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Finnish Agriculture and Rural Industries 2015

Jyrki Niemi and Jaana Ahlstedt (eds.)

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Finnish Agriculture and Rural Industries 2015

Edited by
Jyrki Niemi and Jaana Ahlstedt

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Report drawn up by

Ahlstedt Jaana	layout, editor
Jansik Csaba	chapter 2.5
Knuuttila Marja	chapter 1.1
Koikkalainen Kauko	chapter 5
Koivisto Anu	chapter 2.3
Latukka Arto	chapter 4.2
Liesivaara Petri	chapter 2.2, 3
Miettinen Antti	chapter 5
Niemi Jarkko	chapter 2.4
Niemi Jyrki	chapter 2.1, 2.5, 3, editor
Pyysiäinen Jarkko	chapter 6
Rantala Olli	chapter 4.1
Rantamäki-Lahtinen Leena	chapter 1.2
Sulkava Mika	chapter 4.2
Tauriainen Jukka	chapter 4.1
Toikkanen Heini	chapter 2.5
Väre Minna	chapter 1.3
Wuori Olli	chapter 6

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Authors: Jaana Ahlstedt, Csaba Jansik, Marja Knuuttila, Kauko Koikkalainen, Anu Koivisto, Arto Latukka, Petri Liesivaara, Antti Miettinen, Jarkko Niemi, Jyrki Niemi, Jarkko Pyysiäinen, Olli Rantala, Leena Rantamäki-Lahtinen, Mika Sulkava, Jukka Tauriainen, Heini Toikkanen, Minna Väre, Olli Wuori
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Foreword

This is the 37th time that the annual review of Finnish agriculture and rural industries is published. The first review was published in 1979 by the Agricultural Economics Research Institute of Finland, which in 2001 was merged into MTT Agrifood Research Finland. Since the beginning of 2015, MTT has been part of the Natural Resources Institute Finland, having merged with the Finnish Forest Research Institute, the Finnish Game and Fisheries Research Institute and the statistical services of the Information Centre of the Ministry of Agriculture and Forestry. Due to the merger, this review is released in the publication series of the Natural Resources Institute Finland.

As in the previous years, the review presents the current outlook for the sectors covered and the most recent research data in a single volume. It provides comprehensive information on the operating environment in agriculture and the food sector, the development of the agricultural and food markets, agricultural policy, the economic situation in agriculture, interaction between rural areas and the environment, and the socio-economic development of rural areas.

The publication's special theme is foreign trade in food and other agricultural products, since the growing deficit in Finland's food trade has attracted a great deal of attention in recent years. Concerns over the modest growth rate of Finland's food exports have been frequently expressed in public debate. Export promotion has therefore been set as an important goal.

Thematic articles explore reasons that explain, on the one hand, why Finland's food exports have grown slowly and, on the other, why imported food has gained a significant foothold in the Finnish food market. Other topics include the ongoing free trade negotiations between the EU and the US, and the related opportunities and problems from the food sector's perspective.

I hope our readers in and outside Finland will find this report useful.

Helsinki, 27 April 2015

Jyrki Niemi
Professor
Natural Resources Institute Finland (Luke)
Economics and society

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Special topics

1. OPERATING ENVIRONMENT OF AGRICULTURE

1.1. Agriculture and the food sector in the national economy

In Finland, the total annual consumption expenditure on food and beverages is €23.2 billion. Food and non-alcoholic beverages consumed at home account for a little over half of this, €13.6 billion.

As living standards have risen, the share of food and non-alcoholic beverages consumed at home in the total consumption expenditure of Finnish households has decreased to about the same level as in the old EU countries. In 2013, this share was 12.8%, slightly up from the previous year.

When alcoholic beverages and eating out are also included, food accounts for 21.9% of household consumption expenditure. The share of eating out is 5.9%, a little lower than in the old EU countries (7.2%).

The total value of annual cash flows in the food sector is around €27.2 billion when food exports and agricultural support, in addition to the total public and private consumption expenditure, are taken into account. This is just over 10% of Finland's GDP.

Consumer expenditure on foodstuffs and beverages, € million.

	2012	2013	% change
Total	22,354	23,214	4
Foodstuffs*	11,618	12,349	6
Non-alcoholic beverages*	1,214	1,214	0
Alcoholic beverages*	3,414	3,415	0
Catering services (eating out)	6,108	6,236	2

**Food consumed at home*
Source: Statistics Finland, National accounts.

Share of foodstuffs and non-alcoholic beverages in consumer expenditure of households, %.

	2012	2013
Belgium	12.7	12.9
Denmark	11.2	11.2
Estonia	19.9	20.7
Finland	12.3	12.8
France	13.3	13.4
Germany	10.1	10.4
Greece	17.4	17.2
Italy	14.3	14.4
Norway	11.9	11.7
Portugal	17.4	18.0
Sweden	12.4	12.4
United Kingdom	9.0	9.1

Source: Eurostat National accounts.

Agriculture and horticulture

According to national accounts, agricultural and horticultural output was €6.9 billion in 2013, when €2 billion of production aid is included. Output grew by 1.9% from €6.8 billion in the previous year.

Intermediate products accounted for about half of agricultural output in 2013, amounting to €3.6 billion. This represents an increase of 3.9% from the previous year. The main intermediate products are fertilisers, feedstuffs, electricity, transport fuels and various services that support production.

The value added produced by horticulture and forestry was €3.3 billion, and its impact on Finnish GDP was roughly the same as in the previous year, 1.9%. In addition to weather conditions during the growing season, fluctuations in product and input prices influence the financial out-turn of these sectors more than before.

Agriculture is very capital-intensive because of the machinery, buildings and fields needed in production. Investments accounted for nearly 40% of the value added. In 2013, the share of agriculture in

the total investments of the national economy was 2.7%, which is much higher than its share of GDP.

Food processing

The output of the food industry grew from €11.7 billion in 2012 to €12 billion in 2013. The use of intermediate products increased from €9 billion to €9.2 billion and the value added created in the food industry from €2.7 billion to €2.8 billion.

The food industry accounted for 1.6% of GDP in 2013. The food industry accounted for 9.6% of the value added in the manufacturing industries, which is slightly higher than in the previous year (9.2%).

Measured by both output and value added, the food industry is Finland's third largest industrial sector. The machinery and equipment industry and the paper industry are larger in terms of output, and the machinery and equipment industry and energy supply are larger in terms of value added.

The food industry is raw material intensive: intermediate products and services make up almost 80% of the output. The food industry purchases most of its raw materials from domestic agricultural and horticultural suppliers. Because of transportation costs, a significant proportion of the food industry is highly dependent on domestic raw materials.

The food industry's domestic investments grew in 2013, amounting to €480 million. This is less than 20% of the value added and far below the sector's share of GDP. Its share of the total investments was about the same as the year before, 1.1%.

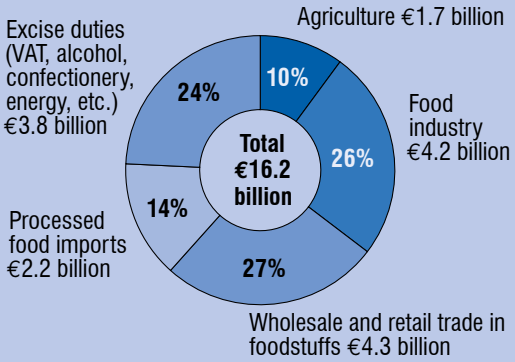
Domestic trade in foodstuffs

The trade sector sees to the final distribution of foodstuffs to consumers. The value of production in the trade sector is not as readily available as that of primary production and processing because in most cases, only figures for sales and turnover are published. In 2012, food trade was estimated to generate output of around €5.4 billion. This figure includes wholesale and retail trade to consumers and to food and beverage service activities.

Foodstuffs require a great deal of handling, which is why wages and salaries and production facilities are significant cost items in the trade sector. Other major cost items are transportation and logistics and various business services.

The position of trade at the end of the food chain differs from primary production and processing. The trade sector is not dependent on domestic primary production in the same way as the food industry, and thus it is capable of taking advantage of competition, both within the domestic food industry and between Finnish and foreign companies.

Food trade is still largely in the hands of domestic operators and is founded on chains of wholesalers and retailers in which the buying-in operations both in Finland and abroad are highly centralised. Besides the German discount chain Lidl, which came to Finland in 2002, the small markets and high transportation costs have not attracted any other foreign food chains.



Distribution of consumption expenditure on food and beverages consumed at home in 2012.

Food and beverage service activities

Food and beverage service activities include eating out in restaurants, cafés and canteens. The output of these activities in 2013, €5.5 billion, remained about the same as in 2012, showing growth of only 2%. The value added created in the sector, €2.3 billion, was also nearly unchanged from the previous year.

Foreign trade in foodstuffs

The value of food imports (CN 1–24) totalled €4.8 billion in 2014, down by 2% from the previous year. The value of food exports, €1.6 billion, was roughly the same as in 2013. Total goods imports fell by 1.4% in 2014, whereas exports remained about the same.

Food imports account for more than 8% of the value of total goods imports (CN 1–99). Meanwhile, food exports only account for 3% of total goods exports.

The main imported foods are fruits and beverages, including alcohol. Some of the imported foods are primary products that cannot be produced in Finland (coffee, cocoa, tea) or that are not produced in sufficient quantities (sugar, fruit, vegetables). However, the export and import of products representing the same product categories, such as cheeses, beverages and other processed products, have increased.

Energy, transport fuels and various chemicals are also imported, since domestic food production is dependent on imports. Most of the machinery, equipment and their parts are imported. The import of services in various management, planning and research tasks is also on the rise. When food imports and the imports needed in domestic production are included, the food sector is 75% domestic.

Taxes and support in the food sector

The state contributes to the food chain by collecting taxes and allocating financial support to agriculture. In addition to value added tax, consumers pay excise duties on the prices of foodstuffs and beverages, as well as energy taxes included in production inputs. Income tax is collected in the food chain on wages and salaries and on capital income.

Since a reduced VAT rate is applied to most foodstuffs, the taxes levied on the

GDP share of agriculture[1] and food industry (at basic price) and investments (at current prices).

Year	Gross domestic product				Share in investments	
	Agriculture million €	Food industry million €	Agriculture %	Food industry %	Agriculture %	Food industry %
2013	3,336	2,754	1.9	1.6	2.7	1.1
2012	3,339	2,683	1.9	1.6	2.6	1.0
2011	3,290	2,589	1.9	1.5	2.7	0.9
2010	3,338	2,617	2.0	1.6	2.7	0.9
2009	3,234	2,815	2.0	1.8	2.9	1.0
2008	3,012	2,549	1.7	1.5	2.6	1.0
2007	3,204	2,499	1.9	1.5	2.8	1.1
2006	2,857	2,340	1.9	1.6	2.8	1.1
2005	2,880	2,414	2.0	1.7	2.9	1.2
2004	2,804	2,377	2.0	1.7	2.8	1.0
2003	2,836	2,450	2.1	1.9	3.3	1.4

[1]Agriculture including subsidies on production in addition to subsidies on products.
Source: National accounts 2003–2013e, Statistics Finland.

food sector are lower than those on other sectors, despite excise duties. The VAT rate on foodstuffs and restaurant services is 14%. The VAT on food rose from 12% to 13% in July 2010 and to 14% at the beginning of 2013. The VAT on restaurant services decreased from 22% to 13% in July 2010 and rose to 14% at the beginning of 2013. The standard VAT rate of 24% is applied to alcohol.

The tax revenue collected as VAT and excise duties totals €4.8 billion. The VAT revenue from food is €1.7 billion and that from the retail sales of alcoholic beverages €0.7 billion. Restaurant services generate €0.8 billion of VAT revenue.

The VAT revenue from food is around 9% of the total VAT revenue. When restaurant services and alcohol are included, the share of the food sector in the total VAT revenue amounts to 16%.

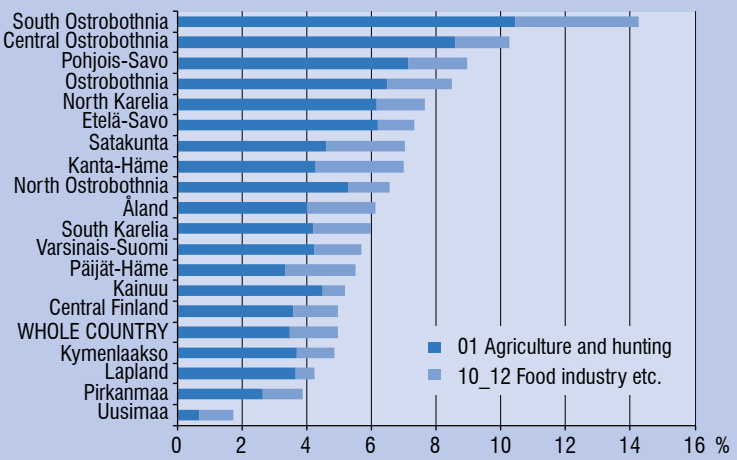
The tax revenue from alcoholic beverages is €1.4 billion. A total of €0.2 billion is collected as excise duties on confectionery, ice cream and soft drinks.

The excise duty on alcoholic beverages was raised in 2008, twice in 2009 and again in 2012 and 2014. The duty on confectionery and ice cream became applicable in 2011, and the duty on soft drinks was raised at the same time. The duty on confectionery and ice cream was raised in 2012 and the duty on soft drinks in 2012 and 2014.

The taxes levied by the state on the food sector far exceed the support to the sector. The various types of support to agriculture, a total of €2.1 billion, are funded by the EU, co-funded by the EU and Finland, or paid from national funds only. The EU contributions to agricultural support amount to €0.8 billion a year, and the support from the state budget is €1.3 billion. Since Finland's EU membership fees from the state budget are around €2 billion, it can be thought that part of the contribution is returned in the form of agricultural support.

Economy-wide effects of the food sector

Besides agriculture, the food industry, the trade sector and the restaurant and catering sector, many other sectors are involved in the food chain by producing goods and services for it. In practice, the effects of the food sector extend throughout the economy and various industries, including the transportation, trade and energy sectors

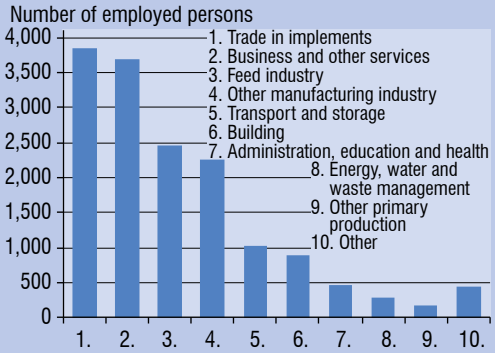


Employed of agriculture and food industry (%) in different regions in 2012. Source: Regional accounting, Statistics Finland.

and water and waste management.

Households use income generated from food production for purchasing goods and services, thereby spreading the effects to sectors producing consumer goods. In more sparsely populated areas in particular, consumption plays a major role in the regional economy.

Part of the investment effects flow abroad, especially through the purchase of machinery. Construction has a more direct impact on the regions themselves than investments in machinery. In addition to agriculture and the processing industry, building investments have been made in recent years in the food trade in particular.



Employment effect of the use of intermediate products in agriculture by sectors in 2012 (number of employed persons).

Employment effects of the food chain

According to national accounts, the number of people employed in agriculture was 86,300 in 2013, representing 3.5% of the employed labour force. This number declined by 1,600 from the previous year. The number of people employed in agriculture has fallen in all regions, along with the number of farms and increased substitution of machines for labour.

In absolute terms, the number of people employed in agriculture is the greatest in the regions of South Ostrobothnia, Southwest Finland, North Ostrobothnia and North Savo. These regions make up 40% of the total labour force involved in agriculture in Finland. Proportionally, the share of agriculture in the employed labour force is the highest in South and Central Ostrobothnia (10.4% and 8.6%), North Savo (7.1%) and the coastal regions of Vaasa (6.5%).

By purchasing goods and services, agriculture also employs around 15,000 people in other sectors, particularly in the trade of implements, services and the manufacturing industry.

National accounts show that the food industry employed 37,300 people in 2013, or 1.6% of the employees in all sectors. Almost a quarter of the jobs in the food industry are in Uusimaa and about 10% each in South Ostrobothnia, Southwest Finland and Pirkanmaa. Proportionally, the food industry is by far the largest employer in South Ostrobothnia (3.8% of the employed labour force), Kanta-Häme and Satakunta (2.5% in both).

As the number of jobs in primary production and processing is decreasing, more people find employment in services in the food chain. In 2013, the number of people employed in restaurants and catering services was 65,600, which was 300 more than the year before. The food trade employs roughly the same number of people: 65,000. In all, the food sector employs around 300,000 people.

1.2. Rural enterprises

The Finnish countryside is changing rapidly, and different types of rural areas are developing in different ways. In many sparsely populated areas, the population is decreasing and ageing rapidly, while the number of rural residents and enterprises has been growing in urban-adjacent rural areas.

Rural enterprises in Finland in 2000–2013.

Year	2000	2002/2003	2004/2005	2010	2012/2013	Change from 2000, %
Total	136,400	130,400	131,500	140,300	130,000	
Basic agriculture farms	58,000	50,150	45,200	44,300	37,600	–35
Diversified farms*	21,800	23,550	24,300	19,500	16,800	–23
Enterprises with no link	56,600	56,700	62,000	74,500	75,600e	34

** incl. horticulture enterprises, e Luke estimate*
Sources: Luke. Register of small rural enterprises (www.mtt.fi/pienyritysrekisteri).

Small rural enterprises can be divided into three groups: farms engaged in basic agricultural production and farm forestry, diversified farms with other gainful activities besides agriculture and farm forestry, and small rural enterprises with no connection to farms.

In 2013, the total number of enterprises in Finland was 354,000. The number of small rural enterprises was estimated at 130,000, of which 29% were engaged in basic agriculture, 13% were diversified farms and 58% were other small enterprises.

Agriculture and farm forestry continue to make up the most significant rural industry. The Finnish farm structure and changes that have taken place in this are presented in more detail in section 1.3.

Diversified farms in Finland and the rest of Europe

In 2013, the number of farms practising other gainful activities besides agriculture was 16,800, meaning that 31% of the Finnish farms were diversified. Diversification into other activities has traditionally been quite common among farmers, but in the 1990s and 2000s, new operations were launched more than ever before. However, the 2010s have seen a slight decline in the

Number of diversified farms in 2000, 2005, 2010 and 2013.

Sector	2000	2005	2010	2013
Diversified farms, total	21,838	24,294	19,530	16,802
Primary production other than agriculture and forestry	*744*	*1,815*	*981*	*808*
Industry	*4,786*	*3753*	*2747*	*2246*
Food processing	1,065	684	479	381
Wood processing	1,349	889	554	405
Production of renewable energy	648	820	668	855
Peat production	311	217	239	448
*Construction***	..	*881*	*438*	*344*
Trade	*1,056*	*1,229*	*850*	*986*
Services	*15,019*	*16,547*	*13793*	*12,419*
Tourism, accommodation, recreation services	2,272	1,865	1,728	1,180
Contracting	8,880	10,013	8,896	8,583
Riding-stables and other horse husbandry services			888	932
Other	2,782	1,924	1,223	1,047
Unknown	..	..	*721*	..

Source: Luke.

number of diversified farms.

Starting other gainful activities is often connected to changes in the operating environment of farms: new demand has been created for products and services. Also, new challenges to agriculture may have encouraged farming families to seek new sources of livelihood. As regards the types of areas, most of the diversified farms are in urban-adjacent rural areas and remote rural areas.

The other activities on farms are usually strongly linked to farming and its resources, i.e. the farm resources are in joint use for activities in several sectors. In 2010, agricultural/horticultural machinery, buildings, land areas or products and labour force were used for other gainful activities on 87% of the diversified farms.

In numerical terms, cereal and other crop farms were most frequently engaged in other business activities. Relative to the size of the production sector, diversified farms were the most common among sheep, goat and horse farms (42% of the farms), mixed farms (40%) and poultry farms (33%). Meanwhile, only one in five pig and dairy farms had other business activities.

Diversified farms operate in various sectors. In 2013, the majority (74%) were engaged in services. Around 13% were engaged in manufacturing, 5% in primary production other than agriculture and 6% in trade. Many farms operate in several sectors, such as in both contractual work and tourism.

The proportional share of activities practised by diversified farms has changed over the last decade. The share of enterprises in the service sector has increased, while the share of manufacturing has declined. The number of farms in other types of primary production has decreased, which also reflects the general trends in these sectors. For example, the number of reindeer herders, fur farmers and fishermen has decreased considerably over the past two decades.

In 2013, primary production was the main activity on 800 farms. The largest sectors are reindeer herding and fur farming.

On 2,200 diversified farms, the main activity was the manufacturing industry, such as energy production and the further processing of foodstuffs or wood. Around 350 farms operated in the building sector and 1,000 farms in the trade sector.

Services was the main sector on 12,500 farms. By far the largest individual service sector was contractual work (8,600 farms), which comprises work with agricultural and forestry machinery, bioenergy work, earthworks, snow ploughing and road maintenance.

About 1,400 diversified farms operated in the tourism industry. Other significant service sectors included riding and other equestrian services (a total of almost 1,200 farms), transportation (300 farms) and business services. About 100 diversified farms provided care services.

Other gainful activities on farms are usually quite small in scale. In 2013, the turnover of these activities was less than €10,000 on 39% of the farms. However, on 14% of these farms the turnover exceeded €100,000.

The relative share of diversified farm in selected European countries in 2010.

Country	% of the farms
Norway	55
Denmark	52
Switzerland	45
Austria	37
Sweden	34
Germany	31
Iceland	29
Spain	2
Greece	1
Bulgaria	1
Rumania	1
Cypros	1
Lithuania	1

Source: Eurostat

Proportionally, the number of farms whose turnover from other gainful activities was more than €100,000 was the highest in Ostrobothnia and South Ostrobothnia. Viewed by production sector, other gainful activities generating a turnover of over €100,000 were most common in diversified horticultural enterprises and on poultry farms.

Statistics on diversified farms in Europe have been compiled since 2003, and these only include farms where agricultural resources and other gainful activities are closely linked. In Finland, the other Nordic countries and western Europe, farm diversification is much more common than in southern and eastern Europe. For example, in Norway and Denmark diversified farms account for more than half of all farms, whereas in Cyprus and Lithuania their share is less than 1%.

Other rural enterprises

It is estimated that about a third of all Finnish enterprises are located in rural areas[1]. In 2010, the Register of Enterprises and Establishments included 81,000 rural enterprises[2] other than those engaged in agriculture and farm forestry, with a total labour force corresponding to 135,000 AWU and a total turnover of €18 billion. Of the small rural enterprises, an estimated 74,500 operate with no connection to farming.

In 2010, 46% of the small rural enterprises operated in the service sectors, 16% in trade and a third in processing. Around 5% were engaged in primary production other than agriculture and forestry.

Since 2000, the number of enterprises, staff and turnover have increased in both the service sectors and processing. There are large regional differences in the number of enterprises. In urban-adjacent rural areas, their number has increased significantly, but in some remote areas, their number has fallen.

The development of certain important sectors of rural enterprise is described below.

Energy production and bioenergy

The role of the resources available in rural areas for the production of bioenergy and other renewable energy is growing. Renewable energy sources comprise solar and wind power, hydropower, bioenergy and geothermal, wave and tidal energy.

Bioenergy accounts for around 80% of all renewable energy sources. Bioenergy, i.e. biofuel, is derived from biomass growing in forests, mires and fields as well as from organic, liquid and gaseous biowaste suitable for energy production from communities, agriculture and industry. In Finland, bioenergy accounts for about a quarter of all energy consumption.

Most of the bioenergy produced and used on farms consists of chips or fuelwood from forests. In 2013, contractual work related to bioenergy, which comprises the production of biodiesel, ethanol and biogas, was the most important activity for 49 farms in terms of turnover.

Food processing

The majority of food processing enterprises are located in rural areas. The field is strongly polarised into a few large companies and numerous small enterprises. Most of the enterprises (71%) employed fewer than five people. The most common sectors are the manufacture of bakery products and further processing of meat.

In 2013, around 400 farms were engaged in the further processing of foodstuffs. The most common types of food processing on farms are the further processing of vegetables and berries, the manufac-

[1] In this context rural area means areas by postal code districts where the population density is less than 50 persons/km^2.

[2] Small enterprise means an enterprise with a single place of business, turnover of at least €8,409 and staff of less than 20.

ture of bakery products, and the slaughtering and further processing of meat.

Rural tourism

Rural tourism is the part of the tourism industry where the opportunities largely derive from resources characteristic to the countryside. Accommodation is provided by around 1,700 farms. The potential offered by rural tourism in the development of the rural areas has been understood for a while now, and the long-term prospects seem favourable. The tourism sector provides employment for young people in particular. Most of the new enterprises offer tourist activities, making use of the surrounding natural environment.

Equine industry

The equine industry is one of the most rapidly growing sectors in the rural areas, with about 75% of the business activities taking place on farms and 17% otherwise in the countryside. In this context, the equine industry comprises the breeding and rearing of horses and care services for them, training, riding schools and equestrian tourism.

The annual money flows in the industry are estimated at €830 million and the annual investments of the sector in the operating environment at €23 million. The sector is estimated to employ 15,000–16,000 people in Finland.

The estimated number of horses in Finland was just below 75,000 in 2014. The total number of stables is about 16,000, of which a quarter are companies. There are around 1,000 riding stables, half of which are riding schools or similar businesses. The number of riding schools and leisure riding stables approved by the Equestrian Federation of Finland is around 300. Approximately 170,000 people enjoy riding as a hobby, 60% of them adults.

More than 200,000 people are actively engaged in harness racing. In 2014, almost 8,000 horses raced in harness races. The turnover of betting on horse races was €231 million, and 650,000 spectators visited harness racing tracks to watch the races.

Reindeer herding

Reindeer husbandry is a highly significant business in the sparsely populated rural areas of northern Finland. It is a source of livelihood as such, and it is also a significant image factor for tourism and a major aspect of the Lappish culture.

The number of reindeer has remained about the same during the past decade, but in the last few years there has been some decrease. In 2009/2010, the number of reindeer was 196,500, of which 100,000 were slaughtered. In recent years, the production of reindeer meat has totalled 2.3–2.8 million kg.

The structure of reindeer husbandry has changed as the number of reindeer owners has declined and the size of reindeer herds has grown. In the 1994/1995 reindeer herding year, there were 7,200 reindeer owners, while today their number is 4,650. In the 2012/2013 herding year, the average turnover of reindeer farms was €21,700.

1.3. Finnish farm

Number and size distribution of farms

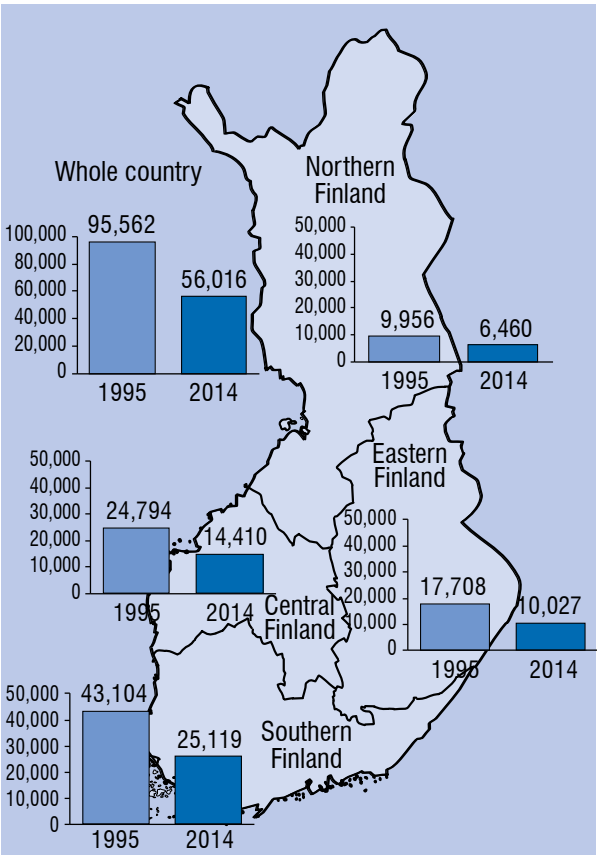
In 2014, the total number of farms (over 1 ha) which had applied for agricultural support was a little over 56,000. This was about 1,500 farms (2.7%) fewer than in 2013. In both absolute and proportional terms, the decrease in the number of farms corresponded to the long-term average. During the 19 years that Finland has been part of the EU (1995–2014), the number of Finnish farms has fallen by more than 41%, or 39,546 farms. On average, the

number of farms has decreased at a rate of 2.8% a year. Proportionally, the decrease has been the greatest in eastern Finland (43%) and the smallest in northern Finland (35%). In southern and central Finland (nearly 42%), the rate of change has been slower than in eastern Finland.

As the number of farms has decreased, the average farm size has grown. In 1995–2014, the average size of farms receiving agricultural support increased by almost 79%, from 22.8 ha of arable land to 40.7 ha.

Annual growth in the average size has ranged from a little over half a hectare to one and a half hectares.

The average farm size increases as the number of the smallest farms declines and that of the largest farms goes up. In the past 19 years, the share of farms of less than 20 ha in size has fallen from 56% to 40%, while the share of farms of more than 50 ha has risen from 7% to 27%. Large farms with more than 100 ha of arable land make up 8% of the Finnish farms.



Number of farms receiving agricultural support in 1995 and 2014 (main regions of Uusimaa and Åland according to NUTS II have been included in Southern Finland). Source: Finnish Agency for Rural Affairs.

About half of the growth in the farm size during the time of Finland's EU membership has occurred through leasing. In 2014, the total cultivated arable area of farms receiving agricultural support was 2.281 million ha, and 788,900 ha (almost 35%) of this was leased. In 1995, the share of leased land was 22%. In the 2000s, the leased arable area has grown by almost 15%.

Number of farms receiving agricultural support in 2004–2014.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Whole country	71,100	69,088	68,766	66,821	65,292	63,716	62,450	61,153	58,898	57,559	56,016
Southern Finland[1]	32,245	31,272	30,967	29,945	29,368	28,694	28,098	27,578	26,517	25,874	25,119
Eastern Finland	12,498	12,121	12,173	11,812	11,501	11,218	11,033	10,808	10,479	10,281	10,027
Central Finland	18,458	17,986	17,947	17,574	17,119	16,650	16,177	15,771	15,172	14,812	14,410
Northern Finland	7,899	7,709	7,679	7,490	7,304	7,154	7,142	6,996	6,730	6,592	6,460

[1] Main regions of Uusimaa and Åland according to NUTS II have been included in Southern Finland.
Source: Finnish Agency for Rural Affairs.

Size class distribution and average arable area of farms receiving agricultural support in 2014[1].

Arable land	Southern Finland[2]		Eastern Finland		Central Finland		Northern Finland		Whole country 1995		Whole country 2014	
	Number of farms	%	Number of farms	%	Number of farms	%	Number of farms	%	Number of farms	%	Number of farms	%
<10 ha	4,584	18	2,420	24	2,939	20	1,381	21	22,850	24	11,221	20
10–20 ha	4,614	18	2,310	23	3,272	22	1,155	18	30,698	32	11,194	20
20–30 ha	3,496	14	1,448	15	2,273	15	850	13	19,669	21	7,960	14
30–50 ha	4,695	19	1,720	17	2,763	19	1,137	18	15,414	16	10,250	18
50–100 ha	5,108	20	1,515	15	2,557	18	1,309	20	5,706	6	10,466	19
>100 ha	2,515	10	569	6	911	7	597	9	784	1	4,647	8
Number of farms	25,012		9,982		14,715		6,429		95,121		55,738	
Average arable area, ha/farm	44.68		34.10		37.77		42.22		22.77		40.73	

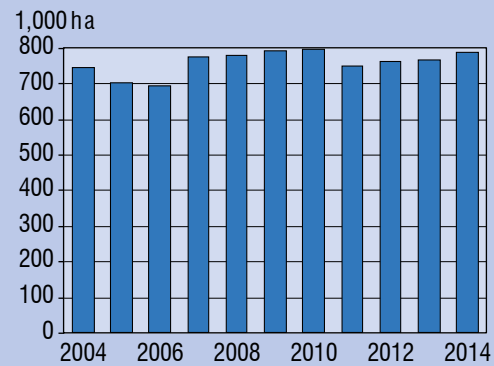
[1] The figures do not include horticultural enterprises if they have no fields under cultivation.
[2] Main regions of Uusimaa and Åland according to NUTS II have been included in Southern Finland.
Source: Finnish Agency for Rural Affairs.

In 2014, the leased arable area grew from the previous year. There is considerable regional variation in leased land: in the Åland Islands, close to 42% of the arable area is leased; in South Savo, North Karelia, Central Finland and Kainuu, this figure is over 39%; and in Central Ostrobothnia, the share of the leased area is only around 29%.

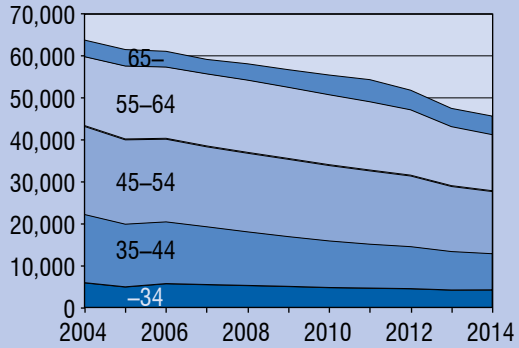
In 2014, the average size of base parcels was 2.46 ha, varying from over 3 ha in southern Finland to less than 2 ha in eastern and northern Finland. The average size of base parcels was the smallest in the Åland Islands: less than 1.5 ha. Hardly any changes have occurred in the average size of parcels or the total cultivated area in recent years.

