



# Finnish Agriculture and Rural Industries 2006



## Report drawn up by:

Ahlstedt, Jaana	(layout, editor)
Aro-Heinilä, Esa	(chapter 5.2)
Heikkilä, Jaakko	(chapter 5.1, 5.4, 5.5)
Jansik, Csaba	(chapter 2.4)
Knuuttila, Marja	(chapter 1.1)
Koikkalainen, Kauko	(chapter 5.4)
Kröger, Laura	(chapter 5.1, 5.5)
Latukka, Arto	(chapter 4.3)
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Niemi, Jarkko	(chapter 2.2)
Niemi, Jyrki	(chapter 2.4, 3, summary, editor)
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Pouta, Eija	(chapter 5.3)
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Turunen, Harri	(chapter 4.1)
Vihinen, Hilikka	(chapter 6)
Vihma, Antto	(chapter 5.2)
Voutilainen, Olli	(chapter 6)

## English translation by:

Kola, Jaana

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*Kasper Waldemar Järnefelt* (1859–1941), the eldest brother of the painter Eero Järnefelt, was an art critic and influential literary person. Among other things, he worked as a translator and teacher of the Russian language. He also produced small-scale paintings of yards and landscapes. This painting, *Rye Field* (oil, plate) shows a harvesting landscape with rye shocks opening from the farmyard.



Taloustutkimus

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# **Finnish Agriculture and Rural Industries 2006**

Edited by  
Jyrki Niemi and Jaana Ahlstedt

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Tel. +358 9 560 80, fax +358 9 563 1164

e-mail: [julkaisut@mtt.fi](mailto:julkaisut@mtt.fi)

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## Preface

In 2005 significant and far-reaching decisions on agricultural and rural policy were made concerning, for example, the sugar policy of the Community and EU budget. The discussion on the increasingly important role of rural policy gave Finland well justified reasons to expect that expenses due to the EU enlargement would be divided equally between the old Member States by cutting the market support for agriculture, the so-called CAP support. This did not happen, but the views on the importance of rural support took the opposite direction as the large agricultural countries of the EU held on to their own interests. This meant that in the old Member States the budget cuts were directed to rural support, such as environmental support and compensatory allowances, which are particularly important in Finland, which is a very rural country and suffers from permanent natural handicap due to the northern climate. The decisions made gave rise to general questions on how the agricultural and rural policy of the EU is responding to the tightening requirements for environmental protection and management and the challenges of globalisation. The way the reform of the EU's sugar policy was carried through gave indications that in major decisions on agriculture the interests of the large Member States have more weight than those of the small countries, not to say anything about the perspective of the poorest developing countries.

The events of the year 2005 again reminded us that the extremely high risks involved in food security and energy supply are very real and every effort is needed to protect us against them. The spread of dangerous animal diseases such as avian influenza or foot-and-mouth disease causes high costs to the society. Proper protection against dangerous animal diseases and food safety risks inevitably increases the food production costs even if serious epidemics could be avoided. In Finland, for example, the cost-efficiency of livestock production which is scattered in different parts of the country cannot be as high as in the intensive livestock production regions of the EU, but the Finnish production units are less susceptible to the dangerous animal diseases.

The rise in the prices of energy and the production inputs derived from it has increased the production costs of agriculture and reduced agricultural income. Policies emphasising renewable bioenergy and shortage of the energy raw material have not yet been reflected on the agricultural product market in Finland. The price parity of ethanol and petrol for transportation was disrupted in the world as the price for ethanol continued to rise but the trend in petrol prices was more stable. If the markets function efficiently, the demand for the raw material for ethanol and biodiesel should reinforce the prices of cereals and oilseed crops in Finland as well. Especially towards the end of the year there were positive expectations that Finland is taking serious action to reduce its dependence on fossil fuels and increase the use of bioenergy for transportation.

Agrifood Research Finland MTT wishes to thank Professor Jyrki Niemi and Research Secretary Jaana Ahlstedt for compiling and editing this publication, as well as all the researchers who contributed to the writing process.

Helsinki 8 March 2006

Kyösti Pietola  
Director of Economic Research  
Agrifood Research Finland MTT

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## SUMMARY

During 2006 no major decisions or policy reforms will be prepared in the agricultural and regional policy of the EU, but the focus will be on the implementation of the CAP and sugar reforms decided earlier as well as in the national preparation of the regional and rural programmes for the next programming period for 2007–2013.

The negotiations on world trade place great demand on the EU as the WTO negotiations proceed to the decision-making stage in 2006. During the Doha round, which has been going on for four years, decisions have been made on only few major issues concerning agricultural or industrial products, as well as the trade in services.

So far the most significant step forward has been the decision on the abolition of exports subsidies by 2013 reached at the WTO Ministerial Conference in Hong Kong in December 2005. In 2006 the focus in the negotiations on agriculture will be on how much the WTO countries agree to lower the duties on agricultural products and what the schedule will be.

The preparation of the legislation for the upcoming programming period is one of the main issues in agriculture during 2006. The rural development funding was cut quite dramatically at the EU summit in December 2005 when the financial frameworks for 2007–2013 were decided. In Finland this will lead to a reduction in rural development funding by about € 100 million.

In the early part of 2006 the EU ministers of agriculture should agree on how the € 18.9 billion available for rural development will finally be divided between the Member States. These negotiations are decisive for Finnish agriculture because, unlike in many other Member States, in Finland a major share of support for agriculture is paid from these rural development funds.

The financial framework agreed in December 2005 cuts also the regional and structural policy support for Finland by about a quarter. Eastern and northern parts of Finland are excluded from the regions eligible for the highest support from the Structural Funds now that the poorer regions in Eastern Europe have joined the Union.

All this means that the net payments of Finland to the EU will be increasing considerably. Agricultural support paid by the EU is threatened by further cuts of several percentage units towards the end of the programming period, because in the financial framework no additional funding for agriculture was reserved for the accession of Rumania and Bulgaria to the EU.

### Promoting the use of bioenergy

Decisions made in the energy policy have far-reaching consequences in the rural areas as well. In 2005 the price of crude oil started to rise more steeply than had been expected, which raised concerns about the poor self-sufficiency of Europe in energy supply. There is a need and will to replace part of the oil with bioenergy.

The public interest in bioenergy is also founded on objectives related to agricultural policy and prevention of climate change. The tensions in the EU's sugar sector made this discussion even more topical.

According to the objectives, the EU Member States should try to triple the use of biofuels for transportation from the current about two per cent to almost six per cent by 2010. In December 2005 the European Commission presented a highly ambitious action plan concerning all forms of bioenergy.

During 2005 bioenergy of agricultural origin made the final breakthrough to the domestic discussion forums as well. The im-

portance of developing biofuels was stressed by the Minister of Agriculture and Forestry, Minister of Trade and Industry and all the presidential candidates. The EU has already reproached Finland for the slow progress in the use of biofuels for transportation.

Bioenergy is hoped to contribute to the objectives concerning entrepreneurship, employment and general viability of regions. The production alternatives offered are biogas, reed canary grass, energy oats and straw for electricity and heat production and oilseed crops, bioethanol and biogas for biofuel for transportation.

### **Time for implementation in agricultural policy**

The single payment scheme adopted in the context of the CAP reform was introduced in Finland in 2006. Most of the support funded in full by the EU, so-called CAP support, will now be paid through this scheme. CAP support has two main components: single payments decoupled from production and payments which continue to be coupled to the production. In Finland the coupled CAP support is paid for suckler cows, male bovines, ewes and starch potato, while the CAP support for arable crops will be almost completely decoupled from the production as of 2006. This means that about 90% of the CAP support paid in Finland is decoupled.

Cross compliance is a further condition for CAP support. Arable lands must be kept in good farming condition and certain minimum requirements concerning animal welfare and state of the environment must be met. In addition to this, Finland has made the national decision that if a farmer sets aside more than the mandatory area, this uncultivated land must be covered with grass to be eligible for the payment.

In Finland the single payment scheme is implemented on the basis of the hybrid model. Former CAP support is converted into payment entitlements which consist of a regional flat-rate payment and possible

farm-specific top-ups. Certain payments continue to be coupled to the production. The values of the payment entitlements will be established towards the end of 2006.

### **Reform of the environmental support scheme**

The Ministry of Agriculture and Forestry appointed a working group in 2005 to prepare a proposal for a new agri-environmental support scheme for 2007–2013. The draft proposal of the working group submitted in February 2006 contains an assessment of the current state of the agricultural environment and objectives of environmental support, description of the proposed measures, their objectives and estimated impacts and an estimate of the costs of the measures and levels of support.

According to the proposal, the general objectives of the new environmental support would be basically the same as in the current programme, i.e. the focus is on water protection, but biodiversity and landscapes will not be neglected, either. Maintenance liming and inventory of the biodiversity sites on farms will be introduced as new basic measures. Requirements concerning fertilisation will be tightened especially on livestock farms because of the raise of the usability percentage of the phosphorus contained in animal manure. There are also plans to introduce a specific support scheme for promoting the welfare of production animals.

Agri-environmental support constitutes the greatest single expenditure item that the State has allocated to environmental protection. In 2005 altogether € 322 million were used for environmental support.

### **Rapid increase in the costs of agriculture**

The year 2005 was the third year in a row when the agricultural income of the agricultural and horticultural sector decreased. Agricultural income totalled a little under



### Agricultural support in Finland, million euros.

	2004	2005 <sup>preliminary</sup>	2006 <sup>estimate</sup>
Support financed by EU			
CAP payments	502	515	543
Support co-financed by EU			
LFA support	423	423	423
Environmental support	295	322	327
National support			
Northern support	387	330	329
National support for Southern Finland	127	99	97
National supplement to environmental support	60	55	55
National supplement to the LFA support		120	120
Other national support	15	15	13
<b>Total</b>	<b>1,809</b>	<b>1,879</b>	<b>1,907</b>
EU contribution	805	829	797
National financing	1,004	1,050	1,110

€ 918 million, which was 14%, i.e. more than € 152 million less than the year before. The reasons for the decrease were the increase in the costs of agriculture and horticulture by 4%, decrease in total return and delays in the payment of agricultural support.

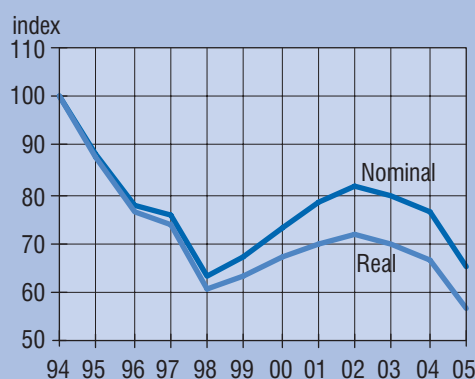
In recent years the total costs of agriculture and horticulture have risen especially due to the increase in oil prices, which influence the energy costs directly, as well as the costs of various other inputs, such as fertilisers, indirectly. The rise in the prices of machines and building has also exceeded clearly the general rate of inflation.

The income formation of agriculture and horticulture is strongly dependent on the amount of support. In 2005 the total amount of support rose to almost € 1.9 billion, which represents about 47% of the total return on agriculture and horticulture.

### Progress in structural development

The structure of Finnish agriculture has changed considerably in recent years. In 1995 there were still more than 95,000 farms, while now, ten years later, the number of farms is a little over 69,000. The number of farms has decreased by a little more than 3% a year, in livestock farming even more. For example, the annual decrease in the number of farms specialised in milk production has been almost 7%. Proportionally the number of farms has fallen the most in eastern Finland (32%) and the least in northern Finland (23%).

The average size of farms has grown as their number has decreased. In 1995–2005 the average size of active farms grew by 44% from less than 23 hectares to almost 33 hectares. About two-thirds of the growth has taken place through leasing of



Development of agricultural in 1994–2005.

### Number of active farms and agricultural income in 1994–2005.

	Number of farms	Change from previous year %	Change from 1994 %	Agricultural income at 2005 prices, € million	Index 1992–94 average: 100
2005	69,088	–2,8	–33	918	62
2004	71,100	–1,3	–31	1,080	73
2003	72,000	–1,9	–30	1,133	76
2002	73,386	–2,7	–29	1,171	78
2001	75,384	–3,2	–27	1,141	76
2000	77,896	–5,2	–24	1,095	73
1999	82,142	–4,1	–20	1,033	69
1998	85,690	–3,0	–17	989	66
1997	88,370	–3,2	–14	1,201	80
1996	91,281	–4,5	–11	1,247	84
1995	95,562	–7,2	–7	1,427	96
1994	103,000 <sup>1</sup>			1,630	109

<sup>1</sup> Estimate of the MTT Economic Research, Agrifood Research Finland.

Sources: Total calculation of the MTT Economic Research, Agrifood Research Finland, Support register of the Ministry of Agriculture and Forestry (MMM).

arable land. In 2005 705,000 hectares (about 31%) of the total cultivated area of 2.24 million hectares was leased.

Despite the rapid structural development, the improvement in profitability has been relatively slow. In 2005 the same amount of inputs yielded about 13% more than in 1992. On average the productivity of agriculture has increased a little less than 1% a year.

### Decrease in the market prices for cereals

The yield of 2005 was better than normally. The total cereal yield was 4.1 billion kg, which is 12% higher than in 2004. The area sown was about the same as before, a little under 1.2 million hectares.

The prices paid for cereals were about 6% lower than the year before. The average price of feed barley fell by 7% from 2004 to about € 100/tonne. In the early part of the year the price for oats decreased rapidly, like in the previous year, but then increased during the last three months of the year. The average price quoted for the year was € 88/tonne, which is about the

same as in 2004.

The average prices for bread cereals were lower than in the previous years, but towards the end of 2005 the price of rye started to rise closer to the long-term average. In the early part of the year the price of wheat was 14% lower than during the same period in the previous year and the opening prices for the autumn were 6% lower than in the previous autumn. In the main wheat producing countries of the EU the fall was even more dramatic, and the average was more than 20%.

### Growth in cheese imports

In 2005 altogether about 2,293 million litres of milk was delivered to dairies, which was 0.5% (10 million litres) less than the year before. At the end of the year the total number of milk suppliers was 15,300, which is 6% less than in the previous year. The average herd size exceeded 20 cows and the average yield of dairy cows rose to 7,505 litres.

The prices paid to Finnish milk producers are still higher than in the EU on average. In 2005 the average price for milk

was € 0.33/litres, which is 4% lower than the year before.

The import of dairy products from the new EU Member States has weakened the profitability of Finnish dairies. Yoghurt is imported from the Baltic States and especially cheeses from Poland.

The cheap imports affect the Finnish dairies especially on the cheese market. In 2005 the cheese imports mainly from Germany, Denmark and Poland rose by 14%. Already about a third of the cheese consumed in Finland is imported. The situation is balanced by the fact that a growing share of the cheese produced in Finland is sold on the export market.

The domestic consumption of cheese has also grown. Especially the special cheeses have increased their market share at the cost of the traditional Emmenthal and Edam cheeses.

### **New record in pigmeat production**

Finland's position as a net importer of beef strengthened in 2005, when as much as 15% of the consumption was imported beef. Beef consumption fell by about 1% from the year before to about 96 million kg. Beef production in Finland totalled about 84 million kg, which is almost 7% less than in 2004.

Beef exports fell by almost 70% to only about 1.5 million kg. Imports grew by 47% to 14.6 million kg. Imports from Brazil and Denmark grew the most, while beef imports from Sweden decreased.

The role of pigmeat as the most significant export article of the Finnish meat industry became stronger and the exports grew by 6% to almost 41 million kg. Most of the exports go to Japan, Russia, Estonia and Sweden, which represented almost 70% of the carcass meat exports. Exports to Russia grew by about a fifth.

Pigmeat imports to Finland increased by 12% and those of processed meats by 42% from the previous year. The most significant trade partners are Denmark, Ger-

many and Sweden. The share of Denmark and Germany in the carcass meat imports has been around 80%.

Exports represented about 20% of the pigmeat production, while the share of imports in the consumption was about 9%. In 2005 pigmeat production totalled a little more than 203 million kg, which is 3% more than the year before. Pigmeat consumption totalled 176 million kg.

The growth in poultry meat production has slowed down, and in the past couple of years the production has been about 87 million kg. However, poultry meat consumption grew again in 2005 by about 1% to 84 million kg.

Foreign trade in poultry meat grew as well. Poultry meat exports grew by 4% and imports by 9%. Especially the imports of frozen broiler fillets from the cheapest producing country, Brazil, are on the increase. This is sold at a lower price than domestic broiler, which causes pressures on the price of domestic broiler.

### **Growing deficit in food trade**

In 2005 the value of food exports from Finland totalled € 980 million, which is a little over 4% more than in 2004. The value of food imports totalled € 2,601 million, which is 7% higher than the year before.

In recent years food imports have grown more rapidly than exports, which has led to a rapid growth in the deficit in the food trade balance. Traditionally the deficit has been due to the high imports of fruits, raw coffee, alcoholic beverages and tobacco. Other important import articles are vegetables, cheeses and cereal products.

In 2005 the food prices in Finland rose by 0.2%. The annual change in the consumer price index was 0.7%, which means that the rise in food prices stayed below the general rate of inflation. Between 2000 and 2005 the food prices in nominal terms rose by 8.8%, while during the same period the general consumer price index rose by 5.5%.

# 1. OPERATING ENVIRONMENT OF AGRICULTURE

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

In Finland the total annual consumer expenditure on food and beverages is about € 16.4 billion, which is about 11% of the GDP. Without alcoholic beverages, the food consumed at home represents a little under 13% of the consumer expenditure. When alcoholic beverages and eating out are included, food represents about 22% of the consumer expenditure of households.

The total value of the annual money flows in the food sector is almost € 20 billion, when food exports and the supports directly related to the food chain are taken into account, in addition to the total consumer expenditure. The money flows in the food sector include agricultural and horticultural production, food processing, food imports, margins of trade, restaurant and catering services, taxes collected by the State and supports paid to the food chain.

### Agriculture and horticulture

The food economy is founded on agricultural and horticultural production. According to the national accounting, the gross value of the domestic basic production is about € 4.3 billion. The production is largely based on the use of inputs purchased from outside the farms. Of the total return more than 60%, about € 2.8 billion, is used for purchasing inputs manufactured in the other sectors of the national economy and from abroad. Inputs for agriculture and horticulture are manufactured in several sectors, such as feed, chemical and metal industries.

In 2004 the value added produced by agriculture and horticulture to the Finnish GDP totalled a little over € 1.5 billion, which is 1.2% of the total GDP of all sec-

tors. The share of agriculture in the GDP has decreased over the years, because production has grown clearly more in sectors other than primary production.

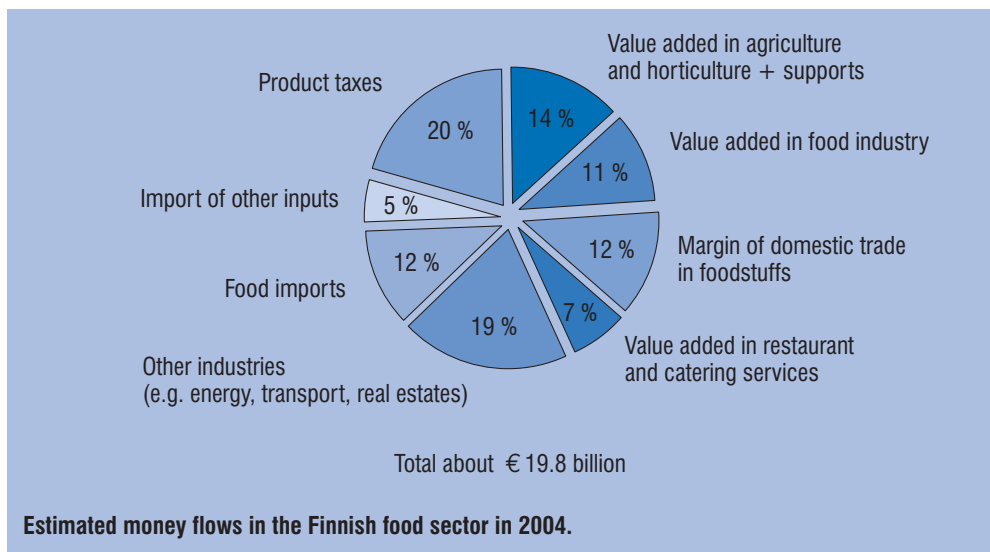
Agriculture and horticulture are closely linked to the industry processing agricultural and horticultural products. In recent years almost 80% of the output of agriculture and horticulture has gone to the domestic processing industry. Food processing is highly concentrated and due to the tightening competition even more concentration is needed, which means that the number of alternative marketing channels for the producers continues to fall.

### Food processing

In 2004 the gross value of the production of the food industry was almost € 9 billion, which is a little less than 7% of the gross value of all industrial production. The value added of the food industry was € 2.1 billion, which is 1.6% of the corresponding value added of the whole national economy.

Measured by the value added of the production, food industry is the fifth largest sector in Finland after the electronics, forest, metal and machine industries. Most of the Finnish food companies engage in meat processing or bakery, beverage or dairy industry.

Finnish food processing industry still purchases most of its raw material from the domestic agriculture and horticulture, even if raw materials may also be imported. In practice food industry is largely dependent on the domestic raw material due to the high transportation costs. In the dairy and meat processing industries most of the raw material is domestic, and thus the link to the domestic basic production is almost seamless.



Joining the EU in 1995 was a significant milestone for the Finnish food industry as it led to a radical change in the operating environment. Serious efforts to improve competitiveness were started in individual companies already in the 1980s. Excess capacity was cut, production costs were reduced, inefficient units were closed down and investments were made to create new and modern processing capacity.

Food industry has traditionally functioned mainly on the domestic market, but in the past few years the internationalisation has proceeded rapidly. Before 1995 very few Finnish food companies had any operations abroad, but now the situation has changed radically. Finnish companies, especially in the meat and bakery industries, have expanded to the Baltic States, Sweden, Russia and Poland.

### Domestic trade in foodstuffs

In addition to the primary production and processing sectors, the role of the wholesale and retail trade is also highly significant in the domestic food chain. The functions of trade include the sale of raw materials and other inputs to agriculture, horticulture and the food industry as well as sell-

ing the finished products to the consumers. However, the domestic wholesale and retail trade is far less dependent on the domestic primary production than most of the food industry.

The share of the wholesale and retail trade in the use of intermediary products of agriculture is quite high. The share of trade in the use of intermediary products of food industry is smaller, because the industry purchases most of the raw material directly from the producers and other inputs directly from other industrial sectors.

The share of wholesale and retail trade of the food expenditure of consumers is about € 2.4 billion.

It is somewhat difficult to estimate the share of trade in the money flows of the food chain, because the available statistics do not distinguish the sale of food from the other articles and the exact percentages of the margins of trade are not known.

The EU membership clearly reinforced the position of trade in the food chain relative to the domestic raw material production and food industry. The trade sector is able to take advantage of the competition between the domestic food companies and between the domestic companies and foreign ones.

Domestic traders were faced with a new competitive situation especially when the German food chain Lidl entered the Finnish market in 2002. The new competitor tightened the price competition. This internationalisation of the Finnish food chain is going to measure the value and significance of the domestic origin.

### Foreign trade in foodstuffs

Free import and export between the Member States of the EU has made it necessary to adjust the operations in agriculture, processing and trade according to the market demand. In 2004 the value of food imports was about € 2.3 billion, which is a little less than 6% of the total value of imports. The value of exports was about € 1 billion, which is about 2% of the total value of exports.

During the EU membership in 1995–2005 the share of foreign foods in food sales have increased by a few percentage units to 15%. Part of the imports are primary products which cannot be produced in Finland or the quantities produced are not sufficient, while part of the foreign trade is cross-trading.

### Support and taxes in the food sector

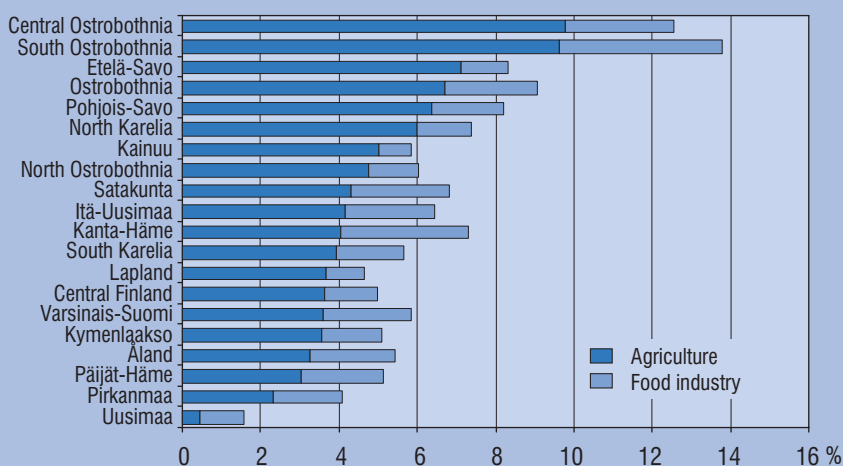
The State supports the food chain, but it also collects various kinds of taxes from the different operators involved. Tax funds are used to support the food sector in order to secure its competitiveness.

In 2004 the support payments to the Finnish agriculture and horticulture under the common agricultural policy of the EU totalled € 1.2 billion. Some of the supports are financed by the EU alone, some are co-financed. The national aids complementing the payments from the EU totalled about € 0.6 billion.

At the same time, however, the State collects a value added tax of 17% on staple foodstuffs, which is quite high compared to the EU average. The State revenue from the value added tax on food totals about € 1.4 billion per year. The revenue from the excise tax on alcoholic beverages fell from € 1.4 to 1.1 billion as the tax rate was lowered in 2004.

### Economic linkages in the food sector

The inputs used in agriculture and food industry and the inputs they produce to



Employment shares of agriculture and food industry (%) in different regions. Source: Alueellinen työssäkäyntitilasto (Regional employment statistics) 2004 (preliminary), Statistics Finland.



the other sectors create a network of dependencies between the different sectors of the national economy. Through these dependencies the impacts of changes in the production in the different parts of the food chain are reflected in the production, income and employment in the national economy and regional economies.

The demand induced by agriculture is highly significant for maintaining various kinds of services in the rural areas, such as shops, traffic and public services. Similarly, part of the processing of agricultural products is linked to the regional and local raw material production.

According to the regions, the GDP share of agriculture is the highest in Central and Southern Ostrobothnia (5%) and the lowest in the southernmost Finland in Uusimaa (0.2%). The GDP share of the food industry is the highest in south-central Finland (5%) and South Ostrobothnia (4%).

### Direct and indirect employment effects of the food chain

The food sector is a significant employer, both directly in agriculture and food industry and indirectly in sectors producing

inputs for the food chain and in transportation and delivery services.

The total employment in the food economy is almost 300,000 AWU, when the domestic use and export of foodstuffs are taken into account. This represents about 13% of the employed labour force.

In 2004 the number of people employed in agriculture was almost 93,000 persons, which is 3.9% of the employed labour force. Agriculture is still a very significant employer in many rural regions. Today every fifth woman and every fourth man of the working age living in the countryside is employed in agriculture. Because of the decrease in the number of farms jobs in agriculture have become less significant for the total employment in the rural areas. Production and jobs are concentrating to southern and western parts of the country

Food processing industry employs a little less than 40,000 people, restaurants and catering services a little over 59,000 people, and the share of food trade is estimated at about 50,000 people. The number of people working in the food industry has been decreasing, even if since 2000 each year 100–150 new food processing companies have been set up.

**The GDP share of agriculture and the food sector, at basic price (current prices).**

Vuosi	GDP Total € million	Agriculture € million	Food industry € million	Share in GDP Agriculture %	Food industry %
2004	129,929	1,539	2,113	1.2	1.6
2003	124,433	1,547	2,109	1.2	1.7
2002	122,594	1,688	2,075	1.4	1.7
2001	119,110	1,608	1,981	1.4	1.7
2000	113,769	1,602	1,752	1.4	1.5
1999	104,421	1,332	1,910	1.3	1.8
1998	101,618	1,185	2,018	1.2	2.0
1997	93,162	1,578	1,978	1.7	2.1
1996	86,460	1,610	1,989	1.9	2.3

Source: National Accounts 1996–2004, Statistics Finland. Revised figures.

## 1.2. Rural enterprises

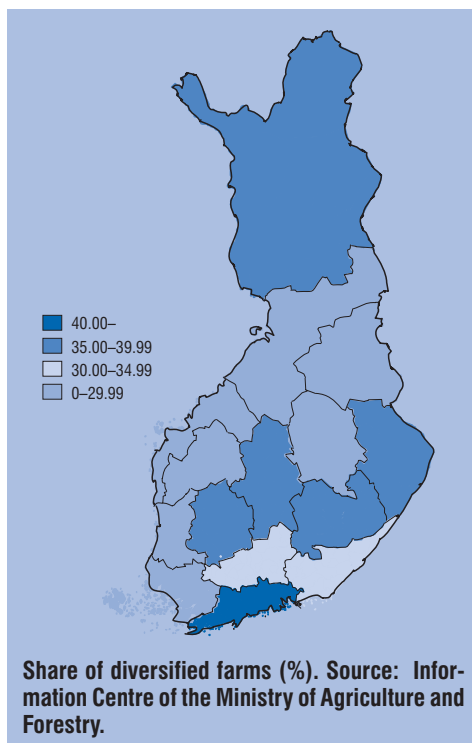
Small rural enterprises can be divided into three groups: farms engaged in basic agricultural production, diversified farms and other rural enterprises. In basic agricultural production, farms are engaged in agriculture and farm forestry. Diversified farms practise both agriculture and forestry and non-agricultural entrepreneurial activity. The third category comprises small rural enterprises with no connection to farms.

In 2003 there were over 130,000 small rural enterprises, of which 39% were engaged in basic agriculture, 18% were diversified farms and 43% were other small enterprises. During the EU membership the total number of small rural enterprises has fallen as the number of basic farms has decreased very strongly. The number and relative share of diversified farms and other small enterprises has increased slightly.

About a third of the Finnish population live in rural areas, i.e. postal code areas where the population density is less than 50 persons/km<sup>2</sup>. This means that the income of the rural population and rural industries are highly significant for the national economy. The concept “rural area” can be defined in a number of ways, depending on the perspective.

### Diversified farms

Engaging in different kinds of activities has traditionally been common among farmers, but in the 1990s new kinds of operations were started more than ever before. Starting other business activities is often connected to changes in the operating environment of farms, creating new demand for the rural products and services, while new challenges to agriculture may have encouraged the farm families to seek new sources of livelihood. New operations have been started especially in the service sector. Of the new enterprises 45% engaged in machine contracting, 6% in tourism and 11% in the class “other services”.



In 2003 the number of farms practising another industry besides agriculture was 23,550, which is 32% of the Finnish farms. The number of diversified farms grew by 8% from 2000.

However, there is a great deal of variation within the group of diversified farms. In 2003 about 30% of farms engaged in other business had started this after 2000, while 27% of farms which had engaged in other business in 2000 had stopped this by 2003.

In 2003 the number of diversified farms was the greatest in Varsinais-Suomi and South Ostrobothnia, but in proportion to the number of farms in different regions their share was the highest in Uusimaa. The farms engage in various kinds of activities. The most common ones are machine contracting (38% of diversified farms), tourism, other services, and wood and food processing.

About a third of the diversified farms practice more than one business activity besides agriculture. These are often connected



to agriculture so that the farm equipment, buildings, land or products are used and the owner of the farm, the spouse, other family member or a partner in a farm company is involved in the other business.

Most of these activities (65% of farms) were also taxed together with agriculture under the Agricultural Tax Act. About a third of the other business activities practised on diversified farms is included in the Register of Enterprises and Establishments of the Statistics Finland.

Entrepreneurial activities on farms are usually quite small in scale. In 2003 on 39% of the farms their turnover was less

than € 10,000. However, on about 7% of these farms the turnover of other business activity was more than € 200,000. In recent years the share of farms with the highest turnover has been on the increase while the share of farms with the lowest turnover has been decreasing.

### Other small rural enterprises

In 2002 the number of small rural enterprises was 65,400. Their turnover totalled € 12.4 billion and they employed 107,300 persons (entrepreneur + staff). In 1997–2002 the number of small enterprises grew

#### Number of diversified farms in 2000 and 2003.

Sector	2000	2003
Diversified farms, total	21,838	23,551
<i>Industry</i>	4,786	4,141
Food processing	1,065	846
Other further processing	134	78
Wood processing	1,349	1,134
Handicraft	274	337
Energy production	959	969
Manufacturing of metal products	625	580
Other manufacturing	380	197
<i>Construction**</i>	*	697
<i>Trade</i>	1,056	1,234
<i>Services</i>	15,019	16,143
Tourism, accommodation, recreation services	2,272	2,041
Contracting	8,880	9,039
Care services	263	249
Transportation	1,055	1,083
Services to business	*	736
Horse husbandry services (renting of stables, horse training)	*	717
Other services	2,549	2,278
<i>Primary production other than agriculture and forestry</i>		1,328
Fish, crayfish etc. farming on farms	112	102
Fur farming	632	647
Reindeer husbandry	*	423
Fishing	*	156
Other	233	*

\*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.

by 2%, staff 9% and turnover by as much as 15%. Small enterprise means a company with one place of business with a turnover of at least € 8,409 which employs less than 20 persons.

