEK. The production value of Scots pine and Norway spruce was 11 and 15 billion SEK, respectively (Table 23). The production value of birch was 2.5 billion SEK, 7 million m<sup>3</sup> standing wood.

Table 23. Annual mean volume harvested forest trees, felling area and economic value, during 2016-2020<sup>1</sup>.

Species		Harvested volume, M m <sup>3</sup> standing wood	Area, k ha	Gross felling value, M SEK
<i>Betula</i> spp.	Birch	7	43	2 454
<i>Picea abies</i>	Norway spruce	46	264	15 274
<i>Pinus sylvestris</i>	Scots pine	34	194	11 117
	Other hardwoods	2	9	544

<sup>1</sup> These data were only available as five-year moving averages. Therefore, also the year 2016 was included in the reporting here.

Species	Harvested volume, M m <sup>3</sup> standing wood	Area, k ha	Gross felling value, M SEK
Sum	89	510	29 381

A total of 387 million seedlings of forest trees were produced annually in Sweden on average (Table 24), which is here assessed to correspond to approximately 117 million tons of seedlings. Hence, the 892 tons of seedlings we trade from Sweden (Table 15) was only a small part of the seedlings produced. The quantity of Norway spruce and Scots pine seedlings were rather similar with a slightly higher figure for Norway spruce with an annual mean of 194 million pieces compared to Scots pine with 178 million pieces produced.

Table 24. Annual mean production of forest tree seedlings and economic value, during 2017-2020.

Species		M pieces	Economic value, M SEK
<i>Betula</i> spp.	Birch	1	9
<i>Picea abies</i>	Norway spruce	194	856
<i>Pinus contorta</i>	Contorta pine	7	32
<i>Pinus sylvestris</i>	Scots pine	178	785
	Other softwoods	5	32
	Other hardwoods	1	10
Sum		387	1 723

## 5.2 Urban trees

The economic value of park- and street trees in cities are not part of the commercial forestry but have a high economic value for county and municipality administrations.

The cost for replacing a single park tree is on average 30 000 SEK and on average 70 000 SEK for a street tree. If calculated with a mean rotation-time of 80 years (Hannunen et.al., 2014) for both park- and street trees, the annual value for urban trees in Stockholm municipality totals 144 million SEK. With 8 696 023 people living in urban areas in Sweden and about 10% of them living in Stockholm municipality (SCB 2016) the total annual value of urban trees in Sweden were estimated to reach approximately 1.3 billion SEK.

## 5.3 Arable plants

The production of arable plants was dominated by cereals, with a yearly average harvest of more than 5.3 million tons. However, in economic terms the value was a little less than that of fodder plants with an average yearly production value of 10.8 billion SEK compared to cereals with an average yearly production value of 7.5 billion SEK ([Fel! Hittar inte referenskälla.](#)). Oil-rich plants were produced at a yearly average of approximately 334 thousand tons, to a value of 1.1 billion SEK.

The production of cereals was dominated by wheat (2.9 million tons) and barley (1.5 million tons). The annual production value of wheat and barley were 3.8 and 2 billion SEK, respectively. Hence the annual production value of wheat and barley was approximately three times higher than the value of the trade to Sweden of these cereals (Table 20). Oil-rich

plants were dominated by rape with an annual mean production of 327 thousand tons, which was almost 98% of the total amount of oil-rich plants produced.

Table 25. Annual mean production of arable plants and production value, during 2017-2020.

