

Agricultural Economic Report
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ABSTRACT

AGRICULTURAL ECONOMIC REPORT 2006 OF THE NETHERLANDS: SUMMARY

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This report offers an English summary of the Landbouw-Economisch Bericht 2006. It presents a survey of the economic state of Dutch agribusiness. First, attention is paid to general economic and political developments and to the development of the agricultural complex. Next, the report deals with the rural area and with environmental issues. Following a description of the production structure and production factors in agriculture, profitability and income formation in the various sub sectors are analysed.

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Preface

This summary of the *Landbouw-Economisch Bericht 2006* offers a global survey of the economic and financial state of Dutch agriculture and horticulture. In it, the changing economic and political circumstances affecting the sector are explicitly taken into account. The complete report, which is available only in Dutch, is based on data and contributions from the three research departments of the Institute. The report has been coordinated and edited by the Public Issues Department. The final draft of the 2006 edition of the report was completed in May 2006.

The Hague, July 2006

A handwritten signature in black ink, appearing to be 'J.C. Blom', written in a cursive style.

The Director,
dr. J.C. Blom

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The environment of the Dutch agricultural sector

1.1 Economic and political developments

The world economy slowed slightly in 2005 following the strong growth of 2004. There were high growth percentages once again in the developing countries in particular; China took the lead with a growth level of more than 9%. A sharp increase in the prices of raw materials – the most notable being the price of oil, which rose by more than 40% – slowed business activities slightly but did not result in higher inflation. Economic development within the EU was disappointing; economic growth in the EU-25 was limited to 1.5%, compared with 3.5% for the USA and 2.5% for all the wealthy countries collectively. The increase in EU-exports (4%) continued to lag significantly behind the growth of international trade (more than 7%).

The Dutch economy grew by less than 1% in 2005, mainly because investments and private consumption more or less stagnated. Imports and exports did increase relatively strongly, by 5.5% and 6.3% respectively, and the export balance remained high. Inflation rose slightly but remained less than 2%. The financial deficit of the government has been reduced considerably, ending up as approximately 0.5% of the GDP. The expectation is that the growth will accelerate in 2006 and 2007 to around 3%, and that unemployment will fall.

The share of primary agriculture within the Dutch economy has fallen from 5% to 2% since the 1970s. Until about 1990, this was primarily a matter of prices that were becoming unfavourable. Later, the growth in production volume was also lagging behind, particularly as a result of environmental measures that were gradually being tightened and changes in the EU's agricultural policy.

The level of support for the agricultural sector has declined slightly in recent years. The form of support offered is gradually becoming less trade-distorting owing to the fact that price support is being replaced by supplementary payments. The negotiations within the framework of the Doha Round, aimed at the further liberalisation of international trade, are still in progress. An agreement was reached however regarding the gradual reduction of export subsidies and other forms of export support. In addition, the 32 least developed countries will be given free market access. No agreement has yet been reached regarding the further reduction of domestic support.

In general, the EU sets higher requirements with regard to animal housing and the environment compared with other important countries. Under the rules of the WTO, it is difficult to set the same requirements for imported products. This puts EU agriculture in an unfavourable position. Moreover, other factors besides the diverse regulations are at least as important with regard to differences in cost price, such as labour costs.

In the spring of 2005, the majority of both the French and Dutch voters rejected the proposed European constitution. The planned institutional modifications have therefore been scrapped for the

time being. Work is continuing with regard to the expansion of the EU; Romania and Bulgaria are likely to be the next new member states.

On behalf of the cabinet, the Dutch Minister for Agriculture – Mr Veerman – published a policy document in September 2005 on the future of the Dutch agricultural sector, entitled “Kiezen voor landbouw” (Choosing Agriculture). In this document, the cabinet expresses its faith in the future of the agricultural sector. Favourable prospects are still foreseen for greenhouse and open field horticulture. A further reduction of the support by the government forms an important element in the expected future developments. The policy document sees the setting up of new activities within agricultural holdings – known as secondary activities – as a possibility for securing the continuity of holdings. In addition, the emphasis is placed on reducing cost prices through increases in scale. According to the document, the entrepreneurs must be given more scope, and the role of the government could be limited. A debate is announced regarding the milk quotas and about the implementation of the income payments. Currently, the payments in the Netherlands are implemented on the basis of a historical reference per farm.