Finnish agriculture is almost exclusively based on family farms: in 2014, 87% of the farms receiving support were privately owned and 11.3% were owned by heirs and family companies and corporations. Cooperatives and limited companies owned 1.3%, general and limited partnerships 0.2% and sole traders 0.1% of the farms. The state, municipalities, schools and parishes owned 0.03% of the farms, as did foundations, associations and the like.

The average age of farmers on farms receiving agricultural support was 51.8 years in 2014. The age of farmers is the highest, over 54 years, in the Åland Islands and the lowest, a little over 50 years, in Central Ostrobothnia. As the farm population ages, the share of young farmers falls and that of older farmers increases. In 2001, the share of farmers over 55 years of age was 26%, but in 2014, their share was over 39%. During the same time, the share of farmers aged below 44 fell from 38% to 28%.



Area of leased arable land (ha) in 2004–2014. Source: Finnish Agency for Rural Affairs.



Number of farmers by age categories in 2004–2014. Source: Luke, Statistical services.

Production structure of farms

In recent years, the changes in the production structure of Finnish agriculture have been characterised by a decline in the number and share of livestock farms and an increase in the number and share of crop farms. In 2014, 25% of the farms which applied for support were livestock farms and 69% were crop farms, while in 1995, the share of livestock farms was 52% and that of crop farms 39%.

In 2014, around 8,700 farms practised dairy husbandry as their main activity. In 1995–2014, the number of dairy farms fell by more than 23,000 farms, at a rate of 6.6% a year. The share of dairy farms of all Finnish farms has also decreased: in 1995, dairy husbandry was the main activity on almost 34% of the farms receiving agricultural support, but in 2014, their share had fallen below 16%. Proportionally, the number of dairy farms is the highest in eastern and northern Finland, where they account for 26% of the farms. Dairy farms are more evenly distributed across all regions of Finland than the other lines of production.

In 2014, just under 3,500 farms (6.2% of all farms) specialised in beef production. In 1995–2014, the number of these farms fell by almost 5,600, at a rate of 4.9% a year. In 1995, 9.5% of all farms specialised in beef production. The distribution of beef farms across the country is quite similar to the regional distribution of dairy farms.

The number of farms specialising in pig meat production was about 1,480 in 2014, representing 2.6% of the farms that applied for support. Of the pig farms, 351 specialised in piglet production, 623 farms in pig meat production and 503 farms practised combined pig production. In 1995–2014, the number of pig farms decreased the most compared to other production sectors: by 76%, or by 7.3% a year. In 1995, the share of pig farms was 6.5%. Pig meat production is focused on southern and western Finland.

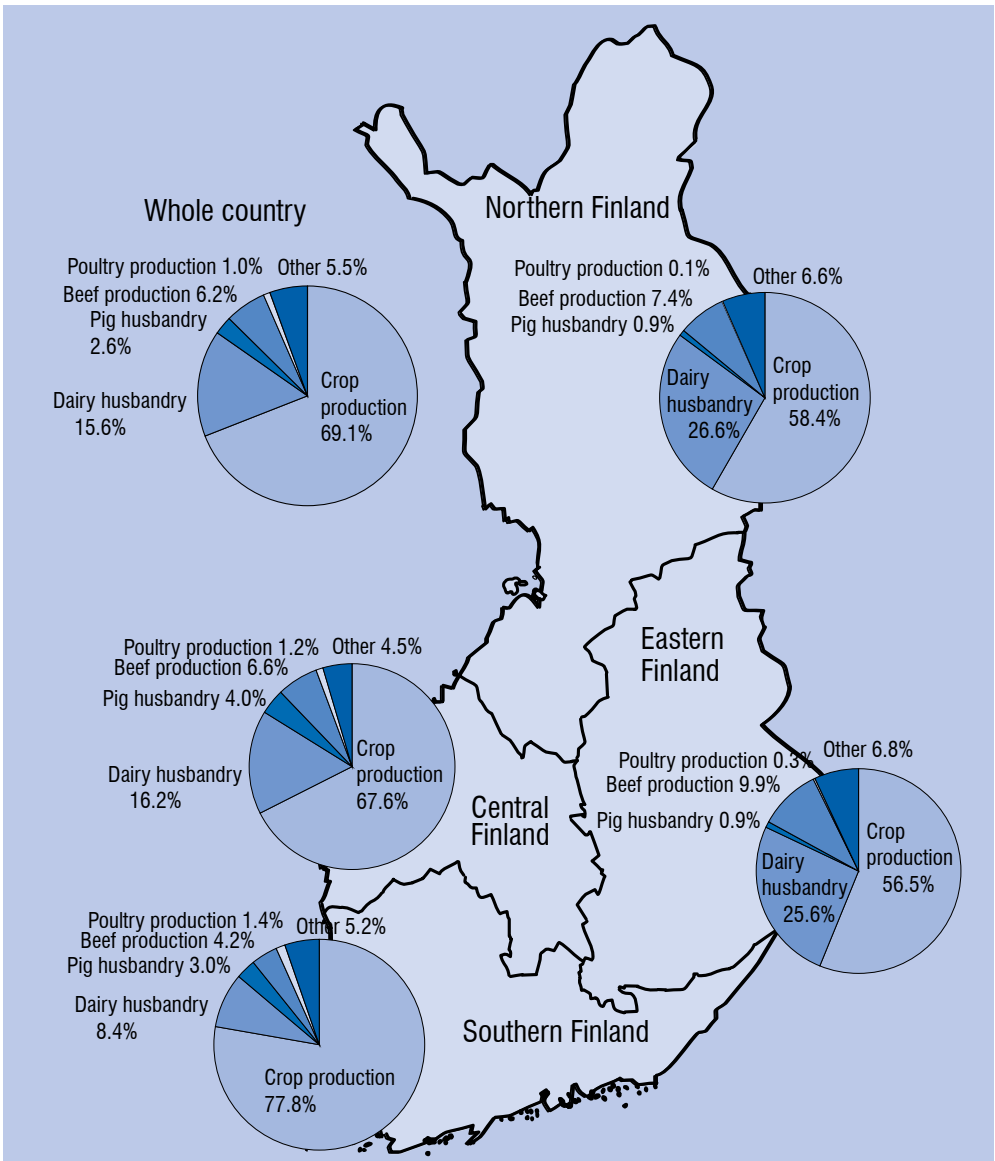
The number of poultry farms was 561 in 2014, which is 1% of the farms that applied for support. During the period of Finland's EU membership, the number of poultry farms has decreased by 74%, at an annual rate of 6.9%. In 2013–2014, only five poultry farms (less than 1% of all poultry farms) closed down. In 2014, around 48% of poultry farms specialised in egg production, 38% in poultry meat production and 14% were breeding units. In 2000, the respective shares were 68%, 21% and 12%. Most of the poultry farms are located in southern and western Finland.

In 2014, there were about 38,700 crop farms, which is almost 1,400 (3.9%) more than in 1995. However, the number of crop farms began to decrease in 2014. More than half of the Finnish crop farms are in southern Finland and a quarter in central Finland, but in recent years the number of crop farms and their share of all farms have grown the most in eastern and northern Finland.

The number of other types of farms was 3,070 in 2014, which is almost 6% of all farms. Over the past 19 years, their number has fallen by more than 65%, at an annual rate of 5.4%. Other farms include those engaged in horse, sheep or goat husbandry, and those engaged in other types of production or activities (e.g. farm tour-

ism). After a period of growth, the number of farms engaged in horse husbandry has decreased. Meanwhile, the number of farms with other types of production or activities has increased slightly all over the country in recent years, except for northern Finland. A larger proportion of these farms than ever is today located in southern Finland.

Forests are an integral part of Finnish farms. In 2014, the average forest area of farms receiving agricultural support was nearly 52 ha. Regional variation is considerable, however: in Southwest Finland and the Åland Islands, the average forest area of farms is 32 ha, while in Lapland it is 108 ha.



Distribution of farms receiving agricultural support according to production line in 2014 (main regions of Uusimaa and Åland according to NUTS II have been included in Southern Finland). Source: Finnish Agency for Rural Affairs.

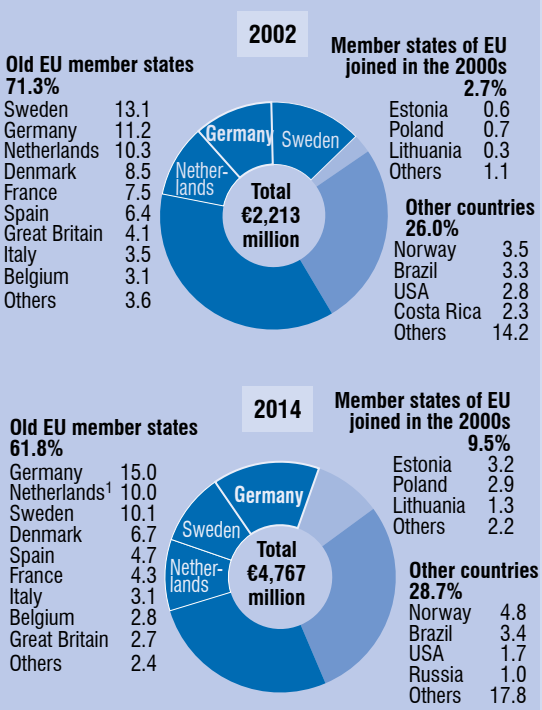
Retailer brands speed up food imports from Germany

Csaba Jansik

Finland's food imports have more than tripled in value since the country joined the EU, rising to €4.7 billion in 2014. In the first years in the EU, growth was quite moderate, but it accelerated after the turn of the century.

When the EU expanded east in 2004, there were concerns over the possible flow of cheap food from the new Member States. Indeed, the share of these countries has grown in ten years from under 3% to almost 10% in 2014. Imports from Poland and the Baltic countries, especially Estonia, have increased the most. Growth has been brisk but more moderate than feared.

The countries that joined the EU in the 2000s increased their share at the expense of the old Member States, whose aggregate share fell by nearly 10 percentage points from 2002 to 2014. Imports from almost all of the old Member States have decreased, Germany being the only notable exception: its share rose from 11.2% to 15%. Apart from Germany and the previously mentioned Baltic countries and Poland, Norway has increased its share, mainly due to the growth in salmon consumption on the Finnish market.

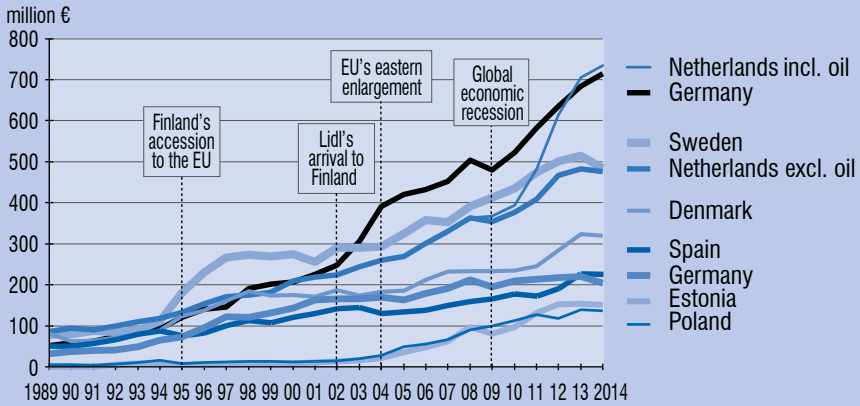


Note: Calculations include CN01–24 classes. [1] Due to its high significance palm oil was deducted from the shares of 2014 imports from the Netherlands and moved to imports from others within the third countries, since palm oil is originally imported from Asia.

Finland's food imports by country in 2002 and 2014 (%). Source: Finnish Customs, ULJAS database.

Germany dominates Finland's food imports

Although the proportional shares of many countries declined, a leap was seen in the value of imports due to an increase in batches arriving from old Member States. Growth curves show that three EU countries – Germany, the Netherlands and Sweden – have managed to increase their sales the most to the Finnish food market. Imports from Sweden shot up right after accession to the EU, but the growth rate slowed a little after the turn of the century. The value of imports from the Netherlands grew steadily until 2010, but then jumped to a new level after 2011. However, a closer analysis reveals that the reason for this exceptional growth is a change in the compilation of statistics on palm oil to be processed for fuel. Palm oil was transferred to the category "inedible vegetable oils and oil fractions", and the Netherlands was recorded as the country of origin for all batches. Since this "food



The value of Finland's food imports by country. Source: Finnish Customs, ULJAS database.

import item" never ends up on the consumer's table, we have fixed the curve for the Netherlands in the diagram. When palm oil is left out, the growth in imports from the Netherlands remained roughly the same as in previous years.

The most rapid growth has been seen in food imports from Germany. Its growth rate diverged from the rates for Sweden and the Netherlands in 2003–2004, and the difference widened further after 2009. For the last five years, the sales of German food companies to the Finnish market have increased faster than those of any other country. The growth also continued in 2014, while imports from all other countries fell or remained unchanged. What is the reason for Germany's unparalleled success?

German food market intensely competitive

One important reason is the structure of the German food industry. There is a large number of small and medium-sized enterprises in nearly all sectors, such as the dairy, meat, brewery, bakery and confectionery industries. Establishing a dominant position in the market is extremely difficult in such a large country, and the sectors have remained fairly fragmented. Consolidation has only begun in recent years in the meat and dairy industries, for example.

The German food market is the most competitive in Europe. This is proved by the failure of three foreign giants in Germany. Around the turn of the century, two of the world's largest food companies, Nestlé and Unilever, invested in the German dairy industry, but eventually pulled out. In the late 1990s, the world's largest retailer, Walmart, entered Germany with ambitious plans, but also had to withdraw and leave the country after two years of operation.

The fierce competition in Germany is mainly due to the discount store concept, which was invented decades ago in – where else – Germany. It is based on intense price competition and maximising income by means of large volumes and low prices. The concept is deeply embedded in the relations between the various parts of the German food chain. Discounters regularly invite suppliers to tender. Quality is the sine qua non, and only price is negotiated. It is no great surprise that profit margins in the German food industry are the lowest in Europe. Companies that survive in this ruth-

Sales of daily consumer goods in Finland and key figures for Lidl's expansion 2000–2014.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Sales of daily goods (€ bn)	9.9	10.5	11.0	11.4	11.6	11.9	12.4	13.1	14.1	14.5	14.5	15.3	16.0	16.6	16.7
Lidl's sales (€ m)			..	205	326	441	508	613	719	741	723	951	1,071	1,347	..
Lidl's share (%)			..	1.8	2.8	3.7	4.1	4.7	5.0	5.1	4.8	4.8	5.5	6.7	7.6

Source: Finnish Grocery Trade Association, Annual Publications 2005–2014. Sales figures for 2014 and Lidl's market shares by Nielsen.

less environment have taken cost-effectiveness to its limit and can compete with prices anywhere in Europe.

Germany's huge food market also means that its numerous medium-sized enterprises are comparable with the market leaders in small countries. Owing to the consolidation trend in recent years, production volumes are large enough that increasing amounts can also be exported. Germany has become a major exporter of affordable foods in Europe. For example, in dairy products its exports are dominated by cheap cheese, while expensive cheese is imported into the country. In consequence, Germany's balance of foreign trade in foods is heavily negative.

Lidl improves German food's access to markets

Another reason for Germany's success on the Finnish – and European – food market is its distribution channels. Over the last two decades, the largest representatives of the discount store concept mentioned above, Aldi and Lidl, have expanded to every country in Europe. Retailing has rapidly become international, and large chains have habitually depended on their familiar suppliers. For discount chains, this has been a rule rather than an exception, since their selections are mostly composed of their own brands, which have established suppliers chosen through tendering.

Food imports from Germany to Finland rose to a new level when Lidl came to the country. This was not so much due to any "systematic promotion" of Germany's food exports, but rather to practicalities: the use of established business relations in a new country.

Lidl's strategy has changed over the years. A number of Finnish branded products have been added to the selection, and more Finnish companies have been chosen as suppliers of its private label products. After the initial surge, the growth in the imports of German food stabilised slightly in 2005–2009. Nevertheless, Lidl has played a key role in enabling German foods, such as dried products and beverages, to gain access to the market.

Imports of German products have also been boosted by the expansion of Lidl's retail network in Finland. The chain has achieved a larger market share than it perhaps set as the target in its original plans. No one was able to correctly predict the economic events and changes in the operating environment in recent years, which affected both Lidl's imports and imports of German food.

Consumers more price-sensitive than ever

The global financial crisis of 2009 also plunged Europe into a deep recession, and the repercussions were felt in the food market. Growing unemployment and lower incomes

reduced consumers' purchasing power, leading them to turn to more affordable food across Europe. As a result, many European retailers struggled with falling sales during the recession, while discount chains strengthened their position.

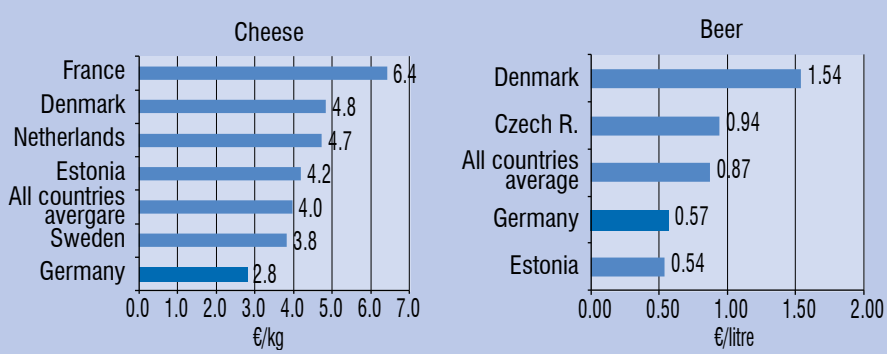
Conventional chains, which use the supermarket and hypermarket concept, responded to the challenges of the downturn by adding low-priced products to their selections – often by developing their own brands and the assortment of private label products. The share of own brands of retailers' sales has, therefore, increased sharply in recent years, more rapidly than ever before. Private label products have also taken over the shelves in Finland in the fresh meat and dairy categories, for example. In addition, fresh bakery products are sold in supermarket bakeries.

German products in all major retail chains' own brands

The steep growth in the import of German food after 2009 was not due to Lidl's actions alone. Large Finnish retail chains have also increased their purchases of German products, usually for the growing selections of their own brands. For example, the sales of German dairy products have almost doubled since 2009, from €64 million to €115 million. Dairy products today are the largest product group imported from Germany, accounting for 16%. S-Group's and Kesko's own brands also include several German products, such as quark, yogurt and cheese. Another example is frozen bakery products used in supermarket bakeries, which are frequently imported from Central Europe.

German foods have the advantage of being affordable. Finnish retailers like to use them in their price reduction campaigns and in fighting for consumers. Price differences can be substantial, as is indicated by two typical examples from different product categories. In 2014, premium cheese of French origin cost two and a half times more on average than budget cheese from Germany. The unit price of imported German beers has been 40%–60% lower than that of similar Czech or Danish brands.

Cheap imported food has gained a significant foothold in the Finnish food market, moulded by the recession, inflating the country's foreign trade deficit in food even further. The truth is that as long as there is a clear demand among consumers for affordable food, German companies will continue to succeed in Finland – and the growing share of foreign firms means that Finnish firms lose out. The question is whether this will change when the economic stagnation finally ends.



Unit prices of imported cheese and beer by country, 2014 (€/kg and €/l). Source: Finnish Customs, ULJAS database.

2. AGRICULTURAL AND FOOD MARKET

2.1. Trends on the world market

The global market for agricultural products has experienced rapid changes in recent years. In 2007–2008, almost unprecedented volatility in prices was seen on the cereal market. The price paid for cereal was more than double that paid in previous years. The global market prices for milk products were also significantly higher than in previous years.

Strong growth was, however, followed by a sudden drop in prices after the middle of 2008. In the summer of 2010, cereal prices on the world market shot up again, reaching their peak in the summer of 2012.

After this high, global cereal prices have been falling steadily. In February 2015, wheat prices were 40% and maize prices more than 50% lower than in August 2012. Despite this dramatic decline, prices are still 2.5 times higher than in 2000.

Over the past decade, total cereal consumption and production in the world have risen by nearly a quarter. Two countries, the United States and China, account for almost 40% of global cereal production. The EU countries produce a total of 300 million tonnes of cereal, or 15% of the global production.

In the 2014/15 crop season, the world cereal production is estimated to amount to 2,545 million tonnes. This is just over 20 million tonnes, or around 1%, less than in the previous year.

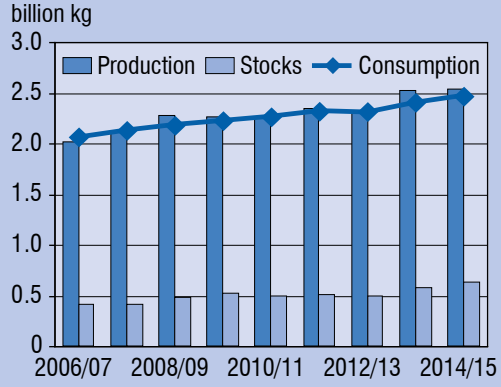
Global wheat production will reach a new record of 728 million tonnes, up by 1.6% from the previous year. Feed cereal production will grow to 1,322 million tonnes, representing an increase of 1% over the previous year's yield. Rice production will remain at 494 million tonnes, down by 0.5% from the year before.

Global oilseed production in 2014/15 is projected to total 535 million tonnes, showing growth of 4.5% over the previous year. Soy production will increase by 10.2% to 314 million tonnes, which is a new record.

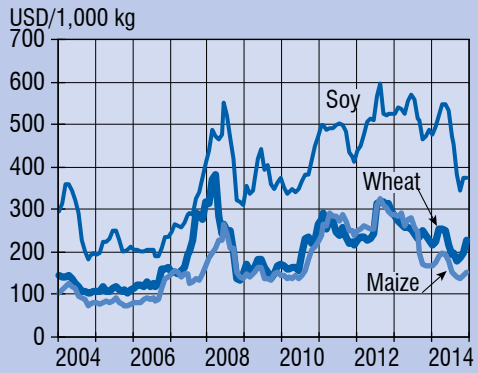
In 2014/15, global cereal consumption will total 2,494 million tonnes, 2.6% more than in the 2013/14 season. Cereal food consumption is forecast to rise to 1,106 million tonnes and feed utilisation to 872 million tonnes.

The world cereal stocks are expected to grow by 6% to a total of 645 million tonnes. The nearly 13% increase in the stocks of feed cereal is mainly attributable to the United States. Wheat and soy stocks are also projected to grow, by 6% and as much as 37% respectively. The expansion in world cereal reserves will result in an increase of nearly 29% in the global cereal stock-to-use-ratio for wheat. For feed cereal and soy, the rise will be around 20% and 14% respectively.

After the record year of 2013/14 in cereal trading, the volumes on the world mar-



Trends in the world grain production, consumption and stocks in 2006–2014. Source: AMIS Statistics.



World market price for maize, soy and wheat in 2004–2014. Source: USDA, CBOT, CBR.

ket will fall by nearly 3% in the 2014/15 crop season. World cereal trade is estimated to amount to 347 million tonnes, which is 14% of the global production.

Feed cereal trade on the global market is expected to decline by 2.6% to 155 million tonnes, representing 12% of the global feed cereal production. World wheat trade is forecast to decrease by 3.3% and remain at 150 million tonnes, which is about one-fifth of the global wheat production.

Rice trade is estimated to reach 40 million tonnes, in which case it would be at almost the same level as the year before. The forecast for global soy trade is a record 120 million tonnes, 5.2% higher than in 2013/2014. Only 8% of the total rice production enters the global market, whereas for soy, this figure is over 38%.

World sugar production is forecast to rise only marginally in 2014/15, since higher outputs in the EU, India and Russia are offset by falling yields in Brazil, China and Pakistan. The Food and Agriculture Organization of the United Nations (FAO) estimates that world sugar production in 2014/15 will be 184 million tonnes.

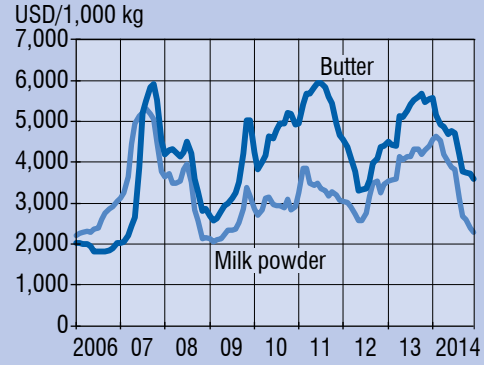
The world market price for sugar has been falling since 2011, mainly because of increased production. According to the FAO, the average price in 2014 was 35% lower than in 2011.

Milk production in 2014 is estimated to have risen to 792 million tonnes, up by 2.4%, corresponding to the rate seen in the previous years. Most of this growth occurred in Asia. In the world's largest milk producing country, India, production grew by nearly 5% to 145 million tonnes. Population growth, together with the increasing level of income, boosts the consumption of milk products in Asia.

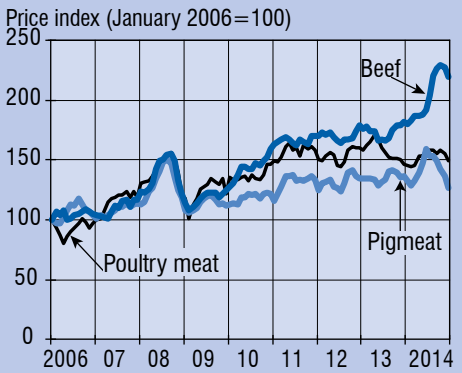
The world market prices for milk products were high at the beginning of 2014, but they began to decline in March 2014. This was the result of reduced purchasing by China and an increase in the EU's export supply. The import restrictions imposed by Russia in August 2014 aggravated the market situation further. In February 2015, the FAO Dairy Price Index was 182 points, 33% lower than in February 2014.

World meat production grew slightly in 2014 to 312 million tonnes, showing an increase of 3.3 million tonnes, or 1.1%, from 2013. Most of the growth occurred in the developing countries, where demand also grew the most.

In 2011–2014, meat prices were remarkably high compared to historical levels. In early 2014, the world market prices



Export prices of butter and skimmed milk powder in 2006–2014. Source: Canadian Dairy Information Centre.



World market price indices for beef, pigmeat and poultry meat in 2006–2014. Source: FAO.

for pig and poultry meat increased but began to slowly fall again towards the year-end. This decline continued at the beginning of 2015.

Global beef prices rose until October 2014, after which they fell by nearly 15%. Nevertheless, in February 2015 the world market price for beef was more than 10% higher than the year before. The FAO Meat Price Index was almost 8% lower in February 2015 than in February 2014.

The global meat trade is estimated to have increased to over 31 million tonnes in 2014. This is 10% of global meat production. Poultry meat accounts for more than 42% of the total meat trade.

There are significant differences in trading between different types of meat. About 14% of the beef production and 13% of the poultry meat production is traded globally. For pig and sheep meat, this figure is 6%–7%.

2.2 Arable crops

2014 was the second warmest year on record in Finland. Temperatures in the summer were, on average, favourable for growth. Rainfall varied: in most parts of the country, it rained too much, but some parts received just the right amount of rain. The total crop, 4.1 billion kg, was slightly larger than in the previous year. Cereal prices declined during the year due to large crops in the world's most significant production regions, which increased stocks.

Weather conditions

2014 was a record warm year. The average temperature was exceptionally high all over Finland. The average temperature for the whole year varied from just over 6 degrees Celsius on the southern and western coast to just below one degree in central and northern Lapland. June 2014 was cool, but a record-long period of hot weather was seen in July and August.

Annual precipitation was close to the long-term average, but there were major regional differences in summer rainfall. It rained the most in the south-western part of the country, on the western coast and in western Lapland. The lowest rainfall was recorded in a zone from Central Ostrobothnia to North Karelia and in northern Lapland.

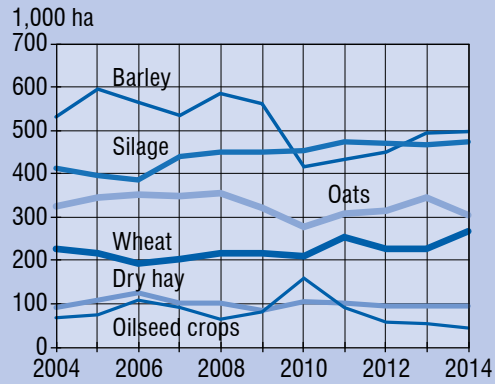
The average temperature for the whole country in June-August was higher than the long-term average. July and August were significantly warmer than average, whereas June was below the long-term average. For example, on Midsummer's Day the temperature was below 15 degrees in all parts of the country, and at night the temperature dropped below zero, even in the south.

The lowest temperature of 2014, –40.7°C, was measured on 20 January in Utsjoki in northern Lapland. The highest temperature of the year, +32.8°C, was measured on 4 August in Pori, western Finland.

The thermal growing season in 2014 started in late April in the southern and central parts of the country. In the south, the growing season began on 17 April and

ended on 14 October. Thus in southern Finland, the season lasted 180 days. In eastern, central and western Finland, the season lasted 170 days and in northern Finland 130 days.

The effective temperature sum in 2014 was slightly higher than average. In Rovaniemi, in the north, the effective temperature sum was 1,143 °C (long-term average 922 °C), in Jokioinen in south-central Finland it was 1,469 °C (1,320 °C) and in Jyväskylä in central Finland it was 1,330 °C (1,191 °C).



Harvested areas in 2004–2014, 1,000 ha.

Areas and yields

The utilised agricultural area in Finland is about 2.3 million ha, which is 6.8% of the total surface area and 7.5% of the land area. Compared to the European Union average, the share of agricultural area is small in Finland.

In 2014, cereals were cultivated on 1,117,000 ha in Finland. The cereal area in-

Harvested areas and yields of main crops in 2013 and 2014.

	2013			2014		
	Area 1,000 ha	Yield kg/ha	Total million kg	Area 1,000 ha	Yield kg/ha	Total million kg
Winter wheat	14.0	3,010	42.3	40.8	4,350	177.3
Spring wheat	213.4	3,880	827.0	226.6	4,020	911.0
Rye	12.3	2,090	25.7	23.7	3,160	74.9
Barley	494.4	3,850	1,904.2	496.9	3,730	1,854.8
Oats	344.3	3,480	1,196.8	304.7	3,410	1,039.0
Mixed cereals	21.3	3,130	66.7	23.9	2,970	70.9
Peas	4.1	2,570	10.5	5.6	2,540	14.2
Potatoes	22.1	28,120	621.7	22.0	27,300	600.3
Sugar beets	12.0	40,190	480.4	13.7	45,820	626.3
Dry hay	93.1	3,120	290.8	94.1	3,460	325.4
Silage	465.4	15,000	6,979.0	471.6	15,540	7,326.9
Green fodder	8.7	11,650	100.9	6.1	11,580	70.0
Cereals harvested green	74.5	4,060	302.8	68.6	3,910	267.9
Turnip rape	36.3	1,440	52.1	28.3	1,170	33.2
Rape	16.4	1,720	28.1	14.7	1,970	28.9
Caraway	15.1	680	7.6	10.1	490	4.9
Pasture	72.3			70.2		
Other crops	82.5			86.9		
Total	2,002.2			2,008.4		
Set aside and managed uncultivated arable land	254.0			247.3		

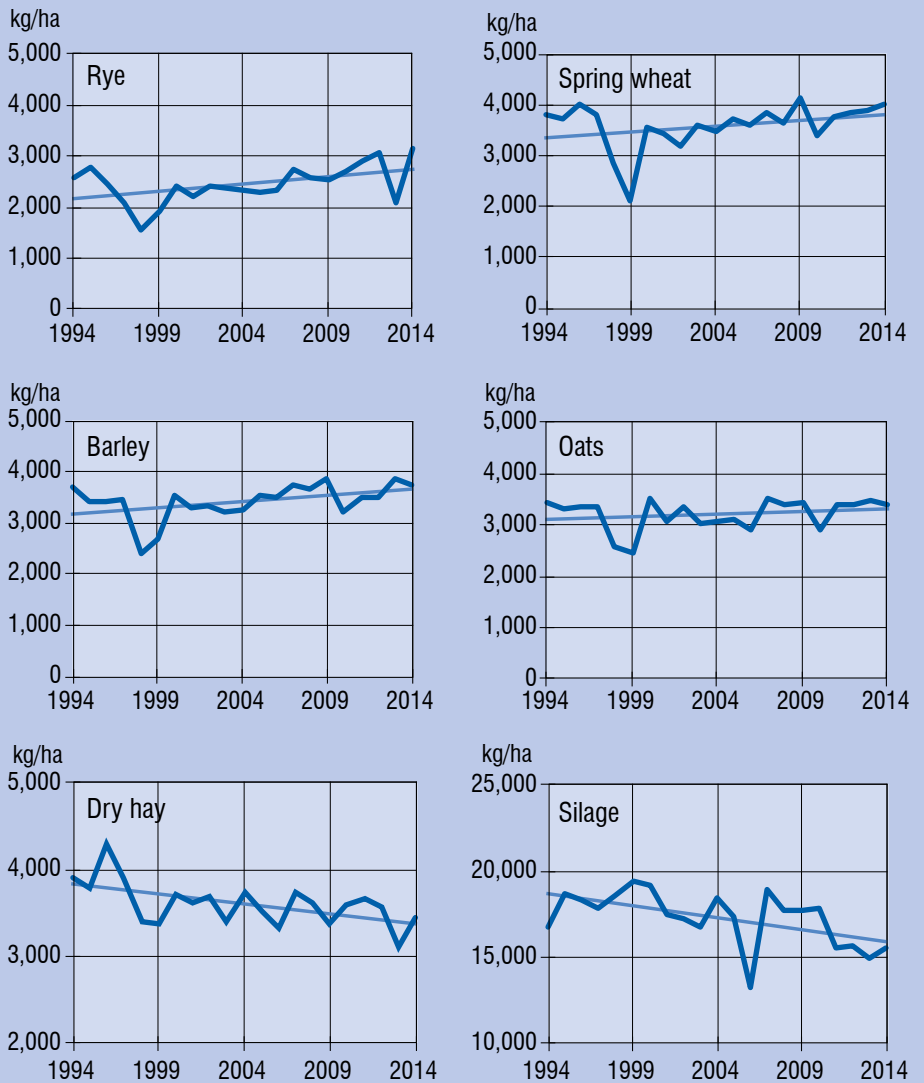
Source: Natural Resources Institute Finland (Luke), Statistical services.

creased from the previous year, and the total cereal crop was 2% higher than in 2013.