Arable plants		Harvest, tons	Area, ha	Value, M SEK
<b>Cereals</b>				<b>7 555</b>
<i>Avena sativa</i>	Oats	629 675	152 775	806
<i>Hordeum vulgare</i>	Barley	1 447 400	313 628	2 042
<i>Secale cereale</i>	Rye	160 225	26 053	210
<i>Triticum aestivum</i>	Wheat	2 902 500	440 758	3 757
<i>Zea mays</i>	Grain maize	9 300	1 443	19
× <i>Triticosecale</i>	Triticale	142 200	24 963	
	Mixed grain	38 875	11 783	
<b>Oil plants</b>				<b>1 161</b>
<i>B. rapa</i> ssp. <i>oleifera</i>	Turnip rape	2 475	2 030	
<i>Brassica napus</i> ssp. <i>napus</i>	Rape	326 475	101 788	
<i>Linum usitatissimum</i>	Oil flax	4 925	3 145	
<b>Fodder plants</b>				<b>10 847</b>
<i>Zea mays</i>	Green maize	194 525	18 550	
	Ley	4 035 675	837 700	
	Cereals harvested green	167 825	57 863	
	Annual plants harvested green	109 200	25 690	
<b>Other</b>				
<i>Beta vulgaris</i> subsp. <i>vulgaris</i> var. <i>altissima</i>	Sugarbeet	1 929 475	29 750	590
<i>Pisum sativum</i> and <i>Vicia faba</i>	Pea and broad bean	134 000	45 630	277
<i>Solanum tuberosum</i>	Potato	824 900	24 050	1 945
Sum		13 059 650	2 117 595	22 374

## 5.4 Vegetables

The production of vegetables was, compared to the production of arable plants, rather small in Sweden and it was here assessed to correspond to a yearly average of less than 1 million ton (Table 25). This was significantly lower than for example arable crops which equaled 13 million tons. The vegetables produced had an annual mean value of 2.6 billion SEK. The economic value was dominated by the production of carrots, with an annual mean value of 629 million SEK, followed by cucumber, garden herbs and tomatoes, with an annual mean value of 370, 298 and 233 million SEK, respectively. The production value of vegetables was 2.6 billion SEK, approximately five times higher than the corresponding value of the trade from Sweden, which was approximately 0.5 billion SEK.

Table 25. Annual mean production of vegetables and economic value, during 2017-2020. Harvested weights and covered area of vegetable cultivars represented in the “Other vegetables” category are found in Appendix 1: Table 36.

Open field		Harvest, ton	Area, ha	Value, M SEK
<i>Allium cepa</i>	Onion	59 963	1 304	179
<i>Allium porrum</i>	Leek	3 679	126	28
<i>Brassica oleracea</i>	Cabbage	15 801	341	75
<i>Brassica oleracea</i>	Broccoli	3 048	341	61
<i>Brassica oleracea</i>	Cauliflower	6 360	389	60
<i>Cucumis sativus</i>	Cucumber	6 777	121	23
<i>Daucus carota</i> subsp. <i>Sativus</i>	Carrot	106 693	1 749	629
<i>Lactuca sativa</i>	Lettuce	20 356	922	151
	Other lettuce	8 029	991	107
	Other vegetables			198
Greenhouse		Harvest, ton	Area, m <sup>2</sup>	Value, M SEK
<i>Cucumis sativus</i>	Cucumber	30 801	688 192	370
<i>Solanum lycopersicum</i>	Tomato	17 150	418 537	233
	Harvest, k pcs	Area, m <sup>2</sup>	Value, M SEK	
	Potted lettuce	11 500	41 971	80
	Garden herbs	48 200	108 812	298
	Harvest, M pcs	Area, m <sup>2</sup>	Value, M SEK	
	Other lettuce	3		39
	Other vegetables			57
Sum				2 586

## 5.5 Fruit and berries

The production value of fruit and berries was lower than that of vegetables. The annual mean value of produced fruits and berries totalled 966 million SEK (Table 26). Of this total value, more than 65% was from strawberry production, which was produced at an annual mean value of 638 million SEK. The total production value of fruit and berries was almost twice the value of the corresponding value of fruit and berries traded from Sweden, which was approximately 520 million SEK annually.

Table 26. Annual mean production of fruit and berries and production values, during 2017-2020.