1.2 Agriculture around the world

In 2005, worldwide grain and potato production declined, while the production of soya beans (amongst other products) and the most important animal products increased. For the first time since 2000, food production per capita has fallen slightly. International prices have been rising since 2002. The year 2005 saw increases in the prices of grain, sugar, coffee and poultry meat amongst other products. The price increase for poultry was chiefly a consequence of the outbreak of bird flu in Asia.

The high oil prices mean extra demand for agricultural products that can be used as a substitute for petrochemical products. In the long term, this would be at the expense of food production. The expectation is however that the emergence of the second generation bio-fuels – made primarily from woody crops – will limit this effect.

The share of North America in agricultural exports has declined over the last ten years while that of the EU has remained more or less stable. Brazil, Russia, India and China play an increasingly important role on the global agricultural market. Combined, these countries account for almost 43% of the world's population and have an estimated 30% share of the total global agricultural production. Brazil in particular is continually growing in importance as an exporter of many agricultural products.

1.3 Agriculture in the EU

The agricultural sector in the EU-15 comprised 6.8 million holdings in 2000, approximately 20% fewer than 10 years previously. The average holding covers 19 hectares of land. The UK occupies the number one spot in terms of size (68 hectares) and Italy is at the bottom of the list with 6 hectares. Agriculture in the Netherlands is by far the most intensive; the average number of ESUs (European Size Units) per hectare is 4.5 times greater than in the EU-15. A large share of the countryside in the EU is under pressure from urbanisation.

In 2005, a start was made with the introduction of farm payments, which are or will be linked to conditions in the fields of 'good agricultural practice', the environment, animal health, public health, crop protection and animal welfare. Countries can either opt for a payment per farm on the basis of historical reference or for an average payment per hectare, also known as the flat rate. Most countries have chosen the first option. In 2004, the payments amounted to almost 80% of the total annual budget of 38 billion euros for the market and income policy of the EU. This budget has remained relatively stable in recent years. In April 2006, an agreement was reached regarding the EU's total multi-annual budget for 2007-2013. The share of agriculture in this budget changes from 43 to 42%. Nearly 81% (293 billion euro for seven years) is earmarked for the market and income policy of the EU. The budget for the second pillar of the agricultural policy – the rural policy – is much smaller (70 billion euro), but increases considerably compared to the available budget in the period 2000–2006. From now on, this policy will be financed from a single fund.

The share of the payments in the total budget will still increase due to the further implementation of the reforms to the dairy policy and due to the changes to the sugar policy as decided upon in 2005. The sugar price will be reduced by 36% over four years, with the growers receiving partial compensation. Besides a one-off reduction in order to eliminate surpluses, no reduction to the quota will be applied although there will be a voluntary buy-up scheme for sugar quotas.

The EU will encourage the production of bio-fuels and has launched an action plan for the improved welfare of animals in the field of livestock production. The European Commission also submitted a proposal to limit the number of animals per square metre of floor surface in broiler farming. The harmonisation of the regulations within the EU in this field is proving difficult due to the diversity of visions regarding animal welfare between the member states. Outbreaks of bird flu in various EU countries led to the EU approving the preventative vaccination of a limited section of the poultry population.

In 2005, the agricultural production volume in the EU-25 declined by more than 5%. This reduction took place entirely within crop production, amongst other things as a consequence of drought. Animal-based production remained at approximately the same level. The prices declined slightly and the value of the purchased means of production remained more or less the same. The real added value per worker in the EU-25 declined by approximately 5.5%, but a limited improvement took place in the ten new member states.