Feed cereals were grown on 825,500 ha in 2014, and the yield totalled 2,965 million kg. Around 1,483 million kg of this was barley. The cultivation area and total output of feed cereals decreased from the year before. The quality was not as good as in 2013.

About 72% of the feed barley crop reached a hectolitre weight of more than 64 kg, which is a little less than in the previous year. There was regional variation in the quality of the crop. In Southwest Finland, 97% of the crop was above the hectolitre weight of 64 kg, but in Central Finland only 30% of the crop reached this hectolitre weight.

The hectolitre weight of oats was, on average, lower than the year before: 87%



Yields of main crops in Finland from 1994 to 2014. Source: Natural Resources Institute Finland (Luke), Statistical services.

of the crop was above the hectolitre weight of 52 kg, which is the minimum requirement commonly used by the feedstuff industry. Only 17% of the oats crop was above the hectolitre weight of 58 kg usually required for grits, while in 2013 a third and in 2012 more than half of the oats crop was fit to be used for grits.

The yield of malting barley in 2014 was 376 million kg, down by 7% from 2013. About 160 million kg, or 43% of the crop, fulfilled the protein content and grain size required for malting.

In 2014, the total area under bread cereals was 291,100 ha and the total yield harvested was 1,163 million kg. This was as much as 30% higher than in 2013 due to the increase in the cultivation area and the higher average yields.

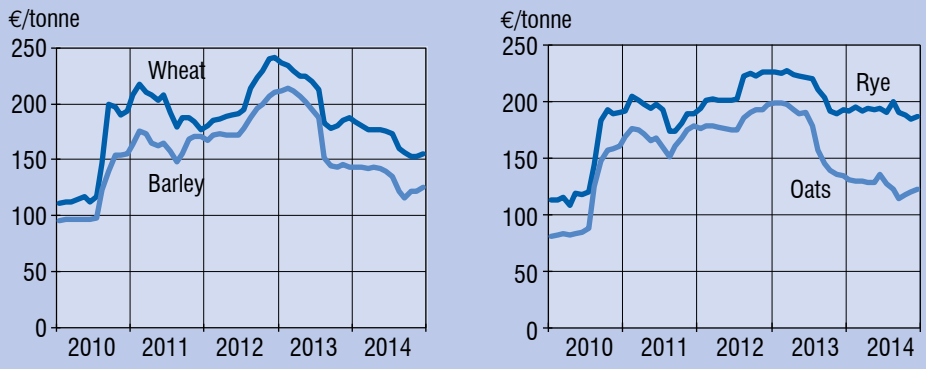
The total yield of wheat harvested in 2014 represented a record high. The yield of winter and spring wheat was 1,088 million kg, of which around 37% fulfilled the quality criteria for bread wheat. The yield of spring wheat totalled 911 million kg, up by 10% from the previous year, and that of winter wheat 177 million kg. The area under winter wheat nearly tripled from 2013. The average yield of winter wheat was 4,350 kg/ha, which is considerably higher than the long-term average. The quality of the crop was slightly weaker than in 2013 due to lower falling numbers and hectolitre weights than in the previous years. The quality of bread wheat was mainly affected by the low protein content, as in the year before.

The area under rye was 23,700 ha in 2014, double that in 2013. The total yield of rye, 75 million kg, was as much as three times the yield in the previous year. 84% of the crop was fit to be used as bread cereal. The area sown with rye in the autumn of 2014 was 36,800 ha, which is 60% more than the year before.

The silage area in 2014 was 471,600 ha, a little larger than in 2013. The total yield was 7,327 million kg, up by 5% from the year before. The average silage yield of 15,540 kg/ha, was just below the average.

The dry hay area fell from the previous year to 93,100 ha, and the total yield of 325 million kg was 12% higher than in 2013. The average yield of dry hay was 3,460 kg/ha, which is higher than the year before and close to the ten-year average. The pasture area decreased from 2013 to 70,200 ha.

The potato crop was slightly smaller than in the previous year. The total yield in 2014 was 600 million kg, down by 3% from 2013. The cultivation area of potato was 22,000 ha, roughly the same as in 2013.



Market prices of cereals in Finland from 2010 to 2014. Source: Natural Resources Institute Finland (Luke), Statistical services.

The total yield of sugar beet was much higher than the year before. The yield in 2014 was 626 million kg, showing an increase of 30% from 2013. The average yield per hectare was also higher than usual, 45,820 kg, while the long-term average in Finland is 38,740 kg/ha.

Prior to 2013, the cultivation area of sugar beet was in decline, but this trend was reversed in 2013 when the area grew by around 500 ha from the year before. In 2014, the cultivation area was as much as 1,700 ha larger than in 2013.

The cultivation area of oilseed crops has decreased in Finland for two consecutive years. In 2014, the area totalled 43,000 ha, which is 9,600 ha less than in 2013. The total yield, 63 million kg, was also smaller than in the previous year. Turnip rape was cultivated on 28,300 ha, an area that was one-fifth smaller than it was in 2013. The total yield of turnip rape was 33 million kg. The average yield per hectare, 1,170 kg/ha, was below the long-term average. However, the average yield of oilseed rape in 2014, 1,970 kg/ha, was above the long-term average.

Market prices for arable crops

Cereal prices in 2014 were lower on average than the year before, and they decreased during the year due to large crops in the world's most significant production areas.

The average price of feed barley was considerably lower in 2014 than in 2013. In January 2014, the price was €143/tonne. Over the course of the year, the price declined by 13% so that in December 2014, it was as low as €125/tonne.

The average price of malting barley was about a quarter lower than the average price in 2013. However, the price remained steady throughout 2014: it was €159/tonne in January and €158/tonne at the year-end.

As with other cereals, the average price of oats in 2014 was lower than in the previous year. The price dropped only marginally over the course of the year, from an average of €131/tonne in January to €123/tonne in December.

Compared to other cereals, the price of wheat declined the most in 2014: it was €179/tonne, on average, at the beginning of the year but only €140/tonne in December. Rye also fetched a lower price in 2014 than in 2013, but the drop during the year was moderate: the price was €195/tonne in January and €186/tonne in December.

The prices of oilseed crops also fell during the year. The average price of turnip

Market prices of cereals in Finland from 2004 to 2014, €/1,000 kg.

	Rye	Wheat	Barley	Oats
2014	195.60	169.51	131.51	125.03
2013	217.52	204.20	174.30	169.25
2012	213.58	203.49	186.72	186.21
2011	186.89	196.91	162.40	166.14
2010	159.71	147.39	112.58	115.71
2009[1]	134.15	131.95	93.93	86.41
2008	207.02	189.14	160.71	137.80
2007	192.19	159.90	145.80	149.73
2006	139.81	110.50	102.00	107.26
2005	118.41	106.20	99.51	87.13
2004	120.90	119.80	106.51	87.32

[1] Statistics has changed. Quality-adjusted price paid to farmers on delivery to first customer
Source: Luke, Statistical services

Market prices of cereals in 2013, €/1,000 kg.

	Rye	Wheat	Barley	Oats
Belgium	124.1	198.7	173.2	124.9
Denmark	167.0	205.0	190.3	155.9
England	-	219.5	186.0	167.9
Finland	217.5	204.2	-	139.9
Germany	201.7	202.6		186.4
Poland	-	190.0	175.3	127.1
Sweden	153.7	193.0	156.0	139.9

Source: Eurostat.

rape and oilseed rape in 2014 was €362/tonne, while the average price in 2013 was €409/tonne. The price was the highest in April 2014, €395/tonne, after which it declined steadily towards the end of the year.

The price of ware potato was low throughout 2014. The average price was €150/tonne, whereas in 2013 it was €240/tonne. The price of potato remained low for the first half of the year, rising to €180/tonne in August. Then the price fell rapidly to €150/tonne, which was the same as the price paid in December 2013.

Cereal prices in Finland were below the prices paid in Central Europe all through 2014. On the domestic market, the prices are slow to react to a rise in the price level, while a drop in EU prices is quite rapidly reflected on the Finnish market. Strong fluctuations in the prices have become a permanent feature on the cereal market, which means that farms should prepare for the market risks caused by these fluctuations better than before.

2.3. Horticultural production

In Finland, horticulture is considered to comprise vegetable production in the open, the production of cultivated berries and apples, nursery production and greenhouses. In some cases, the cultivation of mushrooms and potato production under cover are also included in horticultural production.

Cultivation areas and horticulture enterprises

In 2014, the area of horticultural production in the open was 15,700 ha. The total area remained roughly the same as in 2013. The production areas of fruits and vegetables grown in the open grew slightly from the year before, whereas that of berries contracted a little. The areas under vegetables and ornamental plants in greenhouses decreased somewhat from 2013.

In 2014, there was a total of 3,500 horticultural enterprises in Finland. Of these, 2,800 farms were engaged in production in the open and 1,200 farms in greenhouse production. Some of the farms had both outdoor and greenhouse production. In 2014, the average area of production in the open was 5.80 ha/enterprise and the average area of greenhouse production was 3,255 m^2/enterprise.

Satakunta and Southwest Finland are significant areas for vegetable cultivation in the open, and North Savo is an important berry production region. Most of the apple production takes place in the Åland Islands, south-western Finland and Western Uusimaa. Much of the greenhouse production of vegetables is concentrated

Areas under horticultural production in 2008–2014, ha.

	2008	2009	2010	2011	2012	2013	2014
Production in the open, total	15,533	15,734	16,032	16,213	15,753	15,708	15,736
Vegetables grown in the open	8,146	8,378	8,731	9,034	8,562	8,650	9,100
Berries	6,300	6,278	6,206	6,094	6,100	6,028	5,918
Fruits	690	685	696	702	700	706	718
Greenhouse production, total	392	375	369	360	335	341	331
Vegetable production	240	231	231	226	211	220	218
Ornamental plants	152	143	138	134	124	122	112

Source: Luke; Finnish Agency for Rural Affairs.

in Ostrobothnia, in and around Närpiö in particular.

Weather conditions

The weather at the beginning of the year was mild and dark. Greenhouse vegetables grown under natural light suffered, and their crops were delayed by a couple of weeks to late March. Plotted plants also suffered from the dark weather in the early winter. Significant savings were not achieved due to the mild weather, since more light was needed and energy consumption in greenhouses remained at least the same as before.

Spring arrived early, and the sowing and planting of vegetables in the open began a littler earlier than usual, in late April. However, cold nights and cool days at the beginning of the summer slowed the growth of plants. Early crops were slow to ripen because June was exceptionally cool. Plants that require warmth, such as gherkins and beans, were especially affected by the cool weather. The strawberry crop also remained smaller than usual, and the crop ripened slowly.

The cool June was followed by the hot and dry months of July and August. The hot weather and the lack of rain in particular were harmful to most cultivated plants. For example, cabbages were smaller than usual. Greenhouse vegetables also suffered from the heat, and the yield of tomatoes was lower than usual.

Apples constituted an exception: they benefited from the sunny, warm end of the summer, resulting in a high-quality crop and fruits with just the right amount of colour and flavour. For root vegetables, the warm and dry autumn meant that the weather was ideal for harvesting.

Production in the open

In terms of area, garden peas are by far the most common vegetable, with a cultivation area of almost 3,030 ha in 2014. In terms of yield, however, the most important vegetable is the carrot, with an output of 74 million kg. It was cultivated on 1,650 ha of land.

Other important vegetables were onions (1,150 ha) and cabbages (585 ha). Outdoor vegetables were cultivated under production contracts on 1,700 ha. The

Areas under the most important horticultural products grown in the open and yields in 2014.

	Area ha	Yield kg/ha	Total 1,000 kg
Vegetables grown in the open			
Garden pea	3,030	2,245	6,802
Carrot	1,652	44,928	74,221
Onion	1,150	22,749	26,161
White cabbage	585	41,388	24,212
Cauliflower	262	9,947	2,606
Beetroot	430	29,205	12,558
Swede	352	40,020	14,087
Gherkin	182	49,973	9,095
Chinese cabbage	138	16,188	2,234
Other plants	1,361	9,966	13,564
Total	9,142	20,295	185,540
– share of contract production[1]	1,702	30,832	52,468
Berries and apples[2]			
Strawberry	3,298	3,899	12,858
Black and green currant	1,449	791	1,146
Raspberries and raspberry-arctic bramble cross bred	408	1,900	775
Other berries	639	1,252	800
Total	5,794	2,689	15,579
– share of contract production[1]	770	1,787	1,376
Apple	669	7,789	5,211

[1] 2013 instead of 2014, [2] Crop yielding area
Source: Luke, Horticultural Statistics.

main vegetables cultivated for the processing industry were garden peas, carrots and beetroots.

Strawberries are by far the most significant berry plant in terms of both area and total yield. In 2014, the cultivation area of strawberries was 3,300 ha and the total yield was 13 million kg.

Other important berries were black and green currants, cultivated on 1,450 ha, and raspberries and a hybrid between the raspberry and the Arctic bramble, cultivated on 400 ha. Blackcurrants are by far the most significant berry cultivated under production contracts with the processing industry, representing 73% of the contract production area. A little under 800 ha of the area under berries is covered by contracts. The cultivation area of fruits, mainly apples, totalled 670 ha in 2014.

Greenhouse production

Greenhouse vegetables were cultivated on 253 ha and ornamental plants on 127 ha in 2014. The total output of greenhouse vegetables was 83 million kg. Tomatoes are the most important greenhouse vegetable in terms of both cultivation area and yield. In 2014, tomatoes were grown on 104 ha and the total yield was 40 million kg. Around 30 ha of the area is cultivated round the year, while the rest is only cultivated in summertime.

In 2014, cucumbers were grown on 59 ha, of which 20 ha is cultivated rount the year. The total yield of cucumbers was 38 million kg. Finnish cucumbers account for 80% of all cucumbers sold in Finland.

Potted vegetables were produced on 33 ha in 2014. Most of the production area of potted vegetables is cultivated round the year. Lettuce is the most important potted vegetable, with a cultivation area of 27 ha. A total of 108 million potted vegetables were produced in 2014.

The production of cut flowers in greenhouses continued to decline. The area under cut flowers and ornamental foliage was 4 ha in 2014, compared to 50 ha in

Areas under greenhouse vegetables (m^2) and yields (kg/m^2) in 2014.

	Area 1,000 m^2	Yield kg/m^2	Total 1,000 kg
Total[1]	2,202	38	83,058
Tomato	1,040	38	39,890
Cucumber	589	65	38,386
Other vegetables	573	8	4,782

[1] Does not include potted vegetables.
Source: Luke, Horticultural Statistics.

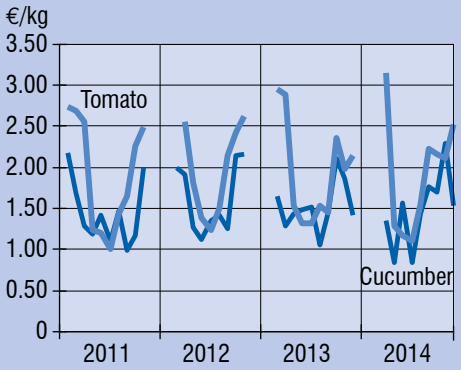
Producer prices for the most important horticultural products in 2008–2014, €/kg.

	2008	2009	2010	2011	2012	2013	2014
Greenhouse production							
Rose (€/unit)	0.47	0.46	0.47	0.45	0.45	0.48	0.61
Tomato	1.40	1.32	1.58	1.50	1.74	1.77	1.69
Cucumber	1.21	1.21	1.27	1.26	1.40	1.49	1.38
Production in the open							
White cabbage	0.56	0.42	0.49	0.48	0.52	0.65	0.62
Onion	0.48	0.43	0.56	0.57	0.56	0.69	0.65
Carrot	0.48	0.47	0.49	0.56	0.64	0.72	0.62
Strawberry	3.90	3.52	3.24	3.58	3.49	3.56	4.43
Apple	1.28	1.20	1.48	1.59	1.57	1.66	1.60

Sources: Kasvistieto Ltd.; Glasshouse Growers Association.

2000. Roses are the most important cut flower.

The production of flowering potted plants has remained rather steady, at 11 million. The production of bulbous flowers fell slightly from the year before to 64 million in 2014. The most important potted plants were daffodils (3.7 million), poinsettia (1.8 million) and winter-flowering begonias (1.4 million). Tulips were the most common bulbous flowers, with a total production of 59 million. The production of bedding plants amounted to 39 million, and violets were the most important with a production of 11 million.



Producer prices for greenhouse cucumbers and tomatoes from 2011 to 2014, €/kg. Source: Kasvistieto Ltd.

Organic horticultural production

In 2013, organic vegetables were grown in the open by 154 enterprises on a total of about 200 ha. Measured by area, the most important organic vegetables were carrots (59 ha), garden peas (36 ha) and onions (33 ha). Organic vegetables accounted for 2% of both the area cultivated and the total yield.

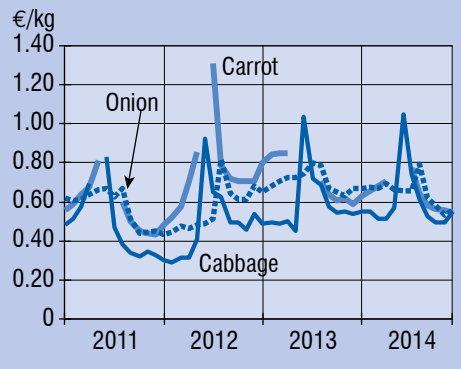
Organic berries were produced by 236 enterprises on 450 ha. In terms of area, currants were the most common organic plant (265 ha). Organic strawberries were grown on 109 ha and apples on 31 ha. The share of organic berries of the production area was 8%, but they only accounted for 1% of the total yield.

Horticultural product market

Strong seasonal and annual variations are characteristic of the producer prices and volumes of horticultural products grown in the open. Producer prices are typically low during the main crop season, when the domestic supply is high. The supply decreases during the storage period, which usually raises the prices.

As regards the prices of storage vegetables, such as carrots, cabbages and onions, it should be noted that they include crops from two different seasons. In the early part of 2014, crops from 2013 were still being sold and it was not until the summer, when the first early vegetables came to the market, that the conditions of the 2014 crop season began to influence the prices.

At the beginning of 2014, the stock levels of onions, carrots and cabbages were normal and there was room in the market. Carrots kept well, and there were enough of them in stock until April–May. Some spoilage caused by *Fusarium* occurred in onions during storage, and the crop lasted until March–August. All cabbages were



Producer prices for certain vegetables grown in the open from 2011 to 2014, €/kg. Source: Kasvistieto Ltd.

sold on the domestic market, and exports were not needed.

The price of greenhouse vegetables were high early in the year. The demand at times exceeded the supply, keeping the prices up. In late March, when crops of plants grown under natural light began to ripen, the prices of cucumbers and tomatoes plunged. Tomato prices remained lower than the previous year throughout the summer. The market for greenhouse lettuce was balanced all through the winter season, with the prices remaining stable.

Return calculation

The return calculation of horticulture comprises the value of the crop produced at producer price and the calculated support payments for the horticulture production area and products in storage.

The horticultural returns forecast for 2014 are the highest in history, almost €571.1 million. The growth from the previous year is due to an increase in the production area and total yield of vegetables grown in the open, along with good producer prices. The value of berry and fruit production also grew from the year before. This was due to the expansion of the apple production area and the higher total yield. Berry production increased in value because the average price of strawberries remained rather high.

In greenhouse production, the record-high value of the previous year could not be achieved. No significant changes occurred in the total yields of the most important greenhouse vegetables, but the average price was lower than in 2013, resulting in a lower value of production. The value of flower production remained almost unchanged.

Return calculation of horticulture at current prices, € million.

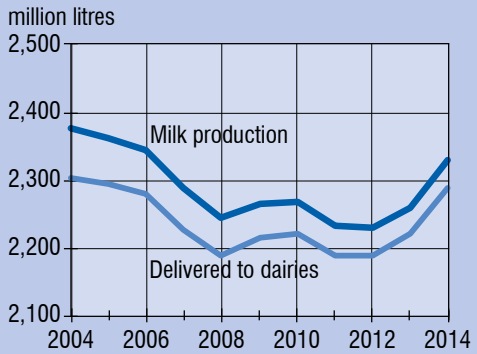
	2008	2009	2010	2011	2012	2013	2014e
PRODUCTION IN THE OPEN							
Vegetables	96.6	102.2	106.9	130.8	109.9	136.7	148.5
Berries and fruits	55.4	54.2	48.1	66.1	66.9	64.9	74.9
Nursery production	30.0	32.1	34.1	34.1	27.1	28.4	28.4
Total	182.0	188.5	189.1	231.0	203.9	229.9	251.7
GREENHOUSE PRODUCTION							
Ornamental plants	99.0	97.5	88.1	82.8	80.8	79.6	79.7
Vegetables	147.7	150.4	151.9	183.7	160.0	196.2	191.5
Total	246.7	247.8	240.0	266.5	240.8	275.8	271.3
Return at producer price, total	428.7	436.3	429.0	497.4	444.7	505.7	523.0
SUPPORT PAYMENTS							
Support for greenhouses	37.3	36.5	36.5	35.6	32.9	29.9	29.6
Storage aid for horticulture products	2.0	2.1	2.1	2.0	2.1	2.4	2.5
Environmental support	9.0	9.0	9.1	9.3	8.9	8.8	9.0
Single payment	3.1	3.2	3.3	3.4	3.3	3.2	3.3
LFA support	2.8	2.8	2.9	2.9	2.8	2.8	2.8
Other support	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Total	55.1	54.5	54.8	54.1	50.9	48.0	48.1
RETURN ON HORTICULTURE, TOTAL	483.8	490.8	483.8	543.9	492.8	547.5	571.1

Sources: Luke; Finnish Agency for Rural Affairs; Kasvistieto Ltd.; Finnish Glasshouse Growers' Association.

2.4. Livestock production

Milk

The amount of milk delivered to dairies in 2014 totalled 2,288 million litres, which was 3% or 68 million kg more than in 2013. Previously this much milk was produced in year 2005. The production of organic milk totalled about 47.2 million litres (+14%). The number of calves born in 2014 was 247,000.



Milk production and the amount of milk delivered to dairies in Finland from 2004 to 2014. Source: Luke, Statistical services.

In the 2013/2014 quota period, milk production in Finland totalled 2,242 million litres, up by 3% (61 million l) from the previous period. TNS Gallup Food and Farm Facts has estimated that the milk output of 2015 will total 2,296 million litres (+3%), which is 9% below Finland's quota.

The number of milk producers decreased by 5% in 2014. At the end of the year, milk was produced on 8,373 farms, of which 143 (+9%) were organic farms. The number of dairy farms has decreased by 63% since the beginning of the century, but milk production has only gone down by 3%.

The average milk yield per dairy cow rose by about 2% and was estimated to have exceeded 8,000 kg. The number of dairy cows per farm was 36.6 at the end of 2014. A fifth of the farms have 40 or more cows, and half of all dairy cows are on these farms. In total, there are about 200 farms which 100 or more dairy cows.

In December 2014, there were around 282,900 dairy cows, which is 900 cows more than the year before. The number of dairy cows rose in 2013–14.

The consumption of milk products grew by 1.5% in 2014. Although domestic milk consumption exceeds production, considerable amounts of certain individual products need to be exported. A major share of the fat contained in the milk produced in Finland continues to be used in the manufacture of export products, influencing the export volumes of butter, for example. Instead, the protein fractions in milk find use in Finland. Imports of liquid milk are low, but foreign products account for a significant share of some product groups, such as cheeses (49%) and yoghurt (27%).

Butter exports increased by nearly 5% in 2014. A total of 76 million kg (–7%) of liquid milk products (including buttermilk, yoghurt and sour products) was exported, and imports of these products amounted to 46 million kg (–4%). Almost half of the liquid products exported and more than two-thirds of the liquid products imported are yoghurts. Cheese imports totalled 70 million kg (+1%) and cheese exports 33 million kg (–29%). Over the past 20 years, an upward trend has been seen in the consumption of imported cheese, with an annual rate of 1–2 percentage points. The consumption of fresh cheese has also increased, while that of aged cheeses has decreased.

Beef

In 2014, meat production in Finland, including all farm animal species, totalled 383 million kg and consumption 407 million kg. In addition to beef, sheep meat and turkey meat, pigmeat production also fell short of consumption.

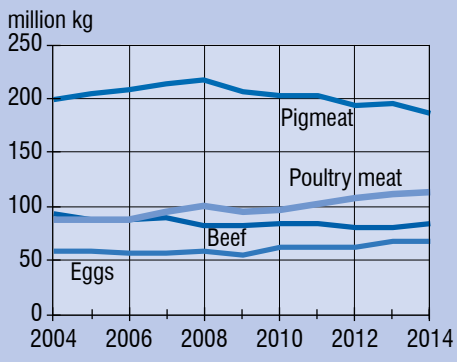
Beef production in Finland totalled 82.3 million kg in 2014, showing growth of 2% from the year before. Beef consumption increased by 2% to 101.4 million kg. Nearly 21% of the meat consumed was imported. TNS Gallup Food and Farm Facts has forecast that in 2015 beef consumption will be 102.2 million kg and production 83.5 million kg.

The number of cattle slaughtered was 270,306 (+1.4%), of which 52% were bulls, 31% cows and 16% heifers. The average slaughter weight of bulls was 341 kg (+4.5 kg), that of heifers 243 kg (+2.6 kg) and that of cows 282 kg (+1.5 kg).

The number of farms specialising in beef production was 3,200, of which 1,700 had suckler cow production. The number of suckler cows has more than doubled during the 2000s. In December 2014, there were 56,777 suckler cows in Finland (+2%).

The number of calves sold was 119,900 (+1%), of which 85% were colostrum calves. The average weight of calves sold for rearing was 115 kg.

In 2014, a total of 21.3 million kg of beef was imported to Finland and 2.1 million kg was exported. Imports fell by 9% and exports grew by more than a quarter, although the export volume was rather small. More than half of the processed beef product imports still came from Sweden, where Finnish meat companies also operate. The total amount of beef imported from Poland, Denmark, Germany and the Netherlands accounted for three-quarters of the imports. Most of the beef exports went to Sweden.



Production of beef, pigmeat, poultry meat and eggs in Finland from 2004 to 2014. Source: Luke, Statistical services.

Pigmeat

Pigmeat production in Finland totalled 186 million kg in 2014, which was 4% less than in the previous year. Previously pigmeat production was this low in 2002. Pigmeat consumption decreased by 3% to 188 million kg. The profitability of production was affected by lower producer prices and the tightening market situation due to the restrictions on exports of EU pigmeat. TNS Gallup Food and Farm Facts has estimated that pigmeat production would fall to 182 million kg, while consumption would stay at 187 million kg in 2015.

The number of pigs slaughtered in Finland was around 2 million (–4%). The average slaughter weight of fattening pigs was 88.8 kg. Over the past decade, the average slaughter weight has risen by almost 7 kg.

Pigmeat exports amounted to 29.7 million kg (–14%) and imports to 33.7 million kg (+3%). Finland's imports were once again higher than exports. As with other types of meat, the carcass parts that are exported are in part different from the parts that are imported. Finland has traditionally exported carcass meat, but the share of meat pieces in exports has risen in recent years. Most of the exports went to Estonia, Sweden, New Zealand, Japan and South Korea. Exports to Russia dropped by 80%.

Of all the pigmeat consumption, 18% was covered by imported meat, mainly originating from Germany and Denmark. Imports from the latter decreased from the year before. Since 2000, Germany has consider-

ably increased its production of pigmeat. Most of the processed meats came from Germany and Sweden.

Poultry meat

In 2014, poultry meat production in Finland totalled 113.4 million kg and consumption 105.7 million kg. Production grew by 2% and consumption by 5% from 2013. Approximately 90% of the poultry meat produced in Finland is broiler.

Broiler meat production totalled 104.6 million kg (+2%) and turkey meat production 7.3 million kg (–1%). Besides these, 1.5 million kg of other types of poultry meat was produced. Turkey meat production was only around 50% of the production in the peak year of 2005. Of the meat consumed, 102 million kg (+5%) was broiler meat and 8.6 million kg (–2%) was turkey meat.

According to TNS Gallup Food and Farm Facts, poultry meat consumption in 2015 will total 114.2 million kg, of which 105 million kg will be broiler meat and 8.8 million kg will be turkey meat. The production is forecast at 115.4 million kg, of which 108 million kg will be broiler meat and 7.3 million kg turkey meat. The market outlook for broiler in the next few years seems more favourable than that for other production sectors, with mainly growth to be expected.

The number of broilers slaughtered increased by 2.1% from the previous year, but the average slaughter weight (1.66 kg) was about the same. The number of turkeys slaughtered rose by 2.3%, but the average slaughter weight (9.2 kg) was a little lower than in 2013.

In 2014, a total of 14.4 million kg of broiler meat (+10%) and 3.3 million kg of turkey meat (+3%) was imported to Finland. Most of the broiler imports were processed products, whereas most of the turkey meat was pieces and carcass meat. Broiler meat and meat products were imported mainly from Brazil, Thailand, Germany and the Netherlands.

Imports covered 14% of the broiler meat consumption and as much as 38% of the turkey meat consumption. Most of the turkey meat imports came from Poland and Germany, which are among the largest turkey meat producers in Europe. A major share of the carcass meat imports was boneless meat.

Broiler meat exports from Finland amounted to 16.8 million kg (–15%) and turkey meat exports to 1.8 million kg (–18%). Exports consisted mainly of

Livestock production in Finland from 2004 to 2014.

	Dairy milk million litres	Beef million kg	Pigmeat million kg	Eggs million kg	Poultry meat million kg
2014	2,289	82	186	67	113
2013	2,220	80	195	67	111
2012	2,188	80	193	62	107
2011	2,190	82	202	63	102
2010	2,222	82	203	62	96
2009	2,215	81	206	54	95
2008	2,188	80	217	58	101
2007	2,226	87	213	57	95
2006	2,279	85	208	57	88
2005	2,293	84	203	58	87
2004	2,304	91	198	58	87

Source: Luke, Statistical services.

pieces with bones, and they mostly went to Russia and the Baltic countries. Estonia and Russia were the largest receivers of turkey exports. Most of the exports were bone-in and boneless pieces.

Eggs

Egg production in 2014 totalled 67.1 million kg, which was about the same as the year before. Besides this, about 1% of the production has in recent years been sold directly or used on farms. Of the eggs produced, 33% came from barn and free-range systems, 62% from enriched battery cage systems and 5% from organic production. The production of organic eggs increased by 11%; however, it only totalled 2.8 million kg. Production in barn and free-range systems decreased by 3% and production in battery cages grew by 1%.

The production of eggs in unenriched cage systems has been prohibited since the beginning of 2012. Production in battery cages has increased by 8% from 2011.

The consumption of whole eggs in Finland totalled 59.2 million kg (+2%) in 2014. Around 5%, or 2.9 million kg (+32%), of these eggs were imported. The amount of eggs used in egg products was 7.9 million kg (–4%).

Egg exports totalled 11.2 million kg, of which whole eggs accounted for 7 million kg (–9%) and egg products 4 million kg (+11%). About one-sixth of the production was exported.

The number of laying hens (3.6 million) at the beginning of April 2014 was 6% higher than in 2013, but the number of chicks (714,100) had decreased by 17%. This may indicate that production will decrease in 2015.

Producer prices

The market prices for livestock products in the EU influence their prices in Finland, but Finnish prices have certain special characteristics. The market prices for pigmeat and milk, for example, vary less in Finland than in many other EU countries. Finland has an oversupply of eggs, and their producer price has been low compared to other parts of the EU. The prices paid to Finnish milk producers are slightly higher than in other parts of the EU on average, and in Finland the seasonal variation in prices is also greater.

The producer prices of the most important livestock products in Finland from 2004 to 2014 including production support (€/100 kg, milk €/100 l)[1].

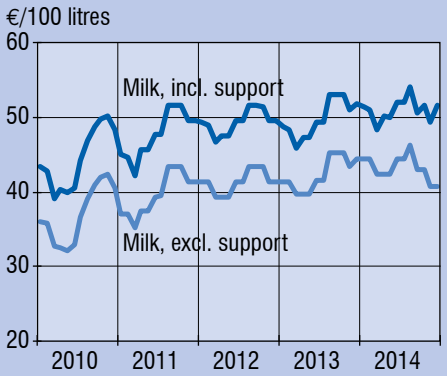
	Milk	Beef	Pig-meat	Poultry meat	Eggs
2014	45.60	303	158	148	100
2013	47.27	311	174	154	117
2012	46.26	281	163	142	116
2011	43.90	253	146	131	96
2010	40.59	240	137	120	88
2009	40.11	247	141	124	87
2008	44.79	241	144	130	92
2007	39.05	221	132	114	77
2006	36.90	212	126	109	62
2005	35.55	205	128	114	60
2004	36.37	190	120	117	74

[1]The milk producer price comprises the price of standard milk which includes the quality portion and other premiums but not production subsidies or quota payments. The estimated retroactive payment of 1.05 cents/l has been added to the 2014 price of milk.
Source: Luke, Statistical services.