Open field		Harvest, tons	Area, ha	Value, M SEK
<b>Berries</b>				
<i>Fragaria x ananassa</i>	Strawberry	15 949	2 411	638
<i>Rubus idaeus</i>	Raspberry	389	129	32

Open field		Harvest, tons	Area, ha	Value, M SEK
	Other berries			16
<b>Fruit</b>				
<i>Malus</i>	Apple	26 073	1 544	252
<i>Prunus</i>	Cherry	100		7
<i>Prunus</i>	Plum	200		4
<i>Pyrus</i>	Pear	1 800		17
Sum				966

## 5.6 Ornamentals and other berry and open field plants

Ornamental plants and other berry and open field plants were produced at a total annual value almost equal to that of vegetables, 2.3 billion SEK (Table 27). The most valuable groups were broad-leaved trees: 606 million SEK, tulips: 319 million SEK, other potted and bedding plants: 317 million SEK, perennial plants: 115 million SEK, and geraniums: 134 million SEK. The production value of ornamentals and other plants was 50 times higher than the corresponding value of the trade from Sweden, i.e. 43 million SEK (Table 18). This indicates that most of the propagation material that was developed into ornamental and open field plants etc., were exclusively sold on the Swedish market.

Table 27. Annual mean production of ornamentals and other open field plants and production value, during 2017-2020. Information on the quantity of additional potted and bedding plant cultivars was available, without information on production value. The full list of potted and bedding plants is available in Appendix 1: Table 37.

Ornamentals and other open field plants		Harvest, M pcs	Value, M SEK
<b>Cut flowers</b>			
<i>Tulipa</i>	Tulips	153	319
	Other	14	5
<b>Potted bulbs</b>			
<i>Hippeastrum × hortorum</i>	Amaryllis	3	72
<i>Hyacinthus orientalis</i>	Garden hyacinth	7	42
<i>Narcissus</i>	Narcissus	6	51
	Other	1	6
<b>Potted plants</b>			
<i>Argyranthemum</i>	Marguerite daisy	1	11
<i>Begonia</i>	Begonia	1	14
<i>Cyclamen</i>	Cyclamen	1	12
<i>Euphorbia pulcherrima</i>	Poinsettia	3	42
<i>Kalanchoe</i>	Kalanchoe	1	10

<b>Ornamentals and other open field plants</b>		<b>Harvest, M pcs</b>	<b>Value, M SEK</b>
<i>Pelargonium</i>	Geraniums	10	134
<b>Bedding plants</b>			
<i>Lobelia</i>	Lobelia	5	36
<i>Petunia</i>	Petunia	7	77
<i>Tagetes</i>	Tagetes	4	21
<i>Viola tricolor var. Hortensis</i>	Garden pansy	24	86
	Other potted and bedding plants	25	317
<b>Plant nursery</b>			
	Berry bushes	1	20
	Broad-leaved trees	1	606
	Conifers	<1	23
	Fruit trees	<1	82
	Hedge- and landscaping plants	4	88
	Ornamental shrubs	1	59
	Perennial plants	7	115
<i>Rosa</i>	Roses	<1	41
	Strawberry plants	2	9
	Other nursery plants	1	19
<b>Sum</b>			<b>2 314</b>

## 6 Concluding remarks

The trade of plants and plant products into Sweden was dominated by different wood products. Moreover, wood and wood products contributed to 91% of the traded value from Sweden, and 60% of the production value of all plants and plant products in Sweden. Hence, the vulnerability to pests related to wood and forests is threefold: it constitutes a large potential pathway into Sweden, a valuable trade from the country, potentially limited in case of outbreaks of regulated pests, and finally a high domestic production value that may be negatively affected.

The production value of arable crops was also high, however the amount of trade from Sweden and its economic value was lower than that of wood products and forestry. Nevertheless, the effects of serious pests on for example cereals, may be very problematic for the rather large and valuable domestic production.

Approximately 13% of the forest seedlings, 49 million pieces, were traded into Sweden, a trade that has increased by 70% between 2004 and 2019 (Swedish Forest Agency, 2021a). Since living plants in general is an important pathway of entry for many groups of plant pests it may be worth investigating if this may be a source of potential pests for an economically important sector.