In 2004, the 25 EU member states combined exported almost 260 billion euros' worth of agricultural products and foodstuffs, with the new member states accounting for just 5% of this. Approximately three-quarters of the exports were destined for other member states. The agricultural imports of the 25 member states amounted to over 270 billion euros; 70% remained within the EU. The EU is the most important trading partner for the least developed countries, both in general and in terms of agricultural trade.

Developments in the Dutch agricultural sector

2.1 Developments within the Dutch agro-complex

In 2004, the total of all the economic activities relating to agriculture and foodstuffs – the so-called ‘agro-complex’ – equated to 9.3% of the total national added value and to over 10% of national employment (table 1). Both proportions are gradually declining. Over a third of the agro-complex is based on the import of foreign raw materials such as animal feed, grain for human consumption and tropical products processed in the Netherlands. The share of the foreign raw materials increases over the years, but the share of primary agriculture and horticulture is showing signs of a gradual decline. In 2004, the added value amounted to almost 7 billion euros and employment amounted to approximately 175,000 annual labour units (table 1). This equated to 1.6% and 2.7% respectively of the national totals.

Table 1	Gross value added and employment of the Dutch agricultural complex, 2001 and 2004			
	Gross value added ^{a)} (EUR billion)		Employment (1,000 labour units)	
	2001	2004 (p)	2001	2004 (p)
Agricultural complex ^{b)}	40.5	40.4	714	651
<i>share in national total</i>	9.4%	9.3%	11.1%	10.1%
Gardening, agricultural services and forestry	3.6	3.8	71	64
<i>share in national total</i>	0.9%	0.9%	1.1%	1.0%
Foreign agricultural raw materials	14.8	15.6	220	205
<i>share in national total</i>	3.4%	3.6%	3.4%	3.2%
Processing industry	6.5	7.1	75	72
Supply	4.1	4.3	70	66
Distribution	4.2	4.2	75	67
Agricultural complex (based on domestic agricultural raw materials)	22.1	21.0	423	382
<i>share in national total</i>	5.1%	4.8%	6.6%	5.9%
Agricultural and horticulture	7.9	6.9	186	176
Processing industry	3.3	3.4	53	45
Supply	7.9	8.4	130	122
Distribution	3.0	2.3	54	40

p: preliminary.
a) In current prices; b) based on domestic and foreign agricultural raw materials (including gardening, agricultural services, forestry, cocoa, alcohol and tobacco).
NB: Due to the revision of the National Accounting Convention and methodological changes, the figures cannot be compared against previously published data.

Source: LEI.

Within the agro-complex, the sub-complex of pasture-based livestock is the most important with a share of almost 30% in the added value of the total agro-complex. The horticulture sub-complex occupies second place with 22%; the relative significance of this sub-complex is increasing over time. Approximately a third of the added value of the agro-complex comes from the food and beverages industry (for 50% based on the processing of foreign raw materials), counting approximately 4,500 enterprises in the Netherlands and providing work for 144,000 people. Roughly two-thirds of the employment in this sector is to be found in enterprises with more than 100 employees. The largest Dutch concern within this industrial branch is Unilever, followed by the brewery Heineken and the meat producer Sovion. As a result of takeovers, the turnover of the last of these businesses has increased 10-fold over a period of three years. This branch of industry is very dynamic: the second half of the 1990s saw a strong wave of concentration, but activities have been hived off again in recent years. One example is the hiving off of the deep-freeze division by Unilever.

2.2 Consumption and retail trade

Consumer expenditure on food and beverages in shops in the Netherlands has been more or less stable in recent years, hovering around 33.5 billion euros. Their share in the total consumer expenditure is gradually declining and was approximately 14% in 2005. The figure stated above does not include consumer expenditure on food in restaurants and other catering situations. In 2004, the total amount for this was a little over 10 billion euros. Approximately 45% of this was spent in restaurants and 30% in fast food establishments. The market share of organic foodstuffs is rising, but still only accounts for 2%. In 2005, this amount was 467 million euros.

