



# FINNISH agriculture AND RURAL INDUSTRIES

# 2014



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# **Finnish Agriculture and Rural Industries 2014**

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## Foreword

The annual review of Finnish agriculture and agricultural industries presents the current development outlook and the most recent research data in a single volume. The operating environment of Finnish agriculture is reviewed through figures in a number of ways from the points of view of the national economy, the agricultural production structure, the economic development of agriculture and horticulture, and the structure of the farm economy. The development of global markets provides the background for the analysis of different production types and food markets. Besides agricultural production, the review focuses on other rural industries and their development. The Finnish countryside offers a framework for new business opportunities that are built sustainably around the utilisation of renewable agricultural and rural resources. Moreover, agricultural and rural resources are playing an increasing part in the production of renewable energy and nature-based recreation and well-being services.

A significant political consensus was reached in agricultural politics in June 2013 when an agreement was signed on the EU's Common Agricultural Policy (CAP) until 2020. This review examines the impact of the reform on EU subsidies for agriculture and national subsidies from the Finnish perspective. In principle, the reform means that the market will guide agriculture more strongly in the near future. For Finland, no significant changes in the total level of EU subsidies are expected before 2020. As market control increases, the risk of price fluctuation in the sale of agricultural products and the purchase of production inputs will increase. This will also be reflected in the development of agricultural profitability. Structural development is also expected to continue at a brisk pace. According to estimates, the number of farms in Finland will significantly decrease during the policy period. However, this will mainly occur among smaller farms. The unit size will grow and no significant reductions are estimated in the production volumes of agricultural products.

The publication's special theme is milk production. Thematic articles discuss the development of the EU's milk markets and the productivity and competitiveness of the Finnish milk chain. Next year, milk production in the EU states will be freed, as the regulatory milk quota system will be discontinued. This will also signify a transition towards market-driven food production and fiercer competition over raw milk and consumers. Studies indicate that differences in production will even out in milk processing, which will increase pressure on the competitiveness of the Finnish milk industry. In newer EU states, productivity in milk processing has steadily developed, and the competitive setting may rapidly change – particularly in the Baltic Sea region. Maintaining and developing competitiveness in the milk sector is a challenge that we will face over the next few years in milk production and the dairy industry.

MTT wishes to thank Professor Jyrki Niemi and Research Secretary Jaana Ahlstedt, who edited the publication, as well as all the experts who took part in writing the publication.

Helsinki, 7 April 2014

Sari Forsman-Hugg  
Director  
MTT Economic Research

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## Special topics

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# 1. OPERATING ENVIRONMENT OF AGRICULTURE

## 1.1. Agriculture and the food sector in the national economy

In Finland the total annual consumer expenditure on food and beverages is € 22.7 billion. The share of food and non-alcoholic beverages consumed at home is a little over a half of this, € 13 billion.

As the standard of living has risen, the share of food consumed at home in the consumer expenditure of Finnish households has decreased to about the same level as in the old EU countries. In 2012 this share was 12.5%, which is a little higher than in the previous year.

When alcoholic beverages and eating out are included, food represents 21.8% of the consumer expenditure of households. The share of food consumed outside home is 5.9%, which is a little lower than in the old EU countries (7.2%).

The total value of the annual money flows in the food sector is about € 26.7 billion, when food exports and agricultural support payments are taken into account, in addition to the total private and public consumer expenditure.

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

	2011	2012
EU 27	12.9	13.0
EU 15	12.3	12.4
Italy	14.3	14.4
Norway	13.3	13.3
Portugal	16.9	18.2
France	13.4	13.7
Sweden	12.0	12.1
Germany	11.5	11.7
Finland	12.3	12.5
Denmark	11.4	11.3
Estonia	19.4	19.0
United Kingdom	9.1	9.2

Source: Eurostat National accounts.

### Consumer expenditure on foodstuffs and beverages, € million.

	2011	2012	% change
Total	21,805	22,687	4
Foodstuffs*	11,274	11,821	5
Non-alcoholic beverages*	1,164	1,209	4
Alcoholic beverages*	3,424	3,486	2
Catering services (eating out)	5,943	6,171	4

\*Food consumed at home

Source: Statistics Finland, National accounting.

## Agriculture and horticulture

According to the national accounting, the gross value of agricultural and horticultural production in 2012 was € 6.8 billion, when production support of 2.1 billion is taken into account. The gross value of the production increased by 3.3% from € 6.6 billion in the previous year.

Intermediate products account for a little less than a half of the gross value of agricultural production. In 2012 this share was € 3.4 billion, which is 5.9% larger than the year before. The main intermediate product items are fertilisers, feeding-stuffs, electricity and transport fuels and various kinds of services in support of the production activities

The value added produced by agriculture and horticulture was € 3.4 billion. Its share in the Finnish GDP fell from 2.1% in 2011 to 2.0% in 2012. Besides the weather conditions during the growing period, fluctuations in the product and input prices are reflected in the economic outturn of these sectors more clearly than before.

Agriculture is very capital intensive because of the various kinds of special machinery and buildings needed in the production. In 2012 the share of agricul-

ture in the total investments of the national economy was 3.1%, which is clearly higher than its share in the GDP.

## Food processing

From 2011 to 2012 the gross value of the production of food industry grew from € 11.3 billion to 11.7 billion. The use of intermediate products increased from € 8.8 billion to 9.1 billion and the value added created in food industry rose from € 2.5 billion to 2.6 billion.

The GDP share of the food industry was 1.6% in 2012. This was about 10.3% of the GDP of the manufacturing industries, which is slightly higher than in the previous year (9.3%).

Measured by both the gross value of the production and value added, food industry ranks as the third largest manufacturing sector in Finland, after machinery and equipment industry and paper industry.

Food industry is raw material intensive: intermediate products represent more than 70% of the gross value of the production. Food industry purchases most of its raw material from the domestic agriculture and horticulture. Because of the transportation costs a significant share of our food industry is highly dependent on domestic raw material.

In 2012 the domestic investments of food industry totalled about € 370 million and their share in the total investments was about the same as the year before, 1.0%. The level of investments is clearly lower than the GDP share of the sector.

## Domestic trade in foodstuffs

The trade sector sees to the acquisition of foodstuffs and their final distribution to the consumers. The value of production in the trade sector, i.e. its margin, 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 the turnover of the trade in

daily consumer goods totalled € 17.1 billion, which was 9.3% higher than the year before. Besides foodstuffs the sales include other daily consumer goods and durables. According to the trade sector operators, foodstuffs account for about 80% of these sales.

Foodstuffs require a great deal of handling, which is why production facilities and wages and salaries are significant items in the outturn of the trade sector. Other major cost items are transportation and logistics and various kinds of business and real estate 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 the Finnish and foreign companies.

Food trade is still largely in the hands of domestic operators, founded on chains of wholesalers and retailers, where 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.

## Foreign trade in foodstuffs

The value of food imports (CN 1–24) grew by 7% to € 4.6 billion in 2012. The value of food exports rose by 1.5% to € 1.6 billion in 2011. From 2011 to 2012 the total goods imports fell by 1.7%, while goods exports stayed about the same.

In 2013 food imports grew by about 4.6% and food exports fell by 0.6%. There was some decrease in both total goods imports and total exports in 2013.

The share of food imports in the value of total goods imports (CN 1–99) is about 8% and the share of food exports in the total value of exports is about 3%.

The most significant imported food products are beverages, including alcohol, and fruits. Some of the imported foods are primary products which cannot be produced in Finland (coffee, cocoa, tea) or the quantities produced are not sufficient (sugar, fruit, vegetables). The export and import of products representing the same product categories, such as cheeses, beverages and confectionary, have been growing.

Besides the finished food products, the food sector imports various inputs needed in the production, such as raw materials for processed foods and feedingstuffs, fuels and various kinds of chemicals. Most of the machinery and implements and their parts are also imported. Besides tangible goods, various kinds of imported services are used in the business management, planning and research tasks. The Agrifood Research Finland MTT has estimated the value of imported inputs without machinery at € 4.9 billion and that of finished food products at 1.9 billion (in 2008).

### Taxes and support in the food sector

The State functions in the food chain as it collects taxes and allocates support payments to agriculture. In addition to the

value added tax, the consumers pay excise duties in the prices of foodstuffs and beverages, as well as energy taxes included in the production inputs. Income tax is collected in the food chain on wages and salaries and on capital income.

The tax revenue collected as VAT and excise duties totals about € 4.5 billion. The value added tax revenue from food is about € 1.5 billion. The value added tax revenue from restaurant services is about € 0.7 billion and that from retail sale of alcoholic beverages is about € 0.6 billion.

The VAT on food was rose from 12% to 13% in July 2010 and to 14% from the beginning of 2013. The VAT on restaurant services was lowered from 22% to 13% in July 2010 and raised to 14% in 2013. The value added tax revenue from food represents about 10% of the total value added tax revenue. When restaurant services and alcohol are included, the share of food commodities in the total value added tax revenue rises to almost 20%.

The excise duty on alcoholic beverages was raised once in 2008, twice in 2009 and again in 2012. The tax revenue from alcoholic beverages totals about € 1.4 billion. A total of about € 0.2 billion was collected as excise duties on confectionary, ice cream

#### GDP share of agriculture<sup>1</sup> 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 %
2012	3,426	2,633	2.0	1.6	3.1	1.0
2011	3,398	2,509	2.1	1.5	3.2	0.9
2010	3,346	2,534	2.1	1.6	3.3	0.9
2009	3,234	2,737	2.1	1.8	3.5	1.1
2008	3,012	2,471	1.8	1.5	3.1	1.1
2007	3,204	2,432	2.0	1.5	3.3	1.2
2006	2,857	2,269	2.0	1.6	3.3	1.1
2005	2,880	2,344	2.1	1.7	3.4	1.3
2004	2,804	2,318	2.1	1.7	3.4	1.1
2003	2,836	2,395	2.2	1.9	3.9	1.5

<sup>1</sup>Agriculture including subsidies on production in addition to subsidies on products.

Source: National accounting 2003–2012e, Statistics Finland.

and soft drinks. The duty on confectionary and ice cream became applicable in 2011, and the duty on soft drinks was raised at the same time.

The various types of support to agriculture, a total of about € 2.1 billion, are funded by the EU, co-funded by the EU and from national funds, or paid from the national funds only. The EU contributions to agricultural support total about € 0.8 billion a year. In 2012 Finland paid about € 1.9 billion from the State budget as membership fees to the EU.

### Economy-wide effects of the food sector

Besides agriculture, food industry and the trade sector, many other sectors are involved in the food chain by producing goods and services for it. In practice the effects of food production extend all through the economy and different industries, also to the transportation, trade and energy sectors and water and waste management.

Households use income generated in food production for purchasing goods and services from sectors producing consumer goods. In sparsely populated areas the eco-

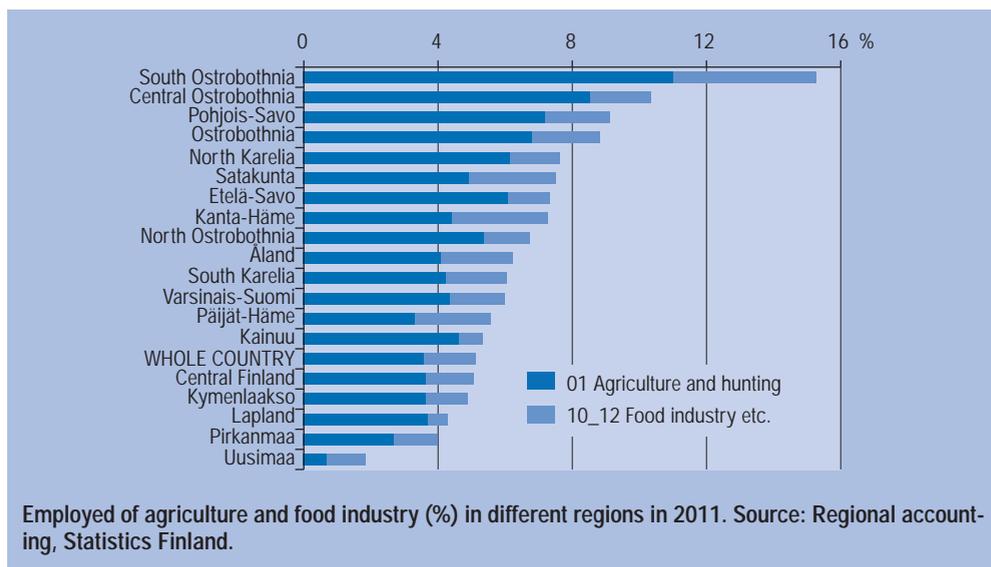
nomie impact of household consumption may be greater than that of input demand in agriculture.

Part of the investment effects flow abroad, especially through the purchase of machinery. The effects of building are more directly targeted to the regions themselves than investments in machinery. Besides agriculture and the processing industry, in recent years building investments have also been made in food trade.

### Employment effects of the food chain

In 2012 the number of people employed in agriculture was 87,900, which is 3.5% of the employed labour force of all sectors. This is 2,100 persons less than the year before. 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, with a 40% share of the total labour force in agriculture. Proportionally the share of agriculture in the



employed labour force is the highest in South and Central Ostrobothnia (11 and 8.5%), North Savo (7.2%) and coastal regions of Vaasa (6.8%).

By purchasing production inputs agriculture also employs people in other sectors, especially in trade of implements, services and manufacturing industry, about 15,000 persons.

In 2012 food industry employed 39,400 persons, which is 1.6% of the employed in all sectors. Almost a quarter of the jobs in food industry are in Uusimaa, 10% in South Ostrobothnia, 9% in Southwest Finland and 8% in Pirkanmaa. Proportionally food industry is by far the greatest employer in South Ostrobothnia (4.2% of the employed labour force) and Häme (2.8%).

While the number of jobs in primary production and processing are decreasing, more people find employment in services in the food chain. In 2012 the number of people employed in restaurants and catering services was about 65,100, which was 800 persons more than the year before. The trade in daily consumer goods employed about 50,400 persons, which was about 1,800 persons more than in 2011.

The production and jobs in restaurant and catering services are strongly concentrated to Uusimaa, with a share of almost 40% of those employed in the sector.

## 1.2. Rural enterprises

The Finnish countryside has changed quite dramatically, especially over the past fifteen years, with strong differentiation in the development trends in different types of rural areas. 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.

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

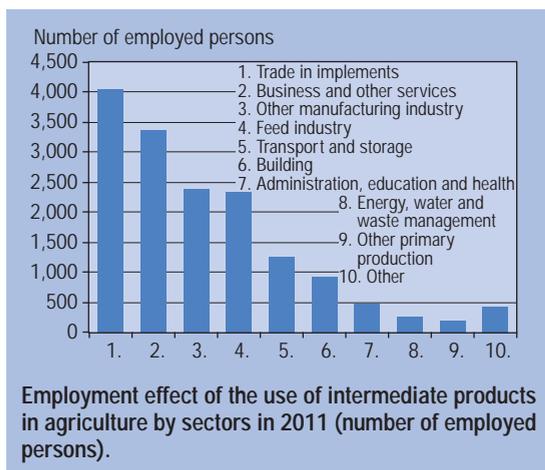
In 2012 the total number of enterprises in Finland was about 322,000. In 2010 the number of small rural enterprises was estimated at about 140,300, of which 32% were engaged in basic agriculture, 14% were diversified farms and 53% were other small enterprises.

Agriculture and farm forestry still constitute the most significant rural industry. The Finnish farm structure and changes which have taken place in this are presented in more detail in Chapter 1.3.

### Diversified farms in Finland and Europe

In 2010 the number of farms practising other gainful activities besides agriculture was 19,500, which means that about 31% of the Finnish farms were diversified. Diversification into other activities besides agriculture has traditionally been quite common among farmers, but in the 1990s and 2000s new operations were launched more than ever before. Towards the end of the 2010s, however, the number of diversified farms turned into a slight decrease.

Starting other gainful activities is often connected to changes in the



### Rural enterprises in Finland in 2000–2010.

Year	2000	2002/2003	2004/2005	2010	Change 2000–2010, %
Total	136,400	130,400	131,500	140,334	3
Basic agriculture farms	58,000	50,150	45,200	44,344	-24
Diversified farms*	21,800	23,550	24,300	19,530	-10
Enterprises with no link	56,600	56,700	62,000	74,450	32

\* incl. horticulture enterprises

Source: Information Centre of the Ministry of Agriculture and Forestry MMM/Tike. Register of small rural enterprises ([www.mtt.fi/pienyrytysrekisteri](http://www.mtt.fi/pienyrytysrekisteri)).

operating environment of farms, creating new demand for the products and services, while new challenges to agriculture may have encouraged the farm 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 machinery, buildings, land areas or products and labour force were used for the other gainful activities on 87% of the diversified farms.

Diversified farms operate in various sectors. In 2010 the majority of them (70%) were engaged in services. One out of eight farms was engaged in manufacturing, 5% in primary production other than agriculture and 4% in trade. Many farms operate in several sectors, for example, in both machine contracting and tourism.

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

Sector	2000	2005	2010
Diversified farms, total	21,838	24,295	19,530
<i>Primary production other than agriculture and forestry</i>	744	1,815	981
Fur farming	632	510	315
Reindeer husbandry	*	574	365
<i>Industry</i>	4,786	3,753	2,747
Food processing	1,065	684	479
Wood processing	1,349	889	554
Production of renewable energy	648	820	668
Peat production	311	217	239
<i>Construction**</i>	*	881	438
<i>Trade</i>	1,056	1,229	850
<i>Services</i>	15,019	16,547	13,793
Tourism, accommodation, recreation services	2,272	1,865	1,728
Contracting	8,880	10,013	8,896
Horse husbandry services (renting of stables, horse training)	*	734	888
Other	233		721

\* Different classification of sectors, this sector not accounted for in the year concerned

\*\* Clearing, demolition and groundwork building included in machine contracting.

Source: Information Centre of the Ministry of Agriculture and Forestry.

The proportional share of activities practised by diversified farms has changed over the past decade. There has been some increase in the share of enterprises in the service sector, while the share of manufacturing has decreased. The number of farms in other types of primary production has decreased, which also reflects the general trends in these sectors. The numbers of, for example, reindeer herders, fur farmers and fishermen has decreased considerably over the past decade.

Primary production other than agriculture, horticulture and forestry comprises fishing, fish or crayfish farming, fur farming and reindeer herding. A total of 1,200 farms were engaged in these types of primary production, about a 1,000 of these as their main activity. The number of these farms has decreased slightly. The largest sectors are reindeer herding and fur farming.

About 4,850 farms were engaged in manufacturing industry, and on 2,750 of these it was the main activity. The largest individual sectors were energy production and further processing of foodstuffs or wood. About 700 diversified farms operated in the building sector, which was the main activity on 400 of them. The number of enterprises engaged in the building sector has decreased quite a bit in the past few years, partly because of the decrease in building activities in general due to the economic recession. The number of diversified farms engaged in trade was about 1,550 and on about 850 farms this was the main activity.

Services were the main activity on about 13,500 diversified farms. The largest individual sector was contracting work (8,900 farms), which comprises work with agricultural and forestry machinery, bioenergy work, earthworks, snow ploughing and road maintenance. About 1,400 diversified farms operate in tourism. Other significant service sectors include riding and other services related to horses (a total of

almost 1,200 farms), transportation (400 farms) and business services. About 170 diversified farms provide care services and on about 120 of these this is the main activity.

Other gainful activities on farms are usually quite small in scale. It is specific to individual farms how large a share of their turnover comes from other activities and what the labour input in this is. In 2010 the turnover was less than € 10,000 on about 40% of the farms. However, on 15% of these farms the turnover of other gainful activities was more than € 100,000.

Within Europe statistics on diversified farms have been kept since 2003. Only farm enterprises where the resources of agriculture and other gainful activities are closely linked to each other are included in these statistics. In Finland, other Nordic countries and West European countries farm diversification is much more common than in southern and eastern Europe. Of the farms in Norway and Denmark, for example, more than half are diversified, while in Cyprus and Lithuania only less than 1% of the farms engage in other gainful activities.

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
Cyprus	1
Lithuania	1

Source: Eurostat

## Other rural enterprises

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

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

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

## Energy production and bioenergy

The resources available in the rural areas have an increasingly important role in the production of bioenergy and other renewable energy. Renewable energy sources comprise solar and wind power, hydropower and bioenergy and geothermal, wave and tidal energy.

In Finland bioenergy accounts for about 80% the energy derived from 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. About a quarter of the total energy consumption in Finland is covered by bioenergy.

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

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

Most of the bioenergy produced and used on farms consists of chips or fuelwood from forests. In 2010 about 149 farms were engaged in contractual work relating to bioenergy, which comprises the production of biodiesel, ethanol and biogas, and for 57 farms this was the most important activity in terms of their turnover.

## Food processing

The majority of food processing enterprises are in the rural areas. The field is strongly polarised into few large companies and numerous small enterprises. Most of the enterprises (71%) employed fewer than 5 persons. The most common sectors are the manufacture of bakery products and further processing of meat. In 2010 a total of 1,070 farms engaged in further processing of foodstuffs, and 650 of these were such that food processing was their main business activity. The most common types of food processing on farms are further processing of vegetables and berries, manufacture of bakery products, and 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. Tourism industry employs about 132,500 persons, 10% of them in the about 5,000 microenterprises practising tourism activities in the rural areas. The number of farms offering accommodation services is about 1,700. The long-term development prospects for rural tourism should also be favourable.

The potential offered by rural tourism in the development of the rural areas has been understood for a long time. Responsibility is a priority theme in the development of tourism, and in this respect rural tourism has a lot to offer to the whole Finnish tourism industry. Tourism is an important employer for the young, in par-

ticular. New enterprises are set up especially in the field of programme services that take advantage of the rural nature as their operating environment.

### **Equine industry**

In this context equine industry comprises the breeding and rearing of horses and care services for them, training, riding schools and horse-related tourism. Equine industry is one of the most rapidly growing businesses in the rural areas: about 75% of the business activities in equine industry take place on farms and 17% otherwise in the countryside. The estimated number of horses in 2013 was about 75,000. The total number of stables in Finland is about 16,000, of which about a quarter are companies. The annual money flows in the industry are estimated at about € 830 million and it is estimated to employ 15,000–16,000 persons. The estimated annual investments of the sector in the operating environment are about € 23 million.

Trotting is a very popular sport in Finland, with more than 200,000 people actively engaged in it. In 2013 about 8,000 horses started off at trotting races, the turnover of betting in horse races was over € 248 million, and about 730,000 spectators visited the trotting tracks to see the races. The number of riding schools and leisure riding stables approved by the Equestrian Federation of Finland is about 300. There are a total of about one thousand riding stables, of which about a half are enterprises that may be considered riding schools. About 160,000 people enjoy riding as a hobby, the majority of them adults.

### **Reindeer herding**

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

The number of reindeer has stayed about the same during the past decade, but in the very recent years there has been some decrease. In 2009/2010 the number of reindeer totalled about 196,500, of which about 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 decreased and the size of reindeer herds has grown. In the reindeer herding year 1994/1995 there were about 7,200 reindeer owners, while today their number is about 4,650. In the reindeer herding year 2008/2009 61.5% of the reindeer left alive at roundups, 119,000 animals, were owned by herders with over 100 animals. In the herding year 2011/2012 the average turnover of reindeer farms was about € 20,300 and their profitability coefficient was 0.31. On the largest reindeer farms (with over 230 animals) the average turnover was € 48,200 and the profitability coefficient was 0.97.

## **1.3. Finnish farm**

### **Number and size distribution of farms**

In 2013 the total number of farms (over 1 ha) which had applied for agricultural support was a little under 57,600. This was about 1,300 farms (2.3%) less than in 2012. In both absolute and relative terms the decrease in the number of farms was close to the long-term average. During the eighteen years in the EU (1995–2013) the number of Finnish farms has fallen by almost 40%, as a total of 38,003 farms have quit production. 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 (42%) and the smallest in northern Finland (34%). In both southern and central Finland (40%) the number of farms has

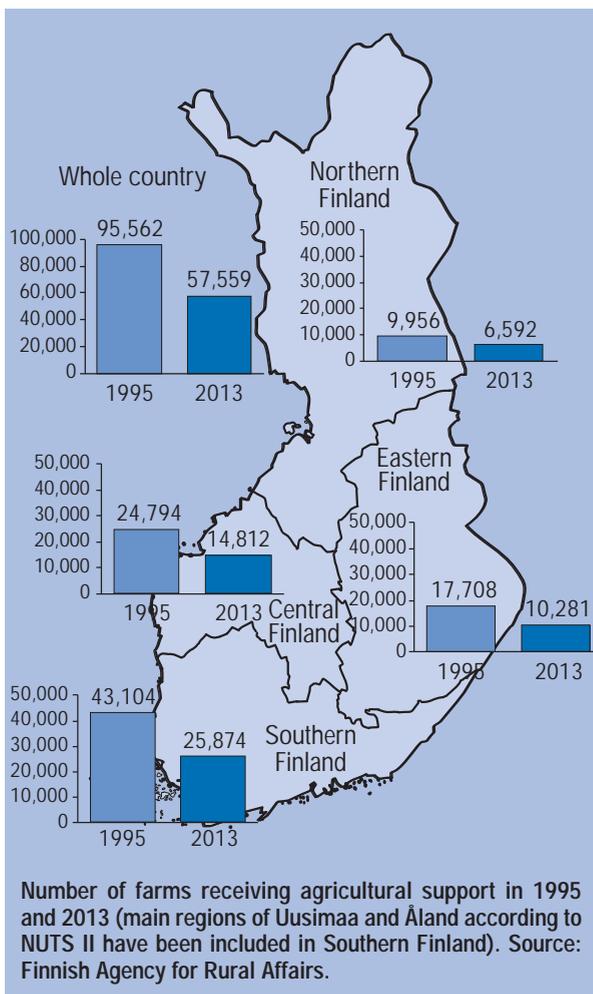
fallen less than in eastern Finland.

While the number of farms is decreasing, the average farm size has been growing. The average size of farms receiving agricultural support in 1995–2013 has grown by almost 74% from 22.8 ha of arable land to 39.6 ha. The average annual growth has varied between 0.5 and 1.5 hectares.

The average size of farms increases as small farms quit production and the number of large farms is growing. In the past eighteen years the share of farms with less than 20 ha has fallen from 56% to 40% and the share of farms with more than 50 ha has grown from 7% to 26%. Large farms with more than 100 ha of arable land represent a little less than 7% of the Finnish farms.

About a half of the growth in the farm size in 1995–2013 has occurred through leasing. In 2013 the total cultivated arable area of farms receiving agricultural support was 2.273 million ha, and about 765,800 ha (almost 34%) of this was leased. In 1995 the share of leased area was 22%. In the 2000s the leased arable area has grown by about 11%. In 2013 the leased area grew only a little from the year before. There is considerable regional variation

in the leased area: in South Savo, North Karelia and Kainuu more than 38% of the arable area is leased, while in Central Ostrobothnia the share of the leased area is less than 29%.



#### Number of farms receiving agricultural support in 2003–2013.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Whole country	72,000	71,100	69,088	68,766	66,821	65,292	63,716	62,450	61,153	58,898	57,559
Southern Finland <sup>1</sup>	32,771	32,245	31,272	30,967	29,945	29,368	28,694	28,098	27,578	26,517	25,874
Eastern Finland	12,630	12,498	12,121	12,173	11,812	11,501	11,218	11,033	10,808	10,479	10,281
Central Finland	18,656	18,458	17,986	17,947	17,574	17,119	16,650	16,177	15,771	15,172	14,812
Northern Finland	7,943	7,899	7,709	7,679	7,490	7,304	7,154	7,142	6,996	6,730	6,592

<sup>1</sup> 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 2013<sup>1</sup>.

Arable land	Southern Finland <sup>2</sup> Eastern Finland Central Finland Northern Finland								Whole country			
	Number		Number		Number		Number		Number			
	of farms	%	of farms	%	of farms	%	of farms	%	of farms	%		
< 10 ha	4,767	18	2,496	24	2,939	20	1,405	21	22,850	24	11,607	20
10–20 ha	4,839	19	2,368	23	3,272	22	1,197	18	30,698	32	11,676	20
20–30 ha	3,680	14	1,529	15	2,273	15	895	14	19,669	21	8,377	15
30–50 ha	4,926	19	1,804	18	2,763	19	1,177	18	15,414	16	10,670	19
50–100 ha	5,121	20	1,501	15	2,557	17	1,333	20	5,706	6	10,512	18
> 100 ha	2,440	9	537	5	911	6	562	9	784	1	4,450	8
Number of farms	25,773		10,235		14,715		6,569		95,121		57,292	
Average arable area, ha/farm	43,36		33,11		36,66		41,21		22,77		39,56	

<sup>1</sup> The figures do not include horticultural enterprises if they have no fields under cultivation.

<sup>2</sup> Main regions of Uusimaa and Åland according to NUTS II have been included in Southern Finland.

Source: Finnish Agency for Rural Affairs.

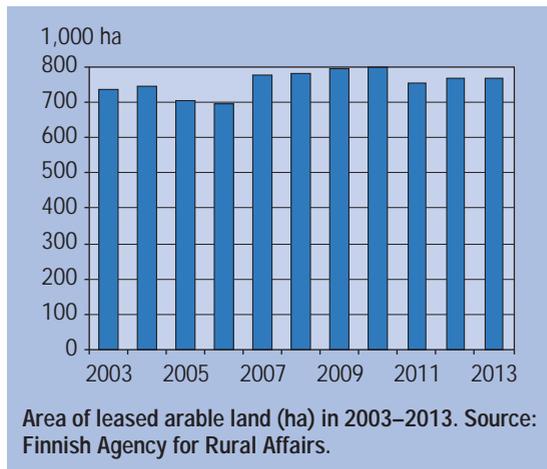
In 2013 the average size of arable land parcels was 2.46 ha, varying from over 3 ha in southern Finland to less than 2 ha in eastern and northern Finland. In recent years there has been hardly any change in the average size of parcels or the total cultivated area.