Every tenth small rural enterprise operates in primary production other than agriculture. In 2003 about 14% engaged in manufacturing industry, 17% in construction and trade and 40% in services.

Service sector is the largest individual sector in rural areas as well, and it has grown further in recent years. Between 1997 and 2002 the number of enterprises increased by 7%, staff by 15% and turnover by 26%. The development of the private service sector and regional strengths receive considerable emphasis in the current Special Rural Policy Programme.

In recent decades rural tourism has received considerable emphasis as a significant industry with good development prospects. According to the rural business register, there are about 3,200 enterprises offering tourism, accommodation and recreation services in the countryside which are not linked to a farm and about 2,100 diversified farms engaged in tourism. A considerable number of enterprises are excluded from the official statistics, and the year-round accommodation capacity of these is estimated at 30,000 bed places.

Maintaining and increasing the number of jobs in manufacturing industry is considered important for the development and competitiveness of the countryside. Manufacturing industry employs about a fifth of the people working in small rural enterprises, while in the whole country 14% of the staff of small enterprises work in manufacturing industry. In recent years the number of industrial plants has decreased slightly in the rural areas, but their average size and total staff have grown.

Rural policy has emphasised the need to develop food and wood processing, which are characteristically located in the rural areas: 55% of the small food com-

panies and 67% of small wood processing plants are in the countryside. During the first years in the EU the number of companies in both sectors grew rapidly, but the growth stopped around the year 2000.

## Equine industry

Equine industry is a rapidly growing activity, which relies heavily on the rural resources and local strengths. Equine industry comprises the raising of horses, care services for horses, training, riding schools and related tourism. The total number of stables in Finland is about 15,000 and about a quarter of these are companies. About 73% of the stables operate on farms.

Each year about 200 new enterprises are established in the sector, which now employs altogether about 10,000 people, 4,000 of them full-time. The number of new jobs created annually is estimated at 250–500. In addition to this, feed production, trade, building, manufacture of equipment, veterinary medicine, competitions, and training and advice employ over 4,000 persons full-time or part-time time. The number of horses has grown by about 40% since 1995. In 2005 there were about 70,000 horses in Finland, of which about 40% were owned by farm enterprises. An estimated 90,000 ha of arable land is tied to the production of basic feed for horses.

Estimated according to the total costs, the money flows in equine industries are about € 0.34 billion. Trotting is a very popular sport in Finland. Altogether 8,000 horses start off each year at trotting races and the annual turnover of betting in horse races totals almost € 250 million. About 50,000 persons enjoy trotting races and totalizator wagering as a hobby. The number of riding schools and stables offering horse activities approved by the Equestrian Federation of Finland is more than 200 and riding is a hobby for about 120,000. The number of horse owners is 35,000.

In the past five years altogether about € 80 million has been invested in the operating environment of horse husbandry (stables, riding manages, etc.). In the next five years these investments are estimated to total over € 115 million. The investments made correspond to 40–50% of the investments in pig houses and 50–75% of those in cattle buildings.

### Fur farming

In 2005 there were about 1,600 fur farms in Finland. According to the Finnish Fur Breeders' Association, fur production employs about 22,000 persons, 5,600 of them directly and 17,000 indirectly. In terms of numbers the most common fur animals are blue fox and mink. Other fur animals farmed in Finland are silver fox, finraccoon and fitchew. Great fluctuations in the trade cycle are characteristic to the field. 98% of the fur production is exported. Finland produces 6% of the mink and 50% of the blue foxes sold in the world. The annual revenue from fur exports totals € 200 million.

### Reindeer herding

Reindeer herding is a highly significant rural business in northern Finland, also in terms of other activities such as tourism. In the reindeer herding year 2004/2005 the number of reindeer owners was 5,134, which is almost a fifth less than ten years

earlier, but the number of reindeer has stayed about the same. In 2004/2005 the number of reindeer totalled about 207,000, of which 116,600 were slaughtered. Meat production rose to about 2.86 million kg.

## 1.3. Finnish farm

### Number and size distribution of farms

In 2005 the total number of farms (over 1 ha) which had applied for agricultural support was about 69,000. During the EU membership (1995–2005) the number of Finnish farms has fallen by 28% (3.2% annually) from 95,562 by about 26,500 farms. Proportionally the decrease has been the greatest in eastern Finland (32%) and the smallest in northern Finland (23%), while in central and southern Finland the number of farms has fallen by 27%.

From 2004 until 2005 the number of farms which applied for support fell by about 2,000 (2.8%). In both absolute and relative terms decrease in the number of farms was close to the long-term average. During the EU membership the decrease was the greatest in 1995–1996 and 1999–2000, when the number of farms fell by about 4,000, which is about 5% of the total number of farms.

While the number of farms is decreasing rapidly, the average farm size is on the increase. In 1995–2005 the average size of

**Number of farms receiving agricultural support in 1995–2005.**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Whole country	95,562	91,281	88,370	85,690	82,142	77,896	75,384	73,386	72,000	71,100	69,088
Southern Finland <sup>1</sup>	43,104	41,351	39,998	38,623	37,037	35,319	34,192	33,375	32,771	32,245	31,272
Eastern Finland	17,708	16,652	16,067	15,446	14,658	13,675	13,219	12,935	12,630	12,498	12,121
Central Finland	24,794	23,694	22,914	22,072	21,108	20,019	19,443	19,023	18,656	18,458	17,986
Northern Finland	9,956	9,584	9,391	9,549	9,339	8,883	8,530	8,053	7,943	7,899	7,709

<sup>1</sup>Main regions of Uusimaa and Åland according to NUTS II have been included in Southern Finland.

Source: Support register of the Ministry of Agriculture and Forestry/Information Centre.

farms receiving agricultural support grew by 44.3% from 22.8 ha of arable land to 32.9 ha. The annual growth in the average farm size has varied from 0.5 ha to 1.5 ha. The growth is due to both the decrease in the number of small farms and increase in the number of large farms.

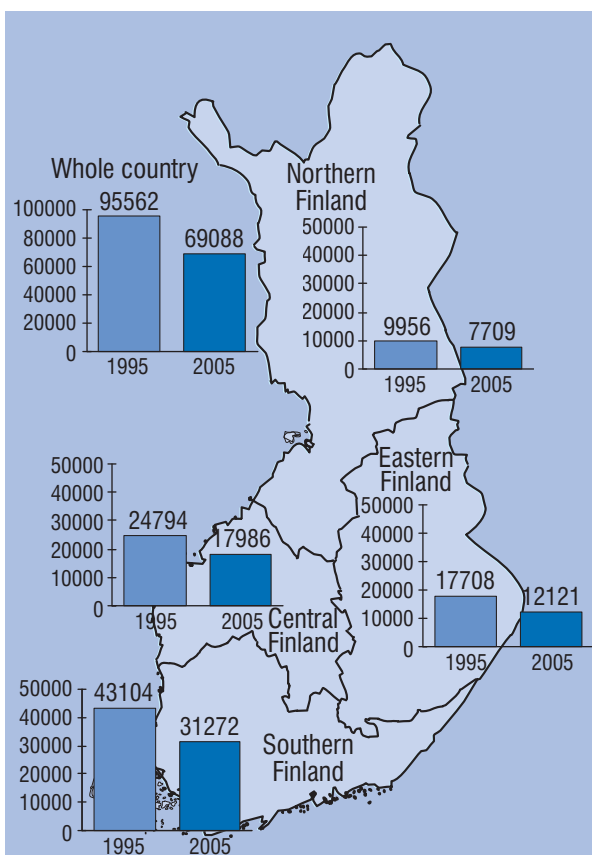
The structural change is reflected in the proportional share of the different size categories: in the past ten years the share of farms with less than 20 ha has fallen from 56% to 42% and the share of farms with more than 50 ha has almost tripled from 7% to 19.3%. However, the share of small farms is still high in Finland, and the very

large farms with more than 100 ha arable land represent only about 4% of the Finnish farms.

In the past decade about two-thirds of the growth in the farm size has occurred through leasing. In 2005 the total cultivated arable area of farms receiving agricultural support was 2.24 million ha, and about 705,000 ha (31%) of this was leased. In 2005 the leasing of arable land decreased for the first time. The leased arable area was about 35,000 ha smaller than in 2004. There is considerable regional variation in the leased area: in the territory of the Lapland and Åland Employment and Eco-

nomic Development Centres almost 42% of the arable area is leased, while in central Finland the share of leased area is less than 30%. The rapid growth in land leasing can be considered to have accelerated the structural development. The possibility to lease land has released capital of active farmers to production investments to, for example, buildings, machinery and animals. However, research results have shown some indications that the trends in the land improvements of leased land may not be as positive as that of land cultivated by the owner. The recent decrease in land leasing cannot be explained through the trade in arable land alone because, according to preliminary data, only about 6,500 of arable land was sold.

The machine capacity needed for arable farming is quite high relative to the average cultivated area. Besides the small farm size, this is due to the short growing season and uncertain cultivation conditions. Cooperation in the use of machinery is difficult due to the short optimal periods for arable farming operations and



**Number of farms receiving agricultural support in 1995 and 2005 (main regions of Uusimaa and Åland according to NUTS II have been included in Southern Finland). Source: Support register of the Ministry of Agriculture and Forestry/Information Centre.**

### Size class distribution and average arable area of farms receiving agricultural support in 2005<sup>1</sup>.

Arable land	Southern Finland <sup>2</sup>		Eastern Finland		Central Finland		Northern Finland		Whole country			
	Number of farms	%	Number of farms	%	Number of farms	%	Number of farms	%	1995 Number of farms	%	2005 Number of farms	%
<10 ha	5,466	18	2,649	22	3,419	19	1,582	21	22,850	24	13,116	19
10–20 ha	6,757	22	3,105	26	4,484	25	1,538	20	30,698	32	15,884	23
20–30 ha	5,209	17	2,169	18	3,360	19	1,230	16	19,669	21	11,968	18
30–50 ha	6,408	21	2,379	20	3,666	21	1,628	21	15,414	16	14,081	21
50–100 ha	5,470	18	1,409	12	2,402	13	1,319	17	5,706	6	10,600	16
>100 ha	1,706	6	223	2	469	3	307	4	784	1	2,705	4
Number of farms	31,016		11,934		17,800		7,604		95,121		68,354	
Average arable area, ha/farm	36.23		28.24		29.82		33.53		22.77		32.86	

<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: Support register of the Ministry of Agriculture and Forestry/Information Centre.

small size of the parcels, which does not allow farmers to take full advantage of efficient machines. In 2004 the average size of base parcels was 2.3 ha. It varied from over 3 ha in southern Finland to less than 2 ha in eastern and northern Finland.

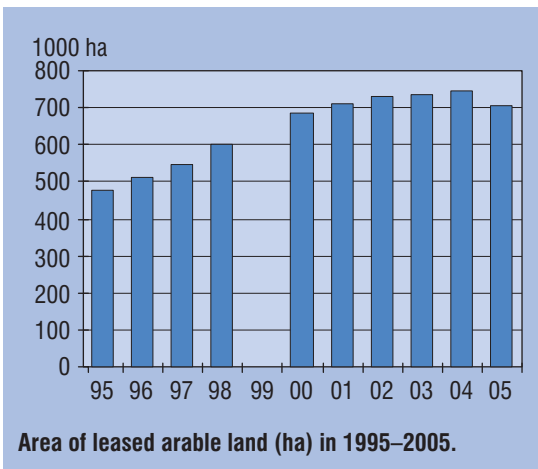
Finnish agriculture is based on family farms: 88.5% of farms receiving support are privately owned and 10.4% are owned by heirs and family companies and corporations. Cooperatives, limited companies and production rings own 0.8% of the farms and 0.1% are owned by the State, municipalities, schools and parishes.

The average age of farmers is 50 years. Since 1995 the average age of farmers has risen by almost three years, partly as a result of the small number of farms transferred to the next generation.

The Agricultural Enterprise and Income Statistics show that, on the average, there has been no major change in the relationship between the turnover and result of agriculture and the debts. However, the data of these statistics involve certain problems, for example, the value of leased land, which is comparable to loan capital, is not taken into account when considering the

debts and obligations. Depending on the valuation of leased land, its capital value may even have exceeded the sum of the other debts, both because of the rapid increase in leasing and the increase in land prices.

The loan capital derived from financial institutions is quite unevenly distributed. About 15% of dairy and pig farms and 40% of cereal farms were free from debt. The share of farms where the debts exceed the annual turnover was 18% in dairy and pig farming and 22% in cereal farming.



Area of leased arable land (ha) in 1995–2005.

## Production structure of farms

Measured by the number of farms, the production structure of Finnish agriculture has changed considerably during the EU membership. The share of livestock farms has fallen while the share of crop farms has increased clearly. In 2005 36% of the farms which applied for support were livestock farms and 59% were crop farms, while in 1995 the share of livestock farms was 52% and that of crop farms was 39%. However, no major change has occurred in the share of livestock production in the return at market price, which was 82% in 2005.

In 2005 about 16,400 farms practised dairy husbandry as their main production line. This is almost 24% of the farms that received agricultural support. In 1995–2005 the number of dairy farms fell by about 15,600, by about 6.5% a year. Based on the total value of the production dairy husbandry is still the most significant type of agricultural production in Finland. In recent years it has accounted for about half of the return on agricultural production at market price (47% in 2005). Proportionally the share of dairy farms is the greatest in eastern and northern Finland (39%).

The number of farms specialising in pig husbandry was about 3,150, and these represent about 4.6% of the farms that applied for support. In 1995–2005 the number of pig farms fell by almost 50%, i.e. 7% per year. Of the pig farms 1,175 specialised in piglet production, 933 farms specialised in pigmeat and 1,041 farms practised combined pig production. Most of the piglet and pigmeat farms are located in southern and western Finland. Pigmeat represents about 16% of the return on agricultural production at market price, and in terms of the value of the production it is the second most important agricultural product after milk.

In 2005 about 4,430 farms (6.4% of all farms), specialised in beef production, and the share of beef in the value of agricultural production was almost 11%. In

1995–2005 the number of these farms fell by about 4,600, which is about 7% per year. The decrease in the number of farms fell much more rapidly during the first years in the EU than in 2001–2005.

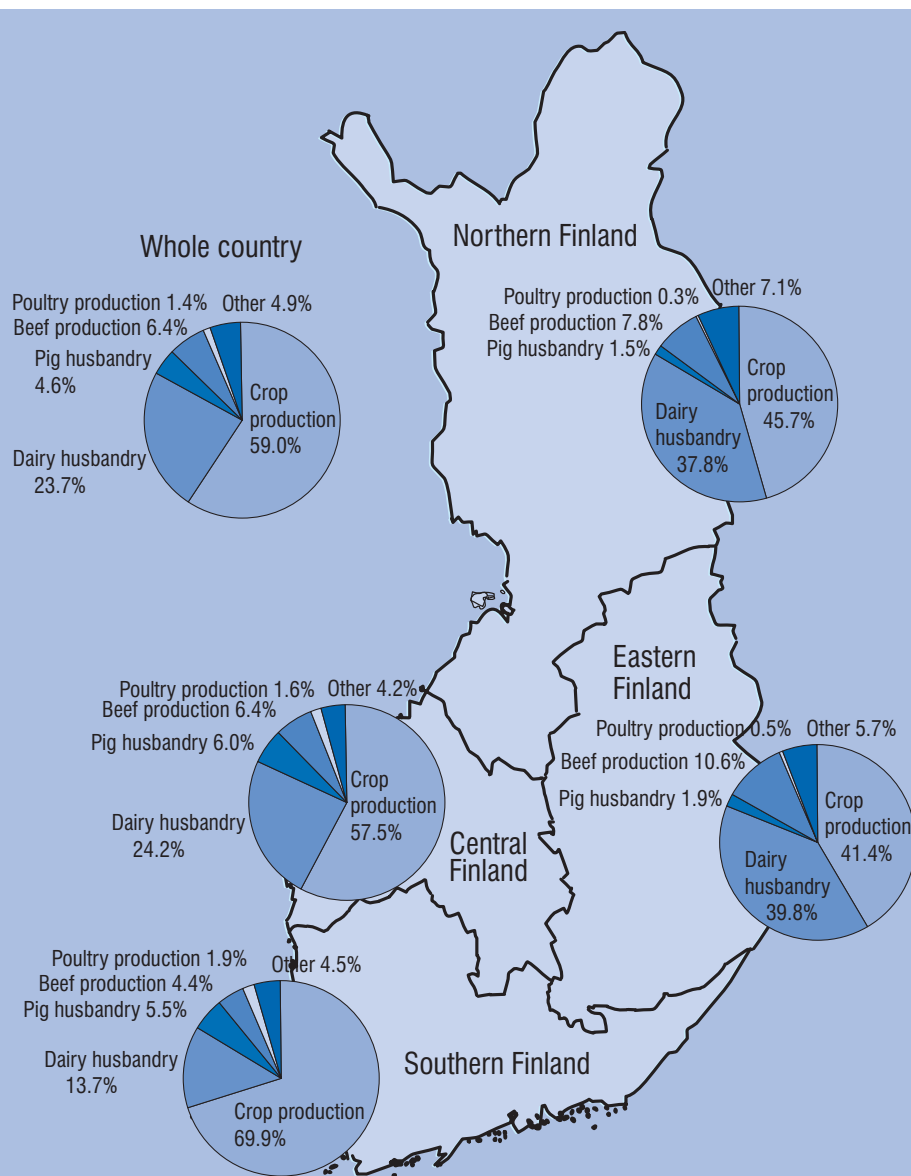
The number of poultry farms was 972, which is about 1.5% of the farms that applied for support. During the EU membership the number of poultry farms has decreased the most, by about 9% per year. In 2005 about 60% of these specialised in egg production, 28% in poultry meat production and 12% were breeding units. The regional distribution is similar to that of pig husbandry, i.e. the production is concentrated to southern and western Finland.

More than half of the farms that receive agricultural support specialise in crop production (59%). This is the only main agricultural sector where the number of farms has been growing in recent years. In 2005 there were about 3,500 crop farms more than in 1995. More than half of the crop farms are located in southern Finland and about a quarter are in central Finland. In 2005 the share of crop production in the return on agricultural production at market price was almost 18%.

Forest is an integral part of Finnish farms. In 2005 the average forest area of farms receiving agricultural support was 46 ha. Regional variation is great: in central Finland the average forest area of farms is less than 30 ha, while in Lapland it is over 100 ha. The income from forestry per farm is the highest in South Savo and lowest in Åland.

The preconditions for agriculture, its current structure and development prospects vary considerably in the different parts of Finland. During the EU membership agriculture has concentrated both regionally and on the farm level. The production is falling rapidly in the remote areas, both nationally and regionally. The production is concentrating to large farms, which means that the share of the large units in the total production is growing.





**Distribution of farms receiving agricultural support according to production line in 2005 (main regions of Uusimaa and Åland according to NUTS II have been included in Southern Finland). Source: Support register of the Ministry of Agriculture and Forestry/Information Centre.**

## 2. AGRICULTURAL AND FOOD MARKET

### 2.1. Arable crops

The crop year 2005 was better than normal. The total cereal yield was 4.058 bill. kg, which was 12% higher than in 2004. The area sown was about the same, a little under 1.2 million ha. One indication of the good conditions is that the difference between the sown and harvested area was only 2,000 ha, while in 2004 it was as much as 94,000 ha.

#### Weather conditions

The weather of summer 2005 was characterised by quite long record warm spells. The average temperature of the year varied from about 6 degrees Celsius in the south to about zero in northern Lapland. In the southern and central parts of the country the year was the tenth warmest in the past hundred years, while in the north it was the third warmest.

January and November were exceptionally mild in Lapland, 5–6 degrees warmer than the average of 1971–2000. The lowest temperature of 2005, –36.5 degrees, was measured on 29 January in Salla in Lapland and the highest, 30.8 degrees was reached in Inari on 9 July, also in Lapland.

The conditions during the growing period were normal. In the south the growing season started at about the usual time (25–26 April), but it lasted longer than usually (until 22 October). In central Finland the growing period started and ended at about the normal time, but in Lapland the growing season was shorter than usually. However, even if the growing season was somewhat short in the north, it was very intensive. The temperature sum was clearly above the normal, in certain areas such a high temperature sum is reached only once in one hundred years. In Helsinki the tem-

perature sum was 1,558 degrees (long-term average 1,337), in Jyväskylä 1,304 degrees (1,127) and in Sodankylä 931 degrees (770).

The months of May, July and August were quite rainy. The early part of the growing season was very wet especially in eastern Finland, and at the worst the sowing had to be stopped for two weeks due to the rains.

In 2005 the precipitation was between 550 and 750 mm in almost all parts of Finland, on the coast and in Lapland about 500 mm. In many places in southern and central Finland this is only slightly above the normal, but in northern Finland the precipitation was as much as 20–40% higher than the average.

#### Areas and yields

The surface area of Finland is 33.8 mill. ha, of which about 2.2 mill. ha (6.5%) is utilised agricultural area. The total cultivated area (incl. fallow) is 2,234,000 ha. Since 1999 the cultivated area has grown steadily by altogether 57,800 ha. Between 2004 and 2005 the cereal area decreased by 3%, grass area stayed about the same and area set aside grew by 23%. In the past five years the cereal area has grown by 2%, while the grass area has decreased by 7%. Of the cereals the area under winter wheat decreased proportionally the most, by 76% (over 36,000 ha), while the area of spring wheat grew the most, by 8% (15,700 ha). Of the area under grasses the pasture area grew by 5% and the area of dry hay by 16%.

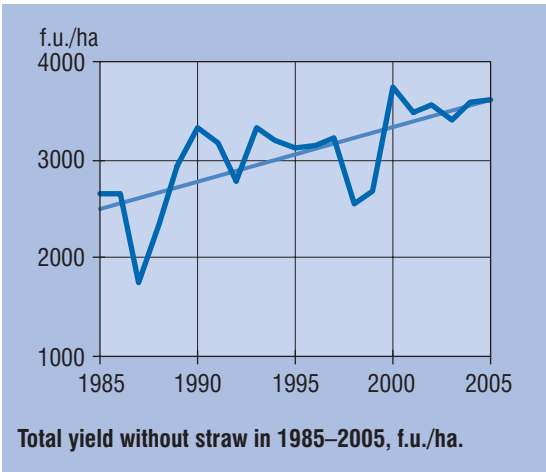
The total yield of fodder cereals, oats and barley, was 5% higher than in 2004. The area under fodder cereals was about the same, which means that the growth was due to higher hectareage yields. In the earlier years the area under barley was growing



while the oats area has been on the decrease. The hectareage yield of barley was 3,540 kg/ha and oats 3,110 kg/ha. The quality was quite good.

The production area of bread cereals has grown over the past seven years, but the variation from one year to another has been great. In 2005 the total yield of bread cereals was 833 mill. kg, which is 1% less than the year before. The area under bread cereals was 14% smaller than the year before, but the yield levels of winter and spring wheat were higher. The area of spring wheat has almost doubled in the past seven years, but the area of winter wheat has varied strongly in recent years and in 2005 it fell to about a quarter from the year before.

The total spring and winter wheat yield harvested in 2005 was 801 mill. kg. The annual domestic need for wheat is 650 mill. kg. On the average the hectareage



yields of bread cereals were slightly higher than before, but wheat suffered from quality problems. The production of wheat which meets the quality requirements for bread cereal, i.e. protein at least 11.5%, Hagberg falling number 180 and minimum weight per hectolitre 78 kg, totalled about 257 mill. kg, which was 32% of the total

#### Harvested areas and yields of main crops in 2004 and 2005.

	Area 1000 ha	2004 Yield 100 kg/ha	Total million kg	Area 1000 ha	2005 Yield 100 kg/ha	Total million kg
Winter wheat	46.7	35.3	165	11.6	38.5	45
Spring wheat	178.5	34.6	617	203.2	37.2	756
Rye	26.9	23.2	62	14.2	22.9	32
Barley	531.8	32.4	1,725	594.0	35.4	2,103
Oats	325.8	30.8	1,002	345.4	31.1	1,073
Mixed cereals	16.2	27.3	44	16.3	29.4	48
Peas	2.7	20.5	6	3.7	22.0	8
Potatoes	27.3	227.0	619	28.9	257.0	743
Sugar beets	30.3	350.9	1,064	31.2	379.3	1,183
Dry hay	91.1	37.3	339	107.1	35.3	338
Green fodder	16.4	99.7	163	16.4	116.1	190
Silage	412.4	184.5	7,611	397.5	174.0	6,915
Turnip rape	65.7	10.9	72	72.6	13.8	100
Other crops	35.2			44.8		
Pasture	86.9			91.5		
<b>Total</b>	<b>1,894.7</b>	<b>3,592<sup>1</sup></b>	<b>6,388<sup>2</sup></b>	<b>1,978.4</b>	<b>3,616<sup>1</sup></b>	<b>6,796<sup>2</sup></b>
Set aside	195.9			241.0		

<sup>1</sup> f.u./ha without straw, <sup>2</sup> million f.u. without straw, <sup>1,2</sup> new feed unit coefficients.

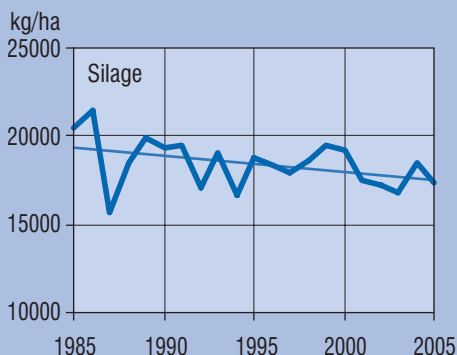
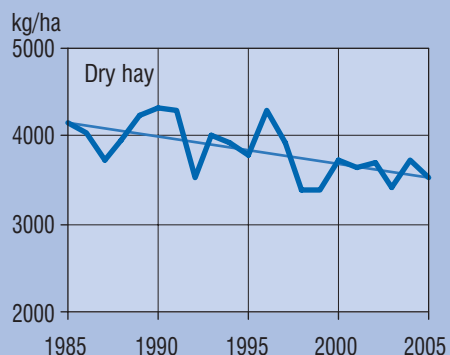
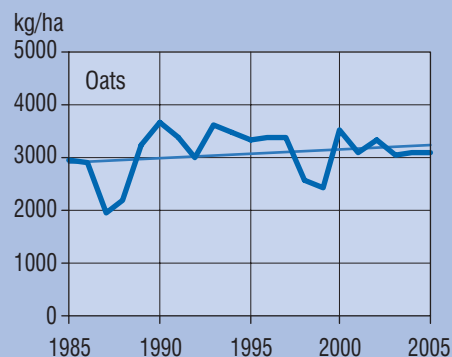
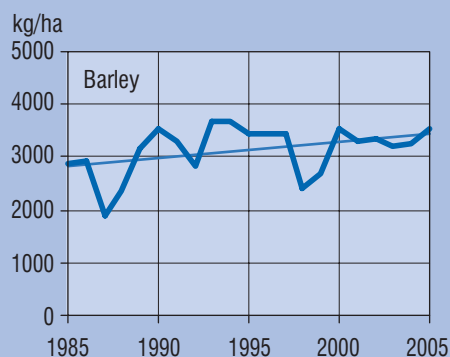
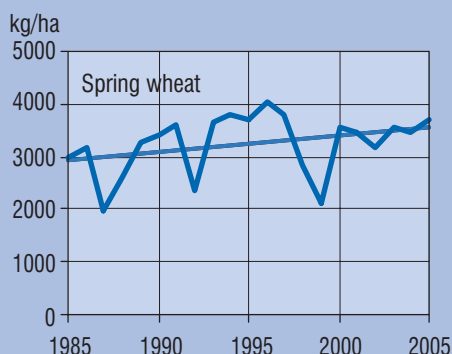
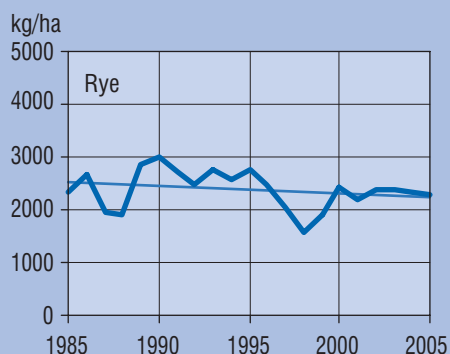
Source: Information Centre of the Ministry of Agriculture and Forestry.

wheat yield. Of the winter wheat 10% and 33% of the spring wheat met the requirements for bread cereal. 64% of the wheat, 515 mill. kg, qualified for intervention.

The total yield of rye was 32.4 mill. kg, which was only about half of the crop in the previous year. The reasons for this were the poor sowing conditions in the autumn and about 50% smaller areas sown. The harvesting of rye suffered from the abundant rains, and the Hagberg falling number col-

lapsed. Only about a third of the small rye crop qualified to be used as bread cereal. The average weight per hectolitre, 71 kg, was a little higher than in the two previous years and the Hagberg falling number was also lower. In only 30% of the samples the Hagberg falling number was over 120 and in 50% of the samples it remained below 90. The share of stunted grains was a little lower than the year before.

The area sown with winter cereals in



**Yields of main crops in Finland from 1985 to 2005. Source: Information Centre of the Ministry of Agriculture and Forestry.**

autumn 2005 was almost a third larger than the year before. 13,000 ha of rye was sown, which was almost a third more than the rye area harvested in the autumn. Direct sowing was used on about 3,300 ha, i.e. about a quarter of the area. The rye area is still so small that the share of foreign rye in Finnish rye bread will stay high. The self-sufficiency in rye is 32%.

In 2005 winter wheat was sown on 30,300 ha. In recent years the wheat area has varied considerably. Now the area sown was almost three times larger than the harvested wheat area. Direct sowing was used on about a third of the winter wheat area, 11,000 ha.

The total silage yield was 6,915 mill. kg, which was 9% smaller than the year before. The dry hay area grew slightly to 107,200 ha. The area under silage was 397,500 ha, which was a little smaller than the year before.

The total potato yield was 742.7 mill. kg, which was 21% higher than the year before. The hectare yield was the second highest ever. The average hectare yield was 25,700 kg.

The yield of sugar beets totalled 1,183.3 mill. kg, which was 11% higher than in 2004. The cultivated area grew by 2% from the year before to a total of 31,300 ha. The hectare yield grew by 8% from the year before. The quality of most

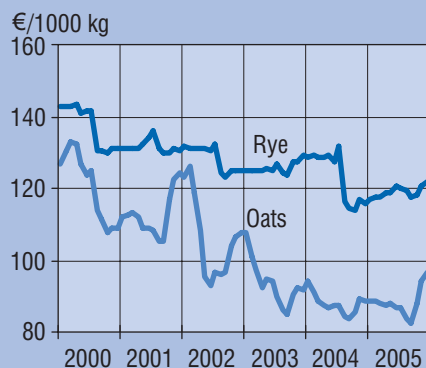
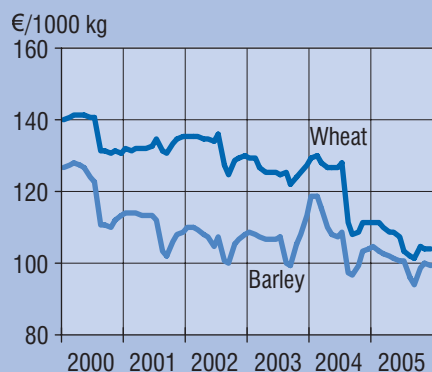
of the crop was good and there was little dirt. In the Salo processing plant the sugar content was 16.7–18.2 and in the Säkylä plant 15.8–17.3%.

In 2005 turnip rape and oilseed rape were cultivated on 76,500 ha and the yield totalled 106 mill. kg. The yield was clearly higher than the year before and in fact the best in the past decade. The average hectare yield was 1,380 kg. The quality of turnip rape was also above the average: the average chlorophyll content was 5 mg/kg and oil content was 39.8%, while the weed content was only 3.2%.

### Market prices for arable crops

On average the prices paid for all cereals in 2005 were 6% lower than the year before. The average price for fodder barley fell by 7% from the year before to 100 €/tonne. A similar decrease took place in the price for malting barley, which has been falling steadily for a couple of years. In December 2005 it was only 108.53 €/tonne, while in January 2004 it was still 133.06 €/tonne.

In the early part of the year the oats prices fell clearly in the same way as the year before, but the prices rose again strongly in the last three months of the year. The average price quoted for the year was 88.15 €/tonne, which was about the same as the year before. After the decrease in the price



Market prices of cereals in Finland from 2000 to 2005. Source: Information Centre of the Ministry of Agriculture and Forestry.

for barley, the price levels of oats and barley are again getting closer to each other. In January 2005 the price for fodder barley was 15% higher than that for oats, but in December the price difference was only 3%.

In autumn 2005 about 1.1 bill. kg of oats were harvested, of which 830 mill. kg goes to domestic consumption and almost 300 mill. kg remains to be exported. Oats is not an intervention crop, which means that it is more sensitive to price fluctuations than the other cereals.