Market prices for livestock products in selected EU countries in 2013, €/100 kg[1].

	Milk	Pigmeat	Beef (bull)	Poultry meat[2]	Eggs[3]
Finland	44.91	178.07	407.59	269.70	118.4
Sweden	38.71	189.38	404.88	248.94	208.9
Denmark	37.11	159.51	399.34	256.98	178.3
Estonia	32.95	173.66	305.78	181.54	103.6
Germany	35.89	173.97	384.18	261.80	107.7
France	33.86	178.07	407.59	269.70	107.9

[1]The average price of January–December, except for milk January–September. [2]Sale price at slaughterhouse, [3]Sale price at packaging plant.
Source: European Commission.



Producer price of milk in Finland from 2010 to 2014. Source: Luke, Statistical services.

In 2014, a downward trend was seen in the market prices for livestock products. The milk and pigmeat markets in particular were affected by the restrictions imposed by Russia on EU food exports. For example, the producer price for milk in the EU was, on average, 18% lower in December 2014 than in December 2013.

In 2014, the average producer price for standard milk with quality premiums was €44.55/100 l (+2%). Additionally, €7.88/100 l was paid as production aid. The average price for grade I standard milk was €40.62/100 l, meaning that the share of quality premiums in the price was €3.93/100 l. The final price of milk is determined when the dairies complete their financial statements and the patronage refunds based on the results are decided. In 2013, the average patronage refund was €3.79/100 l. It is estimated that the refund for 2014 will be small, as the restrictions imposed by Russia on milk imports reduced the price of milk at the end of 2014.

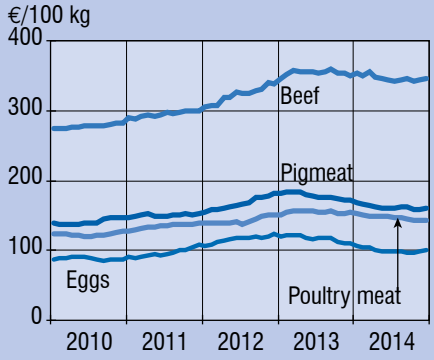
The average price paid to producers for bull meat in 2014 was €3.47/kg, down by 2% from the previous year. The average price of all types of beef was €3.03/kg (–2%). The price of heifer meat was €2.92/kg and that of cow meat €2.12/kg. Beef prices in Finland were slightly higher than the EU average. In the long term, however, the prices in Finland have been close to the EU average.

The price paid for a male colostrum calf was €135, which is nearly 11% lower than the year before. The price paid for a female calf also fell by 12% to €81.

The pigmeat market also suffered from Russia's import restrictions. The average price paid for pigmeat was €1.58/kg (–10%), while the average price for fattening pigs was €1.62/kg (–9%). The average price paid for piglets (30 kg) was €62.5 (–6%). The Finnish prices for both piglets and pigmeat were above the EU average.

The average price paid for broiler meat was €1.46/kg (–4%). Compared to other EU countries, the price is below the EU average, but the product used in the comparison (whole broiler) is not representative of the Finnish market.

In the 2000s, rather strong fluctuations in prices have been observed in the egg market. In 2014, the average price paid for eggs was €0.99/kg, 15% less than in 2013. The prices paid in 2014 for eggs produced in barn systems were 7%–13% higher and the prices paid for organic eggs almost 152%–166% higher than those paid for eggs produced in battery cages.



Producer prices of beef, pigmeat, poultry meat and eggs in Finland from 2010 to 2014. Source: Luke, Statistical services.

2.5. Food market

Consumer prices

The long-term upward trend in food prices was reversed in 2014, with prices falling at an average annual rate of 0.5%. Weak economic development, slow growth of demand and falling raw material prices were the main reasons for lower prices. The general consumer price index rose by 1.0% in 2014.

Food prices increased particularly fast in Finland in 2010–2013, rising by almost one-fifth in three years. Prices continued to climb until May 2013, after which the rise slowed and prices began to decline in 2014.

Prices dropped considerably in February 2015, when lower costs in the food chain were partly passed on to consumer prices. As a result, food prices were 3.3% lower on average than in February 2014.

The prices of meat products rose by an average of 1.5% from 2013 to 2014. The price of pig meat fell by more than 3% and the prices of beef and poultry by around 2%. Meanwhile, fish and shellfish prices rose by a little over 2% in 2014.

Average consumer prices of some foodstuffs in February from 2013 to 2015, €/kg.

	2013 February	2014 February	2015 February
Wheat flour	0.69	0.68	0.67
Rye bread	4.15	4.16	3.78
Beef roast	16.56	17.01	16.20
Slivered pork	9.31	9.37	9.19
Chicken breast fillet	13.81	13.70	13.19
Light milk, €/litre	1.05	1.10	1.04
Emmenthal cheese	13.98	14.28	14.33
Eggs	4.36	3.83	3.58
Butter	6.10	6.14	4.96
Margarine	3.20	3.30	3.26
Tomato	3.48	4.17	4.10
Potato	1.02	0.83	0.88

Source: Statistics Finland, consumer price statistics.

Development of average consumer price index and the consumer price index of foodstuffs in Finland in 2000–2014, 2000=100.

	Price index of foodstuffs	Consumer price index
2014	141.2	127.3
2013	141.9	126.0
2012	133.7	124.1
2011	127.1	120.7
2010	120.7	116.7
2009	125.6	115.3
2008	122.9	115.3
2007	112.8	110.8
2006	110.5	108.1
2005	109.2	106.2
2004	108.9	105.3
2003	108.1	105.1
2002	107.4	104.2
2001	104.4	102.6
2000	100.0	100.0

Source: Statistics Finland.

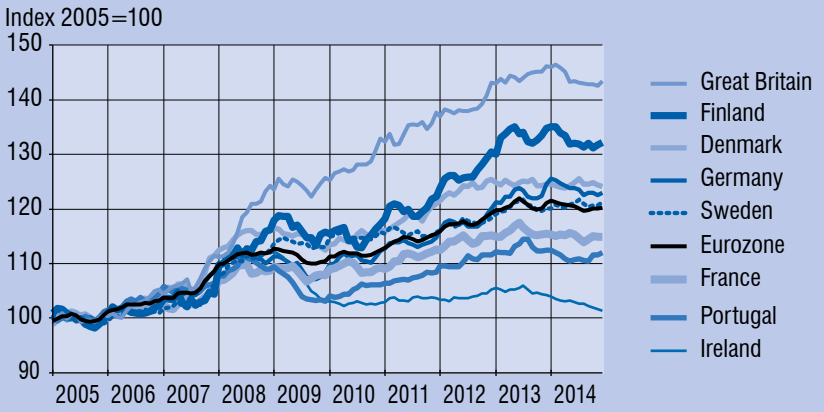
The prices of milk products remained rather stable in 2014. However, these prices decreased in February 2015, ending up nearly 4% lower than in the previous year. The prices of liquid milk and cheese were 6.5% and 4.4% lower respectively than the year before.

Butter prices dropped by an average of 7% in 2014, due to Russia's import bans. In February 2015, butter prices were more than 20% lower than in 2014.

The prices of cereal products remained almost the same in 2014 as in 2013. However, in February 2015 these prices were 3% lower than in the previous year.

Fruit and berry prices declined by a little over 2% in 2014. In February 2015, fruits and berries cost 7% less than the year before. Potato prices also decreased by an average of 4% in 2014, but this is largely explained by seasonal fluctuations in prices, which are rather strong for potatoes and other vegetables.

A reduction in egg prices that began in late 2013 continued in 2014. Egg pric-



Food prices (excluding VAT) in Finland and certain EU countries in 2005–2014.

es plunged by 16.5% from 2013 to 2014. However, this decline stabilised in the middle of 2014. In February 2015, eggs cost 7% less than the year before.

The price of sugar also began to decrease in 2014, falling by 5%. In February 2015, the price was 3% lower than in 2014.

In the 2000s, food prices have increased much faster than consumer prices in general. From 2000 to 2014, the price of food rose by 41% while the general consumer index went up by 27%. Relative to the level of earnings, however, food has become much cheaper, since wages and salaries have increased by 60% since 2000.

According to Statistics Finland, food prices in Finland are 23% higher than the EU average. However, in most Nordic countries food is more expensive than in Finland. One reason why food is still more expensive in Finland than in the rest of the EU is the high value added tax levied on food, which even after the reduction from 17% to 14% is the second highest in the EU-15. Only in Denmark is the tax on

Average consumer prices of some foodstuffs in 2010–2014, €/kg.

	2010	2011	2012	2013	2014	Change % 2013–2014
Light milk, €/litre	0.79	0.84	0.87	1.05	1.10	4.8
Butter	3.86	4.66	5.84	6.12	5.74	–6.2
Margarine	2.76	3.04	3.12	3.20	3.28	1.2
Emmenthal cheese	12.57	13.13	13.82	14.13	14.02	–0.8
Beef roast	12.10	13.54	15.87	16.88	16.74	–0.8
Pork fillet[1]	11.80	11.02	12.37	13.62	12.63	–7.3
Chicken breast fillet	11.28	12.47	13.12	13.75	13.47	–2.0
Eggs	3.00	3.25	3.93	4.25	3.68	–13.4
Wheat flour	0.52	0.61	0.60	0.69	0.68	–1.4
Rye bread, portion size	3.59	3.83	3.85	4.05	3.92	–3.2
Tomato	3.67	3.18	3.24	3.08	3.25	5.5
Potato	0.76	0.68	0.83	0.94	0.87	–7.4

[1] From 2011 pork tenderloin.
Source: Statistics Finland, consumer price statistics.

Consumption of milk products, margarine, meat and eggs per capita in 2003–2013, kg.

	Liquid milk[1]	Butter	Margarine	Cheese	Ice cream (litres)	Beef	Pigmeat	Poultry meat	Eggs
2013	180.2	4.4	..	23.2	..	18.4	35.6	19.5	10.7
2012	181.7	4.2	..	21.9	..	18.9	36.0	19.1	10.6
2011	182.8	4.0	..	21.0	12.3	18.6	36.4	18.2	10.0
2010	183.3	3.3	7.5	19.0	13.6	18.6	34.9	18.2	9.8
2009	183.9	3.0	7.5	18.7	12.9	17.8	34.4	17.5	9.5
2008	186.0	2.8	7.5	18.4	12.6	18.2	35.3	17.2	9.4
2007	189.9	2.5	7.5	17.5	13.3	18.7	34.9	17.6	9.5
2006	183.9	2.8	7.5	19.1	13.7	18.5	34.3	15.8	9.3
2005	184.0	2.6	6.6	18.6	14.0	18.6	33.5	16.1	9.4
2004	186.2	2.8	6.6	18.4	13.2	18.6	33.8	16.0	9.4
2003	185.1	2.7	6.8	16.7	13.7	18.0	33.5	15.8	9.3

[1] Including liquid milk, sour milk products and cream.
Sources: Gallup Food and Farm Facts; Luke, Statistical services.

food higher than in Finland.

Looking at food price trends in 2005–2014, VAT excluded, it can be stated that among the EU-15, only in the UK have prices risen more rapidly than in Finland. The most significant price increases have been seen in the more recent EU Member States, such as Estonia, Lithuania, Hungary and Bulgaria, and in Iceland, which was hit hard by the economic crisis. In EU countries, food prices rose by 0%–3% a year on average in 2006–2014. In 2014, the rise stopped across the EU.

International comparison of prices is complex, however. Prices also depend on various national characteristics and eating habits. For example, the fact that Finnish consumers value the domestic origin and are willing to pay a higher price for Finnish food raises the price level of food shown in the statistics.

Wholesale and retail trade

The total number of enterprises in the wholesale trade sector is around 1,300, but most of these are small companies specialising in the import or delivery of specific product groups, such as alcoholic beverages and tobacco. The market share of these small specialist wholesalers is about one-third.

However, two-thirds of the value of wholesale operations is made up of general wholesalers or operators with broad selections. The field is dominated by a few large enterprises, with two main modes of operation.

Wholesale businesses of retail chains, such as Inex Partners, Ruokakesko and Tuko Logistics, can also be called procurement companies, since their customers are within the same concerns. The other mode of operation is general wholesale trade. These wholesalers provide a broad range of products to the hotel and restaurant sector, kiosks and other individual retail units. The largest general wholesale businesses are Heinon tukku, Metro tukku, Kespro and Meira Nova.

The consolidation trend in the Finnish retail sector has continued for a long time, leading to the two largest chains having a market share of almost 80% in 2014. S-Group in particular has expanded strongly since 2005, increasing its lead over Kesko to more than 10 percentage points. In 2014, S-Group's market share

Market shares of retail companies in 2004–2014.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
S-Group	34.3	35.9	39.9	41.0	42.4	43.2	44.1	45.2	45.6	45.7	45.7
K-Group	35.3	35.9	33.4	33.9	33.7	34.2	35.0	35.3	34.7	34.0	33.1
Suomen lähikauppa*	10.0	10.8	11.9	11.9	11.3	10.2	9.0	7.8	7.3	7.0	6.8
Spar**	6.8	6.2	0.5	-	-	-	-	-	-	-	-
Lidl***	2.8	3.7	4.1	4.7	5.0	5.1	4.8	4.8	5.5	6.6	7.6
Other companies	10.8	9.5	10.2	8.4	7.6	7.3	7.1	6.9	6.9	6.7	6.8
Total	100	100	100	100	100	100	100	100	100	100	100

**Earlier Tradeka. **From 2006 M Group; in 2007–2008 included in "Other". ***estimate*
Source: AC Nielsen.

remained unchanged, while K-Group again lost some market share. According to research firm Nielsen, S-Group's market share was 45.7% and the K-Group's market share 33.1%.

Nielsen estimated the German chain Lidl's market share at 7.6%. Since 2011, Lidl has increased its share by as much as 2.8 percentage points. In 2014, it was ranked the third largest retail chain in Finland. Suomen lähikauppa dropped to fourth place after its market share declined by 0.2 percentage points to 6.8% in 2014.

At the beginning of 2015, the total number of outlets selling daily consumer goods was 3,157.

Nielsen's most recent report shows that the volume of daily consumer goods has grown by only 0.2% a year over the past seven years (Nielsen 2015). Not even during the 1990s recession in Finland was the development of volumes so poor. Growth in 2014 stagnated at 0.1%. The value of the sales of daily consumer goods also grew moderately, by 0.9%, amounting to €16.7 billion.

Due to the recession, consumers are increasingly price-sensitive and are turning to more affordable foods, which has led to a rise in the popularity of discount stores and own brands all over Europe.

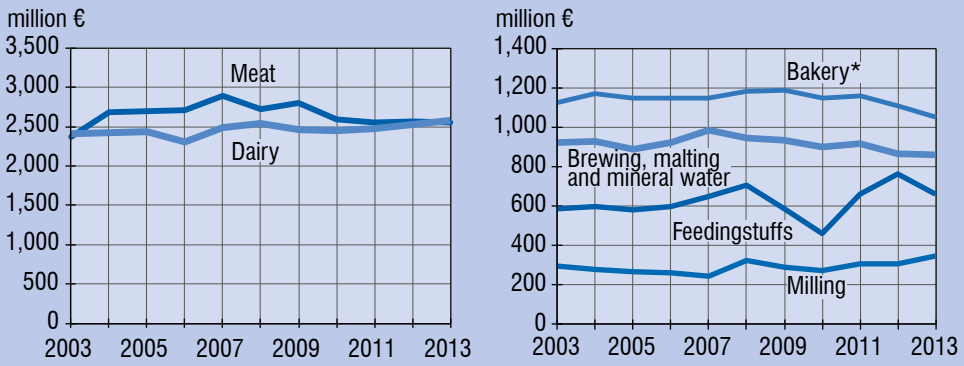
In the Finnish retail sector, these same trends have been visible in the first half of the 2010s. The swift development of Lidl in particular is proof of the popularity of discount stores, and retail chains' own brands have been given much more shelf space than before. Previously, private label (PL) products played a major role in non-food goods and dry foodstuffs, but own brands have in recent years been introduced in an increasing number of product groups. For example, in dairy products they have achieved a significant position over the past three or four years in the sales of liquid milk, fresh products and cheese.

Another trend has been the rising number of speciality shops, such as bread, organic and local food shops. In five years, their number has nearly doubled to 900

Key figures of the Finnish food industry in 2003–2013.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Turnover (at current price, billion €)	8.5	8.9	8.9	9.2	9.7	10.5	10.3	10.2	10.8	11.2	11.0
Turnover (at 2013 price, billion €)	10.1	10.6	10.5	10.8	11.0	11.5	11.2	11.0	11.3	11.4	11.0
Personnel (thousands)	38.2	37.5	36.7	35.9	35.7	34.6	33.5	32.6	33.2	32.5	33.1
Real turnover per person (at 2013 price thousand €)	266	283	286	300	309	332	335	338	341	349	334

Source: Statistics Finland, Finnish Enterprises 2003–2013.



**Includes soft bread, crispbread and biscuit manufacture.*

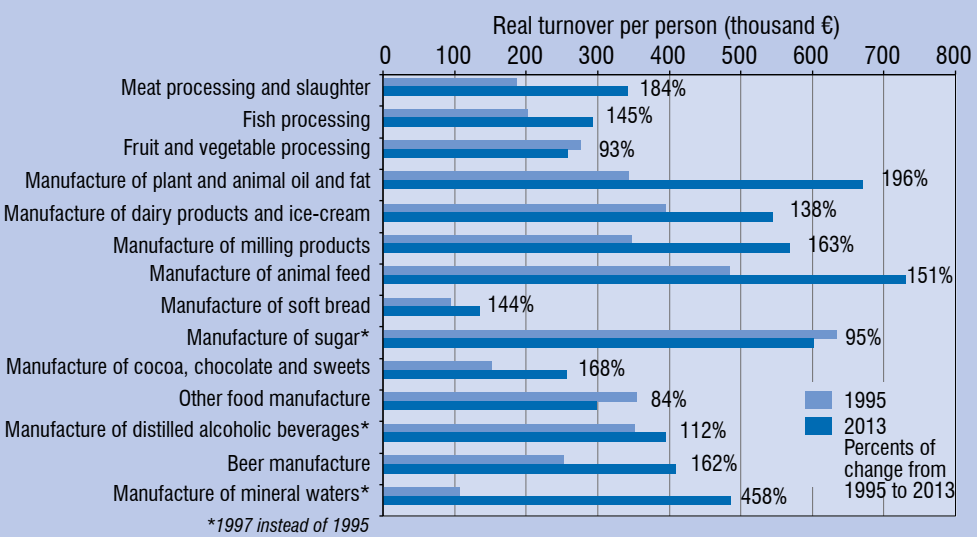
Turnover of Finnish meat and dairy industry and certain other sub-sectors of food industry at 2013 prices.

shops. In 2013, the sales of speciality shops grew by 12%. Although these shops only accounted for 1.7% of the total sales of daily consumer goods, their share exceeded that of online trade, a much talked-about concept (Nielsen 2014).

The increasing number of private label products and the related tendering process, the threat posed by imported goods, and the price level and limited selection of discount stores intensify competition between Finnish suppliers and bring margins down.

Food industry

In 2013, the turnover of the food industry fell by €315 million to €11 billion. The main reason for this decline was probably the reduction in revenues in the Finnish market.



**1997 instead of 1995*

Trend in the real turnover per employee in food industry by sectors. Sources: Statistics Finland, Finnish Enterprises 1995–2013, calculations by Luke.

The number of people employed in the food industry returned to the level of 2011. It exceeded 33,000, which is 555 more than the year before. As a result of the growth of staff by almost 2% and the contracted turnover, the real turnover per person in 2013 decreased by €15,000 to €334,000. This figure dropped for the first time since the end of the 1990s.

There was considerable variation in the development of turnover per person by sector in 2013. Compared to 2012, the ratio fell in the fish, milling, feed and baking industries. These sectors recruited more workers, but their turnover did not increase – indeed, it declined. The baking industry alone employed 370 people more than the year before.

The two main sectors in the Finnish food industry are the dairy and the meat processing industries. The trends in the dairy industry have been rather steady in recent years, while in meat processing the drastic changes in feed prices and difficulties on the export market have pushed the turnover down from the peak figures in 2007. Milk production is much less dependent on cereal than meat production.

2013 was a record year for the dairy industry. Prices on the demand-driven world market remained high, and a new sales record was achieved on the Russian market. For the first time in ten years, the dairy industry generated a higher turnover than the meat industry. Although no official turnover figures are available yet for 2014, it is known that the dairy industry experienced a severe drop, which restored the order of the two largest industries.

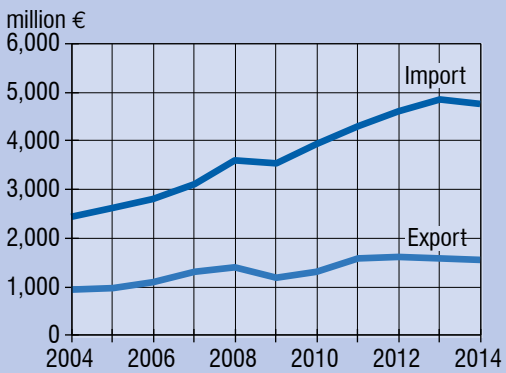
Foreign trade

In 2014, Finland's food exports stayed about the same as the year before for the third year running. The value of food exports totalled €1,562 million, which is around 2% lower than in 2013.

The value of food imports to Finland amounted to €4,767 million, down by 1.8% from the previous year. This drop in imports was unexpected. Over the past two decades, imports have grown steadily and only decreased in four years, each time due to major events: Finland's accession to the EU in 1995, the financial crises in 1999 and 2009, and the sanctions on Russia in 2014.

The special circumstances in 2014 – the embargo on Russia – should have affected exports more than imports. Yet the value of imports has also fallen considerably. There are two explanations for this phenomenon. On the one hand, part of the goods intended for export remained in the domestic market, reducing the need for imports. On the other hand, more affordable meat and milk products and fruits were imported from the EU, meaning that import volumes did not necessarily fall but their prices did.

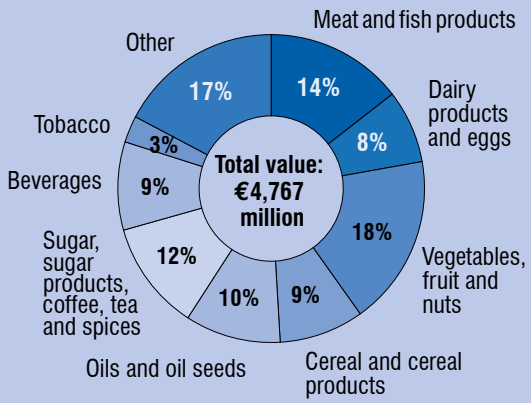
Because of the decrease in the value of imports, the deficit in food trade shrank by €56 million, from €3,266 million to €3,206 million. Despite this slight improvement of the balance, the deficit remained high. Traditionally, the deficit has mainly been due to the large import volumes of fruit, vegetables, raw coffee, alcoholic beverages and tobacco.



Exports and imports of agricultural and food products (CN 01–24) in 2004–2014. Source: Finnish Customs, ULJAS database.

Other important products imported to Finland include vegetables, cheeses and cereal products. In recent years, the Finnish food industry has also been faced with competition in product groups that used to be dominated by domestic production, such as meat and fish.

The geographical distribution of agricultural products and food imports remained about the same as in the previous years, although the share of EU countries grew slightly. The majority (67.2%) of Finnish food imports came from the old EU countries. The share of the new Member States decreased a little, to 9.5% in 2014. The share of non-EU countries fell to 23.7%.



Structure of Finland's food imports (CN 01–24) in 2014 (%). Source: Finnish Customs, ULJAS database.

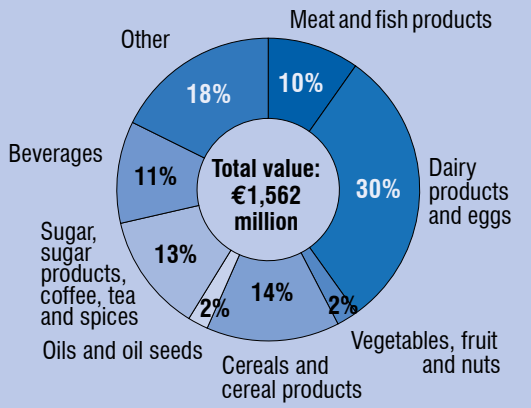
Russia has for a long time been the main destination for Finnish food exports. As a result of the sanctions, exports to Russia declined by more than a quarter in 2014, from €442 million to €327 million. Russia's share of all exports fell from 26%–28% in the peak years to below 21%.

Exports to other countries, such as Sweden, Estonia, the US and the Netherlands, were stepped up in 2014. More than half of the Finnish food exports have traditionally gone to neighbouring countries, and in 2014 this share was over 54% (Sweden 19.6%, Estonia 9.5% and Norway 2.9%).

Despite Russia's ban on imports, dairy products were still the most significant single product group in food exports. However, the dairy industry's exports decreased to €462 million and the sector's share of total exports from 33% in the previous year to 29.5%. The value of butter exports in 2014 totalled €97 million, that of cheese exports €124 million and that of whey exports €76 million.

The dairy industry continues to be the only industry in the Finnish food sector that has maintained a positive trade balance throughout Finland's EU membership. However, the trade balance worsened sharply in 2014, from €160 million to €103 million.

Meanwhile, cereal exports in 2014 grew from the year before, by €160 million, due exclusively to an increase in barley exports from €22 million to €61 million. Cereal exports thus partly offset the drop in milk products. Other key exports include meat, alcoholic beverages and products of the sugar and confectionery industries.



Structure of Finland's food exports (CN 01–24) in 2014 (%). Source: Finnish Customs, ULJAS database.

A boost to Finland's food exports

Csaba Jansik

Finland's food exports have attracted a great deal of attention in recent years. Concerns over the modest growth rate of the exports have been frequently expressed in public debate. Export promotion has, therefore, been set as an important goal in various programmes.

A strategy published in 2010, entitled "Tomorrow's Food", suggested that the value of Finnish food production should be doubled, and underlined the importance of increasing exports. A Team Finland export programme, launched in September 2014, has set a concrete target of doubling Finland's food exports by 2020.

Growth in exports lagging behind other countries

2015 marks the 20th anniversary of Finland's accession to the EU and the single market. This is a good moment to take a look at how EU membership has influenced the development of Finland's food exports. Free access to the EU food market has usually led to an exponential increase in exports from new Member States.

Looking at key figures for the development of food exports in countries that joined the EU in 1995, 2004 and 2007, it can be stated that the growth rate in Finland has been among the lowest. Many Central and Eastern European countries in particular have multiplied their exports since joining the EU by increasing the use of inputs and raising productivity. For example, in ten years Poland has become a leading EU exporter of food.

It should, of course, be admitted that the sharp growth curves of these countries are due to their low initial figures. However, Sweden and Austria, which also joined in 1995, were at roughly the same level as Finland at the outset, but their growth has been much faster. This holds true even if Sweden's fish exports – an extension of the Norwegian fish sector – are deducted from its total food exports.

Food export trends in Member States that joined the EU in 1995, 2004 and 2007.

	Accession year	Exports (€ bn)			Growth in exports	
		2000	2004	2014	2014/2000 (%)	2014/2004 (%)
Finland	1995	0.8	0.9	1.6	193	171
Austria	1995	3.6	5.7	10.4	286	183
Sweden	1995	2.4	3.4	7.8	323	227
Estonia	2004	0.2	0.4	1.2	610	340
Latvia	2004	0.1	0.3	2.2	1,842	729
Lithuania	2004	0.4	0.9	4.7	1,072	545
Poland	2004	2.9	5.3	21.3	739	402
The Czech Republic	2004	1.3	1.9	6.5	483	333
Slovakia	2004	0.4	0.8	2.8	646	327
Hungary	2004	2.4	3.1	7.8	323	252
Slovenia	2004	0.4	0.4	1.4	396	380
Bulgaria	2007	0.5	0.9	3.7	690	436
Romania	2007	0.4	0.6	5.6	1,517	950

Another relevant control group for Finland is the Baltic countries, in which the climate is not as favourable as in Central Europe. These countries have experienced a three- to sevenfold increase in food exports since joining the EU. This means that Latvia and Lithuania, which are significantly smaller than Finland, have caught up with and surpassed Finland's exports by a wide margin in just ten years. Estonia, the smallest and most northerly of the Baltic states, is also rapidly approaching Finland.

Why are Finland's food exports so low?

The moderate growth of Finland's food exports can be explained by many factors. Due to its location in the north across the sea, Finland is in a way isolated from lively trading in the continental EU. Additionally, agricultural raw materials for further processing account for a significant proportion of the growth of foreign trade in food in EU Member States. In Finland, agricultural raw materials mainly go to domestic food processing companies. Although raw material exports, and especially imports, have also increased substantially in Finland, they are far below the levels of other European countries.

Second, the structure of the Finnish food industry is rather polarised. There are a few major companies and a large number of small and medium-sized enterprises. Going global, many large enterprises have made a strategic choice between investing abroad and exporting. For example, Finland's leading meat, bakery and brewery companies have invested in production capacity in neighbouring countries.

Small and medium-sized businesses have specialised in serving the domestic markets. When trying to expand to new markets, they often face major obstacles related to capacity and know-how. Finland lacks food export traditions, background support and strong examples, which exist in the Netherlands, Denmark and Germany, for example, and which encourage even small firms to enter the export market.

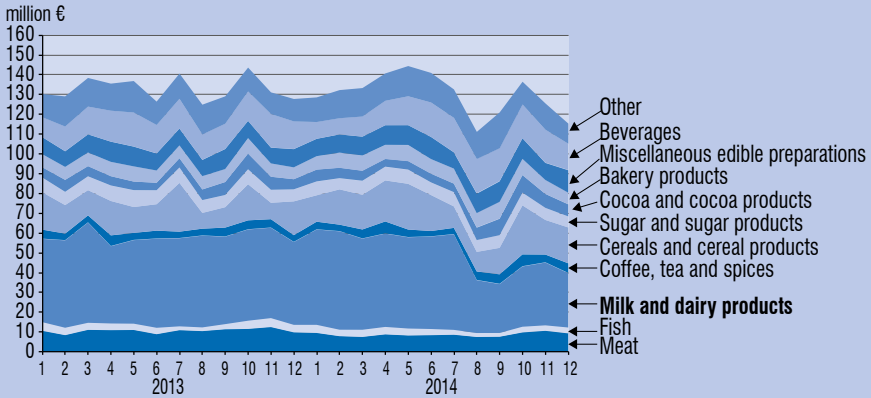
Third, the promotion of Finland's food exports was not considered a priority during the economic boom of the 2000s. The powerful engines of Finland's economy, such as the IT and forestry clusters, ensured a positive balance of foreign trade. In the Finnish manufacturing industry, the food industry has for a long time been only the fourth largest sector after the forestry, mechanical and electronics industries, while in more than half of the EU Member States, the food industry is the number one manufacturing sector.

Impact of the Russian market

In August 2014, Finland's food exports, which had grown slowly in any case, received a blow when exports to Russia dried up. The reason for this was the structure of Finnish exports: they focus on one product category. Dairy products have accounted for almost one-third of the exports. Due to the importance of the Russian market, Finland has been among those who have suffered the most from the import ban, although it applies to all EU countries.

Dairy products have been the only category in Finland's foreign trade in foodstuffs in which the trade balance has remained positive throughout the time of Finland's EU membership. Geographically, dairy exports have focused on two countries. In 2013, more than two-thirds of the exports went to Russia (49%) and Sweden (19%).

In recent years, Russia has repeatedly proved to be a high-risk market, due to fluctuations in its ability to pay and political instability. An example of the weakening of



Finland's food exports by product group monthly 2013–2014. Source: Finnish Customs, ULJAS database.

solvency was seen in 1998, when the rouble plummeted. It took years to get over this crisis. With regard to political meddling with foreign trade in foodstuffs, this can be considered the rule rather than the exception in Russia. This is confirmed by numerous disputes and import bans imposed on EU food, which have been justified by hygiene problems and residues of harmful substances.

In reality, the Russian market is now closed for both of the above-mentioned reasons. The Russian economy's dependence on energy products and the plunge in the price of oil on the world market have led to a sharp decline in the country's solvency. Even if the import ban were abolished right away, it could take years for exports to bounce back.

The Finnish dairy industry, and the food industry more generally, will need to find new markets. It can and must return to the Russian market when this is possible, but it cannot afford to wait around for that opportunity. As a result of Russia's import ban, the EU market has an oversupply of dairy and meat products and fruit. The cleverest exporters have already found alternative markets outside the EU.

Finland needs more food exports

During the economic slowdown, support for the promotion of food exports has also grown in Finland. Crises in industries that have previously been drivers of the economy have resulted in Finland's trade balance swinging from highly positive to negative. The national economy is in dire need of sectors that can improve the balance, and food exports, which were deemed insignificant in the past, are now taken more seriously as well.

Many EU Member States have drawn up strategies for promoting their food sectors or food exports. The results will be seen in due course in the export figures of these countries. Finland has also begun to implement concrete actions for the promotion of food exports, and businesses and public decision-makers have joined forces in various programmes.

In Finland, as everywhere else, the success and growth of exports is contingent on attitudes, background support and know-how. That reminds me of a sad example from a few years ago: a university of applied sciences proposed to offer training in food exports, but the initiative fell through due to a lack of student interest. The Finnish food industry now needs experts in international sales and marketing more than ever.

3. AGRICULTURAL POLICY

Finnish agricultural policy is founded on the support schemes set down in the common agricultural policy of the EU, i.e. direct payments funded by the EU and the co-funded less-favoured area (LFA) and agri-environment payments.

These are supplemented by national aid programs, which comprise northern aid, national aid for southern Finland, and certain other aids.