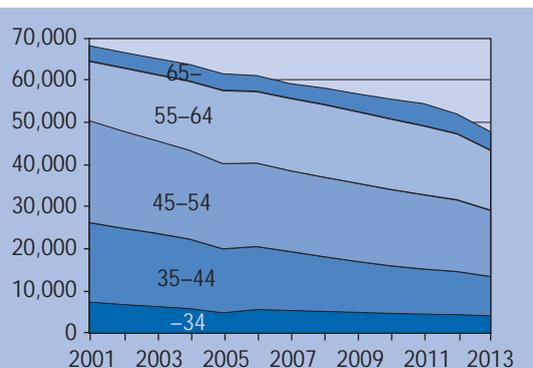
There are regional differences in these trends, however. In the past ten years the total arable area grew by about 9% in northern Finland and by about 3% in eastern and central Finland. Both proportionally and as hectares the arable area grew the most in North Ostrobothnia, by almost 20,600 ha (10%). In both Kainuu and Pirkanmaa the total arable area grew by almost 8% (2,400 and 11,500 ha, respectively). During the same period the arable land area decreased by about 0.5% in the whole area of southern Finland.

Finnish agriculture is almost exclusively based on family farms: in 2013 87.1% of 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 private traders (busi-

ness names) 0.1% of the farms. The State, municipalities, schools and parishes owned 0.03% of the farms.

The average age of farmers on farms receiving agricultural support was 51.7 years in 2013. The age of farmers is the highest, over 53 years, in the Åland Islands and the lowest, about 50 years, in Central Ostrobothnia. As the farm population is ageing, the share of young farmers is falling and the share of the older ones is growing. In 2001 the share of farmers over 55 years of age was 26%, but in 2013 their share was as high as 39%.





Number of farmers by age categories in 2001–2013. Source: Information Centre of the Ministry of Agriculture and Forestry.

### Production structure of farms

In recent years the dominant trends in the production structure have been the decrease in the number and share of livestock farms and growth in the share of crop farms. In 2013 about 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 was 39%.

In 2013 about 9,000 farms practised dairy husbandry as their main activity. In 1995–2013 the number of dairy farms fell by more than 23,000 farms, at a rate of about 6.8% a year. The share of dairy farms of all Finnish farms has also decreased: in 1995 about 34% of all farms engaged in dairy husbandry as their main activity, but in 2013 this share was less than 16%. The share of dairy farms is the highest in eastern and northern Finland, 26% of all farms. Dairy farms are more evenly distributed to all regions of Finland than the other sectors.

In 2013 about 3,500 farms (6.1% of all farms) specialised in beef production. In 1995–2013 the number of these farms fell by about 5,600, at a rate of about 5.2% per year. In 1995 the share of farms specialised in beef production of all farms was 9.5%. 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 husbandry was about 1,540, which is about 2.7% of the farms that applied for support. Of the pig farms 368 specialised in piglet production, 642 farms specialised in pigmeat and 529 farms practised combined pig production. Of all the production sectors the number of pig farms has decreased the most in 1995–2013, by a total of 75% at a rate of about 7.5% per year. In 1995 the share of pig farms of all farms was 6.5%. Most of the pigmeat production is located in southern and western Finland.

The number of poultry farms was 568, which is about 1% of the farms that applied for support. During the EU period the number of poultry farms has decreased by a total of 74% at a rate of about 7.2% per year. The decrease slowed down from the year 2012, when as many as 15% of the poultry farms quit their production. In 2013 about 48% of the 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.

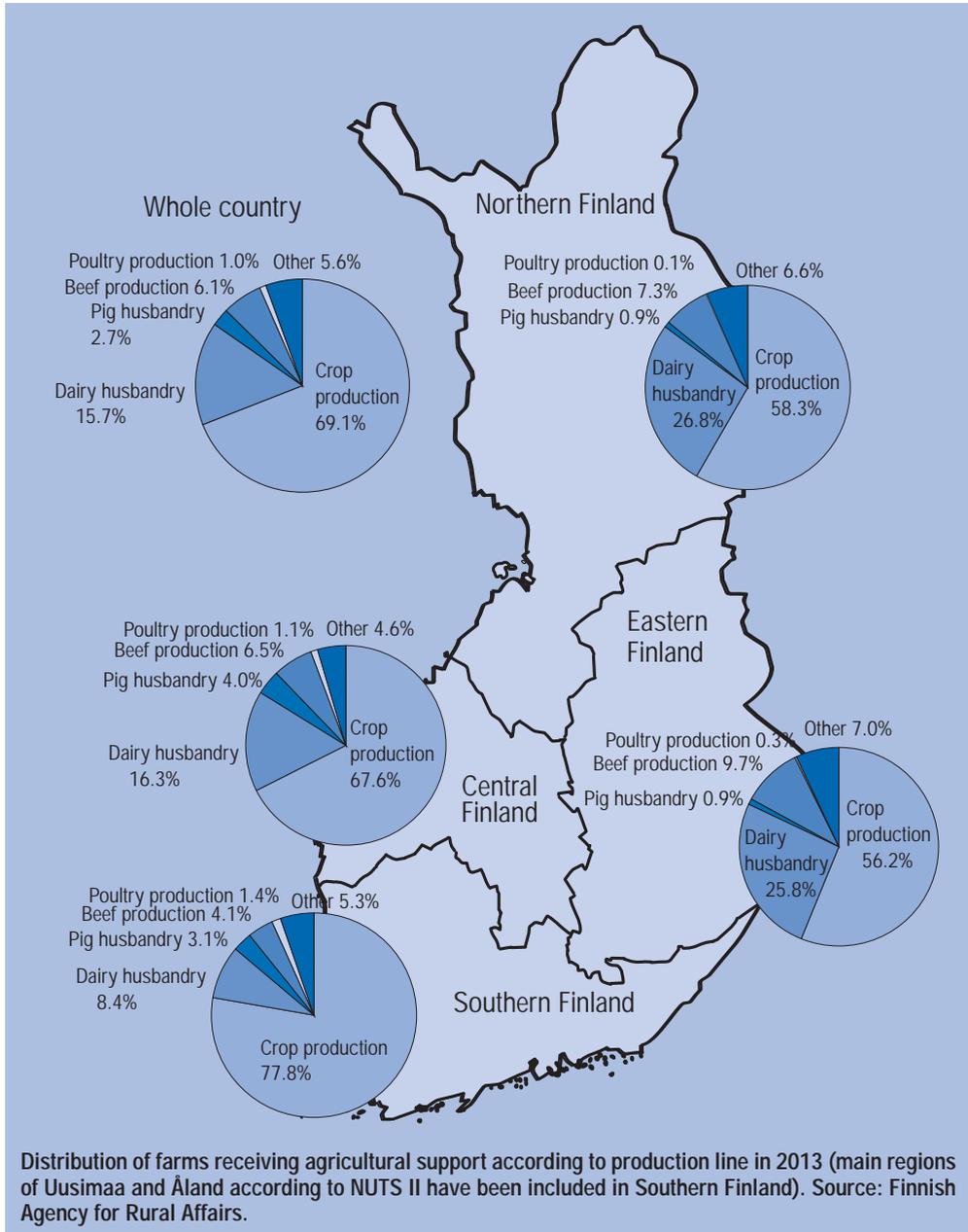
In 2013 there were about 39,700 crop farms, which is almost 2,500 (7%) more than in 1995. After some fall the number of crop farms started to grow again in 2013, except in southern Finland. In recent years, however, only the number of farms engaged in “other crop production” (e.g. grass) has increased, while the number of, for example, cereal and horticulture farms has fallen. More than half of the Finnish crop farms are in southern Finland and a quarter are 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.

In 2013 a total of about 3,200 farms (6% of all farms) engaged in other types of production or activities, such as horse, sheep or goat husbandry or farm tour-

ism. Over the past 18 years the number of these farms has decreased by more than 64%, at a rate of about 5.5% a year. After having increased for some time, the number of farms engaged in horse husbandry and other activities decreased as well. A growing share of farms engaged in other types of production or activities are now

in southern Finland.

Forest is an integral part of Finnish farms. In 2013 the average forest area of farms was 51 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.



## The productivity performance of dairy chains – A comparative analysis across the Baltic Sea region

Xavier Irz and Natalia Kuosmanen

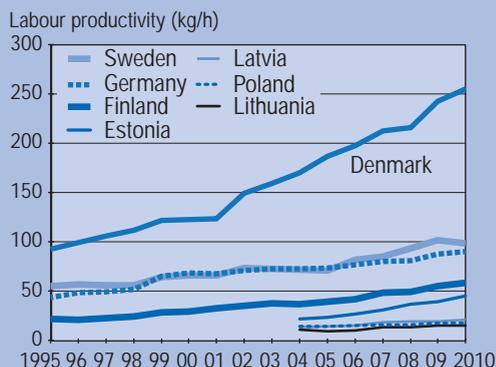
As part of a project investigating the competitiveness of Finnish dairy chains in the Baltic Sea Region, we analysed the productivity performance of Finnish milk farms and dairy processors relative to that of competitors in Sweden, Denmark, Germany, Poland, and the three Baltic states. We used partial productivity indicators and indices of total factor productivity (TFP) to investigate productivity growth and cross-country productivity differences, using data from the Farm Accountancy Data Network as well as national industrial statistics.

At farm level, there are enormous differences in the level of labour productivity across the eight countries: a dairy farmer in Denmark produces 13 times more milk than one in Latvia or Lithuania. Labour productivity in Finland is also significantly lower than in the other older EU countries – not only Denmark, the clear leader, but also Germany and Sweden. Further, there is evidence that Estonia is catching up with Finland in terms of labour productivity.

A decomposition analysis then shows that the cross-country differences in labour productivity on farms are driven primarily by differences in labour requirements per cow, while differences in milk yields account for a much smaller share of the difference. Thus, the key to high labour productivity in milk production is the farm structure and the adoption of mechanical innovations, while differences in adoption of biological innovations (e.g., genetic improvement, feeds) are relatively less important. Our analysis also reveals that country-average yields appear to increase only slowly beyond the threshold value of 8,500 kg/cow.

Although easily interpretable, labour productivity suffers from limitations as an indicator of competitiveness because it can rise either through efficiency gains or factor substitutions that may not be economically optimal. Thus, we pursued the analysis by performing a growth accounting exercise to calculate the evolution of TFP over time. Growth in farm-level production in the four older EU members has occurred through different channels, but average annual TFP growth rates have been roughly comparable from 1995 to 2010, varying from 2.4% in Sweden and Germany to 3% in Denmark and 3.1% in Finland. Hence, there has been no “miracle growth”, in the sense that countries having experienced fast output growth have also expanded their use of inputs rapidly through investments and intensification of production.

Altogether, the competitive position of Finnish dairy farms relative to their counterparts in Sweden, Germany and Denmark has not changed greatly over the last two



Average labour productivity on milk farms in 1995–2010.

decades. The innovations, investments and restructuring that have taken place on Finnish farms have delivered fast improvement in efficiency, but the problem from a Finnish perspective is that other older EU members of the Baltic Sea region have followed a similar course. Unfortunately, given that Finnish farms started running on this “technological treadmill” with a relatively low productivity level, they remain lagging behind with regard to that competitiveness indicator.

When focusing on the more

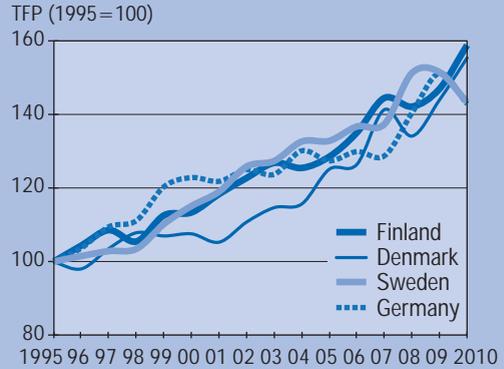
recent past, however, the results are more encouraging, as we find that since the UE enlargement in 2004, TFP on Finnish farms has grown much faster than on German and Swedish farms. Altogether, Finnish farms appear in the process of raising their TFP levels to those of German and Swedish farms, while Danish farms seem in a league of their own in that competitive dimension. However, while recognising the efficiency of Danish farms, it is also important to recognise that the development of the Danish dairy sector, and in particular its heavy reliance on debt to finance investments, raises serious questions about its sustainability (i.e., once interest rates start increasing to levels considered normal by historical standards).

Extending the comparison to include the newer EU members reveals that dairy farms in those countries are lagging behind Finnish ones in terms of TFP and are not catching up. Although Estonian farms, which are on average relatively large, have recorded impressive increases in yields and labour productivity, this has been achieved more by substitutions of other production factors for labour than real efficiency gains.

The processing level of the Finnish dairy supply chain appears more competitive when benchmarked against the processing sectors of the older EU members, although TFP growth has been slow in absolute terms (less than 0.5% per year). Hence, most of the productivity gains achieved in the Finnish dairy sector originate from farms rather than the industrial sector, and a similar situation is observed in the other older EU members. This contrasts with the results for some of the newer EU members, and most notably Poland and Lithuania, where TFP in dairy manufacturing has increased at more than two percent annually since those countries joined the EU.

Hence, a process of convergence in productivity has started in dairy processing, with some of the newer EU members making quick progress towards the productivity levels observed in the older EU countries, including Finland. Given the increasing trade in processed dairy products across the Baltic Sea region, this represents a competitive threat to the Finnish dairy sector, which therefore needs to be monitored carefully.

More generally, the evolution documented here is consistent with the view that transferring technologies and organisational forms from productivity leaders to productivity “laggards” is easier in the manufacturing sector than in primary production, due to the typical difference in the size of firms as well as the more pronounced reliance of the primary sector on country-specific agro-ecological conditions.



TFP growth on milk farms in the older EU countries of the Baltic Sea region in 1995–2010.

## 2. AGRICULTURAL AND FOOD MARKET

### 2.1. Trends on the world market

The world grain prices have steadily decreased following the record high in 2012. Between July 2012 and December 2013, the price of maize fell by 41%, rice by 28% and wheat by 16%. In December 2013, the prices of maize and rice were at their lowest in 3.5 years. The decline in prices has been accelerated by continuously improving production estimates over the crop season 2013/14.

The total world cereal production over the crop season 2013/14 is estimated to increase to 2,500 million tonnes, being nearly 195 million tonnes (8%) higher than the year before. The significant increase in production is mainly a result of the recovery of the maize crop in the United States and the good wheat crop in the Black Sea region.

Global wheat production will grow by 7.7%, exceeding 710 million tonnes, setting a new record. Most of the increase can be explained by the improved outlook of producing countries compared with the year before, when drought caused problems in many places. The first signs in 2014 indicate a growth in the wheat area in the United States, while the European outlook is mixed, particularly in the Black Sea region, where unfavourable weather conditions damaged autumn sowing. In addition, the crisis in Ukraine may have an impact on cereal production in the area.

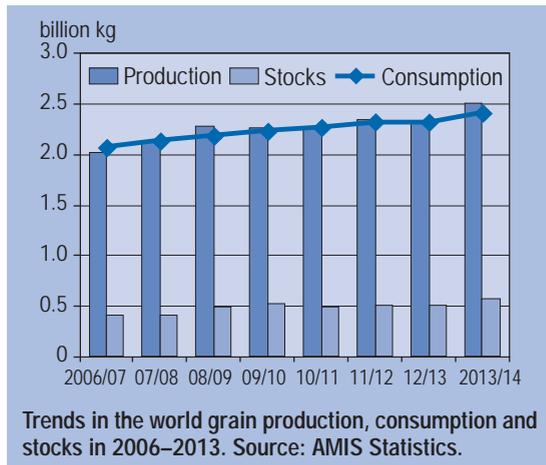
Global feed cereal production is expected to reach a record high in the crop season 2013/14, i.e. 1,295 million tonnes, representing a growth of 12% from the previous year. This is caused by the strong recovery in maize production in the United States after 2012 when the region suf-

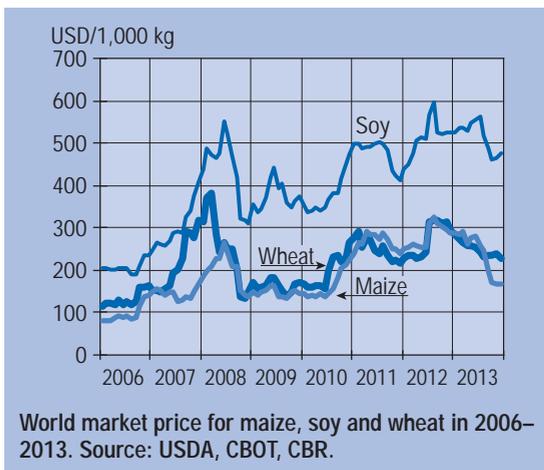
fered from drought. A number of other important producing countries have also contributed to this growth in production. The estimate of global rice production for the crop season 2013/14 is 494 million tonnes, which signifies a growth of 1% from the previous crop season.

Global cereal consumption will reach 2,413 million tonnes in the crop season 2013/14, which is 3.8% more than in the previous season. The food use of cereals is expected to increase to 1,100 million tonnes, representing a growth of 1.7% from the year before. The growth in production and decrease in prices are expected to increase the use of cereals as feed by 5.3%, reaching 850 million tonnes.

The global cereal stocks are expected to grow by 13% to 572 million tonnes. The 29% growth in feed cereals is mainly based on the situation in the United States. Wheat and rice stocks are also estimated to grow: wheat by 9% and rice by 3%. A growth in global cereal stocks would increase the global cereal stock-to-use ratio to 23%, well above the historical low of 18.4% reached in the crop season 2007/08.

Global cereal trade is estimated to reach 318 million tonnes, being 2.7%





higher than in the previous crop season. The international trade in feed cereal trade is projected at a record high of 138 million tonnes, i.e. 4% more than in the crop season 2012/13. The international wheat trade is expected to increase by 1.6% to 142 million tonnes. However, it will be lower than in the record-breaking crop season 2011/12. Rice trade is estimated to grow by 2% to 38 million tonnes after the 2% drop in the crop season 2012/13.

Global sugar production is estimated to increase only slightly in the crop season 2013/14, as falling outputs in the EU, the United States and the Russian Federation offset expansions in Thailand, India and South Africa. The UN Food and Agriculture Organisation (FAO), estimates that global sugar production will reach 180 million tonnes in the crop season 2013/14.

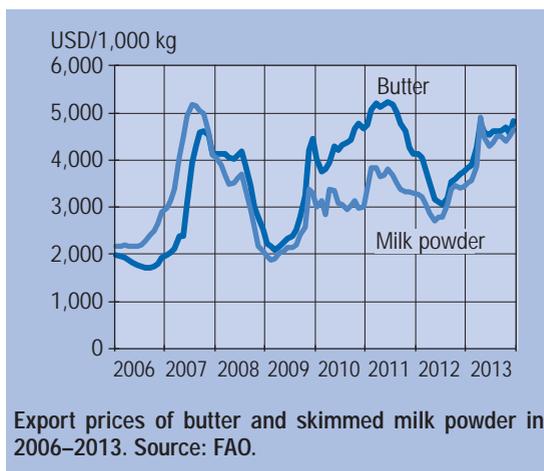
The global market price of sugar turned a decline at the beginning of 2013, continuing the steady decrease that has characterized the market since 2011. The decrease is caused by a strong expansion in production. As the global stock-to-use ratio was at a historically low level, the expansion in production underpinned the market in the crop seasons 2008/09 and 2010/11.

World milk production is estimated to have grown by 1.9% to 780 million tonnes in 2013, corresponding to the growth rate of previous years. Most of growth came from Asia, Latin American and the Caribbean, whereas growth was very limited in other regions. Due to production limitations, the international trade in milk products is projected to decrease by nearly 1% to 53 million tonnes. This compares with the average annual growth of 7% over the past four years.

Asia has remained the main market area for milk products, making up 55% of global imports. It is followed by Africa (15%). Demand is still expected to grow significantly in China, Iran, Singapore and Pakistan.

The high international prices of milk products have led many countries to reconsider the need for imports. In February 2014, the FAO milk price index was 275, being 31% higher than in February 2013.

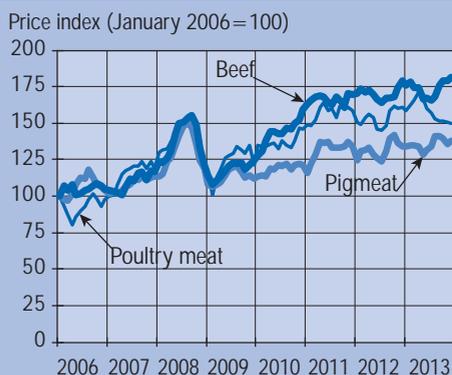
The strength in global dairy prices, lower feed prices and favourable weather conditions in 2014 are expected to encourage farmers to produce more milk and, as a result, milk production is expected to grow by 2%. Purchases made by China continue to be the most important factor on the global milk market.



Global meat production grew slightly in 2013 to 308 million tonnes, representing a growth of 1.4% or 4.2 million tonnes compared to 2012. The growth in production is concentrated in the developing countries, which also show the highest growth in demand.

In 2011–2012, meat prices were unusually high compared to the historical level. In 2013, pork and poultry prices fell slightly as a result of a decrease in feed prices. However, the price of beef remained at the previous year's level. In February 2014, the FAO meat price index was 195, being 19% lower than in February 2013.

International meat trade is estimated to have increased to more than 30 million tonnes in 2013, corresponding to 10% of global production. Trade grew more slowly than in 2012 (+ 1.1%) and significantly more slowly than in 2010 (+ 6%) and 2011 (+ 7%). This refers to a growth in national production in many importing countries and a decrease in production in important exporting countries. However, there are significant differences in trade in the different types of meat. Beef trade grew slightly and sheep meat trade increased significantly, whereas poultry trade remained mostly stable and pork trade fell.



World market price indices for beef, pigmeat and poultry meat in 2006–2013. Source: FAO.

## 2.2. Arable crops

In Finland, the 2013 growing season was exceptionally warm and in the central parts of the country more humid than normal. The volume of crop production was greater than the year before. Cereal prices fell towards the end of the year due to the strong crop outlook in the world's most significant production regions. The total cereal crop in Finland was 4.1 billion kg, which was more than in 2012 and was the largest in previous four years.

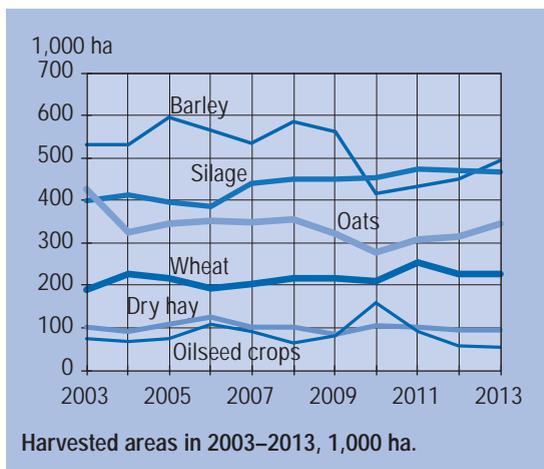
### Weather conditions

The year 2013 was very warm, and in the central parts of the country more rainy than normal. The average temperature was higher than normal in the whole country, varying from 6 degrees in southwestern Finland to less than 1 degree in central and northern Lapland. Summer started early in 2013 and in Lapland the summer was notably longer than normal. However, there was spatial variation in summer precipitation, which was considerably higher in eastern-central parts of Finland. The least rainy areas were in southwestern Finland and Lapland. The average temperature of the whole country in June to August was higher than the long-term average. June and August were warmer than on average, and in July the temperature was close to the long-term average.

The lowest temperature of the year,  $-39.7\text{ }^{\circ}\text{C}$ , was measured on 9 December in Sodankylä in central Lapland. The highest temperature,  $+32.4\text{ }^{\circ}\text{C}$ , was measured on 26 June in Liperi in North Karelia.

The thermal growing period in 2013 started later than normal. In the south, it started on 17–29 April and ended on 11–13 October. Thus, the growing season was 180 days in the south, about 170 days in eastern and western Finland and 130 days in the north.

The effective temperature sum reached a record-breaking high in Lapland. In Rovaniemi in the north, the accumulated temperature sum was 1,247 °C (long-term average 922 °C). In other parts of the country, the effective temperature sum was higher than normal. In Jokioinen in south-central Finland, the accumulated temperature sum was 1,536 °C (long-term average 1,320 °C) and in Jyväskylä in central Finland it was 1,415 °C (1,191 °C).



### 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 average in the European Union, the proportion of agricultural area

is very small in Finland.

In 2012, cereals were cultivated on about 1,100,000 ha in Finland. The cereal area was higher than in the previous year. The total cereal crop was 11% higher than in 2012.

#### Harvested areas and yields of main crops in 2012 and 2013.

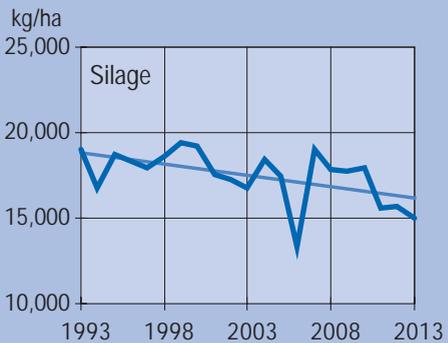
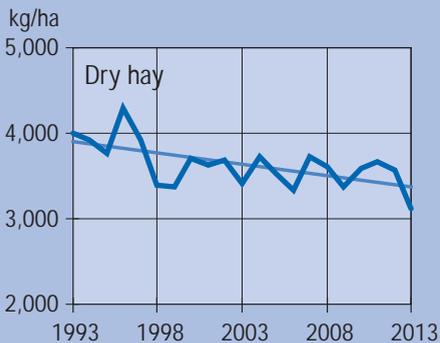
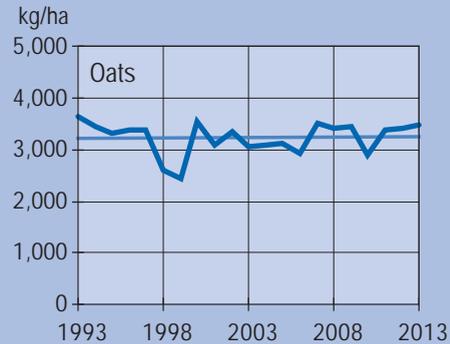
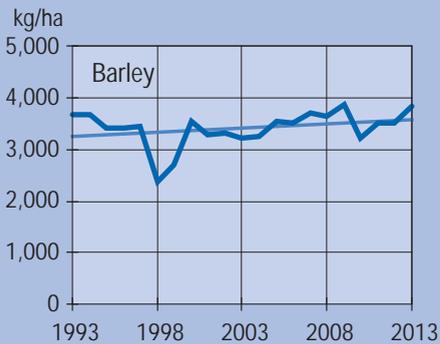
	2012			2013		
	Area 1,000 ha	Yield kg/ha	Total million kg	Area 1,000 ha	Yield kg/ha	Total million kg
Winter wheat	23.1	4,560	105.3	14.0	3,010	42.3
Spring wheat	204.2	3,830	781.6	213.4	3,880	827.0
Rye	20.7	3,090	64.1	12.3	2,090	25.7
Barley	451.2	3,500	1,581.0	494.4	3,850	1,904.2
Oats	313.8	3,420	1,073.1	344.3	3,480	1,196.8
Mixed cereals	20.9	2,540	53.2	21.3	3,130	66.7
Peas	4.7	2,320	9.4	4.1	2,570	10.5
Potatoes	22.7	23,650	489.6	22.1	28,120	621.7
Sugar beets	11.6	34,790	398.7	12.0	40,190	480.4
Dry hay	95.3	3,570	339.7	93.1	3,120	290.8
Silage	471.1	15,700	7,396.7	465.4	15,000	6,979.0
Green fodder	10.2	11,440	77.2	8.7	11,650	100.9
Cereals harvested green	68.0	3,890	265.0	74.5	4,060	302.8
Turnip rape	53.4	1,140	49.2	36.3	1,440	52.1
Rape	15.4	1,670	24.0	16.4	1,720	28.1
Caraway	18.8	570	8.2	15.1	680	7.6
Pasture	73.3			72.3		
Other crops	139.4			82.5		
<b>Total</b>	<b>2,017.8</b>			<b>2,002.2</b>		
Set aside and managed uncultivated arable land	267.3			254.0		

Source: Information Centre of the Ministry of Agriculture and Forestry.

The area under feed cereals was approximately 860,000 ha in 2013 and the yield totalled 3,168 million kg. About 1,500 million kg of this was barley. The cultivation area and total output of feed cereals grew from the year before. However, the quality of feed cereals was lower than in 2012.

About 78% of the feed barley crop reached a hectolitre weight of more than 64 kg, which was a larger share than in

previous years. However, there was considerable regional variation in the quality. In Varsinais-Suomi in southern Finland, 99% of the crop was above the hectolitre weight of 64 kg, but in Keski-Suomi only 8% of the crop reached this hectolitre weight. The hectolitre weight of oats was lower than the year before: 92% of the crop was above the hectolitre weight of 52 kg, which is the minimum requirement commonly used by the feedstuff industry.



Yields of main crops in Finland from 1993 to 2013. Source: Information Centre of the Ministry of Agriculture and Forestry.

Meanwhile, 32% of the oat crop was above the hectolitre weight of 58 kg usually required for grits, while in 2012 about half of the oat crop was fit to be used for grits.

The yield of malting barley in 2013 was about 404 million kg, which was 10% more than the year before. About 284 million kg, or 67% of the crop, fulfilled the protein content and grain size required for malting.

The total area under bread cereals was 239,800 ha and the total yield harvested was about 895 million kg. This was 6% lower than in 2012 due to the decrease in the area under cultivation. The average yields of bread cereals were also lower than the year before.