The largest item of expenditure in terms of foodstuffs is meat and meat products. On average, the Dutch consumed almost 86 kg of meat each in 2005, almost half of which was pork. Considered over a period of a few decades, some fairly significant shifts have taken place in the consumption of foodstuffs. For example, the consumption of margarine and full cream milk has declined while that of semi-skimmed milk, cheese, pork, poultry and wine has increased (table 2). Purchases of fruit and vegetables increased in 2005 for the first time in years. This is favourable from the point of view of healthy eating. Approximately half the Dutch population is overweight, and this problem is growing particularly fast in children. On the initiative of the minister of public health, the government, civil-society organisations and the sections of industry concerned entered into a covenant in 2005 in order to tackle this problem. The foodstuffs industry contributes by no longer targeting their media advertising at young children and by bringing more low-sugar and sugar-free products into the market.

Table 2		Per capita consumption (in kg) of a number of types of food and beverages in the Netherlands, 1970-2004				
	1970	1980	1990	2000	2004	
Butter	3.0	3.6	3.4	3.3	3.2	
Margarine	17.7	12.6	9.8	6.6	5.4	
Low-fat margarine	.	2.5	2.9	3.0	3.1	
Cooking fat and oils	8.1	10.6	13.0	22.6	22.6	
Full cream milk	76.7	38.8	20.3	10.1	5.4	
Semi-skimmed milk	4.2	27.5	41.3	42.8	41.4	
Cheese	8.3	12.2	13.6	15.8	16.7	
Beef and veal	19.7	22.2	19.4	19.2	19.5	
Pork	26.5	39.5	44.9	43.3	42.3	
Poultry meat	.	8.9	17.2	21.6	21.9	
Fresh vegetables ^{a)}	81	53	60	.	74 ^{b)}	
Fresh fruit ^{a)}	.	66	73	.	94 ^{b)}	
Soft drinks (litres)	.	64	86	114	113	
Beer (litres)	57	86	91	83	78	
Wine (litres)	5.1	12.9	14.5	18.8	20.6	

a) Amount purchased per household (source: Market Gardening Marketing Board); b) 2005.
Source: Statistics Netherlands (CBS).

More than 80% of the purchases of foodstuffs take place in supermarkets. Their share is still increasing at the expense of the specialist shops. Only specialist shops selling organic produce and exotic foodstuffs are able to maintain their position. One important reason for the increase in purchases made in supermarkets is the fact that supermarkets have greatly expanded their range of fresh products in recent years. The 'price war' – whereby various supermarkets try to increase their market share through lowering their prices for a wide range of products – may also play a role. The consequences of the price war for the other links in the food chain – particularly the consequences for farmers – are not clear. This war was started by the largest Dutch supermarket chain – Ahold – which had a market share of almost 27% in 2005. In total, the Netherlands had almost 5,600 supermarkets in 2004, with over 100,000 employees (full time equivalents).

2.3 Imports and exports of agricultural products and foodstuffs

In 2005, Dutch agricultural exports grew in value by 5% to over 50 billion euros. The total exports increased by 10% to over 280 billion euros. Ornamental plant products have the largest share (15%) in agricultural exports, followed by meat and dairy products. Over 80% of agricultural exports go to other EU countries. With more than a quarter share, Germany has been the most important customer for several decades; the United Kingdom occupies second place with a 12% share. Imports of agricultural products and foodstuffs amounted to over 28 billion euros in 2005, 2% more than the year before. Germany is also the most important trading partner in terms of imports of agricultural products and foodstuffs, with a 22% share.

Rural areas, the landscape and the environment

3.1 Agriculture and rural areas

Over 60% of the area covered by the Netherlands is defined as rural. Rural areas are defined as areas (on the basis of postcodes) with fewer than 100 addresses per km² and with less than 10% built-up areas. Approximately 13% of the population lives in such areas, where agriculture has the largest share (19%) in employment. Partly due to this, the growth in the number of jobs in these areas by just 0.6% per year lags a long way behind the national average (3.2%).