3.1. Common agricultural policy of the EU

The common agricultural policy (CAP) of the EU has been implemented for more than 50 years. From the very beginning, the main objectives were to improve the productivity of agriculture and balance the food markets, as well to secure the supply of food, a reasonable standard of living for farmers, and reasonable prices for consumers. Since then, these objectives have been supplemented by other aims, in particular, those relating to environmental issues, which reflect the societal demands that have arisen over recent decades.

The share of expenditure which arises from the CAP in the EU budget is very high indeed, about 39 percent of the total budget in 2015. It should be born in mind, however, that in the other sectors the integration does not go as wide and deep, and there is no common policy in the same way as is implemented in the agriculture sector through the CAP.

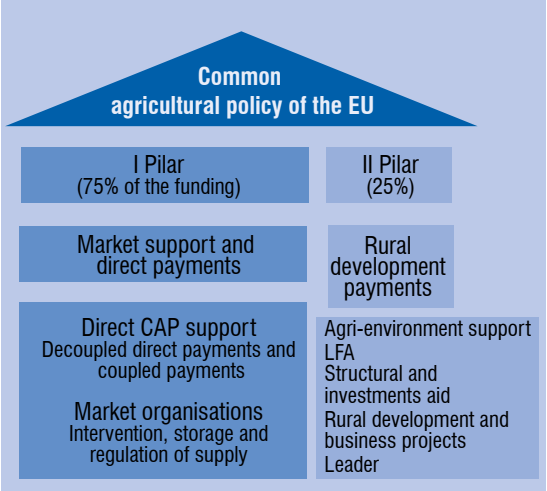
The CAP is comprised of the so-called first and second pillars. Most of the funding (75%) is allocated to the first pillar, mainly market support and single farm payments. The rest of the funding (25%) is used for rural development measures under the second pillar (Rural Development Programs, RDP).

As an outcome of the policy reforms during the past two decades, direct payments to farmers now constitute the lion's share of EU agricultural expenditure. In the early 1990s, most of the CAP funds were still used for export refunds for agricultural products and other market interventions.

CAP reforms since 1992

As a result of the policy reforms of 1992 and 1999, the intervention prices of agricultural products in the EU were lowered to be closer to the world market prices. The price reductions were compensated for by means of direct payments, which is why support payments based on arable area and livestock numbers gained a central position in the CAP.

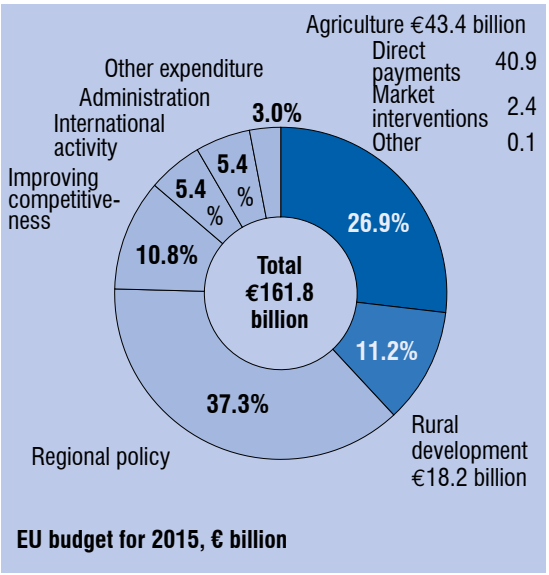
In the policy reform of 2003, most of the EU payments for arable crops and livestock were transferred to the decoupled single payment scheme (SPS). At the same time, new conditions relating to the envi-



Structure of the common agricultural policy (CAP).

ronment, maintaining the condition and productivity of the land, food safety, animal welfare, and occupational safety were incorporated into the scheme.

In November 2008, the EU agriculture ministers again decided on a reform of the CAP, also called the health check. The decision continued the earlier reforms and strategic outlines, aiming to increase the market orientation of EU agriculture. Decoupled payments are now applied even more widely, and some of the remaining production restrictions have been abolished, to allow farmers to respond better to market demand.



EU budget for 2015, € billion

The most recent CAP reform, decided in 2013, was launched by the Commission Communication issued in autumn 2010. This was followed by wide discussions on the future agricultural policy between the EU institutions, states, EU citizens and various stakeholders. The process aimed at drafting the new legislation was initiated in October 2011 when the Commission published its legislative proposal concerning the CAP reform.

CAP until 2020

Political understanding on the outlines and content of the CAP until 2020 was reached in June 2013. The European Commission, Council and Parliament were finally able to reconcile their positions after two years of negotiations, which had become more and more intense, especially towards the end. Because of the new co-decision procedure and the long process of stakeholder consultation in 2010–2011, reaching an agreement took longer than had been planned, and the implementation of the new policy did not start until the beginning of 2015.

The new CAP includes the so-called greening of direct payments, and it aims for a more even distribution of payments among the Member States. Most of the main elements of the current policy have been retained, even reinforced.

The reform not only puts an end to the trend for liberalization which gained strength in the middle of the first decade of the 2000s, but in some respects it actually "turns back the hands of time." In fact, the new policy allows some degree of recoupling of EU payments to the production of certain commodities.

The reform also contains measures which aim to improve the supervision of the commercial interests of the producers and reinforce the position of producer organizations so that they have more negotiating power relative to the actors at the end of the supply chain. Furthermore, the reform entitles Member States to develop insurance schemes and income stabilization tools by means of EU co-funding.

Distribution of EU support for agriculture 2014–2020

The average annual budget for the EU agriculture policy for the program period 2014–2020 is €55.7 million. Even though the objective of the agriculture policy reform regarding the period 2014–2020 was

to improve the equal distribution of aid, no significant changes occurred in the aid focus.

Due to the stringent economic situation, EU support for agriculture for 2014–2020 was reduced by 5.9 percent compared to the funding period 2007–2013. Budget cuts particularly affected the second pillar, i.e. rural development funds, which were cut by 13 percent compared to the previous funding period.

The largest recipient of EU support for agriculture during the current funding period is France, whose share of all EU support for agriculture amounts to 16 percent (€8.9 billion). The second largest recipient is Germany (€6.2 billion) and the third largest is Spain (€6.1 billion). Finland's share of all subsidy payments for agriculture is some 1.5 percent (€864 million).

On average, about €13.6 billion is distributed annually in the EU as rural development payments, which amount to 24 percent of all EU support for agriculture. The largest recipient of rural development funds was Poland (€1.6 billion) and

Agricultural support per year in EU-28 by Member State on average in the programming period 2014–2020.

Country	Agricultural support, € million per year on average	Rural development payments under Pillar II, € million per year on average	Share of the MS of EU agricultural support, %	Average EU support per farm, € per year	Share of support farm net value added, %
France	8,899	1,416	16.0	16,875	39.9
Germany	6,243	1,174	11.2	16,852	38.2
Spain	6,056	1,184	10.9	5,801	33.6
Italy	5,275	1,490	9.5	3,141	22.5
Poland	4,593	1,563	8.2	1,921	44.2
Great Britain	3,944	369	7.1	13,155	48.2
Rumania	2,973	1,145	5.3	756	27.4
Greece	2,584	599	4.6	3,004	46.9
Hungary	1,763	494	3.2	2,815	48.3
Ireland	1,525	313	2.7	11,893	74.2
Austria	1,255	563	2.3	7,584	56.8
Czech Republic	1,183	310	2.1	30,033	63.7
Portugal	1,165	580	2.1	4,235	45.1
Bulgaria	1,116	334	2.0	2,264	36.0
Denmark	985	90	1.8	22,077	21.8
Sweden	948	249	1.7	13,052	72.8
Finland	864	340	1.5	12,663	142.9
Netherlands	839	87	1.5	10,934	13.7
Lithuania	706	230	1.3	3,066	48.8
Slovakia	659	270	1.2	9,546	100.4
Belgium	597	79	1.1	12,430	27.5
Croatia	534	332	1.0	-	-
Latvia	396	138	0.7	3,680	67.3
Slovenia	255	120	0.5	3,391	125.1
Estonia	253	104	0.5	10,850	62.7
Cyprus	68	19	0.1	1,705	36.4
Luxembourg	48	14	0.1	20,809	80.7
Malta	19	14	0.0	1,725	28.0
EU-28	55,747	13,620		4,133	37.6

Source: Official Journal of the European Union L 347/655; Official Journal of the European Unioni L 347/487; EUFADN Database.

the second largest was Italy (€1.5 billion).

In relation to its size, Finland has traditionally received a significant amount of rural development payments. During 2014–2020, Finland will receive second-pillar support of an annual average of €340 million.

Farm structures vary greatly between Member States. On average, a farm receives annually €4,133 EU support for agriculture. The Finnish farms receive significantly more: on average, €12,663 per farm annually. In Romania, the average payment per farm is only €756 annually. In the Czech Republic, where large corporate farms play an important role, an average amount of over €30,000 per farm is paid annually.

Support for agriculture has a significant impact on the income formation of farms in the EU. The relative importance of EU support for income formation can be studied through the ratio between the subsidy payments and the farm net value added. The farm net value added represents the income generated by farming which is used to remunerate (i) borrowed/rented factors of production (capital, wages and land rents), and (ii) own production factors (own labour, capital and land).

In the EU-27, the average share of subsidies for agriculture in farm net value added was 37.6 percent in 2012. In other words, agricultural support represents more than a third of the results of farms. In Finland, the share was much higher, at 142.9 percent, which is the highest rate in the entire EU. The lowest rate is in the Netherlands, where the figure was only 13.7 percent. In large Member States, the figures were close to the EU average.

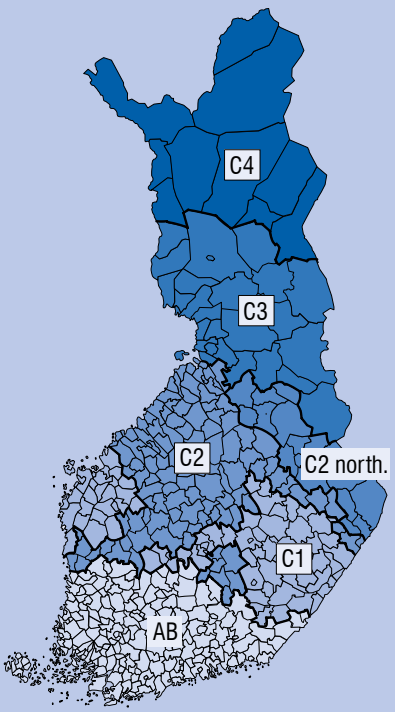
3.2. EU support payments in Finland

In 2015, the support for Finnish agriculture under the CAP will total around €1,413 million. This consists of the CAP payments for arable crops and livestock (€525 million), less-favoured area (LFA) payments (€552 million) and environmental payments (€336 million). These are funded either by the EU alone or co-financed by the EU and Finland.

CAP payments are an integral element of the common market organizations and they are funded in full from the EU budget. The EU contributes a little more than a quarter of the LFA and environmental payments. The rest is paid from national funds.

Besides the EU support, in 2015, about €324 million will be paid to Finnish farms as national aid. The national aid scheme comprises northern aid (€289 million), national aid for southern Finland (€29 million), and certain other national aid programs (€5.5 million). National top-ups to LFA payments are paid as part of the EU LFA payments.

Before 2015, Finland was divided into three main support areas for the allocation



Support areas.

of payments. In the reform of 2015, the support areas were reduced to two. CAP support, environmental support and LFA payments are paid in the whole country.

Northern aid is paid only in support area C. This has been divided into five subregions for the differentiation of the aid. National aid for southern Finland (so-called aid for serious difficulties) is paid in support area AB (previously areas A and B).

Because the agricultural policy of the EU has not been designed for farming in northern conditions and mainly by small farms, Finland has to pay for almost 60 percent of the necessary support for agriculture from national funds, while only 40 percent comes from the EU agriculture budget.

Still, Finland can be considered to have succeeded quite well in obtaining EU funding for agriculture. In the period 2014–2020, the average annual EU payments to Finnish agriculture will be about €864 million, of which about 39 percent are rural development payments.

CAP support

Most of the so-called CAP support financed in full by the EU is paid through the single payment scheme adopted in 2003. In Finland, the single payment scheme is implemented as the so-called hybrid model. Former CAP payments have been converted into payment entitlements, which consist of a regional flat-rate payment and farm-specific top-ups.

In order to be eligible for CAP support, farmers must comply with certain conditions. According to the cross-compliance conditions included in the CAP support, the arable lands must be kept in good farming condition and minimum requirements for animal welfare and the state of the environment must be met.

Along the reform agreed upon in 2013, so-called greening measures, i.e. environmental measures that go beyond the base level, were included in the conditions for direct CAP payments from 2015. 30 percent of the national maximum amount of direct payments of each country must be reserved for greening. To be eligible for the payment, a farm must have at least two/three crops in cultivation and at least 5 percent of the cultivation area must be left as an ecological focus area.

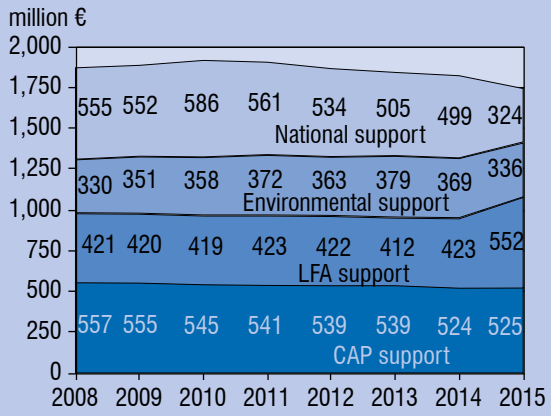
In Finland, 90 percent of direct CAP support has been paid as decoupled single payments. In the Common Agricultural Policy health check, Finland was authorized to pay 10 percent of the support as coupled payments until 2013.

Coupled CAP support has been very important for Finland, especially as regards the supply of domestic beef. Coupled support is paid for suckler cows, male bovines and ewes. In addition, a total of €13.7 million is paid annually as coupled support for certain arable crops.

The possibility of applying coupled support payments remains in the EU agricultural policy. The reform of 2013 even

Structure of CAP support from 2015.

Type of support	Status	Amount
Basic payment	Mandatory	Remaining share
Greening	Mandatory	Fixed 30% share
Natural constraint payment	Optional	Max 5%
Aid for young farmers	Mandatory	Up to 2%
Coupled support	Optional	Max 8% or 13%, optional 2% to protein crop top-up
Small farmers' payment	Optional	Max 10%



Agricultural support in Finland in 2008–2015, € million.

allows payment to be re-coupled to the production of certain commodities in the coming years. In Finland, the share of coupled payments of the total amount of CAP support rises to 20 percent in 2015 and then decreases to 18 percent toward the end of the period 2014–2020.

Less favoured area payments (LFA)

Certain rural regions in the EU have been defined as less favoured areas (LFA). The purpose of LFA payments is to ensure the continuation of farming in these regions and keep rural areas populated. In Finland, LFA support is paid for the entire cultivated area of about 2.16 million hectares.

The objective of the LFA payment is for agricultural production to continue in spite of the adverse climate conditions due to the northern location, the number of farms to develop in a controlled manner, and economically viable farming units to continue to exist, thus contributing to rural employment and promoting economic development in rural areas.

The whole of Finland continues to be entitled to LFA payments. The maximum amount of the payment in the so-called mountain area, i.e. in Finland support area C in the north, is €450 per hectare, while in the rest of the country it will be €250 per hectare. The payment for plant production farms is €217 per hectare in area AB and €242 per hectare in area C, and for livestock farms €277 per hectare and €302 per hectare, respectively.

In 2007–2013, the average annual LFA payments totaled €421 million. The amount budgeted for 2015 is €552 million. The payment sum is increasing because the national LFA payment (ca €120 million) will be paid as part of the EU LFA payment as of 2015. The EU contribution to the LFA payment in Finland is some 18 percent.

Environmental payment

From 2015 onwards, environmental support will be called environmental payment. Simultaneously, the scheme that comprised three types of measures (basic, additional and special measures) will be replaced by measures targeted to specific parcels.

Agri-environmental support introduced in 1995 compensates for income losses resulting from the reduction in production and increased costs as farmers commit to undertake measures aimed at reducing environmental loading caused by agriculture.

The environmental payment scheme strives to further the biological diversity of nature and to reduce emissions from agriculture into the air and waters. The environmental payments are divided into the measure of nutrient balance, which is universally mandatory, and voluntary, parcel-specific measures.

All farmers who are committed to the scheme must adhere to certain limits for the use of nitrogen and phosphorus in ar-

able farming. Farm-specific measures deal with the use of manure and the promotion of biodiversity, among others.

In the programming period 2007–2013, an annual average of €320 million was paid in environmental support. The average share of the EU contribution to environmental support was 28 percent. The funds for environmental support budgeted for 2015 total €271 million, of which €157 million comes from national funds.

The current environmental support scheme and the new environment payments are presented in more detail in Chapter 5.2 (pp. 72–73).

3.3. National aid

The national aid paid in Finland comprises northern aid, national aid for southern Finland, and certain other payments. The aim is to ensure the preconditions for Finnish agriculture in different parts of the country and production sectors. The principles to be applied in determining the level and regional distribution of national aid were agreed in the membership negotiations. The aid may not increase production, nor may the amount of aid exceed the total payments before the accession.

Northern aid

The Accession Treaty of Finland (Article 142) allows for the payment of national northern aid to areas north of the 62nd parallel and adjacent areas (support area C). A little over 1.4 million hectares, i.e. 55.5% of the cultivable arable area in Finland, is eligible for this aid.

Northern aid consists of milk production aid and aid programs based on the number of animals and cultivated area. The northern scheme also includes aid for greenhouse production, storage aid for horticultural products and wild berries and mushrooms and headage-related payments for reindeer.

Northern aid paid in 2015 will total about €289 million. The most significant types of aid are northern aid for milk production and northern aid based on livestock units.

The effectiveness of the northern aid is evaluated every five years. In 2007, the European Commission commissioned an evaluation of how well the objectives set for northern aid have been reached and whether the means applied are still feasible and justified. Based on the results, the Commission and Finland discussed the future and development needs of the north-

Agricultural support based on the CAP in Finland (financed in full and part-financed by the EU), € million.

	2010	2011	2012	2013	2014prelim.	2015estimate
Total	1,322	1,335	1,324	1,330	1,322	1,413
CAP income support	545	541	539	539	524	525
Natural handicap payments	419	423	422	412	423	552
EU contribution	117	118	118	115	118	97
National financing	302	304	304	297	304	455
Environmental support*	358	372	363	379	369	336
EU contribution	101	107	107	112	107	141
National financing	257	265	256	267	262	195
EU financing, total	763	766	764	766	755	763
National financing, total	559	569	560	564	566	650

**Environmental support also includes payments relating to animal welfare and non-production investments.*

National aid for agriculture in Finland, € million (aid per production year).						
	2010	2011	2012	2013	2014	2015[estimate]
Total	586.1	560.8	534.3	504.9	499.4	323.9
Northern aid	335.8	333.5	328.2	317.4	310.9	288.5
National aid for Southern Finland	86.2	83.4	74.9	62.5	62.9	28.9
National supplement to the LFA support	119.0	119.3	119.4	119.3	119.7	-
Other national aid	45.6	22.4	11.8	5.7	5.9	5.5

ern aid in 2008.

As a result of the agreement reached in December 2008, the aids for pig and poultry meat production were decoupled from production in 2009. Coupled payments continue to be applied in cattle husbandry.

National aid for southern Finland

National aid for southern Finland, i.e. support area AB, was paid under Article 141 of the Accession Treaty until 2013. This article allowed the payment of aid due to serious difficulties resulting from accession to the EU. However, it does not define the concept of serious difficulties in any more detail or limit the duration of the measure. The Finns have interpreted the article so that it gives authorization for payment of the aid in the long term. The Commission, on the other hand, has seen it as a temporary solution.

Finland has negotiated with the Commission on the continuation of the aid based on Article 141 every few years. According to the outcome of the negotiations reached in November 2007, Finland was granted both national direct aid and raised investment aid for livestock production and horticulture in southern Finland in 2008–2013.

The aid for ruminants was paid as coupled aid during the entire period 2008–2013. Instead, in the pig and poultry sectors, since 2009 the aid has been paid as decoupled single payments based on the production volumes of the farms in 2007.

The period for the payment of the aid under Article 141 ended in 2013. However, the structure and financing of the national income aid in southern Finland paid in 2014 stayed about the same as in 2013. The aid totaled €62.4 million, which is about 30 percent less than the €89.6 million paid in 2009.

As of 2015, however, Finland is transferring a significant share of the coupled aid in southern Finland to EU-funded direct payments. This means that, in the future, milk and beef production, sheep and goat husbandry and cultivation of starch potato and vegetables in the open will mainly be supported by a scheme based on EU support.

The present type of national income aid will continue to be paid for pig and poultry husbandry and horticultural production in southern Finland. However, the aid will no longer be paid under Article 141 of the Accession Treaty, but under Article 149a for the new programming period. This new legal basis under Community law to continue the payment of national aid for agriculture in southern Finland was approved by the EU institutions in autumn 2013.

In connection with this, the national income aid for southern Finland will decrease from some €62.9 million to some €29.2 million, and further to €17.4 million in 2020.

National top-ups to LFA payments

National top-ups to LFA payments have been paid in the whole country since 2005. The top-up was based on an agreement reached in the negotiations between Finland and the Commission in 2003. As of 2015, the national top-up for LFA payments will be paid as part of the EU LFA payment.

3.4. Structural support for agriculture and farm relief services

Investment aid and early retirement

The agricultural investment aid and early retirement arrangements aim to promote growth in farm size by reducing production costs. In practice, these forms of structural aid comprise subsidized interest rates, subsidies, and state guarantees. In 2015, interest rate subsidy loans, mainly for financing production buildings on farms and the acquisition of real estate and movables relating to setting-up aid for young farmers, may be granted up to €250 million. The costs to the state from interest rate subsidies will total about €33 million in 2015.

In 2015, agricultural investments in livestock production, the interest subsidy for interest rate subsidy loans, and the state guarantee will be financed entirely from national funds. Setting-up aid for young farmers, on the other hand, will be partially funded by the EU. In 2015, €22 million has been budgeted for setting-up aid for young farmers. The early retirement scheme offers aging farmers the opportunity to give up the farm or its production. In 2015, retirement support will total €85 million.

Setting-up aid for young farmers supports the transfer of farms to the next generation. The estimated number of farms receiving the aid in 2015 is about 1,100. Setting-up aids were granted to 597 young farmers in 2014, which was an increase compared to previous years.

Farm relief services

Farmers practicing livestock production on a full-time basis are entitled to 26 days off per year. The Ministry of Social Affairs and Health is responsible for the management, control, and coordination of the services. The purpose of the services is to ensure that farming activities continue uninterrupted during holidays, and that substitute help is available in the case of illness or accidents. In 2015, the funds used for the relief services to farmers and fur producers was about €225 million in total.

Number of objects of structural support and funds committed to these in 2010–2014.

	2010	2011	2012	2013	2014
Number of decisions on subsidies	2,771	2,537	2,205	2,461	2,801
– building in dairy husbandry	292	295	276	293	232
– building in beef cattle production	106	94	87	83	87
– horticulture investments	67	63	55	51	41
Number of setting-up aids	542	535	544	597	1,108
Funds committed, € million	95.7	77.3	73.1	92.2	92.2

Source: Ministry of Agriculture and Forestry

Agriculture a source of contention in the EU–US free trade negotiations

Ellen Huan-Niemi and Jyrki Niemi

The European Union and the United States are currently negotiating an extensive free trade agreement called the Transatlantic Trade and Investment Partnership (TTIP). The negotiations started in July 2013 and the liberalisation of agricultural trade is one of the toughest issues being discussed. The EU and the US have very different food and agricultural policies, thus many trade policy disputes have arisen between them in recent decades.

Different approaches to food safety

Food safety regulations and standards are the hardest part of the negotiations concerning agriculture. The EU policy is to ensure food safety throughout the food production chain, from primary production to the end product (farm to fork). In the US, it is enough that the product is safe for consumption. The EU and the US have diverging views on issues such as the use of growth hormones in meat production, pathogen reduction treatments, genetically modified (GM) foods, and food safety regulations.

Both the EU and the US are part of the Sanitary and Phytosanitary (SPS) agreement, under the World Trade Organization (WTO), specifying the measures applied to protect human, animal or plant life or health must be based on science. However, the precautionary principle applies if there are suspected risks of causing harm to the public or to the environment, in the absence of scientific consensus. The EU has made this principle a cornerstone of its risk management on issues of health and plant protection. In the US, the precautionary principle is seen as an excuse to build barriers to trade and the science-based method is the preferred policy.

Chlorine washing and hormone meat

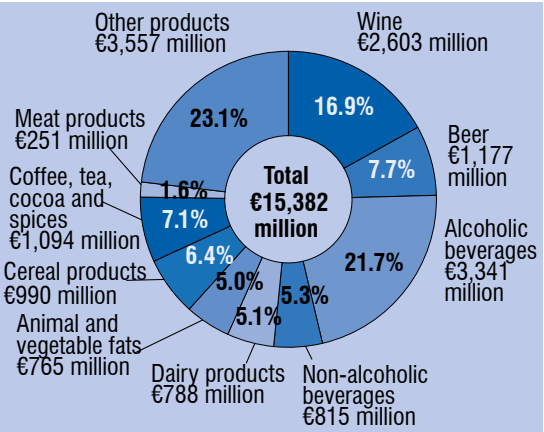
One significant disagreement between the parties is related to the EU's ban on hormone-treated meat. At the heart of the dispute is the use of growth-enhancers in the final stages of feeding beef cattle, which is common in the US. This accelerates growth and improves the efficiency of feeding. No internationally recognised evidence exists of this method posing actual health risks to consumers. Nevertheless, the EU can fairly say that the use of growth-enhancers is not necessary for meat production and should, therefore, be banned if there is even a minimal increase in health risks or if animals suffer.

Another disputed issue is that US poultry meat has practically been shut out of the European market due to a ban on pathogen reduction treatments. This is because poultry in the US is commonly washed with chlorine in all poultry production facilities.

The EU's negative stance concerning GM products and foods that contain them is also seen as a threat to US agricultural exports, and in some cases it has already obstructed trade. Behind the controversy are the widely different views of the EU and the US regarding GM products and their potential health and environmental effects.

The US goal in the negotiations is to change the EU's attitude to the approval and labelling of GM food products.

The harmonisation of regulations and standards would enable a significant growth in trade flows between the EU and US. Abandoning import duties on agricultural products and facilitating market access in general would bring many benefits to food companies on both sides of the Atlantic.



EU food and agricultural exports to the US in 2013.

EU exports alcoholic beverages and imports nuts & animal feed

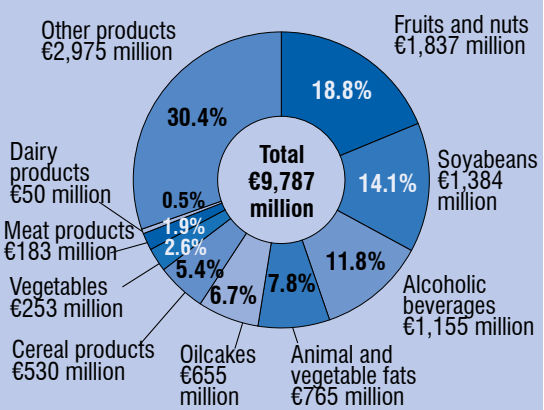
The EU and the US are large export markets for each other's agricultural products. In 2013, the total value of EU's food and agricultural exports to the US was €15 billion. The majority of the exports were highly processed food products and beverages. Various beverages, such as beer, wines and strong alcoholic beverages, accounted for more than half of the value of the exports. In contrast, the main food and agricultural products imported from the US include nuts, soya bean, processed fruit and vegetables, and animal feed with a total value of €10 billion.

Even though the EU is a leading exporter of food products, its agricultural sector has adopted a defensive role because US agriculture is generally considered to be highly competitive, and it is more efficient than EU agriculture in many respects. It is important for EU agriculture to reach a trade deal that allows the EU's food safety and other standards to be imposed on products imported from the US.

Agreement in 2016?

Initially, the aim was to conclude the negotiations in 2015, but the target has been postponed to 2016. This is due to the complexity of the issues involved. Therefore, a successful conclusion calls for major compromises and a more flexible approach from both parties.

The year 2016 is seen as crucial in making progress on the TTIP, with the U.S. presidential election set for November 2016. Trade negotiators are keen to close the deal before President Barack Obama leaves office in January 2017.



EU food and agricultural imports from the US in 2013.

4. THE ECONOMIC SITUATION OF AGRICULTURE

4.1. Development of results and profitability in agriculture and horticulture

The development of results and profitability in Finnish agriculture and horticulture is examined using the results of Luke's bookkeeping farms. The data from about 900 bookkeeping farms are weighted so that they indicate the average results of the 37,900 largest agricultural and horticultural enterprises. These account for more than 90% of the output of Finnish agriculture. In calculating the results, individual revenue and expense items and support payments are allocated as returns and costs to the year of production, in accordance with the accrual principle. Annual variations in yields and returns and changes in prices and support payments are thus directly reflected in annual profitability figures.

External factors affect results

The structure of agriculture and horticulture has changed rapidly in the 2000s. Entrepreneurs are expanding their farms and using various forms of business in an effort to keep pace with fiercer competition in the food sector. Finnish agriculture and horticulture are closely integrated with the global environment. In recent years, external factors in particular have increased instability and shocks to the operating environment, influencing prices and markets.

Input prices have for many years been rising faster than producer prices, which has led to higher costs and lower profitability. The prices of supplies, especially energy and fertilisers, have risen rapidly. In recent years, the recession has curbed the rise in input prices while the prices of products have even gone up. However, the prices of cereal and oilseed crops began a sharp decline in the autumn of 2013. Market prices have a major impact on farmers' income and business profitability.

Yields are also a significant contributor to profitability. Fluctuations in the weather are projected to increase, which may also increase the risks associated with farming. The cereal yield harvested in 2010 was the smallest in a decade, but the yields in subsequent years have been better. In 2013, the cereal yield was the largest since the peak year of 2009, and the yields of other crops and grasses were also good. In parts of southern Finland, the yields were, however, reduced by a lack of rain.

Growth of returns slowed

The high prices of cereal and oilseed plants improved the results of crop farms from the trough seen at the end of the last decade. Just as farms had recovered from the previous price shock, at the beginning of the 2013 crop year prices began a steep decline. The results of cereal and other crop farms plummeted. An improvement in the results of pig farms, boosted by meat prices, was cut short by the soft market in 2013. Other production sectors have no significant improvements in sight either.

The gross return of enterprises grew by 4% on average in 2013, to €157,400 per farm. The rise in the prices paid to producers for meat and milk led to a 7% increase in the return on livestock on the previous year. The return on crop production was 6% higher than the year before, although the return on cereals fell by one-fifth. A significant increase was seen in the return on other crops and the return on horticulture. Changes in the producer prices of crops were inconsistent. The prices of cereal and oilseed plants declined sharply towards the end of the year, while those of other plants and vegetables strengthened. Other sales proceeds grew by 12%, and the amount of support payments grew by 1% to €51,600 on average. Support

payments accounted for 33% of the gross returns. Support payments also include investments subsidies allocated to the years in which the investments are used.

The gross return includes the value of products produced on the farm and used as feed for animals or as own seeds. Since this item is also recorded as an expense, it does not influence entrepreneurial income or other results.

Modest rise in input prices

The production costs of agriculture increased by 5% in 2013, to €184,500 on average. Over the last couple of years, input prices have risen moderately due to the recession. In 2013, the prices rose by an average of 2.4%. The prices of energy products fell slightly, while feed prices went up by 6.5%. Cultivation costs and purchased feed increased the cost of supplies by 11% on the year before. Insurance and rents increased the 'other expenses' item by nearly 10%. More hired labour was used and its cost rose to 19% of the total labour expenditure. The farming family's work input accounted for 82% of the total work input. The reduction in the interest rate used in calculating the cost of own capital lowered the interest cost by 11%.

When the costs had been deducted, the entrepreneurial income left as compensation for the farming family's labour and own capital fell by 18% to an average of €17,900 per farm. Entrepreneurial income was the compensation for the use of own resources in agriculture and horticulture, the 1,985 hours' labour input and €329,500 of own capital invested in the enterprise.

When the costs of these are deducted from the entrepreneurial income, we obtain the entrepreneurial profit, where all costs of production are taken into account. This was again negative, –€27,200. The costs were 17% higher than the returns. The wage claim for own labour has been calculated using the recorded working hours and average hourly wages of agricultural employees (€14.90).

The interest rate used in calculating the cost of own capital for individual farms is the sum of the risk-free interest rate and farm-specific risk premium. The risk-free interest rate is the return on five-year Finnish government bonds. The farm-specific risk premium is determined on the basis of the operating result percentage, equity ratio and relative indebtedness. The average interest rate for 2013 was 4.8%, which compares with 5.7% in the previous year.

Profitability in decline

The results of agriculture and horticulture began to decline in 2013. Profitability figures have not been as low since 2000 – except for 2009, when producer prices tumbled. The development of profitability in 2010–2012 was steady but modest. Despite increased farm sizes, entrepreneurial income in real terms fell by a couple of per cent every year. In 2013, the average profitability ratio was 0.40. The ratio is obtained by dividing entrepreneurial income by the sum of the wage and interest claims. This means that entrepreneurs received only 40% of the wages and interest set as the target, so that the hourly wages were €5.9 and the interest on equity was 1.8%.

The entrepreneurial income of dairy farms decreased by 16% to €39,700, and the profitability ratio fell from 0.60 to 0.52. The gross return was about the same as the year before and costs rose by a couple of per cent, leading to a decrease of €7,600 in entrepreneurial income. The return on milk grew by 4%, while the return on cereals dropped by one-third. Supplies and wages increased costs the most. Meanwhile, interest paid and interest cost on own capital decreased. The profitability of beef cattle farms has improved slightly in recent years, but that of suckler cow farms is stagnant at a lower level. The profitability ratio of beef cattle farms rose from 0.47 to 0.57, while the ratio of suckler cow

farms remained at 0.44.