Sweden is almost completely dependent on traded propagation material for vegetables. Thus, even though the amount and value of traded seeds and cuttings for this purpose was low, the dependence on foreign propagation material makes the production rather vulnerable in the case of e.g. outbreaks in the main countries traded from, for example Denmark and Germany.

We are aware that the production value, as calculated in this survey, have inherent limitations and comparisons of the value at risk between different types of plants and production systems should be interpreted with caution. For example, the reestablishment of fruit tree orchards, or a forest stand, requires a very high investment. Hence, the economic consequences in the different types of production systems may be higher than the annual production value estimated here. To further develop the estimates of the value at risk, a more detailed modelling of production systems and economy is suggested. For forest systems, this could be done with the forest modelling system Heureka (Wikström et al., 2011).

Overall the report provides valuable information for evaluating the risk associated with specific plant pests in Sweden. The survey provides data to enable the identification of potential pathways for plant pests and for the assessment of risk of pest introduction and establishment. Furthermore, the report also provides important information to support estimations of the potential economic impact if a pest becomes established.

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## Appendix 1

Additional information about trade to Sweden. The data in this appendix was obtained from Statistics Sweden (2021). The share of tons by country should be seen as an approximate value.

Table 28. Annual amount of other clover seeds than red clover traded into Sweden, by country, in tons and % share, during 2017-2020.

Other clover seeds	Mean	% Mean
Canada	<1	0%
Denmark	8	5%
France	<1	0%
Germany	24	16%
New Zealand	116	74%
Poland	7	4%
Switzerland	<1	0%
Sum	156	100%

Table 29. Annual amount of Italian ryegrass seeds traded into Sweden, by country, in tons and % share, during 2017-2020.

Italian ryegrass seeds	Mean	% Mean
Canada	13	13%
Denmark	23	23%
France	<1	0%
Germany	13	13%
Netherlands	15	16%
Uruguay	17	18%
USA	16	17%
Sum	97	100%

Table 30. Annual amount of Sweet corn seeds traded into Sweden, by country, in tons and % share, during 2017-2020.

<b>Sweet corn seeds</b>	<b>Mean</b>	<b>% Mean</b>
Britain	<1	0%
Denmark	126	67%
France	1	1%
Germany	44	23%
Netherlands	4	2%
Spain	12	6%
USA	1	0%
Sum	187	100%

Table 31. Annual amount of Beetroot seeds traded into Sweden, by country, in tons and % share, during 2017-2020.

<b>Beetroot seeds</b>	<b>Mean</b>	<b>% Mean</b>
France	1	11%
Germany	2	39%
Italy	1	11%
USA	2	39%
Sum	5	100%

Table 32. Annual amount of common bean traded into Sweden, by country, in tons and % share, during 2017-2020.

<b>Common bean</b>	<b>Mean</b>	<b>% Mean</b>
Austria	21	32%
Denmark	6	9%
Germany	16	24%
Greece	1	2%
Italy	1	1%
Netherlands	4	5%
Portugal	7	10%
Spain	5	7%
USA	6	9%

<b>Common bean</b>	<b>Mean</b>	<b>% Mean</b>
Sum	66	100%

Table 33. Annual amount of sawn wood of Norway spruce traded into Sweden, by country, in tons and % share, during 2017-2020.

<b>Sawn wood of Norwegian spruce</b>	<b>Mean</b>	<b>% Mean</b>
Austria	6	<1%
Belgium	32	<1%
Britain	61	<1%
Czech republic	440	<1%
Denmark	468	<1%
Estonia	388	<1%
Finland	3 539	2%
France	196	<1%
Germany	98	<1%
Greece	11	<1%
Ireland	1	<1%
Italy	102	<1%
Lithuania	6	<1%
Netherlands	86	<1%
Norway	140 487	96%
Poland	<1	<1%
Russia	21	<1%
Spain	27	<1%
USA	9	<1%
Sum	145 974	100%

Table 34. Annual amount of roughly sawn wood of ash and poplar (*Populus spp.*) traded into Sweden, by country, in tons and % share, during 2017-2020.