The oats crop harvested in Canada in autumn 2005 totalled 3.4 mill. kg, which was 7% less than the previous year. The average yield was 2.59 tonnes per hectare. The decrease in the total yield kept the world market prices on a high level. In November-December the world market price for oats rose by 20% to 97 €/tonne. The rise was caused by the poor harvesting conditions in Canada, which left an unusually large share of the crop to the fields and the harvested crop also suffered from quality problems. The rise in the world market price has not been directly reflected in the Finnish producer prices, which have risen mainly because of the demand on the internal market of the EU. The decrease in export subsidies has also curbed the increase in the prices in Finland. The decrease in export subsidies has followed the increase in the oats prices quite closely. In the next growing season oats produc-

**Market prices of cereals in Finland from 1995 to 2005, €/1000 kg.**

	Rye	Wheat	Barley	Oats
2005	118.41	106.21	99.51	87.13
2004	120.90	119.80	106.51	87.32
2003	124.88	126.66	105.57	92.21
2002	126.57	131.79	106.00	104.38
2001	131.31	132.36	109.66	111.37
2000	131.19	134.55	119.41	117.73
1999	142.96	137.91	122.78	114.37
1998	146.32	142.96	122.78	111.00
1997	149.69	148.01	124.46	117.73
1996	151.37	153.05	126.14	124.46
1995	149.69	146.32	122.78	117.73

*Source: Information Centre of the Ministry of Agriculture and Forestry (Grain bulletin and Monthly Review of Agricultural Statistics).*

tion is expected to increase in Canada because of the reasonable price level and low production costs of oats compared to the other crops.

The average prices for bread cereals in 2005 were lower than in the preceding year, but towards the end of the year the price for rye started to rise closer to the long-term average. In the early part of the year the market price for wheat was 14% lower than during the same period the year before and the opening prices in the autumn were 6% lower than in the previous autumn. In the main wheat producing countries of the EU the prices fell even more, on average more than 20%.

In 2005 the average price for turnip rape and oilseed rape was 16% lower than in 2004. In the early part of 2005 the prices for oilseed crops were low, but the long-term average was reached towards the end of the year. The price is determined according to the world market prices quoted in MATIF in Paris.

Because of the high potato yield harvested in autumn 2005 the prices fell to a lowest level for many years. The average price for food potato, 187.36 €/tonne, was 18% lower than in 2004.

**Market prices of cereals in 2005, €/1000 kg<sup>1</sup>.**

	Rye	Wheat	Barley	Oats
Finland	118.09	109.58	101.70	87.84
Sweden	97.14	100.65	90.91	69.97
Denmark	91.26	100.44	102.45	98.52
Germany	85.78	94.72	94.51	76.87
France	-	-	-	-
England	-	103.22	99.05	95.04
Spain	116.49	132.86	119.19	129.95

<sup>1</sup>The prices of the 1st half of the year as unweighted averages.

Source: Eurostat.

## Climate change brings new opportunities and challenges to Finnish crop production

*Pirjo Peltonen-Sainio, Kaija Hakala, Timo Kaukoranta, Kristiina Regina and Kari Tiilikkala*

Climate change progresses as a self-reinforcing process. Measures to mitigate it allow us to slow down the change, but it cannot be stopped. So far we also do not know whether the recent exceptional weather events are to be seen as indications or even results of climate change. Last year was exceptionally warm in the history of the world's climate and the names for extreme weather events, hurricanes and typhoons, also typical of climate change almost started to run out before the year was over. In recent summers the Mediterranean countries have suffered from extreme drought and forest fires. These observations are surprisingly close to the anticipated impacts of climate change. However, as yet we cannot be sure which of the events are still to be attributed to random variation and which are caused by warming. Because random variation may obscure the trends, the "truth" will only be revealed later on, as the years go by.

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### Focus of European agriculture shifts to the north

Climate change will not treat different regions in an equitable way, and it may not be the harshest to those who promote it or vice versa. Strengthening greenhouse effect will neither change production conditions similarly within Europe. Southern Europe and gradually also Central Europe is likely to suffer from an increasingly severe drought, which restricts agricultural production very strongly and may in some places even put an end to it, as well as noxiously high temperatures. The climate in northern Europe will become milder, which means that the focus of European agricultural production is likely to move gradually to the north. Many of the anticipated changes benefit farming in the north, but the rate of the change, dramatic variations in the weather that are to be expected and the negative factors involved give justified cause for uncertainty.

The rate at which climate change proceeds is not known, and there are several climate scenarios instead of just one. What the scenarios have in common is the change in temperatures over a couple of nearest decades, but when forecasting the situation in the middle of the current century the scenarios start to differ from each other considerably. Compared to the figures for 1961–1990, the mean temperature in Finland is forecast to rise, taking account of the annual variation, from a little more than 1 degree to about 3 degrees by 2040. The temperatures of the winter and spring months will rise much more strongly than those of the summer and autumn.

According to the slowest forecast the changes will remain almost invisible in the next couple of decades, but in the scenario with the most rapid trend the temperature conditions in Finland will start to resemble those now prevailing in southern Sweden, the Baltic States and Poland quite rapidly. In this case the conditions now prevailing in southern Finland would move to the central parts of the country. The temperature sum for each following decade would be 50–200 degree days higher, which means that the growing period would be a couple of days to one and a half weeks longer. According to the forecasts, the warming would continue after this, but how strong it will be depends on the amount of greenhouse gas emissions.

## **Responding to the challenges is required to fulfil the potential**

Sectors to be affected the most by climate change are forestry as well as agriculture and horticulture. The longer growing season described above offers the opportunity to increase the diversity of farming through new crops and varieties with a longer growing season, possibly with new winter crops and varieties. Horticulture may also become increasingly diverse and spread to a wider area. However, the impact of climate change on the production of perennial horticultural crops in Finland and northern Europe has not been studied. In Canada there is one, partly model-based study on the impacts of the change. In the same way as in the case of forest trees, the weather during the winter season will determine the location where the plants will survive.

Work under the Finnish Research Programme on Climate Change (SILMU) showed through model plants how the rise in the temperature and increase in the carbon dioxide content of the atmosphere increase the production potential of arable crops considerably. However, growth in the yield potential alone does not mean that this phenomenon would be positive for agricultural production in Finland. There are other important questions, such as how the climate as a whole will change, do the risks and uncertainties increase so that the anticipated yield potential will not be fully realised, and if this is the case, to what extent. The most significant factors that may restrict plant production concern the sufficiency and annual distribution of precipitation, success of autumn sown plants and varieties, incidence of pests, and the long day conditions.

### **Production risks and uncertainty may increase**

Annual precipitation is forecast to increase slightly, but the rains are more abundant especially during winter. Dry spells in the early part of the growing season are the most significant factor which causes uncertainty and annual variation in the production of arable crops in Finland. Drought may become even more decisive in the future. The longer growing season and increased growth potential lead to more luxurious vegetation which requires more water. If the total precipitation during the growing season stays almost at the current level, the shortage of water may become a serious obstacle to the production. There is also the risk that extreme weather events typical of climate change, such as heavy rains, become increasingly common. If a larger share of the rain-fall during the growing season comes as heavy rain, the cost-benefit ratio of the precipitation becomes much weaker.

It is customary to associate the future growing conditions in Finland with those now prevailing in Central Europe simply by comparing the changes in the temperature. However, the future growing conditions in Finland cannot be associated with the conditions prevailing anywhere in the world. Climate change will not alter the length of the day and amount of daylight, which are the main factors why our conditions are so exceptional, also in the future. The abundant daylight is likely to restrict the realisation of the higher yield potential resulting from climate change, because it accelerates the development of many crops. This means that it may not be possible to take full advantage of the opportunities offered by the longer growing season. On the other hand, the possibility to increase the cultivation area of winter varieties is an important opportunity with various implications. However, the anticipated milder winters do not reduce the risks and uncertainty of overwintering because of the possible increase in extreme weather events.



**Mean temperature and precipitation changes and their upper and lower ranges (in parentheses) in Finland according to two IPCC climate scenarios. The CO<sub>2</sub> emissions are growing rapidly in the consumer society scenario (A2) and slowly in the scenario aimed at sustainable development (B2).**

Time	Temperature rise (°C)		Precipitation change (%)	
	Scenario A2	Scenario B2	Scenario A2	Scenario B2
Winter				
2010–2039	2.2 (1.2–4.5)	2.6 (1.8–4.4)	9 (–1–32)	11 (1–26)
2070–2099	6.8 (5.9–8.7)	5.1 (3.8–7.4)	28 (14–60)	20 (7–49)
Spring				
2010–2039	2.1 (1.1–3.4)	2.2 (1.1–4.2)	6 (–2–16)	12 (2–25)
2070–2099	5.6 (3.5–9.4)	4.4 (2.8–8.1)	21 (8–44)	17 (5–31)
Summer				
2010–2039	1.2 (0.6–1.6)	1.3 (1.1–1.5)	4 (–5–12)	4 (–7–17)
2070–2099	3.4 (2.4–4.3)	2.5 (2.0–3.2)	3 (–8–12)	5 (–3–14)
Autumn				
2010–2039	1.8 (1.1–2.6)	1.7 (0.9–2.9)	6 (1–14)	7 (3–15)
2070–2099	4.5 (2.9–5.6)	3.3 (2.1–4.4)	15 (8–28)	15 (3–31)
Year				
2010–2039	1.8 (1.3–2.8)	2.0 (1.5–2.8)	6 (2–13)	8 (3–16)
2070–2099	5.1 (4.4–5.9)	3.8 (3.0–5.0)	15 (8–29)	14 (6–28)

Source: Jylhä, K., Tuomenvirta, H. & Ruosteenoja, K. 2004. Climate change projections for Finland during the 21st century. *Boreal Environmental Research* 9: 127–152.

Experience from the practical farming at present has already produced anticipation on the effects and risks of possible climatic changes on plant production. In addition to the problems due to the varying wintering conditions and drought, new diseases have already now increased the use of pesticides, as the occurrence of pathogens and pests (plant lice, mites, sugar beet nematode) have increased, and immigrant species (Colorado beetle, *Arion lucitanicus*/Spanish slug) have spread further to the north. The sales statistics of plant protection products have already turned into an increase. Uncertainties weaken the cost-benefit ratio of the input use considerably, which erodes our competitiveness and poses special challenges to the sustainable use of natural resources.

Milder spells during winter and higher summer temperatures accelerate the microbial activity in the soil, while the runoff through the soil in winter increases. These changes are going to increase the leaching of nitrogen in the future. Recent results also indicate that soil erosion may increase during mild winters on lands that are not covered by vegetation, while land that is under permanent vegetation reacts far less easily. Annual greenhouse gas emissions from arable lands will also be growing, which involves the risk that the carbon stocks in agricultural land may be diminishing.

### **Adjustment to climate change calls for anticipation**

The expected growth in the yield potential due to climate change and increasingly diverse range of species and varieties available cannot be taken full advantage of without proper anticipation and preparation. For the success of our agriculture and horticulture it is important to recognise both the positive and negative factors influencing the future success of the crops and our competitiveness. We may be capable of adjusting to many factors, especially the positive ones, quite spontaneously, but we should also prepare for the possible restrictions to allow enough reaction time to correct the situation.

## 2.2. Livestock production

### Milk

The amount of milk delivered to dairies in 2005 totalled about 2,293 mill. litres, which was 0.5% (10 mill. litres) less than the year before. According to the figures for the yield in the early part of the year, the production was decreasing even more than this, but the change remained smaller as the production increased after July. The high yields towards the end of the year were affected by the high quality and quantity of grass crop yield. The average yield of dairy cows rose by 1.4% from the year before, up to 7,505 litres.

Milk production in Finland fell 46 mill. litres short of the national quota for the period that ended in 2005. According to the forecast of the Gallup Food and Farm Facts, in the quota period 2005/2006 milk production in Finland remained 36 mill. litres below the national quota, in which case the quota would be filled up to 98.5%. Calving is forecast to decrease but the yield level should rise during 2006. Thus in 2006 milk production would total 2,295 mill. litres.

At the end of 2005 there were 15,351 milk producing farms in Finland. According to the data for December, organic milk was produced on 133 farms. A little over

a thousand farms quit milk production, which means that the number of farms delivering milk to dairies decreased by 6.5%. By December 2005 the number of dairy cows had fallen to 312,900 (–4,900 cows and –1.5%). The change in the number of cows was smaller than the year before. The slaughtering of cows decreased by 7%.

In the summer the average herd size exceeded 20 cows. During the year 2005 the average herd size grew by about 0.9 cows. However, the herd size in Finland is still clearly smaller than on the most other EU-15 Member States.

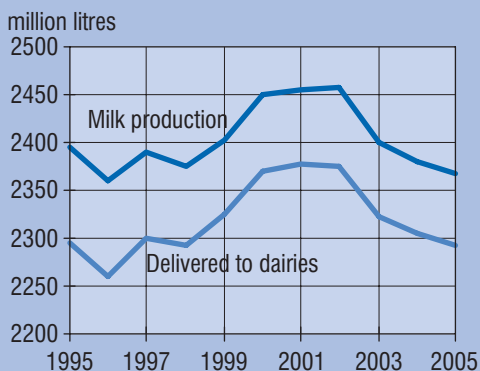
The consumption of milk and butter-milk fell by about 1%. The consumption of yoghurt grew by almost 5% and the imports increased by 7%. The total imports of fresh dairy products increased as well. The production of milk powder increased to over 23 mill. kg.

The production of butter fell by 2% and domestic consumption of butter by 12% in 2004–2005. The butter stocks diminished, despite the slight decrease in exports. The ratio of domestic consumption to domestic production in butter fell to 24%. Butter-vegetable oil mixes are manufactured for the domestic market.

Cheese consumption increased by 2%. The share of other cheeses in the consumption grew at the cost of the traditional Emmenthal and Edam cheeses. Cheese imports increased by 14%, and now imports represent approximately a third of the cheese consumption in Finland. The situation is balanced by the fact that a growing share (38% in 2005) of the domestic cheeses are sold on the export market.

### Beef

Finland's position as a net importer of beef strengthened, and now imports satisfy already 14% of the consumption. Beef production of slaughterhouses totalled 84.6 mill. kg (–7%)



**Milk production and the amount of milk delivered to dairies in Finland from 1995 to 2005.**



and slaughtering at farms 2.1 mill. kg. The production remained smaller than the year before especially in the early part of the year. Beef consumption fell by about 1% to 95.4 mill. kg.

In 2005 altogether 158,000 adult male bovines and 97,000 cows were slaughtered at slaughterhouses. The average slaughter weight of bovines was about the same as in 2004, but in the long term the average slaughter weights have risen considerably. For example, the average weight of male bovines slaughtered in 2005 was about 318 kg, while in 2000 it was only about 275 kg.

The number of suckler cows was 13% higher than in 2004, and in December 2005 the total number of suckler cows in Finland was 35,700. The number is forecast to increase further in 2006.

Beef exports decreased by almost 70% to only 1.6 mill. kg, while imports grew by 37% to 13.6 mill. kg. Almost 80% of the exports went to Sweden. Beef exports from Brazil and Denmark grew the most, while imports from Sweden decreased.

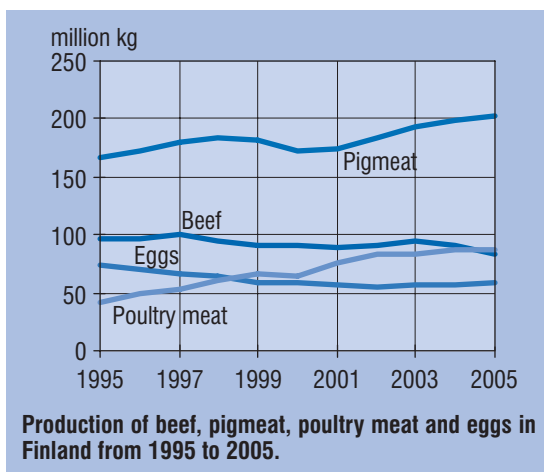
Beef production in the EU is likely to decrease in 2006, due to the decoupling of CAP subsidy payments.

## Pigmeat

Pigmeat production totalled a little over 203 mill. kg in 2005, which is 3% more than the year before. The average slaughter weight of pigs rose by almost 0.5 kg. The number of pigs slaughtered, 2.4 mill., was 2% higher than in 2004. In recent years the average slaughter weight of fattening pigs has been 82–83 kg, but the seasonal variation has been greater.

Pigmeat consumption totalled about 175 mill. kg, which was about 1% less than the year before. It was estimated that the position of domestic ham strengthened on the Christmas market.

Pigmeat is the most important export



article of the Finnish meat industry. In 2005 pigmeat exports exceeded 40 mill. kg (+4%). Most of the pigmeat exports are to Japan, Russia, Estonia and Sweden, which represent almost 70% of the carcass meat exports. Exports to Russia grew by about a fifth and the amount of pigmeat in the stocks by about a third. Imports of fresh pigmeat to Finland decreased whereas the imports of meat products increased by 28% from 2004. The most important trade partners were Denmark and Germany, which in the past couple of years have represented about 80% of the carcass meat imports. Most of the meat products come from Sweden and Germany. Pigmeat exports represented about 20% of the production and the share of imports in the consumption was 9%.

The number of piglets traded via the largest slaughterhouses was almost 5% higher than in 2004. The number of sow farms fell by 11%, whereas the number of sows was almost the same as in 2004. No increase in the number of pig places is expected in 2006, because the ban on the application for investment aid for pig husbandry remains in effect.

According to a forecast by the Gallup Food and Farm Facts, pigmeat production should rise to 205 mill. kg in 2006. The consumption is forecast to rise by 1% to about 178 mill. kg. In the EU, 15 old

## Livestock production in Finland from 1995 to 2005<sup>1</sup>.

	Dairy milk million l	Beef million kg	Pigmeat million kg	Eggs million kg	Poultry meat million kg
2005	2,293	85	203	57	87
2004	2,304	91	198	57	87
2003	2,323	94	193	56	84
2002	2,376	91	184	55	83
2001	2,378	90	174	57	76
2000	2,371	91	173	59	64
1999	2,325	90	182	59	66
1998	2,300	93	184	64	61
1997	2,301	99	180	67	53
1996	2,261	96	172	71	49
1995	2,296	96	168	75	43

<sup>1</sup>Starting from July 1, 1995 the hot weight reduction is 2%.

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

Member States produce 85% of the pigmeat, but production is expected to shift to the new Member States, where the production costs are low and the demand is expected to increase. According to an estimate by the European Commission, in 2006 pigmeat production in the EU should be about 21.3 mill. tonnes and consumption 19.9 mill. tonnes.

### Poultry meat

Production of poultry meat seems to no longer increase in Finland as in 2004 and 2005 the production has been around 87 mill. kg. Instead, poultry meat consumption increased by about 1% to 84 mill. kg in 2005. Poultry meat exports increase by 3% and imports by 14%. In 2006 poultry meat consumption is estimated to rise to 85 mill. kg and production to 88 mill. kg.

Broiler production totalled 72.2 mill. kg (+1%) in 2005. Broiler consumption rose to 69.5 mill. kg (+3%). Broiler exports grew by more than 4% and imports by as much as one third. Especially the exports to Estonia and Germany increased considerably whereas exports to Russia and Lithuania decreased. Of the product labels the exports of winged pieces, which rep-

resent about a third of the exports, grew the most. Most of the broiler meat imports were from Brazil, Denmark, Germany and France. Imports from Brazil doubled. Broiler meat imports as boneless pieces more than doubled as well.

Towards the end of the 1990s and in the early part of the 21st century the growth in poultry meat production was driven by the increase in turkey meat production. Now both the production and consumption seem to stay a little under 14 mill. kg. Compared to 2004 the production fell by 5% and consumption by 4%. In 2005 turkey meat imports were 16% and exports 3% smaller than the year before. Almost half of the turkey meat exports were to Russia or Poland, and most of the imports were from Brazil and Germany.

The share of domestic broiler in the consumption is 93% while domestic production accounts for 85% of the turkey meat consumption. The figures are higher than in many other EU countries. One likely reason for this is that the poultry meat consumed in Finland is more highly processed and most of the meat is consumed as unfrozen fresh products, which gives the domestic production a competitive advantage compared to the foreign mass producers.

## Eggs

In 2005 the amount eggs packed by packaging plants and farms rose to about 57 mill. kg, which was about 1% higher than the year before. The increase was mainly due to the growth in farm packaging by about a third, because the production of the central packaging plants fell by 5%. In the autumn more chicks were hatched than the year before, which means that egg production may grow slightly in 2006.

The domestic sale of eggs totalled 49 mill. kg, which is 0.4 % more than the year before. The sales of shell eggs of the central packaging plants on the domestic market were 1% larger than in 2004 and the sale of egg products decreased as well. The need to export grew like in the previous year, now by 5% (to 11 mill. kg). The export of egg products more than doubled compared to 2004.

## Producer prices

The prices paid to the Finnish milk producers are slightly higher than the prices paid to the producers in the EU on average. In 2005 the average producer price for milk (incl. quality supplements) was about 32.99 €/100 l (-4%). In addition to this, production aid averaging 7.62 €/100 l was paid. The average producer price fell

### Market prices for livestock products in certain EU countries in 2005<sup>1</sup>, €/100 kg.

	Milk	Pigmeat (E)	Beef (bull)	Poultry meat	Eggs
Finland	32.54	138.49	255.49	197.07	86.65
Sweden	29.65	139.01	250.80	177.99	133.31
Denmark	28.82	121.81	271.61	162.83	132.89
Estonia	25.46	135.56	185.74	147.68	78.14
Germany	27.15	147.00	289.55	169.92	76.51
France	28.18	135.56	305.40	171.46	75.96

<sup>1</sup>Statistics have changed from the previous year. For milk the average of January-September, for other products the average of the prices of January-December or average price.

Source: European Commission.

### The producer prices of the most important live-stock products in Finland from 1995 to 2005 including production support (€/100 kg, milk €/100 l).

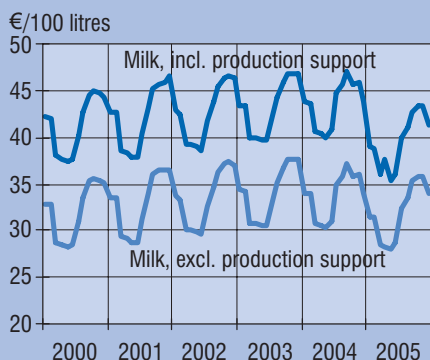
	Milk	Beef	Pigmeat	Eggs
2005	41.96	205.00	129.00	60.00
2004	45.56	190.00	120.00	74.00
2003	45.80	186.00	115.00	80.00
2002	45.99	190.00	137.00	79.00
2001	45.45	208.00	150.00	69.00
2000	44.21	206.05	129.18	81.58
1999	43.76	215.97	112.53	74.34
1998	44.71	223.71	126.15	64.59
1997	45.84	209.24	139.94	60.89
1996	44.88	222.87	133.89	70.31
1995	47.04	348.68	177.62	89.48

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

especially due to the low prices in the summer. The final price for milk will only be known when the dairies complete their financial statements and the retroactive payments based on the result are decided. In 2004 the average retroactive payment for milk was 1.35 €/100 l.

The seasonal differentiation of the price for milk leads to great variation between the seasons. In November 2005 the price paid to the producers for milk with standard fat and protein content (norm milk) was 34.92 €/100 l, which was 5 cents less than the year before and €7 less than in May 2005. In November the difference between the highest and lowest producer price for norm milk was 4.15 €/100 l.

The market situation of beef in the EU is quite stable and the producer prices continued to rise in 2005. One reason for this was the ban on beef imports from Brazil. The average price of, for example, bull's meat in Finland, 2.41 €/kg, was 6% higher than the year before. At the end of 2005 the average price for bull's meat was 2.51 €/kg, the average price for cow's meat was 1.39 €/kg. The price paid for bull's meat was the highest in September, while

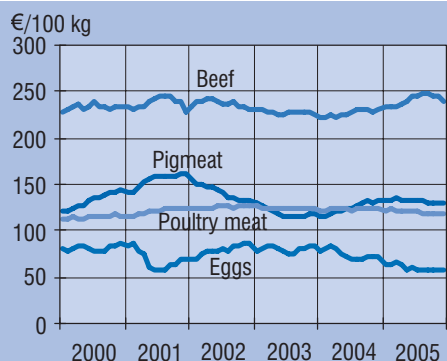


**Producer price of milk in Finland from 2000 to 2005.**  
Source: Information Centre of the Ministry of Agriculture and Forestry.

in the early part of the year the price paid in Finland was below the EU average. In the autumn the price for bull's meat, as well as other beef, rose then being close to the EU average.

The average price for a male calf rose by 2% from the previous year. In January–September the price for male suckler calf varied between € 166 and 175. Thereafter a larger number of calves were traded and the price fell gradually to € 154. Instead, the purchase prices of dairy calves rose in the autumn. The price variations were mainly due to changes in the weights.

The producer prices for pigmeat and piglets rose by 8% from the year before. The producer price level of pigmeat is exceptionally stable in Finland. For example,



**Producer prices of beef, pigmeat, poultry meat and eggs in Finland from 2000 to 2005.** Source: Information Centre of the Ministry of Agriculture and Forestry.

the price for Grade E pigmeat was between 1.34 and 1.40 €/kg. The average price for a fattening pig was 1.33 €/kg and that for all pigmeat 1.29 €/kg. In the autumn the prices started to decrease slightly, and this trend was forecast to continue in 2006. The purchase price for a piglet (25 kg) was € 56–58.

Pigmeat producers in the EU benefited from the animal disease problems faced by the other meat sectors. The Finnish pigmeat prices followed the average price level in the EU, except that the variation from one week to another was smaller. The producer price in Finland was 10–15% higher than in Denmark. In the EU countries it is easy to see the connection between the country's self-sufficiency in pigmeat and pigmeat prices. Hence, the increase in pigmeat exports is might affect on the pigmeat price in Finland as well.

The producer price for broiler meat decreased in Finland in 2005. In January the price for a kilogram of broiler meat was € 1.17, whereas at the end of the year it was only € 1.13. Previously the price was this low in 2000. The average price for turkey meat was 1.53 €/kg. The average price for both broiler and turkey meat fell by 2% from the year before.

The excess supply in eggs has beaten their producer price down. In 2005 the price fell to about 0.60 €/kg (–19%), which is less than the price on most other EU countries. At the end of the year the producer price was 10–15 cents lower than in Sweden or Denmark. The share of packaging plants in the consumer price for eggs decreased towards the end of the year.

The news on the spread of avian influenza virus affected the poultry meat market of the EU as well. The demand for poultry products fell in some Member States. In Finland, the demand was quite unaffected.

# Productive and sustainable animal breeding

Asko Mäki-Tanila

## Animal breeding is the key link in the production chain

The animal product chain starts from the breeding decision and from the new production generation. These two elements determine what kind of animals we have available for food production – or for other purposes, depending on the animal species. Selection is an efficient tool for improving animal production, because the changes achieved are cumulative and permanent and their impacts are reflected in the whole production chain.

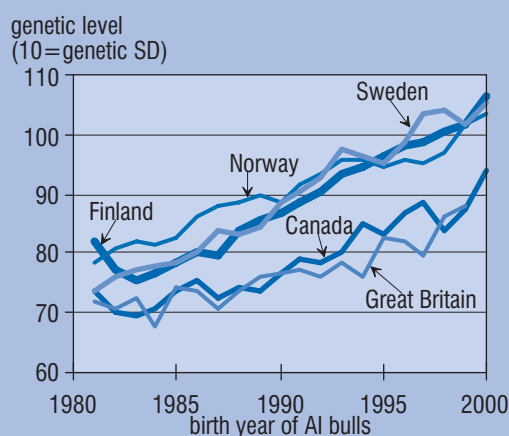
The opportunities offered by selection and breeding technology become even more interesting when they are viewed from the perspective of the society, economy and sustainable development. Sustainability stems from on three entities – people and the society, environment and its state, and profitability and economic benefit. The objectives in the use of genetic information and reproduction technology can be summarised as 1) safe and wholesome food, 2) robust and healthy animals, 3) balance between intensive selection and sustainable management of genetic variation, 4) social responsibility and 5) competitive self-sufficiency that distinguishes us from the others.

These objectives can be elaborated further with the descriptions: better quality of food, lower disease (especially zoonosis) and residue risk, robust animals suited to variable production environments and, in the case of species such as fur animals and fish, strains that are selected for use as domestic and production animals. Genetic variation should be utilised to match the regional differences (local breeds, regional products and culture). The new technology applications should be discussed openly with the society.

## Economic value of animal breeding

The total market value of livestock production in Finland (on the farm level) is € 1.38 bill. (€ 116 bill. in EU-15), which is some 70% of the total value of primary production (incl. horticulture) in Finland (40% in EU-15). The Finnish figures do not include horse sector, fur farming and fisheries. The return on fur farming is some € 250 mill., which is about the same as the market income on pig production.

Thanks to programme coordination, artificial insemination, cooperation between farms and



Genetic trend of protein yield in red dairy breeds. The values computed by the Interbull organisation are comparable through the AI bulls used jointly in different countries.

R&D work, Finnish animal breeding has achieved internationally good results in all animal species (Figure). The strategic influence of animal breeding and artificial insemination is many times greater than the size of the organisations carrying out the work. The genetic level improves by 1 to 2% a year, and a cautious estimate could be that Europe benefits annually almost € 2 bill. from animal breeding.

In Finland the economic impact of pig breeding has been studied most. The MTT Agrifood Research Finland/Economic Research has estimated the impact of breeding work in terms of a capacity unit for a fattening pig and found that breeding improves the annual contribution margin of a unit by € 1.5. Because the genetic improvement in animals is disseminating and prevailing over the years, its impact in a 10-year time span compared to present would be € 6 at a 5% interest rate (including some uncertainties). When this is multiplied by the number of units in the whole country (roughly 500,000), the value of one year's breeding work is  $500,000 \times € 6 = € 3 \text{ mill.}$ , and in a 20-year time perspective € 7.5 mill.

The animal breeding organisations, which may even operate on a global scale, are only of the size of SMEs. In Finland the farms are actively taking part in animal breeding and therefore it is not easy to distinguish the breeding costs from the other development costs – the surveys indicate that breeding would cost less than 10% of the benefits – thus the cost-benefit ratio is excellent. Efficient breeding organisations also export products and services, which further improves their financial status.

Similar calculations can be made for dairy cattle. The efficiency in the selection of cows can be improved through embryo flushing and transfer. The MTT Agrifood Research Finland and Embryo Centre Ltd. have a joint ASMO (MOET) programme for the Ayrshire cows. Its impact is disseminated through artificial insemination to the whole Finnish dairy cattle. The additional income to the producers due to the improved milk traits is € 6 mill. after the first 10 years and more than € 20 mill. after 20 years. The benefit is manifold compared to the operation costs.

### **Animal health is an income of a qualitative nature – diseases are an irretrievable loss**

In Finland the animal health is of prime quality giving an enormous advantage for the economy and image of the production and for public health. Good health status guarantees that the food processing industry is enjoying the best raw material for animal products in the world. Good animal health and – its reverse – the disease risk have implications for the breeding operations. Because the results of Finnish breeding have been good, there is little demand for genetic importations, and on the other hand, hardly any restrictions to export Finnish breeding animals or sperm.

The increased transport of animals, sperm, and embryos means higher disease risk on farms. Imports without control constitute a serious hazard for animal health, and even a well coordinated import is a risk. For example, in pigs there are several diseases not encountered in Finland.

In Finland, so far there are no cases of PRRS (porcine reproduction and respiratory syndrome), PMWC (postweaning multisystemic wasting syndrome) or swine influenza, which are quite common elsewhere. In Denmark the diseases occur frequently, in Sweden they are quite common, and the first cases have been found in Norway. Finland has set an ambitious but feasible goal to eradicate even much milder disease such as the enzootic pneumonia in pigs, which is very common in Sweden and is also



found in Swedish farms involved in the national pig breeding programme. Far more serious threats include the swine fever and foot-and-mouth disease, which occasionally have scattered outbreaks in Europe. The same applies to the types of salmonella that are hazard for public health. A few years ago the Swedish authorities banned the regular import of Danish breeding pigs due to salmonella.

Finally, a corollary that is often forgotten. Because of the good health situation in Finland, it is easy to set up the centralised testing of pigs coming from a wide range of farms. This is a great benefit and cost advantage for Finnish pig breeding. Earlier there were several testing stations, but now all the testing operations take place at a single station located in central part of the country. Such a cost-efficient centralisation of operations is not possible in other countries.

### Breeding objectives and their reassessment

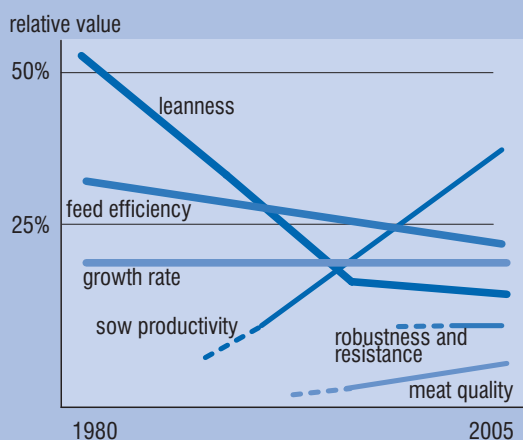
Animal breeding and reproduction technology offer opportunities to develop the biological efficiency of production and the robustness and welfare of animals. The feed efficiency has been improved through selection. Animal breeding can make a significant contribution to the more efficient use of nitrogen and phosphorus and thereby to reduction of nutrient leaks.