The improved results of pig farms in 2012, which were due to a rise in the producer price of pig meat, were short-lived. The profitability of pig husbandry collapsed in 2013: entrepreneurial income was only €15,500 (–62%) and the profitability ratio dropped from 0.56 to 0.22. The results were significantly lower than in recent years. Entrepreneurial income declined due to a lower return on cereals and costs that exceeded returns. The size of pig farms increased considerably from the year before.

The profitability of cereal farms has risen and fallen in recent years along with cereal prices. The period of high cereal prices that began during the 2010/11 crop year ended in 2013 at the start of the new crop year. By the end of the year, the prices of cereal and oilseed plants had fallen by one-third, bringing the profitability of cereal farms down to the level of the weakest years of 2008–2009. Entrepreneurial income only amounted to €4,700 (–57%), and the profitability ratio fell from 0.39 to 0.17. The profitability of farms cultivating potatoes and sugar beet was improved by high prices, but the results of other crop farms were poor.

Differences in profitability

Differences in profitability between support areas were smaller than usual in 2013. Profitability decreased in all areas, but most in A and C2p. Profitability is above average in support areas C2–C3, which are strong dairy and beef cattle areas. Support area A was the weakest due to the low profitability of crop production.

The entrepreneurial income of the most successful farms (the group 'strong') was €47,500, and their profitability ratio was 0.79. The return on total assets was 1.8%. The entrepreneurial income of the poorest farms (the group 'weak') was negative, –€10,300 per farm, meaning that these farming families received no compensation for their labour and own capital. The cultivated areas and livestock numbers are much larger on the 'strong' farms than on the 'weak' farms.

Considerable differences in profitability also existed between farms representing the same production type and economic size. On average-sized dairy farms, the profitability ratio of the 'strong' farms was 0.92, but in the group 'weak' it was as low as 0.26. On the largest dairy farms in the 'strong' group, the profitability target was achieved and the profitability ratio was 1.31. In the weakest quarter of the same economic size, however, the ratio was as low as 0.10.

Low return on assets

When the wage cost of own labour is deducted from the entrepreneurial income, we obtain the net result left as return on equity, which was –€11,700 on average. The return on equity was 3.6%. The income tax on agriculture and horticulture has not been deducted as an expense from the net result.

In 2013, the return on the total assets of agriculture and horticulture was –€8,800. This is obtained by adding the interest paid to the net result. The average assets during the accounting period totalled €439,700, and thus the return on total assets was –2.0%. On average, farms received no return on assets. Among the production types, the return percentage varied from 0.1% to 5.0%.

Good solvency

In 2013, the average total assets of agriculture and horticulture enterprises were €444,400, of which €329,500, or 74%, was own capital. Continuous structural change has increased the amount of assets. The total assets per farm have more than doubled since the early 2000s. The financing of investments depends largely on external capital and investment subsidies.

The amount of debt has grown faster than that of assets, but solvency has remained solid, which is typical of this sector.

The share of equity of the total assets is 74% on average. The equity ratio is the highest on cereal farms, 83%, and the lowest in greenhouse enterprises, 31%. On pig and poultry farms, the amount of total assets is twice the average and that of debt 2–3 times the average. Poultry farms and greenhouse enterprises have the largest liabilities.

Relative indebtedness, i.e. the amount of debt relative to turnover, has risen from 60% in the early 2000s to 80%. At the turn of the decade, indebtedness declined for a couple of years, but then began to increase as the growth in turnover slowed. The indebtedness ratio is indicative of the increased financial risk in enterprises, which has partly been reduced by the low interest rates.

There are considerable differences in indebtedness between farms and production sectors. Indebtedness is the highest on farms with sheep and goats (97%) and the lowest on horticulture farms with production in the open (41%). Farms that are growing in size have the most debt. Relative indebtedness is less than 10% on one in four farms. However, on 10% of the farms the amount of debt is more than double their income.

On the balance sheet, asset items are measured at current value, and investment subsidies or investment reserves are not deducted from the value of assets. The depreciation cost of fixed assets purchased using investment subsidies is calculated, and the subsidies are allocated as returns alongside the corresponding depreciation amounts.

MTT's results and profitability forecast

The result and profitability figures for 2014 are based on farm-specific forecasts calculated from the bookkeeping data. Changes in product and input prices, support payments and regional average crop yields have been taken into account. Support payments are the actual payments for the year. Farm sizes and production and input structures have been assumed to be the same as the year before.

Farm-specific forecasts have been weighted to indicate the average results of the 36,400 largest agriculture and horticulture enterprises. Weighting has been performed using the enterprise structure in the structure statistics of Luke's statistical services, which is why the structural change influences the weighted figures in the forecast.

The data used in the forecast for 2014 are based on the results of the structural forecasting model of profitability bookkeeping. The forecast is calculated using data from 1998–2013. The number of farms declines as smaller enterprises discontinue production, meaning that, in the forecast for 2014, larger bookkeeping farms are assigned higher weighting coefficients. Structural and profitability development thereby affects the results forecasts.

Preliminary results for 2014

In 2014, the gross return of agriculture and horticulture enterprises decreased by 2% on the previous year to €154,800. Sales proceeds accounted for 58%, support payments for 33% and other returns for 9% of the gross return. Returns declined due to a 10% drop in producer prices. Cereal prices were a quarter lower than the year before, and the prices of livestock products also fell markedly. The return on livestock remained roughly the same, while the return on crop production was one-fifth lower than in 2013. Input prices also decreased, but only by 3%. The moderate increase in input prices over the past few years has helped curb the rise in costs. Costs excluding the wage and interest claims fell by 2%, and total production costs by 1% on the previous year. This decline was mainly attributable to lower costs of fuel and feed.

The results of enterprises fell slightly from 2013, according to the forecast. Entrepreneurial income was only a couple of per cent lower, and the profitability ratio fell from 0.40 to 0.39. When the costs of own labour and capital, €45,300, are deducted from the entrepreneurial income of €17,600, the resulting entrepreneurial profit is –€27,800.

Profitability continued to decline on crop farms. Falling cereal prices reduce returns and the profits of cereal farms, despite the moderate growth of costs. No turn for the better is in sight for pig and poultry farms. The overproduction of pig meat in Europe and Russia's import ban have led to a decline in producer prices and have disturbed the market. The decrease in feed prices reduces costs but is not enough to offset shrinking returns, resulting in lower profitability.

The profitability of beef cattle and sheep farms improved slightly. The positive price development of sheep meat contributed to the improved results of sheep farms, although their level of profitability is modest. Dairy farms are also recovering from the previous year's drop, although the producer price of milk continues to be under great pressure. Costs on dairy farms were probably kept in check, and the structural development, taken into account in the forecast, increases returns. The forecast estimates that the number of cattle per farm rose from 32.5 to 34.7.

The profitability ratio calculated in the forecast was 0.58 for dairy farms, 0.53 for beef cattle farms, 0.20 for pig farms, 0.37 for poultry farms, 0.52 for horticulture in the open, 0.69 for greenhouse enterprises, and 0.10 for cereal farms.

EU typology and weighting

In the results of profitability bookkeeping, production types and economic size classes are determined using EU farm typology. The typology was revised in 2010, when classification based on the standard output (SO) of products was introduced. Classification is based on the standard output of crops and livestock calculated by region (NUTS 3 area). Output is calculated using the region's average yields, animal output and prices.

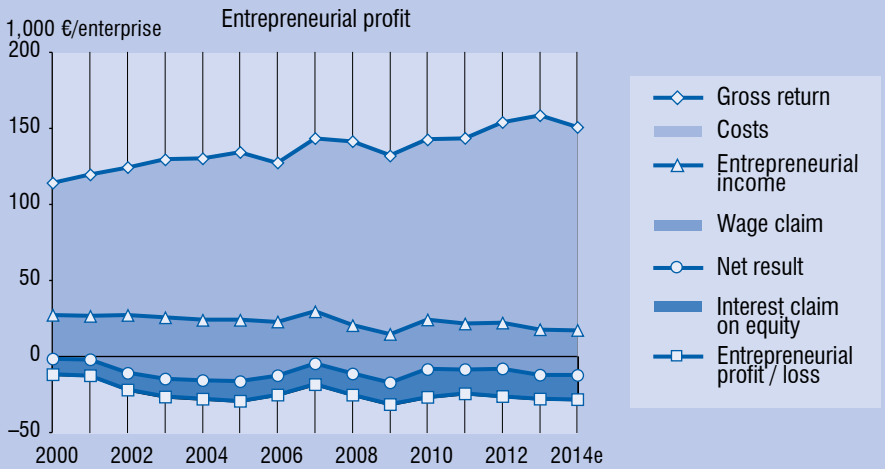
The production type and economic size class of an enterprise are determined by multiplying the areas under crops and the average numbers of livestock by their regional standard outputs. The sum of these products is the economic size of the enterprise in euros. The production type is determined on the basis of the total standard output of the enterprise.

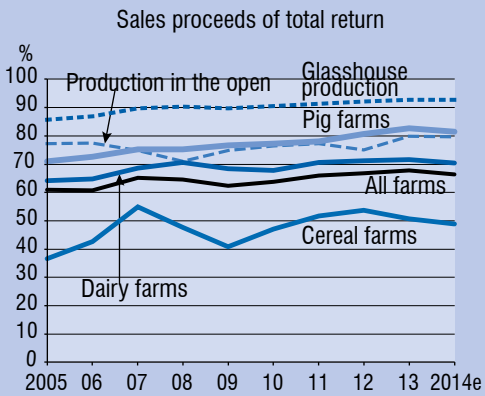
The calculation of the production type 'Sheep, goat and other grazing livestock' has been revised by omitting riding and harness racing stables from the group of farms used in weighting. This makes the results of sheep and goat farms more representative. The results presented here and in EconomyDoctor have been calculated using the new typology and weighting for the entire period under review.

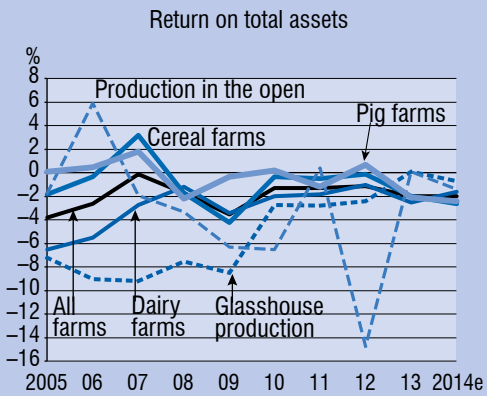
Results of agriculture and horticulture available in EconomyDoctor

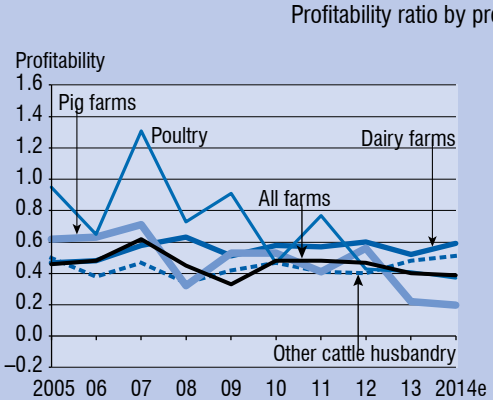
The results of agriculture, horticulture and reindeer husbandry can be found online in EconomyDoctor. Users can, for example, view the average results of enterprises representing various production types and economic size classes since 2000, using the chosen area classifications. The results shown are calculated by means of weighting on the basis of the figures of the bookkeeping farms, which means that they can be extrapolated to the area under review.

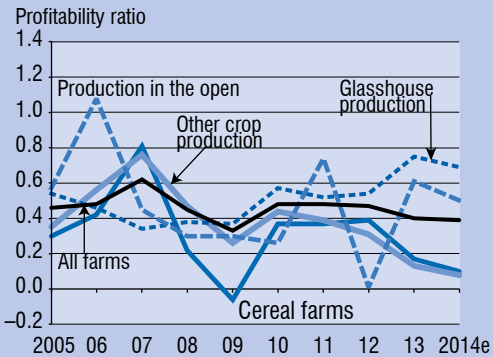
EconomyDoctor also provides the average figures for agriculture in EU Member States (FADN Standard Results) and the profitability and equity ratios calculated by Luke (FADN Advanced Results). The FADN data cover the results of more than 80,000 farms, which are weighted so as to reflect the finances of around 5 million farms in the EU.











Result and profitability development of agriculture and horticulture.

4.2. Economic development of Finnish agriculture and horticulture

The trends in the return and cost items as well as assets of Finnish agriculture and horticulture in general are followed at Luke using the total calculation system for agriculture. In this system, the results for Finnish agriculture and horticulture as a whole are calculated from farm-specific profitability bookkeeping data by weighting and summing up.

Besides the actual results, preliminary results for 2014 are calculated on the basis of the preliminary farm-specific results arrived at using the forecasting system of the profitability bookkeeping (see section 4.1). The results, which are constantly updated, are available in the total calculation online service of Luke's EconomyDoctor website (www.mtt.fi/economydoctor/total_calculation).

Trends in the results

According to the forecast, the gross return of agriculture and horticulture was €5.9 billion in 2014, while the production costs totalled €7.1 billion. The entrepreneurial profit, obtained as the difference between the gross return and production costs, which indicates absolute profitability, was negative, –€1.2 billion.

When the costs due to the farming family's labour input and own capital are excluded from the production costs, we arrive at the entrepreneurial income remaining for these inputs. The forecast for the entrepreneurial income of 2014 is €592 million, 5.7% lower than in 2013. Since 2000, the entrepreneurial income has been lower only once, in 2009, when it was €534 million.

Specification of returns

Of the €5.9 billion gross return of agriculture and horticulture forecast for 2014, €1.95 billion or 35% came from support payments. Support payments also include the items of investment subsidies from earlier years allocated to 2014. Investment subsidies are allocated as returns alongside the corresponding asset item depreciations.

The return on livestock accounted for

Economic development of agriculture and horticulture (€ million) and profitability ratio as well as return on total assets.

Year	Farms represented	Total return	Production cost	Entrepreneurial profit	Entrepreneurial income	Entrepreneurial income at 2014 prices	Profitability ratio	Return on total assets %
2014e	52,031	5,860	7,085	–1,225	592	592	0.33	–2.9
2013	54,369	6,152	7,391	–1,241	628	641	0.34	–2.9
2012	56,792	6,146	7,409	–1,266	767	806	0.38	–2.4
2011	58,001	5,863	7,004	–1,135	828	899	0.42	–2.1
2010	59,303	5,689	6,927	–1,234	892	1,008	0.42	–2.5
2009	61,018	5,405	6,859	–1,453	534	657	0.27	–4.5
2008	62,540	5,644	6,982	–1,333	645	808	0.33	–3.6
2007	63,867	5,567	6,577	–1,006	992	1,236	0.50	–1.9
2006	66,434	5,038	6,252	–1,210	766	994	0.39	–4.0
2005	67,542	5,038	6,330	–1,290	808	1,047	0.39	–5.0
2004	70,161	4,942	6,247	–1,303	800	1,049	0.38	–5.2
2003	71,918	5,030	6,264	–1,234	900	1,161	0.42	–4.9

35% and the return on crop production for 18% of the gross return. The latter also includes intermediate products, i.e. feedstuffs and seeds produced and used on farms.

The return on horticulture represented 10% of the gross return. This includes sales proceeds from products sold. The return on crop production, livestock and horticulture also include the prices of products delivered outside the agricultural sector or used by the entrepreneur.

In calculating the results, individual revenue and expense items and support payments are allocated as returns and costs to the year of production, in accordance with the accrual principle. This means that annual variation in yields and returns and changes in prices and support payments are directly reflected in annual results. The transfer of sales or support payments to the next accounting year has no impact on the results.

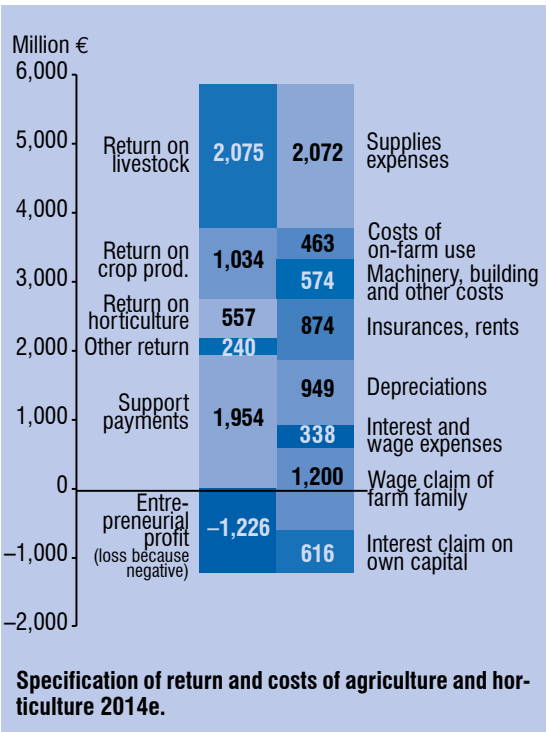
Specification of costs

According to the forecast for 2014, the production costs of agriculture and horticulture totalled €7.1 billion. The largest cost item, the supplies cost of €2.1 billion, accounted for 29% of the production costs. The depreciation cost of €0.95 billion represented about 13% of the production costs.

The wage claim cost due to the farming family's own work input calculated by the hourly wage claim of €15.1 was €1.2 billion, or 17% of the production costs. This would be the cost to the farmer if the work had been done by hired labour.

In profitability bookkeeping, the wage claim cost of own capital is calculated using a farm-specific, risk-based interest rate (see section 4.1). The average interest rate of all farms was around 4.7%, and the interest claim cost based on this amounted to €616 million in the forecast for 2014.

For a more detailed specification of cost and return items, see page 94.



Specification of return and costs of agriculture and horticulture 2014e.

Profitability

The entrepreneurial income of about €592 million in 2014 should cover the costs due to the farming families' labour and own capital. The labour hours of farming families at an hourly wage of €15.1 result in a wage claim cost of €1.2 billion, while the own capital of about €13.4 billion gives an interest claim cost of €616 million. The profitability ratio of 0.33 is obtained by dividing the entrepreneurial income by the sum of the wage and interest claim cost. This means that the income covers 33% of the wage and interest claim cost. The profitability ratio of Finland's entire agricultural sector has been about 0.1 units lower than the average profitability of the 36,500 largest Finnish farms obtained from the bookkeeping results.

If the total wage claim of €1.2 billion is deducted from the entrepreneurial income of €592 million, the compensation for own capital is negative, and the return on own capital also turns negative, to the level of –4.5%. The return on total assets was also negative, –2.9%.

Solvency

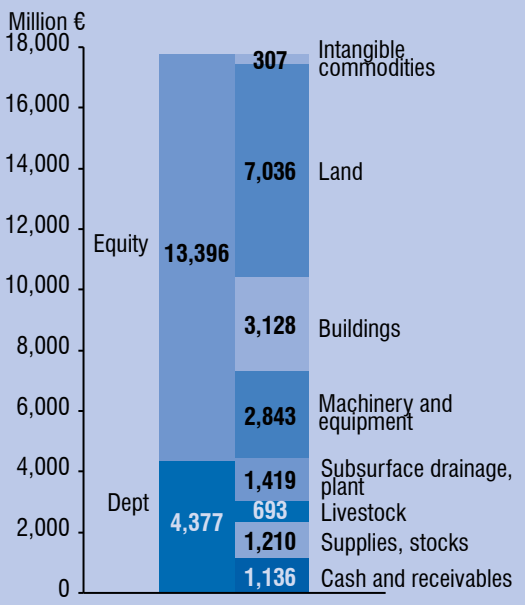
According to the forecast, at the end of accounting year 2014 the capital invested in agriculture and horticulture totalled €17.8 billion. Asset items have been measured at current value, and investment subsidies or investment reserves are not deducted from the value of assets. The depreciation cost of fixed assets purchased using investment subsidies is calculated, and the subsidies are allocated as returns alongside the corresponding depreciation amounts.

Around €13.4 billion, or 75%, of the total assets is farmers' own capital. Total liabilities amounted to €4.4 billion at the end of 2014. No debts of the farming families for forestry, other business activities and private household purposes are included in the debts of agriculture. The debt-to-turnover ratio, i.e. relative indebtedness, was 82%. Turnover only includes sales proceeds and support payments.

Weighting system and change in calculation

In the total calculation, the results for the whole country are obtained by summing up the results of the bookkeeping farms. In 2014, the total number of farms in Finland was about 52,000, but the number of bookkeeping farms was only 900, which means that the figures for each bookkeeping farm are included several times in the calculation in accordance with the weighting coefficient determined for each farm. The weighting coefficients are determined simultaneously for all farms, so that the number of farms by production type, economic size class and support area calculated by means of weighting corresponds to the atual number of farms. The areas cultivated in the support areas calculated by means of weighting must also correspond to the actual total areas.

In the specification of returns, the return items for crops include as a new component the value of feedstuffs and seeds produced and used on the farms since 2000. In the profit and loss account, these items are entered as a single item after turnover, which means that they are included in the gross return. Since the same item is included in the costs under 'costs of on-farm use', it has no impact on entrepreneurial income or the profitability ratio. This change in calculation highlights the importance of growing crops for feed use on livestock farms and makes it possible to better compare the two groups of enterprises: those that use their own feed and those that purchase their feed.



Balance sheet of agriculture and horticulture 2014e.

5. AGRICULTURE AND THE ENVIRONMENT

5.1. Environmental impacts of agriculture

Besides food production, agriculture has an important role in maintaining biodiversity and rural landscapes and providing recreational services. In addition to their positive effects, agricultural activities also have negative impacts on the environment, i.e. the soil, waters and air.

Soil

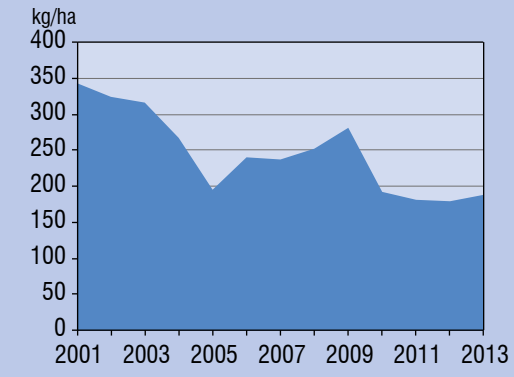
Environmental loading from arable land depends on the soil type, cultivation properties and crop rotations. Finnish soil contains no heavy metals, its average phosphorus level is satisfactory, acidity is increasing, and the amount of organic matter is decreasing.

The phosphorus level in arable land is an indicator of both productive capacity and environmental loading. In Finland, the phosphorus levels have been rising up until the present, even if phosphorus fertilisation has been reduced considerably through, for example, the fertilisation restrictions under the agri-environment schemes. At present, the annual increase in phosphorus through purchased fertilisers is less than 6 kg/ha, which is only a quarter of the level in 1995. The amount of phosphorus entering the land in animal manure (about 8 kg/ha) is higher than the amount of phosphorus contained in purchased fertiliser, and no significant reduction has taken place in this since 1995.

Studies have shown that some further reduction in total phosphorus fertilisation (purchased fertiliser + manure) would be possible without a decrease in yields, except in parcels where the phosphorus levels are particularly low. In the light of current knowledge, turning the phosphorus balance of arable lands into a negative one is the most efficient way to permanently reduce the phosphorus loading of waters.

The load on waters from arable farming is also influenced by the soil structure. Soil compaction reduces the permeability of the soil, which increases the risk of nutrient surface runoff and erosion. It also weakens the nutrient intake of plants, which lowers the nutrient utilisation rate. Poor permeability may also increase the release of greenhouse gases.

Only about 7% of the surface area of Finland is arable land. The ownership of arable land is quite decisive in terms of the long-term productivity of the land. Studies have shown that less land improvement work is being carried out on leased areas than on lands owned by the farmer. The use of agricultural lime, for example, has halved from the levels before Finland joined the EU, due to the increased share of leased land. The average application amount of lime for land improvement is now less than 200 kg/ha/year, which is not enough to maintain the productive capacity of arable lands.



Quantities of land improvement lime used (kg/ha). Source: Luke, Statistical services.

Loading of waters

Nutrients leach into ditches, rivers, lakes, and the sea from arable land, causing eutrophication of water bodies. This can be seen in the turbidity of the water, increased growth of algae, and mass blooming of toxic blue-green algae in the summer. Even if the volumes of nutrients used per hectare have been significantly reduced, the eutrophication of waters continues and no improvement in the state of water bodies has been observed by measurements.

The Finnish Environment Institute estimates that about 50% of the nitrogen loading and 60% of the phosphorus loading comes from agricultural sources. In the nutrient loading of the Baltic Sea, Finnish agriculture accounts for about 4% of the nitrogen loading and about 5% of the phosphorus loading. In the loading on the Archipelago Sea and coastal waters, the share of Finnish agriculture is much greater.

The loading of water bodies is caused by both arable farming and livestock production. Because of the regional concentration of livestock production, the amount of manure produced is excessive in many places relative to the agricultural area utilised and the needs of the crops cultivated. The phosphorus contained in manure, in particular, has become a problem.

Use of pesticides

The use of pesticides in Finland increased until 2010, after which their use has declined slightly. Most of the pesticides used are products intended for preventing weeds (herbicides). The main reason for the previous growth in pesticide use was increased cereal monoculture and the wider use of non-tillage technology. Farmers also switched over to pesticides which need to be used in larger doses. However, on the European scale, the quantities of pesticides used in Finland are still quite moderate.

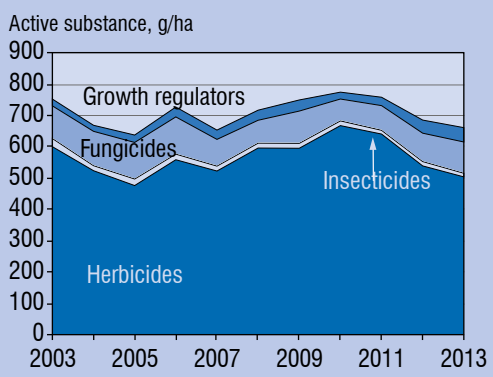
Emissions to the air

Climate change poses new challenges to Finnish agriculture. Measures to adapt to climate change are changing the prioritisation of species and varieties and the relative profitability of different crops and production methods. Climate change is also influenced by agricultural activities.

Greenhouse gas emissions from the agriculture sector itself represent about 9% of the total emissions in Finland. Most of them are due to the digestion of ruminant livestock (methane emissions) and decomposition of organic matter in the soil, manure and nutrients (nitrous oxide emissions).

According to the United Nations Framework Convention on Climate Change (UNFCCC), carbon dioxide emissions from the soil and emissions from the energy consumption of farms are not calculated for the agriculture sector itself. Carbon dioxide emissions are reported for the so-called LULUCF sector (Land Use, Land Use Change and Forestry). Emissions from the energy consumption of farm buildings, grain drying and agricultural machinery are reported for the energy sector.

Greenhouse gas emissions from the agriculture sector decreased by 11% during 1990–2011. The most significant decrease occurred during the early years



Use of pesticides (active substance g/ha). Source: Luke, Statistical services.

of the report period. During 2005–2011, emissions increased by 0.6%.

The agriculture sector is excluded from emissions trading. However, the objective set for Finnish agriculture is that by 2020 the greenhouse gas emissions should be reduced by 13% from the emission levels in 2005. This objective is difficult and expensive to reach by reducing the use of nutrients and by adapting the number of ruminants. If consumption of dairy and meat products remains at the current level, the risk of production and thereby also emissions moving to other countries is high.

According to the 2014 report of the Finnish Climate Panel, the most cost-efficient measures to reduce agricultural greenhouse gas emissions include diminishing the need to clear organic soil for cultivation, for example, by promoting the solid-liquid separation of manure, long-term fallowing or grass cultivation of organic soil and reforesting arable lands which have become redundant in regard to production and food security.

Biodiversity in farming environments

Biological diversity comprises the abundance of species, diversity of habitats and intra-species genetic diversity. The decline in biodiversity is considered to be a serious environmental problem as biological diversity is the foundation for the functioning of ecosystems. Without diversity, ecosystems are not capable of adapting to changes in the environment, such as climate change.

Besides biodiversity, it is also considered important to secure the functioning of ecosystems and the services produced by them. Ecosystem services refer to the tangible and intangible services derived by humans from nature. They can be divided into provisioning, regulating, supporting, and cultural services. Biodiversity also lays the foundation for ecosystem services.

Agricultural production is based on the utilisation of biological diversity. Similarly, many wild plant and animal species have over centuries adapted to utilising agricultural environments created by man.

The positive impact of agriculture in enhancing biodiversity was at its greatest at the time when animal feed was produced on meadows and natural pastures. The growth of farm size since the 1950s together with increased input intensity and farm-specific and regional specialisation has led to a decline in the biodiversity of farming environments and increased the numbers of threatened species and habitats.

For some wild species, changes in their habitats due to new and more efficient production methods have been too rapid, and they have not been able to adapt to the new conditions. In particular, organisms which depend on meadows and forest pastures have declined and become endangered due to the decrease in grazing and cattle husbandry. According to an assessment of threatened habitats, the highest share of these of the total number of habitats of a certain type is found in traditional biotopes, of which 93% are threatened.

However, in habitats maintained by agriculture, numerous wild plant and animal species are still present which benefit from farming activities, open arable areas and grazing livestock, as well as from many measures related to the agri-environment scheme and non-productive investments.

Landscape and recreation value of arable environment

The countryside and rural margin areas around towns and cities with arable lands offer important recreation environments for Finnish citizens. Farming environments are important for outdoor recreation, especially in areas with a high share of agricultural land. Farming environments are commonly used for nearby recreation, especially in southern Finland.

On average, the Finns engage in outdoor activities close to their home

170 times per year, of which 35% takes place in farming environments. This means a total of 230 million instances of outdoor recreation per year. Besides nearby outdoor activities, agricultural areas are also used for recreation involving overnight stays. The average number of nature trips per year is eight, and the average total number of days spent on such trips is 25. Summer cottages and holiday homes are the most popular destinations. About a quarter of nature trips are made to areas with both agricultural and forest activities. Altogether, this means 10 million days a year spent on nature trips in farming environments.

As rural tourism is hoped to become a significant source of livelihood in the countryside, it would be important to consider how farming environments could be developed into a real attraction in rural tourism destinations. One way to promote landscape values and access to farming environments for outdoor recreation is through the agri-environment scheme.

Studies have shown that the valuation of agricultural landscape is improved, in particular, by the presence of grazing animals in the landscape and the renovation of farm buildings located on open fields. Both of these landscape features are becoming less and less frequent because of the aim for higher efficiency in agriculture and regional differentiation of production sectors.

5.2. Agri-environmental regulation

In the new EU programming period, which started in 2015, the baseline for environmental protection in agriculture continues to rest on the so-called cross-compliance conditions, comprised of the requirements for Good Agricultural and Environmental Condition and the Statutory Management Requirements. From the environmental perspective, the most significant element in the agricultural policy reform is the even stronger emphasis on and recognition of the linkage between agricultural support and the environment as an obligation which is binding on all European farmers.

In this period, 30% of direct payments are targeted at so-called greening measures, including ecological focus areas, crop diversification and permanent grassland. As a concrete measure, farmers in Uusimaa and Finland Proper and on Åland must designate 5% of their agricultural area as an ecological focus area. Arable farming must be diversified to include two to three crops, depending on the size of the farm. In addition, permanent grasslands must be maintained. Organic production is considered to fulfil the greening conditions, which means that it is entitled to the greening payment without the measures listed above.

Impacts of agri-environment scheme

According to the final report of the follow-up study on the impacts of the Finnish agri-environment scheme (MYTVAS 3) published in 2014, the nutrient loading potential of agriculture measured by nutrient balances has continued to decrease for both phosphorus and nitrogen. The decrease of the loading potential is mainly due to the decrease in the use of artificial fertilisers.

Despite the decrease in nutrient balances, the nutrient leach from manure in concentrated livestock production areas is becoming a larger problem than before. Indeed, the basic problem of the nutrient loading of Finnish agriculture is the spatial segregation between livestock production and plant production, which diminishes the feasibility of nutrient use. It is therefore crucial to focus on measures that both improve the exploitation of the nutrients in manure and reduce the amount of nutrients that end up in manure.

The phosphorus loading from one

hectare of cultivated land has decreased in Finland during each programming period: during the third programming period (2007–2013), it was only around 80% of the level of the first programming period (1995–1999). During the second programming period (2000–2006), the nitrogen loading of waters increased due to the growth in cultivation area, but decreased during the third programming period (2007–2013). A similar development was seen in the nitrogen loading calculated per hectare of cultivated land.

The impact of agri-environmental measures in reducing the greenhouse gas emissions of the agriculture sector has been rather insignificant as a whole. Apart from the special measures agreements regarding long-term grass cultivation of peaty arable lands and the incorporation of liquid manure into the soil, the agri-environment scheme has not included any measures which directly reduce gas emissions.

Incorporating nature management fields as a voluntary measure under the basic agri-environment measures has significantly enhanced biodiversity in agricultural environments. According to the measure-specific results of the follow-up study MYTVAS 3, biodiversity gains have also been locally achieved when measures such as green fallowing and nature management fields and special measures agreements, such as organic production, the management of traditional biotopes, the management of multifunctional wetlands, and the establishment and management of riparian zones, have been implemented to a sufficiently broad scale.