<b>Roughly sawn wood of ash and poplar</b>	<b>Mean</b>	<b>% Mean</b>
Denmark	1	<1%
Estonia	19 049	17%
Finland	19	<1%
Latvia	53 464	48%
Norway	192	<1%

Roughly sawn wood of ash and poplar	Mean	% Mean
Russia	39 743	35%
USA	15	<1%
Sum	112 484	100%

Table 36. Annual mean production of other vegetables during 2017-2020.

		Harvest, ton	Area, ha
<b>Open field</b>			
<i>Brassica oleracea</i>	Brussel sprouts	403	43
	Beans and peas	254	88
<i>Anethum graveolens</i>	Dill	480	175
<i>Foeniculum vulgare</i>	Fennel	374	26
<i>Brassica Oleracea</i>	Kale	1 181	114
<i>Helianthus tuberosus</i>	Jerusalem artichoke	1 435	97
<i>Brassica napus</i>	Swede	3 519	125
<i>Zea mays</i> var. <i>Saccharata</i>	Sweet corn	836	102
<i>Pastinaca sativa</i>	Parsnip	7 628	248
<i>Petroselinum crispum</i>	Parsley	203	39
<i>Cucurbita</i> spp.	Pumpkin	4 737	215
<i>Rheum</i> spp.	Rhubarb	373	31
<i>Beta vulgaris</i> ssp. <i>Vulgaris Conditiva</i> Group	Beetroot	17 560	471
<i>Beta vulgaris</i>	Other beets	2 991	115
<i>Brassica oleracea</i> <i>Capitata</i> Group	Red cabbage	1 350	34
<i>Apium graveolens</i>	Celery and Celerac	2 225	89
<i>Asparagus officinalis</i>	Asparagus	236	151
<i>Spinacia oleracea</i>	Spinach	175	57
<i>Brassica oleracea</i> ssp. <i>capitata</i> var. <i>elliptica</i>	Point cabbage	1 272	72
<i>Cucurbita</i> spp.	Squash	1 475	49
<i>Allium sativum</i>	Garlic	104	17
	Other kale	1 129	78
	Other misc. vegetables	1 467	156

		Harvest, ton	Area, ha
<b>Greenhouse</b>		Harvest, ton	Area, m <sup>2</sup>
<i>Solanum melongena</i>	Aubergine	20	3 635
<i>Capsicum spp.</i>	Chili	8	3 297
<i>Cucumis melo</i>	Melon	NA	2 907
<i>Capsicum annum var. Grossum</i>	Sweet pepper	35	4 689
<i>Lactuca</i>	Lettuce	NA	51 830
	Other misc. vegetables	1 584	16 974

Table 37. Annual mean production of potted and bedding plants during 2017-2020.

Open field	Harvest, k pcs
Azalea	837
Begonia	1 451
Nicotiana	285
Cyclamen	931
Dahlia	753
Scaevola	246
Fuchsia	369
Gerbera	19
Green plants	818
Hortensia	450
Sanvitalia	409
Impatiens	837
Begonia semperflorens	2 489
Euphorbia	2 593
Kalanchoe	1 072
Streptocarpus	182
Chrysantemum	1 498
Kitchen herbs	2 144
Lavender	342
Lobelia	4 725
Marguerite daisy	1 064
Dichondra	403
Pelargonium	9 670
Garden pansy	23 728
Petunia etc.	6 709

Open field	Harvest, k pcs
Primula	734
Rosa	23
Saintpaulia	357
Plant combinations	695
Jacobaea maritima	1 174
Bacopa	729
Osteospermum	574
Tagetes	3 794
Verbena	618
Other	8 291

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