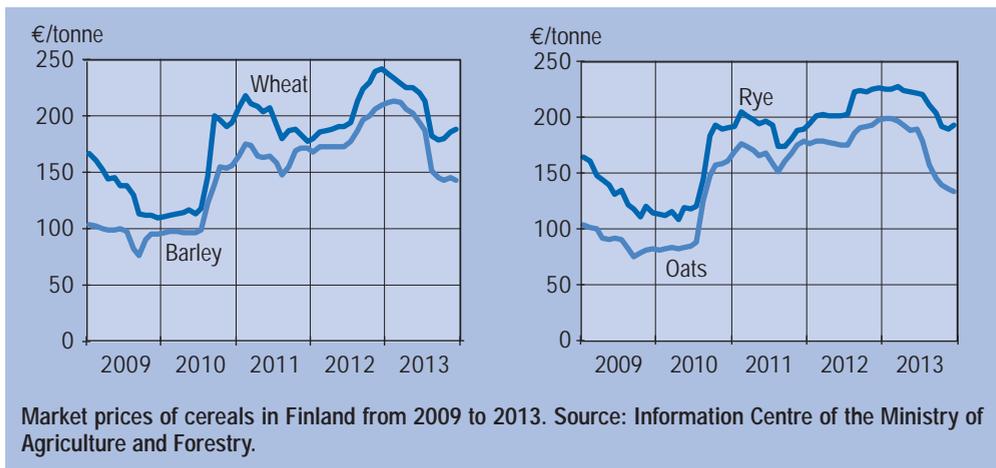
The total yield of winter and spring wheat was 869 million kg, of which 58% fulfilled the quality criteria for bread wheat. The yield of spring wheat was about 827 million kg and that of winter wheat about 42 million kg. The total yield of spring wheat grew significantly from the year before. The area under winter wheat was 39% less than in 2012. The average yield of winter wheat was 3,010 kg/ha, which was below the long-term average. The quality of the crop was the same as in 2012. Of the spring wheat, 57% was fit to be used as bread cereal, while 79% of the winter wheat crop was fit for this purpose. The main problem as regards the quality of the

bread wheat crop was the low protein content, which was as low as in 2012. However, the falling numbers of both spring and winter wheat were high and the hectolitre weights were good.

The total yield of rye, about 26 million kg, was about half of the yield in the previous year; 73% of the crop was fit to be used as bread cereal. The area sown with rye in autumn 2013 was about 24,700 ha, which was approximately two times more than the year before.

The silage area in 2013 was about 465,400 ha, which was a little less than in 2012. The total yield was about 6,979 million kg, which was also slightly lower than the year before. The average silage yield of 15,000 kg/ha was below the average. The dry hay area fell from the previous year to 93,100 ha and the total yield of 291 million kg was 14% lower than the year before. The average yield of dry hay was 3,120 kg/ha, which was lower than the year before and the ten-year average. The pasture area decreased from the year before to 72,300 ha.

The potato yield grew from the previous year's poor total yield to a normal level. The potato yield of 2013 totalled about 622 million kg, which was as much as 27% more than the year before. The cultivation area of potatoes grew slightly from 2012 to 22,100 ha.



The yield of sugar beet also grew from the year before. The total yield of 2013 was 480 million kg, which was 21% more than in 2012. The average yield per hectare was 40,190 kg, while the long-term average in Finland is 37,820 kg/ha. The cultivation area of sugar beet has decreased in recent years, but the decline ended in 2013 and the cultivation area of sugar beet increased by 500 ha from the previous year.

The cultivation area of oilseed crops totalled about 52,700 ha, which was 5,000 ha less than the year before. However, the total yield of 80 million kg was higher than in 2012. Turnip rape was cultivated on 36,300 ha, which was 16% less than the turnip rape area in 2012. The total yield of turnip rape was 52 million kg and the hectare yield of 1,440 kg/ha was higher than the long-term average. The hectare yield of oilseed rape, 1,720 kg/ha, was slightly higher than the long-term average.

### Market prices for arable crops

The prices on the Finnish cereal market fell in 2013. The prices on average were lower than the year before, and the closing prices for all cereals were lower at the end than the beginning of the year. Crop yields in the world's leading cultivation areas were high, which reduced the crop prices. Expectations of a high crop yield reduced the prices throughout year.

In January 2013, the price of feed barley was about € 212/tonne. The price fell during the year so that in December 2013 the average price of feed barley was € 143/tonne. From January to December, the price fell by almost one-third, and the average price for the whole year was almost the same as in 2012.

The price of malting barley fell by only about 25% in 2013. By December 2013, the price had fallen to about € 170/tonne, from about € 227/tonne in January. The average price of the year for malting barley was slightly lower than the average price in 2012.

Market prices of cereals in Finland from 2003 to 2013, €/1,000 kg.

	Rye	Wheat	Barley	Oats
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 <sup>1</sup>	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
2003	124.88	126.66	105.57	92.21

<sup>1</sup> Statistics has changed. Quality-adjusted price paid to farmers on delivery to first customer  
Source: Information Centre of the Ministry of Agriculture and Forestry.

The average price of oats fell by 31% in 2013. In December, the price of oats was € 134/tonne, while the average price was € 195/tonne in January. The average price of oats during 2013 was € 168/tonne, which was lower than in 2012.

The wheat price fell by about a quarter during 2013. At the beginning of the year, the average price for wheat was about € 229/tonne, but by December it had fallen to € 183/tonne. The price of rye fell slightly during 2013. The price of rye was € 225/tonne in January, while the average price in December was about € 197/tonne. The average price of rye for the whole year was € 218/tonne, which was almost the same as that for 2012.

Market prices of cereals in 2012, €/1,000 kg.

	Rye	Wheat	Barley	Oats
Belgium	148.8	-	216.1	230.0
England	-	238.3	206.4	233.8
Spain	219.2	239.1	223.3	217.1
Poland	178.0	213.8	196.3	157.4
Sweden	202.2	218.3	188.4	166.6
Finland	213.6	203.5	-	186.2
Denmark	198.8	206.9	213.6	200.2

Source: Eurostat.

The prices for oilseed crops fell throughout the year. In 2013, the average price of turnip rape and oilseed rape was € 409/tonne, while the average price in 2012 was € 468/tonne. The prices were highest at the beginning of the year, but the prices fell during the year.

In contrast to cereal prices, the price of potatoes rose in 2013 from the previous year. The average price of ware potatoes was € 240/tonne, while in 2012 the average price was € 160/tonne. Potato prices were stable at the beginning of the year until June, when the price was € 310/tonne, after which they started to fall. By December 2013, the price had fallen to € 150/tonne, which was about half of the price in December 2012.

The cereal prices in Finland were below the prices paid in Central Europe throughout the year. On the domestic market, the prices are slow to react to a rise in the price level, while a fall in the EU prices is quite rapidly reflected on the Finnish market. Strong fluctuations in the prices appear to 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,

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 2013, the area of horticultural production was about 15,700 ha. In total, the area has remained unchanged compared with the previous year. With regard to production types, the production areas of vegetables cultivated in the open and berries fell slightly from the previous year, similarly to the cultivation of ornamental plants in greenhouses. Instead, the production area of fruit increased. Similarly, the production area of greenhouse vegetables turned into an increase after several years of decline.

In 2013, there were a total of 3,900 horticulture enterprises in Finland, of which 3,000 were engaged in production in the open and 1,300 were greenhouse enterprises. Some of the enterprises practice both outdoor and greenhouse production. In 2013, the average area of production in the open was 5.25 ha per enterprise and the average greenhouse area was 2,960 m<sup>2</sup> per enterprise.

Strong areas for vegetable cultivation in the open include Satakunta and Varsinais-Suomi. North Savo is an important berry production region, while most of the

Areas under horticultural production in 2007–2013, ha.

	2007	2008	2009	2010	2011	2012	2013
Production in the open, total	15,357	15,533	15,734	16,032	16,213	15,753	15,708
Vegetables grown in the open	8,405	8,146	8,378	8,731	9,034	8,562	8,650
Berries	6,283	6,300	6,278	6,206	6,094	6,100	6,028
Fruits	669	690	685	696	702	700	706
Greenhouse production, total	399	392	375	369	360	335	341
Vegetable production	242	240	231	231	226	211	220
Ornamental plants	157	152	143	138	134	124	122

Source: Ministry of Agriculture and Forestry, Support Register.

apple production takes place in the Åland Islands, southwestern Finland and western Uusimaa. Ostrobothnia, the Närpiö region in particular, is a significant concentration of vegetable production in greenhouses.

### Weather conditions

The raspberry crop suffered from the extreme cold in March and the sunny weather. In particular, sensitive varieties, such as Glen Ample, suffered from the winter.

However, in vegetable production in greenhouses, the sunny weather in March was more than welcome after the dark January and February. The increase in natural light enlivened plant populations, producing unusually good crops in early spring.

The spring was warm with relatively no frost. This produced benefits to blooming berry plants and the summer flower season. Early vegetables were planted one week later than the year before. However, in a few previous years, it has been possible to plant vegetables earlier than usual. Lettuce seedling started at the end of April, together with onions and carrots.

The early summer was hot, which led to a record early strawberry season. Normally, the first strawberries are ripe around Midsummer and the main crop season is in July. In 2013, the main crop season started as early as in June, approximately one week earlier than usual. The early crop season caused problems in the availability of pickers.

Thanks to the sunny and warm summer, the quality of the apple crop was high, with the fruit showing the right amount of colour and taste. Summer varieties and some autumn varieties remained small due to the

heat, whereas winter varieties were normal in size. The harvesting weather in autumn was very good thanks to the long and dry autumn.

### Production in the open

In terms of the surface area, garden pea is the most common vegetable, with a cultivation area of nearly 2,800 ha in 2013. In terms of the crop volume, carrot was the most important vegetable with a production volume of nearly 71 million kg. On the basis of the area, carrot was the second most important outdoor vegetable with a cultivated area of nearly 1,600 ha. Other significant vegetables included onion with

Areas under the most important horticultural products grown in the open and yields in 2013.

	Area ha	Yield kg/ha	Total 1,000 kg
<i>Vegetables grown in the open</i>			
Garden pea	2,783	2,243	6,242
Carrot	1,582	44,753	70,800
Onion	1,113	20,543	22,864
White cabbage	556	39,243	21,819
Cauliflower	280	12,196	3,415
Beetroot	411	27,798	11,425
Swede	361	34,399	12,418
Gherkin	175	56,417	9,873
Chinese cabbage	157	16,242	2,550
Other plants	1,231	11,729	14,438
<b>Total</b>	<b>8,649</b>	<b>20,331</b>	<b>175,844</b>
– share of contract production	1,702	30,832	52,468
<i>Berries and apples<sup>1</sup></i>			
Strawberry	3,368	3,914	13,184
Black and green currant	1,518	1,017	1,544
Raspberries and raspberry-arctic bramble cross bred	408	1,806	737
Other berries	673	935	629
<b>Total</b>	<b>5,967</b>	<b>2,697</b>	<b>16,094</b>
– share of contract production	770	1,787	1,376
<b>Apple</b>	<b>694</b>	<b>7,231</b>	<b>5,018</b>

<sup>1</sup> Crop yielding area

Source: Information Centre of the Ministry of Agriculture and Forestry, Register of Horticulture Enterprises 2013.

a cultivated area of 1,100 ha and head cabbage with an area of 560 ha.

Of berries, strawberry is clearly the most important in terms of the total area and volume. In 2013, the area of strawberry was nearly 3,400 ha and its total volume was over 13 million kg. Other important berry plants included black and green currants with a cultivated area of 1,500 ha, as well as raspberry and arctic bramble. The cultivated area of fruit, mainly apple, was 660 ha in 2013.

### Greenhouse production

In 2013, the total area of vegetable production in greenhouses was 248 ha and ornamental plant production in greenhouses was 128 ha. A total of 78 million kg of greenhouse vegetables were produced. Tomato is the most important greenhouse vegetable in terms of cultivated area and yield. In 2013, the cultivated area of tomato was 104 ha and its total yield was 38 million kg. Tomato is cultivated around the year in some 30 ha. The remaining area covers traditional cultivation over the summer.

In 2013, the cultivated area of cucumber was 58 ha, of which 20 ha covered production around the year. The total yield of cucumber was 36 million kg. Of all cucumbers sold in Finland, 80% have been produced in Finland.

### Areas under greenhouse vegetables (m<sup>2</sup>) and yields (kg/m<sup>2</sup>) in 2013.

	Area 1,000 m <sup>2</sup>	Yield kg/m <sup>2</sup>	Total 1,000 kg
Total <sup>1</sup>	2,180	36	78,515
Tomato	1,040	37	38,335
Cucumber	575	62	35,897
Other vegetables	565	8	4,283

<sup>1</sup> Does not include potted vegetables.

Source: Information Centre of the Ministry of Agriculture and Forestry, Register of Horticulture Enterprises 2013.

In 2013, the area of potted plants was 30 ha. The majority of potted vegetables are cultivated around the year. Lettuce is the most important potted vegetable with an area of 24 ha. A total of 87 million potted vegetables were produced in 2013.

The production of cut flowers grown in greenhouses has continued to decrease. In 2013, the cultivated area of cut flowers and plants was under 7 ha, while the area of cut flowers in 2000 was still 50 ha. Rose is the most important cut flower.

The production of blooming potted plants has remained fairly stable at 11 million plants. The production of bulbous plants fell slightly from the previous year, being 64 million plants in 2013. The most important blooming potted plants were narcissus (3.2 million), poinsettia (1.9 million) and begonia (1.6 million). The most

### Producer prices for the most important horticultural products in 2007–2013, €/kg.

	2007	2008	2009	2010	2011	2012	2013
<i>Greenhouse production</i>							
Rose (€/unit)	0.42	0.47	0.46	0.47	0.45	0.45	0.48
Tomato	1.32	1.40	1.32	1.58	1.50	1.74	1.77
Cucumber	1.34	1.21	1.21	1.27	1.26	1.40	1.49
<i>Production in the open</i>							
White cabbage	0.58	0.56	0.42	0.49	0.48	0.52	0.65
Onion	0.60	0.48	0.43	0.56	0.57	0.56	0.69
Carrot	0.47	0.48	0.47	0.49	0.56	0.64	0.72
Strawberry	3.58	3.90	3.52	3.24	3.58	3.49	3.56
Apple	1.53	1.28	1.20	1.48	1.59	1.57	1.66

Sources: Kasvistieto Ltd., Glasshouse Growers Association.

important bulbous plant was tulip with a production volume of 59 million. The production volume of bedding plants was 39 million, of which violet was the most important with a volume of 11 million.

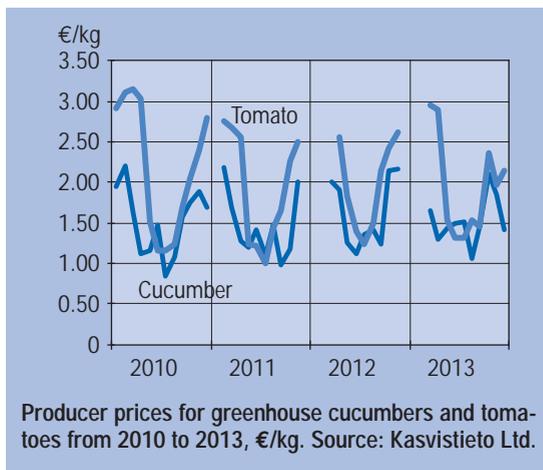
### Organic horticulture

In 2012, organic vegetables were produced in the open by 144 enterprises. The cultivated area of organic vegetables was 200 ha. Measured by the area, the most important organic vegetables were carrot (54 ha), garden pea (38 ha) and onion (36 ha). The share of organic vegetables from the total area and yield was 2%.

Organic berries were produced by 233 enterprises. In terms of area, currants were the largest organic plants with an area of 267 ha. The area of organic strawberry was 108 ha. Organic apples were produced by 57 enterprises over an area of 40 ha. The share of organic berries from the total area was 9%. Instead, organic berries made up only 2% of the total yield.

### Horticultural product market

Strong seasonal and annual variation is characteristic to the producer prices and volumes of horticultural products grown

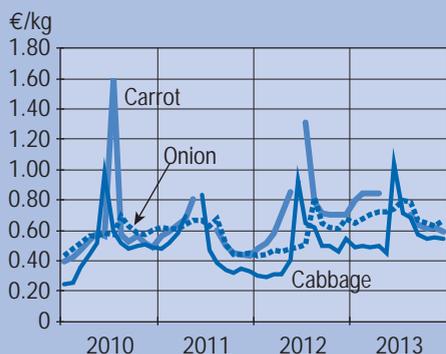


in the open. Usually, the producer price is low during the main crop season when the domestic supply is high. The supply of stored products decreases during the storage period, which usually raises the prices.

As regards the prices of stored vegetables, such as carrot, head cabbage and onion, it should be noted that they include the crop from two different seasons. In the early part of 2013, crop from the year 2012 was still being sold, and it was not until the summer when the first early vegetables came to the market, causing the conditions of the 2013 crop season to affect the prices.

In early 2013, onion and carrot suffered unusually high storage losses due to diseases, meaning that 10% fewer Finnish stored vegetables were in stock than usual during the same period. Low stock levels kept early-year prices higher than the year before. In April, the exports of head cabbage to Russia started, and the Finnish price level remained good.

The head cabbage yield during the 2013 crop season was lower than usual. The price of head cabbage was good at the end of the year. For greenhouse vegetables, the market is congested at times when supply is temporarily higher than demand, resulting in lower product prices. In the 2013 crop season, the tomato market



Producer prices for certain vegetables grown in the open from 2010 to 2013, €/kg. Source: Kasvistieto Ltd.

was congested in summer when the sunny and warm weather produced a high yield. The cucumber market was well balanced throughout the crop season. Towards the end of 2013, there was even an occasional shortage of cucumber, which raised the price of cucumber to a record high.

For potted vegetables, demand was high throughout the summer. In potted vegetable production, the rapid product development of lettuce and herbs provides consumers continuously with new products, increasing demand.

### Return calculation

The return calculation of horticulture comprises the market value of the crop produced and calculated subsidies for the horticultural production area and products in stock. The estimated return on horticulture in 2013 was € 547 million.

The unusually high returns were based on two key factors. The first factor was the price of outdoor vegetables with a significant market value, such as carrot, onion and head cabbage.

Another factor was the growth in the production volumes of potted vegetables and herbs in greenhouses compared to the previous year, which increased the returns on these plants. There was no notable change in the production volumes of cucumber and tomato compared to the year before. Instead, the higher price of cucumber increased the returns on greenhouse vegetables.

Returns on ornamental plants cultivated in greenhouses continued to fall. Even though the price level of ornamental plants remained fairly unchanged compared to the previous year, the fall in the production area of cut flowers reduced the total returns on ornamental plants.

Return calculation of horticulture at current prices, € million.							
	2007	2008	2009	2010	2011	2012	2013e
<b>PRODUCTION IN THE OPEN</b>							
Vegetables	99.7	96.6	102.2	106.9	130.8	109.9	136.7
Berries and fruits	46.7	55.4	54.2	48.1	66.1	66.9	64.9
Nursery production	31.7	30.0	32.1	34.1	34.1	27.1	28.4
<b>Total</b>	<b>178.1</b>	<b>182.0</b>	<b>188.5</b>	<b>189.1</b>	<b>231.0</b>	<b>203.9</b>	<b>229.9</b>
<b>GREENHOUSE PRODUCTION</b>							
Ornamental plants	98.7	99.0	97.5	88.1	82.8	80.8	79.6
Vegetables	135.9	147.7	150.4	151.9	176.1	157.2	190.0
<b>Total</b>	<b>234.6</b>	<b>246.7</b>	<b>247.8</b>	<b>240.0</b>	<b>258.8</b>	<b>238.0</b>	<b>269.6</b>
<b>Return at producer price, total</b>	<b>412.7</b>	<b>428.7</b>	<b>436.3</b>	<b>429.0</b>	<b>489.8</b>	<b>441.9</b>	<b>499.5</b>
<b>SUPPORT PAYMENTS</b>							
Support for greenhouses	38.2	37.3	36.5	36.5	35.6	32.9	29.9
Storage aid for horticulture products	1.8	2.0	2.1	2.1	2.0	2.1	2.4
Environmental support	9.4	9.0	9.0	9.1	9.3	8.9	8.8
Single payment	2.9	3.1	3.2	3.3	3.4	3.3	3.2
LFA support	2.9	2.8	2.8	2.9	2.9	2.8	2.8
Other support	0.9	0.9	0.9	0.9	0.9	0.9	0.9
<b>Total</b>	<b>56.1</b>	<b>55.1</b>	<b>54.5</b>	<b>54.8</b>	<b>54.1</b>	<b>50.9</b>	<b>48.0</b>
<b>RETURN ON HORTICULTURE, TOTAL</b>	<b>468.8</b>	<b>483.8</b>	<b>490.8</b>	<b>483.8</b>	<b>543.9</b>	<b>492.8</b>	<b>547.5</b>

Sources: Information Centre of the Ministry of Agriculture and Forestry Tike, Support Register and Horticulture Statistics, Kasvistiето Ltd., Finnish Glasshouse Growers' Association.

# EU dairy market situation and outlook

Jyrki Niemi

High milk prices, induced by strong global demand, triggered a significant rebound in milk production in the second half of 2013, more than offsetting the decrease of the first months of the year. The number of EU dairy cows increased significantly in 2013, thus leading to expectations that milk production should increase in both 2014 and 2015.

Although no significant surge in the EU milk production is expected after the quota system is abolished in 2015, higher milk availability should allow grasping export opportunities in world markets, in particular for milk powders and cheese. These are the main conclusions of the analysis by market experts within the Directorate General for Agriculture and Rural Development of the European Commission<sup>1</sup>.

Milk production increased significantly in Estonia, the Netherlands, Ireland, Denmark, Belgium and Germany and in 9 countries milk deliveries exceeded the production quotas in 2013/2014. This overshoot was particularly high in the Netherlands where a milk price of 44.0 €/100 kg in December 2013 was a strong incentive to produce despite the perspective of paying a surplus levy of 28 €/100 kg. By contrast, in Poland where the milk price was lower (at 37.2 €/kg in December 2013) there was less incentive to overshoot the quota.

In 2014/15, for the last year of the dairy quota system, the Member States already producing at quota level in 2013/14 are expected to maintain a strong level of production provided that milk prices remain high and feed prices remain at their current levels. In addition, production in France and the United Kingdom could grow substantially as these two countries are underutilizing their quota.

EU milk production could increase further by 1.8% in 2014. No spectacular surge in production is expected in 2015 after the quota system is abolished because significant growth took place already and milk prices might not remain as high as in 2013 and 2014.

## Milk and dairy products prices remain high

In December 2013, EU milk prices reached a record level of 40.4 €/100 kg, 18% above December 2012 level. Similarly dairy products prices have significantly risen

in 2013 with powders and butter prices about 30% higher than in 2012. In the first 3 months of 2014, prices were still very firm and only EU butter prices started decreasing from their very high levels.

World dairy prices have also remained firm in spite of high milk production in the main world dairy



Producer price of milk in EU-28 countries and in Finland in 2011–2013.

<sup>1</sup> European Commission 2014. Short Term Outlook for arable crops, meat and dairy markets in the European Union, Winter 2014. Directorate General for Agriculture and Rural Development - Short Term Outlook – N°8 [http://ec.europa.eu/agriculture/markets-and-prices/index\\_en.htm](http://ec.europa.eu/agriculture/markets-and-prices/index_en.htm)

producing regions: the US (+0.9% in January 2014 compared to 2013) and New-Zealand (+4.6% in December 2013 compared to 2012). This highlights that demand remains strong especially in China where domestic milk production decreased by 5.7% in 2013. As a consequence, prices should remain firm through 2014.

### More dairy cows in EU farms

The number of dairy cows in the EU is growing. The number of dairy cows has increased for the second year in a row in the EU-15: by 0.9% in 2012 and an estimated 1.3% in 2013. The 2013 increase is particularly pronounced in the Netherlands (+3.6%), Spain (+3.6%), Ireland (+2.1%), Germany (+1.8%) and France (+1.5%). By contrast the 2013 number of dairy cows decreased in Denmark, Portugal and the United Kingdom. In Spain, the impact of the herd recovery on the milk production should be seen in the coming months driven by the lower feed prices.

In the EU-N13, the estimated number of dairy cows is still decreasing (-0.9%) because of the on-going restructuring of the dairy sector. In Poland, which has the third largest herd in the EU, dairy cows number fell by 2% while, thanks to the strong growth in yields, milk production is going on increasing. The decrease in herd is also significant in Slovakia, Hungary and Lithuania. However, the number of dairy cows is increasing in Romania and the Czech Republic.

### Milk production in EU countries in 2008–2012, million kg.

Country	2008	2009	2010	2011	2012	Change % 2008–2012
Germany	27,466	27,461	29,076	29,764	29,703	8.1
France	23,793	22,905	23,576	24,698	24,246	1.9
Great Britain	13,350	13,237	13,582	13,805	13,591	1.8
Netherlands	11,295	11,469	11,626	11,642	11,675	3.4
Italy	10,489	10,500	10,500	10,480	10,598	1.0
Poland	8,893	9,140	9,002	9,309	9,858	10.8
Spain	5,834	5,742	5,877	5,838	6,089	4.4
Ireland	5,090	4,944	5,327	5,536	5,379	5.7
Denmark	4,581	4,734	4,830	4,800	4,927	7.5
Belgium	2,849	2,954	3,067	3,101	3,072	7.8
Austria	2,717	2,716	2,771	2,896	2,964	9.1
Sweden	2,987	2,933	2,862	2,850	2,861	-4.2
Czech Republic	2,433	2,354	2,312	2,366	2,429	-0.2
Finland	2,254	2,281	2,289	2,255	2,254	0.0
Portugal	1,886	1,868	1,829	1,842	1,861	-1.3
Hungary	1,425	1,407	1,322	1,308	1,398	-1.9
Lithuania	1,376	1,274	1,278	1,317	1,360	-1.1
Rumania	1,051	992	904	897	888	-15.6
Slovakia	946	852	800	812	851	-10.0
Latvia	634	595	625	662	718	13.3
Estonia	606	612	621	642	665	9.8
Greece	706	685	673	639	637	-9.7
Croatia	599	675	624	626	602	0.6
Slovenia	524	517	520	526	535	2.1
Bulgaria	705	600	565	549	514	-27.1
Luxembourg	265	271	282	281	278	4.8
Cyprus	152	152	151	153	154	0.9
Malta	40	40	40	40	40	0.0
EU-28	134,945	133,909	136,930	139,634	140,148	

Source: Eurostat.

## 2.4. Livestock production

### Milk

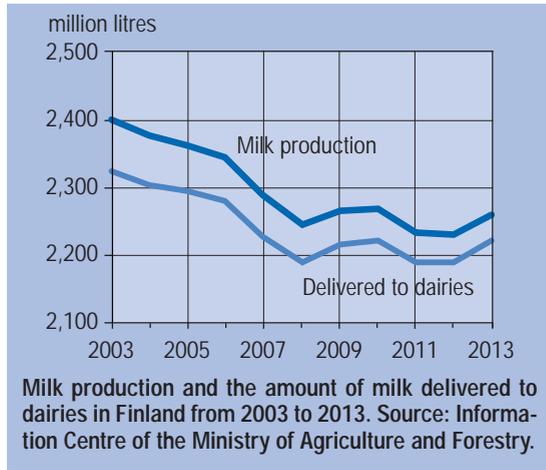
The volume of milk delivered to dairies in 2013 totalled 2,200 million litres, which was 1.5% and 32 million kg higher than in 2012. The amount included nearly 41.2 million litres of organic milk (+10%). According to the estimate of Gallup Food and Farm Facts, the 2014 milk output will be 2,245 million litres (+1%).

The number of milk producers fell by 5% in 2013, meaning that the decrease was slower than in the previous year. At the end of the year, milk was produced on 8,825 farms, of which 131 (-6%) were organic. The number of dairy farms has decreased by 61.5% from the beginning of the millennium, but milk output has fallen only by 6.4%. However, the production of organic milk has increased by 153% during the 2000s.

The average dairy herd size increased to 31.3 cows in 2013. Some 20% of all farms had 40 or more cows. These farms have nearly 50% of all cows. There were more than 200 farms with more than 100 dairy cows.

Even though Finnish milk production is lower than consumption, there is significant need for exports in single product groups. A significant part of the fat contained by milk produced in Finland is still used in the manufacture of exported products, which is reflected in the export volume of butter. Instead, milk protein is used in Finland.

Exports make up a large portion of production, particularly in terms of butter and milk powders. The exports of butter increased to 24.6 million kg (+16.5%), causing butter stocks to decrease. Yoghurts were both exported (+7%) and imported (+0.1%), totalling 35.2 million kg. The imports of other packaged liquid milk totalled 15 million kg and that of unpackaged liquid milk amounted to 40 million



litres. The exports of liquid milk other than yoghurt increased by 12.6%.

Altogether 67 million kg (+10.8%) of cheeses were imported and 45.9 million kg (+2%) were exported. The share of imported cheeses out of total consumption increased slightly as only 50% of all cheeses consumed were of a Finnish origin. The consumption of imported cheeses has grown by 1–2 percentage points a year over the past 20 years.

### Beef

In 2012, meat production in Finland totalled 386.9 kg, with total consumption being 404.5 million kg. In addition to beef, the production of turkey meat has fallen below its consumption level.

In 2013, Finland produced a total of 80.3 million kg of beef, being on par with the previous year. The consumption of beef fell by 2% to 98.2 million kg. Of the total consumption, nearly 22% comprised imported beef. According to the estimate of Gallup Food and Farm Facts, some 97 million kg of beef will be consumed and 81 million kg will be produced in 2014.

The number of bovines slaughtered was 266,251 (+0.7%), of which 52% were bulls, 32% cows and 15% heifers. The number of bulls and cows slaughtered was slightly lower than the year be-

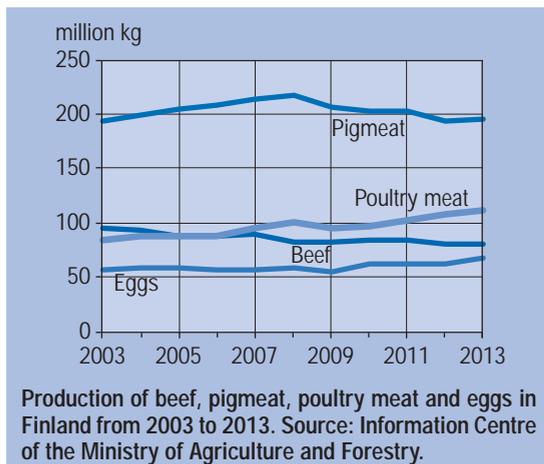
fore, but the number of heifers slaughtered increased by 6.6%.