In order to achieve environmental effectiveness, the MYTVAS 3 final report recommends adapting and tailoring the objectives, content and support level for agri-environmental measures on a regional, sector and farm-specific level, as there are significant differences between rural areas in regard to the state of the agricultural environments and societal needs.

New agri-environment climate scheme from 2015

On 12 December 2014, the European Commission approved the fourth and newest agri-environment scheme. In the new scheme, the former model, composed of basic, additional and specific measures, will be replaced by a parcel-specific system. In the new scheme, the farmer implements follow-up of soil fertility as a farm-specific measure and commits to complying with plant and soil fertility class values set for nitrogen and phosphorus fertilisation. Besides these measures, there are parcel-specific agri-environment measures concerning plant cover in winter, enhancing biodiversity and the utilisation of manure and recycled nutrients.

Specific contracts are concluded on more detailed and site-specific environmental measures to reduce nutrient leaching, increase biodiversity, and reduce emissions to the air. The measures concerning plant cover in winter and riparian zones as well as the measure concerning nature management fields are targeted on the grounds of water protection so that, in the catchment areas of rivers discharging into the Baltic Sea, the measures are more demanding and the payment to farmers higher.

The funding of the Rural Development Program for Mainland Finland 2014–2020 totals €8,265 million. The share of the agri-environment-climate measure is €1,586 million, about €200 million per year, which is a little less than in the period 2007–2013. A total of €326 million has been allocated to promoting organic production and €458 million to animal welfare.

The main topics discussed during the preparation of the scheme were the same as before: the limits for nitrogen and phosphorus fertilisation, the percentages for the usability of animal manure, the use of start-up phosphorus in fertile soil, and targeting the measures to the most environ-

mentally sensitive areas. Commitments under the new programming period will be entered into as of spring 2015.

5.3. New plans for water management

According to the Government Resolution from 2006 on guidelines for water protection, nutrient loading from agriculture was to be reduced by at least a third from the average in 2001–2005 by the year 2015. The objective was to reduce phosphorus loading by circa 3,000 t/a and nitrogen loading by circa 30,000 t/a.

The objective of the EU Water Framework Directive is to protect, improve and restore waters in order to prevent their status from declining and to secure a good status of the waters in the entire EU in 2015. The resolution also strives to prevent harmful substances from entering the waters, and to reduce damage caused by floods and drought. For this purpose, Finland was divided into eight water management areas, each with a specific water management plan designed for the area.

Objectives not met within time frame

Nutrient loading from agriculture involves non-point source loading from over a million agricultural parcels with highly varied characteristics. Besides the physical characteristics, such as slope and soil type, water loading from a specific parcel depends on the weather conditions and cultivation and tillage practices.

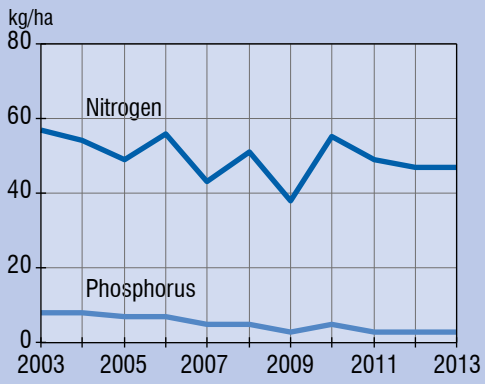
According to the Water Framework Directive, the assessment of the status of waters is made by comparing the current status with an estimated natural state. In 1995–2014, the fertiliser sales per hectare of cultivated land decreased from 92 kg to 75 kg for nitrogen and from 16 kg to 6 kg for phosphorus. During the same period, there was no decrease in the yields per hectare, which means that the nutrient balances had improved considerably.

The trend is correct considering both the efforts to reduce nutrient loading and the profitability of agriculture. We should bear in mind, however, that the average per hectare is composed of highly varied fertilisation volumes which may have much higher loading potential in areas susceptible to erosion. Certain risk areas load the waters much more than average.

In Finland, about 90% of the loading occurs outside the growing season, which means that it is important to consider what happens between harvesting and sowing. In this respect, too, the trend is the right one, as the voluntary agri-environment scheme and changes to the legislation have increased plant cover in winter, which reduces erosion, and less manure is spread on the lands in the autumn.

The objectives set for the reduction in loading were not met within the time frame. Particularly as regards phosphorus, the soil reacts very slowly to changes in fertilisation. Therefore, even significant reductions in the annual nutrient balance are not immediately reflected in the loading.

The concentration of livestock production and growing unit size are also a problem as regards meeting the objectives. Transporting manure is



Surpluses of nutrient balances (kg/ha).

costly. Manure is still often spread through broadcast spreading instead of incorporation of slurry into the soil, the latter of which being more expensive. In addition, manure is often spread based on the nitrogen need of the crop. This means that the phosphorus levels become too high for the needs of the plants and the loading potential increases. A new threat to water quality is climate change which is expected to increase precipitation, especially outside the growing season.

During 2015, new objectives will be set for water protection. For the part of the Baltic Sea, the objectives will be published in the sea management measure scheme for 2016–2022, which was presented to the public in early 2015. Drafts for water management plans for inland waters and flood risk management plans for 2016–2021 will be presented together with the sea management measure scheme.

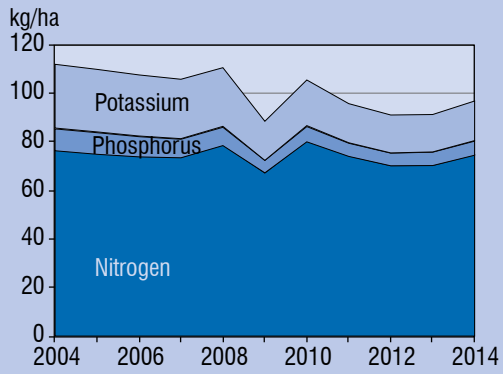
5.4. Main topics and future perspectives

Developing organic production

Organic production has already gained a strong foothold in Finland, as shown by its share of about 9% in the total cultivation area. However, the market share of organic products is only around 2%, which means that the production chain is not working as it should be.

In 2010, the Country Brand Delegation set a target to increase the share of the organic cultivation area to half of the total cultivation area by 2030. Efficient organic production and nutrient economy would call for closer interaction between crop and livestock production and better organisation of nutrient cycling than we have at present.

The Ministry of Agriculture and Forestry set its own, more realistic, target to increase the share of organic area in Finland to 20% of the total cultivation area by 2020. In the new Rural Development Program for 2015–2020, a total of €326 million has been allocated for supporting organic production and the support payments to organic farming will increase slightly from the present.



Use of fertilisers (kg/ha). Source: Luke, Statistical services.

Gypsum

Increasing plant cover and riparian zones are effective means for reducing the amount of particulate phosphorus drifting into waters through erosion. The means available for decreasing soluble phosphorus loading are more limited. Reducing the concentration of soluble phosphorus in the soil also reduces soluble phosphorus loading.

Recently, the spreading of gypsum onto cultivated land has been proposed as an active means for decreasing phosphorus loading. There is strong theoretical evidence for the phosphorus-retaining effect of gypsum (calcium sulphate, $CaSO_4$). Lab tests have given promising results for the abilities of gypsum as a retainer of phosphorus. Gypsum treatment experiments on cultivated land have reduced the soluble phosphorus leaching by as much as half in the following years compared

to previous levels. Even though short-term experiments on cultivated land have been promising, supporting gypsum treatment has not yet been incorporated into the agri-environment measures.

Permanent grassland

Maintaining permanent grassland is an objective across the entire EU area. The requirement to maintain permanent grassland as of 2015 applies to permanent grasslands according to the new definition. According to the Direct Payments Regulation (Regulation (EU) No 1307/2013 of the European Parliament and of the Council), permanent grasslands are agricultural lands which are used for cultivating grasses and other herbaceous forage and have not been included in the crop rotation of the farm in at least five years.

In 2015, a land parcel is classified as permanent grassland if it has been grassland continuously during 2010–2014 and it is also reported as grassland in 2015 (in accordance with the growth codes for permanent grassland of the Agency for Rural Affairs). For the years 2010–2014, only land parcels that have been solely grassland are taken into account. In Finland, a large portion of the grasslands of dairy and livestock farms would be classified as permanent grassland if the parcel rotation has only included grasslands.

The status of permanent grassland does not impose actual restrictions on use if grass cultivation does not decrease within the whole of Finland. According to the interpretation of the regulation by the Commission, parcel-specific grassland measures according to the environmental payment scheme, such as riparian zones, grassland for green manure, nature management field grassland or perennial environment grasslands, do not imply a permanent grassland status for the land parcel.

The status of permanent grasslands is monitored on a national level. If the area of permanent grassland decreases as of 2015 by 5% in the whole of Finland, farmers may be required to transform grassland parcels which have been taken into another use back to grass cultivation.

Greening

New environmental requirements which have been added for direct payments, the so-called greening measures, sparked vivid discussion. Greening measures refer to measures which go beyond the cross-compliance conditions but are more limited than the agri-environment measures. 30% of direct payments are targeted at greening measures.

Farms which were engaged in organic farming or primarily grassland cultivation were granted full or partial exemption from greening measures. In order to avoid double funding, the coordination of greening measures and the new agri-environment climate scheme required clear distinctions in definitions.

In order to be eligible for support payments, farmers must comply with three greening measures:

1) Crop diversification: farmers must cultivate at least two crops on 10–30-hectare farms and three crops on farms larger than 30 hectares. Farms north of the 62nd parallel and adjacent areas form an exception; they are required to produce only two crops on farms larger than 10 hectares. The diversification requirement does not apply to farms which cultivate over 75% grassland.

2) Maintaining permanent grassland: monitored on a regional or national (member state) level.

3) At least 5% of the arable area of the farm must be a so-called ecological focus area. In Finland, fallow land, nitrogen-fixing plants, short rotation coppices, and so-called landscape features in accordance with cross-compliance conditions are accepted as ecological focus areas.

The requirement for ecological focus areas may increase to 7% in 2018. Excep-

tions in regard to ecological focus areas have been provided for areas and farms which comply with some of the requirements (e.g. predominantly forested areas and grassland-focused farms). In Finland, farms which are located in Finland Proper and Uusimaa or on Åland are required to have ecological focus areas. The ecological focus area requirement does not apply to farms in other regions, as they are exempted due to the area being predominantly forested.

Utilising agricultural nutrients

33,000 tons of phosphorus fertilisers are used in Finland annually. A little over half of the phosphorus comes from manure and refinery sludge. Around 230,000 tons of nitrogen fertilisers are used annually. Around a third comes from manure and refinery sludge. All in all, Finnish agriculture produces around 20 million tons of manure annually. The problem is, however, that concentrated livestock production takes place in different areas than the arable farming which utilises manure. In order for transportation of manure to be profitable, it has to be processed somehow.

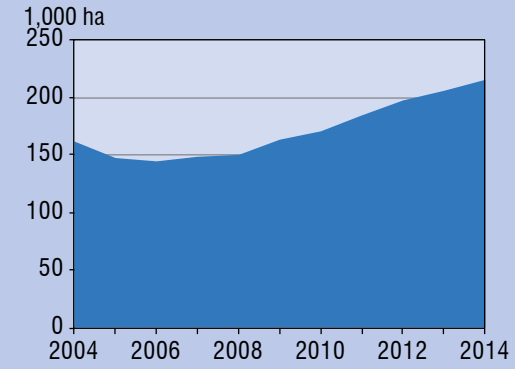
In September 2014, a two-year project was launched to secure the efficient utilisation of manure and other organic matter containing nutrients produced in Finnish agriculture. Central measures of the project include environmental payments for agriculture and training, guidance, investments, and support for enterprises and projects. The project is being carried out in collaboration with farmers' organisations and other national, regional and local actors. €6.5 million of the Rural Development Program's funds are allocated for supporting enterprises and projects that further nutrient recycling, particularly in the Archipelago Sea river catchment area.

Bioeconomy

Bioeconomy does not have one specific definition, and different actors highlight different aspects. For some, bioeconomy is about biotechnology, while some emphasise biofuels. Many perceive bioeconomy as the utilisation and processing of biomass, in which case bioeconomy refers to all production which produces, processes, and markets renewable resources as well to the consumption of products made from renewable resources. This includes the forest industry, the chemical industry, the fishing industry, the agriculture industry, forestry, the food industry, and the pharmaceutical industry. In addition, nature tourism can be classified as part of bioeconomy.

Bioeconomy strives to reduce dependency on fossil fuels and to maintain the diversity of ecosystems. Within the framework of green growth, it promotes economic growth and the creation of new jobs in accordance with the principles of sustainable development.

The Finnish Bioeconomy Strategy was published in 2014. The objective of the strategy is to generate economic growth and new jobs through the growing bioeconomy business and products and services of high added value, simultaneously maintaining the functionality of ecosystems in nature.



Area under organic production in 2004–2014. Source: Luke, Statistical services.

Nitrates Decree revised to improve the protection of waters and air

Tarja Haaranen

The revision of the Nitrates Decree (931/2000), issued in 2000, began in 2011. The operating environment for agriculture has changed in many ways in ten years, and the Decree had caused a range of difficulties in interpretation. The purpose of the reform was to clarify the contest of the Decree and bring it up-to-date using the latest research findings.

A working group representing a wide range of stakeholders worked for almost three years on the reform, until the revised Decree was issued at the end of 2014. The revised Decree aims to reduce the leaching of nitrates from agriculture and horticulture into waters, as well as to cut down ammonia emissions into the air. More than 90% of Finland's ammonia emissions originate from agriculture, and the measures set out in the Decree will also contribute to achieving the limitation targets for ammonia emissions pursuant to the EU National Emission Ceilings Directive. The title of the Nitrates Decree was changed in order to correspond to the amended content.

Amounts of nitrogen fertilisers revised

The Decree specifies the maximum amounts of nitrogen fertilisers per year for various crops, separately for mineral and organic soils. The maximum amounts are smaller than before, which will reduce the high nitrogen balance of field plots and thereby reduce the risk of nitrogen leaching. The amounts are based on a study by Luke in which information was gathered on the crop response of various crops to different amounts of nitrogen fertilisers. The study assessed the biologically acceptable optimum limits that do not pose major environmental risks. The higher crop potential of the most recent varieties was also taken into account. The amounts applied on organic soils are smaller than those applied on mineral soils, since the nitrogen released from soils containing high levels of organic matter reduces the need for nitrogen fertilisation.

Manure to be spread during the growing season

The application period of manure and organic fertiliser products has been shortened by two weeks in autumn, meaning that application will be prohibited between 1 November to 1 April. The objective is to limit the use of manure to the growing season, and thereby lower the risk of nutrients leaching into waters. Research indicates that in Finland, the application of manure in autumn increases nitrogen leaching much more than application in spring. In order to reduce the discharge of nutrients, it is also crucial to avoid soil compaction caused by spreading manure with heavy machinery, and this risk is often greatest in spring when the sub-soil beneath the plough layer is wet.

The Nitrates Decree was issued pursuant to the Environmental Protection Act. A provision is being prepared to the Environmental Protection Act which will enable the extension of the application period of manure and organic fertiliser products in the event of exceptional natural conditions. Such conditions could include a particularly rainy summer or autumn that has prevented spreading. This will increase flexibility in individual cases.

Updated manure storage requirements

The requirements for manure storage capacity specified in the previous Decree were based on data from the 1980s, so it was high time they were updated. A growth in manure and washing water volumes, together with rainy growing seasons, have in some places resulted in a need to spread manure also in autumn. Increasing the manure storage capacity enables the application of manure during the growing season.

The manure storage capacities set out in the Decree are based on a survey conducted by Luke and the Finnish Environment Institute (Syke), which examined manure production volumes for different types of manure and animal. The manure volumes include actual amounts of excreta, litter and wash water generated under normal circumstances. The size of manure storage facilities has been enlarged due to changes that have taken place in animal feeding and in the operation of animal housing, for example. The amount of wash water from animal housing has also increased, following the transfer to automated systems due to larger unit sizes.

The new capacity requirements apply to newly built storage facilities. In calculating the manure storage volume, the following may be taken into account: manure treatment, farmers' joint storage facilities, transferring manure to another user, and deep litter in loose housing systems.

As the efficiency of nutrient recycling improves, the use of various organic fertiliser products increases. The requirements for their storage have varied from one area to another. One of the aims of the new Decree was to harmonise the practices of storing unpacked organic fertilisers. Farms that receive or store fertiliser products produced outside the farm must have appropriate storage facilities. However, fertiliser products with a dry matter content of 30% or more may be stored in heaps on a field. The nutrient discharges from the heaps can be managed by using appropriate base structures and by covering theheap.

Coverage required for new storage facilities

New manure storage facilities must now be covered; previously, this was only recommended. Slurry storage systems may be covered using either a fixed or a floating cover. A fixed cover prevents rainwater from entering the storage, reducing the required capacity. The coverage reduces odours and ammonia emissions. The best way to reduce ammonia emissions is to use a fixed cover made from concrete, for example. Tent-like covers and lighter roof structures cut emissions by 80% and floating covers by 60% compared to uncovered sites. A surface crust that forms on cattle slurry reduces emissions by 40% compared to slurry without a crust.

New Decree took effect in spring 2015

The revised Decree became effective on 1 April 2015, simultaneously with the new agricultural support schemes. Farmers must comply certain sections of the Decree in order to be eligible for support. The Decree was notified to the European Commission in early 2015. The Commission assesses whether the Decree meets the requirements of the Nitrates Directive. It remains to be seen how long the notification process will take and whether changes will need to be made to the Decree.

6. SOCIOECONOMIC DEVELOPMENT OF THE FINNISH COUNTRYSIDE

In international comparison, Finland is remarkably rural country, characterised by a low population density and long distances between cities. What is exceptional compared to other countries with a low population density is that settlement extends to nearly all parts of the country. Finland stands out as a sparsely populated country with a rather narrow belt of urban settlement in the south. In the urban–rural typologies of EuroStat or OECD, only the capital region belongs to the category of the most urban areas.

The changes in regional division of work have had an impact on the regional differentiation in the entire country, and also on the internal differentiations in the countryside. During recent decades, the population has concentrated in urban centers and southern Finland, as well as in regional centers or their surrounding areas. Concentration within municipalities first shifted from sparsely populated areas to villages and later to parish villages. Urban areas of more than 100,000 residents have grown the most, followed by population centers of 1,000–100,000 residents. The number of population centers has decreased through the decades, and according to Statistics Finland, there were only 735 of them in 2005. Smaller population centers have lost their residents to larger ones. Sparsely populated areas have been continuously losing their residents.

The decrease in the number of farms and the diminishing jobs in primary production due to structural changes in agriculture has emphasized the importance of other rural means of living as sources of livelihoods. The strongest phase of the structural change had passed by the late 1970s. The regional concentration of agriculture has nevertheless continued. The number of jobs and the share of the work force has developed most favorably in towns and urban-adjacent rural areas.

Three types of rural areas

The special regional features of the socioeconomic development of the countryside in Finland can be observed by using a regional division that typifies the special characteristics of rural areas. On the basis of the OECD rural typology, 400 of the total 432 Finnish municipalities were classified as rural in 2002 on the grounds that their population density was less than 150 inhabitants per square kilometer. In European comparisons, Finland ranks among the top five countries in terms of the share of rural areas in proportion to the total area, total population and GDP.

A division of rural areas into three types was developed for analyzing the differences and special characteristics of the extensive rural area in Finland. This is the typology commonly applied in Finnish rural policy. The typology includes variables indicating the degree of rurality of municipalities, the distribution of employment, and variables representing the regional structure, the economic structure, farming and development challenges, among others. The three types can be characterized as follows:

Urban-adjacent rural areas have the best development prospects. Their inhabitants have access to employment in nearby towns. Farmers and other entrepreneurs have access to diverse local markets. Most of such areas are located in southern and western Finland, where the conditions for agriculture and the diversification of the economic structure in the countryside are the most favorable. Many municipalities in these areas have net immigration.

This type of area is particularly favored by families with children. Thanks to net immigration, many municipalities in urban-adjacent rural areas, including small towns, are able to diversify their services and make investments, while maintaining their economic viability. In these areas, the level of well-being is among the highest in the whole country.

Rural heartland areas are strong areas of primary production. In certain areas, there are also industrial centers or specialized primary production clusters, such as pig and poultry husbandry, fur farming, and greenhouses. There are often several medium-sized population centers close to rural heartland areas. Municipal centers offer a variety of functions and services, and most villages are viable. The majority of rural heartland areas are located in southern and western Finland.

Sparsely populated rural areas are the most challenging in terms of regional development. Concerning socioeconomic development, there is often the risk of entering a vicious circle where the young move away, services disappear, agriculture declines, there are not enough new jobs to substitute for the loss of traditional ones, the population ages and the economic bearing capacity of municipalities becomes weaker. The short growing season and other natural constraints reduce opportunities to develop primary production. Most of the municipalities in sparsely populated rural areas are located in eastern and northern Finland.

Municipality-based regional typology

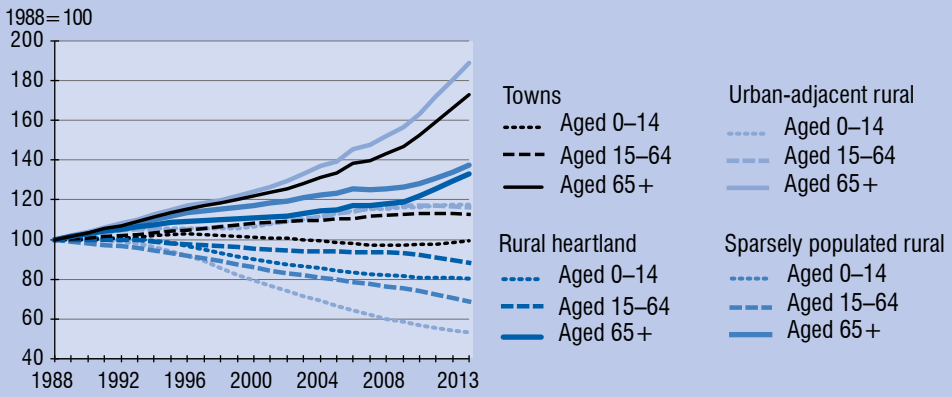
In accordance with the three types of rural areas, the 432 municipalities of Finland (municipal division of 2006) were distributed as follows: 58 urban municipalities, 89 urban-adjacent rural municipalities, 142 rural heartland municipalities and 143 sparsely populated rural municipalities. Over 1.3 million Finns lived in rural heartland municipalities and sparsely populated rural municipalities. According to the typology, 374 municipalities were classified as rural municipalities in 2005. The share of rural municipalities in relation to the entire population was 42 percent, and 94 percent in relation to the area of the entire country.

The change in the municipality structure has continued: according to the municipal division of 2010, Finland had 342 municipalities; in early 2015, only 317. After municipal mergers, the new, merged municipalities receive their classification as urban or rural based on the classification of their most populous 'old' municipality. A rural municipality can only be classified as one of the three types of rural area. As municipalities have merged into areas almost the size of provinces, this has diminished the efficiency of the municipal division as a means to illustrate regional variation.

The municipality-based triple typology has been or is being replaced with a place-specific categorization. This categorization consists of three classes for urban areas: the inner urban area, the outer urban area and the surrounding area. On the part of rural areas, a new class has been added in addition to the three previous ones: rural centers. This report still utilizes the traditional three types of rural area, since long time series are available with this classification, and the objective is to describe the development of rural Finland.

Development of the population in different types of rural areas

In accordance with the three types of rural areas, over 66 percent of Finns lived in urban areas, and sparsely populated rural areas accounted for 8.4 percent of inhabitants at the end of 2013. There were relatively more men in rural areas and more women in urban areas. In urban-adjacent rural areas, no gender is overrepresented.



Distribution of the population by age categories in different types of municipalities in 1988–2013 (Source of raw data: Rural indicators of Statistics Finland).

The age structure of an area's population is a key factor in terms of regional development. Services and infrastructure as well as the improvement of business opportunities require different solutions in different areas in order to guarantee welfare services that constitute the basic rights for the population. To put it simply, regional population development has followed a pattern whereby towns grow and become old, whereas sparsely populated rural areas lose their population and grow old. In urban-adjacent rural areas, the number of children, the working population and the aging population are increasing, and the situation differs from other rural areas. The number of under-15-year-olds has only increased in urban-adjacent rural areas; in urban areas, their share has stayed the same. This is partly due to the expansion of the functional area of towns and cities beyond their administrative borders. Studies have often observed that families move within the functional urban area according to their age. As children are usually raised outside urban centers, urban-adjacent rural areas offer an attractive option. In sparsely populated rural areas, the population is decreasing in all age categories, except for the over-65-year-olds.

The share of over 75-year-olds is estimated to grow rapidly in all municipality types after 2020. In the capital area, the share of the working population is decreasing at a slightly slower pace than other areas thanks to immigration, but the share of over 75-year-olds is simultaneously growing at an even faster pace than in rural areas. The baby boomers will create a 'peak' for a couple of decades, which will be evened out as the smaller generations reach retirement age. The aging population is increasingly wealthy and in better health, and it possesses significant know-how. The impact of the aging peak depends largely on how working life, the living environment, and services develop and are able to respond to the consequences of the growing share of the aging population.

In sparsely populated rural areas, the number of young adults (20–34-year-olds) underwent a steep decline in the early to mid-1990s. The flight of young adults from sparsely populated rural areas culminated in 2007, when a point was reached where the number of 20–39-year-olds had fallen to below half of the initial level of 1988. In terms of numbers of persons, the decline was from 169,776 people (in 1988) to 78,903 people (in 2007) and further to 71,815 people (in 2013). At the same time,

the size of the oldest population (over-80-year-olds) started to increase, with the steady growth of the 1990s and 2000s reaching its peak in 2013. At this point, the number of over 80-year-olds had doubled to 36,266 compared to the number in 1988. In the age group 20–24-year-olds, the share of women is 42.2 percent, which is reflected in the birth rates.

In rural heartland areas, the trend is similar to sparsely populated rural areas, even though young adults are not fleeing the areas as clearly. Population development is not as critical in the rural heartland as in sparsely populated rural areas, as the decrease in the number of young adults and the increase in the oldest population are more moderate. In 2013, the share of men in the age group 20–24-year-olds is 55.3 percent and 44.7 percent for women.

In urban-adjacent rural areas, population development is in many respects more favorable than in the other two areas. For example, the flight of young adults is even more moderate than in rural heartland areas. From the mid-1990s onwards, the depopulation of 20–29-year-olds has picked up some pace, but the net population loss among 30-year-olds and older age groups is not as prominent. Urban-adjacent rural areas seem to be more attractive to 30-year-olds and older age groups than the rural heartland and sparsely populated rural areas. In urban-adjacent rural areas, the size of the middle-aged population (45–59-year-olds) underwent a steep increase in the 1990s. In the 2000s, this age group is more than 1.5 times larger in urban-adjacent rural areas than in 1988.

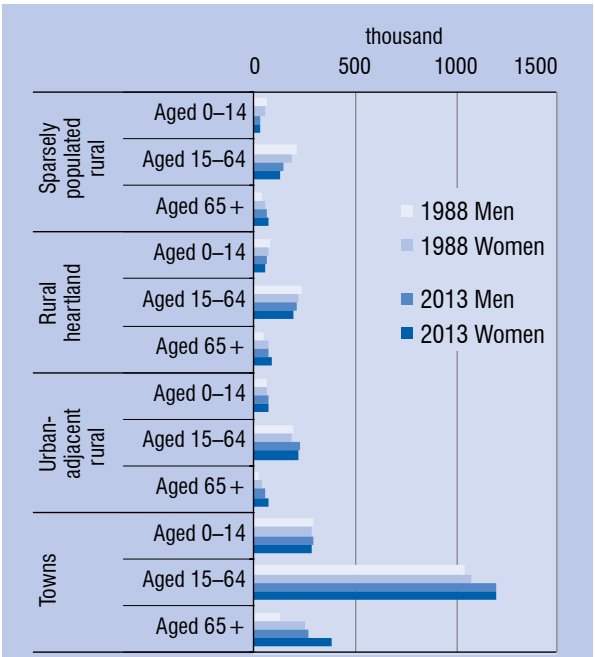
In urban areas, a noteworthy feature in their development is the rapid increase of the share of over 75-year-olds. The oldest age group has been steadily growing since the year of comparison, 1988. In 2010, the size of the oldest age group surpassed that of the youngest. 0–15-year-olds, on the other hand, have been fewer compared to 1988 ever since 2004.

Population development and gender differences

In sparsely populated rural areas, the relative number of young women (15–29-year-olds) has declined heavily. For example, there were systematically fewer women aged 20–24 years than men of the same age group throughout the review period. In 2013, there were only 73.1 women aged 20–24 years per 100 men of the same age in sparsely populated rural areas. In older age groups, the differences between genders even out. For example, in the final year of the review period (2013), there

Population according to rural area type and gender, 2013.

	Both genders		Men			Women		
Population Dec. 31, 2013	Number	Share of Finland's population, %	Number	Share of region's population, %	Share of Finland's population, %	Number	Share of region's population	Share of Finland's population, %
Whole country	5,451,270	100.0	2,680,364	49.2	49.2	2,770,906	50.8	50.8
Sparsely populated rural	457,181	8.4	232,620	50.9	50.9	224,561	49.1	49.1
Rural heartland	673,958	12.4	337,336	50.1	50.1	336,622	49.9	49.9
Urban-adjacent rural	707,298	13.0	353,644	50.0	50.0	353,654	50.0	50.0
Towns	3,612,833	66.3	1,756,764	48.6	48.6	1,856,069	51.4	51.4



Population per age and gender group between rural types in 1988 and 2013 (source of raw data: Rural indicators of Statistics Finland).

were 87 women aged 30–34 years per 100 men of the same age. This population development can be interpreted so that women are underrepresented in sparsely populated rural areas at the age that typically involves studying, vocational training and/or employment, and starting a family.

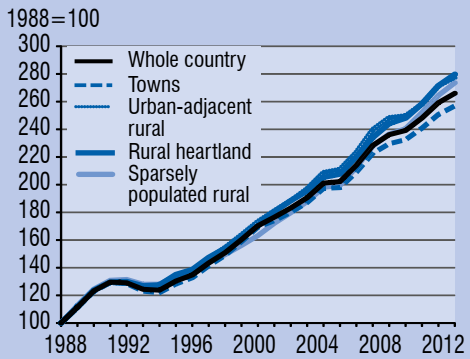
Another noteworthy observation is that the share of men in the oldest age groups steadily grew in all areas during the review period, up until 2013. This can be interpreted so that the closer we move to the present, the more the life expectancy of men has increased – and approached that of women – in all types of areas.

Income

The income of the population can be observed through net incomes. Of course, municipal taxation can be used for securing services for the population, in which case people do not face the need to purchase services from the private sector. In 2013, the population of municipalities accounted for only 9 percent of the variation in incomes and taxes between municipalities. On average, net incomes are largest in the urban-adjacent rural municipalities, and smallest in sparsely populated rural municipalities. The greatest differences between municipalities are found in urban areas and in urban-adjacent rural areas.

In 2012, net incomes in Finland amounted to €96,265,7 million. The majority of net income is concentrated in urban areas due to the denser population structure. A change in net incomes reflects a change in population. Total incomes have increased in urban areas and in urban-adjacent rural areas. The share of net incomes of sparsely populated rural areas has declined.

On a regional level, net incomes per capita have developed in a similar manner. Changes reflect the economic structure and the impact of the general economic situation on regional economy. The noto-

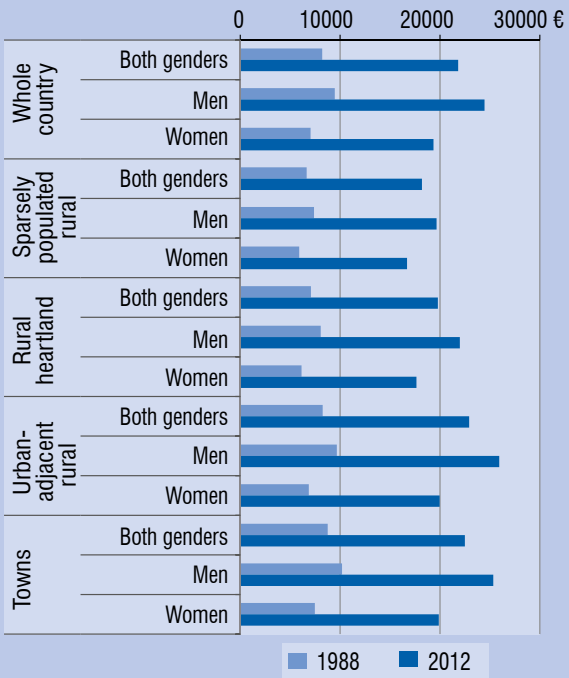


Net income per income earner (1988=100).

rious recession of the 1990s was reflected in the industrial sector and thereby in the net incomes of urban areas and urban-adjacent rural areas. In the early 21st century, on the other hand, average net incomes in the rural heartland increased faster than elsewhere. Later, average net incomes saw a brief peak in urban-adjacent rural areas, particularly among men, compared to the other regions.

On average, the net incomes of men are larger than those of women. In the 1990s, income development was more favorable in rural areas than in urban areas. The poor economic development affected men and women in cities, in particular.

In n the 21st century, the net incomes of women have developed more favorably than those of men even though they still are on lower level. The best income development for women has occurred in rural heartland areas and the worst development for men in urban areas and the second worst for men in the sparsely populated rural areas. This reflects the evening-out of income distribution, as the average net income of women in 2012 was smaller compared to the national average, and the smallest incomes were found in women in remote rural areas. The largest average net incomes of men and women were found in urban-adjacent rural areas and the second largest in cities, where they are almost on the same level.



Average net income per income earner, €.