Large bodies of varying type of collected records are used in selection: feed intake, growth, yield, health, behaviour. The weight of the individual components in selection can be deduced from the additional economic advantage gained and the input needed to achieve it. The selection goal for production efficiency has been widened to include the physiology (welfare, health, reproduction) of the whole animal (Figure).

There is one more decisive factor. In terms of genetic potential, it is always possible to change the direction of the selection – we never run out of the genetic variation. During each generation the increment 0.1% of the genetic variation enters the animal populations through recurrent mutations. Large bodies of recorded data and understanding the genetic variation and the influence of selection are the backbone of the breeding programmes. Genomics research produces new information on animals and

their physiology and gives additional means to balance the selection.

In pigs it is a norm to have crossbred production animals. Crossing as such is not selection and for full utilisation of the resources it must be founded on efficient genetic improvement of the pure breeds. The economic benefits from increased viability of the hybrids and from combining different traits have to be assessed against the costs of coordinating selection programmes in several breeds.



The breeding goals in pigs keep changing. The graph is an illustration of the recent main trends.

## 2.3. Horticultural production

In 2005 the value of horticultural production totalled about € 352 mill. This was € 10 mill. (about 3%) lower than the year before. The decrease was mainly due to the clearly weaker price level of vegetables grown in the open.

The weather conditions of 2005 were quite good for plant production. The early part of the summer was cool and dry and the growth of especially vegetables grown in the open got started somewhat slowly. The middle of the summer was warm with a suitable amount of rain and the yields of vegetables grown in the open were very good in the whole country. The apple crop was exceptionally good and the yields of berries were also high.

According to the Horticultural Enterprise Register, there were altogether 6,563 enterprises in the sector in 2004. Of these, 2,307 practised greenhouse production and 5,265 engaged in horticultural production in the open, i.e. they were vegetable, berry or fruit farms or nurseries. Some of the enterprises engaged in both greenhouse production and production in the open.

Production in the open is often practised in connection with basic agriculture. Most of the outdoor production is located in south-western Finland, berries are produced in the eastern parts of the country and apples in Åland and in south-western Finland. A little under a half of the green-

house vegetable area is in Ostrobothnia. The production of ornamental plants is more evenly distributed in different parts of the country.

Greenhouse production represents about 60% and production in the open about 40% of the value of horticultural production.

### Greenhouse production

In recent years the cultivated areas in greenhouse production have not changed very much. In 2005 the area eligible for support was a little larger than the year before (6 ha, 1.5%), but the number of enterprises fell by about 70 (4.3%). The total number of greenhouse enterprises receiving support was 1,522 and their average size was 2,660 m<sup>2</sup>. The total greenhouse area was about 405 ha.

Of the greenhouse area 60% is used for vegetable production and 40% for the production of ornamental plants. Tomatoes are produced on about half of the vegetable area and about a third is under cucumber (76 ha). Tomato and cucumber represent 95% of the total yield of greenhouse vegetables.

The production area of tomato was about the same as the year before, about 117 ha. Tomato production round the year using artificial lighting has increased rapidly in recent years and now this is used on about a fifth of the tomato area.

**Areas under horticultural production in 2000–2005, ha.**

	2000	2001	2002	2003	2004	2005
Production in the open, total	16,948	16,515	16,466	16,469	16,025	15,417
Vegetables grown in the open	9,107	8,797	8,918	8,983	8,837	8,254
Berries	7,355	7,200	7,004	6,886	6,552	6,495
Fruits	486	519	544	600	636	667
Greenhouse production, total	398	400	400	398	399	405
Vegetable production	234	236	237	236	239	245
Ornamental plants	164	164	164	163	161	160

*Source: Ministry of Agriculture and Forestry, Support Register.*



### Areas under the most important horticultural products grown in the open and yields in 2004.

	Area ha	Yield kg/ha	Total 1000 kg
<i>Vegetables grown in the open</i>			
Garden pea	2,335	2,525	5,896
Carrot	1,698	33,569	56,987
Onion	1,020	23,149	23,602
White cabbage	593	30,216	17,929
Outdoor cucumber	339	30,479	10,343
Chinese cabbage	297	18,789	5,574
Swede	470	32,911	15,452
Beetroot	414	28,894	11,976
Cauliflower	409	7,938	3,244
Other plants	1,353		
<b>Total</b>	<b>8,927</b>	<b>18,498</b>	<b>165,131</b>
– share of contract production	2,304	21,735	50,084
<i>Berries and apples<sup>1</sup></i>			
Strawberry	3,060	3,135	9,593
Black and green currant	1,751	914	1,601
Raspberries	409	925	378
Other berries	542		
<b>Total</b>	<b>5,763</b>	<b>2,113</b>	<b>12,174</b>
– share of contract production	1,109	1,621	1,798
<b>Apple</b>	<b>497</b>	<b>5,383</b>	<b>2,675</b>

<sup>1</sup>Crop yielding area

Source: Information Centre of the Ministry of Agriculture and Forestry, Register of Horticulture Enterprises 2004.

The cucumber area grew by a few hectares from 2004. More advanced cultivation methods have increased the average yields per square metre and now more than

a third of the cucumber area is cultivated round the year.

In 2004 the number of potted vegetables produced in Finland rose to 59 mill. Their production has doubled during the EU membership: in 1995 only 30 mill. potted vegetables were produced.

The production area of ornamental plants has decreased in recent years by a few hectares, and in 2005 it was 160 ha. The area eligible for support used for the production of cut flowers was 36 ha. Roses were produced on about 78% of this area. The area under potted and bedding plants was 99 ha. About 25 ha were used for mixed production of both cut flowers and potted and bedding plants.

In 2004 altogether 45 million bedding plants and 12.1 million flowering potted plants were produced. The most common bedding plants are violet, petunia, lobelia and geranium and the most popular flowering potted plants are poinsettia, begonia and saintpaulia. Hanging pots of

summer flowers have become increasingly common in recent years and in 2003 about 2 mill. of these were sold.

### Production in the open

The area used for vegetable production in the open decreased by about 600 ha (4%) in 2005. The total area was 15,417, of which 10,500 ha received aid for vegetable production in the open. Of the cultivated area 55% was under vegetables, 42% was under berries and 4% were used for apple production. The area of nursery production, which is not included in the support register, was 630 ha. The most common outdoor vegetables in Finland are garden pea, carrot, onion and white cabbage.

### Areas under greenhouse vegetables (m<sup>2</sup>) and yields (kg/m<sup>2</sup>) in 2004.

	Area 1000 m <sup>2</sup>	Yield kg/m <sup>2</sup>	Total 1000 kg
<b>Total</b>	<b>2,588</b>	<b>27</b>	<b>69,308</b>
Tomato	1,171	30	34,599
Cucumber	757	41	31,018
Other vegetables	660		

Source: Information Centre of the Ministry of Agriculture and Forestry, Register of Horticulture Enterprises 2004.

In 2004 production contracts with processing industry covered about 26% of the area used for commercial outdoor production. The most significant crops for contract production are garden pea, gherkin, red beet and carrot. During the EU membership, i.e. since 1995, the area under production contracts has decreased by 17% (474 ha). The number of enterprises producing for the industry under production contracts was only a third of that in 1995, but the quantities produced have stayed about the same.

Strawberry is cultivated on about 53% (3,400 ha) of the berry production area and it represents about 80% of the production volume. In 2003–2005 the strawberry area decreased by 7% (250 ha). The yield levels of strawberry production have risen considerably because of the more efficient production methods used, which means that the decrease in the area is not reflected in the total output. Variations in the crop between years are great, depending on the wintering of the plants and weather conditions during the growing period.

The apple production area has been increasing so that in 2005 it was 630 ha. Between 2003 and 2005 the area under blackberry bushes grew to 72 ha (33%), while the areas of raspberry and black currant have been about the same since 2003. In 2004 about 15% of the total yield of berries was covered by production contracts.

The area of nurseries, which are included in the production in the open, was 630 ha. No significant changes have occurred in this in recent years.

### Horticultural product market

In 2005 the prices for greenhouse vegetables changed slightly from the year before. The average price for tomato has been about the same for several years, and in 2005 it was 1.15 €/kg. The monthly price for tomato was the lowest, about 0.66 €/kg, during the peak production season in July. The average price of cucumber fell by 8% from the year before to 0.99 €/kg, which was the lowest price in four years. Due to the hot weather and abundant rains in July the cucumber price fell to as low as 0.71 €/kg.

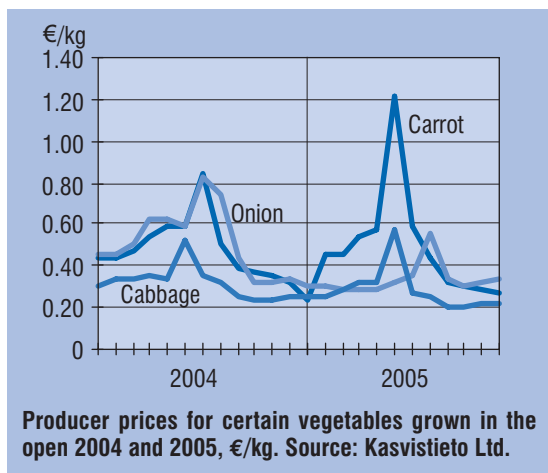
The average price for cut roses was a little higher than the year before. The cultivation area of cut roses has decreased in recent years, which has had positive impacts on the producer price. The markets of seedlings and bedding plants functioned well thanks to the steady sales all through the summer. After the peak season in the early part of the summer, the steady demand for bedding plants continued until August.

In 2005 the average price level of vegetables grown in the open was much lower than the year before. The prices for white cabbage and carrot fell by 18% from 2004

**Producer prices for the most important horticultural products in 2000–2005, €/kg.**

	2000	2001	2002	2003	2004	2005
<i>Greenhouse production</i>						
Rose (€/unit)	0.32	0.32	0.32	0.36	0.40	0.41
Tomato	0.99	1.18	1.12	1.15	1.16	1.15
Cucumber	1.08	0.98	1.05	1.16	1.08	0.99
<i>Production in the open</i>						
White cabbage	0.17	0.21	0.32	0.38	0.33	0.27
Onion	0.42	0.41	0.52	0.50	0.47	0.33
Carrot	0.41	0.48	0.39	0.47	0.45	0.37
Strawberry	2.01	1.66	2.33	3.52	3.05	2.68

Sources: Finnish Association of Fruit and Berry Growers, Kasvistieto Ltd., Glasshouse Growers Association.



to a lowest level in three years. The yield of onions was good for the second year in a row and the price fell by 31% from the year before to 0.33 €/kg. The last time the onion price was this low was in 1996.

The average price of strawberry fell by 12% from 2004 to 2.68 €/kg mainly because of the relatively high output (12 mill. kg). The middle of the summer was very warm, which shortened the strawberry season, but the markets functioned quite well.

The total yields of black currants and raspberries were also good. The yield of apples was about 40% higher than usually. The amount of apples produced in home gardens was also high, which reduced the

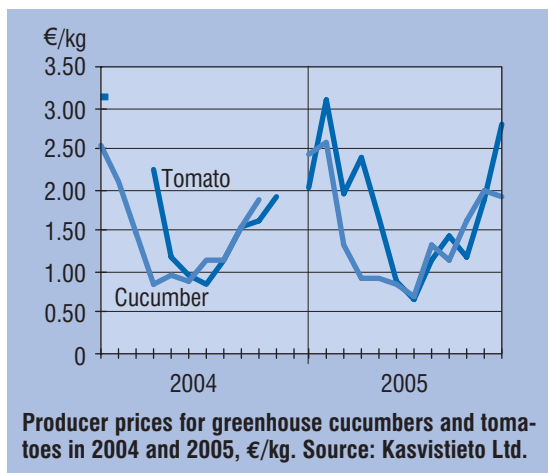
demand and the average price was very low (0.87 €/kg). The price was 41% lower than in 2004.

Horticultural product market is often characterised by strong seasonal variation in the producer price, caused by the ripening of the domestic crop, conditions during the growing season and the resulting domestic supply on the market. The price level is also influenced by imports. It should be kept in mind that the annual averages of the prices for vegetables grown in the open include output from two different years, because the crop of 2004 was still being sold in

the early part of 2005. The yields of, for example, cabbages, including white cabbage, were better in 2005 than in the previous year, which was reflected in the about 6 cents/kg lower producer prices towards the end of 2005.

The average price for vegetables depends a great deal on the sales during the early summer season. The producer price of the early carrot was particularly high in 2005. The producer prices for greenhouse cucumber and tomato are typically the highest in winter, when the production volume are low and production costs high. Thanks to the cultivation of cucumber and tomato round the year by means of artificial lighting the price level in the spring is getting closer to the summer prices earlier than before.

No major changes have occurred in vegetable consumption in Finland since 2000. The annual consumption of fresh vegetables, including potato, is about 115 kg/capita. The consumption of other vegetables and root plants is 53 kg/capita. The most popular vegetable is tomato, whose annual per capita consumption is about 11 kg in Finland. Carrot comes second, with a per capita consumption of about 9 kg, and the third is greenhouse cucumber, whose consumption is about 8 kg/capita/year.



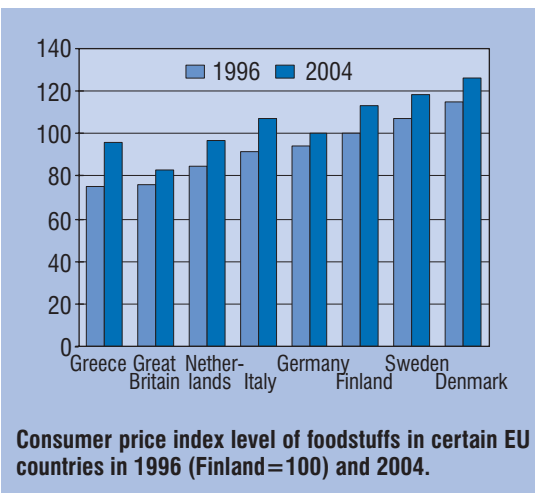
# 2.4. Food market

## Consumer prices

In 2005 the food prices in Finland rose by only 0.2%. The annual change in the consumer price index was 0.7%, which means that the increase in food prices remained below the general rate of inflation.

In the long term, however, the food prices have risen somewhat more rapidly than consumer prices in general. Between 2000 and 2005 the food prices in nominal terms rose by 8.8%, while the general consumer price index rose by 5.5%.

A comparison of the trends in the consumer price levels of food in eight EU countries between 1996 and 2004 shows that no major changes have occurred in the relative positions of the countries. The price level in Finland was lower than in Denmark and Sweden but higher than in the other countries in both 1996 and 2004. The differences in prices are partly caused by the great variation in the indirect taxes between the countries and products. For example, the value added tax (VAT) on food in Finland is 17%, which is about 10% higher than the average in the countries using the euro, and this obviously increased the reference prices for Finland by this percentage.



Average consumer price index and development of the consumer price index of foodstuffs in Finland in 1995–2005, 1995=100.

	Consumer price index	Price index of foodstuffs
2005	114.1	111.2
2004	113.3	111.0
2003	113.1	110.2
2002	112.5	109.5
2001	110.8	106.5
2000	108.0	102.0
1999	104.4	101.0
1998	103.2	101.3
1997	101.8	99.6
1996	100.6	98.2
1995	100.0	100.0

Besides the trends in food prices it is interesting to observe the distribution of the retail price paid by the consumer within the food chain. A growing share of the price of food is left to the wholesale and retail sector, whose negotiation power in the food chain relative to the food industry and domestic raw material production has strengthened in recent years. Farmers, in turn, have been receiving an increasingly lower proportion of the retail price of food.

The share of wholesale and retail sector in the price for basic dairy products, such as light milk and Edam cheese, has grown by several percentage units relative to the sale prices of the dairies. In the case of eggs the margins of retailers have also grown considerably. For example, in 1999 about 11 cents of a litre of light milk was left to the retail sector, but five years later this was as much as 17–18 cents. Instead, the price paid for the raw material of light milk to the milk producer stayed about the same in 1999–2004, 24 cents per litre. The processing margin of the dairy industry did not change very much, either, but it stayed around 19–20 cents per litre.

### Consumption of milk products, margarine, meat and eggs per capita in 1995–2005, kg.

	Liquid milk <sup>1</sup>	Butter	Margarine	Cheese	Ice-cream	Beef <sup>2</sup>	Pigmeat <sup>2</sup>	Poultry meat	Eggs <sup>3</sup>
2005 <sup>e</sup>	184.8	2.3	6.6	18.8	14.0	18.6	33.5	16.1	9.4
2004	186.2	2.6	6.6	18.4	13.4	18.6	33.8	16.0	9.4
2003	185.1	2.4	6.8	16.7	13.8	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
2000	193.9	3.8	7.7	16.5	13.5	19.0	33.0	13.2	10.1
1999	195.8	3.9	8.1	16.6	13.9	18.8	34.3	12.6	10.0
1998	198.5	4.3	8.4	15.9	13.2	19.2	34.1	11.9	10.3
1997	199.4	4.5	8.5	14.8	13.8	19.3	32.2	10.7	10.4
1996	203.8	4.9	8.6	14.8	13.4	19.1	32.9	9.9	11.0
1995	203.2	5.3	8.3	14.8	14.1	19.4	33.3	8.7	11.8

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

<sup>2</sup> Hot weight reduction of 2% has been made in slaughter weights from July 1995.

<sup>3</sup> Method of statistical compilation changed from January 2001.

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

Rising retail margins and a declining share for the farmer have come during a period of considerable change in the structure of both the retail and wholesale sectors. The concentration of the retail sector, with fewer outlets and the growth of the large supermarket chains, has been particularly rapid in Finland. The two leading retail chains of food and daily goods increased their market share from 55 per cent in 1990 to nearly 80 per cent by 2005.

The Finnish food sector is not alone in witnessing a growth in retail margins. This phenomenon appears to be happening across other EU markets where falling farm gate prices don't always lead to the fall in retail prices, which increases retail margins. This reflects the increased market power of the retail sector, although some other factors, including more value-added at the retail level, including better service and a greater variety, play a role as well.

### Average consumer prices of some foodstuffs in 2001–2005, €/kg.

	2001	2002	2003	2004	2005	Change % 2001–2005
Light milk, €/l	0.67	0.71	0.72	0.73	0.74	10.0
Butter	4.94	4.83	4.87	4.92	4.96	0.3
Margarine	2.30	2.26	2.37	2.36	2.35	2.0
Emmental cheese	9.62	9.84	10.35	10.65	10.58	10.0
Beef joint	8.50	8.35	8.26	8.34	9.05	6.5
Pork chops	7.26	7.84	7.64	7.69	7.87	8.3
Legs of broiler	2.65	2.71	2.47	2.10	2.03	–23.4
Eggs	2.21	2.13	2.24	2.36	2.33	5.5
Wheat flour	0.62	0.63	0.62	0.61	0.59	–4.5
Rye bread	2.78	2.81	2.97	3.09	3.15	13.3
Tomato	2.53	3.03	3.04	2.94	2.99	18.2
Potato	0.60	0.61	0.58	0.72	0.65	8.9

Source: Statistics Finland, consumer price statistics.

## Structural changes in retail trade

During Finland's EU membership since 1995 the grocery sales have expanded rapidly in Finland. The fall in food prices as Finland joined the EU led to a 3% decrease in the value of the sales to € 8,569 million in 1995, but since then the retail sales have been growing steadily. In 2005 they totalled € 11,908 million, which is 2.3% higher than the year before. The sales volume grew by 2.4% but the prices decreased by 0.1%. The decrease in the prices reflects the tightening competition in the retail sector. The retail trade in foodstuffs has changed rapidly and structural changes in the sector increase the competition in the food chain.

Retail trade is concentrating to larger units. The concentration is reflected both in the rapid decrease in the number of retail outlets and in the market shares of the leading chains. The number of small shops in the rural and sparsely populated areas, i.e. village shops, has fallen by almost 50% during the time Finland has been in the EU. In 1995 the number of small retail stores was still almost 2,300, but only 1,200 of these survived by 2004 and their share in the sales had decreased from 11 to 6%. During the same period the share of hypermarkets in the sales grew from 15 to 23% and the share of large supermarkets from 20% to as high as 32%. In 2004 the

### Market shares of retail companies in 2000–2005.

	2000	2001	2002	2003	2004	2005
K Group	37.6	36.5	36.0	35.8	35.3	35.9
S Group	28.9	30.5	31.1	31.1	34.3	33.9
Tradeka/Elanto	12.4	12.6	12.9	12.7	10.0	10.8
Spar	9.1	8.7	8.1	7.4	6.8	6.2
Other	12.0	11.7	11.9	13.0	13.6	13.2
Total	100	100	100	100	100	100

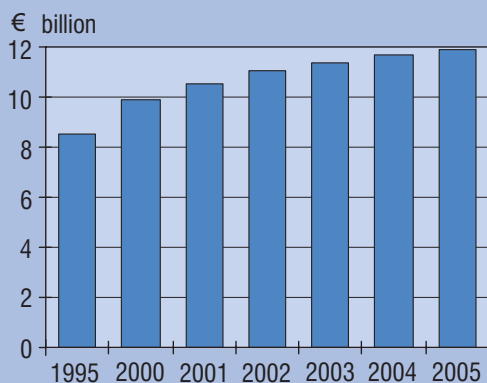
Source: AC Nielsen.

total number of retail outlets was almost 4,200 and about half of the sales took place in the 396 largest stores.

Significant reorganisations have taken place among the largest chains in the recent years. The market share of the S Group has increased rapidly and by the merger of HOK-Elanto it reached the K Group in 2004 and overtook it in 2005. The share of the K Group has been diminishing in the past few years. The share of Tradeka has stayed about the same, when the transfer of the 3% share of Elanto to the S Group in 2004 is taken into account. Instead, the share of Spar has been on the decrease for some time. The share of the group of "other" companies has increased due to the entry and rapid spread of the German Lidl on the Finnish market. Its share was estimated at 1.8% in 2003, 2.8% in 2004 and 3.7% in 2005.

There are also structural changes according to types of products. In 2004 the share of the private labels in sales was about 10% in Finland, but elsewhere on the European market their share was as high as 23%. In 2004 these private labels increased their share the seventh rapidly in Finland, by 16%, in a comparison of altogether 38 countries.

Private labels take over the markets in all countries as the retail trade is concentrating and the number of soft and hard discount stores is increasing. The leading Finnish chains have been active in developing their



Value of retail sales in Finland. Source: AC Nielsen.



### Key figures on the Finnish food industry in 1995–2004.

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Turnover (at current price, bill. €)	7.7	7.8	8.0	7.8	7.5	7.9	8.3	8.4	8.5	8.9
Turnover (at 2003 price, bill. €)	8.8	8.8	9.0	8.6	8.2	8.4	8.5	8.5	8.5	8.9
Personnel (thousands)	44.9	44.6	44.2	42.8	40.7	39.9	38.6	38.0	38.2	37.5
Real turnover per person (thousand €)	172	175	182	183	184	198	214	220	222	237

Source: Statistics Finland, Finnish Enterprises 1995–2004.

own private labels and the rapid spread of discount chains has accelerated this trend.

### Challenges to the food industry

Structural changes in the retail sector create serious challenges to the domestic food industry. It is becoming more and more difficult to maintain the negotiating power against the concentrating retail chains. In their efforts to improve the logistics the retail chains purchase a growing share of the foodstuffs from large processors, but the structural changes in the wholesale and retail sector are also putting large food companies to a serious test.

The progress of both private labels and the discount chain concept are pushing

down the food prices. The average price difference between the private labels and processors' labels was 36%, which was one reason for the decrease in the sales of food processors' labels by 3% in 2004.

Competitive tendering to produce private label products, threat of imports and the low price level and narrow product range of the discount stores tighten the competition between the domestic suppliers and reduce the margins of production. The processors have responded to the challenges by improving the efficiency and outsourcing certain production stages as well as through specialisation.

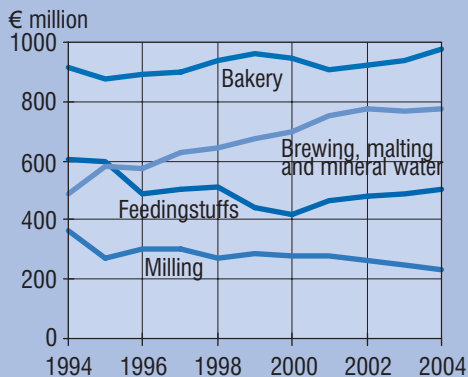
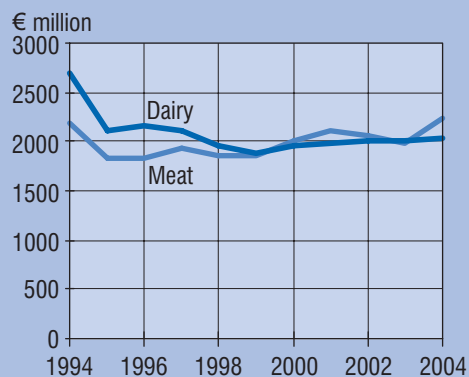
The turnover of the food industry rose by a little over € 400 million to € 8.9 billion in 2004. At fixed prices the turnover



\*1997 instead of 1995.

Turnover per person in the food industries. Sources: Statistics Finland, Finnish enterprises 1995–2004.





**Turnover of Finnish meat and dairy industry and certain other sub-sectors of food industry at 2003 prices.**

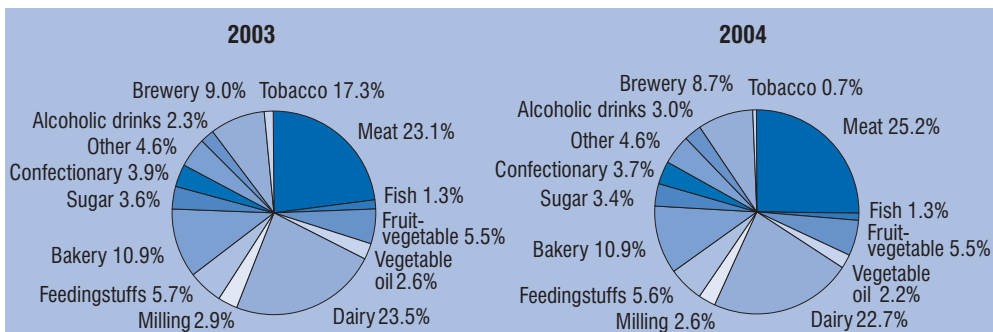
of the sector increased to the level of 1995 and were almost as high as in 1997, the best year during the early part of the EU membership, which was a highly successful time for Finnish exports. However, the growth in recent years originates mainly from the domestic market, because in 2004 exports represented only about 10.3% of the sales, which was 0.4% less than the year before. In 1997 the share of exports was 12.9%.

Employment in the sector continued its downward trend. In 2004 the staff decreased by 630 employees. As a result of this and the increased sales revenues, the turnover per person improved considerably. After the slower trend in the earlier years, this increased by more than 6% in 2004 to € 237,000.

There were certain differences in the development of the turnover per person between sectors. However, compared to 1995 the figures for 2004 showed that there had been growth in all sectors except for the continuously varying mixed group of “other foodstuffs”.

### Structural development of the sectors

Among the largest industries the year 2004 was highly successful for the meat industry, whose turnover in real terms rose by almost 12% to € 2.2 billion. This increase of € 267 million accounts for 70% of the growth in the total turnover of the food processing industry. Exports have been growing steadily, but they represent only a



**Structural change among sub-sectors of Finnish food industry.**

little over 5% of the turnover of the meat industry. Most of the growth came from the domestic market, where meat consumption was again higher than in the previous year.

The turnover in real terms in the second large sector, the dairy industry, rose by € 6 million to about € 2 billion. The significance of the domestic market has grown in the dairy industry as its share in the sales grew from 80% at the turn of the millennium to 83% in 2004. Difficulties for exports were caused by the EU enlargement and tightening competition from the new Member States especially on the markets of the third, i.e. non-EU, countries.

The turnover of the bakery industry grew by € 38 million to more than € 978 million. Thus it exceeded the sales reached in 1999, which had been its best year during the EU membership. Because of the requirements for freshness and consumer habits the bakery industry focuses its operations on the domestic market. The prices for bakery products rose on average by 1.2% in 2004, but the prices for flour decreased. The price trends reflect the changes of the sales in real terms of these two industries.

Certain significant changes took place in the sales structure among the industries between 2003 and 2004. The share of the meat industry grew by 2 percentage points and now it represents already more than a quarter of the turnover of the whole food industry. The share of the dairy industry decreased by 0.8 percentage points to 22.7%. Of the smaller sectors the share of the production of alcoholic beverages rose from 2.3 to 3% partly as a result of the increased consumption generated by the reduction of the tax on alcohol.

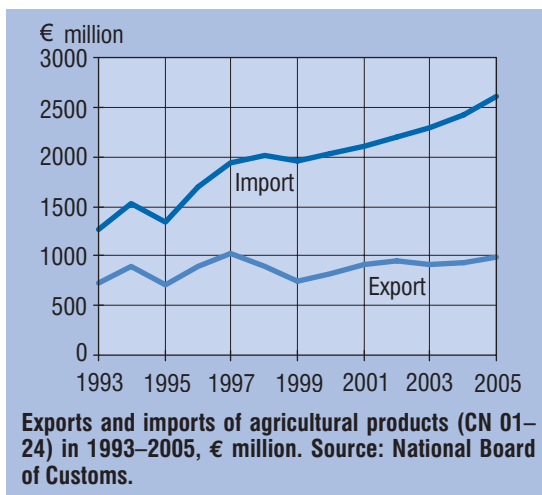
## Foreign trade

In 2005 the value of the Finnish food exports totalled € 980 million, which

is 4.5% higher than the year before. The Finnish food exports have been characterised by the fluctuation of up- and downward periods. After the difficulties during the first years in the EU the exports grew to a record high level in 1997, but the devaluation of the Russian rouble led to a sharp decline in Finnish exports in 1998 and 1999. Since 2001 the level of exports has been quite stable and the growth in 2005 brought it again close to the record levels of the 1990s.

Almost half of the exports go to the neighbouring countries. Russia is still the main target for the Finnish food exports with a share of about a fifth, Sweden comes second (16%) and the third is Estonia (10%). The most important export articles are cheese, butter, sugar industry products, pigmeat, cereals and alcoholic beverages.

The value of food imports to Finland was € 2,601 million in 2005, which was 7% more than in the previous year. Imports have been growing more rapidly than exports, which means that the deficit in the food trade balance increased considerably. Traditionally the deficit has been due to the extensive import of fruits, raw coffee, alcoholic beverages and tobacco. Other important import articles are vegetables, cheeses and cereal products.



## Consumers, municipal decision-makers and future of local food

Sari Forsman-Hugg<sup>1</sup>, Johanna Mäkelä<sup>2</sup> and Anne Arvola<sup>3</sup>

The membership in the EU in 1995 led to a wide discussion on the role and future of Finnish primary production and food economy. Local aspects and values have received a great deal of attention, besides the globalisation trends. In Finland this has drawn attention to both domestic food production in general and local food production in particular. It seems that Finnish food production, too, is simultaneously influenced by globalisation and localisation trends. The role and nature of local food have been discussed in various kinds of working groups and its use has been promoted through strategies, initiatives and concrete actions. The proposal for a national programme of the Committee on Sustainable Consumption and Production highlights the role of local food as a means to maintain Finnish agricultural and food production.

Local food has also attracted the interest of researchers. If we consider local food as a serious alternative to be supported, we should consider the views and images attached to local food in Finland. We should also reflect on the potential future of local Finnish foods on the increasingly global food market and how local food should be marketed. These are the questions addressed in the project “Consumers, decision-makers and local or organic food: Opportunities for the SMEs”, a joint endeavour by National Consumer Research Centre, MTT Agrifood Research Finland and VTT Technical Research Centre of Finland. Altogether 1,695 consumers, 212 representatives of municipal institutional kitchens and 144 municipal officials from different parts of Finland replied to the questionnaire sent to the consumers and municipalities.

### Interesting but unspecified and challenging local food

The attitudes of both consumers and decision-makers to local food were positive. When assessing the properties of local food, they were considered slightly better than those of “conventional” Finnish food. The problem is, however, that the profile of local food is not clearly specified. Local food does not always differ from other domestic food and, according to the consumers it is difficult to identify local food at the food store. The views on local food also vary, partly because there is no unambiguous definition for it, unlike for organic food, whose production method is written down in the law. This is reflected in, for example, the dimensions related to distance that the consumers and decision-makers associate with local food. For most of them the word local meant that the food was Finnish and produced close to the place where it was sold. However, for some people local food and Finnish food seem to be two different things. For example, about a third of the consumers considered that all food produced in Finland could be local food, but about the same number of respondents were of the opposite opinion. Instead, very few consumers or decision-makers were prepared to accept food produced abroad or from foreign raw material as local food.

One solution for clarifying the profile of local food could be to tie this concept more closely to the specific locality, such as the culinary tradition of a certain region. Through this the content of the concept of local food could be constructed through

<sup>1</sup> MTT Agrifood Research Finland, <sup>2</sup> National Consumer Research Centre, <sup>3</sup> VTT Technical Research Centre of Finland/  
Food Biotechnology

the local identity, which would make it easier to highlight the benefits related to the local image or regional economy often associated with local food. It is also possible that this local aspect could add new meaning to the domestic origin. Local food could gain new impetus if it were more strongly integrated to the Finnish and regional culinary culture. Finnish culinary tradition has always consisted of the many regional culinary cultures of the country.