The increase in the average slaughter weights has decelerated the fall in beef production volumes. In 1996–2010, the average slaughter weight of bulls increased by 71 kg but has decreased since. In 2013, the average slaughter weight of bulls was 336 kg (-0.2 kg), that of heifers was 240 kg (-3.7 kg) and that of cows was 281 kg (-1.4 kg).

The number of farms specialised in beef production was 3,500, of which 1,800 had suckler cow production. The number of suckler cows has more than doubled during the 2000s. In May 2013, there were 57,300 suckler cows in Finland (-1%).

Some 118,600 calves were sold for rearing (+0.5%), of which the majority comprised colostrum calves. The average weight of calves sold was 113 kg.

In 2013, a total of 22.4 million kg was imported to Finland, while 1.5 million kg of beef was exported. Imports increased by 2% and exports by 64%. The volume of frozen stocks nearly doubled. Stocks had more 4.7 million of beef at year-end. Poland, Denmark, Germany and the Netherlands made up 75% of total imports. More than half of beef products were imported from Sweden where Finnish meat companies also operate. Beef was mainly exported to Sweden and Estonia.



Of other ruminants, the total production of sheep meat was 0.9 million kg (+2%) and its consumption was 3.2 million kg (-10%).

## Pork

In 2013, Finland produced 194.5 million kg pork. After a few years with decrease in production quantity, 2013 pork production increased by nearly 1% from the year before. Pork consumption nearly reached the previous year's level, being 193.9 million kg (-0.5%). An increase in producer prices contributed to the recovery of production but, at the beginning of 2014, European pig farms were once again having doubts over the supply situation becoming fiercer. According to the estimate of Gallup Food and Farm Facts, pork production in 2014 will fall to 193 million kg but consumption will remain at 194 million kg.

More than 2.1 million pigs were slaughtered in Finland (+0.1%). The average slaughter weight of fattening pigs rose to 88.9 kg (+0.8%). The average slaughter weight has increased by nearly 7 kg over the past decade. The number of sows slaughtered decreased by 5%. The number of piglets sold (1.5 million) was 1.6% higher than the year before. The average weight of piglets sold increased to 31.1 kg (-0.4 kg).

In April 2013, Finland had 125,000 sows (-6%) and 489,700 fattening pigs of at least 50 kg (+2.6%). The number of pig farms was 1,600 (-8%). These changes also indicate the improved efficiency of production and the increase in slaughter weights as the number of sows has fallen by 31% and that of boars by 62% during the 2000s. At the same time, the number of fattening pigs has increased by 21%. Regionally, production has centralised in Varsinais-Suomi, Satakunta and three Ostrobothnian regions, housing 75% of all pig production.

Pork was imported by 33.5 million kg (-11%) and exported by 32.1 million kg (-8%). This means that Finland is a net exporter of pork, even though to a very small extent. In addition, imports and exports cover different cuts of the carcass. The most important countries of exports were Russia, Estonia, Sweden, New Zealand and South Korea. Exports to Russia increased by 50%:

Imported pork made up 18% of total consumption. Most pork imports originated from Germany, followed by Denmark, showing an increase in imports. Of these, Germany has strongly increased its pork production during the 2000s. Pork products were mainly imported from Germany and Sweden.

### Poultry meat

In 2013, poultry meat production in Finland totalled 110.9 million kg and consumption was 105.7 million kg. Poultry meat production increased by 3% and consumption by 4% from 2012. Some 92% of production was made up by chicken meat.

The production of chicken meat totalled nearly 102.3 million kg (+ 4%) and that of turkey meat was 7.3 million kg (+ 9%). Of total consumption, 96.6 mil-

lion kg (+ 5%) was chicken and 8.8 million kg (-5%) turkey. In addition, 1.2 million kg of other poultry meat was produced. Turkey meat production was slightly over half of the top year 2005.

According to the estimate of Gallup Food and Farm Facts, poultry meat consumption in 2014 will be 109.6 million kg, of which 100.4 million kg will be chicken and 8.7 million kg turkey. According to the estimate, the production volume of poultry meat will be 114.2 million kg, of which 107 million kg will be chicken and 7.2 million kg turkey. The market outlook for chicken is in general more favourable than that of other meats, and an increase in poultry meat production is expected in the coming years.

In terms of volume, 3.2% more chickens were slaughtered than in 2012. The average slaughter weight (1.65 kg/bird) was close to the year before. The number of turkeys slaughtered fell by 11.4% and their average weight (9.5 kg/bird) increased by 0.2 kg.

In 2012, 13.2 million kg of chicken meat (+ 13%) and 3.2 million of turkey meat (-10%) was imported to Finland. The most chicken meat was imported from Brazil, Thailand, Denmark, Germany and the Netherlands. Meat products were

Livestock production in Finland from 2003 to 2013.

	Dairy milk million litres	Beef million kg	Pigmeat million kg	Eggs million kg	Poultry meat million kg
2013	2,220	80	194	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
2003	2,323	94	193	56	84

Source: Information Centre of the Ministry of Agriculture and Forestry.

mainly imported from the same countries. Imports made by nearly 14% of chicken consumption and up to 38% of turkey consumption. Turkey meat was mainly imported from Poland and Germany where there is large-scale turkey production. The processing rate of imported meat has increased because the majority of imports was made up by meat products. The majority of imported carcass meat was made up by boneless meat.

Finland exported 19.3 million kg of chicken meat (+8%) and 2.2 million kg of turkey meat (+21%). Chicken meat was mainly exported to Russia and the Baltic countries. Significant volumes of turkey meat were also exported to Sweden and Poland. Exports mainly comprised meat with bones. Instead, imports consisted mainly of boneless meat.

## Eggs

In 2013, the volume of eggs delivered to packaging totalled 67.5 million kg (+8.5%). In addition, less than 1% of production has been delivered to other uses, mainly to direct sales or farm household use. Production increased from the year before. The production of organic eggs increased by 16.6% but its share of total production was only 4%. The volume of eggs produced in barn systems increased by 8% and that of eggs produced in battery cages grew by 6%.

Of all eggs, 34% were produced in barn systems and 62% in enriched battery cage systems. Starting from the beginning of 2012, eggs cannot have been produced in unenriched battery cages. In the first half of 2012, production fell by 8%, meaning that the recovery of egg production by more than 15% during the first four months of 2013 can be explained by the previous year's slump.

Egg consumption totalled 50.6 million kg (+3.5%), while egg exports amounted to 7.8 million kg (+21%). Some 7.5 million kg was used in egg products, meaning

The producer prices of the most important livestock products in Finland from 2003 to 2013 including production support (€/100 kg, milk €/100 l)<sup>1</sup>.

	Milk	Beef	Pig-meat	Poultry meat	Eggs
2013	47.14	310	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
2003	37.31	186	115	117	80

<sup>1</sup>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 3.4 cents/l has been added to the 2012 price of milk.

Source: Information Centre of the Ministry of Agriculture and Forestry.

that total consumption was 58.1 million kg (+4.5%). Egg products were exported by 3.8 million kg (-16.6%). Exports made up one-sixth of the total egg production.

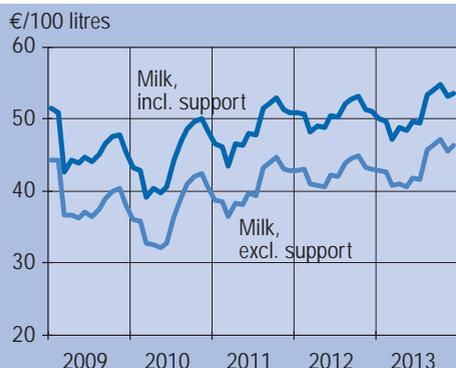
In April 2013, there were about 3.4 million laying hens in Finland (+8%). Egg production is estimated to increase slightly in 2014.

Market prices for livestock products in selected EU countries in 2013, €/100 kg<sup>1</sup>.

	Milk	Pigmeat	Beef (bull)	Poultry meat <sup>2</sup>	Eggs <sup>3</sup>
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

<sup>1</sup>The average price of January–December, except for milk January–September. <sup>2</sup>Sale price at slaughterhouse, <sup>3</sup>Sale price at packaging plant.

Source: European Commission.



Producer price of milk in Finland from 2009 to 2013. Source: Information Centre of the Ministry of Agriculture and Forestry.

### Producer prices

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

In 2013, the producer price of standard milk, including quality premiums, was € 43.48 per 100 l (+2%). In addition, € 7.47 per 100 l was paid in production subsidies. The average price of regular milk was € 39.78 per 100 l, meaning that various premiums made up € 3.7 per 100 l of the price of standard milk. The final price of milk is determined when dairies complete their financial statements and the retroactive payments based on dairy results are decided upon. In 2012, the average retroactive payment was € 3.66 per 100 l.

The average price paid to the producer for bull meat in 2013 was € 3.54/kg, being 10% higher than the year before. The average price of all

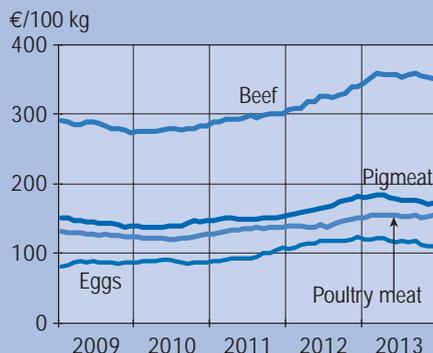
beef types was € 3.10/kg (+11%). The price payable for heifer meat was € 2.99/kg and that payable for cow meat was € 2.22/kg. The Finnish price of beef rose above average EU prices. In the long-term, the Finnish price has been fairly close to the average EU price.

The price payable for male calves was € 151.5/calf, i.e. 1% lower than the year before. Instead, the price payable for male colostrum calves rose by 6% to € 91.6/calf.

The average price paid for pork was € 1.74/kg (+7%). The average price paid for fattening pigs was € 1.78/kg (+7%). The average price payable for piglets (30 kg) was € 66.8 (-0.3%), which was at the previous year's level. Both the prices of piglets and pork were higher in Finland than in the EU on average.

The average price paid for poultry meat was € 1.54/kg carcass weight (+8%). The poultry product (whole chicken) used in EU price monitoring does not represent the Finnish market properly.

The average price paid for eggs was € 1.17/kg (+1%). There are price differences between production types. The average price paid for eggs produced in barn systems was 11 cents/kg and that payable for organic eggs was nearly € 1.56/kg higher than that paid for eggs produced in cage systems.



Producer prices of beef, pigmeat, poultry meat and eggs in Finland from 2009 to 2013. Source: Information Centre of the Ministry of Agriculture and Forestry.

## 2.5. Food market

### Consumer prices

In 2013, food prices rose by 6.2% in Finland. The annual change in the consumer price index was 1.5%, which means that the rise in food prices was clearly more rapid than the general inflation trend.

Food prices started to rise towards the end of 2010 and kept on rising until May 2013. However, the rise decelerated in the second half of the year. Food prices changed at the turn of the year when the new agreements negotiated by trade and industry and the increases in VAT and candy tax entered into force.

The consumer prices of meat products increased by 7% from 2012 to 2013. The consumer price of pork increased by more than 8%, that of beef by 6% and that of poultry meat by nearly 7%. The consumer prices of fish and seafood rose by more than 10% in 2013.

However, the consumer price of milk showed exceptionally strong growth in 2013, which was a consequence of the increase in wholesale prices resulting from the statement of the Finnish Competition

Average consumer prices of some foodstuffs in January from 2012 to 2014, €/kg.

	2012 January	2013 January	2014 January
Wheat flour	0.61	0.68	0.68
Rye bread	3.83	3.80	4.01
Beef roast	14.26	16.56	16.87
Slivered pork	7.88	8.98	9.45
Chicken breast fillet	12.86	13.40	13.79
Light milk, €/litre	0.86	0.90	1.10
Emmenthal cheese	13.33	14.09	14.13
Eggs	3.44	4.27	4.09
Butter	5.68	5.98	6.10
Margarine	3.12	3.18	3.30
Tomato	3.93	3.59	4.33
Potato	0.67	0.98	0.83

Source: Statistics Finland, consumer price statistics.

Development of average consumer price index and the consumer price index of foodstuffs in Finland in 2000–2013, 2000=100.

	Price index of foodstuffs	Consumer price index
2013	142.2	125.9
2012	133.9	124.1
2011	127.3	120.7
2010	120.9	116.7
2009	125.4	115.3
2008	122.9	115.3
2007	113.2	110.8
2006	110.9	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.

and Consumer Authority. The consumer price of liquid milk rose by nearly 20% in April 2013.

The consumer price of butter was an average 3% higher than the year before. Furthermore, the prices of other milk products increased by 3%. Sugar showed an increase of 6% in the consumer price.

In 2013, the consumer prices of cereal products were more than 4% higher than in the previous year. At the same time, the consumer prices of fruit, berries and vegetables increased by 10%. Apples were 18% more expensive than the year before. Moreover, the consumer price of potato increased by more than 13% in 2013.

The consumer prices of eggs were 7% higher than in 2012. However, the increase in the consumer price turned to a decline towards the end of 2013. Between July and December, the consumer price fell by nearly 7%.

In the 2000s, food prices have risen much faster than general consumer prices. From 2000 to 2013, food price has increased by more than 42%. Over the



Food prices (excluding VAT) in Finland and certain EU countries in 2005–2013.

same period, the consumer price index has grown by 26%. Relative to the level of earnings, food has, however, become much cheaper as wages have increased by 57% in the 2000s.

According to international price comparisons published by Statistics Finland, food is 18% more expensive in Finland than in the EU on average. However, in most Nordic countries, food is more expensive than in Finland.

One reason for food being more expensive in Finland than in central Europe is

the high value added tax (VAT) rate, which is the second highest in the EU-15 area even though the VAT payable on food has fallen from 17% to 14%. In Denmark, taxation on food is even heavier than in Finland.

Reviewed by the standardised EU consumer price index, the development of food prices accelerated in Finland in 2013. Before 2013, price development was close to the average level in euro countries. This can be explained by the reduction in VAT rates in 2009, as a result of which the con-

Average consumer prices of some foodstuffs in 2009–2013, €/kg.

	2009	2010	2011	2012	2013	Change % 2012–2013
Light milk, €/litre	0.89	0.79	0.84	0.87	1.05	20.69
Butter	4.59	3.86	4.66	5.84	6.12	4.79
Margarine	3.11	2.76	3.04	3.12	3.20	2.56
Emmenthal cheese	12.86	12.57	13.13	13.82	14.13	2.24
Beef roast	12.62	12.10	13.54	15.87	16.88	6.36
Pork fillet <sup>1</sup>	12.27	11.80	11.02	12.37	13.62	10.11
Chicken breast fillet	11.68	11.28	12.47	13.12	13.75	4.80
Eggs	2.99	3.00	3.25	3.93	4.25	8.14
Wheat flour	0.60	0.52	0.61	0.60	0.69	15.00
Rye bread, portion size	3.79	3.59	3.83	3.85	4.05	5.19
Tomato	3.58	3.67	3.18	3.24	3.08	-4.94
Potato	0.76	0.76	0.68	0.83	0.94	13.25

<sup>1</sup> From 2011 pork tenderloin.

Source: Statistics Finland, consumer price statistics.

### Consumption of milk products, margarine, meat and eggs per capita in 2001–2012, kg.

	Liquid milk <sup>1</sup>	Butter	Margarine	Cheese	Ice cream (litres)	Beef	Pigmeat	Poultry meat	Eggs
2012 <sup>e</sup>	182.8	4.2	..	21.9		18.7	36.0	18.7	10.6
2011	182.8	4.0	..	20.9	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
2002	190.0	3.0	7.6	16.6	13.5	17.9	31.9	15.4	9.7
2001	191.7	3.5	7.8	16.5	13.3	17.9	32.7	14.5	9.7

<sup>1</sup> Including liquid milk, sour milk products and cream.

Sources: Gallup Food and Farm Facts, Information Centre of the Ministry of Agriculture and Forestry.

sumer prices of food fell by 4.3% in Finland. When examining the price development of food without the VAT impact, only in Great Britain has the increase in food prices been quicker than in Finland within the EU-15 area.

New EU member states, such as Estonia, Lithuania, Hungary and Bulgaria, and the financial crisis victim, Iceland, have shown the strongest growth in food prices. In euro countries, food prices have risen by 0–3% in 2006–2013. In 2013, food prices in Finland have increased by 5% more than in other euro countries.

However, an international price comparison is not that straightforward. The prices are still affected by many 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 wholesale market is operated by a total of 1,300 enterprises but the majority of these are small companies specialised in the

imports or distribution of specific product groups, such as alcohol beverages, cigarettes or other product groups. These small specialised wholesale companies make up 33% of the entire market.

However, the remaining 67% of the wholesale value is generated through a wide product assortment of general wholesale. This field is dominated by a few major corporations, revolving around two operating principles.

Retail wholesalers, such as Inex Partners, Ruokakesko and Tuko Logistics, can be labelled as purchasing companies because they have a stable customer base within their groups. The other operating principle concerns general wholesalers that distribute a large selection of products to the hotel and restaurant sector, kiosks or other single retail units. The largest general wholesale enterprises include Heinon tukku, Metro tukku, Kespro and Meira Nova.

The retail market structure has been centralised for long but the development was fairly conservative before the EU era. Two leading chains dominated 58% of the market in 1980, and the same figure was 62% in 1995.

### Market shares of retail companies in 2004–2013.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
S Group	34.3	35.9	39.9	41.0	42.4	43.2	44.1	45.2	45.6	45.7
K Group	35.3	35.9	33.4	33.9	33.7	34.2	35.0	35.3	34.7	34.0
Suomen lähikauppa*	10.0	10.8	11.9	11.9	11.3	10.2	9.0	7.8	7.3	7.0
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
Other companies	10.8	9.5	10.2	8.4	7.6	7.3	7.1	6.9	6.9	6.7
Total	100	100	100	100	100	100	100	100	100	100

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

In the 2000s, the retail sector has seen significant reorganisation measures between the major chains. The total market share of the two leading retail chains was 66% in 2000, increasing to nearly 70% by 2005. In recent years, the centralisation has accelerated even further, causing the market share of the two largest chains to rise up to 80%.

S Group has expanded particularly strongly after 2005 and its gap to Kesko has grown up to 10 percentage points. In 2013, the market share of S Group showed moderate growth, whereas Kesko's market share declined slightly. According to research company Nielsen, the market share of S Group was 45.7% and that of K-Group was 34%.

Suomen Lähikauppa, which recently reduced its shop network by 70 units, held 7% of the market in 2013. According to Nielsen's estimate, the German Lidl chain had a market share of 6.6%. From 2012, Lidl increased its share by 1.1 percentage

points. The market share of Lidl is quickly closing the gap to Suomen Lähikauppa.

The number of special shops, such as bread, organic and local food shops, has increased every year. In five years, their number has nearly doubled to 900 shops. In 2013, special shops increased their sales by nearly 12%. However, special shops make up only 1.7% of the total grocery sales.

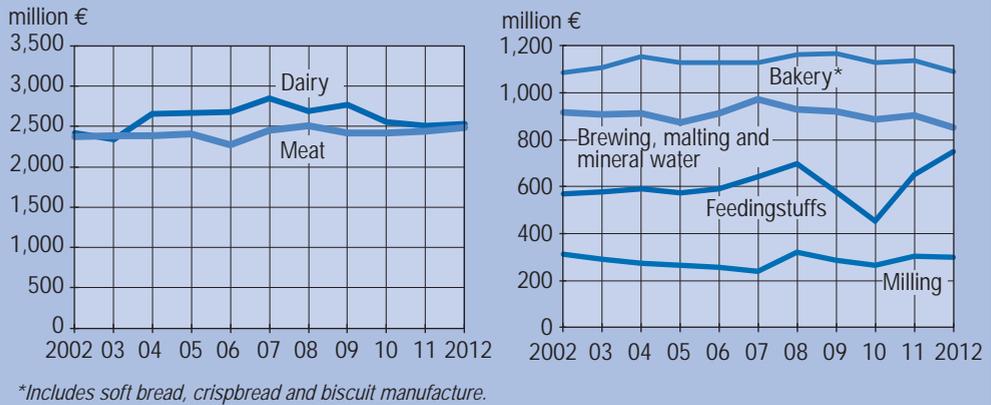
The structural development of retail trade is also reflected in that the Finns are concentrating their food purchases into large shop units which cover an ever-increasing share of the daily goods sales. The share of hypermarkets increased from 15% to 25% in 2008 and exceeded 27% in 2011 when Kesko opened six and S Group two new hypermarkets.

At the beginning of 2014, there were a total of 3,171 units selling daily goods, excluding special shops and market hall shops. The number of small shops in rural and sparsely populated areas has reduced by over half during the EU era.

### Key figures on the Finnish food industry in 2002–2012.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Turnover (at current price, billion €)	8.4	8.5	8.9	8.9	9.2	9.7	10.5	10.3	10.2	10.8	11.2
Turnover (at 2012 price, billion €)	10.0	10.0	10.5	10.3	10.6	10.9	11.3	11.1	10.8	11.2	11.2
Personnel (thousands)	38.0	38.2	37.5	36.7	35.9	35.7	34.6	33.5	32.6	33.2	32.5
Real turnover per person (at 2012 price thousand €)	262	262	279	282	295	304	327	330	333	336	344

Source: Statistics Finland, Finnish Enterprises 2002–2012.



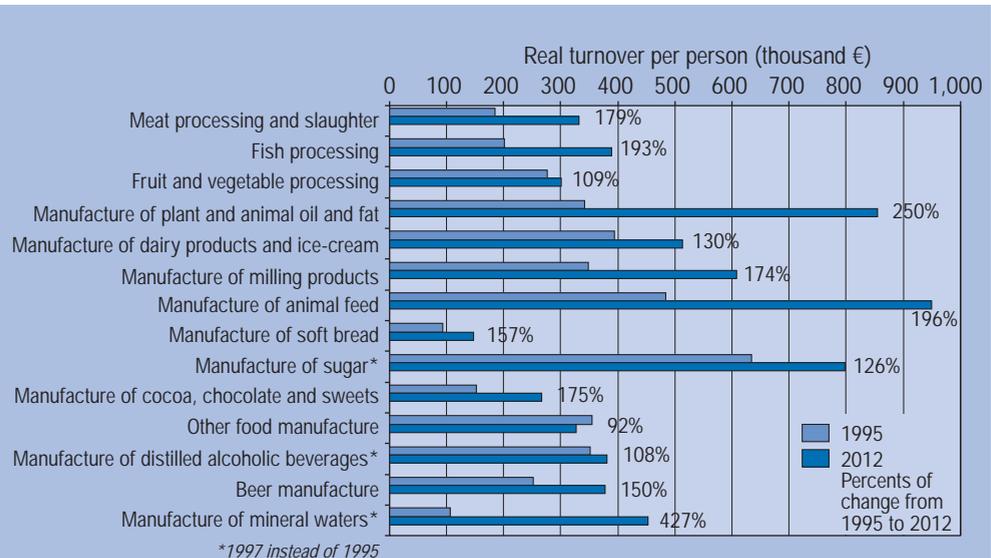
Turnover of Finnish meat and dairy industry and certain other sub-sectors of food industry at 2012 prices.

### Food industry

In 2012, the turnover of the food industry increased by € 347 million to € 11.2 billion. The increase in turnover was caused by growth in earnings in the domestic market because exports fell slightly at the same time.

The increase in turnover indicates that the growth in cereal prices and raw material and other costs started in 2010 was transferred to the 2012 product prices. After all, there is no significant increase in food consumption in Finland.

Employment in the food industry fell to the 2010 level after an increase in 2011.



Trend in the real turnover per labour in food industry by sectors. Sources: Statistics Finland, Finnish Enterprises 1995–2012, calculations by MTT.

The number of employees amounted to slightly over 32,500, being 667 fewer than the year before. As a result of the 2% decrease in the number of employees and the increase in turnover, the real turnover per person grew by € 8,000 to € 344,000 in 2012.

The turnover per person developed very differently between industries but, compared to the 1995 level, the 2012 figures show growth in nearly every industry. At the prices of 2012, the real turnover of the food industry per employee has risen from € 230,000 to € 344,000 during Finland's EU membership, i.e. by nearly 50%. A number of industries, such as the meat, fish, plant oil, mill, feed and confectionery industries, have shown much faster growth than on average.

Improved efficiency is also reflected in a smaller number of jobs, especially as major corporations with a nationwide network of facilities have centralised their production geographically to larger facilities, while closing down some smaller units.

The dairy industry and meat processing are the two largest sectors in the Finnish food industry. The dairy industry has grown more steadily over the recent years, whereas the strong fluctuation in feed prices and difficulties in exports have pushed down the turnover of the meat industry after the peak year 2007. Milk production is clearly less dependent on cereal feeds than meat production.

### Foreign trade

In 2013, Finnish food exports stayed close to the previous year's level for the second year in succession. The value of food exports from Finland totalled € 1,590 million, which is 0.6% less than in 2012.

After long stagnation in the early 2000s, Finnish food exports rose to a whole new level at the end of the first decade. The fluctuating develop-

ment in recent years shows that food exports are still sensitive to market changes in the Baltic Sea region. The rapid growth in exports started in 2006 came to a stop in 2009 due to the global economic crisis. In 2010–2012, exports recovered in the Russian markets, but declined in the traditional EU markets in 2012–2013.

However, imports have grown rapidly. In 2013, the value of food imports to Finland totalled € 4,825 million, which is 5% higher than the year before. Due to the rapid growth in imports, the foreign trade deficit of foodstuffs rose steeply by € 224 million from 3,011 million to € 3,235 million.

The deficit has traditionally been caused by the import volumes of fruit, vegetables, raw coffee, alcoholic beverages and tobacco. Other important imported products include vegetables, cheeses and cereal products. In recent years, Finnish food production has also faced competition with imports in product groups that offer Finnish alternatives, such as meat and fish products.

Foreign trade statistics of agrifood products include such plant-based raw materials that never end up in dining tables. The imports of palm oil used in the production of biofuels doubled between 2007



Exports and imports of agricultural and food products (CN 01–24) in 1993–2013. Source: National Board of Customs, ULJAS database.

and 2010 but fell by half to € 100 million in 2011–2012.

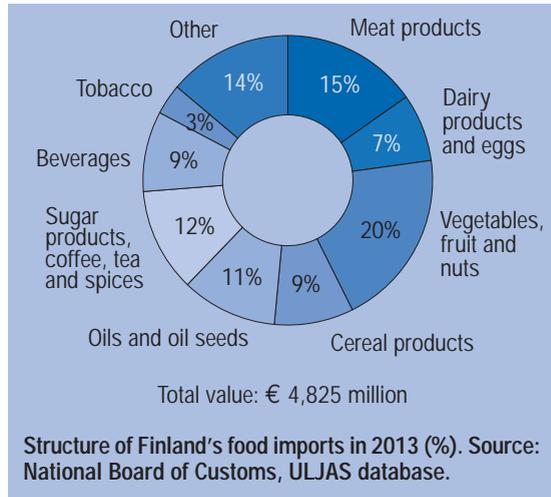
In 2013, relatively no palm oil was imported because the production of biofuels in Finland has shifted to the use of animal-based fat as raw material. In other words, the discontinued imports of palm oil reduced the deficit of the food balance by € 100 million.

The geographical distribution of imported agricultural products and food changed slightly in 2013. The growth in imports was wholly attributed to EU countries, the older member states in particular. The share of non-EU countries fell to 24%. The majority (65.8%) of imported food originated from older EU member states. The share of food imported from new EU member states increased slightly, being 10% in 2013.

With regard to growth in exports, the Russian market continues to play key part. In 2013, the value of food exported to Russia totalled € 442 million, representing growth of 4% from the year before. Russia has for long been the most important country, and its share of exports has varied from 20% to 26%, being up to 27.8% in 2013. All in all, more than half of all food exported from Finland has been distributed to the neighbouring countries, with the share being more than 57% in 2013 (Sweden 17.7%, Estonia 9% and Norway 2.7%).

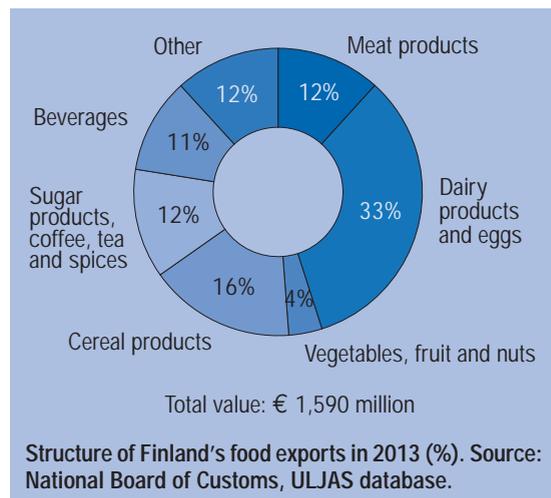
The most significant single product group in food exports is dairy products. The exports of dairy products increased to € 520 million, and the industry's share from total exports rose from the previous year's 30% to nearly 33%. In 2013, the value of exported butter was € 103 million, that of exported cheese was € 166 million and that of exported whey was € 91 million.

The dairy industry is the only



field in the Finnish food sector which has maintained a positive trade balance through the EU membership. Traditionally, the surplus has been more than € 100 million. In 2013, it grew by nearly 30% to € 134 million thanks to the favourable price and market situation.

Less cereal was exported in 2013 than the year before, totalling € 130 million. Both wheat and oat exports declined in 2013. Only the exports of barley increased, showing a growth of 20% from the previous year. Other important export articles include meat, alcohol beverages, and sugar and confectionery products.



### 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 aids, which comprise the northern aid, national aid for southern Finland, national top-ups to the LFA payments, and certain other aids.

#### 3.1. Common agricultural policy of the EU

The common agricultural policy (CAP) 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 the consumers.