Jobs, labor force and their regional distribution

The economic dependency ratio refers to the share of the unemployed and people outside the workforce in relation to the workforce. The ratio was the most favorable in the late 1980s, then declined due to heavy unemployment during the 1990s recession, and has since then slowly recuperated. The aging of the population and structural unemployment that remained at a high level have hampered recovery. In regard to the economic dependency ratio, the weakest municipalities are found in eastern and northern Finland, in particular.

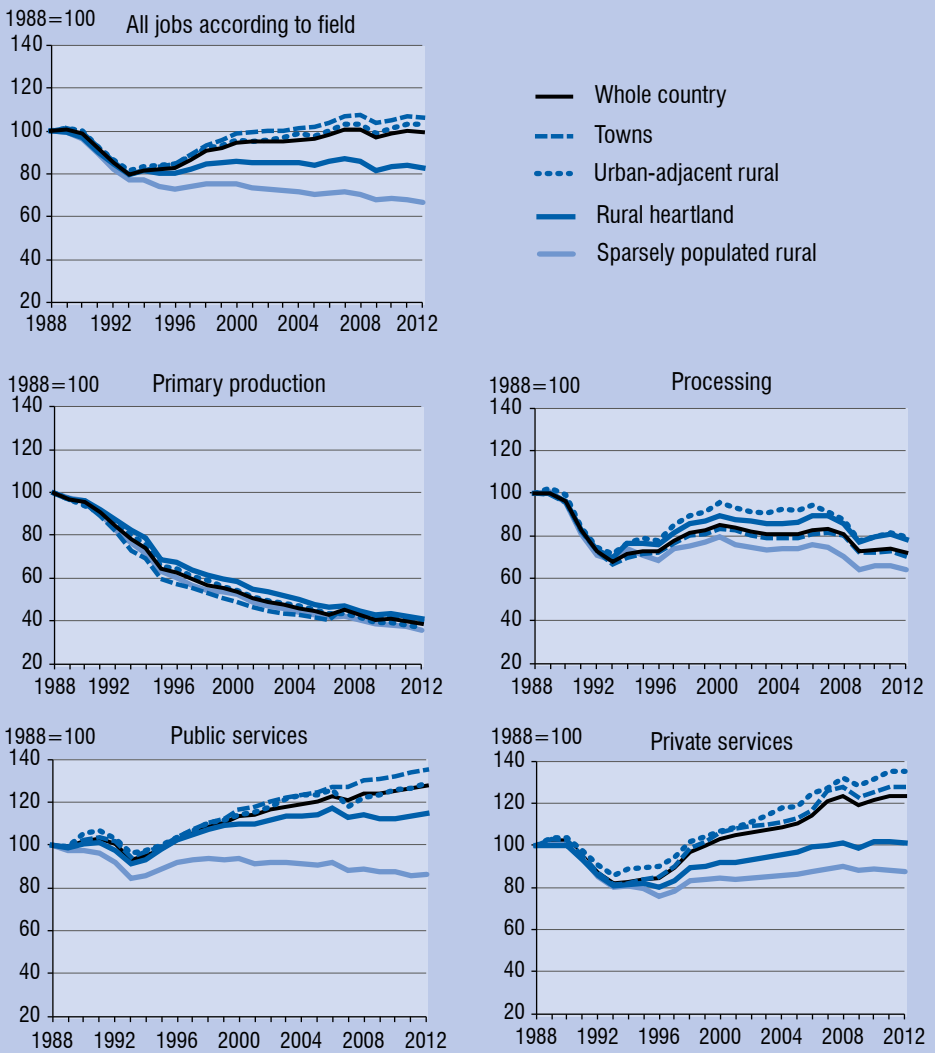
Job development

The number of jobs has varied according to economic cycles. The first decade of the century approached the 1980s peak levels before the slump associated with the euro crisis started. The number of men's jobs has fluctuated more strongly than that of women. This is mainly due to the different shares of men and women in different industries. Economic depression is first reflected in the number of men's jobs. The correlation between jobs and the working population

during 1988–2010 was 0.26 for men and 0.46 for women.

The number of jobs has developed most favorably in towns and urban-adjacent rural areas. The development in these municipality types has differed from that in the rural heartland and sparsely populated rural areas, where the size of the labor force has decreased. This development was strongest in the latter areas. Sparsely populated rural areas also have fewer workers in absolute terms. The labor force of urban-adjacent rural areas exceeded that of the rural heartland in 2000. In sparsely populated rural areas and the rural heartland, the jobs of both men and women have developed along fairly similar lines.

The number of jobs has developed



Development of the number of jobs by types of municipalities in 1988–2012. The 1988 index is 100. Based on the 2010 municipal division. (Source of raw data: Rural indicators of Statistics Finland).

fairly similarly amongst both genders in the rural–urban dimension. On average, the number of women's jobs has developed more favorably than that of men's jobs. An exception to this rule is women's jobs in the rural heartland, where the development was slower before 2007 than among men. However, because of the economic depression, the development has become similar to other rural types.

In 2012, majority of jobs were in public administration, particularly in social services and healthcare, followed by the industrial sector. During 2007–2012, the fields that employed over 5 percent and grew during this period were social and health services, education, administration and support services, other professional, scientific and technical activities etc. Jobs within agriculture and forest industry have decreased. There were relatively fewer jobs in public administration in the rural heartland than in other rural types or towns.

It can be generalized that jobs in public administration are held by women in particular, and jobs in secondary production are primarily held by men. The economic fluctuation has thus been reflected both as a fluctuation in jobs on regional level and a gendered fluctuation in jobs. Economic

Jobs according to field and rural area type, 2012.

	Whole Finland	Sparsely populated rural areas	Rural heartland areas	Urban-adjacent rural areas	Towns
Primary production, total (A)	80,058	22,577	28,422	9,678	19,381
B Mining	5,669	2,534	1,107	610	1,418
C Industry	321,182	18,613	47,532	37,091	217,946
D Electricity, gas and heating maintenance, cooling operations	12,819	549	1,011	1,590	9,669
E Water management, sewerage and other sanitation activities	10,525	767	1,021	1,405	7,332
F Construction	154,184	9,773	17,227	20,595	106,589
G Wholesale and retail, repair of vehicles and motorcycles	282,438	13,630	22,903	23,309	222,596
H Transportation and storage	139,323	8,716	13,023	13,168	104,416
I Hotel, restaurant and catering business	84,688	6,479	6,932	6,562	64,715
J Information and communications	87,866	961	1,802	1,791	83,312
K Banking and insurance	46,559	1,571	2,955	1,857	40,176
L Real estate	21,259	1,036	6,771	1,406	17,460
M Vocational, scientific and technical operations	132,301	4,213		8,626	112,691
N Administration and support services	147,748	7,123	9,165	12,196	119,264
O Public administration and civil defense	121,622	7,366	9,382	8,876	95,998
P Education	168,069	9,497	17,444	15,030	126,098
Q Healthcare and social services	383,605	26,393	41,191	36,536	279,485
R Art, entertainment and recreation	42,013	2,048	2,140	2,954	34,871
S Other services	69,005	5,032	6,393	5,769	51,811
T Households as employers	228	13	47	31	137
U International organizations and bodies	398	1	.	9	388
X Unknown	28,345	2,535	3,829	3,722	18,259

Source of raw data: Rural indicators of Statistics Finland.

highs and lows show up first in secondary production and thereafter in jobs on the public sector.

On a national level, primary production is a fairly small employer. However, it has relatively the greatest impact on sparsely populated rural areas and the rural heartland. Secondary production, a field traditionally regarded as an urban source of livelihood, offers relatively more employment in the rural heartland and urban-adjacent rural areas than in towns. Naturally, secondary production offers in absolute terms the most jobs in towns.

In *primary production*, differences in development between rural types have been very small, with the number of jobs having steadily decreased. It can be stated that the development of jobs within primary production has been less negative in the rural heartland and urban-adjacent rural areas. By contrast, there have been notable differences between genders, as women's jobs have decreased more rapidly than men's jobs in all rural types. The development has been most unfavorable among women in urban-adjacent rural areas and sparsely populated rural areas. For men living in urban areas, job development has been the weakest within this sector.

Jobs in *secondary production* first disappeared during the recession of the 1990s, but they were partly replaced during the next decade. Industrial jobs recovered best in the rural heartland and urban-adjacent rural areas. However, only the number of men's jobs increased. Conversely, the number of women's jobs decreased in all area types. Among women, jobs in secondary production have decreased in all rural types and mostly in sparsely populated rural areas. Women's jobs in industry are mainly located in towns, which is indicated by the overlapping graphs that represent all jobs and those in towns. During 2007–2008, jobs in secondary production decreased. Since then, up until 2012, jobs in secondary production have slightly increased among men in all rural types, but have continued to decrease among women, particularly in urban-adjacent rural areas and sparsely populated rural areas.

The relative proportion of *private services* is the highest in towns. In addition, they are more important in urban-adjacent rural areas than in other rural types. Private services have increased since the recession of the 1990s: Since 2007, private services have decreased only in sparsely populated rural areas. After 2007, in cities and in urban-adjacent rural areas, the largest relative increase in jobs has been in jobs for women and somewhat less in jobs for men. In sparsely populated rural areas, there are more women's jobs than men's jobs, whereas the ratio is nearly even in the rural heartland.

Public services have developed along the lines of private services. One difference is that women's jobs have mainly increased in public services, while men's jobs have increased in private services. Jobs for men have decreased both in sparsely populated rural areas and rural heartland areas; jobs for women only in sparsely populated rural areas, but on a smaller relative scale. The development of men's jobs in urban-adjacent rural areas and the rural heartland has been similar to that of women's jobs in sparsely populated rural areas. The change in the number of men's jobs in sparsely populated rural areas has differed from other segments, because the number has been constantly declining. In 2012, rural heartland areas had four, urban-adjacent rural areas 3.9, sparsely populated rural areas 3.6, and rural areas 2.9 women's jobs per one men's job.

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Number of farms receiving agricultural support according to production line in 2000–2007.

	2000	2001	2002	2003	2004	2005	2006	2007
Number of farms	77,896	75,384	73,386	72,000	71,100	69,088	68,766	66,821
Crop production	38,113	40,578	40,891	41,136	41,263	40,736	41,688	41,488
Dairy husbandry	22,564	21,026	19,839	18,561	17,427	16,399	15,002	13,732
Beef production	5,206	5,137	4,955	4,818	4,640	4,425	4,244	4,122
Pig husbandry	4,303	3,979	3,807	3,646	3,385	3,149	2,959	2,722
Poultry production	1,220	1,135	1,077	908	1,015	972	928	879
Other	6,490	3,529	2,817	2,931	3,370	3,407	3,945	3,878

Source: Finnish Agency for Rural Affairs.

Number of farms receiving agricultural support according to production line in 2008–2014.

	2008	2009	2010	2011	2012	2013	2014
Number of farms	65,292	63,716	62,450	61,153	58,898	57,559	55,983
Crop production	41,496	41,195	41,114	40,730	39,609	39,717	38,693
Dairy husbandry	12,635	11,807	11,136	10,501	9,827	9,008	8,708
Beef production	4,035	3,932	3,789	3745	3,633	3,490	3,469
Pig husbandry	2,477	2,239	2,036	1920	1,771	1,539	1,477
Poultry production	817	769	724	696	589	568	563
Other	3,832	3,774	3,651	3,561	3,469	3,237	3,073

Source: Finnish Agency for Rural Affairs.

Distribution of farms receiving agricultural support according to production line in 2014.

	Southern Finland[1]		Eastern Finland		Central Finland		Northern Finland	
	Number of farms	%	Number of farms	%	Number of farms	%	Number of farms	%
Total	25,103	44.8	10,017	17.9	14,408	25.7	6,455	11.5
Crop production	19,520	50.4	5,659	14.6	9,743	25.2	3,771	9.7
Dairy husbandry	2,103	24.2	2,560	29.4	2,327	26.7	1,718	19.7
Beef production	1,045	30.1	989	28.5	955	27.5	480	13.8
Pig husbandry	758	51.3	94	6.4	570	38.6	55	3.7
Poultry production	360	63.9	30	5.3	166	29.5	7	1.2
Other	1,317	42.9	685	22.3	647	21.1	424	13.8

[1]Main regions of Uusimaa and Åland according to NUTS II have been included in Southern Finland.
Source: Finnish Agency for Rural Affairs.

Producer price index and index of purchase prices of means of agricultural production (2005=100).[1]

	Producer price index of agriculture[2]	The index of purchase prices of means agricultural production			
		Total index	Goods and services	Investments	Buildings
2014	131.4[e]	138.4	142.0	126.1	128.5
2013	150.7	140.6	145.9	124.3	127.5
2012	140.0	137.5	142.5	122.9	127.1
2011	130.8	132.5	136.7	120.2	124.0
2010	115.2	118.1	119.0	115.7	118.0
2009	108.5	115.2	115.3	114.9	115.3
2008	120.9	125.4	129.5	113.2	119.9
2007	110.7	108.4	108.6	107.8	115.4
2006	105.0	103.6	103.7	103.5	105.8
2005	100.0	100.0	100.0	100.0	100.0
2004	102.4	97.3	98.2	95.8	96.2
2003	99.9	94.7	95.8	92.6	93.3
2002	104.6	93.3	94.8	90.4	91.8
2001	106.1	92.8	95.1	88.3	89.9
2000	100.9	90.8	93.4	85.6	87.8

[1] Indices are based on EU classifications..
[2] Incl. fur production.
Source: Statistics Finland.

Structural change in agiculture.

	Number[1] of farms 1,000	Average[1] size of farms, hectares	Number of milk suppliers 1,000	Employed in agriculture[2]	
				1,000 persons	% of employed
2014	53	43.0	9	76	3.1
2013	54	41,5	9	76	3.1
2012	56	38.9	10	78	3.1
2011	58	37.4	10	80	3.2
2010	60	36.7	11	84	3.4
2009	64	35.9	11	88	3.6
2008	66	35.0	12	88	3.5
2007	67	34.4	13	87	3.5
2006	69	33.3	15	90	3.7
2005	70	33.0	16	91	3.8
2004	72	31.5	17	93	3.9
2003	74	30.6	18	99	4.2
2002	75	30.0	19	106	4.5
2001	77	29.1	21	112	4.7
2000	80	28.0	22	118	5.1

[1] The compilation of farm statistics was renewed in 2010. According to the new Agricultural and Horticultural Enterprise Register, the economic output threshold for a farm enterprise is € 2,000. Approximately 4,000 farms earlier included in the register now remain below the threshold.
[2] From 2005 based on new industrial classification TOL 2008.
Sources: Luke, Statistical services; Statistics Finland.

Number of animals in June and the average yield per cow.

	Dairy cows 1,000	Yield per cow litres	Pigs 1,000	Hens 1,000
2014	285	8,201	1,245	3,645
2013	283	7,977	1,308	3,432
2012	284	7,876	1,290	3,172
2011	286	7,859	1,335	3,304
2010	289	7,896	1,367	3,394
2009	290	7,850	1,381	2,926
2008	289	7,767	1,483	3,190
2007	296	7,796	1,448	3,134
2006	309	7,646	1,436	3,103
2005	319	7,505	1,401	3,128
2004	324	7,404	1,365	3,069
2003	334	7,251	1,375	3,016
2002	348	7,117	1,315	3,212
2001	355	6,932	1,261	3,202
2000	364	6,786	1,296	3,110

Source: Luke, Statistical services.

Sales of fertilizers, kg/ha and hectarage yield, f.u./ha.

	Nitrogen kg/ha	Phosphorus kg/ha	Potassium kg/ha	Total kg/ha
2013–14[e]	74.6	6.0	16.4	97.0
2012–13	70.2	5.7	15.5	91.3
2011–12	70.1	5.4	15.7	91.2
2010–11	74.1	5.6	16.2	95.8
2009–10	80.3	6.5	18.9	105.6
2008–09	67.1	5.3	16.2	88.7
2007–08	78.5	7.8	24.3	110.9
2006–07	73.5	7.9	24.6	106.1
2005–06	73.9	8.6	25.3	107.7
2004–05	75.0	9.2	25.9	110.1
2003–04	76.5	9.3	26.4	112.2
2002–03	80.0	9.8	27.8	117.6
2001–02	80.5	10.1	28.3	118.9
2000–01	83.2	10.8	31.1	125.1

Source: Luke, Statistical services.

Results of the total calculation of agriculture in 2007–2014e at current prices, € million.

RETURNS, € million	2007	2008	2009	2010	2011	2012	2013	2014e
Farms represented	63,867	62,540	61,018	59,303	58,001	56,792	54,369	52,031
GROSS RETURN, € million	**5,567**	**5,644**	**5,405**	**5,689**	**5,863**	**6,146**	**6,152**	**5,860**
Return on crop production	**1,160**	**927**	**771**	**1,022**	**1,137**	**1,255**	**1,161**	**1,034**
Rye and wheat	196	124	75	160	183	197	160	151
Barley	355	238	188	236	278	327	283	235
Oats, other cereals	178	133	77	142	185	232	163	136
Oilseed crops	32	28	46	68	55	28	48	41
Grass fodder	293	308	271	294	318	392	397	358
Potato and sugar beet	93	82	93	92	88	58	82	88
Leguminous plants and other	13	15	21	29	31	20	26	25
Return on livestock	**1,728**	**1,943**	**1,850**	**1,796**	**1,958**	**2,069**	**2,154**	**2,075**
Return on cattle husbandry	1,212	1,331	1,245	1,262	1,360	1,517	1,510	1,491
Return on pig husbandry	340	357	386	371	343	335	373	330
Return on poultry	167	237	184	137	214	177	219	201
Return on sheep, goats, horses, etc.	10	19	35	26	40	39	53	53
Return on horticulture	**514**	**537**	**556**	**580**	**520**	**558**	**614**	**557**
Financial return	**13**	**17**	**13**	**12**	**14**	**12**	**12**	**11**
Other return	**198**	**222**	**238**	**247**	**243**	**223**	**209**	**229**
Support payments total	**1,953**	**1,998**	**1,978**	**2,031**	**1,991**	**2,030**	**2,002**	**1,954**
CAP support total	550	571	559	582	571	618	596	554
Natural handicap and environment payments	765	779	799	801	803	808	814	811
National and investment subsidy	636	647	619	647	616	602	584	589

COSTS, € million	2007	2008	2009	2010	2011	2012	2013	2014e
PRODUCTION COST	**6,577**	**6,982**	**6,859**	**6,927**	**7,004**	**7,409**	**7,391**	**7,085**
Supplies costs	**1,696**	**1,927**	**1,943**	**1,850**	**1,993**	**2,149**	**2,235**	**2,072**
Fertilisers, liming	201	224	327	220	246	279	285	267
Other crop production costs	312	332	361	361	358	371	388	383
Fuels	223	311	236	239	283	337	341	308
Electricity	157	169	172	192	193	203	207	194
Purchased fodder cost	464	563	492	447	541	569	620	544
Livestock cost	339	328	355	391	372	389	395	375
Costs of on-farm use	**376**	**410**	**343**	**377**	**448**	**554**	**536**	**463**
Machinery cost	**993**	**1,085**	**1,063**	**1,023**	**1,042**	**1,057**	**1,104**	**1,095**
Depreciations on machinery	593	655	622	579	596	575	595	594
Other machinery costs	400	430	441	444	446	482	508	501
Building costs	**380**	**392**	**371**	**386**	**373**	**378**	**379**	**377**
Depreciations on buildings	323	329	310	320	315	316	306	305
Other building costs	57	62	62	66	57	61	73	73
Other cost	**791**	**810**	**819**	**854**	**867**	**897**	**921**	**924**
Insurances	280	281	281	296	296	308	318	311
Rents	117	125	132	149	147	138	150	161
Other depreciations	49	49	49	49	50	49	50	50
Other costs	345	355	357	360	374	402	403	402
Labour costs	**1,622**	**1,595**	**1,585**	**1,592**	**1,496**	**1,522**	**1,482**	**1,434**
Wages paid	186	213	197	199	203	221	236	234
Wage claim	1,436	1,382	1,388	1,393	1,293	1,302	1,246	1,200
Interest costs	**718**	**764**	**734**	**845**	**785**	**851**	**734**	**720**
Interest expenses	157	168	135	112	116	121	111	104
Interest claim on own capital	562	596	600	733	670	731	624	616

FINANCIAL RATIOS	2007	2008	2009	2010	2011	2012	2013	2014e
RETURNS, € million	5,567	5,644	5,405	5,689	5,863	6,146	6,152	5,860
PRODUCTION COST, € million	6,577	6,982	6,859	6,927	7,004	7,409	7,391	7,085
Entrepreneurial profit, € million	-1,006	-1,333	-1,453	-1,234	-1,135	-1,266	-1,241	-1,225
Entrepreneurial income, € million	992	645	534	892	828	767	628	592
Profitability ratio	0.5	0.33	0.27	0.42	0.42	0.38	0.34	0.33
Return on assets %	-1.9	-3.6	-4.5	-2.5	-2.1	-2.4	-2.9	-2.9

Agricultural support[1].		
SUPPORT FINANCED COMPLETELY OR PARTLY BY THE EU IN 2015, €/ha or €/unit		
Aid area	AB	C
BASIC SUPPORT (REGIONAL FLAT-RATE PAYMENT), €/ha	117.63	101.74
Farm-specific top-ups:		
Farm-specific top-up up for bulls, €/livestock unit	22.05	22.05
Farm-specific top-up for steers, €/livestock unit	15.75	15.75
Farm-specific top-up for starch potato, €/tonne	6.19	6.19
Additional payment for milk, €/tonne of the reference quantity	8.57	8.57
Farm-specific top-up for sugar beet, €/tonne	64.97	64.97
Farm-specific top-up for timothy[2]		
GREEN DIRECT PAYMENT, €/ha	74	66
PAYMENT FOR YOUNG FARMERS, €/ha[3]	50	50
CROP PREMIUM, €/ha		
Protein crops[4]	90	90
Rye	60	60
Sugar beet	70	70
Starch potato	600	600
Vegetables grown in the open	180	-
BOVINE PREMIUM MAINLAND FINLAND, €/animal		
Bulls and steers	480	160
Suckler cows and suckler cow heifers	360	140
Dairy cows	520	-
Slaughtered heifers, €/carcass	250	-
EWE PREMIUM MAINLAND FINLAND, €/animal	50	-
DOE PREMIUM, €/animal[5]	150	-
SLAUGHTER LAMB- AND GOATLING PREMIUM, €/carcass	40	40
LFA PAYMENT, €/ha[6]	217	242
, additional payment for livestock farms	60	60

[1] The table includes only support payments for main products, and therefore does not cover all payments.
[2]The farm specific top ups for timothy paid in the whole country total €1.15 mill. The support is allocated according to a reference quantity which depends on the average support granted in 2007–2009.
[3] Farmer is eligible for young farmer payment if he or she is no more than 40 years old at the moment of submitting an application for aid. Farmer is eligible for this payment maximum of five years.
[4] Protein crops which entitle to the premium are winter oilseed rape, winter turnip rape, spring oilseed rape, spring turnip rape, sunflower, oil flax, Camelina sativa, broad bean, oil hemp, field pea(food and fodder pea) and sweet lupin. Mixtures of protein and cereal crops are not eligible for support. Mixtures of protein crops eligible for crop premium are entitled for support.
[5] Premium shall be granted provided that the average annual production is 400 liters per doe.
[6] In the LFA scheme, livestock farm is a farm with minimum stocking density of 0.35 LU/ha. The amount of LFA payment decreases as the area eligible for payment increases. It is paid in full up to 150 ha. For the area between 150 ha and 300 ha, the payment is 90% of the maximum and for the area exceeding 300 ha the payment is 80% of the maximum.

SUPPORT FINANCED COMPLETELY OR PARTLY BY THE EU IN 2015

ANIMAL WELFARE PAYMENTS, €/LU	Animal specific measures €/LU
Bovines	11–439
Pigs	7–349
Sheep and goats	8–55
Poultry	5–34

Conversion coefficients for animal welfare payments: Bulls, cows and other over 2-year old bovines 1.0 LU, bovines 6 months to 2-years old 0.6 LU, bovines less than 6 months old 0.4 LU, sheep and goats (aged over 1 year) 0.2 LU, lambs and kids (aged over 3 months) 0.06 LU, sows (with piglets or idle) 0.5 LU, other pigs (except unweaned pigs) 0.3 LU, laying hens 0.014 LU, broilers 0.007 LU, turkeys 0.03 LU.

ORGANIC PRODUCTION	160 €/ha

In addition, payment for organic livestock production is 134 €/ha if animal density is at least 0.3 LU/ha. The compensation is 600 €/ha if organic production commitment is made only to vegetables grown in the open. Payment is made based on production crop.

AGRI-ENVIRONMENT-CLIMATE PAYMENTS, €/ha/year	€/ha/year
Farm-specific measure:	
Balanced use of nutrients, field crops/horticultural plants and caraway	54/200
Parcel-specific measures:	
Incorporation of slurry into the soil	40
Recycling of nutrients and organic matter	40
Control of runoff waters, controlled subsurface drainage/controlled irrigation or recycling of drainage water	70/250
Environment management grasslands:	
riparian zones in target area II/other areas	500/450
perennial environment grasslands,	50
environment management field grasslands in target area II/other areas	120/100
Use of organic cover for horticultural plants and seed potato, one year/perennial	300/500
Biodiversity in agricultural environments:	
grassland for green manure	54
catch plants	100
cultivation of renovation crops	300
biodiversity fields	300
Alternative plant protection for horticultural plants, group 1/group 2	500/300
Plant cover on arable land in winter 20, 40, 60, 80% of area covered, target area III/other areas	4, 18, 36, 54/4, 9, 11, 11

The minimum area under agri-environment commitment is 5 hectares and 1 hectare in horticulture. Farmer must take one-day training. The minimum lenght of commitment is 5 years. Farmer can choose one or several parcel-specific measures. Farmer committed to the scheme must oblige baseline requirements, which are cross-compliance conditions, maintaining agricultural land and requirements for the use of fertilisers and pecticides. The farm-specific measure is compulsory for all farmers committed to the scheme.

Support levels for parcel-specific measures are higher in such target areas where the requirements for support are stricter.

	Unit	2010 €/unit	2011 €/unit	2012 €/unit	2013 €/unit	2014 €/unit	2015 €/unit
NATIONAL SUPPORT FOR AGRICULTURE AND HORTICULTURE NATIONAL AID FOR SOUTHERN FINLAND, NORTHERN AID AND AID FOR CROP PRODUCTION							
Aid per livestock unit							
Aid for animal husbandry, suckler cows							
AB	€/LU	83	83	90	93	90	-
C1	€/LU	300	300	300	300	300	300
C2	€/LU	300	300	300	300	300	300
C2north. and archipelago	€/LU	376	376	376	376	376	376
C3	€/LU	451	451	451	451	451	451
C4	€/LU	636	636	636	636	636	636
Aid for animal husbandry, male bovines >6 months							
AB	€/LU	187	187	187	187	187	-
C1	€/LU	414	422	422	422	422	422
C2	€/LU	422	430	430	430	430	430
C2north. and archipelago	€/LU	498	506	506	506	506	506
C3	€/LU	574	582	582	582	582	582
C4	€/LU	759	767	767	767	767	767
Aid for animal husbandry, ewes and goats							
AB	€/LU	184	184	184	184	184	-
C1	€/LU	390	390	390	390	390	363
C2	€/LU	398	398	398	398	398	369
C2north. and archipelago	€/LU	474	474	474	474	474	426
C3P1–P2	€/LU	664	664	664	664	664	568
C3P3–P4	€/LU	745	745	745	745	745	629
C4P4	€/LU	956	956	956	956	956	787
C4P5	€/LU	956	956	956	956	956	787
Decoupled aid for pips and poultry[1]							
AB	€/LU	139	138	114	74	76	78
Farms below the farm specific limit[2]							
C1	€/LU	261	265	245	208	208	191
C2	€/LU	227	231	214	182	182	167
C2north. and archipelago	€/LU	281	284	269	242	242	223
C3 and C4	€/LU	290	293	278	251	251	230
Farms below the farm specific limit[2]							
C1	€/LU	199	197	162	105	108	111
C2	€/LU	170	169	140	91	93	96
C2north. and archipelago	€/LU	145	144	119	77	79	81
C3 and C4	€/LU	145	144	119	77	79	81

[1] As from 2009 support paid as decoupled payment according to the farm-specific reference quantity of 2007. Reference amounts in AB- and C-area are based on certain criterion. Therefore comparing the aid based on reference amounts between different regions needs further review. The premise is that the aid for units exceeding the farm specific limit in C-area is the same as in AB-area.
[2] The farm-specific differentiation of coupled support is applied in northern aid. The farm specific limit for small farms is 146 LU in area C1, 170 LU in area C2, 200 LU in area C2 north and in areas C3 and C4. .

	Unit	2010 €/unit	2011 €/unit	2012 €/unit	2013 €/unit	2014 €/unit	2015 €/unit
Northern aid paid for slaughtered animals							
Male bovines C3–C4							
P1–P2	€/animal	131	131	131	131	131	131
P3–P4	€/animal	182	182	182	182	182	182
P5	€/animal	333	333	333	333	333	333
Heifers							
AB	€/animal	144	144	144	144	144	-
C1	€/animal	299	299	299	299	299	299
C2	€/animal	299	299	299	299	299	299
C2north. and archipelago	€/animal	348	348	348	348	348	348
C3	€/animal	390	390	390	390	390	390
C4	€/animal	476	476	476	476	476	476
Production aid for milk							
AB	cents/l	3.1	3.2	3.1	3.1	2.8	-
C1	cents/l	8.0	8.0	8.0	8.0	7.7	7.7
C2	cents/l	8.7	8.7	8.7	8.7	8.4	8.4
C2north.	cents/l	9.7	9.7	9.7	9.7	9.4	9.4
C3P1	cents/l	12.7	12.7	12.7	12.7	12.4	12.4
C3P2	cents/l	14.4	14.4	14.4	14.4	14.1	14.1
C3P3-P4	cents/l	17.0	17.0	17.0	17.0	16.7	16.7
C4P4	cents/l	21.7	21.7	21.7	21.7	21.4	21.4
C4P5	cents/l	30.9	30.9	30.9	30.9	30.6	30.6
Aid for crop production							
C1 area[1]							
Wheat	€/ha	47	47	38	38	38	20
Rye	€/ha	150	150	150	150	150	100
Malting barley	€/ha	-	-	-	-	-	80
Oil seed plants	€/ha	120	120	120	120	120	100
Starch potatoes	€/ha	133	133	133	133	133	133
Vegetables grown in the open	€/ha	348	348	348	348	348	348
Arable crops excl. cereals	€/ha	120	120	120	120	120	80
Protein crops	€/ha	-	-	-	-	-	45
C2 and C2north areas[1]							
Wheat	€/ha	47	47	38	38	38	20
Rye	€/ha	150	150	150	150	150	100
Malting barley	€/ha	-	-	-	-	-	45
Oil seed plants (excl. C2north.)	€/ha	47	47	47	47	47	100
Starch potatoes	€/ha	133	133	133	133	133	133
Vegetable grown in the open	€/ha	348	348	348	348	348	348
Other arable crops excl. cereals (excl. C2north.)	€/ha	47	47	47	47	47	45

[1] *C area Northern aid.*

	Unit	2010 €/unit	2011 €/unit	2012 €/unit	2013 €/unit	2014 €/unit	2015 €/unit
Aid for special crops in southern Finland							
AB area							
Starch potatoes	€/ha	100	100	100	100	100	-
Vegetable grown in the open	€/ha	100	100	100	100	100	-
Aid per hectare of livestock farms							
AB area	€/ha	30	36	37	39	41	-
National aid for sugar beet	€/ha	350	350	350	350	350	350
General area payment C2–C4							
Cereals and other arable crops							
C2, C2north and archipelago	€/ha	33	33	33	33	28	14
C3	€/ha	49	49	49	49	44	30
C4	€/ha	100	100	100	100	95	70
General area payment for young farmers C1–C4	€/ha	36	36	36	36	36	36
Aid for greenhouse products A and B							
over 7 months	€/m^2	10.9	11.4	11.1	10.3	10.5	9.7
2–7 months	€/m^2	4.4	4.4	4.1	3.8	4.0	3.7
Aid for greenhouse products C1 and C2							
over 7 months	€/m^2	12.3	11.1	11.4	10.6	10.6	10.0
2–7 months	€/m^2	4.7	4.9	4.4	4.1	4.1	4.0
Aid for greenhouse products C2P							
over 7 months	€/m^2	11.7	12.3	11.4	10.6	10.6	10.0
2–7 months	€/m^2	4.7	4.9	4.4	4.1	4.1	4.0
Aid for greenhouse products C3–C4							
over 7 months	€/m^2	11.7	12.3	11.4	10.6	10.6	10.0
2–7 months	€/m^2	4.7	4.9	4.4	4.1	4.1	4.0
Northern storage aid for horticulture products							
AB area							
Storages with thermo-control system	€/m^3	14.2	14.2	14.2	14.2	14.2	14.2
Storages without thermo-control system	€/m^3	8.8	8.8	8.8	8.8	8.8	8.8
C areas							
Storages with thermo-control system	€/m^3	14.2	14.2	14.2	14.2	14.2	14.2
Storages without thermo-control system	€/m^3	8.8	8.8	8.8	8.8	8.8	8.8

Conversion coefficient of livestock units in national aid

Livestock unit	
Suckler cows	1
Suckler cow heifers, over 2 years	1
Suckler cow heifers, 8 months–2 years	0.6
Bulls and steers, over 2 years	1
Bulls and steers, 6 months–2 years	0.6
Ewes	0.15
She-goats	0.48
Horses	
- breeding mares (horses and ponies)	1
- Finnhorses, at least 1 year a	0.85
- other horses 1–3 years	0.6

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Natural Resources Institute Finland (Luke)
Viikinkaari 4
FI-00790 Helsinki
FINLAND