### **Consumers and decision-makers hope for more local food but do not believe in its prospects**

In respect of the future of local food, certain interesting aspects of the food economy until 2010 were raised. The consumers and decision-makers were asked to express their positions concerning a development that they considered likely and one that they saw as desirable. 90% of the consumers and representatives of institutional kitchens and as many as 94% of the municipal leaders hope that the use of local food would increase until 2010, while only about half of them considered such increase as likely. Instead, there was a strong belief in the growing globalisation of the food economy. Both the consumers and decision-makers expect that food trade will become increasingly international, transportation distances will be increasing and raw material production and processing will move to countries where the production costs are low. At the same time, however, there were hopes that the significance of local food cultures would grow and the competitiveness of small Finnish food companies would improve.

The role of mass catering and institutional kitchens as a channel for promoting the use of local food has been recognised. However, the representatives of institutional kitchens and municipal leaders had less faith in the increase of the use of local food in the food service of their own municipality than in the increase in the use of local food in the food economy in general. Of the municipal leaders only a third and slightly fewer of the representatives of municipal kitchens believed that the use of local food would increase in their own services, while three out of four decision-makers considered this desirable. More than half of the representatives of institutional kitchens believed that food preparation in the municipalities will become increasingly concentrated, the funds for municipal food service will decrease and the use of convenience and semi-finished foods will be growing.

### **Positive development calls for action**

In the views of the consumers and decisions-makers concerning the future of local food it is noteworthy how much their assessment of the likely development trend and the desirable future differs from each other. We can well ask whether the citizens really see that their possibilities to influence the future development are so limited. Considering the decision-makers we can question whether it is not through their own decisions, initiatives and choices that they can promote the increased use of local food? Will alone is not enough. If we wish to bring the likely trend closer to the desirable trend we also need policy decisions to this direction.

Even if local food is seen as a positive concept and its increased use is considered desirable, the future involves serious challenges. One constructive approach could be to give up the strict opposition between globalisation and localisation and incorporate the discussion on local food as one potential aspect to the internationalisation of the food economy.

### 3. AGRICULTURAL POLICY

The national objectives of Finnish agricultural policy are founded on the view that the permanent competitive disadvantage due to adverse natural conditions must be compensated for so that Finnish agriculture can succeed on the common EU market. Efforts to reach these objectives have been made by developing the common agricultural policy of the EU to take better into account the special needs of Finland as well as through national measures allowed by the Accession Treaty.

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

The EU markets of agricultural products are steered by administrative means in the same way as in most other industrialised countries. The price level on the internal market is kept above the world market prices mainly through price policy instruments. Common policy is implemented through common organisations of the markets for specific products. The basic idea is that the fall of the prices within the EU below a cer-

tain level is prevented by means of public intervention, while the prices of imported foodstuffs are raised to the EU level through import duties. Exports are subsidised by export refunds.

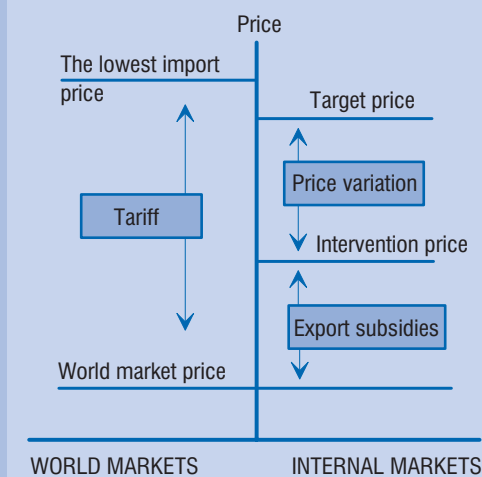
The EU markets are also regulated through production quotas and support entitlements. Production quotas are applied in the milk and sugar sectors and support entitlements are used for the area under cereals and oilseed crops, potato starch, and suckler cows, male bovines and ewes. The Finnish quotas and support entitlements were determined in the Accession Treaty.

As a result of the policy reforms of 1992 and 1999, the intervention prices of cereals and beef were lowered closer to the world market prices. The price reductions were compensated for by means of direct payments, which is why support based on the area or number of animals (headage and area related payments) gained a central position in the product-specific price and market organisations.

#### Agricultural policy reform

As a result of the reform of the common agricultural policy agreed in June 2003 most of the payments for arable crops and livestock are decoupled from the production and a new single payment scheme (SPS) is set up in the Member States. Most of the payments financed by the EU alone will be included in the SPS, and new conditions relating to the environment, maintaining the productivity of the land, food safety, animal welfare and occupational safety will be incorporated into the scheme (cross-compliance).

The reform includes so-called modulation, through which a gradually increasing share of the CAP support is transferred to rural development measures through the EU



The price system of the EU.

budget. Modulation does not apply to the first € 5,000 of each farm. The cut for the share exceeding this is 4% in 2006 and 5% from 2007 onwards.

The dairy policy was reformed by lowering the intervention price for butter by altogether 25% and that for skimmed-milk powder by 15% in 2004–2007. This means that the prices for butter and milk fat are going to decrease considerably in the EU.

To compensate for the quite radical cuts, the milk quota system will continue until 2015. The reduction in the producer price for milk due to the cuts in the intervention prices 2004–2007 is compensated for through a dairy cow premium, which must be decoupled from the production by 2007 and incorporated into the single payment scheme. In Finland this takes place in 2006.

## EU agricultural policy in Finland

In 2006 the support under the common agricultural policy to the Finnish agriculture will total about € 1,293 mill. This consists of the CAP support for arable crops and livestock (€ 543 mill.), compensatory allowances for less-favoured farming areas (€ 423 mill.) and environmental support (€ 327 mill.). The supports are funded either by the EU alone or co-financed by the EU and Finland.

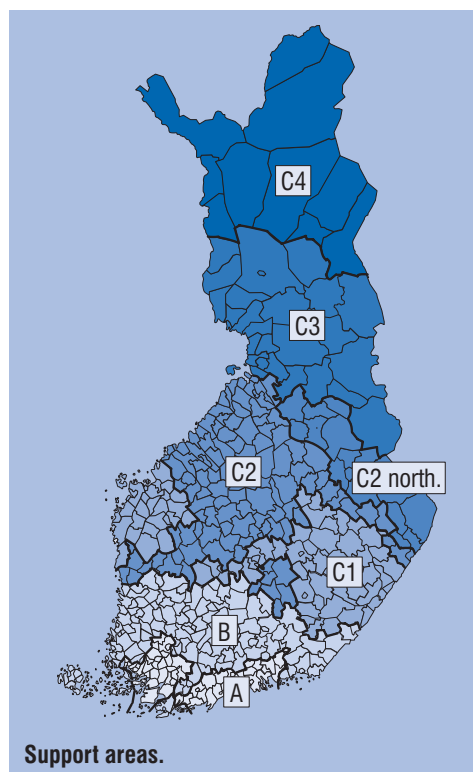
CAP payments are an integral element of the functioning of the common market organisations and they funded in full from the EU budget. The EU contributes about 32% of the compensatory allowances and 55% of the environmental supports. The rest is paid from national funds.

In 2006 the national aid for Finnish agriculture and horticulture will total about € 614 mill. National aid scheme comprises the northern aid (€ 329 mill.), national aid for southern Finland (€ 97 mill.), national supplement to environmental support (€ 55 mill.), national supplement to compensatory allowances (€ 120 mill.) and certain other aids.

Finland has been divided into seven support areas for the allocation of the payments. CAP support, environmental support, compensatory allowances and the national supplement to this 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) and the national supplement to environmental support are paid in areas A and B.

## CAP support

The application of the single payment scheme introduced in the context of the CAP reform of 2003 starts in Finland in 2006. In the future most of the so-called CAP support financed in full by the EU will be paid through this scheme. CAP support has two main components: decoupled single payments and payments which continue to be coupled to the production.





In Finland coupled payments will continue to be applied for suckler cows, male bovines and ewes, starch potato and timothy, while the CAP support for arable crops will be almost completely decoupled from the production as of 2006. In Finland about 90% of the CAP support will be decoupled.

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. Finland has also decided that if a farmer sets aside more than the mandatory area, this managed, uncultivated land must be under grass to be eligible for the payment.

In Finland the single payment scheme is implemented as the so-called hybrid model. Former CAP payments are converted into payment entitlements, which consist of a regional flat-rate payment and possible farm-specific top-ups. The values of the payment entitlements are established towards the end of 2006. By decision of the Member State, production premiums coupled to the production may be paid for certain products. In Finland these will be applied to certain arable crops and bovines.

### **Compensatory allowances (LFA support)**

Certain rural regions in the EU have been defined as less favoured areas. The purpose of compensatory allowances, or LFA support, is to ensure the continuation of farming in these regions and keep them populated. In Finland this support covers the whole cultivated area of about 2.16 mill. ha.

In 2005 the LFA support paid to Finnish farmers totalled € 423 mill. and the same amount is budgeted for 2006. In Finland the EU contributes 50% of the compensatory allowances in Objective 1 areas and 25% in the other parts of the country. The average EU contribution is 32%. The support is 150 €/ha in area A, 200 €/ha in areas B and C1 and 210 €/ha in areas C2–C4.

### **Environmental support**

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

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

	2001	2002	2003	2004 <sup>prelim.</sup>	2005 <sup>prelim.</sup>	2006 <sup>e</sup>
Total	1,134	1,148	1,185	1,220	1,260	1,293
CAP income support	435	443	456	502	515	543
Support for arable crops	345	345	345	362	351	
Other area-based support	10	10	10	10	10	
CAP support for animals	80	88	101	130	154	
Compensatory allowances	418	422	423	423	423	423
EU contribution	130	131	137	137	137	137
National financing	288	291	286	286	286	286
Environmental support	281	283	306	295	322	327
EU contribution	157	158	167	166	177	117
National financing	124	125	139	129	145	210
EU financing, total	722	732	760	805	829	797
National financing, total	412	416	425	415	431	496



The support consists of basic measures, additional measures and contracts concerning special measures. In terms of the environment the main emphasis is on water protection, but efforts are also made to restrict emissions into the air, reduce risks due to the use of pesticides and take care of the rural landscape and biological diversity.

In 2005 environmental support paid to Finnish farmers totalled € 322 mill. and the amount budgeted for 2006 is € 327 mill.

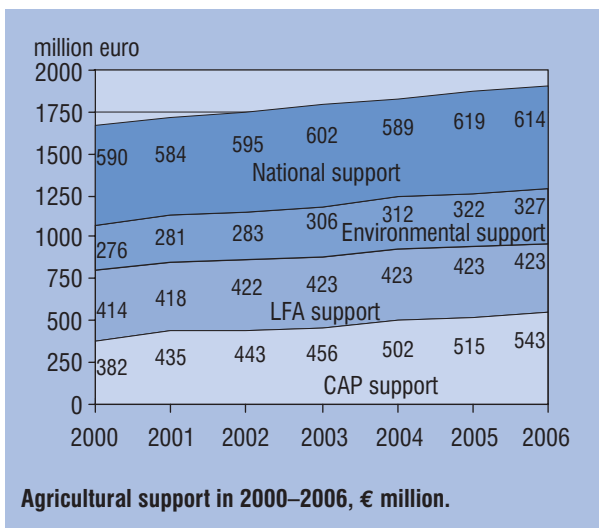
In Finland the agri-environmental scheme covers 94% of the farmers and 98% of the arable area. Under the scheme filter strips have been established along waters, use of fertilisers has been reduced, plant protection sprayers have been tested and animal manure is used more efficiently.

### 3.2. National aid

The national aids paid in Finland comprise the northern aid, national aid for southern Finland, national supplements to environmental support and compensatory allowances, and certain other forms of support. The aim is to ensure the preconditions for Finnish agriculture in different parts of the country and sectors of agricultural production.

The principles to be applied in determining the level and regional distribution of national aid were agreed in the membership negotiations. The aid may not increase production, nor may the total amount of support exceed the level before the EU membership. The aid was to be degressive over the transitional period, because the competitiveness of Finnish agriculture was expected to improve thanks to the increase in the farm size and other adaptation.

The national aid for agriculture and



horticulture paid for the production of 2005 totalled € 619 mill. and € 614 mill. have been allocated for this purpose for the production of 2006. Aid is paid on the basis of the area and number of animals and as additional price for milk. The aid for horticulture is paid as storage aid, area payments for horticultural production in the open and aid for greenhouse production.

#### 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, i.e. support area C. A little over 1.4 mill., which is 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 aid for reindeer.

Northern aid paid for the production of 2005 totalled about € 330 mill., of which € 200 mill. was paid as northern aid for milk production and € 105 mill. as northern aid based on livestock units.

## National aid for southern Finland

The national aid for southern Finland, i.e. support areas A and B, is based on Article 141 of the Accession Treaty. 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 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. The Commission considers that Finland should increase the farm size to improve competitiveness so that eventually national aids would no longer be needed.

Finland must negotiate 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 October 2003, Finland may grant both national direct aids and raised investment aid for livestock production and horticulture in southern Finland until the end of 2007. The future of the aid scheme after that will be reviewed on the basis of information that Finland will deliver to the Commission in 2006.

## National supplement to environmental aid

The national supplement to crop production was paid from 1997 until 2003, and

during this time the total amount paid per year grew from € 21 million to about € 100 million. This area-based aid was paid mainly for the most significant arable crops and vegetables grown in the open in support areas A and B, as well as for silage grass in the whole country.

From 2004 the aid for crop production has been paid as national supplement to environmental support. The supplement is determined relative to the environmental support for the crop concerned (%). The supplement is also paid in areas A and B, while in the north a corresponding amount is paid as northern aid.

## National supplement to compensatory allowances

The national supplement to compensatory allowances has been paid in the whole country since 2005. A preliminary agreement on this supplement was reached in the negotiations between Finland and the Commission on the aid under Article 141. The basic supplement 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 2005 the payments totalled 93.7% of the maximum according to the hectares. The total amount of the compensatory allowances part-financed by the EU and the national supplement may not exceed the average of 250 €/ha.

**National aid for agriculture in Finland, € million (aid per production year).**

	2001	2002	2003 prelim.	2004 prelim.	2005 prelim.	2006 estimate
Total	583.5	594.7	601.8	588.6	619.4	614.2
Northern aid	354.9	353.8	357.6	387.1	330.4	328.7
National aid for Southern Finland	134.9	133.6	130.8	127.3	99.0	97.0
National aid for crop production	80.5	93.0	98.7			
National supplement to environmental support				60.0	55.0	55.0
National supplement to the LFA support					120.4	120.4
Other national aid	13.2	14.3	14.7	14.2	14.6	13.1

## Impacts of the CAP reform on agricultural production in Finland

*Heikki Lehtonen*

The majority of the so-called CAP supports paid directly from the agricultural budget of the EU will be completely decoupled from the production in 2006. Now the CAP support is divided into two main components: single payments decoupled from the production and certain coupled payments. In many EU countries, including Finland, Sweden and Denmark, some of the headage-related payments for bovines continue to be coupled to the production while in others (Great Britain, Ireland) all CAP support has been decoupled. Coupled CAP support is paid for suckler cows, bulls and ewes and starch potato, but the CAP support for arable crops will be completely decoupled from the production as of 2006, i.e. about 90% of the CAP support will be decoupled in Finland.

Cross-compliance conditions were included as a new element to CAP support. Arable lands must be kept in good farming condition and certain minimum requirements concerning animal welfare and state of the environment must be met. In addition to this, Finland has decided nationally that if a farmer sets aside more than the mandatory area, this unused arable area must be under grass (perennial green fallow) to be eligible for CAP support. LFA support (average of 250 €/ha) is paid in full only if the set aside area is less than half of the total arable area of the farm.

In Finland the farm-specific supplements to the CAP support will stay on the same level until 2010 and then they will be abolished gradually by 2016. This means that CAP support capitalises into the land prices and the payment entitlements and lease prices of even neighbouring parcels may differ considerably. This may become an obstacle to land acquisition for farms that would need additional land and may increase the costs of expanding farms.

### Balancing cereal markets and increase in green fallow

Finland decouples the support for arable crops, including compensation for drying, completely from the production. According to studies made at the MTT Agrifood Research Finland, this will lead to a reduction in the cereal area by 10–20% and further decrease in cereal export, which may even stop completely. The set aside area will grow from the present 200,000 ha to 500,000–600,000 ha during the next decade. Part of the poorest cereal production area will be set aside, which could reduce the production volume up to about 10%. The production of fodder cereals would be sufficient to meet the domestic need. In Sweden the cereal area fell by 9% in the first year after the reform. It is noteworthy that the Finnish cereal area has grown by 20% since 1994, largely as a result of the initiative offered by CAP support.

The growing voluntary set aside area would be green fallow, because this is an eligibility condition for support. Replacing the arable area by perennial set aside would be beneficial, not only because of the current oversupply on the cereal market, but also in terms of biodiversity of agricultural land and the reduced loading of waters caused by farming. Land released from cereal production offers new opportunities to produce crops other than traditional agricultural plants, such as certain special crops and bio-energy, to respond to the demand.

## **CAP reform calls for functioning markets**

According to the theory, it would be ideal if the markets were regulated by the prices instead of support, which means that, if the markets function well, each product would be produced at a certain price in quantities which meet the demand. However, production continues only on the condition that the market prices and remaining production linked support for the production are sufficient to cover the production costs in the long term. This may not be the case in the EU in conditions where the global agricultural trade is liberalising. In the other parts of the world there are regions where many of the products can be produced at a lower cost than even the most efficient enterprise in the EU would be capable of. Studies have shown that the abolition of export subsidies by 2013 would lead to oversupply in the EU and reduce the prices for fodder cereals on the internal market by 5–6%. Because of the internal market of the EU the Finnish prices cannot rise to a level that would correspond to the production costs, and thus the indirect coupling of support to production through cross-compliance and restrictions on LFA support may be well justified in Finland in the future if we wish to maintain production motivation and continue farming. This coupling does not, however, extend to the level of products or crops, but in respect of these the production decisions will be increasingly dependent on the market situation.

The impacts of the CAP reform will be decided on the markets, which determine the changes in product prices if production decreases. What is also crucial is whether enough producers give up production so that there are enough arable hectares and milk quotas available at a reasonable price. The reform may facilitate the transfer of arable land to farms which continue in production if, for example, small cereal farms find leasing the lands a better alternative than investing in the renewal of production equipment at their poor margins. The land prices are still going to stay high.

## **Average income will not decrease – how about production?**

Because part of the coupled support is used for covering the production costs, decoupled support improves and stabilises farmers' incomes. Farmers may reduce the least profitable activities without losing support. Decrease in the production may increase the market prices. In the impact analyses of the European Commission in 2003 it was estimated that the CAP reform may lead to a reduction in the production of certain products, such as beef, and the price level within the EU may rise. Some decrease has indeed taken place in beef production and the price increased in the EU in 2005. The EU has become a net importer of beef. In Finland, where beef production is 12% smaller than the domestic consumption, the price for bull's meat rose by 6% and that for cow's meat by 13%. The incomes of beef farms increased and their profitability improved in 2004 and 2005. The partial decoupling of the support from production at the EU level seems to have improved the incomes of cattle farms, at least for the time being. In the other production sectors the incomes and profitability fell in Finland in 2005.

On farms producing beef and milk the contribution margin per animal place decreases considerably when CAP support is decoupled from the production. The contribution margin is highly important in terms of the profitability of investments in livestock production and production motivation. It is possible that a significant share of the small beef and milk producing farms will no longer make any investments in maintaining or expanding the production.

In the future part of the efficient producers will be able to increase the production in a profitable way, for example, by increasing the slaughter weights. In Finland we have often seen that the price for beef does not even cover the variable costs, which is why the selected CAP support based on the number of bulls and suckler cows is justified to ensure that production is continued. It is likely, however, that in Finland the increase in beef prices alone is not enough to encourage the producers to any significant increase in the production that would substitute for the falling trend due to the decrease in the number of dairy cattle. Beef production may continue to fall in both Europe and Finland, especially if the growing deficit between the consumption and production is readily covered by imports and the prices do not increase. The CAP reform provides much fewer support policy instruments than before to encourage the producers to increase beef production.

Within each sector 10% of the CAP support may be coupled to the production. In the case of beef most of this will be used for the support for suckler cows and heifers of the meat breeds, which would remain much lower than the payments to male bovines. In the same way a small share of the CAP support for arable crops will be paid for oilseed crops and winter cereals, but the maximum limit for this is 50 €/ha. This alone is not enough to raise the profitability of e.g. rye to the same level with other cereals.

Decoupling of CAP support from the production and the simultaneous reduction in the price for milk lead to a decrease in investments especially on small and medium-sized dairy farms. As the contribution margin to fixed production factors decreases, the repayment of loans takes longer and financing risks of investments increase. Decoupling of the CAP support may also slow down the investments in large and efficient dairy farms. The weaker profitability of the investments is partly compensated by the lower prices for milk quotas, i.e. release of quotas from farms that quit production. However, farms whose production is already quite large in scale are in the best position. Large and efficient farms produce better margins and they are capable of making profitable investments in expanding their production even if the product prices were lower. In Finland the problem is that the number of such large farms is still relatively small. Investments in larger units should continue for years before most of the production would come from the large farms, which is already the case in most of the large milk producers of the EU.

### **Opportunities offered by CAP support**

Decoupling of the support from production creates opportunities also for Finland, where the production costs are high. For example, because of the reduction in milk production and decrease in butter exports, the fall in milk prices could remain smaller. If the price reduction remained quite moderate, say 10–15%, the prospects of the farms that continue or expand their production are reasonable, albeit challenging, because there will be more room for them on the market. As small farms quit production and investments concentrate to large farms, structural change in agriculture is likely to accelerate in the next few years. However, no major change is expected in the steadily falling trend in the number of farms, but most of the farms continue some form of production. Decoupled support encourages to a shift from livestock production to crop production or set aside, but it also offers better opportunities to concentrate on the production of new crops and products and to seek income from outside the farm, if such alternatives are available.

## 4. ECONOMIC SITUATION OF AGRICULTURE

### 4.1. Agricultural income

The returns and costs of agriculture and horticulture as well as the economic result are followed by means of a total calculation made at MTT Economic Research. Income development is assessed through the concept of family farm income, which indicates the compensation for farm family's labour and own capital invested in agriculture. In 2005 the total family farm income was a little under € 918 mill., which was € 152 mill. (14.3%) lower than the year before.

Between 1994 and 2005 the nominal family farm income fell by about 35%. Since 1995, when Finland joined the EU, family farm income fell until 1998, when the decrease was particularly great due to the very bad crop. In 1999–2002 family farm income was growing steadily, but in 2003 it turned again into a decrease. Family farm income at fixed prices was about 44% lower in 2005 than in 1994.

The main reasons for the decrease between 2004 and 2005 were the poor market prices for crops, which reduced the

farm sales, and fall in the return on milk due to the lower producer price. Some of the support payments for 2005 were also transferred to the following year. Horticultural income decreased as well. Costs rose especially due to the high price for fuel oil.

The total return on agriculture and horticulture fell by about 1% from the year before to € 3.93 bill. The total return consists of the revenue from selling agricultural products and agricultural support. In 2005 the sales revenue of agriculture and horticulture totalled € 2.04 bill., which is much less than the year before. Most of the sales revenue, € 1.38 bill. in 2005, comes from livestock production. The sales revenue of crop production totalled € 0.3 bill. and that of horticulture € 0.35 bill.

Return on livestock production fell by more than 3% in 2005, even if the average meat and milk production volumes were about the same as in the previous year. The main reason for the decrease was the lower producer price for milk. Return on pigmeat rose by more than 7% thanks to the favourable trend in both volumes and

**Agricultural income at nominal and 2005 prices in 1994–2005<sup>e</sup>, € million.**

Year	Total return at nominal prices	Total cost at nominal prices	Agricultural income at nominal prices	Agricultural income at 2005 prices	Annual change at 2005 prices, %
2005 <sup>e</sup>	3,927	3,009	918	918	–15.0
2004	3,968	2,897	1,070	1,080	–4.7
2003	3,932	2,811	1,121	1,133	–3.3
2002	3,960	2,812	1,148	1,171	2.6
2001	3,900	2,798	1,102	1,141	4.2
2000	3,753	2,722	1,031	1,095	6.0
1999	3,520	2,579	941	1,033	4.4
1998	3,484	2,594	890	989	–17.7
1997	3,609	2,542	1,067	1,201	–3.6
1996	3,650	2,556	1,093	1,247	–12.7
1995	3,759	2,515	1,245	1,427	–12.4
1994	4,270	2,864	1,407	1,630	26.4



prices. Return on beef fell by a little more than 3% and that on poultry meat by about 6%.

The sales revenue of crop production decreased by almost 5%. The total yield of both cereals and potato was good, but the producer prices fell considerably. Because of the price reduction the amounts of especially rye and oats traded fell clearly. Return on sugar beets decreased by almost 16% from 2004, even if the crop was 10% higher. Instead, the sales revenue of oilseed crops increased by more than 40% as a result of the high total yield.

Sales revenue of horticulture fell by almost 3%. Because of the low price level of vegetables grown in the open the value of the production fell by more than 6%. The market return on greenhouse production stayed about the same as the year before even if the prices for ornamental plants decreased by almost 4%. Sales revenue decreased especially due to the low prices for white cabbage and carrot. The high prices for heating fuel increased the costs.

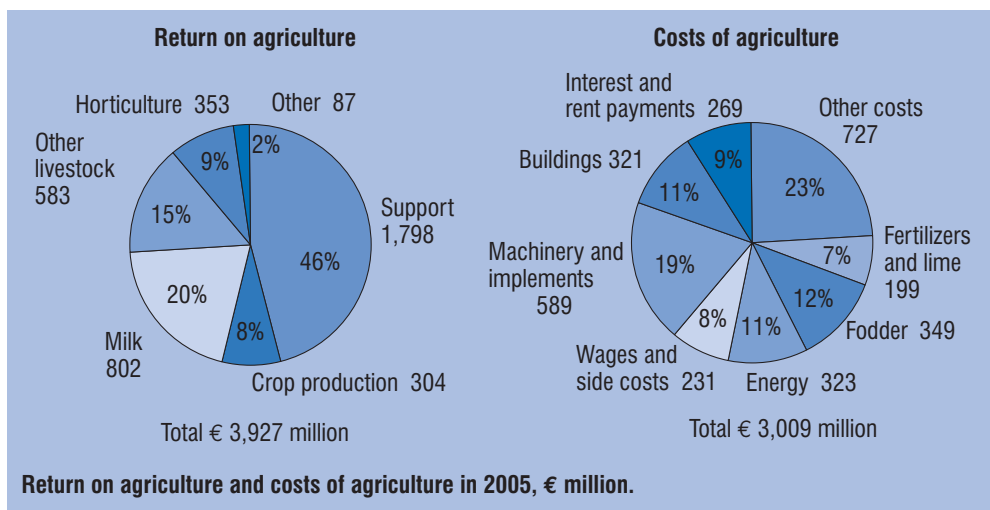
The amounts of support payments influence the income formation of Finnish agriculture and horticulture a great deal. In 2005 the payments were about 0.6% (€ 10 mill.) higher than the year before. About € 40% of the anticipated payments

for 2005 were transferred to the following year. Support payments totalled € 1.8 bill., which is almost 47% of the total return on agriculture and horticulture.

There are two main types of agricultural support: support paid under the common agricultural policy of the EU and national aid. Support funded completely or in part by the EU totalled € 1.18 bill. in 2005 and the national aids paid to farms totalled € 0.62 bill.

In 2005 the total costs of agriculture and horticulture were € 3.0 bill., which was 3.9% higher than the year before. The cost of artificial feed fell by a little under 1% and the plant protection cost by almost 7% due to the lower prices. Fuel cost rose by almost 27% as a result of the price increases in the previous year. Overheads of agriculture grew by more than 3%, following the general price trends. Lower interest rates did not cause any changes in the interest costs, but the credit portfolio of agriculture increased slightly.

The total calculation of agriculture and horticulture is based on the money flows of the sectors according to calendar years. Changes in the stock of the final products or production inputs are not taken into account.



## 4.2. Productivity development in agriculture

Positive development in the productivity of agriculture is one of the main objectives of the common agricultural policy of the EU. The national objective for the development of productivity in agriculture has been formulated as follows: "Agricultural policy creates the conditions for efficient food production which respects the nature and meets the consumer expectations." Thus the national objective is well in line with the objective of the EU but somewhat more specific.

Productivity means the ratio between the volume produced and the use of inputs. Productivity improves if the same use of inputs, such as arable land, labour and capital, yields larger volume of output or if the same volume of output is achieved by means of less input. The predominant trend in Finnish agriculture has been that the production volume has been quite stable while the use of inputs has decreased as a result of the rapid reduction in labour input.

Positive productivity development is an important objective and precondition for the growth of the national economy, which also largely determines how the competitiveness of Finnish agriculture develops on the common EU markets and what kind of income level the farmers may reach. In recent years the productivity of livestock farms has improved rapidly because of the structural change. However the productivity on farms specialised in cereal cultivation has stagnated.

Different productivity trends are often explained in international comparisons through investments in physical production equipment or human capacity as well as product development and technical innovation. Attention has also been drawn to basic factors such as stable social

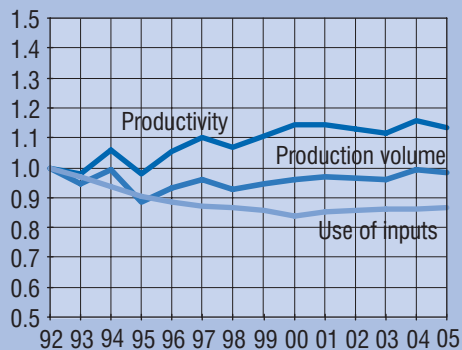
conditions, clearly defined ownership and role of the society on the market.

In Finland the productivity development cannot suffer from mental capacity or shortage of capital. The research is constantly producing technical innovation which can be refined into new products. The fact is, however, that various kinds of decoupled support payments represent a growing share, now more than half, of the turnover of cereal farms, which is why the true incentive to improve the productivity may be lacking on some of them.

In Finland we have also experience on the rights of ownership or possession of the means of production which have not been defined in a sustainable way. The problem of land tenure insecurity is contributing to a decreasing productivity growth in the Finnish arable crop cultivation. It is expected that this trend will continue, driving the sector into a low productivity trap if the problem is not solved by better contract design.

In 2003 about 13.3% of more output was reached by means of the same use of inputs as in 1992. The total production volume was 98.2% and use of inputs 86.7% of the levels in 1992. The average productivity growth in agriculture was 0.97% per year.

It seems that the new economic environment under the EU since 1995 has not



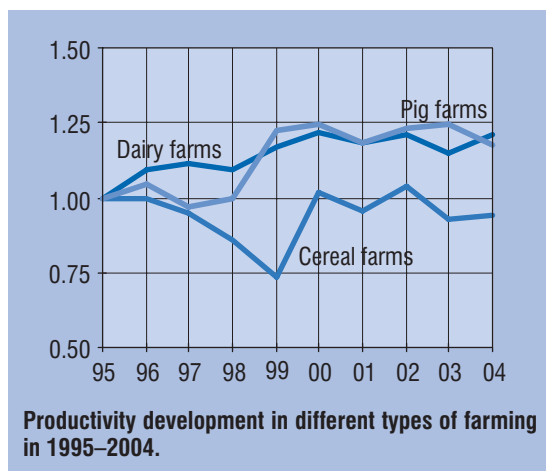
Productivity, production volumes and use of inputs in 1992–2005, when the year 1992 is indicated by 1.

accelerated the productivity development as had been hoped for. The improvement of the competitiveness of Finnish agriculture on the common market would call for faster productivity growth.

From 1992 to 2005 the total quantities of inputs used for the production decreased until 2000. In recent years the total use of inputs has increased, even if 2,800 employees, in average, leave the sector each year.

During the EU membership the average productivity development has been positive on livestock farms, while the development of crop farms has stagnated. In 2004 the same use of inputs yielded, on average, 21% more production than in 1995 on dairy farms, while on pig farms the productivity grew by 17.5%. On livestock farms the relative prices of the products and inputs have provided an incentive to improve productivity. On cereal farms the same use of inputs yielded 93.8% of the production volumes of 1995.

The productivity development in agriculture presented here is restricted to the products and inputs which can be traded on the market. The calculation does not take account of the externalities of agriculture, such as decrease in nutrient loading. The figures indicating the production volumes and use of inputs have been calculated by the Divisia index method.



### 4.3. Development of the economic result and profitability of agriculture and horticulture

The average profitability of Finnish agriculture and horticulture enterprises improved in 2004, partly as a result of the strong growth in the farm size. The arable land area of the holdings grew by 8% and the number of animals by 10%. The profitability of cattle and horticulture farms improved the most, but the profitability of cereal farms weakened.