Since then these objectives have been supplemented by other aims, in particular, those relating to environmental issues, which reflect the demands of the society that have arisen over the recent decades.

The share of expenditure which arises from the CAP in the EU budget is very high indeed, about 42% of the total budget in 2013. 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 being implemented in the agriculture sector through the CAP.

The CAP is comprised of the so-called first and second pillar. Most of the funding (75%) is allocated to the first pillar, mainly market support and

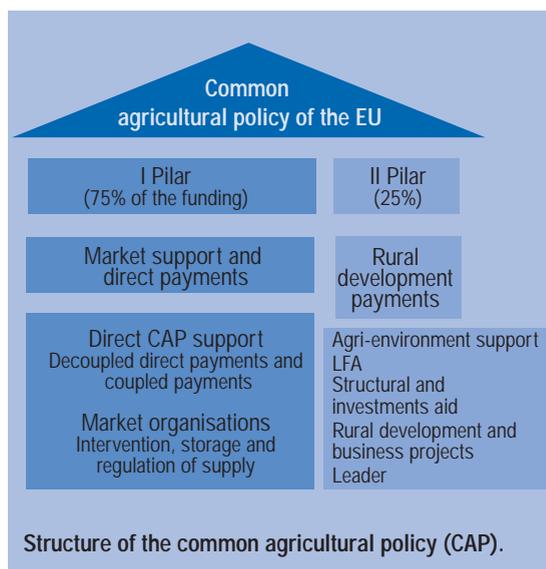
single farm payments. The rest of the funding (25%) is used for rural development measures under the second pillar (Rural Development Programmes).

As an outcome of the policy reforms during the past two decades the direct payments to farmers now constitute a lion's share of the EU agriculture expenditure. In the early 1990s most of the CAP funds were still used for export refunds of 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 closer to the world market prices. The price reductions were compensated for by means of direct payments, which is why support payments based on the 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 environment, 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, aimed to increase the market orientation of EU agriculture. Decoupled payments are now applied even more widely and some of the remaining

production restrictions were abolished to allow the farmers to respond better to the market demand.

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 started in October 2011 when the Commission published its legislative proposal concerning the CAP reform.

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

Country	Direct payments under Pillar I, € million per year on average	Change from the period 2007–2013, %	Rural development payments under Pillar II, € million per year on average	Change from the period 2007–2013, %	Share of the MS of EU agricultural support, %
France	7,483	-4.2	1,417	14.3	15.9
Germany	5,069	-4.9	1,173	-19.9	11.1
Spain	4,932	-2.3	1,184	-9.7	10.9
Italy	3,785	-6.5	1,492	1.4	9.4
Great Britain	3,576	-2.5	368	-5.5	7.0
Poland	3,030	-1.0	1,562	-29.0	8.2
Greece	2,173	-5.7	599	-5.9	5.0
Rumania	1,828	2.6	1,144	-13.2	5.3
Hungary	1,270	-3.3	493	-22.0	3.1
Ireland	1,212	-3.3	313	-23.6	2.7
Denmark	895	-6.0	90	-4.5	1.8
Czech Republic	873	-3.4	309	-33.8	2.1
Bulgaria	785	-2.3	334	-22.6	2.0
Netherlands	752	-7.4	87	-10.4	1.5
Sweden	698	-2.8	249	-21.2	1.7
Austria	682	-3.1	563	-15.0	2.2
Portugal	585	1.1	580	-12.9	2.1
Finland	524	-2.9	341	-4.0	1.5
Belgium	518	-7.1	79	-1.2	1.1
Lithuania	476	16.1	230	-20.5	1.3
Slovakia	389	-0.7	270	-17.6	1.2
Latvia	258	50.6	138	-20.0	0.7
Croatia	202	-	332	-	1.0
Estonia	150	31.3	104	-12.5	0.5
Slovenia	136	-4.6	120	-20.7	0.5
Cyprus	50	-5.7	19	-30.3	0.1
Luxembourg	33	-3.2	14	-7.8	0.1
Malta	5	-8.8	14	10.7	0.0
EU-28	42,368	-3.2	13,620	-13.5	

Source: Little et al. 2013. European council conclusions on the multiannual financial framework 2014–2020 and the CAP.

## CAP until 2020

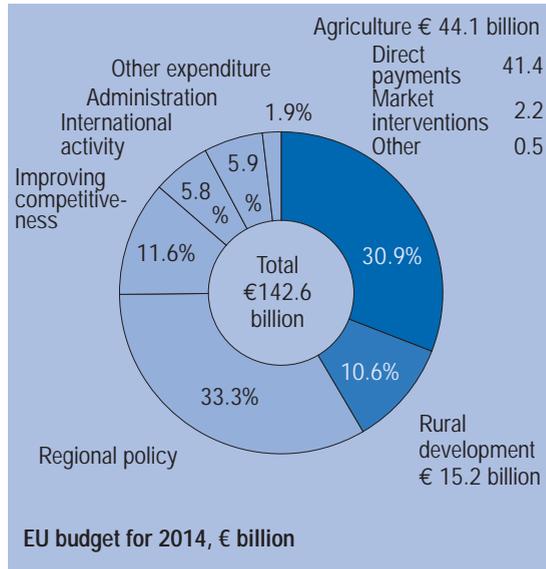
Political understanding on the outlines and content of the CAP until 2020 was reached in June 2013, when the European Commission, Council and Parliament were finally able to reconcile their positions after two years of negotiations, which especially towards the end became more and more intense.

This time the political decision-making process was particularly interesting as the agreement was prepared under a completely new institutional structure. This was the first time when the European Parliament had the power to decide on the outcome on an equal standing with the other institutions. Earlier the Council as the main decision-making body of the EU made the decisions based on Commission proposals.

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 in the beginning of 2014. Thus, for the most part, the application of measures under the earlier policy was extended to the year 2014.

The negotiations led to an agreement which lays the basis for a new common agricultural policy to be implemented from 2015. The new CAP includes the so-called greening of direct payments, and it aims for 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 liberalization trend 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 produc-



tion of certain commodities.

The reform 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 could have more negotiating power relative to the actors at the end of the supply chain. The reform also entitles the Member States to develop an insurance scheme and income stabilization tool by means of EU co-funding.

### Distribution of EU support for agriculture

The reform of the EU agricultural policy for 2014–2020 included cuts to the agriculture budget due to the tightening economic situation in the EU. As a whole the EU support payments to agriculture were cut by 5.9% compared to the programming period 2007–2013. Direct payments under the first pillar were reduced by about 3.2%, while the rural development funds were cut by as much as 13% from the previous period.

The amount of direct EU payments to Finland decrease by 2.9% from the programming period 2007–2013, which is

less than in the EU on average. The rural development payments to Finland were cut by 4%.

The only countries that will receive more agricultural support than in the previous period are Estonia (7.7%), Latvia (12%), Lithuania (0.3%) and Malta (5.3%).

The greatest cuts were targeted to the EU funding for agriculture in Cyprus, the Czech Republic and Poland. This was mainly due to the reduction in the payments for rural development for the period 2014–2020. Proportionally the reduction in rural development funding is the greatest in the Czech Republic, where the amount of support under the second pillar is about a third lower than in the previous period. In Euros the amount of agricultural support falls the most in Poland, where rural development payments account for a significant share of the total amount of support for agriculture.

More than half of the EU agricultural support still goes to the largest Member States France, Germany, Italy and Spain. Of these countries the support for Italian agriculture was cut the most, by 6.5% from the previous programming period. In absolute terms the highest amount of agricultural support goes to France.

### 3.2. EU support payments in Finland

In 2014 the support under the CAP to the Finnish agriculture will total about € 1,322 million. This consists of the CAP payments for arable crops and livestock (€ 530 million), less-favoured area (LFA) payments (€ 423 million) and environmental support (€ 369 million). These are funded either by the EU alone or co-financed by the EU and Finland.

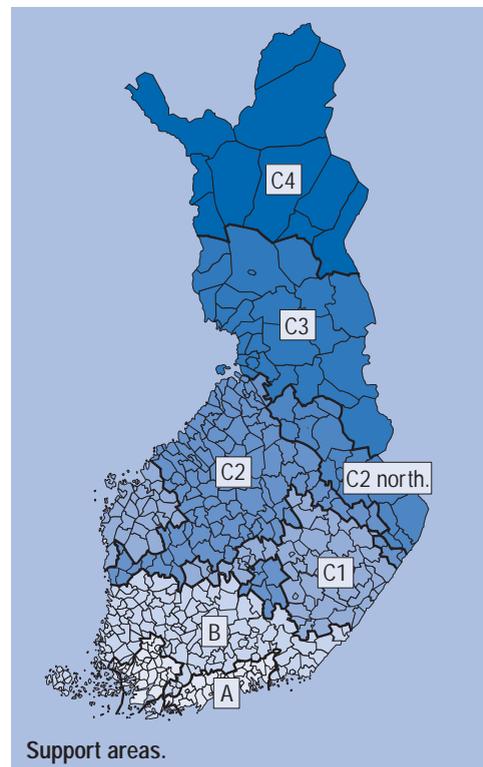
CAP payments are an integral element of the common market organisations and they are funded in full from the EU budg-

et. The EU contributes a little more than a quarter of the LFA payments and environmental support. The rest is paid from national funds.

Besides the EU support, in 2014 about € 499 million will be paid to Finnish farms as national aid. The national aid scheme comprises the northern aid (€ 310 million), national aid for southern Finland (€ 62 million), national top-ups to LFA payments (€ 119 million), and certain other national aids (€ 6.7 million).

Finland has been divided into seven support areas for the allocation of the payments. CAP support, environmental support, LFA payments and the national top-ups to these are paid in the whole country.

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



Because the agricultural policy of the EU has not been designed for farming in the northern conditions and mainly by small farms, Finland has to pay almost 60% of the necessary support for agriculture from national funds while only 40% 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 EU payments to Finnish agriculture will be about € 865 million a year, on average, of which about 39% 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 were converted into payment entitlements, which consist of a regional flat-rate payment and farm-specific top-ups.

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 state of the environment must be met.

By the reform agreed on in 2013 so-called greening measures, i.e. environmental measures that go beyond the base level were included in the conditions of direct CAP payments from 2015. 30% of the

national maximum amount of direct payments of each country must be reserved for greening. To be eligible for the payment the farm must have at least two/three crops in cultivation and at least 5% of the cultivation area must be left as ecological focus area.

In Finland 90% of the direct CAP support has been paid as decoupled single payments. In the health check of the common agricultural policy Finland was authorised to pay 10% 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 as well as ewes. Under the single payment scheme a total of € 9.2 million a year is paid as coupled support for certain arable crops.

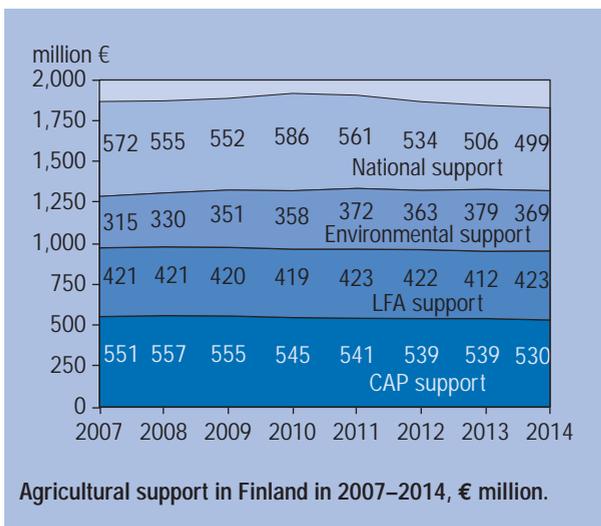
The possibility to apply coupled support payments stays in the EU agricultural policy. The reform of 2013 even allows to re-couple the payments to the production of certain commodities in the coming years. In Finland the share of coupled payments in the total amount of CAP support rises to 20% in 2015 and then decreases to 18% towards 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

#### 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%



continuation of farming in these regions and keep the rural areas populated. In Finland LFA support is paid for the whole cultivated area of about 2.16 million ha.

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

After the agricultural policy reform the less-favoured areas will be called areas facing natural constraints (ANC). The whole of Finland continues to be entitled to the payment for such areas. The maximum amount of the payment in the so-called mountain area, i.e. in Finland support area C in the north, rises from € 210 to € 450 per hectare, while in the rest of the country it will be 250 €/ha. Now the payment is 150 €/ha in area A, 200 €/ha in area B and C1 and 210 €/ha in areas C2–C4.

In 2007–2013 the LFA payments totalled, on average, € 421 million a year. The amount budgeted for 2014 is € 423 million. In the period 2007–2013 the average EU contribution to the LFA payment

in Finland was 28%, while Finland paid the remaining 72% from the national budget funds.

### Environmental support

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

The support scheme is comprised of the basic and additional measures and contracts concerning special measures. The main goal is to reduce the load on waters. Besides this, the aim is to restrict emissions into the air, mitigate the risks due to the use of pesticides, and protect and manage rural landscapes and biodiversity.

In the programming period 2007–2013 the average of € 320 million per year was paid as environmental support. The average share of the EU contribution to environmental support was 28%. The funds for environmental support budgeted for 2014 total € 369 million, of which € 262 million comes from national funds.

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

The current environmental support scheme and the new environment payments are presented in more detail in Chapter 5.2 (pp. 72–75).

### 3.3. National aid

The national aids paid in Finland comprise the northern aid, national aid for southern Finland, national top-ups to LFA pay-

ments 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 the production, nor may the amount of aid exceed the total payments before the accession.

### Northern aid

The Accession Treaty of Finland (Article 142) allows 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 ha, 55.5% of the cultivable arable area in Finland, is eligible for this aid.

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

Northern aid paid in 2014 will total about € 310 million. The most significant

types of aid are the northern aid for milk production (€ 161 million) and northern aid based on livestock units (€ 100 million).

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 northern aid in 2008.

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

### National aid for southern Finland

National aid for southern Finland, i.e. support areas A and B, was paid under Article 141 of the Accession Treaty until 2013. This article has allowed the payment of aid due to serious difficulties resulting from the accession to the EU, but it does not define the concept of serious difficulties in

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

	2009	2010	2011	2012	2013 <sup>prelim.</sup>	2014 <sup>estimate</sup>
Total	1,323	1,322	1,335	1,324	1,330	1,322
CAP income support	552	545	541	539	539	530
Natural handicap payments	420	419	423	422	412	423
EU contribution	118	117	118	118	115	118
National financing	302	302	304	304	297	304
Environmental support*	351	358	372	363	379	369
EU contribution	98	101	107	107	112	107
National financing	253	257	265	256	267	262
EU financing, total	768	763	766	764	766	755
National financing, total	555	559	569	560	564	566

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

National aid for agriculture in Finland, € million (aid per production year).						
	2009	2010	2011	2012	2013	2014 estimate
Total	552.0	586.1	560.8	534.3	505.8	498.8
Northern aid	327.5	335.8	333.5	328.2	317.7	310.3
National aid for Southern Finland	89.6	86.2	83.4	74.9	62.4	62.4
National supplement to the LFA support	119.3	119.0	119.3	119.4	119.4	119.4
Other national aid	15.6	45.6	22.4	11.8	6.3	6.7

any more detail or limit the duration of the measure. The Finns have interpreted the article so that it gives the authorisation to the payment of the aid in the long term, while the Commission 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 has granted both national direct aids 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 whole period 2008–2013. Instead, in the pig and poultry sectors the aid has since 2009 been paid as decoupled single payments based on the production volumes of the farms in 2007.

In 2013 the aid under Article 141 to southern Finland totalled € 62.4 million, which is about 30% less than the € 89.6 million paid in 2009. The total amount of aid under Article 141 was reduced the most in the last two years of the period, with the greatest cuts in the aid for pig and poultry farms.

The period for the payment of the aid under Article 141 ended in 2013. This is why Finland submitted a proposal concerning the national income and structural aids to agriculture in southern Finland for 2014–2020 to the Commission in October 2013. The proposal took account of the

EU agricultural policy reform and the EU support instruments that are better suited to Finland. An agreement was reached in the negotiations between Finland and the EU in November 2013.

According to the agreement the structure and financing of the national income aids in southern Finland paid in 2014 stay about the same as in 2013. From 2015, however, Finland transfers a significant share of the aids for specific products in southern Finland to the 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 horticulture 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 the Community law to continue the payment of national aid for agriculture in southern Finland was approved by the EU institutions in autumn 2014. The amount of aid decreases to € 17.4 million by the year 2020.

### National top-ups to LFA payments

National top-ups to LFA payments have been paid in the whole country since 2005

based on an agreement reached in the negotiations between Finland and the Commission in 2003. The basic top-up paid for the arable area may not exceed 20 €/ha in areas A, B and C1 and 25 €/ha in areas C2–C4. A raise for livestock not exceeding 80 €/ha is paid for the arable area of livestock farms. In 2009 the payments totalled about 95% of the maximum according to the hectares. The total of the co-financed LFA payments and the national top-ups may not exceed the average of 250 €/ha.

### 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 the farm size by reducing production costs. In practice these forms of structural aid comprise subsidised interest-rates, subsidies and state guarantees. In 2014 interest-rate subsidy loans, mainly for financing production buildings on farms and acquisition of real estate and movables relating to the 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 € 31 million in 2014.

In 2014 the investments in livestock buildings, setting-up aid for young farmers, building investments in greenhouses and building investments relating to renewable energy production are co-funded by the EU. Subsidies for other types of investments are financed nationally. The early retirement scheme offers the ageing farmers the opportunity to give up the farm or its production. In 2014 the national subsidies included in structural support are estimated to total € 87 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 2014 is about 500. In 2013 setting-up aid was granted to 597 farms, which is about the same as in 2012 and 2011.

#### Farm relief services

Farmers practising 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 the holidays, as well as the availability of substitute help in case of illnesses or accidents. In 2014 the funds used for the relief services to farmers and fur producers will total about € 225 million.

Number of objects of structural support and funds committed to these in 2009–2013.

	2009	2010	2011	2012	2013
Number of decisions on subsidies	3,289	2,771	2,537	2,205	2,461
– building in dairy husbandry	415	292	295	276	293
– building in beef cattle production	151	106	94	87	83
– horticulture investments	92	67	63	55	51
Number of setting-up aids	495	542	535	544	597
Funds committed, € million	98.1	95.7	77.3	73.1	92.2

Source: Ministry of Agriculture and Forestry

## Milk quota abolition will intensify competition

*Csaba Jansik*

Milk production in the European Union will be released from restrictions when the milk quota system is abolished in 2015. Preparation for the change began with a step-by-step increase in quotas in order to ensure a “soft landing” so that its restrictive impact will remain minimal.

### **Towards market-driven food production**

The abolition of milk quotas is part of the EU Commission's long-term strategic policy of reducing the control of agricultural policies and, at the same time, increasing the steering role of the market. The external and internal pressures in the EU, such as trade liberalisation, international trade relations and the need for cutting the agricultural budget, have all pointed to the need for a more liberal agricultural policy. The reforms over the past years, such as the phasing out of the intervention system, the removal of export subsidies, the reform of the sugar regime, and most recently the abolition of milk quotas, are all intended to enhance the transfer of policy control to market forces.

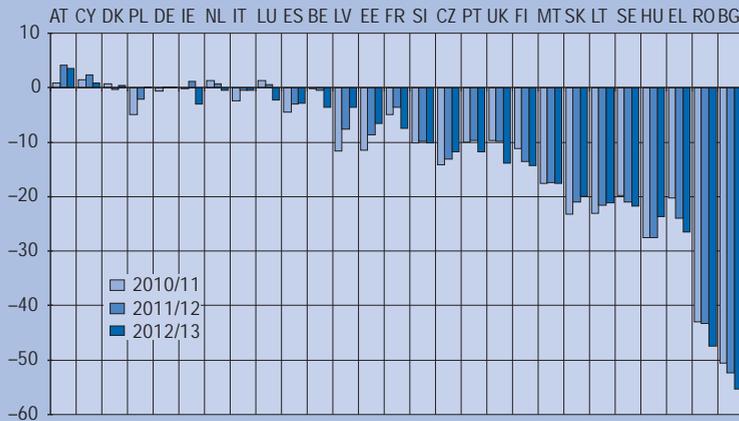
The changes in export subsidies and the intervention system were successful in their timing due to the favourable world market circumstances, with high global market prices. Fortunately, this also appears to be the case for the elimination of milk quotas. After the fluctuation in global market prices during the years 2008–09, milk product prices are again at record highs.

Although prices may well change by 2015, the basic market arrangement will not change over the next few years. The rapid growth in the consumption of milk products in developing countries such as China and India is keeping demand high. According to the leading forecasting institutions (OECD, FAO, Rabobank), supply will not be able to keep up with the demand, despite the expanding production of the developing countries themselves. The demand-driven dairy markets in the coming years will be well suited to the largest exporters, such as New Zealand and the EU. Consequently, this is the best possible time to implement the milk reform.

### **Winners and losers as a result of removing quotas**

The experiences following the sugar reform suggest that EU member states will also be divided into winners and losers as a result of the abolition of milk quotas. Those nations that have the most competitive milk chains might be expected to raise their production and increase their exports. At the same time, the relative significance of the milk sectors in the weakest nations will decrease and absolute production volumes will shrink.

Even though milk quotas have lost their importance over the years, their fulfilment still signifies the different growth potential amongst the member states. Countries that have continuously struggled with the limits of the quota are becoming the EU's most efficient producers. The removal of quotas is anticipated with enthusiasm, especially in the Netherlands, Denmark and Ireland, where stringent growth targets have been set and the leading businesses in the dairy industry are strongly export-oriented. The growth potential for the export of dairy products is also considerable in Germany and Poland, although their dairy industry structure is rather fragmented and competition among equally strong and mid-sized enterprises characterises the large domestic markets.



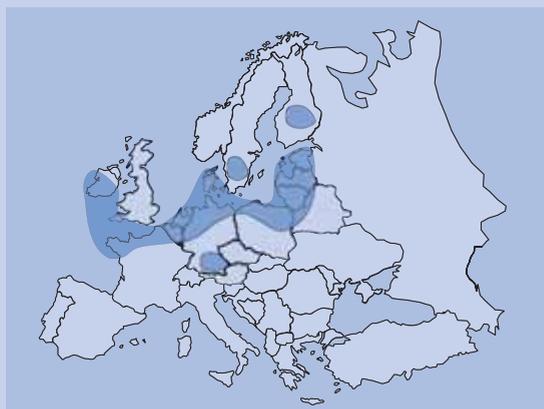
Fulfilment of milk quotas in European Union member states (Source: Versteijlen, H. 2013).

Although quota ceilings have not been reached everywhere, the rising fulfilment percentage is an indicator of the growth potential. Of the Baltic nations, Estonia and Latvia in particular may be able to rapidly raise their milk production over the next few years. On the other hand, deterioration in the fulfilment percentage indicates a possible reduction in future production. Milk production may therefore decline from its current levels in many East European countries, as well as in Sweden and Finland. Typically, a decline in domestic milk production leads to more vigorous importation of dairy products.

### Europe's milk production zone

As a result of these changes, a new milk production belt is being formed in Europe, which will stretch over the coastal regions of the Atlantic Ocean and Baltic Sea from Ireland via Bretagne to the Baltic countries. On the one hand, climate conditions have always specifically favoured milk production and grazing in the coastal regions. On the other hand, high prices over the last few years have raised the profitability of grains and oilseeds in Central Europe, where farms have to an increasing extent shifted their production to crops. As the focal area of milk production moves from the inland areas of the continent to the north and west, regions are specializing more distinctly in specific production lines in the EU.

Regional specialization is, of course, relative, and it does not mean the disappearance of milk production from other parts of Europe. For example, specialised milk production sub-areas are also forming in Germany's Bavaria, central Sweden and the C subsidy area of Finland. Similar areas can also be found in the mountainous regions of central or southern Europe.



Europe's milk production belt.

## Competition for raw materials and consumer euros

Competitiveness is measured by success on the markets, and increasing milk production is a basic prerequisite for growth in the milk chain. Dairy businesses that have access to good-quality, affordable raw materials will be able to perform best during the post-quota years. Competition will no longer be limited to that for the consumers' money, but there will also be increasing rivalry for raw milk. An increasing amount of milk is being exported and imported for processing over national borders.

Foreign trade in the EU's common market immediately increased after the expansion in 2004 due to the large price differences over the pre-enlargement period. In recent years, the fastest growing dairy businesses have ensured their positions as well as their access to raw materials through corporate acquisitions and by importing milk from neighbouring countries. A 'milk war' has evolved in the Baltic countries, where the strong Lithuanian dairies have already purchased one-fourth of Estonia's and one-third of Latvia's milk.

However, the competition is still strongest in the markets for end-products. The largest European dairies are targeting the world's growing cheese and powder markets, but hundreds of dairies are also preparing for the post-quota rivalry on the EU common markets. The coming years will witness an intensifying rush of the EU member states into each other's markets. The megatrends in retail, such as the growing popularity of the discount store chains and retailers' own private labels, will further reinforce the sales channels and create new ones for foreign trade.

## Finland's future is open

In Finland, the milk supply chain has been a major driver for the whole agricultural and food sector. The dairy industry has been a strong fortress of Finland's food industry, concentrating on high added-value products and having succeeded in export markets. It is the only field that has preserved a positive foreign trade balance during the entire period of EU membership. In a large part of the northern subsidy region C, milk production is the most or only relevant production line.

The structural development has been rapid. At present, the total number of dairy farms has fallen below ten thousand. The overall volume of production has declined only mildly, although the number of farms has continuously halved at ten-year intervals.

The impacts of the turbulence generated in the market as a result of the milk quota abolition will surely be reflected in Finland. The share of imports in the consumption of dairy products has steadily risen; for example, the share of imports in cheese consumption exceeded 50% last year. From next year onwards, the pressure for importation will further increase. European trends in retail trade will also strengthen in Finland, with private labels acquiring ever-larger shares in many milk product groups. Consumers have become more price sensitive, and loyalty to domestic products has been put to the test.

The milk quota abolition in the European Union is a significant milestone in the development of the dairy product market. The individual member countries, regions and businesses have prepared quite differently to participate in the intensifying race. In examining the competitive capability of the entire milk chain and its potential, Finland is not in the group of top countries, but neither is it among the bottom ones; rather, it is in the middle group, along with many others. Now is the time for important decisions that will affect the milk sector in terms of Finland's competitive ranking in the years to come.

## 4. ECONOMIC SITUATION OF AGRICULTURE

### 4.1. Development of results and profitability of agriculture and horticulture

MTT Economic Research calculates annually the result and profitability development of Finnish agriculture and horticulture on the basis of the results of bookkeeping farms. The results are based on weighed data from about 900 bookkeeping farms so that they indicate the average results of the 38,900 largest agricultural and horticultural farms in Finland. These account for more than 90% of the output of Finnish agriculture. The results have been calculated so that individual revenue and expense items and subsidies are allocated as returns and costs to the year of production in accordance with the accrual principle. As a result, annual yields and production volumes, as well as variation in prices and subsidies, have a direct impact on the results of the reviewed year.

#### Fluctuating prices and markets

Market prices have a significant impact on the income of farmers and the profitability of farms. In recent years, the operating environment of agriculture and horticulture has been more uncertain than before. Due to the global economic cycles and changing climate conditions fluctuations in the prices of raw materials and products are growing. This has been particularly visible in cereal prices and many production inputs since 2007.

The prices of production inputs have for long increased more rapidly than producer prices, which has increased costs and reduced profitability. In particular, the prices of fertilisers and feed have risen strongly. Over the past few years, the economic recession has slowed down the increase in input prices, while the prices of products have strengthened. However, the

prices of cereal and oil plants turned to a steep decline in autumn 2013.

In recent years, there has also been considerable variation in yields. After the record cereal harvest in 2009, harvest in 2010 was the smallest in a decade. The 2011 harvest was again better than normal, while the cool and rainy growing season in 2012 led to serious crop damages in parts of the country.

#### Growing returns

Unfavourable prices and the poor market situation caused agricultural profitability to be very low at the end of the last decade. The economic situation tightened especially on crop, pig and cattle farms. The strengthening cereal prices and modest increase of costs improved the results of cereal and crop farms in 2010, while the economic situation in meat production remained low due to the poor price relations.

In 2012, the average gross return of agricultural and horticultural farms increased by 9% to € 136,400 per farm. The producer prices of cereal, oil plants and potato rose to a record breaking level at the end of the year, which increased the sales proceeds by 14%. Cereal output increased by one-third from the previous year. Furthermore, the increase in producer prices of meat continued, which raised the proceeds of livestock production by 10%. Other sales proceeds fell slightly, while the amount of subsidies increased by nearly 8% to an average of € 50,900. Subsidies accounted for 37% of gross return in 2012. Subsidies also include investment subsidies allocated to years of service.

#### The rise in costs decelerated

In 2012, production costs in agriculture increased by 9% to an average of € 161,600. The increase in input prices decelerated,

being 4% on an annual level. The prices of fertilisers and fuels increased by more than 7% and those of purchased feed by 5%. The increasing fertiliser and fuel costs increased the cost of production supplies by an average of 13%. Production supplies represent about 24% of the total costs. The use of hired labour increased and the cost rose to 15% from total labour costs. The interest cost of capital increased by 16% as a result of the growth in the amount of capital and the interest rates applied to equity.

After the deduction of costs, the entrepreneurial income, i.e. the labour and equity compensation for the farm family, increased by 5.5% to € 21,900 per farm. The entrepreneurial income is compensation for own resources used in agriculture and horticulture, the labour input of 2,030 hours and the invested capital of € 318,400.

When costs are deducted from the entrepreneurial income, the resulting entrepreneurial profit was € -25,300, taking all the production costs into account. The loss grew by € 2,400 from 2011. The costs exceeded the returns by 18%. The cost of own labour has been calculated on the basis of recorded working hours and the hourly wage of € 14.50 of agricultural employees.

Since 2010, the interest rate of equity has been defined for each farm as the sum of risk-free interest and farm-specific risk premium. The risk-free interest is the return on five-year Finnish government bonds. The company-specific risk premium is determined according to a specific calculation method on the basis of the variation coefficient of the operating result percentage, equity ratio and relative indebtedness. The average interest rate for equity was 5.3% in 2011 and 5.7% in 2012.

### **Profitability is stagnant**

The profitability of agriculture and hor-

ticulture has remained stagnant for three years. After hitting the bottom in 2009, profitability has returned to the average level of the past 10 years. Entrepreneurial income has not increased noticeably and, in real terms, has fallen by 2% a year. In 2012, the profitability ratio was 0.47. The indicator is calculated by dividing entrepreneurial income by the sum of wage and interest claims. This means that agricultural entrepreneurs received 47% of their target wages and interest. The entrepreneurial income produced hourly wages of € 6.7 and a 2.6% return on equity.

On dairy farms, entrepreneurial income increased by 16% to € 47,300 and the profitability ratio rose to 0.60. Gross return was 16% and production cost 14% higher than the year before, mainly due to the larger size of farms. Cost of supplies and interest cost of capital increased 20%, but other costs remained relatively unchanged. The profitability of other cattle farms improved from the year before but is still clearly poorer than that of dairy farms.

In recent years, the profitability of pig farms has suffered from poor price relations and changes in the subsidy system. The recovery of the market and prices seems to improve the finances of pig farms. Entrepreneurial income increased to € 40,900 and the profitability ratio rose to 0.56 in 2012. The real entrepreneurial income on pig farms rose above the average value of the past 10 years. Results improved the most on farms specialised in piglets and pork production.

In recent years, the profitability of cereal farms has fluctuated strongly due to cereal prices. After the poor years at the end of the last decade, profitability has improved but is still modest. Cereal market prices nearly doubled in the crop year 2010/2011 and have remained high ever since. Cereal prices reached a record high at the beginning of 2013.

The benefits brought by the increase in cereal prices have mainly been overrun by increased costs. In 2012, entrepreneurial

income on cereal farms increased by 9% to € 11,000 and the profitability ratio rose to 0.39. On other crop farms, entrepreneurial income was € 7,900 per farm and the profitability ratio was 0.31.

### Differences in profitability

There are no major differences in profitability between farms representing the same production type in different subsidy areas. The differences are mainly caused by the different production structure of the areas. A profitability higher than the average value was reached in A, C2p and C3 subsidy areas. The best profitability was achieved in the C2p subsidy area where the profitability ratio was 0.70.

The profitability ratio of the most successful farms (the strong group) was € 42,400 on average, while the profitability ratio was 0.83. Total capital produced returns of 3%. The entrepreneurial income of the poorest group (the weak group) was € -2,600, meaning that no compensation was paid for own labour and capital. The cultivated areas and the number of livestock are clearly higher on strong farms than on weak farms.

There are also noticeable profitability differences between farms of the same production type and size category. On average, the profitability ratio of dairy farms in the strong group was 0.94 but that of the weak group only 0.33. On larger dairy farms, the strong group reached its profitability target, with the profitability ratio being 1.38. However, the profitability ratio of the weakest quarter of farms of the same size was as low as 0.33.

### Hourly earnings and return on assets

After deducting the interest claim for equity from entrepreneurial income, annual earnings were € 4,200 on average in 2012. When this is divided by the 2,030 working hours of the farm family, hourly earnings are € 2.1. This hourly wage can be com-

pared with the hourly earnings of regular wage earners. The real level of annual earnings have been € 7,700 and hourly earnings € 3.3 since 2005. According to forecast, earnings in 2013 will be closer to the recent years' average of € 7,000 and hourly wage will be € 3.6.

When the cost of own labour is deducted from entrepreneurial income, the return on equity, i.e. net result, was € -7,500 on average. In percentage, return on equity was -3.3%. Income tax on agriculture and horticulture has not been deducted as expenses from the net result.

In 2012, return on assets in agriculture and horticulture was € -4,500. This is obtained by adding interest paid to the net result. Average assets over the accounting period were € 413,300, with return on assets being -1.1%. This means that assets produced no return on average. Return on assets per production type varied from 0.7% to -14.7%.

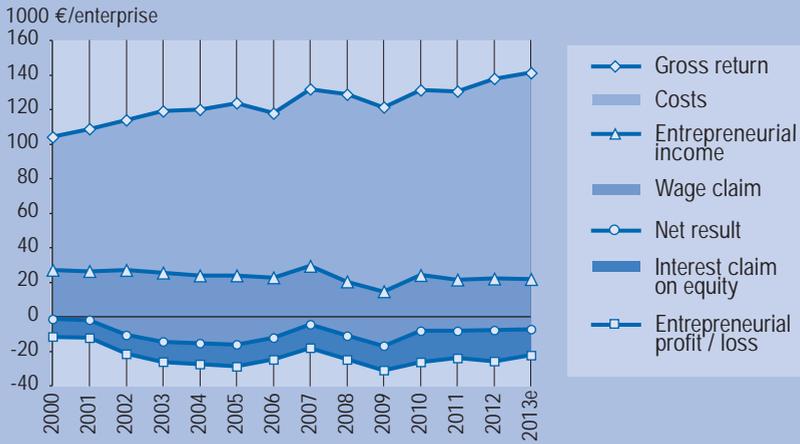
### Solvency

In 2012, the total assets of agricultural and horticultural farms were € 422,100 on average, of which equity comprised € 318,400 or 75%. The growth in business size has increased the amount of capital needed. Currently, the capital per farm is 1.4 times greater than in 2005. Investment financing depends largely on external capital and investment subsidies. The amount of debt has increased alongside the growth of capital, but the pace has slowed down clearly in recent years. Solvency has remained good, while relative indebtedness has turned into a decline.

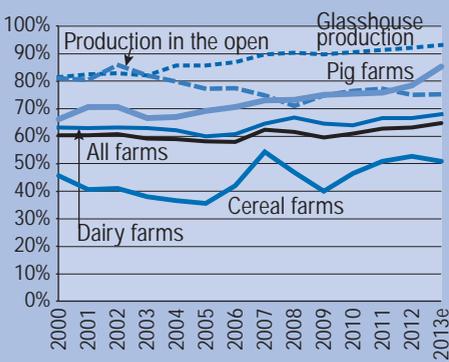
Equity accounts for 75% of the total assets of enterprises. The equity ratio was the highest on cereal farms (85%) and the lowest in greenhouse companies (38%). The amount of capital and debt is higher on poultry and pig farms, with greenhouse companies having the highest indebtedness.

The ratio between debt and returns, i.e. relative indebtedness, increased from 60%

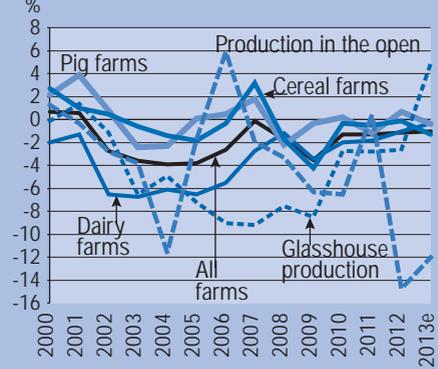
### Entrepreneurial profit



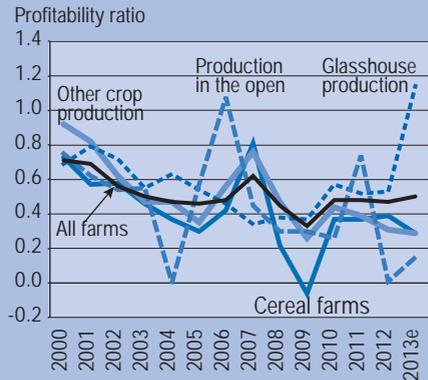
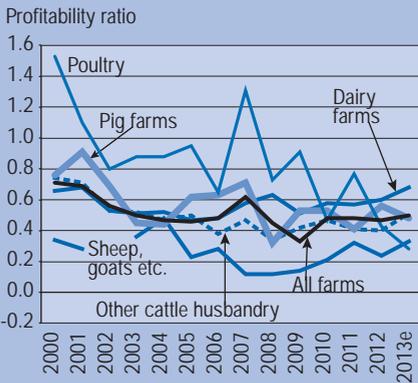
### Sales proceeds of total return



### Return on total assets



### Profitability ratio by production types



Result and profitability development of agriculture and horticulture in 2000–2013e.

in 2000 to 83% in 2009. After this, indebtedness has turned into a decline, while returns have grown faster than debt. This ratio is indicative of the financial risk of enterprises, which has partly been reduced by low interest rates.

There are considerable differences in indebtedness between farms and production types. Indebtedness is the highest on other cattle farms (88%) and the lowest on pig farms (54%). On slightly under 10% of farms, the amount of debt is nearly double compared with the returns.

On the balance sheet, the asset items have been valued at fair values, and no investment subsidies or provisions used have been deducted from the asset values. The value of fixed assets acquired through investment subsidies is wholly included in the depreciation base, and subsidies are recognised as income, following the depreciation on corresponding asset items. As a result, the key indicators calculated from financial statements give the true picture of the amount of the capital, as well as the solvency and profitability of enterprises.

## Liquidity

The liquidity in agriculture and horticulture is based on cash flow statements. In 2012, cash returns increased by 7% to an average of € 131,600. Subsidies accounted for 38% of the returns. Short-term production costs increased to € 88,900, showing a growth of 10% from the previous year. As a result, operational surplus was € 42,700, which is 1% higher than the year before.

Financial surplus fell by 2% to € 33,500 as financing costs and taxes were higher compared to the previous year. Financial surplus comprises financial income which is disposable for investments, repayment of loans and private household expenditure.

The net amount used for investments was € 22,700 per farm, i.e. 9% more than the year before. Investments have re-

mained relatively unchanged over the past few years. The amount of new loans taken out increased by 10% and repayment of loans by 5%, which is why the net change in loans grew.

Cash surplus fell by 8%, being € 14,700 on average. This amount was produced by business activities in agriculture and horticulture to be used for the private consumption of the farm family.

## Result and profitability forecasts

The 2013 result and profitability figures presented here are based on farm-specific forecasts calculated from the accounting data. They include any changes in product and input prices and subsidies, as well as any regional changes in average yields of crops. Agricultural subsidies are actual 2013 figures. The farm size, and production and input structure are assumed to remain similar to the previous year. In other words, the calculation model does not take the impact of productivity development into account in the forecasted results.

Farm-specific forecasts are weighed according to region, production type and size category in order to represent the average results of some 37,800 largest agricultural and horticultural enterprises. The weighing is based on the farm structural statistics of the Information Centre (Tike) of the Ministry of Agriculture and Forestry, because of which the impact of structural changes is taken into account in the forecasts.

The forecast year's weighed data is based on the results of the structural forecast model of profitability accounting. The forecasts are calculated using a regression analysis over the period of 1998–2012. The number of farms decreases as smaller farms quit their production, in which case larger bookkeeping farms have been provided with higher weight factors in the 2013 forecast. As a result, the structural and productivity development is taken into account in the forecast.

### **Preliminary results for 2013**

According to the preliminary results for 2013, the average gross return grew by 4% to € 142,100. Sales proceeds rose to € 85,600, showing a growth of 6% from 2012. The decrease in cereal prices reduced cereal returns by 8%. The amount of subsidies fell slightly to € 50,800 per farm. The increase in input prices was only a couple of per cent in 2013, which slowed down the increase in costs. Costs excluding the wage and interest claim increased by 5% from the previous year. The costs were mostly increased by fertiliser and cultivation costs and the price of purchased feed.

The results of farms improved slightly from 2012. Entrepreneurial income remained relatively unchanged, but the profitability ratio rose from 0.47 to 0.50. The decrease in the interest rate on equity reduced the interest claim. After the costs of € 44,100 arising from own labour and capital are deducted from entrepreneurial income, the resulting entrepreneurial profit is € -22,100. The loss decreased by € 3,200.

Profitability fell the most on cereal farms, and pig and poultry farms. The decrease in producer prices reduced their profitability even though the increase in costs decelerated clearly. The results of other cattle farms and horticulture improved from the previous year. The profitability of pig farms turned to another decline. The entrepreneurial income of dairy farms increased by nearly 20% and their profitability continued to improve. The price of milk remained at a good level and the increase in costs was moderate. The forecast also includes the change of farm structure, which is fast paced in the dairy sector.

The profitability of pig and beef cattle farms has been low over the past few years. Rise in meat prices over the recent years has slightly alleviated the situation. The decrease in cereal prices reduces the pressure on feed costs, but other costs continued to

rise. The entrepreneurial income and profitability of other cattle farms improved but the results of pig farms fell clearly last year. The price relation between pork and feed remains to be poor even though the cereal price has fallen. The result slightly higher than in 2012 seems to be temporary on pig farms.

The profitability ratio calculated in the forecast was 0.68 on dairy farms, 0.51 on other cattle farms, 0.48 on pig farms, 0.28 on poultry farms, 0.15 in horticulture in the open, 1.14 in greenhouse companies and 0.29 on cereal and other crop farms.

### **EU typology and weighing**

In profitability results, the production types and size categories of farms are determined following EU farm typology. The typology was revised in 2010 when the classification changed from standard gross margins (SGM) to standard output (SO). The classification is based on regionally (NUTS3 region) calculated crop- and livestock-specific outputs. Outputs are formed on the basis of each region's average crops, livestock production and prices.

When determining the production type and size category of a farm, areas of crops and the average number of livestock are multiplied by their regional standard outputs. The sum is the farms's economic size in euros. The production type is determined according to the products the farm's standard output consists of.

The results are weighed according to the farm structural statistics of Tike. The calculation of the sheep, goat and other cattle production type was specified so that trotting and riding farms were excluded from the farm group which are weighting bookkeeping farms. This improved significantly the representation of the results of sheep and goat farms. The results presented here are available from the Economydoctor web-service.

# What a litre of milk costs: knowing the production costs helps to develop profitability

*Arto Latukka and Marja Vilja*

'Production costs' refer to the expenditures involved in producing a product. When they are divided by the production quantity, the unit cost is obtained. Its recognition is useful if, for example, the farmer is able to price the product. The price should be competitive on the market, but at the same time as high as possible so that, together with subsidies, it will cover at least most of the unit costs incurred for the product.

## A calculation system

At MTT Agrifood Research Finland, a calculation system generating the unit costs of 77 individual agricultural products has been developed. It determines the unit costs from MTT's profitability bookkeeping data on a farm-by-farm basis, and the results are weighted from region to region with generalized average results derived from the production types and farm-size classes. The reports not only provide the production costs, quantities and unit costs calculated as their ratio, but also the unit cost structure of each product.

The system covers at maximum 540 cost items per farm directly for crops and livestock: 77 individual products in total. All agricultural and horticultural products are included in the system. The cost items include variable inputs (total: 15 items), livestock acquisition costs (25), purchased feed (46), and intermediate products produced on the farm that are distributed in accordance with the raw material products (229), as well as agricultural and horticultural machines and buildings, with 100 separate items in each. The cost items are divided by the product quantities, whereupon each of the 540 cost items is calculated per product unit. These cost items are summed in the system reports in 24 individual cost items, thus enabling the unit cost structure to be examined. The unit costs of products are obtained as a sum of these items.

In targeting the cost items, ProAgria's model calculations are used as the basis for the products concerned. Ratios are obtained from these and the resources thereby targeted at the products. The costs are derived from the enterprises' own financial information. The system has additionally been developed so that it is also possible to utilize farm-based information with regard to the use of resources for the various products in its targeting ratios. The unit costs of intermediate products such as feeds and heifers are calculated based on the farm's production, and these unit costs are used to value the intermediate products to be included into the unit costs of final products, for example milk.

## The unit cost of milk

On dairy farms in 2012, the unit cost of a litre of milk was, on average, 0.81 euros. The results are presented in accordance with the farm-size class in Table.

By concentrating on the largest cost items, it is possible to best reduce unit costs and develop profitability and the competitive edge. Labour costs were 16.8 cents per litre of milk. This only includes the paid labour and work of the entrepreneurial family with regard to livestock. The labour costs of feed production include the production costs specific to each feed. By taking these labour costs and other cost items incurred

by feed production into account, we obtained the unit costs of each feed, from which the use of feed was priced. The cost incurred by the use of a farm's own feeds for cows was, on average, 17.4 cents per litre of milk. With respect to the share of purchased feed in terms of unit costs, this came to about 9 cents.

The cost of renewal caused by animals purchased and the breeding of heifers was 9.1 cents per litre of milk. The share of depreciation and interest charges incurred by buildings and machines was 8.7 cents, and the cost of repair for these was 4.4 cents. The share of fuel, electricity and heating costs was 3.0 cents, and insurance, rents and other expenditure accounted for about 8 cents. Costs connected with feed production and other crop production are not directly targeted at milk: rather, they are targeted via the use of feed.

### Low labour costs on large farms

The unit cost of a litre of milk varied from 1.29 euros for an eight-cow farm-size class to 68 cents for a farm-size class of 139 cows. As farm size increased, labour costs in particular significantly declined, from 43 cents on an eight-cow farm to approximately 9 cents for a 139-cow farm. Additionally, own-feed production costs decline by almost a half. Depreciation and interest costs grow in; however, the increase was calculated to be only a few cents per litre of milk.

In subsidy region A, unit costs were just slightly lower than the rest of the country, being 0.77 euros per litre of milk, whereas in subsidy region C4 the costs were clearly higher, at 1.01 euros per litre of milk. Nevertheless, the farm size in region A is greater than in the rest of the country, while with regard to subsidy region C4 it is clearly smaller. This partly explains the unit cost differences between subsidy regions. Calculated per cow, production costs in Finland in 2012 were, on average, approximately 6,680 euros per year.

Unit cost results will be provided on MTT Agrifood Research Finland's Taloustohtori ('Economy doctor') web pages ([mtt.fi/economydoctor](http://mtt.fi/economydoctor)) via their own online service starting with the most important agricultural products. The unit costs for milk and cereals will be published first. The results will be calculated retroactively for the period covering the last 10 years, enabling the development trends of unit costs to be examined.

### The production costs of milk per litre in various farm-size classes in 2012.

Dairy farms represented	8,980	760	3,350	3,870	860	130
Total no. of cows on average	32	8	17	35	78	139
	Average					
Production costs, €/farm	214,994	85,237	124,528	236,792	493,775	798,446
Production quantity, in litres	266,584	66,283	139,941	294,917	668,481	1,172,325
Unit costs, €/litre	0.81	1.29	0.89	0.80	0.74	0.68
Feeds purchased, cents/litre	9.1	10.5	8.6	8.9	9.7	9.2
Own feeds, cents/litre	17.4	25.9	19.7	18.1	14.4	13.4
Other livestock expenditure, cents/litre	3.6	3.9	3.9	3.7	3.2	3.3
Breeding + purchases of animals	9.2	13.3	8.5	9.0	10.1	8.7
Fuel, electricity, heating, cents/litre	3.0	3.9	3.2	3.1	2.9	2.5
Building and machine repair, cents/litre	4.4	5.3	4.0	4.1	4.9	6.0
Insurance, rents, other expenditure, cents/litre	8.0	14.8	9.8	8.0	6.5	6.4
Labour costs, cents/litre	16.8	43.2	25.2	16.6	10.1	8.7
Depreciation + interest cost for machines, cents/l	4.4	4.9	3.8	4.3	5.3	3.8
Depreciation + interest cost for buildings, cents/l	4.3	2.4	1.8	4.2	6.3	5.7

## 4.2. Economic development of Finnish agriculture and horticulture

The trends of return and cost items and assets in Finnish agriculture and horticulture are monitored at the total level by the agricultural total calculation system of MTT. 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.

In addition to the realised results, preliminary results for 2013 were calculated on the basis of the farm-specific estimates from the forecast system for profitability bookkeeping (see Chapter 4.1). Continuously updated estimates are available in the agricultural total calculation service on the MTT Economydoctor website ([www.mtt.fi/economydoctor](http://www.mtt.fi/economydoctor)).

### Result trends

The total returns of agriculture and horticulture are approx. € 5.6 billion according to the estimate. Production costs amount

to € 6.7 billion. The entrepreneurial profit, which represents absolute profitability and is calculated as the difference between total returns and production costs, is € -1.1 billion.

When the costs arising from the entrepreneur family's labour and equity are excluded from the production costs, the result is the entrepreneurial income left as the margin for inputs. The estimated entrepreneurial income in 2013 was € 733 million, showing a decrease of 4% from 2012. This was 25% lower than the record level reached in 2007, but 39% higher than the low of 2009.

Entrepreneurial income varies from one year to the next, particularly in crop-dominated subsidy areas. For example, in subsidy area A, the 2013 estimated entrepreneurial income was € 113 million, whereas it was € 36 million 2009 and € 195 million in 2007.

### Specification of returns

According to the estimate, the total returns of agriculture and horticulture are € 5.6 billion, of which € 1.96 billion or 35%

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 2013 prices	Profitability ratio	Return on total assets %
2013e	53,608	5,614	6,724	-1,110	733	733	0.40	-2.4
2012	56,793	5,577	6,848	-1,275	755	774	0.37	-2.5
2011	59,294	5,427	6,601	-1,167	813	864	0.41	-2.3
2010	60,550	5,316	6,605	-1,286	877	971	0.41	-2.8
2009	62,139	5,076	6,555	-1,479	527	629	0.26	-4.7
2008	63,607	5,240	6,603	-1,359	632	772	0.32	-3.8
2007	64,885	5,190	6,225	-1,030	978	1,195	0.49	-2.1
2006	67,310	4,740	5,970	-1,225	763	966	0.38	-4.1
2005	67,583	4,729	6,021	-1,291	808	1,023	0.39	-5.0
2004	70,196	4,635	5,940	-1,304	800	1,024	0.38	-5.2
2003	71,940	4,714	5,948	-1,234	900	1,136	0.42	-4.9
2002	73,407	4,787	5,877	-1,088	1,035	1,309	0.49	-4.0

comprise subsidies. Support payments also include the items of investment subsidies from earlier years targeted at the year 2013. Investment subsidies are allocated as returns alongside the corresponding asset item depreciations.

Sales proceeds and other returns totalled € 3.66 billion in 2013. Livestock returns accounted for 37% of the total returns, while crop returns accounted for 12%. However, crop returns do not include any intermediate products, such as feed.

Horticulture represents 10% of the total returns. This percentage also includes sales proceeds from intermediate products. Returns on crop production, livestock and horticulture also include the prices of products delivered outside the agricultural sector or used by the entrepreneur.

In the calculation of the results, individual revenue and expense items and subsidies are allocated as returns and costs to the year of production in accordance with the accrual principle. As a result, annual yield and production fluctuations, as well

as variation in prices and subsidies, have a direct impact on the annual results. The transfer of sales or subsidies to the following financial year does not have any impact on the results.

### Specification of costs

According to the 2013 estimate, the production costs of agriculture and horticulture totalled € 6.7 billion. The largest cost item, i.e. material costs of € 2.2 billion, accounted for 32% of the production costs. The depreciation costs of € 0.95 billion represent some 14% of the production costs.

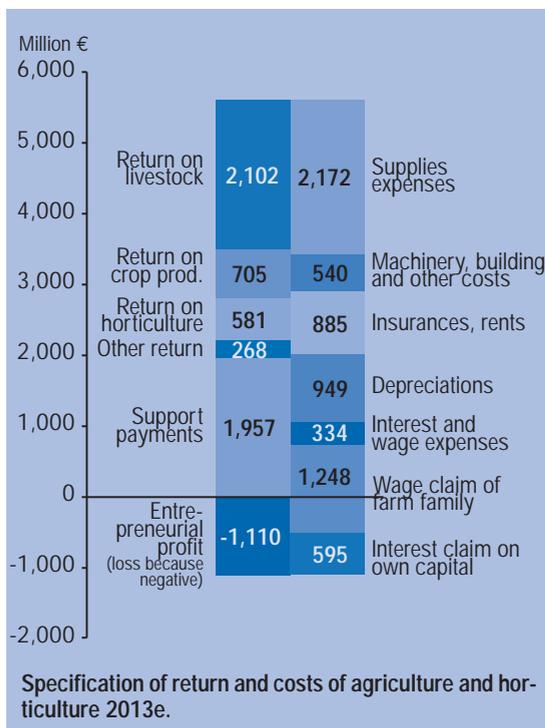
The wage claim costs calculated from the hourly wage claim of € 14.9 based on the entrepreneur family's labour was € 1.25 billion, i.e. nearly 19% of the production costs. This would be the cost to the entrepreneur if all work had been carried out by hired labour. The wage claim cost is the only cost item that has fallen from year to year. This can be explained by the decrease in working hours.

In profitability bookkeeping, the equity interest claim cost was calculated, due to the revision introduced in 2010, according to the interest rate based on the farm-specific risk of bookkeeping farms (see Chapter 4.1). The average interest rate of all companies was 4.7%, according to which the interest costs in the 2013 estimate were € 595 million.

A more detailed specification of the development of cost and profit items is provided on page 92.

### Development of profitability

The 2013 entrepreneurial income of € 733 million should cover all costs arising from the entrepreneur family's labour and capital. The entrepreneur family's working hours at an hourly price of € 14.9 result in a wage claim



cost of € 1.25 billion, and the equity of € 13.2 billion results in an interest claim cost of € 595 million.

The profitability ratio of 0.4 is reached by dividing the entrepreneurial income by the sum of wage and interest claim costs. In other words, entrepreneurial income covers 40% of the wage and interest claim costs.

If the hourly wage claim of € 1.25 billion is deducted from the entrepreneurial income of € 733 million, compensation for equity will be negative, similarly to return on equity (-4%). Moreover, return on total assets is also negative (-2.4%).

The entire agricultural profitability ratio has been some 0.1 units lower annually than the average profitability of the 39,000 largest farms in Finland, according to profitability bookkeeping results.

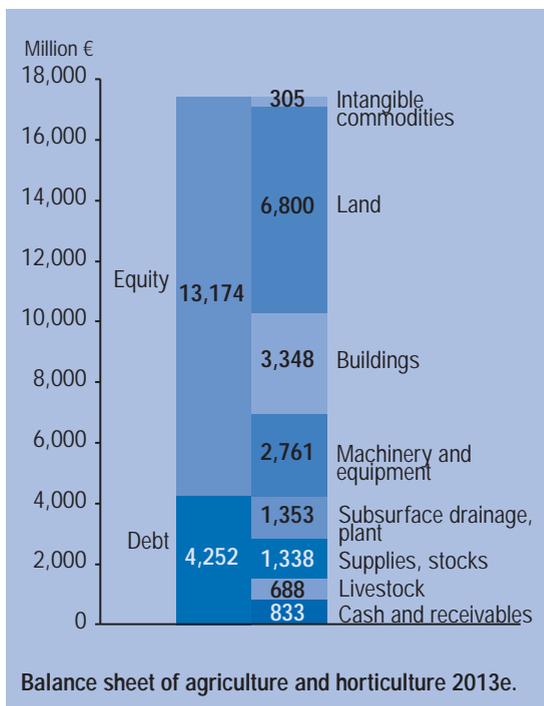
### Development of solvency

The total capital in agriculture and horticulture was € 17.4 billion at the end of the 2013 financial year. The asset items were recognised at current values, and no investment subsidies or provisions used were deducted from the asset values. Depreciation costs of the fixed assets purchased by means of the investment subsidies were calculated and the subsidies were allocated as returns alongside the corresponding depreciations in the result calculation.

Of the total assets, € 13.2 billion comprises entrepreneurs' equity, which accounts for 76% of the entire capital of farms. The total amount of liabilities totalled € 4.3 billion at the end of 2013. No debts of the farm family from forestry, other business activities or the private household were included in agricultural debt. The ratio between agricultural debt and total returns, i.e. relative indebtedness, was 76%.

### Classification and weighting system

In the total calculation, the results for the whole country are calculated by summing the results of profitability bookkeeping farms. Because there are 55,000 agricultural farms in Finland, the figures from all 900 bookkeeping farms are included several times in the total amount according to the weighting coefficient defined for each bookkeeping farm. The weighting coefficients are defined for all farms at the same time so that the number of farms calculated according to the production type, farm size and subsidy area corresponds with the actual number of farms, and so that the cultivated area of each subsidy area corresponds with the actual cultivated area. This classification system and the calculation method for weighting coefficients were revised in 2014 to be more accurate. This revision was applied retroactively to the preceding years in the 21st century to maintain the comparability of the results.



## 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. Based on studies, the Finns consider it particularly important to prevent the eutrophication of water bodies.

#### 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.

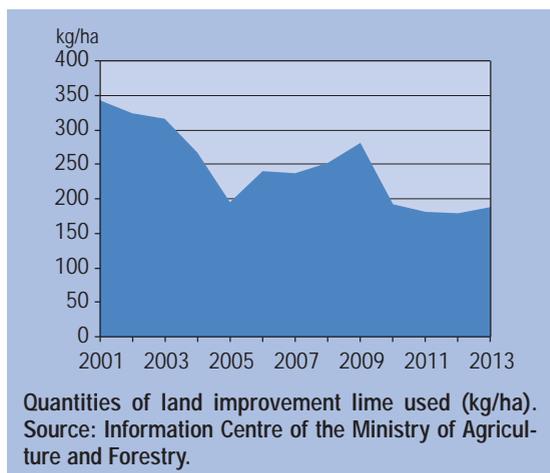
The phosphorus level in arable land is an indicator of both productive capacity and environmental loading. In Finland, the phosphorus levels have been rising up to the present, even if phosphorus fertilisation has been reduced considerably through, for example, the fertilisation restrictions under the agri-environment scheme. 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 done 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 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.

### Loading of waters

Nutrients leach to 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 waters has been observed by measurements.