The figures indicating profitability are based on the results of the profitability bookkeeping of the MTT Economic Research. These are calculated from results of about 900 bookkeeping farms by weighting them so that the results indicate the average results of the 45,000 largest Finnish agriculture and horticulture enterprises. On these farms the standard gross margin indicating the farm size exceeds € 9,600 and together they produce over 90% of the output of Finnish agriculture.

#### Development of returns

The gross return of the enterprises, which is the sum of the sale proceeds and support payments, grew by 11% to € 110,000. On the average, 61% of the gross return of the bookkeeping farms came from the market and the rest consisted of various kinds of support payments.

In horticulture enterprises sale proceeds represented 85% and on dairy, pig and other crop farms about 65% of the gross return. On cereals farms and other cattle farms the share of sale proceeds in the gross return was about 40%.

## Development of costs

On the average the costs grew by 11%, i.e. in the same proportion as the gross return. On the average level the costs can be divided into four almost equal parts: materials and implements, capital costs (depreciations, paid interest and interest claim for net worth), wage claim for the labour of the farm family and, as a remainder, other variable and fixed costs. The shares of these cost items differ considerably between the production sectors.

After the costs had been deducted, the average family farm income left as compensation for farm family's labour and own capital was € 25,000, which is 11% more than in 2003. Family farm income was the highest, € 34,000, on dairy farms and the lowest, € 8,000, on cereal farms.

## Costs of own labour and capital

Family farm income should cover the costs due to the use of own labour and capital. The number of annual working hours recorded by the farm family increased slightly to 3,210 hours. The cost of this was about € 37,600, when € 11.7 based on the hourly wages of agricultural employees was used as the hourly wage claim in the calculation. The wage claim cost calculated in this way increased by 6% in 2004. The hourly wage claim also includes the additional costs due to holidays, sick leave, etc. so that the calculated cost of own labour to the enterprise is the same as that of an hour of work done by hired labour.

Because of the increase in the farm size and growth in capital intensity the amount of own capital rose by 12% to € 219,000. By a calculated interest rate of 5% the interest claim cost of the average own capital during the accounting period was € 10,700.

## Profitability development

When the sum of the wage claim and interest claim for net worth are deducted from family farm income we arrive at the entrepreneurial profit indicating profitability. On average this was minus € 23,000, varying between € -15,000 and -30,000. The returns should be this much higher to give the agricultural entrepreneur the compensation for labour according to the hourly wage claim and the 5% return on own capital.

When the family farm income of € 25,000, which remains as compensation for own labour and capital, is divided by the total of the wage claim and interest claim for net worth, € 48,300, we obtain the profitability coefficient. As a relative concept this is better suited for the comparison between different years as well as farms representing different size classes and production sectors.

In the accounting year 2004 the profitability coefficient rose from 0.50 to 0.52, which means that the entrepreneur reached 52% of the wages and interest set as the objective, i.e. hourly wages of € 6.1 and 2.6% interest on own capital. Because the profitability coefficient is less than 1, family farm income did not cover the interest and wage claim, as was already seen in the entrepreneurial profit, which was negative. On dairy farms the profitability coefficient was 0.54, on other cattle farms it was 0.63, on pig farms 0.47, horticulture enterprises 0.59, cereal farms 0.35 and other crop farms 0.58. In this context horticulture enterprises refers mainly to greenhouse enterprises.

The individual income and cost items have been entered as return and costs of the year when the production took place in accordance with the accrual principle. Support payments have also been allocated to the year when they were determined

independent of the time of payment. This means that the annual variations in the yields and returns are directly reflected in the annual profitability figures of the enterprises.

However, no far-reaching conclusions on the long-term trends in profitability should be drawn from relatively small changes in profitability. When analysing the differences in profitability between production sectors it should also be kept in mind that a temporary decrease in profitability relative to the other sectors is by no means alarming if the result of the preceding years has been better. The situation is alarming in production sectors where the profitability has been low for quite a long time. This means that, for example, the weaker profitability in pig husbandry gives far less cause for concern than the profitability of cereal farming, which has been low for a long time.

### **Variation and dispersion of profitability**

In about half of the enterprises the profitability is between 0.25 and 0.75 (lower and upper quartiles). In the best 12% of the enterprises the profitability coefficient is higher than 1, which means that compensations for own capital and an hour of labour were over 5% and € 11.7, respectively. However, there are an equal number of farms where the profitability coefficient was negative, which means that there was no compensation for own labour and capital.

The variation in the profitability was the smallest on dairy farms. Of the cereal, horticulture, pig and other cattle farms the profitability coefficient was negative in the lowest 10% (1st decile), while only in the groups of horticulture, other crop and other cattle farms the profitability coefficient was more than one on all farms included in the best 10% (9th decile).

Partly as a result of the weak profitability of cereal farming the profitability was

poorer in southern Finland than in central and northern Finland. The variation in the profitability was also the greatest in support areas A and B, i.e. in southern Finland. In support areas C the profitability varied less than in the south.

When considered according to the production sectors, the differences between the support areas have decreased and, for example, in milk production the profitability is about the same in all support areas already in the size class with about 30 cows.

In most production sectors the profitability was clearly the better the larger the farm size. For example, on cereal farms the profitability coefficient was less than 0.2 but in the class of farms with 40–100 ha it was 0.48.

However, this should not lead to the conclusion that all farms should aim to increase their size to improve the profitability without considering the cost aspect. The final result depends on how and in what conditions the farms have reached their current size.

### **Solvency and liquidity**

In agriculture and horticulture the net profit which remained as interest on own capital was negative, € –12,500. The profitability figure used by businesses, return on own capital, is obtained when the net profit is divided by the average own capital of the accounting period. In agriculture and horticulture enterprises this return on own capital was about –6%. This means that further capital needs to be invested to continue the production activity in the current extent. This further capital may be external, but often it consists of the compensation for own labour left to the enterprise or funding from other operations left to ensure liquidity with the same conditions as own capital (forest and wage income, investment subsidies, etc.). This is one reason why the average debt of the enterprises was only about € 70,000 and



the equity ratio, i.e. the average share of own capital in total capital, is still very high, 76%. However, there is considerable variation between the sectors from the average of 53% in horticulture enterprises to 80% on cereal farms.

The equity ratio is improved by the fact that all investment subsidies are included in own capital in the balance sheet. Of the bookkeeping farms about 80% make some investments annually and about 20% of these take advantage of investment subsidies. One-off depreciation of these, i.e. excluding them from the balance, would distort both the equity ratio and the picture of the capital needed for agricultural production in general.

Property acquired by means of investment subsidies is included in the balance and depreciations are calculated from this as well. In the profit and profitability calculation this depreciation cost is compensated for by the same amount of investment subsidy entered as return. Because of the subsidy entered as return, the profitability shown in the calculation is higher on farms which have received investment subsidies than on similar farms which have not. If the investment subsidy is used for a purpose on which no depreciation is made, the figure of 5% is used to enter the subsidy as return.

When calculating the total capital, the balance values of arable land have since 2003 been based on regional five-year averages in the real estate market price register (statistics). A 30% reduction was made to these and the average value of subsurface drainage in the region concerned was deducted, because subsurface drainage is already included in fixed assets. This revision corrected the values of arable land in different regions to correspond to the real situation, but it did not increase the average amount of capital tied to arable land in the whole country. This procedure is used to determine the value of arable land in the

bookkeeping, but the value of the purchased lands of bookkeeping farms for the balance is determined by the purchase price.

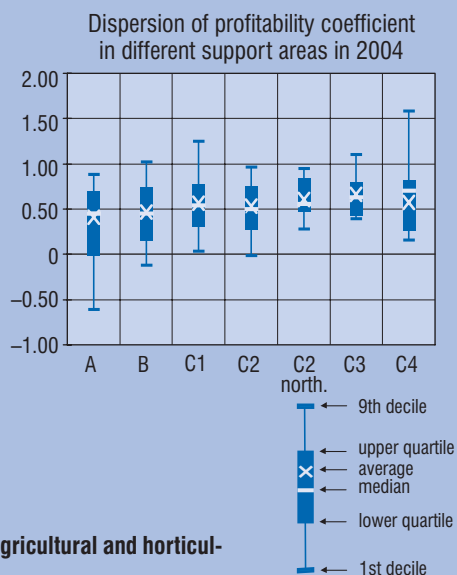
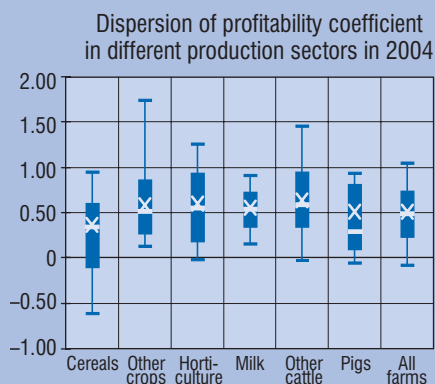
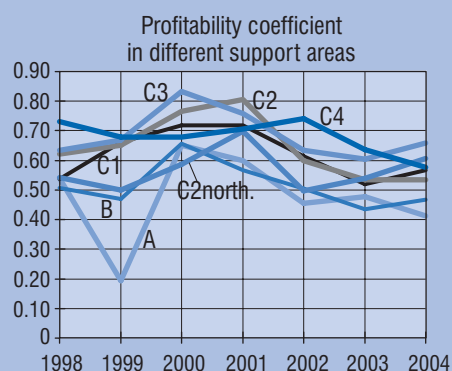
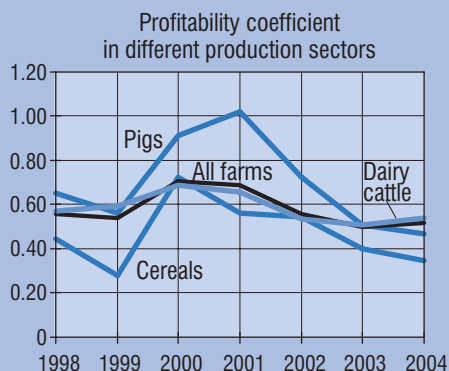
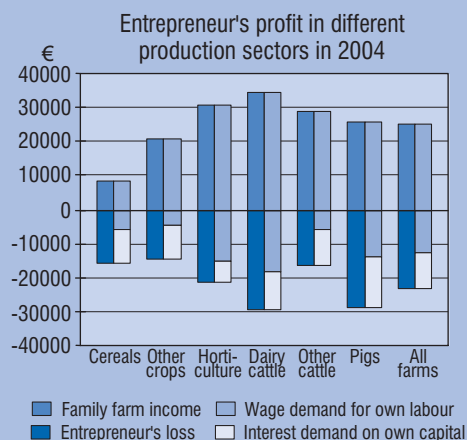
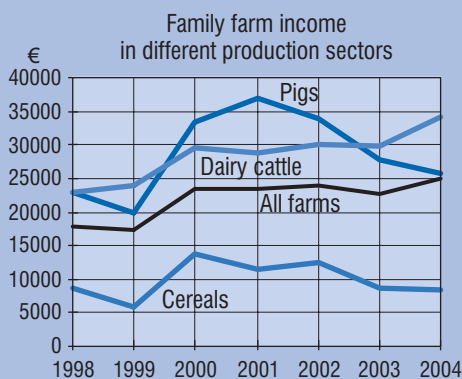
The capital turnover (gross return relative to total assets) was low, i.e. capital is tied for a long time. This may cause liquidity problems in production founded on external capital, because the interest payments and repayments often need to be made over a shorter time period. High equity ratio may in fact be a basic condition for agricultural production in terms of maintaining liquidity.

However, high equity ratio may not be reflected as high profitability, as can be seen on cereal farms. To a smaller extent this may be due to the fact that the capital invested by the entrepreneur is risk capital which the entrepreneur gets back in a liquidation situation only if any of it is left after the financial institutions have taken their own share. This is why an interest demand of 5% is used on own capital invested, which as such is quite low compared to the about 10% rate normally used by businesses. In many cases external capital may be available at a much lower interest rate and thus a higher share of this would improve the profitability.

### **Earnings of farmers compared to other occupations**

When the interest claim for net worth of 5% is deducted from family farm income, what are left are the earnings, € 14,300. By dividing this by the hours of labour we arrive at the hourly earnings, which can be compared with the earnings of the other occupations. The average earnings in agriculture are € 4.5, while the earnings of industrial workers are about four times higher. At the current low rate of inflation, however, part of the 5% interest on own capital can be used for consumer expenditure without lowering the real value of the capital.





Development of results and profitability on full-time agricultural and horticultural enterprises at nominal prices in 1998–2004.

## 4.4. Production costs of agriculture

High production costs per unit produced have always been one of the main problems in Finnish agriculture. Success on the common European market, where the competition is tightening and producer prices are on the decrease, calls for more attention to the unit costs of farm products and possibilities to reduce them. During the EU membership the farms have increased in size with the aim of lowering the unit costs and improving their profitability. The production costs of milk and cereals from 1995–2004 presented below are based on the profitability bookkeeping data of the MTT Agrifood Research Finland. The costs have been deflated to the price level of 2004 by means of the cost-of-living index.

### Milk

In 2004 the average production cost of milk was 59 cents/kg. The producer price without support was 34.4 cents/kg and the average production support in the whole country was 9.8 cents/kg. In 2004 the unit cost of milk was about a fifth lower than in the beginning of the EU membership, mainly as a result of the increase in the farm size and milk yield of dairy cows.

The average arable area of dairy farms included in the calculation was 49 ha and the average number of cows was 26. The average annual milk yield per cow was 8,100 kg. The size of farms has grown strongly during the EU membership: in 2004 the arable area was almost 20 ha larger than in 1995 and the number of cows had increased by nine. The annual milk yield per cow had risen, on average, by 1,200 kg over the past decade.

The unit cost of milk decreases as the farm size grows. The labour cost of the farm family, which is one of the fixed costs, is the most important factor explaining the differences in the costs in different farm size classes. On farms with over 50 cows it represented 22% of the unit costs and on average it was 61% lower on these farms than on farms with 10–20 cows. Relative to the production volumes the use of human labour is higher than on large farms, where capital is substituted for labour.

### Cereals

In 2004 the average production cost of cereals on the bookkeeping farms was 46 cents/kg. The average market price for all cereals was 11.2 cents/kg.

The unit cost of cereals was about the same in 2004 as in 1995 when Finland

**Milk production costs in 2004, cents/kg.**

	Number of cows/farm					Average
	under 10	10–20	20–30	30–50	over 50	
Variable costs	26.9	24.3	23.8	23.0	23.5	23.9
– purchased feed	5.6	5.9	6.1	6.7	7.2	6.2
– other livestock expenses	3.4	2.6	2.5	2.3	2.3	2.5
– energy	2.3	2.1	2.0	1.8	1.7	2.0
– maintenance	3.4	3.3	3.3	2.9	2.9	3.2
– other	12.2	10.4	9.9	9.3	9.4	10.0
Fixed costs	61.2	40.5	32.8	27.7	25.6	35.1
– cost of farm family labour	50.4	28.3	19.6	13.9	11.0	22.1
– depreciations	5.3	7.0	7.9	8.6	9.7	7.8
– interest on capital	5.5	5.2	5.3	5.2	4.9	5.2
Production costs, total	88.1	64.8	56.6	50.7	49.1	59.0

### Production costs of cereals in 2004, cents/kg.

	Arable area, ha/farm				Average
	under 30	30–50	50–100	over 100	
Variable costs	23.7	22.0	14.8	15.6	19.1
– purchased fertilisers	3.1	2.9	2.6	2.8	2.9
– other expenses of crop production	3.0	2.6	1.9	2.2	2.4
– energy	3.3	3.4	2.3	2.0	2.8
– maintenance	4.7	3.8	2.2	2.3	3.2
– other	9.6	9.3	5.8	6.3	7.8
Fixed costs	34.1	32.5	20.8	18.0	26.9
– cost of farm family labour	14.2	12.5	7.4	5.5	10.2
– depreciations	10.3	10.9	6.9	7.1	8.9
– interest on capital	9.6	9.1	6.5	5.4	7.8
Production costs, total	57.8	54.5	35.6	33.6	46.0

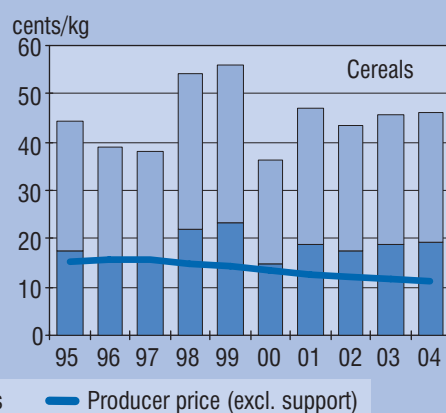
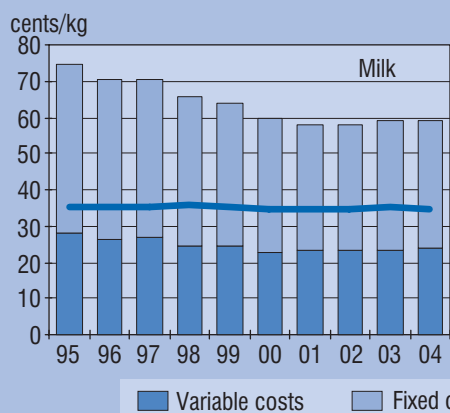
costs cannot be divided between these in a reliable way, and thus the costs indicate the average cost of both bread and fodder cereals.

The unit cost of cereals decreases as the farm size grows. On cereals farms, too, the differences between farm size classes were the greatest in the labour cost

joined the EU. In 1998 and 1999 the crop was poor and the unit costs were high. The year 2000 was again a good year and the unit costs were the lowest during Finland's EU membership.

The average arable area on the farms included in the calculation in 2004 was 60 ha, of which the average cereal area was 44 ha. The average cereal crop was 3,300 kg/ha. The arable area of cereal farms has grown by only 10 ha during the EU membership. The profitability bookkeeping data do not allow the calculation of the production costs for the different cereals, because the

of the farm family. In 2004 the labour cost on large cereals farms with over 100 ha was about half of the costs on farms with 30–50 ha. The variable costs of cereal production were, on average, about the same in the farm size classes of 50–100 and over 100 ha of arable land. In farm size classes with under 50 ha both the fixed and variable costs per unit produced were higher than in the other size classes. In cereal production the share of depreciations and interest on capital in the unit cost is quite high, while on dairy farms the share of the labour cost is more significant.



Unit costs of milk and cereals and prices in 1995–2004 (at 2004 prices).

## Addressing challenges within the WTO

*Ellen Huan-Niemi*

The members of the World Trade Organization (WTO) are growing with 149 member countries in December 2005. Thus, there are different groups within the WTO that have diverse interests in agriculture. The developing countries are keen to lower protection and support given to the food and agricultural markets in the developed countries and increase market access to these lucrative markets. Until now, the WTO membership has approved to eliminate export subsidies by 2013.

The United States (US) has recommended a three-stage approach to the reduction of domestic support with the European Union (EU) having a higher reduction rate compared to the US. As a result, the EU's Common Agricultural Policy (CAP) will be further reformed whereby direct payments to producers are being decoupled from production and market supports for agricultural production are being dismantled. Finnish agriculture has to survive the reforms made to enhance the competitiveness and market-orientation of the CAP in order to strengthen the EU's negotiating position in the WTO. The EU has proposed to drastically reduce domestic support by 70% in the form of Aggregate Measure of Support (AMS). According to MTT projections, the EU may not be able to fulfil this obligation with the current agreed reforms that include the radical reform of the EU sugar regime. Finland will have to face challenges within the CAP as well being a high cost producer that is dependent on protection and support. Producers in Finland have been receiving high market prices for their agricultural products with the help of protection. In addition, producers have been eligible for payments that are coupled to production. In the quest to fulfil commitments made under the WTO, producer prices and agricultural income in Finland will decrease further.

The US proposal for tariff reductions exceeds the so called Harbinson proposal put forward by the former chairman of the agriculture negotiating body for the Doha Round in 2003. In the first stage of application, over five years from 2008, tariffs would be reduced by from 65% to 90%, with the largest cuts for tariffs greater than 60%. This anticipates a more rapid and severe reduction than the EU proposal. The highest cut under the EU proposal is 60% for tariffs greater than 90%. According to MTT projections, the agricultural products most sustainable to acute erosion of border protection would be butter, poultry, beef, and sugar. Furthermore, the US proposal also specifies a low percentage of tariff lines which would qualify for "sensitive products" status – only 1%. This percentage level is not enough even for the tariff lines for poultry meat alone not to mention the other sensitive products. Thus, the EU would have great difficulty in protecting its most sensitive sectors. On the other hand, the EU has proposed up to 8% of the total number of tariff lines may be designed as "sensitive products" status. The EU may be able to shield the sensitive sectors from the full force of the tariff reductions if 8% of tariff lines could be nominated as "sensitive products."

The severe cut in tariffs plus phasing out of export subsidies would pose considerable problems for the Finnish dairy sector. The acute erosion of border protection for butter would result further cut in the intervention price for butter in order to ensure the competitiveness and market-orientation of the CAP. Hence, market prices for milk in Finland would drop and the income of dairy farmers would decline as well. The dairy sector is the largest and most important agricultural sector in Finland. The Doha Round would be a tough challenge for the Finnish dairy sector if there will be drastic reduction in border protection due to inadequate tariff protection.

## 5. AGRICULTURE AND THE ENVIRONMENT

Modern societies direct various kinds of expectations to farming. Apart from producing staple foods, agriculture should contribute to, for instance, beautiful landscapes, biological diversity and rural viability. This so-called multifunctional agriculture is not a new issue. After World War II secure food supply received considerable attention, while ensuring the viability of the rural areas has been a major topic since the 1970s. In recent years the role of environmental amenities as a product of multifunctional agriculture has become increasingly important. Environmental policy of agriculture is closely linked to other trends in the society, because the state has always been active in steering agricultural production.

Since 1995, when Finland joined the European Union, agricultural production has been influenced by the agricultural and environmental policy of the Community. The main EU instrument for environmental policy of agriculture is the Agri-Environmental Scheme, which aims to reduce the loading on surface waters and groundwater, reduce emissions to air, protect the biodiversity of farming environments and manage the rural landscapes.

The Finnish Agri-Environmental Scheme consists of basic and additional measures as well as special measures which call for more efficient environmental protection and management. The aim has been that the basic measures would be adopted by as many farmers as possible. In 2004 the scheme covered 91% of the Finnish farms and 96% of the arable area. The role of special measures has been smaller than expected, accounting for less than 10% of the funding.

Agri-environmental support is the largest item in the state expenditure on environmental protection. In 2005 about € 969 million was used for environmental protection and agri-environmental sup-

port accounted for about a third of this, € 322 million. The amount of environmental support was about € 28 million higher than the year before.

The majority of the five-year environmental contracts ended in 2005, and these were continued by two-year contracts with the same terms. At the beginning of the new programming period in 2007 the farmers conclude new contracts according to the conditions of the new scheme. The preparation of the Rural Development Programme, which includes the compensatory allowances for less-favoured areas and environmental support, began in 2005 (see special topic “Revision of environmental support“ on page 78).

### 5.1. Environmental impacts of agriculture

Agriculture has an important role in maintaining biodiversity and as a producer of rural landscape and recreational services. In the future agriculture may have a new significant role as a producer of renewable energy to substitute for the imported fossil fuels. However, agriculture also has negative impacts on the environment concerning the soil and its structure, surface and groundwater and the air.

#### Biodiversity and rural landscape

Agricultural production is based on utilising biological diversity. Similarly, many wild plant and animal species have over centuries adjusted to utilising agricultural environments created by man. As the production methods of agriculture have changed and become more intensive, the diversity of species has declined in farming environments. There are fewer species in intensive plant production regions with little diversity in the landscape structure

than in extensive and mixed farming and livestock production regions. Due to the decrease in grazing and animal husbandry organisms that depend on meadows and forest pastures have declined and become endangered.

In the past fifty years, agricultural landscape has lost many of its small features. Headlands of open ditches and barns in the fields have become increasingly rare. Especially subsurface drainage, regional differentiation of plant and animal production, and concentration of animal husbandry to larger units have affected agricultural land use and landscapes.

Based on the results of the follow-up study on the impacts of the Finnish Agri-Environmental Programme (MYTVAS), the agri-environmental measures have contributed to the preservation of biodiversity and open farming landscapes. However, the current measures are not likely to be sufficient to stop the negative effects caused by long continued development towards more intensive farming practices.

and the sea from arable land, causing eutrophication. This can be seen as turbidity of the water, increase in algae and the mass blooming of toxic blue-green algae in the summer.

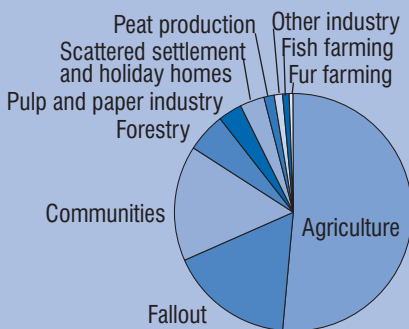
Environmental support has improved the farming practices considerably. For example, filter strips are left along water bodies, a larger share of the arable lands is covered by plants during the winter and the use of phosphorus fertilisers has decreased by almost 70% and that of nitrogen fertilisers by 30% from the levels in 1990. However, agriculture is still the greatest single source of nutrient loading on waters. The Finnish Environment Institute estimates that at present about 50% of the nitrogen loading and 60% of phosphorus loading comes from agricultural sources. Even if the emissions have been reduced, the eutrophication of waters continues and the state of waters has not improved as expected.

The use of pesticides began to increase in Finland towards the end of the 1990s after a long downward trend. The main reason for this was the wider use of direct sowing and the shift to pesticides that need to be used in larger doses. On the European scale, however, the quantities of pesticides used in Finland are still relatively moderate. In 2004 the use decreased again after a ten-year upward trend.

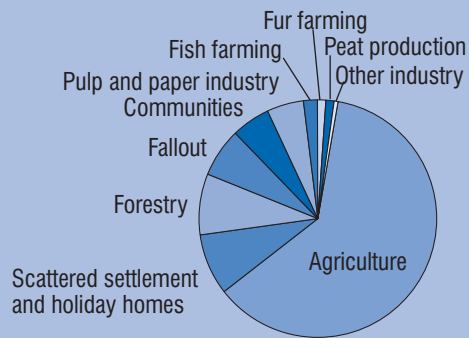
## Loading of waters

Agriculture is a significant source of non-point source pollution. Load on waters is caused by both arable farming and livestock production. Nutrients, mainly phosphorus and nitrogen, leach to rivers, lakes

**Sources of nitrogen emissions**

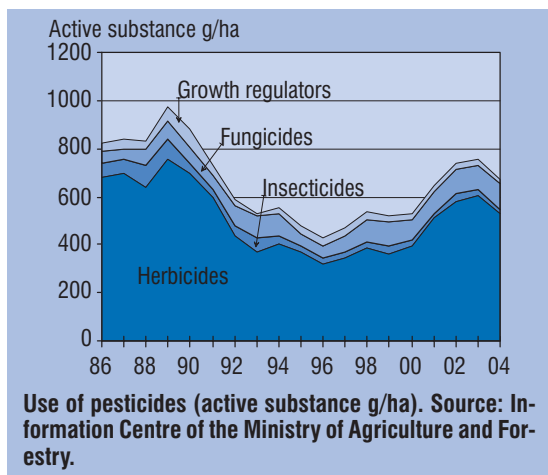


**Sources of phosphorus emissions**



**Loading of waters. Source: Ministry of the Environment.**





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

### Emissions to the air

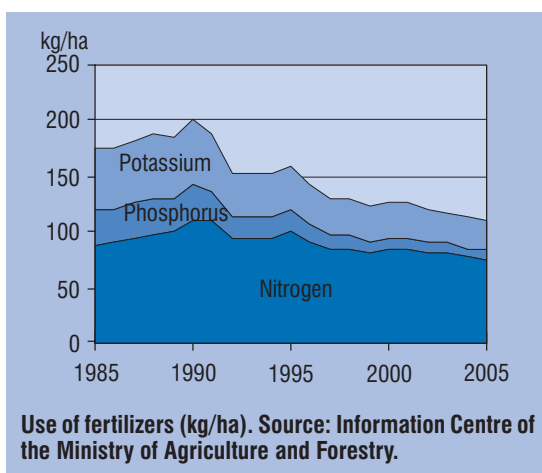
Climate change poses new challenges to Finnish agriculture. The measures of adaptation to climatic changes are likely to change the relative profitability of different crops and production methods. Agriculture also contributes to climate change. The greenhouse gas emissions from the agricultural sector represent about 9% of the total emission in Finland. Since 1990 the emissions from agriculture have decreased by about a fifth as a result of the decrease in agricultural production. In relative terms the emissions from agriculture have decreased even more as the total emissions from other sectors have grown. Despite the positive trend, agriculture will continue to be seen as one source of environmental pollution also in this respect.

Most of the greenhouse gas emissions from agriculture are caused by the decomposition of organic matter in the soil, the digestion of bovines and the decomposition of manure. Minor emission sources include nitrogen fertilisation, liming of arable land and use of fossil energy in agriculture. One common feature in all emissions from agriculture is that it is difficult to reduce them without directly influencing the volume of agricultural production.

### Agri-environmental regulation

Besides factors causing emissions and environmental load, the structural change in agriculture and growth in the farm size increase the environmental risks of farming. Various kinds of administrative measures have been taken to mitigate the negative impacts, including normative regulations and support for environmentally sound production practices.

Environmental protection in the agricultural sector is influenced by both national and international environmental legislation. National regulation includes for instance environmental permission procedure and waste legislation. The EU environmental legislation related to agriculture includes for instance the Natura 2000



network, the Nitrates Directive and the Water Framework Directive.

The Water Services Act of 2004 implements the Water Framework Directive in Finland. The aim of the Directive is to protect, improve and restore waters so that their status will not deteriorate any further and the chemical and ecological status of waters is good in the whole EU by 2015. Water protection is founded on the assessment of the status of waters, where the current status is compared to the natural state. Management and action plans are drawn up for each water management area.

Another significant regulatory instrument concerning agriculture is the Agri-Environmental Scheme, which also emphasises water protection and thus most of the support is directed to water protection measures. In contrast, only about 2–3% of the support is used for measures that are primarily targeted at enhancing biodiversity. However, the impact of environmental support on biodiversity is larger, because many of the water protection measures, such as filter strips and headlands, have positive impacts on biodiversity.

## 5.2. Agricultural bioenergy

In 2005 the price of crude oil started to rise more steeply than had been anticipated. The low self-sufficiency of Europe in energy supply became a topical issue, leading to a need and desire to develop backstop technology through biofuels to respond to the possible future price shocks of oil. According to the recent targets, the EU Member States aim to triple the use of biofuels for transportation from the current about 2% to almost 6% by 2010. In December 2005 the European Commission presented a highly ambitious action plan concerning all forms of bioenergy. The public attention to bioenergy is also related to the objectives of agricultural policy and efforts to mitigate the impacts

of climate change. The tensions and uncertainties in the sugar sector of the EU also promoted the discussion on bioenergy.

Agricultural bioenergy made the final breakthrough on the domestic forums as well. The efforts to develop bioenergy are no longer considered superfluous, even if the Finnish energy policy has traditionally been driven by the industry and favoured centralised solutions. The importance of developing agricultural bioenergy products was stressed by the Minister of Agriculture, Minister of Trade and Industry and the candidates for the President of Finland. The topic was also widely discussed in major newspapers.

Bioenergy is hoped to contribute to reaching various kinds of objectives concerning entrepreneurship, employment and rural viability. The alternative forms of bioenergy production are reed canary grass, biogas, energy oats and straw for electricity and heat production and oil-seed crops, bioethanol and biogas for biofuel for transportation.

### Production of biogas and field biomass energy

Biogas can be produced from animal manure, arable biomass and other organic matter by anaerobic digestion, and it can be used for the production of heat and electricity or refined into biofuel for transportation. The production of agricultural biogas has already started in Finland. The breakthroughs in recent years have created a positive impetus and today both farmers and decision-makers show interest in biogas production.

The simplest concept for biogas production is to produce electricity and heat for farm's own use. The most productive solutions are found on large sow farms, where the need for heat and electricity corresponds most closely to the amount of biogas energy derived from animal manure. The profitability of using farms' own

energy is founded on the fact that no transfer charges, emergency supply fees or VAT need to be paid for it.

In 2005, the first large-scale agricultural biogas power plant in Finland was opened in Vehmaa. The power plant processes liquid manure from 20 pig farms as well as community waste, and functions primarily as a waste treatment plant for environmental purposes. The profitability of such plants is based on the charges for receiving waste from industry and communities for processing.

Economically the most promising alternative is the refining of biogas to be used for transport. The problem is that there are still very few filling stations and vehicles which could use gas as fuel. The most readily usable potential obviously exists in public transportation, which uses a single filling station.

Arable biomass, such as reed canary grass and energy oats, can be cultivated directly for burning, both for heat and combined production. Especially reed canary grass has attracted a lot of interest. Experiences from cultivation have been partly encouraging, partly somewhat disappointing.