The Finnish Environment Institute estimates that about 50% of the nitrogen loading and 60% of the phosphorus loading come from agricultural sources. In the nutrient loading of the Baltic Sea, Finnish agriculture accounts for about 3.8% of the phosphorus and 3.7% of the nitrogen 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 concentration of livestock production, the amount of manure produced is excessive in many places relative to the utilised agricultural area 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 has been growing steadily since Finland joined the EU. Most of the pesticides used are products intended for preventing weeds (herbicides). The main reason for the growth is increased cereal monoculture and wider use of non-tillage technology. Farmers have also switched over to pesticides which need to be used in larger doses. On the European scale, the quantities of

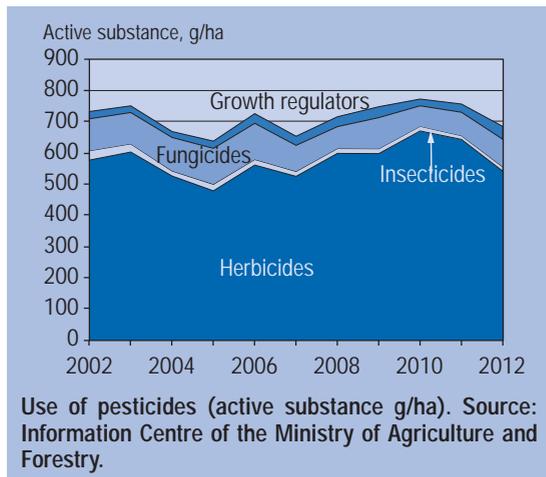
pesticides used in Finland are still quite moderate.

### Emissions to air

Climate change poses new challenges to Finnish agriculture. The 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 represent about 9% of the total emissions in Finland. Most of them are due to the digestion of ruminant livestock, decomposition of organic matter in the soil and decomposition of manure.

Minor emission sources include nitrogen fertilisation, liming of arable lands and the use of fossil energy in agriculture. A common feature in all emissions from agriculture is that it is difficult to reduce them without significant impacts on the volume of agricultural production.

The agriculture sector is excluded from emissions trading. 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. Through agri-environment measures, efforts are made to transfer peaty arable lands from continuous cereal produc-



tion to the cultivation of grasses on a long-term basis. In other soil types, less intensive tillage practices or cultivation without tillage should also be preferred.

### **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 a serious environmental problem as biological diversity is the foundation for the functioning of ecosystems. Without biodiversity, the 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 lays the foundation for ecosystem services as well.

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 the 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. Especially organisms which depend on meadows and forest pastures have declined and become endan-

gered due to the decrease in grazing and cattle husbandry. According to an assessment of threatened habitats, the highest share of these in 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 there are still numerous wild plant and animal species which benefit from farming activities, open arable areas and grazing livestock, as well as from many of the 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 the 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 recreation close to their home 170 times a year, of which 35% takes place in farming environments. This means a total of 230 million times of outdoor recreation per year. Besides nearby outdoor activities, agricultural areas are used for recreation involving overnight stay. 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, farming environments should be developed into a real attraction in the rural tourism destinations. One way to

promote landscape values and access to farming environments for outdoor recreation is through the agri-environment scheme. Cultivation practices that support landscape values and outdoor activities also contribute to the benefits to be derived from the right of public access (everyman's right). Studies have shown that the valuation of agricultural landscape improves, in particular, by the presence of grazing animals in the landscape and renovation of farm buildings located in 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 the production sectors.

## 5.2. Agri-environmental regulation

In the new EU programming period, which starts 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 the next period, 30% of the direct payments are targeted to so-called greening measures, including ecological focus areas, crop diversification and permanent grassland. As a concrete measure, farmers must designate 5% of their agricultural area as an ecological focus area, arable farming must be diversified to include at least three crops, and permanent grassland area must be kept at the same level as it was in 2003. Organic production is considered to fulfil the greening conditions, which means that it is entitled to the greening payment with-

out the measures listed above.

Numerous comments on and suggestions for improvements in greening were submitted and discussed at the Commission and the European Parliament. Agreement on the budgetary framework could not be reached until the end of 2013; this means that, instead of 2014, the implementation of the revised policy starts at the beginning of 2015. The reform creates the opportunity to apply environment-based payments under the first pillar of the CAP, while the environment payment funded from the Rural Development Programme under the second pillar will, also in Finland, be specifically targeted to the most environmentally sensitive farming areas.

### Agri-environment scheme in 2007–2013 and in 2014

Rural development in mainland Finland is funded from the European Agricultural Fund for Rural Development (EAFRD) and from national sources. The total public funding for the seven-year programming period is about € 6.6 billion, of which a third comes from the EU. The programme has four axes, of which Axis 2 includes the agri-environment and natural handicap payments, non-productive investments and promoting the welfare of farm animals. The funding for Axis 2 totals about € 2.3 billion.

The measures of the third agri-environmental programme implemented as from 2007 are quite similar to those in the earlier programmes. The programme consists of basic, additional and special measures. Farms in support areas A and B must undertake the basic measures plus one to four additional measures. In area C, no additional measures are required, and no more than two may be selected. The most popular additional measures have been more accurate nitrogen fertilisation of arable crops, different forms of plant cover on arable land in winter and calculation of nutrient balances.

The number of farms committed to the agri-environment scheme fell slightly from the previous programming period, but it still covers more than 95% of the arable area. The main objective of the scheme is to reduce the load on waters. This is why most of the support is directed to measures which contribute to water protection. The role of the agri-environment payments in enhancing biodiversity is, however, greater than their share of the funding, because certain measures which are primarily targeted at water protection, such as field margins, filter strips, riparian zones and wetlands, also contribute to biodiversity.

Over the years, new measures have been included in the agri-environment scheme to improve its efficiency. The three new special measures included in 2008 concerned the incorporation of liquid manure into the soil, long-term grass cultivation on peaty arable lands and more efficient reduction in nutrient loading. The voluntary special measure concerning nature management fields was included in the programme in 2009. It was designed to compensate for the losses in nature and environmental values due to the abolition of compulsory set-aside from the single payment scheme. Nature management fields comprise perennial grasslands and biodiversity fields, the latter being further divided into game animal and landscape fields and fields sown with meadow plants. According to data from the Information Centre of the Ministry of Agriculture and Forestry, in 2013 the total area of nature management fields was 138,200 ha.

The changes to the special measures in 2010 include the following: The geographical area eligible for the contract concerning the management of multifunctional wetlands was extended to the catchment areas of rivers discharging into the Kvarken and Bothnian Bay. The annual site-specific support for the management of small valuable traditional biotopes (0.3–0.5 ha) was raised to 200 €/site from the earlier 135 €/site. The limits for the maxi-

imum acceptable costs of the contracts concerning special measures were revised.

In 2010, the maximum support for non-productive investments concerning the establishment of multifunctional wetlands was raised to 11,500 €/ha and the area covered by this measure was also extended to the catchment areas of rivers discharging into the Kvarken and Bothnian Bay. In small wetland sites (0.3–0.5 ha), the amount of investment aid is fixed at 3,226 €/site. Support for non-productive investments in the first clearing and fencing of valuable traditional biotopes was differentiated according to the surface area of the biotopes. The amount of the investment support is 1,179 €/ha for sites with the maximum area of 3 ha, 910 €/ha for sites larger than 3 ha but no more than 10 ha, and 750 €/ha for sites of more than 10 ha.

Support for non-productive investments in the establishment of multifunctional wetlands and the first clearing and fencing of traditional biotopes and support for the special measures concerning the management of multifunctional wetlands and traditional biotopes may also be granted to beneficiaries other than farmers, provided that they follow the LEADER methodology.

Winter cereals were approved to fulfil the condition concerning plant cover in winter as from the winter season 2010–2011. Agri-environment commitments given earlier may be continued in 2014 with the same conditions as before. Environment payment commitments under the new programming period will be made from the beginning of 2015.

### **Assessment of the impacts of the agri-environment scheme**

According to the mid-term report of the follow-up study on the impacts of the Finnish agri-environment scheme (MYT-VAS 3) published in 2010, the nutrient loading potential of agriculture measured

by nutrient balances has continued to decrease for both phosphorus and nitrogen during the terms of the agri-environment scheme, mainly due to the decrease in the use of artificial fertilisers. The decrease in the nutrient loading potential has not, however, been fully reflected in water loading from agriculture.

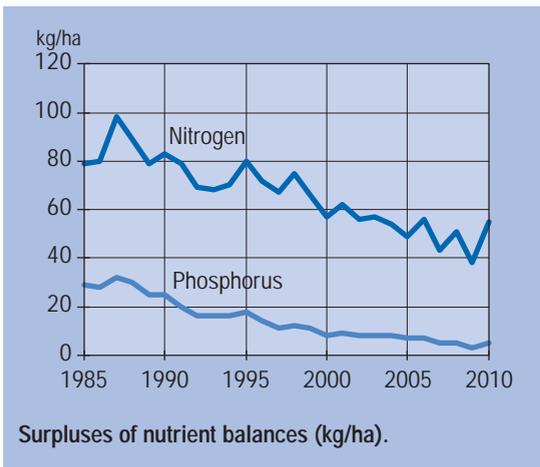
Nitrogen loading has grown in almost all of the 22 catchment areas of rivers discharging into the Baltic Sea included in the model. The main reasons for this seem to be the growth in arable area, concentration of livestock production implying large quantities of manure in certain locations, increase in the land application of manure, and increased use of concentrate feed for livestock, which raises nitrogen levels in manure.

Instead, the phosphorus drift from the river catchment areas to the Baltic Sea decreased during the whole period covered by the analysis (1985–2006), except in the Archipelago Sea. The measures which have the greatest potential to reduce nutrient loading of waters are fertilisation of arable crops and nature management fields among the basic measures and the additional measures concerning plant cover and fertilisation.

The greatest threat to biodiversity is the decrease in open or semi-open areas which are not used for farming purposes.

The measures with the best potential in terms of biodiversity are some of the special measures and non-productive investments. Basic and additional measures alone do not significantly promote the preservation of biodiversity in agricultural environments. The overall conclusion of the mid-term report is that more regional, sectoral and farm-specific adjustment and customisation of the objectives, measures and support levels of the agri-environment scheme are needed due to the considerable regional differences in the state of agricultural environments and the needs of the society.

The environmental benefits of nature management fields were evaluated in 2012. The study showed that, thanks to the popularity and diversity of the measure, nature management fields are better suited to enhancing biodiversity than compulsory set-aside. Especially meadow fields and old meadow-like grasslands with the vegetation mainly composed of wild plant species clearly increase biodiversity in farming environments. However, these cannot be used to substitute for e.g. traditional biotopes because rarer plant species are not very common on nature management fields. At the moment, most of the nature management fields are quite similar to regular grassland or green manure grass, in which case the environmental benefits may remain small.



### New environmental payment scheme from 2015

The new environment payment scheme has been approved by the Finnish Government and submitted to the European Commission. In the new scheme the present model, composed of the basic, additional and specific measures, will be replaced by a parcel-specific system. In the new scheme, the farmer first implements the follow-up of soil fertility as part of the so-called start-up package and

commit to complying with plant and soil type specific values set for nitrogen and phosphorus fertilisation. Besides these, there are parcel-specific environmental measures concerning plant cover in winter, enhancing biodiversity, and 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 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 is higher.

The implementation of the new programme and measures under it starts in the beginning of 2015, but the commitments to continue the earlier measures in 2014 are financed from the budget of the new programme. Thus one more year was allowed to prepare the new programme, but the progress was quite slow, partly due to delays in other legislative work.

The funding of the Rural Development Programme for Mainland Finland 2014–2020 totals € 7,092 million. The share of the environment and climate measures is € 1,626 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 € 438 million to animal welfare. The main topics discussed during the preparation were the same as before: limits for nitrogen and phosphorus fertilisation, percentages for the usability of animal manure, use of start-up phosphorus in fertile soil, and targeting the measures to the most environmentally sensitive areas.

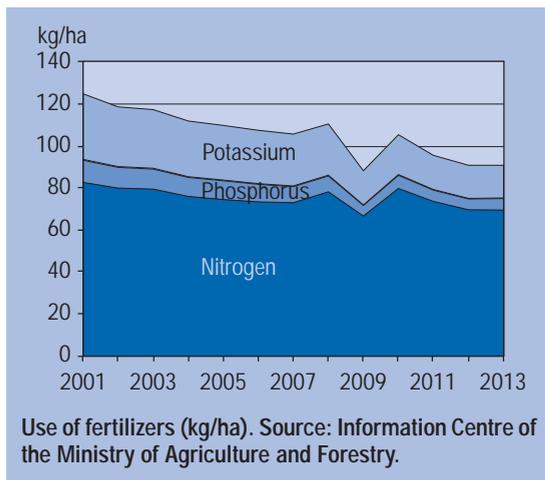
### 5.3. Water protection guidelines

According to the Government Resolution on guidelines for water protection adopted in 2006, nutrient loading from agriculture should be reduced by at least a third from the average in 2001–2005 (phosphorus by 3,000 t/a and nitrogen by about 30,000 t/a) by the year 2015. In addition to this, the EU Water Framework Directive sets even more detailed quality standards for specific water areas.

The objective of the EU Water Framework Directive is to prevent the decline in the status of surface waters and groundwater, guarantee a good chemical and ecological status of waters by 2015, prevent harmful substances from entering the waters, and reduce damages caused by floods and drought. To meet these objectives, the Member States are obliged to introduce measures for specific water areas. For this purpose, Finland has been divided into eight water management areas, each with a specific water management plan designed for the area.

#### What do the objectives mean for agriculture?

Nutrient loading from agriculture is 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.

Fertilisation is obviously one of the principal factors in nutrient loading, which is why it is also used as an indicator of the loading potential. In 1995–2013, the fertiliser sales per hectare of cultivated land decreased from 92 kg to 70.0 kg for nitrogen and from 16 kg to 5.7 kg for phosphorus. During the same period, there was no decrease in the yields per hectare, which means that the nutrient balances 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 the 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 agri-environment scheme as the main environmental policy instrument in agriculture has basically stayed the same for the past almost 20 years, and now the focus in water protection is on objectives specific to certain water areas. Thus it is to be expected that in areas where the loading from agriculture is the strongest, the reduction in the loading potential resulting from the scheme will not be sufficient to reach a good status of waters by 2015. Especially as regards phosphorus, the soil

reacts very slowly to changes and 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 costly and the decisions on spreading are often made based on the lowest cost or the need for nitrogen, which means that phosphorus levels may be too high for the needs of the plants and the loading potential increases. The pressure to improve the profitability of agriculture pushes towards more efficient production and larger units. A new threat to water quality is climate change, which is expected to increase precipitation especially outside the growing season.

## 5.4. Main topics and future perspectives

### TEEB Finland

The national project concerning the economic importance of ecosystem services (i.e. TEEB Finland project) implemented during 2014 produces an assessment of the current state and future trends in the most significant ecosystem services in Finland, the economic importance of these services and their role in promoting green economy. The project work is done in collaboration between the Finnish Environment Institute, Agrifood Research Finland and Institute for European Environmental Policy. The valuation of the benefits produced by ecosystems in monetary terms is difficult, but not doing this may lead to a situation where ecosystem services are completely ignored in the decisions on economic and social issues.

### Neomehi project

The Neomehi project is a joint study of the MTT Agrifood Research Finland and the Finnish Food Safety Authority Evira on

how neonicotinoid-based insecticides used in plant protection affect honey bees. Plant protection products containing neonicotinoids are used in the cultivation of common oilseed rape and turnip rape plants for treating seeds to protect the crops against pests during the sprouting phase. Currently there are no alternative seed treatment substances. The background of the research project is the decision of the European Commission to ban the use of three plant protection products containing neonicotinoids in the EU countries. The Commission will review the decision in the light of new research data in 2015, which is also when the results of the Neomehi project are available. The first results of the project seem to suggest that plant protection products containing neonicotinoids do not cause acute harm to honey bees.

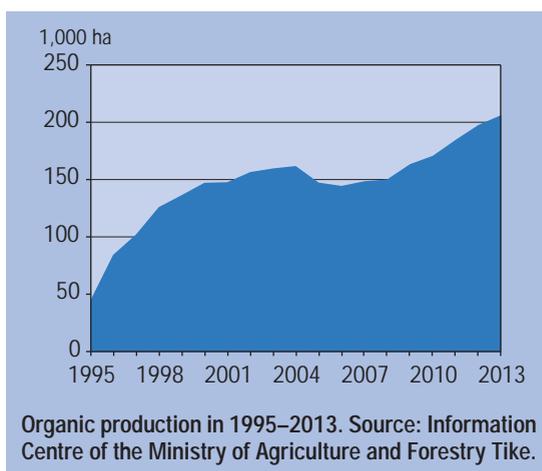
### Grass-based biogas production

The biogas project of Agrifood Research Finland conducted in 2010–2014 has studied the preconditions for growing grass in a sustainable way as raw material for biogas in Häme, Uusimaa and south-east Finland. The results show that enough grass could be produced as raw material for gas for about ten plants with an output 10–15 MW without removing any production area from food production. The operation environment for biogas production is still undeveloped in Finland, but as the share of gas-operated vehicles is growing, biogas would increase the share of renewable energy in transport fuels and improve Finland's foreign trade balance. Utilisation of grass fodder in southern Finland would also increase plant cover on arable lands in winter and reduce nutrient leaching to waters. In crop rotations of cereal farms, grass would improve the soil and reduce the need to prevent plant diseases.

### 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 just around 2%, which means that the production chain does not work as it should. The Country Brand Delegation set as the target in 2010 to increase the share of organic cultivation area to a half of the total cultivation area by 2030. Organic production practice should also be set as the standard in developing agriculture. 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 Programme for the years 2014–2020, 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. In 2013 about 206,000 hectares of arable land was under organic production or being converted into this.



## Stages of agricultural environmental policy in Finland

*Kauko Koikkalainen*

Agricultural water protection was already a topic of discussion at the end of the 1970s, but detrimental impacts as environmental problems requiring specific measures did not come to the fore until the 1980s. Actual environmental protection tasks were limited for the most part to the supervision of pesticide use. The use of DDT was prohibited in 1976. The administration changed when the Ministry of the Environment was established in 1983.

In the first water protection indicative programme, which extended to 1995, a 50% reduction objective for phosphorus loading in agriculture was established, which corresponded to relatively the same amount of waterway load reduction as that demanded by other actions for practices that contaminated waterways.

Before Finland joined the European Union, environment policy regulating agriculture was based on counselling, training and voluntary compliance with good cultivation methods. Obligations binding farmers were quite minimal. Some measures aimed at reducing agricultural waterway loading were, however, already in use. Fertilizing was reduced, bare lands were transformed into green fallows, protective zones were established, and the use of manure was made more effective. In addition, solutions based on various cultivation techniques were brought to the knowledge of farmers via information guidance projects commencing at the beginning of the 1980s. Fertilizer taxes were implemented in agricultural policy to fund the marketing of over-production, and it was necessary to apply for an environmental permit for certain large-sized livestock units.

### First environmental support period 1995–1999

European Union membership brought a new breeze to agricultural and environmental policy. The EU's most pivotal tool for harmonizing agricultural and environmental policy was the environmental support system introduced during 1992–1999 as part of the agricultural development programme. It imposed a joint framework, but left the member nations the possibility to create their own support programme in accordance with the national and local conditions.

The environmental support programme changed the cultivation practices of farms in a significantly better direction from the environmental perspective, even if it partly took the character of income support in accordance with the membership agreement. The terms and conditions for support required, for example, environmental planning and monitoring for cultivation, the restriction of fertilizer use, the leaving of headlands and buffer zones at the tributaries of brooks and waterways as well as clarification of the use of plant protection agents. During the first programme period, fertilization declined, the use of fertilizers was examined and clarified, organic cultivation was increased, buffer zones were left at the tributaries of waterways, wintertime vegetation cover on fields increased, and wetlands, sedimentation basins and protective zones were established to a much larger extent than had been the case prior to environmental support. Despite these measures, the ambitious goals set for reducing agricultural waterway loading were not achieved. Environmental support was anticipated to reduce the amount of overall phosphorus transported by waterways from farming by 40% and the amount of overall nitrogen loading by 30%. The reductions remained, however, at 4–15% for nitrogen and 5–13% for phosphorus.

## **Second environmental support period 2000–2006**

The broad themes in agricultural environment issues remained the same. During the 1990s, there was concern over the phosphorus and nitrogen loading of waterways, ammonia gases, rural landscapes, the use of plant protection agents, and food quality. With the arrival of the 2000s, matters connected with the same themes were emphasized. In 1998, the decree on nitrates came into effect, which affected all farmers and was initiated on the basis of the nitrate directive. Its purpose was to protect groundwater from contamination caused by nitrates derived from agriculture. With this decree, regulations were issued regarding, for example, the storage and distribution of fertilizers, fertilizer quantities and the placement and care of livestock, as well as areas for animal exercise. Compliance with the decree was obligatory for each farmer throughout the country, regardless of whether they belonged to the sphere of environmental support.

Finland's second environmental support system was in effect during the 2000–2006 programme period. The environmental programme still included basic and extra measures as well as special support measures requiring, from the environmental perspective, more effective environmental protection and maintenance actions. The intention was to focus basic support as maximally as possible on a large number of farmers, and during the programme period approximately 91% of the farms and 96% of field area came within the sphere of support. The share of special support remained smaller than had been planned – less than 10% of overall funding. During 2000–2006, the basic structure of the implemented environmental support system was similar to the previous one. It was possible, however, to take the local conditions into consideration to some extent more effectively than with the first system. As additional measures, it was possible to select the actions for each area that would reduce the environmental load the most from a wide selection of available procedures. Despite the increased freedom of selection, farming continued with largely the same methods as before during this programme period.

## **Third environmental support period 2007–2013**

The third environmental support programme initiated in 2007 was similar to the previous programmes with regard to its measures. The programme consisted of basic support, additional measures and special support. Compared to the previous programme period, there were changes in the basic requirements affecting the use of plant protection products and fertilizers, as well as in the obligation periods and target group of support recipients. In addition to the basic measures, it was necessary to implement one extra measure in part of the country. The total number of farms participating in environmental support declined slightly from the previous programme period, but over 95% of field area was still within the sphere of environmental support.

The pivotal goal of agricultural environment support was the reduction of waterway loading. The largest part of the environmental support reserves was indeed used to finance water protection measures. For example, measures primarily promoting natural diversity were allocated only 2–3% of environmental support expenditure. The importance of environmental support as a promoter of biodiversity is, however, greater than its financial share, as a few procedures primarily benefiting water protection, such as wetlands and buffer zones, also maintain diversity.

## 6. SOCIOECONOMIC DEVELOPMENT OF THE FINNISH COUNTRYSIDE

The Finnish countryside has undergone various changes over the past few decades. The population has concentrated in urban centres and southern Finland, as well as in regional centres 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 centres of 1,000–100,000 residents. Similarly, population centres of less than 1,000 residents have also grown rapidly, which represents the transfer of the population within municipalities towards municipal centres. In particular, sparsely populated areas have lost their population.

When compared to the rest of Europe, Finland still 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. Besides the very low population density, Finland is characterised by a large share of rural areas and long distances between relatively small towns. What is exceptional compared to other countries with a low average population density is that settlement extends to all parts of the country, and even the most remote rural areas are to be considered viable.

### Three types of rural areas

The special regional features of the socio-economic development of the countryside in Finland are worth inspecting using a regional division that typifies the special characteristics of rural areas. On the basis of the OECD rural typology, 400 of the total of 432 Finnish municipalities were

classified as rural in 2002 on the grounds that their population density was less than 150 inhabitants per square kilometre. In European comparison, 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 has been developed to analyse the differences and special features characteristic of the extensive rural area in Finland. This is the typology commonly applied in Finnish rural policy. The typology is based on a multi-stage method that 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. The three types can be characterised as follows:

*Urban-adjacent rural areas* have the best development prospects. Their inhabitants have access to employment in the nearby towns, and 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 favourable. Many municipalities in these areas have net immigration. This type of area is particularly favoured 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 centres or special-

ised primary production clusters, such as pig and poultry husbandry, fur farming and greenhouses. Often, there are several medium-sized population centres close to rural heartland areas. Municipal centres 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 ones 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 the opportunities to develop primary production. Most of the municipalities in sparsely populated rural areas are located in eastern and northern Finland.

### Development of the population in different types of rural areas

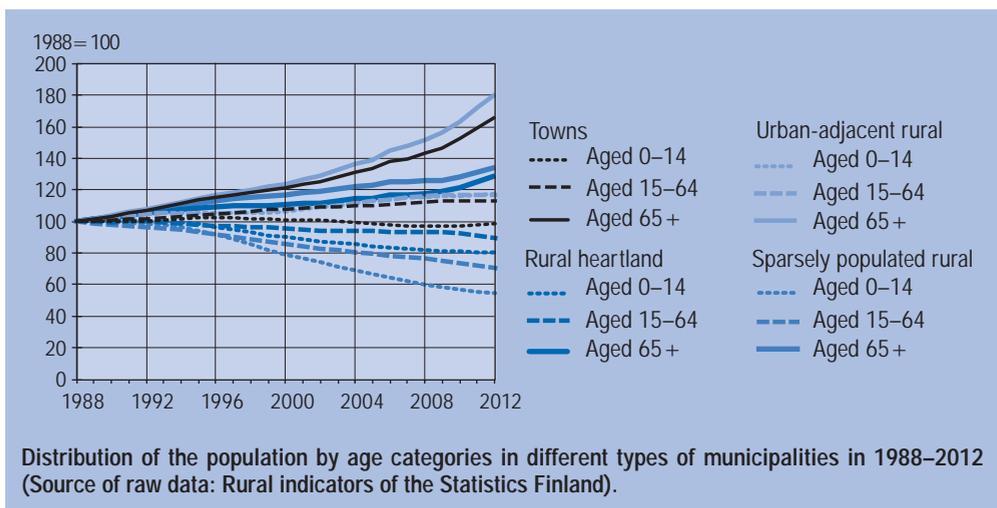
The age structure of an area's population is a key factor in terms of regional develop-

ment. For example, services and infrastructure, and 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 where 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 is increasing. This situation clearly differs from the rural heartland and sparsely populated rural areas. The number of under-15-year-olds has only increased in urban-adjacent rural areas. This is partly due to the expansion of the functional area of towns and cities beyond their administrative borders.

Studies that describe the development of towns have often observed that families move within the functional urban area according to their age. As children are usually raised outside urban centres, 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.

When reviewing the key trends in



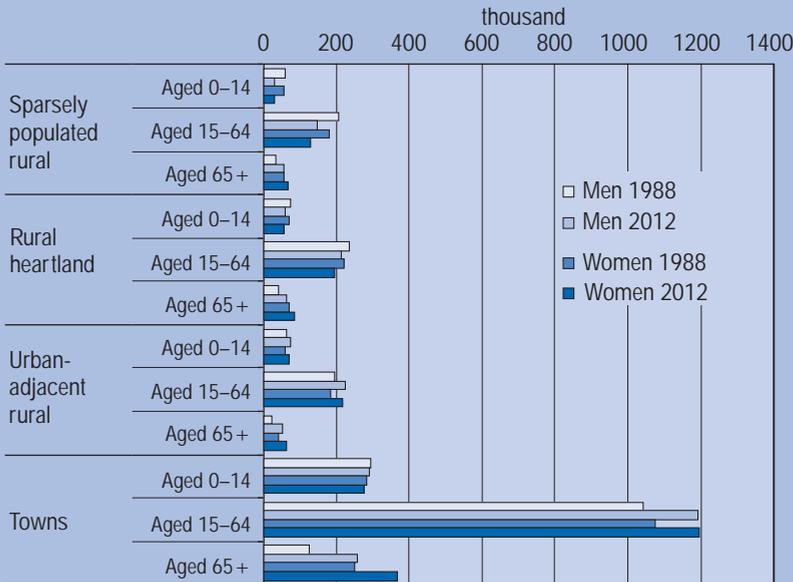
recent population development in different rural areas according to age group over a review period ranging from 1988 to 2012, distinctive differences can be seen between various rural areas.

What is noteworthy about the population development in *sparsely populated rural areas* is that the number of young adults (20–34-year-olds) turned to 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. At the same time, the size of the oldest population (over-80-year-olds) started to strongly increase so that the steady growth of the 1990s and 2000s reached its peak in 2012, when the number had nearly doubled from 1988.

In *rural heartland areas*, the trend is similar to sparsely populated rural areas, even though young adults are not fleeing the areas as clearly. Generally speaking, 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 *urban-adjacent rural areas*, population development is in many respects more favourable than in the other two areas. For example, the flight of young adults is 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 noticeable. 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. Concerning population development in urban-adjacent rural areas, it should be noted that the size of the middle-aged population (45–59-year-olds) turned to 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.



Population per age and gender group between rural types in 1988 and 2012 (source of raw data: Rural indicators of Statistics Finland).

When reviewing population development in terms of gender differences, we can see that the relative share of young women (15–29-year-olds) in sparsely populated rural areas has strongly decreased compared to the same age group among men. For example, there were systematically fewer women aged 20–24 years than men of the same age group throughout the review period.

In 2012, there were only 73.3 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 (2012), there were 88.2 women aged 30–34 years per 100 men of the same age.

The aforementioned population development can be interpreted so that women are under-represented in sparsely populated rural areas at the age that typically involves studying, vocational training and/or employment, and starting a family.

Another noteworthy observation regarding gender-specific population development is that the share of men in the oldest age groups steadily grew in all areas (including towns) during the review period (to 2012). 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.

### **Jobs, labour force and their regional distribution**

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.

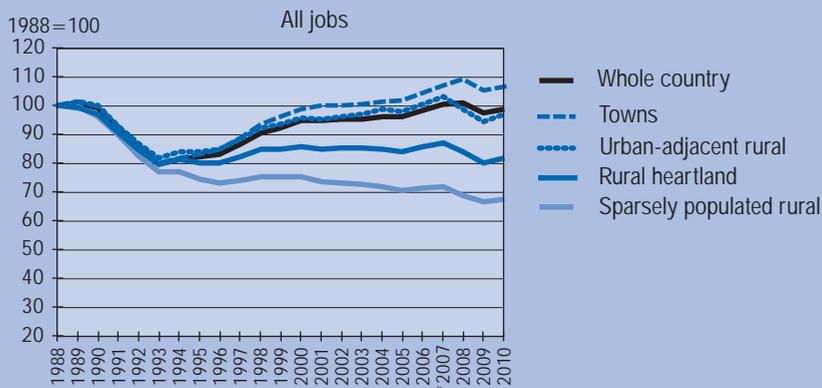
The number of jobs has developed most favourably in towns and urban-adjacent rural areas. The development in these municipality types has differed from that of the rural heartland and sparsely populated rural areas, where the size of the labour force has decreased. This development was the strongest in the latter areas. Sparsely populated rural areas also have fewer workers in absolute terms.

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

In 2010, most jobs existed in public administration, particularly in social services and healthcare, followed by the industrial sector. There were relatively fewer jobs in public administration in the rural heartland than in other rural types or towns.

Primary production is a fairly small employer at the national level. 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



Relative change in the number of jobs per rural type in 1988–2010 in Finland. The 1988 index is 100. Based on the 2010 municipal division. (Source of raw data: Rural indicators of Statistics Finland)\*

having steadily decreased. It can be stated that the development 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 in primary production more rapidly than men's jobs in all rural types. The development has been most unfavourable among women in sparsely populated rural areas.

Jobs in secondary production started to disappear during the recession of the 1990s, but were partly replaced during the next decade. Industrial jobs started to recover the quickest 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. After 2008, jobs in secondary production slightly increased among men in all rural types, but continued to decrease among women.

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. In towns and urban-adjacent rural areas, men's jobs and, to a lesser extent, women's jobs have increased in private services. 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. A difference is that women's jobs have mainly increased in public services, while men's jobs have increased in private services.

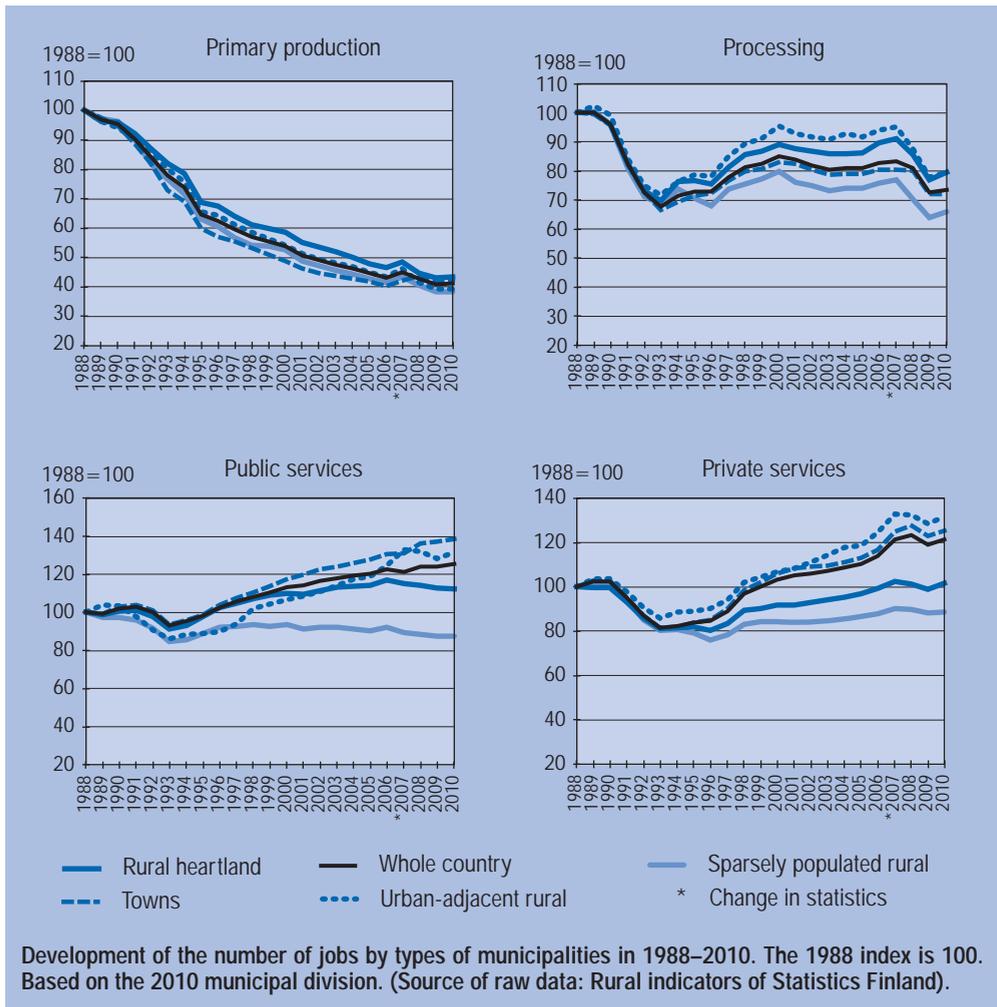
The development of men's jobs has been similar in urban-adjacent rural areas and the rural heartland to that of women's jobs in sparsely populated rural areas. The change in the number of men's jobs in sparsely populated rural areas has differed from other segments, because the number has been constantly declining. The public sector in the rural heartland and urban-

\* Here and in other figures showing the number of jobs the numbers before 2007 are based on TOL2002 classification and those after 2007 on TOL2008.

adjacent rural areas has 3.8 women's jobs for each men's job, while the same ratio is 3.5 in sparsely populated rural areas and 2.8 in towns.

Of all the fields included in secondary production, the most successful employers compared with 1998 have been machinery and equipment manufacturing, electronics and electrical products. The least successful fields include textile and leather manufacturing. The textile industry has reduced its labour force in all rural types and amongst both genders. The decline in the textile industry has particularly reduced women's jobs, and the slowing paper industry has reduced men's jobs.

The food industry, which is functionally linked to primary production and rural areas, is a female-dominated business field. The jobs of both men and women have decreased in towns. However, the decrease has been slower in the rural heartland and urban-adjacent rural areas. The business field continues to be an important industrial employer for women in the countryside and a significant employer in towns. Timber production is another industrial field closely linked to primary production. The male-dominated field offers fewer jobs, but the decline has been slower in sparsely populated rural areas and the rural heartland than in other rural types. Most jobs



are in towns and the least in urban-adjacent rural areas. Of all industrial jobs in sparsely populated rural areas, timber production has the highest relative significance for men and the second highest for women. In areas of the rural type, the manufacture of rubber and plastic products and the manufacture of machinery and equipment have been emerging fields among men and women. The former offers relatively few jobs but its importance has decreased in towns among both genders and in urban-adjacent rural areas among women.

In the rural heartland, the manufacture of metals and metal products is an

important field that has increased its volume. Another significant industry is the manufacture of small-scale machinery and equipment. These two have a higher importance in the rural heartland than in other rural types. In sparsely populated rural areas and the rural heartland, the manufacture of rubber and plastic products and vehicle manufacturing have been smaller but growing fields. The latter has mainly offered jobs for men. The positive development of business fields came to a stop in 2007, after which the development has also been similar in urban-adjacent rural areas.

#### The number of jobs in 2010.

	Entire Finland	Sparsely populated rural areas	Urban-adjacent rural areas	Rural heartland areas	Towns
Primary production, total (A)	85,030	24,153	29,926	10,339	20,612
Secondary production, total (B–F)	514,943	33,296	69,227	61,326	351,094
D Electric, gas and heating maintenance, cooling operations	12,610	513	1,025	1,455	9,617
G Wholesale and retail, repair of vehicles and motorcycles	280,062	13,793	23,063	23,503	219,703
H Transportation and storage	141,248	9,171	13,322	13,188	105,567
I Hotel, restaurant and catering business	80,071	6,564	6,321	6,246	60,940
J Information and communications	85,986	993	1,870	1,725	81,398
K Banking and insurance	46,663	1,735	3,168	1,961	39,799
L Real estate	20,812	1,034	1,409	1,425	16,944
M Vocational, scientific and technical operations	127,953	4,206	6,677	7,923	109,147
N Administration and support services	143,527	6,938	9,371	11,090	116,128
Public services, total (O–U)	769,071	51,109	74,913	67,468	575,581
O Public administration and civil defence, mandatory social insurance	121,141	7,680	9,854	8,812	94,795
P Education	166,803	9,808	17,475	14,865	124,655
Q Healthcare and social services	370,875	26,396	38,891	35,101	270,487
R Art, entertainment and recreation	40,881	2,027	2,056	2,774	34,024
S Other services	68,719	5,179	6,605	5,880	51,055
T Households as employers	205	19	32	17	137
U International organisations and bodies	447	.	.	19	428
X Unknown	30,313	3,243	3,937	3,766	19,367

Source of raw data: Rural indicators of Statistics Finland

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### Number of farms receiving agricultural support according to production line in 2000–2006.

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

Source: Finnish Agency for Rural Affairs.

### Number of farms receiving agricultural support according to production line in 2007–2013.

	2007	2008	2009	2010	2011	2012	2013
Number of farms	66,821	65,292	63,716	62,450	61,153	58,898	57,559
Crop production	41,488	41,496	41,195	41,114	40,730	39,609	39,717
Dairy husbandry	13,732	12,635	11,807	11,136	10,501	9,827	9,008
Beef production	4,122	4,035	3,932	3,789	3,745	3,633	3,490
Pig husbandry	2,722	2,477	2,239	2,036	1,920	1,771	1,539
Poultry production	879	817	769	724	696	589	568
Other	3,878	3,832	3,774	3,651	3,561	3,469	3,237

Source: Finnish Agency for Rural Affairs.

### Distribution of farms receiving agricultural support according to production line in 2013.

	Southern Finland <sup>1</sup>		Eastern Finland		Central Finland		Northern Finland	
	Number of farms	%	Number of farms	%	Number of farms	%	Number of farms	%
Crop production	20,105	50.6	5,769	14.5	10,004	25.2	3,839	9.7
Dairy husbandry	2,178	24.2	2,654	29.5	2,412	26.8	1,764	19.6
Beef production	1,048	30.0	1,000	28.7	960	27.5	482	13.8
Pig husbandry	794	51.6	96	6.2	591	38.4	58	3.8
Poultry production	126	58.9	0	0.0	88	41.1	0	0.0
Other	189	68.5	22	8.0	57	20.7	8	2.9

<sup>1</sup>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 (2000=100).<sup>1</sup>

	Producer price index of agriculture <sup>2</sup>	The index of purchase prices of means agricultural production			
		Total index	Goods and services	Investments	Buildings
2013	148.7 <sup>e</sup>	154.9	157.1	146.3	145.5
2012	138.2	151.5	153.4	144.6	145.0
2011	129.2	146.0	147.2	141.5	141.5
2010	113.7	130.1	128.1	136.2	134.6
2009	107.2	126.9	124.1	135.2	131.5
2008	119.9	139.5	141.8	134.3	136.6
2007	109.3	122.1	119.1	129.0	132.1
2006	103.2	116.1	113.7	121.6	120.5
2005	98.9	110.8	108.2	116.8	114.0
2004	101.5	107.1	105.1	111.8	109.5
2003	99.0	104.2	102.5	108.1	106.3

<sup>1</sup> Indices are based on EU classifications.

<sup>2</sup> Incl. fur production.

Source: Statistics Finland.

## Structural change in agriculture.

	Number <sup>1</sup> of farms 1,000	Average <sup>1</sup> size of farms, hectares	Number of milk suppliers 1,000	Employed in agriculture <sup>2</sup>	
				1,000 persons	% of employed
2013	54 <sup>e</sup>	41.5 <sup>e</sup>	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
1999	..	..	24	121	5.3
1998	88	25.0	26	120	5.4
1997	90	24.0	28	130	6.0
1996	94	22.9	30	133	6.3
1995	100	21.7	32	141	6.7

<sup>1</sup> 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.

<sup>2</sup> From 2005 based on new industrial classification TOL 2008.

Sources: Information Centre of the Ministry of Agriculture and Forestry, 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
2013	283	7,977	1,300	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
1999	372	6,443	1,351	3,361
1998	383	6,225	1,401	3,802
1997	391	6,183	1,467	4,152
1996	392	5,993	1,395	4,184
1995	399	5,982	1,400	4,179

Source: Information Centre of the Ministry of Agriculture and Forestry.

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

	Nitrogen kg/ha	Phosphorus kg/ha	Potassium kg/ha	F.u.yield (incl. straw) f.u./ha
2012–13	70.0	5.7	15.5	..
2011–12	70.1	5.4	15.7	..
2010–11	74.1	5.6	16.2	..
2009–10	80.3	6.5	18.9	..
2008–09	67.1	5.3	16.2	..
2007–08	78.5	7.8	24.3	..
2006–07	73.5	7.9	24.6	..
2005–06	73.9	8.6	25.3	4,673
2004–05	75.0	9.2	25.9	4,826
2003–04	76.5	9.3	26.4	4,630
2002–03	80.0	9.8	27.8	4,478
2001–02	80.5	10.1	28.3	4,692
2000–01	83.2	10.8	31.1	4,531

Source: Information Centre of the Ministry of Agriculture and Forestry.

Results of the total calculation of agriculture in 2006–2013e at current prices, € million.

RETURNS, € million	2006	2007	2008	2009	2010	2011	2012	2013e
Farms represented	67,310	64,885	63,607	62,139	60,550	59,294	56,793	53,608
<b>GROSS RETURN, € million</b>	<b>4,740</b>	<b>5,190</b>	<b>5,240</b>	<b>5,076</b>	<b>5,316</b>	<b>5,427</b>	<b>5,577</b>	<b>5,614</b>
<b>Return on crop production</b>	<b>412</b>	<b>775</b>	<b>513</b>	<b>415</b>	<b>636</b>	<b>673</b>	<b>726</b>	<b>705</b>
Rye and wheat	84	173	98	59	137	152	167	158
Barley	117	276	169	132	164	184	234	208
Oats, other cereals	71	126	87	49	103	130	170	139
Oilseed crops	33	31	26	45	66	52	28	52
Grass fodder	10	70	44	27	55	51	37	31
Potato and sugar beet	83	89	76	84	86	76	74	102
Leguminous plants and other	14	11	13	20	26	28	16	15
<b>Return on livestock</b>	<b>1,637</b>	<b>1,728</b>	<b>1,943</b>	<b>1,862</b>	<b>1,799</b>	<b>1,973</b>	<b>2,033</b>	<b>2,102</b>
Return on cattle husbandry	1,126	1,207	1,322	1,245	1,257	1,361	1,508	1,553
Return on pig husbandry	334	340	358	390	374	350	314	330
Return on poultry	160	170	244	188	138	215	175	181
Return on sheep, goats, horses, etc.	17	11	18	39	31	47	36	38
<b>Return on horticulture</b>	<b>496</b>	<b>523</b>	<b>543</b>	<b>569</b>	<b>588</b>	<b>527</b>	<b>562</b>	<b>581</b>
<b>Financial return</b>	<b>13</b>	<b>13</b>	<b>17</b>	<b>13</b>	<b>12</b>	<b>14</b>	<b>12</b>	<b>12</b>
<b>Other return</b>	<b>199</b>	<b>200</b>	<b>225</b>	<b>235</b>	<b>245</b>	<b>243</b>	<b>221</b>	<b>258</b>
<b>Support payments total</b>	<b>1,983</b>	<b>1,951</b>	<b>1,999</b>	<b>1,982</b>	<b>2,035</b>	<b>1,998</b>	<b>2,023</b>	<b>1,957</b>
CAP support total	544	549	570	559	583	572	617	597
Natural handicap and environment payments	739	766	781	802	806	807	807	805
National and investment subsidy	699	634	647	619	645	617	596	555
<b>COSTS, € million</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013e</b>
<b>PRODUCTION COST</b>	<b>5,970</b>	<b>6,225</b>	<b>6,603</b>	<b>6,555</b>	<b>6,605</b>	<b>6,601</b>	<b>6,848</b>	<b>6,724</b>
<b>Supplies costs</b>	<b>1,646</b>	<b>1,700</b>	<b>1,933</b>	<b>1,951</b>	<b>1,857</b>	<b>2,003</b>	<b>2,131</b>	<b>2,172</b>
Fertilisers, liming	195	200	223	325	219	246	279	287
Other crop production costs	295	313	333	364	364	356	378	398
Fuels	243	223	312	235	241	283	339	312
Electricity	138	160	171	175	192	195	203	198
Purchased fodder cost	438	464	565	494	448	545	558	579
Livestock cost	337	338	328	358	393	378	375	396
<b>Machinery cost</b>	<b>923</b>	<b>995</b>	<b>1,088</b>	<b>1,068</b>	<b>1,027</b>	<b>1,045</b>	<b>1,061</b>	<b>1,055</b>
Depreciations on machinery	565	594	656	626	581	596	578	577
Other machinery costs	358	401	431	442	446	449	483	477
<b>Building costs</b>	<b>338</b>	<b>383</b>	<b>394</b>	<b>376</b>	<b>390</b>	<b>379</b>	<b>379</b>	<b>385</b>
Depreciations on buildings	283	326	332	314	322	320	317	322
Other building costs	55	57	62	62	68	58	62	63
<b>Other cost</b>	<b>773</b>	<b>795</b>	<b>812</b>	<b>821</b>	<b>857</b>	<b>875</b>	<b>903</b>	<b>935</b>
Insurances	279	283	284	283	300	301	308	302
Rents	112	116	124	129	146	143	141	153
Other depreciations	45	49	49	49	49	51	50	50
Other costs	337	347	355	360	362	379	404	430
<b>Labour costs</b>	<b>1,640</b>	<b>1,632</b>	<b>1,610</b>	<b>1,602</b>	<b>1,627</b>	<b>1,513</b>	<b>1,522</b>	<b>1,477</b>
Wages paid	173	187	217	199	199	204	223	229
Wage claim	1,467	1,445	1,393	1,402	1,428	1,310	1,299	1,248
<b>Interest costs</b>	<b>651</b>	<b>721</b>	<b>766</b>	<b>738</b>	<b>847</b>	<b>787</b>	<b>852</b>	<b>701</b>
Interest expenses	129	158	169	135	112	116	120	105
Interest claim on own capital	522	563	597	603	735	671	732	595
<b>FINANCIAL RATIOS</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013e</b>
RETURNS, € million	4,740	5,190	5,240	5,076	5,316	5,427	5,577	5,614
PRODUCTION COST, € million	5,970	6,225	6,603	6,555	6,605	6,601	6,848	6,724
Entrepreneurial profit, € million	-1,225	-1,030	-1,359	-1,479	-1,286	-1,167	-1,275	-1,110
Entrepreneurial income, € million	763	978	632	527	877	813	755	733
Profitability ratio	0.38	0.49	0.32	0.26	0.41	0.41	0.37	0.40
Return on assets %	-4.1	-2.1	-3.8	-4.7	-2.8	-2.3	-2.5	-2.4

## Agricultural support<sup>1</sup>.

### SUPPORT FINANCED COMPLETELY OR PARTLY BY THE EU IN 2014, €/ha or €/unit

Aid area	A	B	C1	C2	C2north	C3	C4
<b>DECOUPLED CAP PAYMENTS, €/ha</b>							
Single payment (regional flat-rate payment), €/ha	232.51	194.29	194.29	170.33	170.33	170.33	170.33
Farm-specific top-ups:							
Farm specific top up for bulls, €/livestock unit	22.05	22.05	22.05	22.05	22.05	22.05	22.05
Farm specific top up for steers, €/livestock unit	15.75	15.75	15.75	15.75	15.75	15.75	15.75
Farm specific top up for starch potato, €/tonne	6.19	6.19	6.19	6.19	6.19	6.19	6.19
Additional payment for milk, €/tonne of the reference quantity	8.57	8.57	8.57	8.57	8.57	8.57	8.57
Farm specific top up for sugar beet, €/tonne	64.97	64.97	64.97	64.97	64.97	64.97	64.97
Farm specific top up for timothy <sup>2</sup>							
<b>PROTEIN AND OILSEED CROPS PREMIUM<sup>3</sup></b>							
	85	85	85	85	85	85	85
<b>STARCH POTATO PREMIUM</b>							
	550	550	550	550	550	550	550
<b>CAP LIVESTOCK PREMIUM, €/animal</b>							
Beef premium, bulls and steers	385	385	225	225	225	225	225
Beef premium, suckler cows and suckler cow heifers	150	150	85	85	85	85	85
Dairy cow premium	148	148	-	-	-	-	-
EWE PREMIUM <sup>4</sup>	13.5	13.5	13.5	13.5	13.5	13.5	13.5
QUALITY PREMIUM FOR SLAUGHTER LAMBS <sup>5</sup>	35	35	35	35	35	35	35
<b>LFA SUPPORT, €/ha<sup>6</sup></b>							
LFA <sup>7</sup> - basic payment	20	20	20	25	25	25	25
- additional payment for livestock farms	80	80	80	80	80	80	80
<b>ANIMAL WELFARE PAYMENT, €/LU</b>							
		Basic conditions		Additional conditions			
Bovines		50.00		17.00–57.00			
Pigs		16.00		4.00–23.00			
<b>ENVIRONMENTAL SUPPORT, €/ha</b>							
		Crop producing farm			Livestock farm		
Cereal, oilseed crops, protein crops, grasses		93			107		
Group 1 horticultural crops (outdoor vegetables etc.)		450			450		
Group 2 horticultural crops (berries and fruits)		438			438		
Nature management fields (perennial grasses)		170			170		
Nature management fields (biodiversity)		300			300		
Certain seed spice plants		181			181		

**Additional agri-environment measures: support areas A, B and C:** reduced fertilisation 10 €/ha, more accurate nitrogen fertilisation of arable crops 23 €/ha, manure spreading during growing season 27 €/ha, plant cover in winter and reduced tillage 11 €/ha, nutrient balances 18 €/ha.

**Additional measures only for areas A and B:** plant cover in winter 30 €/ha, intensified plant cover in winter 45 €/ha, crop diversification 24 €/ha and cultivation of catch plants 13 €/ha.

**Additional measures for horticulture (support areas A, B and C):** more accurate nitrogen fertilisation of horticultural crops 90 €/ha, use of cover for perennial horticultural crops 256 €/ha and use of pest monitoring methods 144 €/ha.

**Contracts concerning special agri-environment measures:** support level 56–450 €/unit of payment.

<sup>1</sup> Includes payments for main products, which means that the table does not cover all support payments.

<sup>2</sup> 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.

<sup>3</sup> The premiums total 5.96 mill. €. The final level of the premium is determined according to the approved total area. Protein crops which entitle to the premium are field pea (food and fodder pea), field bean and sweet lupin. Mixtures containing more than 50% of the protein crop seed in the total amount of seed sown are also eligible. Premium is paid for the following oilseed crops: winter oilseed rape, winter turnip rape, spring oilseed rape, spring turnip rape, sunflower, oil flax, oil hemp and gold of pleasure (*Camelina sativa*). The premium is subject to the condition that at least 10% of the arable area of the farm is under the eligible crops or mixtures.

<sup>4</sup> Includes the top-up for less favoured areas 3.5 €/ewe. Milk producing animals 8 €/animal + top-up 3.5 €/animal.

<sup>5</sup> Premium is granted on the basis of slaughterings notified to the sheep and goat register for lambs with a carcass weight of at least 18 kg.

<sup>6</sup> In LFA scheme livestock farm is a farm with minimum stocking density of 0.4 LU/ha or the farm has at least 10 LU and the minimum stocking density is 0.2 LU/ha for the whole commitment period

<sup>7</sup> Top-ups to LFA payments are cut due to payment ceilings. In 2009 the payments were 98.3% of the maximum per hectare.

	2009	2010	2011	2012	2013	2014	
Unit	€/unit	€/unit	€/unit	€/unit	€/unit	€/unit	
<b>NATIONAL SUPPORT FOR AGRICULTURE AND HORTICULTURE</b>							
<b>NATIONAL AID FOR SOUTHERN FINLAND, NORTHERN AID AND AID FOR CROP PRODUCTION</b>							
<b>Aid per livestock unit</b>							
Aid for animal husbandry, suckler cows							
A and B	€/LU	83	83	83	90	93	93
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							
A and B	€/LU	187	187	187	187	187	187
C1	€/LU	414	414	422	422	422	422
C2	€/LU	422	422	430	430	430	430
C2north. and archipelago	€/LU	498	498	506	506	506	506
C3	€/LU	574	574	582	582	582	582
C4	€/LU	759	759	767	767	767	767
Aid for animal husbandry, ewes and goats							
A and B	€/LU	184	184	184	184	184	184
C1	€/LU	390	390	390	390	390	390
C2	€/LU	398	398	398	398	398	398
C2north. and archipelago	€/LU	474	474	474	474	474	474
C3P1–P2	€/LU	664	664	664	664	664	664
C3P3–P4	€/LU	745	745	745	745	745	745
C4P4	€/LU	956	956	956	956	956	956
C4P5	€/LU	956	956	956	956	956	956
Decoupled aid for pips and poultry <sup>1</sup>							
A and B	€/LU	148	139	138	114	74	76
Farms below the farm specific limit <sup>2</sup>							
C1	€/LU	269	261	265	245	208	208
C2	€/LU	234	227	231	214	182	182
C2north. and archipelago	€/LU	288	281	284	269	242	242
C3 and C4	€/LU	297	290	293	278	251	251
Farms over the farm specific limit <sup>2</sup>							
C1	€/LU	205	199	197	162	105	108
C2	€/LU	176	170	169	140	91	93
C2north. and archipelago	€/LU	150	145	144	119	77	79
C3 and C4	€/LU	150	145	144	119	77	79

<sup>1</sup> 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.

<sup>2</sup> 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	2009 €/unit	2010 €/unit	2011 €/unit	2012 €/unit	2013 €/unit	2014 €/unit
<b>Northern aid paid for slaughtered animals</b>							
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							
A and B	€/animal	114	144	144	144	144	144
C1	€/animal	269	299	299	299	299	299
C2	€/animal	269	299	299	299	299	299
C2north. and archipelago	€/animal	318	348	348	348	348	348
C3	€/animal	360	390	390	390	390	390
C4	€/animal	446	476	476	476	476	476
<b>Production aid for milk</b>							
A and B	cents/l	3.1	3.1	3.2	3.1	3.1	2.8
C1	cents/l	8.1	8.0	8.0	8.0	8.0	7.7
C2	cents/l	8.7	8.7	8.7	8.7	8.7	8.4
C2north.	cents/l	10.0	9.7	9.7	9.7	9.7	9.4
C3P1	cents/l	13.0	12.7	12.7	12.7	12.7	12.4
C3P2	cents/l	14.7	14.4	14.4	14.4	14.4	14.1
C3P3–P4	cents/l	17.4	17.0	17.0	17.0	17.0	16.7
C4P4	cents/l	22.2	21.7	21.7	21.7	21.7	21.4
C4P5	cents/l	31.4	30.9	30.9	30.9	30.9	30.6
<b>Aid for crop production</b>							
C1 area <sup>1</sup>							
Wheat	€/ha	47	47	47	38	38	38
Rye	€/ha	112	150	150	150	150	150
Malting barley	€/ha	70	-	-	-	-	-
Oil seed plants	€/ha	100	120	120	120	120	120
Starch potatoes	€/ha	133	133	133	133	133	133
Vegetables grown in the open	€/ha	348	348	348	348	348	348
Other arable crops excl. cereals	€/ha	100	120	120	120	120	120
C2 and C2north. areas <sup>1</sup>							
Wheat	€/ha	47	47	47	38	38	38
Rye	€/ha	112	150	150	150	150	150
Malting barley	€/ha	70	-	-	-	-	-
Oil seed plants	€/ha	27	47	47	47	47	47
Starch potatoes	€/ha	133	133	133	133	133	133
Vegetable grown in the open	€/ha	348	348	348	348	348	348
Arable crops excl. cereals	€/ha	27	47	47	47	47	47
C3 and C4 areas							
Vegetable grown in the open	€/ha	348	348	348	348	348	348

<sup>1</sup> C area Northern aid.

	Unit	2009 €/unit	2010 €/unit	2011 €/unit	2012 €/unit	2013 €/unit	2014 €/unit
<b>Aid for special crops in southern Finland</b>							
A and B areas							
Starch potatoes	€/ha	100	100	100	100	100	100
Vegetable grown in the open	€/ha	100	100	100	100	100	100
<b>Aid per hectare of livestock farms</b>							
A and B areas	€/ha	30	30	36	37	39	41
<b>National aid for sugar beet</b>	€/ha	350	350	350	350	350	350
<b>General area payment C2–C4</b>							
Cereals and other arable crops							
C2, C2north and archipelago	€/ha	30	33	33	33	33	28
C3	€/ha	46	49	49	49	49	44
C4	€/ha	97	100	100	100	100	95
Other crops							
C2, C2north. and archipelago	€/ha	35	33	33	33	33	28
C3	€/ha	51	49	49	49	49	44
C4	€/ha	102	100	100	100	100	95
<b>General area payment for young farmers C1–C4</b>	€/ha	36	36	36	36	36	36
<b>Aid for greenhouse products A and B</b>							
over 7 months	€/m <sup>2</sup>	11.0	10.9	11.4	11.1	10.3	10.5
2–7 months	€/m <sup>2</sup>	4.0	4.4	4.4	4.1	3.8	4.0
<b>Aid for greenhouse products C1 and C2</b>							
over 7 months	€/m <sup>2</sup>	11.7	12.3	11.1	11.4	10.6	10.6
2–7 months	€/m <sup>2</sup>	4.3	4.7	4.9	4.4	4.1	4.1
<b>Aid for greenhouse products C2P</b>							
over 7 months	€/m <sup>2</sup>	13.2	11.7	12.3	11.4	10.6	10.6
2–7 months	€/m <sup>2</sup>	4.3	4.7	4.9	4.4	4.1	4.1
<b>Aid for greenhouse products C3–C4</b>							
over 7 months	€/m <sup>2</sup>	11.2	11.7	12.3	11.4	10.6	10.6
2–7 months	€/m <sup>2</sup>	4.3	4.7	4.9	4.4	4.1	4.1
<b>Northern storage aid for horticulture products</b>							
A and B							
Storages with thermo-control system	€/m <sup>3</sup>	14.2	14.2	14.2	14.2	14.2	14.2
Storages without thermo-control system	€/m <sup>3</sup>	8.8	8.8	8.8	8.8	8.8	8.8
C areas							
Storages with thermo-control system	€/m <sup>3</sup>	14.2	14.2	14.2	14.2	14.2	14.2
Storages without thermo-control system	€/m <sup>3</sup>	8.8	8.8	8.8	8.8	8.8	8.8
<b>Conversion coefficient of livestock units in national aid</b>							
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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