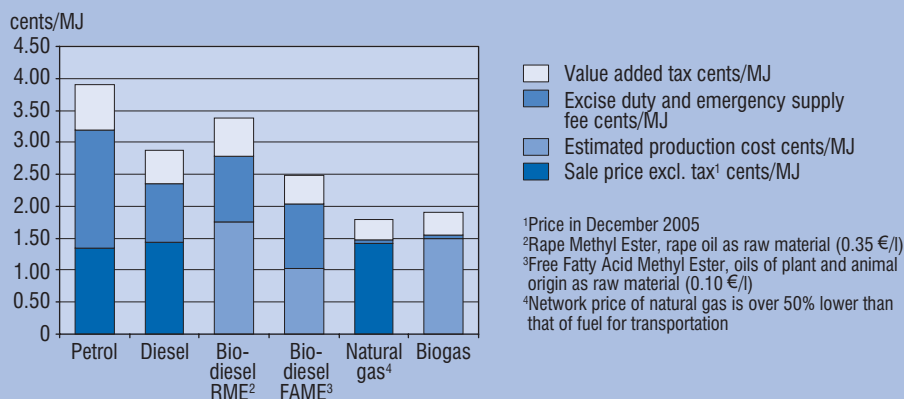
The burning of reed canary grass succeeds best in fluidized bed boilers, mixed with other fuel (max 25% of the fuel vol-

ume). The potential for using reed canary grass depends on the existing power plants in the region and availability of the other fuels for the mixture. Energy oats is mainly suited as a heat production solution for farms and as a way to utilise the sorting waste and cereals which cannot be sold on the cereal market.

## Need for regulatory instruments

The support for arable energy (45 €/ha) involves rules that are directed at preventing the abuse of the scheme. In practice these rules make it quite difficult to apply this support instrument. For example, farmers may not produce energy from crops themselves, but the processor must be another party (so-called primary processor). This other party must lodge a security (60 €/ha) to the Ministry of Agriculture and Forestry, which may be lost if the set norms cannot be complied with. Area under CAP set-aside (10% in 2005) is not eligible for the support for energy crops.

Increased use of biodiesel and ethanol as biofuels for transportation is restricted by the excise duty collected as a kind of punitive damage tax. The tax is founded on the fear of reduced tax revenue if foreign biofuels take over the markets. In the case of biogas such an import threat is unlikely,



Price formation of fossil and renewable fuels for transportation, cents/MJ.

because transferring gas takes a lot of space and is very costly. The use of both biogas and natural gas for transportation is very likely to increase, as the energy taxation on these fuels is rather light.

The present legislation restricts the large-scale use of vehicles which could utilise gas, because the gas vehicles registered in Finland must meet the future Euro 4 emission norm. This is no problem for new vehicles, but the rule prevents the import of used vehicles or conversion of cars using petrol to the use of gas.

### 5.3. Recreational use of nature

The countryside surrounding towns and cities with forests and fields offers an important recreation setting for the Finns. According to studies, 97% of the Finns use nature for recreation at least once a year. A third of the Finns engage in outdoor recreation in the nature almost daily and only 4% less than once a month. On the average, Finns have eleven hobbies which involve outdoor recreation in the nature. Activities relating to rural environments which the majority of Finns engage in at least once a year include walking and hiking, swimming, picking of berries and mushrooms, cycling and spending time at summer cottages.

The recreational use of the nature is directed both to the immediate surroundings of people's homes and nature sites located further away. The concept of nature tourism is used when the main purpose of travel is outdoor recreation and the trip involves spending the night at site. A little under half of the Finns make at least one such trip per year, the average number is nine and the average number of days per year is 25. Almost 40% of the days used for nature tourism are spent at summer cottages.

Almost 90% of the Finnish land area can be freely used for outdoor activities under the everyman's right, the public

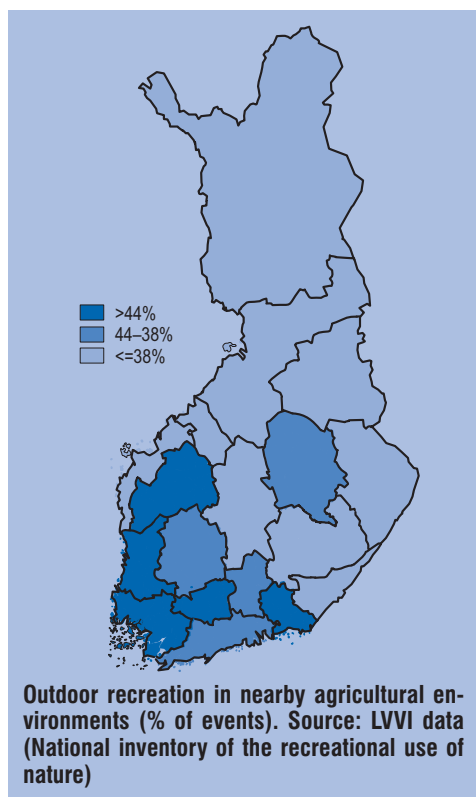
right of access. The access to forests, roads across arable areas, headlands and in winter also arable lands is free. Furthermore, municipalities and the state offer recreational services in areas designated specifically for outdoor recreation and activities. The total surface area of these is more than 3 million hectares.

### Role of farming environments

The role of forests as recreational environments has been widely recognised for a long time. Managed arable lands are appreciated as landscape features, but traditionally agricultural land has not been understood as an important element of the recreation environment. However, almost 40% of the day trips takes place in farming environments, which makes up altogether 180 million visits to these environments. Of over night nature trips about a third are directed to regions with agriculture, in addition to forests. Altogether this makes up 4.6 million days of nature tourism.

Even if recreational use of nature mainly takes place under the everyman's right and most of the trips are made to summer cottages owned by families, nature tourism also offers business opportunities for the rural areas. Nowadays about 3,600 small rural enterprises offer tourism and recreation services. They employ about 6,000 persons and their turnover totals about 461 million euros.

Agricultural environments are particularly important for outdoor recreation in areas where the share of agricultural land is large or there are fewer waters bodies. Hence farming environments are common recreation areas especially in southern Finland. The visits to agricultural environments differ from other visits in that people often do these visits alone and they are prepared to spend less money on them than on recreation in other types of sites. Agricultural environments are commonly used for hunting, walking the dog or cycling.



## Benefits from recreational use

The perceived benefits of outdoor recreation often relate to physical and spiritual health, experiencing the nature and landscape, social relationships and self-improvement. The monetary value of the personal experiences can be estimated by considering the choices people make. Outdoor recreation often involves at least the cost of getting to the site or that the time spent there is not available for other uses. In monetary terms the benefits can be estimated according to the number of times the site is visited and the costs involved. The estimates of the benefits of one outdoor recreation event vary from € 10 to 60.

When assessing the benefits of recreation it is also possible to consider the impact of the environment on the perceived benefits. In home surroundings the ben-

efits from outdoor recreation seem to be equal in agricultural and in forest environments. The preliminary results of research on nature tourism show that people are willing to pay more for travelling to a nature site which does not include agricultural environment than for a trip to agricultural environment. Thus it seems that the present farming environments reduce the benefits from nature tourism.

There are expectations for rural tourism to become a significant industry in the countryside. Therefore it is important to consider how the agricultural environment could be developed as an attraction especially in rural tourism sites. Farming practices that promote landscape values and outdoor recreation would increase the benefits from outdoor activities. Such practices would be particularly important in southern Finland, where agricultural areas are commonly used for outdoor recreation in home surroundings.

Promoting the recreational use of nature and nature tourism have not been included in the objectives of the Agri-Environmental Scheme. However, certain basic and special measures contribute to outdoor recreation in farming areas. These measures include for instance traditional biotopes, plant cover during winter, riparian zones, biodiversity of arable lands, and development and management of landscapes.

## 5.4. Biosecurity in agriculture

The biosecurity of agriculture and the food sector has recently become a very topical issue in several countries. In this context biosecurity means the protection of production (including agricultural and food production), the environment and human health against various kinds of pathogens, weeds and pests. Biosecurity deals largely with the same questions as the traditional quarantine policy.

However, biosecurity differs from quarantine policy in two important respects. First, its objectives are more varied: besides sustainable production (supply security, economic profitability) and food safety, the role of the environment and cultural values (traditional food, land use) are also important. Second, biosecurity aims at a comprehensive approach in preventing the threats: the prevention of animal and plant diseases, zoonoses (diseases communicable between animals and humans) and pests are interlinked, threats are prevented on several levels and decisions on selections between threats are transparent and prioritised. Biosecurity stresses the fact that the problem is shared and efforts to mitigate the problems and their consequences are made through extensive cooperation.

One reason for the growing importance of biosecurity is globalisation, which offers the diseases and pests unprecedented opportunities to move rapidly and efficiently from one place to another via tourism, transport and trade. In 2005, especially the avian influenza was widely discussed as a potentially very dangerous disease relating to agriculture. Such diseases have serious consequences because even if a pandemic (epidemic of a global scale) could be prevented, the economic impacts on agricultural production and international trade could be enormous. Especially in poor countries killing for instance all the poultry of a village would have serious economic and nutritional implications.

### **Economic impacts of biosecurity**

The costs to the society may be considerable should the biosecurity policy fail. The foot-and-mouth disease epidemic cost Great Britain billions of euros and, according to recent estimates, the costs of a one-year avian influenza epidemic could rise to 800 billion dollars. The concern of the international community is reflected in its prepar-

edness to increase funding to prevent the spread of the problems. We can only guess whether the motive is a genuine desire to help or the fear that this lethal problem may move to the western countries.

Biosecurity is characterised by the externalities of the threats and the public good nature of the measures to prevent them. Individual actors may have an important role in the degradation of biosecurity – anyone could risk it, for example, by importing a pet without the appropriate quarantine arrangements. Thus an act by an individual agent produces a negative externality which weakens biosecurity. The benefits from the prevention extend to the whole community, while the party carrying out the preventive actions is responsible for all the costs. This is why the market will not produce sufficient amounts of prevention and the public sector has an important role in producing biosecurity.

The public resources, however, are limited. The societies need to decide how much they are prepared to invest in biosecurity and how to optimise the allocation used for biosecurity to reach the best possible result. This involves decisions on prioritising the species and diseases to be prevented, selecting the most cost-efficient means and dividing the costs in the society.

### **Challenging policy measures**

Even if the prevention of a certain species would be economically profitable (benefits are greater than the costs), the measure may not be economically rational if the limited resources would lead to insufficient attention being paid to a species causing possibly even greater damage. The prioritisation of the species and diseases to be prevented is challenging – no comprehensive cost-benefit analyses can be carried out for all the organisms. The creation of joint optimisation policy also suffers from the scattered responsibility between different administrative sectors and bodies and the



many elements of uncertainty involved.

Further, in addition to the potential risks, various international agreements must be taken into account in formulation of the biosecurity policy. Of these the most significant is the WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), which allows the protection of human, animal, plant and ecosystem health through measures which restrict international trade. The measures must be founded on scientific evidence and treat all trade partners in a non-discriminatory manner, and they may not be more trade-restricting than is necessary. Studies have revealed some cases where a threat which may appear relatively minor in the western countries leads to trade-restricting standards which may indirectly cause very serious economic and health problems in, for example, Africa.

Biosecurity will become increasingly important in the modern world. Protecting supply security against diseases and pests spread either intentionally or unintentionally is in itself a matter of security policy. On a smaller scale biosecurity has significant impacts on the profitability of agriculture, state of the environment, and finances of the consumers and tax-payers.

### **5.5. Pressures for change in agri-environmental policy**

Agri-environmental policy is faced with pressures due to changes in both the society and the environment. The Agri-Environmental Scheme and the overall increase in environmental awareness have shaped the farmers' attitudes. Also consumer awareness has grown, resulting in pressures on the EU to reform its agricultural policy to respond to the public opinion and demands. On the global scale meeting the obligations relating to the WTO membership binds the EU to reform the support payments to agricultural production.

In view of the implementation of the CAP reform and preparing for the new programming period 2007–2013, the concept of multifunctional agriculture is again topical. Decoupling support from production and the new single payment scheme introduced the cross-compliance conditions, according to which agricultural land must be maintained in good condition from both production and environmental perspectives.

The implementation of the Water Framework Directive will highlight the need to reduce non-point source water pollution, posing challenges to agriculture. The nutrients now stored in waters alone will continue to deteriorate their status for years. Biodiversity in farming environments has not been successfully preserved by the Agri-Environmental Scheme applied so far. Climate change is going to alter the relative profitability of different production crops and increase the risk of spreading new diseases and pests. Rational management of biosecurity will thus be increasingly important in the future.

At present there are no genetically modified crops in cultivation in Finland, but according to a study of expert opinions on future prospects this is very likely to begin by 2010–2012. The development trends in genetically modified and organic production offer both threats and opportunities for future agriculture. A big challenge is to find out how the coexistence of the different types of production can be organised in a way that meets the needs of the society.

New opportunities for rural areas are presented by production of bioenergy and use of rural nature for recreation and tourism. Topical themes to be studied during 2006 include environmental indicators, green GDP, harmonisation of new policy measures and broader environmental water impacts. There is a lot of work to be done on these and other emerging environmental topics.

## **Reform of environmental support**

*Kauko Koikkalainen*

The Ministry of Agriculture and Forestry appointed a working group to prepare a national strategy plan for the implementation of the rural development programmes during the programming period 2007–2013. The task of the strategy group was to incorporate the support systems prepared in different groups into a single Rural Development Programme for Mainland Finland. Of the measures to be included in the programme, environmental support is the only measure that is compulsory to all Member States.

### **Preparation of environmental support**

A working group to prepare a proposal for the new environmental support scheme for 2007–2013 was set up in February 2005. The proposal of the working group was also to contain an assessment of the current state of the rural environment, objectives of environmental support, description of the proposed measures, their objectives and impacts, and an estimate of the costs of the measures and the levels of support. Further, the working group was to prepare a proposal for the possible aid for non-production investments and Natura 2000 support for agricultural and forestry areas. The working group consisted of representatives of the Ministry of Agriculture and Forestry, Ministry of Finance, Ministry of the Environment, Environment Centres, Employment and Economic Development Centres, research institutes, producer organisations and advisory and environmental organisations.

When the working group started its work in the beginning of March 2005 the preparation of the Rural Development Regulation was not yet completed and the financial framework had not been approved. The main elements of the Regulation had been decided, so that the working group had a clear picture of the guidelines to be applied when preparing for the new programming period. One of the most significant changes compared to the previous programming period are the so-called cross-compliance requirements incorporated into the 2003 Common Agricultural Policy reform. The new measures in the environmental support scheme must exceed these requirements to be eligible for support. Limits must also be set for the use of pesticides and fertilisers, and actions which go beyond these may be eligible for compensation.

### **Structure of the new support scheme**

The general objectives of the new environmental support are about the same as those of the current scheme: the focus is on water protection, without neglecting biological diversity and landscape. The extent and income effects of the support were also important topics during the preparation. The efficiency of environmental support should be improved through more careful targeting and regional allocation of the measures.

The first draft proposal for the agri-environmental support scheme for 2007–2013, non-production investments, Natura 2000 support and support related to the implementation of the Water Framework Directive was circulated for comment in November 2005. The structure of the proposal was similar to that of the current programme and the measures were divided into basic measures which all those who join

the programme must take, additional measures complementing the former, and more demanding special measures.

Like in the current programme, there are separate additional measures for horticultural producers, and the limits for nitrogen and phosphorus fertilisation are established for different groups of plants. The greatest change in the basic measures is that the requirements concerning mandatory training and acquisition of plant protection guides have been abolished and the measures are no longer divided into those intended for plant or livestock farms.

The proposed new requirements for nitrogen fertilisation are closer to the earlier additional measure of more accurate fertilisation, where the amount of nutrients the plant needs is better taken into account than in the earlier fertilisation base level. The requirements concerning phosphorus fertilisation become stricter as the usability percentage of phosphorus contained in animal manure is raised. Liming and inventory of biodiversity sites on the farm are introduced as new basic measures. Set aside area taken into account as support entitlements will also be incorporated into the environmental scheme. The support for basic measures is estimated at about 90 €/ha.

The changes made in the additional measures are greater. Of the earlier measures only plant cover on arable land during winter is left in the proposal, and the content of this also differs to some extent from the earlier scheme.

The new additional measures presented in the proposal are reduced fertilisation, more accurate nitrogen fertilisation through measurement of liquid nitrogen, spreading of manure during the growing season, nutrient balance and inventory of the productive capacity of arable lands. The level of support for these measures is estimated to vary between 10 and 30 €/ha. A specific support scheme is proposed for promoting the welfare of the production animals.

Most of the contracts concerning special measures are the same as in the current programme. The contracts concerning the management of traditional biotopes and wetlands would continue to be included in the special measures. In the proposal the current support for conversion into organic production and contract concerning organic production are combined into one single contract and the contracts concerning organic livestock production continue to be applied.

Through the non-production investments support could be granted to the establishment of multifunctional wetlands and clearing and fencing of traditional biotopes. This measure was not present in the earlier programme. The management of Natura 2000 sites in agricultural and forestry areas should continue as a special environmental measure, as is the case at present. The preparation of supports relating to the implementation of the Water Framework Directive has not been started yet, because the water management plans will not be completed until 2009, while the new Rural Development Programme will be introduced on 1 January 2007. However, the environmental support scheme will be the most important means for reaching the objectives set in the Water Framework Directive.

The draft environmental support programme was submitted to the strategy group at the end of 2006, even if the views of the members of the working group differed from each other in certain respects (e.g. fertilisation and liming, plant cover during winter, biodiversity and landscape, spreading of manure during the growing season, organic production and LEADER methodology). The National Strategy for Rural Development in the Programming Period 2007–2013 was completed in April 2006 and the work on the Rural Development Programme for Mainland Finland continues during the spring and summer 2006.

## 6. RURAL AND REGIONAL POLICY

The rural and regional policy efforts aim to improve the living conditions and welfare in the rural areas and slow down the migration away from the countryside. Action to development in the Finnish rural areas and regions in general are taken under regional development programmes funded both by the EU and nationally. The national Rural Policy Programme combines and directs rural development work of as well the public and private sector as NGOs. Regional structural development programmes, such as the Objective 1 Programmes for Eastern and Northern Finland (support for regions lagging behind in development), the Regional Rural Development Programme for areas outside Objective 1 (ALMA) and Community initiatives such as Interreg (transboundary cooperation between nations and regions) consist of extensive regional and transregional development projects. On the level of sub-regions development work is done by local action groups, (LAGs). These are funded under the LEADER+ Programme, Objective 1 Programmes and Regional Rural Development Programme and the national Rural Programme Based on Local Initiative (POMO). The Regional Centre Programme, aimed at reinforcing the urban areas, has impacts on rural development as well.

The development of regions is founded on their own needs and objectives, as well as their own investments, natural resources, human and social capital, and ability to attract investments from elsewhere. Regional development programmes are used as channels for public support for solving problems faced by the regions and promoting and coordinating their development. The programmes aim to activate and reinforce the development efforts of the regions themselves. The programmes are implemented through projects, which

may be business or community development projects aimed to support the target area or investments and subsidies for individual enterprises.

Local rural development is one element of the rural and regional policy aiming at comprehensive development of the countryside. The following chapters deal with the methods and policy instruments applied in local rural development work. Local rural development is divided into village action, local action groups and the contribution of regional centres to rural development.

### 6.1. Local rural development

The roots of local development work rest in neighbourly help and cooperation, village activities and strong local associations. The rural residents have long traditions in understanding joint action and organisation, both in the production operations and local community affairs, as the means for developing their own regions and livelihoods. This has made it easier for Finland to take advantage of the new opportunities for local development brought along by the EU membership in regional and rural policy and development.

The local perspective is very strong in the Finnish rural policy. The fundamental idea is that the local residents are the best experts in the development of their own area. Locally-oriented development work aims at mobilising local, grass-root level actors and promoting participatory decision-making in the rural areas to be able to transfer the responsibility for the implementation of regional development to the local people. Local development follows the so-called bottom-up approach, which means that the development work starts from the grass-root level.

## 6.2. Village action

Village action is an important form of organisation for the rural residents. The development of village communities is one of the key areas in rural development. Community development means joint action by villagers for common interest: taking the initiative and assuming the power and responsibility in the development of their own village. Village action possesses a number of important strengths. It takes advantage of local people and actors. The activity is flexible and open to local needs. Village action is specifically directed and focused according to the local needs. Village action is comprehensive, which means that no matter that may relate to the village in an essential way is excluded. The role of village action in local development is even more important if the financial basis of the State and municipalities weakens, municipalities become larger and the bureaucracy, division of tasks according to sectors and privatisation increase.

Still in the mid-1970s there was relatively little village action based on the local initiative in Finland. Village action got started towards the end of the 1970s as a radical and powerful movement against the depopulation of the rural areas, concentration of the population and policies and decline of services. Since then the village action has developed rapidly.

The first village committees were established in 1965 to respond to the need for better coordination and to develop villages in a comprehensive way. The organisation of villages made rapid progress during the 1970s and 1980s so that by the mid-1980s there were more than 2,000 and by 1990 some 3,000 village committees. In November 2005 the total number of Finnish village committees was 3,800. This is very high indeed, because altogether there are a little more than 4,000 villages in Finland, and many of the committees cover more than one village. The total number of people working directly in the committees is 40,000 and an even greater number of

people are indirectly involved.

Many village committees have established their position as statutory organisations, village associations. The idea is that the planning of villages and municipalities should be harmonised. Organisation into associations is important to make it possible for the groups to use public funding. In 2005 the number of registered village associations was 2,400 and the number of unregistered ones was 1,390. The registration of village committees into associations continues.

Village activity can be divided into traditional and new village activity, or first and second generation village activity. The first generation activities include the supervision of the interests of the villages and action focused on the attractiveness and leisure time, which has long traditions. The second generation activity comprises work to develop villages and their environment, services and economy through various kinds of projects. One example of the new activity is the active input of village associations to the work of the local action groups.

## 6.3. Local action groups

Local action groups (LAGs) are registered regional rural development associations, which encourage the rural residents to develop their own region, improve its amenities and create jobs and enterprises. The group implements a regional development plan based on an extensive and participatory brainstorming and negotiation process. The development plan is drawn up for each programming period of the EU, and the current period covers the years 2000–2006. The local action groups and regional actors have presented their proposals to be included in the new Regional Rural Development Programme for 2007–2013. The activity is strongly founded on the plan, because it brings forward the needs and wishes of the local residents and actors and commits them to developing their own region. Based on the development plan,



### Principles of the LAG work in Finland:

- LAGs are registered rural development associations which are open to all.
- Three-way representation in the board: 1/3 municipal officials and holders of positions of trust, 1/3 representatives of associations and enterprises and 1/3 individual rural residents.
- Activity is based on a development plan drawn up together with the local residents.
- Municipalities are committed to the LAG work.
- LAGs make the decisions on financing the projects, whose validity is checked by the Employment and Economic Development Centres.

individual persons, enterprises and associations can prepare their own project plans to be funded by the local action groups. In accordance with the principle of the three-way negotiation procedure, the representatives of municipalities, associations and enterprises and individual residents are present in the boards of the LAGs.

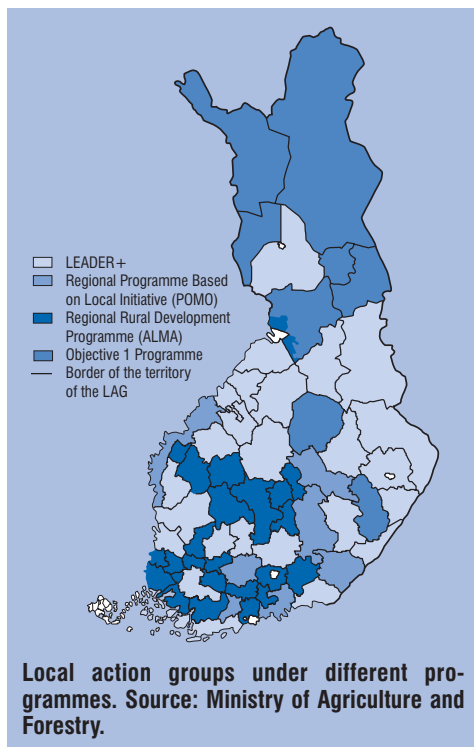
Finland is the only country where the representation in the LAG boards must follow the three-way procedure, while in the other countries it is only required that at least half of the representatives of the decision-making bodies, i.e. boards, must be other than official authorities. In Finland the official authorities are the municipal officials and people holding municipal

positions of trust, which make up a third of the representatives. Finnish LAGs differ from those in the other countries in that the local rural residents must also be represented in the boards to reinforce the rural development work founded on the grass-root level. Finland has been praised for adopting this approach.

The work of the LAGs got started in 1995, when Finland joined the EU and the LEADER II Programme and corresponding national Rural Programme Based on Local Initiative (POMO) were launched. The good results and inspiring experiences led to the extension of the work to the whole country during the current programming period. Besides Finland, such comprehensive LAG work is being done only in Ireland.

In Finland there are altogether 58 LAGs, whose territories vary from 1,000 to 49,000 square kilometres and the number of people in these from 14,000 to 80,000. The average territory is about the size of a sub-regional unit with 40,000 residents. LAGs receive their funding from various sources, but the most significant source is the development programmes part-funded by the EU. In the current programming period of the EU (2000–2006) the public funding for all Finnish LAGs totals about € 220 million of which the EU contributes 85 million, the State 90 million and the remaining 20% comes from the municipalities. All LAGs also search for funding from private sources. The average funding for a LAG during the whole programming period totals € 3.9 million.

The LAG work covers the whole mainland Finland except for the largest cities and a few individual municipalities.





The municipalities in the LAG territories have an important role in both the administrative work and funding of the projects. The project implementers also contribute to the resources through voluntary work, materials or own funding.

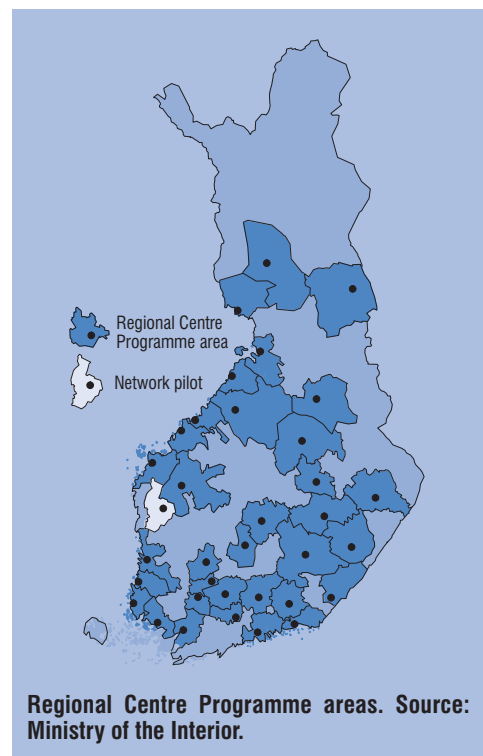
The range of projects reflects the creative imagination and innovativeness present in the regions. Various kinds of community projects constitute one key area in the development work. Often the work starts from improving the common environment and renovation of joint facilities for meetings. This is quite naturally followed by search for ideas for development projects concerning the economic activities in the rural areas. Good business ideas are further refined into investments and new business activity. The regional economy can be activated and reinforced through various kinds of training, networking and marketing projects directed to groups of enterprises. Financial support for investments, development of operations and starting a new business may be granted to individual enterprises.

The main task of the LAGs is to find new developers and development ideas and getting them started, provide the opportunities for this work and launch and encourage more extensive development action. At best the LAGs influence the regional economies in diverse ways. The direct impacts include the creation of new jobs and enterprises and attracting new investments, residents and tourists to the region, which increases the tax revenue and demand for services. The LAGs also create new solutions for offering services to all residents. The LAGs have an important role in the accumulation of social capital, community spirit and cooperation. This lays the foundation for various kinds of development projects concerning the rural industries and influences the amenities and population trend in the region. Through this, the work of the LAGs aims for long-lasting impacts on the regional economies, some of which may only be seen after some time.

The evaluations of the development programmes have shown that local action groups as a development method and part of the rural policy have produced significant results and created added value. Besides the direct economic impacts the work of the LAGs has been important for accumulating especially the human and social capital.

#### 6.4. Regional Centre Programme in rural development

The Regional Centre Programme is an urban policy development programme of the Finnish Government to be implemented until the end of 2006. The programme work was started in 2002 and it will continue under a new programme from the beginning of 2007. The objective of the Regional Centre Programme is to reinforce a more balanced regional structure based on the strengths inherent in urban areas of different sizes, know-how and collaboration. The work is founded on functional and natural regional units in



view of working, residence, production of services and demand, which in the programme are called regional centre districts or programme areas. The total number of such programme areas is 35.

The Regional Centre Programme aims to bring vitality to the urban areas, which also has positive impacts on the rural areas. According to the current Government Programme, the regional centre work needs to focus more on the margin areas surrounding the centres, which in practice refers to the rural areas. The Regional Centre Programme for the Raasepori region is the only one to contain a particular rural development section, which has made greater progress than expected. The achievements include a professorship in rural studies, reinforcing the potato research of the Agrifood Research Finland as a top unit and the network of specialists in rural development Oras. In an evaluation published recently the network pilot project of the only clearly rural area among the regional centre district, Kauhajoki region, has been presented as an example of an area where the resources of the different actors have been successfully brought together to achieve dynamic development and improved viability. Because this is the only network pilot project in the Regional Centre Programme, development work based on partnership and close cooperation between the different regional actors and stakeholders receives a great deal of emphasis.

In developing the cooperation between urban and rural regions the cooperation between regional centres and LAGs has produced good experiences which have benefited all the parties involved. However, tensions along the urban-rural axis have emerged in several regions. The Regional Centre Programme has encouraged the discussion on the relationship between the regional and rural policy and the two distinct trends in the rural areas which have divided them into winners and losers.

## **6.5. Local development as a resource of the rural areas**

The strong tradition of joint action has helped Finland to take full advantage of the new opportunities for local development work in the regional and rural policy and development of the rural areas brought along by the EU membership.

The work on rural development through the local action groups has won international recognition. The local action groups constitute an important spiritual and financial resource in their own areas. They contribute to the mobilisation of local expertise, diverse knowledge and skills and voluntary work, which might not be utilised without the opportunities offered by the LAGs. Work to reach goals considered important by the local residents is done under various projects. The significance of the local action groups has also been recognised in the programme evaluations. In the Regional Centre Programme the focus is on urban centres, but there are also indications of positive impacts on the countryside. However, further achievements in this call for a significant role for urban-rural interaction in the development of the regions.

Local regional development founded specifically on the grass-root level has been widely recognised as a development method. The good results achieved speak in favour of the continuation of the local rural development work, which now has gotten off to a good start. However, in some cases rural development is beginning to suffer from the frustration of the actors, which may be due to the great inputs of certain key actors into the development of the region, often founded on voluntary work, and uncertainty concerning the availability and continuation of the project funding and other resources. This may be a serious threat to the continuation of rural development work in the long-term perspective.

## Countryside in municipal policy

*Ella Mustakangas*

Programme-based implementation of rural and regional policies has led to the fragmentation of the municipal development. The rise of bottom-up approach and local action groups have reinforced the position of villages. At the same time sub-regional entities, like local enterprise companies, have taken the central role in implementing the municipal industrial policy.

There is a great variety of the opportunities of the municipalities to take advantage of the rural policy instruments. The capacity of the municipalities to establish their own agency has been increased but their real autonomy calls for sufficient economic resources. However, the economic factors alone cannot explain the varying roles of the municipalities in implementing the rural policy. Could emerging control over the local development contribute to the strategic manoeuvring space of the municipalities? The scope of the traditional municipal policy can change into a wider sub-regional policy if the activity of the municipalities extends between the municipality and the other municipal organisations and associations operating in the same area. The municipality could function as the key institutional actor of the network and take initiatives together with neighbouring municipalities, companies and other actors.

As a strategic junction, new opportunities open up for the municipality concerning its rural areas. However, incorporating the countryside to the municipal policy requires changes to certain practices. Rural perspective should be integrated into the sub-regional development policy, while village activities and industrial policy should be brought together. Rural development in the municipalities is also linked to the national municipal policy. At the moment a comprehensive reform of the municipal and service structure is being prepared.

### **Sub-regionalisation as a challenge for rural municipalities**

Sub-regionalisation, the localisation of the economic-development of the municipalities, is a major challenge for municipal rural development. Typically, the sub-regional growth impulses are unevenly distributed both among the municipalities and within a single municipality. In the latter, certain villages lose their population while those located closer to the sub-regional centre become more attractive. However, the sub-regional growth impulses do not reach every rural municipality, and several municipalities are seeking to join a group of municipalities that could support their development in the best possible way.

In some rural municipalities, the sub-region has been taken as the strategic level of development. This kind of strategic thinking is linked with the implementation of the Regional Centre Programme which tends to influence the politics of the municipal policy. The sub-regional orientation in the municipal policy signals that hardly any attention is paid to the problems of the rural areas, and the countryside is not regarded as a strategic potential of the municipality.

Some municipalities, however, recognise the opportunities of the rural policy and do not regard the sub-regional strategy as the only option. Cooperation with the sub-regional growth centre does not have to exclude the development of the rural areas from the agenda of municipal policy. In a sub-regionalising municipality, the crucial

question is whether the development of the rural areas is considered as a political issue and whether any efforts are made to bring it to the sub-regional decision-making.

### **Development of village communities and objectives of industrial policy**

Nowadays, the municipal industrial policy aims at comprehensive development of the municipality, including the improvements of residential environment and high-quality services. Rural policy offers an arena to expand the industrial policy to this kind of wider municipal policy. However, there have been numerous conflicts between the development of industries and village projects. Because of the meagre municipal resources, the village actions are expected to produce rapid and concrete results, such as new entrepreneurial activity and jobs.

On the other hand, the potential of villages is highly valued and room is given to village activities. At the extreme, however, this could create a breach in rural development. If the initiative is considered to belong only to one party, the countryside tends to be developed either by the municipality or by the villages. To reach real cooperation between the actors, the municipalities should be involved in the development of villages at very early stage, like when villages are drafting their plans.

In the municipalities, the rural policy is also fragmented by projectification. This trend has altered the work of the municipal staff and their conceptions of the objectives of their actions. New opportunities have opened up especially for those who know the project practices best, such as the municipal agriculture officials. They do the groundwork for the funding of the projects by presenting them to the elected officials. The strategic links of individual projects to the municipal policy is difficult to assess, and yet each project decision steers the development of the municipality to a certain direction.

### **Overhaul of municipal and service structure – rural perspective?**

In the beginning of 2006, there were 431 municipalities in Finland but this number is likely to fall dramatically in the near future. In autumn 2005, three different models were presented, the model of basic municipalities, the regional model and the district model, and the legislation of the municipal and service structure should be reformed on the basis of these by 2007.

The project to structure the municipalities and services gives rise to several questions concerning rural development. How does the reform change the municipality as a partner? Where will the municipal policy be formulated? The answers are not yet available. However, it should be noted that the reform offers the opportunity for a redefinition of the division of responsibilities of the individual and the community. During the last decade, rural policy has contributed to the emergence of new operating models based on the partnership between the public, private and voluntary sectors. Simultaneously, alternative service production has been initiated. Yet, the definition of the division of responsibilities between the public sector and the NGOs calls for serious effort. The issue needs to be addressed both nationally and on the local level.

A smaller number of municipalities do not guarantee the efficiency of implementation. In eastern and northern Finland municipal amalgamations will not bring the same benefits as in the other parts of the country due to the long distances. It is probable that in these areas greater emphasis will be put on the cooperation between municipalities and the alternative forms of service delivery.

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# **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
2005	98.1 <sup>e</sup>	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
2002	103.7	102.8	101.5	105.5	104.6
2001	105.2	102.2	101.8	103.1	102.4
2000	100.0	100.0	100.0	100.0	100.0
1999	96.6	95.0	94.2	97.2	96.4
1998	101.3	96.2	96.4	95.1	95.1
1997	102.5	97.5	98.4	94.0	93.7
1996	108.1	95.6	96.4	92.5	89.7
1995	103.6	94.2	94.6	92.3	90.5

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

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

Source: Statistics Finland.

## **Some figures of the agricultural structure.**

	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
2005	..	..	16	93	3.9
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
1994	115	19.2	34	153	7.4
1993	116	18.8	35	154	7.4
1992	121	18.1	36	166	7.5
1991	126	17.7	40	177	7.5
1990	129	17.3	45	183	7.3

<sup>1</sup>A farm refers to a unit with more than 1 ha of arable land that practise agriculture of other entrepreneurial activity.

Sources: Information Centre of the Ministry of Agriculture and Forestry, Ministry of Labour.



### 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
2005 <sup>1</sup>	319	7,505	1,401	3,128
2004 <sup>1</sup>	324	7,404	1,365	3,069
2003 <sup>1</sup>	334	7,251	1,375	3,016
2002 <sup>1</sup>	348	7,117	1,315	3,212
2001 <sup>1</sup>	355	6,932	1,261	3,202
2000 <sup>1</sup>	364	6,786	1,296	3,110
1999 <sup>1</sup>	372	6,443	1,351	3,361
1998 <sup>1</sup>	383	6,225	1,401	3,802
1997 <sup>1</sup>	391	6,183	1,467	4,152
1996 <sup>1</sup>	392	5,993	1,395	4,184
1995 <sup>1</sup>	399	5,982	1,400	4,179
1994	417	5,869	1,298	4,090
1993	426	5,648	1,273	4,025
1992	428	5,613	1,298	3,969
1991	446	5,619	1,344	4,138
1990	490	5,547	1,394	4,845

<sup>1</sup> 1.5.

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

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

	Nitrogen kg/ha	Phosphorus kg/ha	Potassium kg/ha	F.u.yield (incl. straw) f.u./ha
2004–05	75.0	9.2	25.9	4,826 <sup>1</sup>
2003–04	76.5	9.3	26.4	4,630 <sup>1</sup>
2002–03	80.0	9.8	27.8	4,478 <sup>1</sup>
2001–02	80.5	10.1	28.3	4,692 <sup>1</sup>
2000–01	83.2	10.8	31.1	4,531 <sup>1</sup>
1999–00	84.2	10.4	30.5	4,900 <sup>1</sup>
1998–99	81.0	11.0	31.1	3,146
1997–98	85.0	11.4	32.6	2,980
1996–97	86.0	11.8	32.5	3,816
1995–96	92.3	16.1	34.3	3,736
1994–95	101.6	20.0	38.5	3,655
1993–94	94.1	19.0	40.0	3,810
1992–93	94.3	19.4	39.8	3,912
1991–92	92.8	19.9	39.7	3,269
1990–91	109.4	26.3	53.4	3,771

<sup>1</sup> New feed unit coefficients.

Sources: Kemira, Information Centre of the Ministry of Agriculture and Forestry.

**Total calculation of agriculture (excl. horticulture) at current prices, million euros.**

	1999	2000	2001	2002	2003	2004	2005 <sup>e</sup>
<b>CROP PRODUCTION</b>							
Rye	3.5	7.2	7.7	7.1	6.1	5.1	3.4
Wheat	39.7	45.6	52.3	48.9	55.2	54.6	53.3
Barley	76.9	87.7	99.2	80.4	69.3	67.1	64.3
Oats	42.0	50.1	72.1	56.3	45.5	36.9	33.5
Potatoes	94.3	54.2	43.1	50.3	38.5	51.2	50.9
Potatoes for processing	21.0	21.1	19.5	22.7	18.2	19.2	20.3
Sugar beet	53.0	52.7	61.6	47.8	56.8	60.9	51.4
Oil plants	14.9	13.6	21.7	22.2	19.8	13.2	18.7
Other crop production	4.9	6.1	5.8	6.1	10.5	10.8	8.1
<b>Total</b>	<b>350.2</b>	<b>338.3</b>	<b>383.0</b>	<b>342.0</b>	<b>319.9</b>	<b>319.0</b>	<b>303.9</b>
<b>ANIMAL PRODUCTION</b>							
Milk	808.0	842.9	867.5	888.9	871.1	844.0	801.5
Beef (excl. veal)	196.5	189.0	185.4	168.7	185.5	185.0	178.5
Pork	206.6	224.1	261.1	255.9	229.7	246.1	264.4
Mutton	1.5	1.1	1.0	1.2	1.1	1.3	1.3
Poultry meat	75.7	72.7	92.0	104.2	110.2	111.1	104.5
Eggs	41.4	44.7	40.5	45.4	42.4	41.8	34.4
Other animal production	1.0	1.0	0.4	0.3	0.2	0.2	0.2
<b>Total</b>	<b>1,330.6</b>	<b>1,375.5</b>	<b>1,447.9</b>	<b>1,464.6</b>	<b>1,440.2</b>	<b>1,429.6</b>	<b>1,384.8</b>
<b>Gross return at market prices</b>	<b>1,680.9</b>	<b>1,713.8</b>	<b>1,830.9</b>	<b>1,806.6</b>	<b>1,760.1</b>	<b>1,748.6</b>	<b>1,688.7</b>
COMPENSATIONS FOR CROP DAMAGES	50.7	28.1	1.2	4.0	2.7	2.7	19.6
<b>INCOME FROM RENTS</b>							
Means of production	33.4	35.9	36.0	36.0	36.4	36.5	36.8
Buildings and land	27.1	29.2	29.3	29.3	29.6	29.7	30.2
<b>Total</b>	<b>60.5</b>	<b>65.1</b>	<b>65.3</b>	<b>65.3</b>	<b>66.0</b>	<b>66.2</b>	<b>67.0</b>
<b>SUBSIDIES</b>							
CAP subsidy for fields crops	230.2	341.8	343.6	341.1	353.2	366.4	381.5
CAP subsidy for livestock	38.1	39.9	78.5	87.7	93.8	88.1	88.2
LFA	296.0	414.5	418.4	422.1	419.4	420.2	418.3
Environmental subsidies	260.2	266.9	274.6	277.4	283.8	290.3	284.1
Subsidy for animal units (nordic subsidy)	67.0	97.3	100.5	102.0	105.3	114.1	99.7
Subsidy of animal units (subs. of tr.period)	21.9	0.1	0.0	0.0	0.0	0.0	0.0
Subs. for animals slaught. (subs. of tr.period)	83.0	0.1	0.0	0.0	0.0	0.0	0.0
Other national subsidies for animals	25.1	83.1	78.8	79.6	80.0	78.9	65.1
Subsidy for field area (subs. of tr.period)	16.2	0.1	0.0	0.0	0.0	0.0	0.0
Other national subsidies for field areas	125.9	113.5	126.7	132.9	134.4	137.9	219.7
Production subsidies							
- milk	216.7	219.1	215.7	230.4	221.9	238.2	187.5
- rye	0.3	0.0	0.0	0.0	0.0	0.0	0.0
- wheat	0.3	0.0	0.0	0.0	0.0	0.0	0.0
- barley (malt)	2.0	0.0	0.0	0.0	0.0	0.0	0.0
- sugar beet	4.1	2.1	0.0	0.0	0.0	0.0	0.0
- potatoes (starch)	0.5	0.2	0.0	0.0	0.0	0.0	0.0
Subsidy paid by the common measures of the EU	824.5	1,063.0	1,115.1	1,128.4	1,150.1	1,165.0	1,172.1
National subsidies	563.0	515.6	521.7	544.9	541.5	569.1	572.0
<b>Total subsidies</b>	<b>1,387.6</b>	<b>1,578.6</b>	<b>1,636.8</b>	<b>1,673.3</b>	<b>1,691.6</b>	<b>1,734.1</b>	<b>1,744.1</b>
<b>GROSS RETURN TOTAL</b>	<b>3,179.6</b>	<b>3,385.6</b>	<b>3,534.2</b>	<b>3,549.2</b>	<b>3,520.5</b>	<b>3,551.6</b>	<b>3,519.4</b>

**Total calculation of agriculture (excl. horticulture) at current prices, million euros.**

	1999	2000	2001	2002	2003	2004	2005 <sup>e</sup>
<b>COSTS</b>							
Fertilizers	155.3	168.0	177.0	180.0	176.9	166.5	169.9
Lime	41.2	30.3	29.4	32.5	22.8	20.0	21.4
Feed concentrates							
- mixture	351.4	371.5	379.3	378.5	340.7	345.1	343.3
- other	7.1	5.1	5.2	5.4	5.3	5.4	5.3
Feed conserving chemicals	21.1	20.6	21.0	21.0	20.8	21.6	22.2
Plant protection products	49.8	44.5	51.8	49.8	59.2	60.2	56.1
Purchased seeds	40.5	39.1	42.0	41.0	46.9	57.5	58.4
Fuel and lubricants	98.2	142.4	145.2	145.2	135.6	157.5	199.6
Electricity	65.0	63.5	65.4	66.4	79.0	80.0	78.9
Agricultural firewood and timber	10.0	10.9	11.2	11.2	7.5	7.5	7.6
Delivery of calves and pigs	8.6	8.7	8.7	5.1	5.1	5.3	4.2
Overhead costs	234.8	253.7	271.5	272.0	273.1	280.8	290.0
Hired labor costs							
- wages	81.1	82.9	81.0	81.0	90.0	92.1	92.3
- social expenses	56.0	57.4	56.1	54.6	60.8	63.2	63.2
Machinery and equipment expenses							
- depreciations	338.2	340.6	344.8	354.8	366.1	381.3	404.5
- maintenance	133.6	136.7	139.4	146.4	149.8	155.0	159.5
Equipment	41.0	42.5	43.9	44.0	43.9	45.8	48.5
Building expenses							
- depreciations	218.9	227.4	231.9	232.0	235.9	243.1	252.9
- maintenance	38.5	40.0	40.8	41.6	42.6	43.5	45.3
Ditches, bridges, etc.							
- depreciations	62.8	65.0	66.3	67.0	68.1	70.2	73.0
- maintenance	19.0	20.3	21.1	21.1	21.6	22.1	23.0
Interest payment	108.6	130.7	138.6	137.3	126.8	128.4	128.9
Imports of animals	0.5	0.5	0.5	0.5	0.6	0.6	0.6
Rent expenses							
- means of production	37.4	40.2	40.7	41.0	41.5	41.5	42.2
- buildings and land	74.0	79.7	80.4	81.0	81.9	82.1	84.2
Farmers' share of cost from							
- accident insurance payment	9.7	9.2	9.4	9.4	11.8	11.7	11.6
- outside help	10.7	10.9	12.1	13.0	15.2	15.6	16.3
- day-off scheme	2.8	2.9	3.5	3.8	4.4	5.2	5.5
<b>TOTAL COSTS</b>	<b>2,316.0</b>	<b>2,445.3</b>	<b>2,518.1</b>	<b>2,536.4</b>	<b>2,533.9</b>	<b>2,608.8</b>	<b>2,708.4</b>
<b>FARM INCOME EXCL. HORTICULTURE</b>	<b>863.6</b>	<b>940.3</b>	<b>1,016.1</b>	<b>1,012.8</b>	<b>986.6</b>	<b>942.8</b>	<b>811.0</b>

Gross return of horticulture at current prices, million euros.							
	1999	2000	2001	2002	2003	2004	2005 <sup>e</sup>
FIELD PRODUCTION							
Vegetables	64.9	75.8	73.4	80.0	83.3	80.0	74.1
Berries and fruits	28.5	32.3	28.5	37.0	39.2	37.2	34.4
Others	18.2	18.5	18.5	20.2	20.2	21.2	21.2
<b>Total</b>	<b>111.6</b>	<b>126.6</b>	<b>120.4</b>	<b>137.2</b>	<b>142.7</b>	<b>138.4</b>	<b>129.7</b>
GREENHOUSE PRODUCTION							
Ornamental plants	91.8	90.1	89.7	110.1	99.6	104.8	100.8
Vegetables	88.3	96.6	101.6	112.9	115.2	119.0	122.7
<b>Total</b>	<b>180.1</b>	<b>186.7</b>	<b>191.3</b>	<b>223.1</b>	<b>214.8</b>	<b>223.8</b>	<b>223.5</b>
<b>Gross return at market prices</b>	<b>291.7</b>	<b>313.2</b>	<b>311.8</b>	<b>360.3</b>	<b>357.5</b>	<b>362.2</b>	<b>353.2</b>
SUBSIDIES							
Subsidies for greenhouses	34.6	40.7	40.9	40.5	40.3	40.1	40.1
Subsidies for field production	3.8	2.5	2.5	2.0	1.9	2.0	2.0
Other subsidies	10.4	11.2	10.5	7.9	11.4	11.8	11.9
<b>Total</b>	<b>48.8</b>	<b>54.3</b>	<b>53.9</b>	<b>50.4</b>	<b>53.6</b>	<b>53.9</b>	<b>54.0</b>
<b>GROSS RETURN TOTAL</b>	<b>340.5</b>	<b>367.6</b>	<b>365.7</b>	<b>410.7</b>	<b>411.1</b>	<b>416.1</b>	<b>407.2</b>
COSTS							
Fertilizers, lime	7.8	7.9	7.9	7.7	7.6	7.8	8.2
Plant protection products	4.7	5.1	5.1	5.0	5.6	5.6	5.5
Seeds, seedlings, plants	14.0	14.4	14.5	14.1	13.6	13.4	13.9
Other material	34.0	34.4	34.7	34.8	34.8	35.7	36.7
Hired labor costs	65.0	73.1	74.5	69.7	65.2	74.7	75.9
Fuel and lubricants	14.1	16.9	15.4	14.6	15.7	17.8	23.4
Electricity	20.3	16.9	17.1	17.8	21.5	21.8	21.5
Interests paid	13.2	15.4	16.4	15.2	15.2	14.5	14.1
Depreciation of machinery	19.9	20.3	20.9	21.9	22.3	23.3	24.7
Depreciation of buildings	18.9	19.7	20.3	20.7	21.0	21.7	22.5
Depreciation of ditches, etc.	1.5	1.6	1.6	1.7	1.7	1.8	1.9
Other costs	49.7	50.8	51.3	52.0	52.7	50.5	52.1
<b>TOTAL COSTS</b>	<b>263.1</b>	<b>276.6</b>	<b>279.7</b>	<b>275.2</b>	<b>276.9</b>	<b>288.6</b>	<b>300.4</b>
<b>HORTICULTURAL INCOME</b>	<b>77.3</b>	<b>90.9</b>	<b>86.0</b>	<b>135.4</b>	<b>134.2</b>	<b>127.6</b>	<b>106.8</b>

Total calculation of agriculture (incl. horticulture) at current prices, million euros.							
	1999	2000	2001	2002	2003	2004	2005 <sup>e</sup>
RETURN ON AGRICULTURE	3,179.6	3,385.6	3,534.2	3,549.3	3,520.5	3,551.6	3,519.4
RETURN ON HORTICULTURE	340.5	367.6	365.7	410.7	411.1	416.1	407.2
<b>RETURN, TOTAL</b>	<b>3,520.1</b>	<b>3,753.2</b>	<b>3,899.9</b>	<b>3,960.0</b>	<b>3,931.6</b>	<b>3,967.7</b>	<b>3,926.6</b>
COSTS OF AGRICULTURE	2,316.0	2,445.3	2,518.1	2,536.4	2,533.9	2,608.8	2,708.4
COSTS OF HORTICULTURE	263.1	276.6	279.7	275.2	276.9	288.6	300.4
<b>COSTS, TOTAL</b>	<b>2,579.2</b>	<b>2,721.9</b>	<b>2,797.8</b>	<b>2,811.6</b>	<b>2,810.8</b>	<b>2,897.3</b>	<b>3,008.8</b>
<b>AGRICULTURAL INCOME</b>	<b>940.9</b>	<b>1,031.3</b>	<b>1,102.1</b>	<b>1,148.3</b>	<b>1,120.7</b>	<b>1,070.4</b>	<b>917.8</b>

## Agricultural support\*.

### SUPPORT FINANCED COMPLETELY OR PARTLY BY THE EU IN 2005

€/ha or €/unit

Aid area	A	B	C1	C2	C2 North.	C3	C4
<b>CAP ARABLE AREA PAYMENT<sup>1</sup>, €/ha</b>							
Cereals <sup>2</sup>	295	243	243	200	200	200	200
Oil seed plants <sup>2</sup>	295	243	243	200	200	200	200
Protein crops	269	231	231	199	199	199	199
Silage grass	214	176	176	145	145	145	145
Starch potatoes <sup>3</sup>	707	707	707	707	707	707	707
Set-aside	214	176	176	145	145	145	145
Drying aid for cereals and oil seed plants	81.7	67.2	67.2	55.2	55.2	55.2	55.2
Average regional yields for cereals and oil seed plants, tn/ha	3.4	2.8	2.8	2.3	2.3	2.3	2.3
<b>CAP SUPPORT, €/LU</b>							
Special beef premium	210	210	210	210	210	210	210
extensification premium							
- 1.4–1.8 LU/feed ha	40	40	40	40	40	40	40
- under 1.4 LU/feed ha	80	80	80	80	80	80	80
Suckler cow premium	200	200	200	200	200	200	200
additional national payment	50	50	50	50	50	50	50
extensification premium							
- 1.4–1.8 LU/feed ha	40	40	40	40	40	40	40
- under 1.4 LU/feed ha	80	80	80	80	80	80	80
<b>LFA SUPPORT, €/ha</b>	150	200	200	210	210	210	210
LFA supplement							
- basic payment	20	20	20	25	25	25	25
- additional payment for livestock farms	80	80	80	80	80	80	80
<b>ENVIRONMENTAL SUPPORT €/ha</b>	Crop producing farm		Livestock farm				
Cereals, oil seed plants, protein crops, grass	107		130				
Horticulture (vegetables grown in the open etc.)	333		333				
Horticulture (berry and fruit plants etc.)	484		484				
Set-aside	0		0				

\*This appendix includes only the main agricultural products and therefore the list of various support measures is not complete..

<sup>1</sup>The cut due to exceeding the CAP base area has not been taken into account in the CAP support for arable crops. In 2004 the CAP support for cereals was cut by about 7% and that for silage by about 26%. In 2005 the cuts may be higher, because the cultivation requirement of CAP support changes from 1991 to 2003. In 2005 the 3% modulation of CAP support applies to farms receiving more than € 5,000 of CAP support.

<sup>2</sup>Drying aid is included in the CAP arable area payment.

<sup>3</sup>The area payment presented here is based on the yield level of 32 tonnes/hectare. The support is € 22.1/tonne.

- Support for protein crops includes the premium for protein crops.

- LFA support as proposed to the Commission.

- In LFA support a livestock farm is a farm with a minimum stocking density of 0.4 LU/ha or at least 10 LU during the whole commitment period and minimum stocking density of 0.2 LU/ha.

- Based on the data from 2003 it can be expected that the supplement to the LFA support will be cut by about 8%.

- In the new environmental support contracts all farms are considered crop farms.

		2001	2002	2003	2004	2005	2006
	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	67	65	63	133	86	83
C1	€/LU	269	269	269	309	299	296
C2	€/LU	269	269	269	309	299	296
C2North. and Archipelago	€/LU	345	345	345	385	375	372
C3	€/LU	420	420	420	460	450	447
C4	€/LU	605	605	605	645	635	632
Aid for animal husbandry, male bovines >6 months							
A and B	€/LU	357	345	336	336	219	211
C1	€/LU	412	412	412	477	415	417
C2	€/LU	420	420	420	485	423	425
C2North. and Archipelago	€/LU	496	496	496	561	499	501
C3	€/LU	572	572	572	637	575	577
C4	€/LU	757	757	757	822	760	762
Aid for animal husbandry, ewes and goats							
A and B	€/LU	360	344	333	333	212	207
C1	€/LU	412	412	412	482	404	399
C2	€/LU	420	420	420	490	412	407
C2North. and Archipelago	€/LU	496	496	496	566	488	483
C3P1-P2	€/LU	824	824	824	894	816	811
C3P3-P4	€/LU	925	925	925	995	917	912
C4P4	€/LU	1,093	1,110	1,110	1,180	1,102	1,097
C4P5	€/LU	1,379	1,110	1,110	1,180	1,102	1,097
Aid for animal husbandry, pigs							
A and B	€/LU	308	294	285	266	215	206
C1	€/LU	320	306	297	278	296	284
C2	€/LU	320	306	297	278	268	258
C2North. and Archipelago	€/LU	400	387	378	359	308	300
C3	€/LU	400	387	378	359	308	300
C4	€/LU	400	387	378	359	308	300
Aid for animal husbandry, hens							
A and B	€/LU	287	283	275	257	207	203
C1	€/LU	287	283	275	257	259	264
C2	€/LU	289	286	278	260	238	242
C2North. and Archipelago	€/LU	375	372	364	348	288	292
C3	€/LU	442	439	431	413	355	359
C4	€/LU	442	439	431	413	355	359
Aid for animal husbandry, other poultry							
A and B	€/LU	271	260	252	234	196	186
C1	€/LU	271	260	252	234	243	242
C2	€/LU	276	265	257	239	225	225
C2North. and Archipelago	€/LU	367	352	344	326	277	278
C3	€/LU	367	352	344	326	277	278
C4	€/LU	367	352	344	326	277	278
<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

- In 2005 the livestock support for pig husbandry, chickens and other poultry is paid for 77% of the production in area C1 and 80% of the production in area C2.



		2001	2002	2003	2004	2005	2006
	Unit	€/unit	€/unit	€/unit	€/unit	€/unit	€/unit
<b>Heifers</b>							
A and B	€/animal	114	111	108	150	119	121
C1	€/animal	210	210	210	210	210	270
C2	€/animal	210	210	210	210	210	270
C2North. and Archipelago	€/animal	259	259	259	259	259	319
C3	€/animal	301	301	301	301	301	361
C4	€/animal	387	387	387	387	387	447
<b>Production aid for milk</b>							
A and B	cents/l	6.15	6.0	5.8	5.6	3.0	3.1
C1	cents/l	8.83	8.8	8.8	10.0	7.4	7.5
C2	cents/l	9.35	9.4	9.4	10.6	8.0	8.1
C2North.	cents/l	10.74	10.7	10.7	11.9	9.3	9.4
C3P1	cents/l	13.68	13.7	13.7	14.9	12.3	12.4
C3P2	cents/l	15.42	15.4	15.4	16.6	14.0	14.1
C3P3-P4	cents/l	18.01	18.0	18.0	19.2	16.6	16.7
C4P4	cents/l	22.69	22.7	22.7	23.9	21.3	21.4
C4P5	cents/l	31.87	31.9	31.9	33.1	30.5	30.6
<b>Aid for crop production</b>							
<b>A area<sup>1</sup></b>							
Wheat	€/ha	93	105	105	88–115 <sup>3</sup>	88–115 <sup>3</sup>	88–105 <sup>3</sup>
Rye	€/ha	143	160	160	110–145 <sup>3</sup>	99–129 <sup>3</sup>	98–129 <sup>3</sup>
Malting barley	€/ha	67	84	84	73–96 <sup>3</sup>	73–96 <sup>3</sup>	73–84 <sup>3</sup>
Feed grains	€/ha	0	7	9	4–6 <sup>3</sup>	4–6 <sup>3</sup>	4–6 <sup>3</sup>
Grass <sup>2</sup>	€/ha	177	202	202	125–164 <sup>3</sup>	98–129 <sup>3</sup>	98–129 <sup>3</sup>
Oil seed plants	€/ha	135	143	143	108–142 <sup>3</sup>	98–129 <sup>3</sup>	98–129 <sup>3</sup>
Sugar beet	€/ha	202	202	202	125–164 <sup>3</sup>	98–129 <sup>3</sup>	98–129 <sup>3</sup>
Starch potatoes	€/ha	143	143	143	108–142 <sup>3</sup>	98–130 <sup>3</sup>	98–129 <sup>3</sup>
Vegetables grown in the open	€/ha	446	446	446	346–425 <sup>3</sup>	333–392 <sup>3</sup>	320–392 <sup>3</sup>
<b>B area<sup>1</sup></b>							
Wheat	€/ha	93	105	105	88–115 <sup>3</sup>	88–115 <sup>3</sup>	88–105 <sup>3</sup>
Rye	€/ha	143	143	143	110–145 <sup>3</sup>	98–129 <sup>3</sup>	98–129 <sup>3</sup>
Malting barley	€/ha	67	84	84	73–96 <sup>3</sup>	73–96 <sup>3</sup>	73–84 <sup>3</sup>
Feed grains	€/ha	0	7	9	4–6 <sup>3</sup>	4–6 <sup>3</sup>	4–6 <sup>3</sup>
Grass <sup>2</sup>	€/ha	177	202	202	125–164 <sup>3</sup>	98–129 <sup>3</sup>	98–129 <sup>3</sup>
Oil seed plants	€/ha	135	143	143	108–142 <sup>3</sup>	98–129 <sup>3</sup>	98–129 <sup>3</sup>
Sugar beet	€/ha	202	202	202	125–164 <sup>3</sup>	98–129 <sup>3</sup>	98–129 <sup>3</sup>
Starch potatoes	€/ha	143	143	143	108–142 <sup>3</sup>	98–130 <sup>3</sup>	98–129 <sup>3</sup>
Vegetables grown in the open	€/ha	395	395	395	346–425 <sup>3</sup>	333–392 <sup>3</sup>	320–392 <sup>3</sup>
<b>C1 area<sup>1</sup></b>							
Wheat	€/ha	93	105	105	88	56	60
Rye	€/ha	135	135	135	112	112	112
Malting barley	€/ha	67	84	84	78	70	70
Feed grains	€/ha	0	7	9	0	0	0
Grass <sup>2</sup>	€/ha	93	93	95	0	0	0
Oil seed plants	€/ha	135	140	140	115	100	100
Sugar beet	€/ha	202	202	250	197	185	185
Starch potatoes	€/ha	168	168	168	143	133	133

<sup>1</sup> A- and B-area national aid for crop production, C-area northern aid.

<sup>2</sup> Aid for forage grass is paid for farms with cattle, sheeps, goats and horses.

<sup>3</sup> As of 2004 this aid is paid as a national supplement to environmental support. This supplement is established relative to the environmental support for the crop concerned.

- Support levels may be cut due to the ceilings set for the payments. In 2004 about 90% of the envisaged additional LFA support was paid. In 2005 the cuts are likely to be more than this.

	Unit	2001 €/unit	2002 €/unit	2003 €/unit	2004 €/unit	2005 €/unit	2006 €/unit
<b>C2 and C2North. -areas<sup>1</sup></b>							
Wheat	€/ha	93	105	105	88	56	60
Rye	€/ha	135	135	135	112	112	112
Malting barley	€/ha	67	84	84	78	70	70
Feed grains	€/ha	0	7	9	0	0	0
Grass <sup>2</sup>	€/ha	93	93	95	0	0	0
Oil seed plants	€/ha	59	67	67	42	27	27
Sugar beet	€/ha	202	202	250	197	185	185
Starch potatoes	€/ha	168	168	168	143	133	133
<b>C3 area</b>							
Feed grains	€/ha	0	7	9	0	0	0
Grass <sup>2</sup>	€/ha	93	93	95	0	0	0
<b>C4-tukialue</b>							
Feed grains	€/ha	0	7	9	0	0	0
Grass <sup>2</sup>	€/ha	93	93	95	0	0	0
<b>General area payment C2-C4</b>							
Cereals and other arable crops							
C2, C2North and Archipelago	€/ha	34	34	34	34	30	30
C3	€/ha	50	50	50	50	46	46
C4	€/ha	101	101	101	101	97	97
Other crops							
C2, C2North. and Archipelago	€/ha	34	34	34	34	35	35
C3	€/ha	50	50	50	50	51	51
C4	€/ha	101	101	101	101	102	102
<b>General area payment for young farmers C1-C4</b>							
Aid for greenhouse products A, B and C2P-C4	€/ha	27	27	27	30	32	32
over 7 months	€/m <sup>2</sup>					11.4	11.4
2-7 months	€/m <sup>2</sup>					5.3	4.8
<b>Aid for greenhouse products C1 and C2</b>							
over 7 months	€/m <sup>2</sup>	11.4	11.4	11.4	12.0	12.8	12.8
2-7 months	€/m <sup>2</sup>	5.7	5.7	5.7	6.0	5.9	5.3
<b>Northern storage aid for horticulture products (max.)</b>							
Storages with thermo-control system	€/m <sup>3</sup>	15.1	15.0	14.5	14.2	14.2	14.2
Storages without thermo-control system	€/m <sup>3</sup>	10.1	10.1	10.1	9.8	9.8	9.8

#### Aid during the transitional period: Conversion factors with which the average number of animals is multiplied

	LU		LU		LU
Dairy cows	1	Other bovines > 2 years	1	Horses > 6 months, Mares for breeding, incl. ponies	1
Suckler cows	1	Other bovines 0.5-2 years	0.6	Finnish horses	0.85
		Ewes, goats	0.15	Other horses and ponies, 1-3 years	0.6

#### Nordic aid: Conversion factors with which the average number of animals is multiplied

	LU		LU		LU
Suckler cows	1	Sows, boars	0.7	Hatching broilers and other poultry	0.025
Male bovines > 2 years	1	Pigs > 3 months	0.23	190/223 slaughtered turkey	1
Male bovines 0.5-2 years	0.6	13 slaughtered pigs	1	Horses > 6 months, Mares for breeding, incl. ponies	1
Ewes, goats	0.15	Laying hens	0.013	Finnish horses	0.85
		Broilers	0.0053	Other horses and ponies, 1-3 years	0.6

<sup>1</sup> A- and B-area national aid for crop production, C-area northern aid.

<sup>2</sup> Aid for forage grass is paid for farms with cattle, sheeps, goats and horses.

P1 = Province of Oulu: Haukipudas, Kiiminki, Oulu, Utajärvi, Ylikiminki, Parts of Oulunsalo.

P2 = Province of Lapland: Kemi, Kemijärvi, Simo, Tervola, Tornio.

Province of Oulu: Hailuoto, Hyrynsalmi, Ii, Kuhmo, Kuivaniemi, Yli-Ii

P3 = Province of Lapland: Kemijärvi, Pello, Ranua, Rovaniemi mlk, Rovaniemi, Ylitornio.

Province of Oulu: Pudasjärvi, Puolanka, Suomussalmi, Taivasskoski

P4 = C3: Province of Lapland: Posio. Province of Oulu: Kuusamo.

C4: Province of Lapland: Kolari, Pelkosenniemi, Salla, Savukoski; Parts of Kittilä and Sodankylä.

P5 = Province of Lapland: Muonio, Enontekiö, Inari, Utsjoki; Parts of Sodankylä and Kittilä.

Archipelago: Parts of areas C1 and C2.

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