The Dutch rural area has shrunk by approximately 90,000 hectares over a period of ten years as a result of development and urbanisation. This took place at the expense of the grassland; the area of arable land (including green fodder crops) and horticultural land has increased (table 3). On balance, the area of land for agricultural use (excluding greenhouse horticulture) decreased by almost 4%. In turn, the areas of woodland and natural areas increased in size. Forecasts indicate that the shrinking of land-based agriculture will result in large areas of the Dutch landscape looking very different in the long term. Due to a large number of farms ceasing operations, more non-agricultural activities are appearing in rural areas. Until recently, spatial policy was very restrictive with regard to non-agricultural functions in rural areas. However, the Spatial Policy Document that was passed by the Dutch parliament in early 2006 considerably expands the possibilities for residential and small-scale industrial functions.

Table 3		Land use^{a)} in the Netherlands, 1995/97-2003/04			
Type of land use	1995/97	2003/04	2003/04	1996-2004	
	(1,000 hectares)		(in %)	Change (%)	
Grassland	1,336	1,226	36.3	-8.2	
Arable farming and horticulture	934	959	28.4	2.7	
Greenhouse horticulture	13	15	0.5	19.0	
Woodland	306	316	9.4	3.0	
Other areas of nature	160	182	5.4	13.5	
Built-up areas	528	575	17.0	9.0	
Roads and railways	100	102	3.0	1.7	
Total land area	3,378	3,376	100.0	-0.1	

a) Based on satellite data. Source: Alterra.

The emphasis of the Dutch government's nature policy of recent years has been more on private and agricultural nature management rather than on the purchase of land for nature development. This shift offers farmers possibilities to earn extra income and represents a limitation for government spending since no compensation needs to be given for the fall in the value of the agricultural land. However, the question remains of whether the desired results can be achieved through agricultural nature management and whether continuity is guaranteed in the long term.

Farmers are very interested in nature management; the contracted area already amounts to more than 140,000 hectares. There is not only a lot of interest in nature management but also in other farm-related secondary activities. There are already more than 500 'care farms' (or social farming, where f.i. mentally handicapped persons partake in the daily activities on the farm), almost 2,900 farms offering some form of recreation and 460 farms with a windmill. In total, 15-20% of all agricultural and horticultural holdings implement some form of secondary activities. The total turnover of all these activities is estimated at over 150 million euros. Growth possibilities appear to exist for most forms of secondary activities, particularly for nature management and care farms. There are probably still growth opportunities for daytrips, but residential recreation appears to be stagnating in rural areas.

Despite the growth, the secondary activities still only make a limited contribution to turnover in agriculture and horticulture. In recent years, the average agricultural and horticultural holding within LEI's Farm Accountancy Data Network achieved a turnover of over 2,000 euros from secondary activities, as well as over 1,500 euros from sales from the farm and on-site processing of agricultural and horticultural products. Altogether, this accounted for approximately 1.5% of the average turnover of the holding. Naturally, the significance of secondary activities, sales from the farm and processing on site for the holdings that actually occupy themselves with these activities is much greater. Thirty percent of the arable farms that are occupied with recreation achieve a turnover from these activities of more than 10,000 euros, and the care farms achieve an average estimated turnover of 70,000 euros from their care tasks.

3.2 Agriculture and the environment

The share of agriculture and horticulture in the total national environmental costs is approximately 6%. That is about three times as much as this sector's share in the total national added value. This sector also has a relatively large share in various forms of environmental impacts. This is to a great extent related to the nature of the sector; the use of fertilisers is an obvious example. The share of the foodstuffs industry in the various forms of environmental impacts is comparable in size to its share in the national income, except that this branch of industry produces a relatively large amount of waste.

The environmental impact of agriculture and horticulture has been declining over a long period of time, although this process appears to have stagnated in recent years (table 4). The use of chemical crop protection agents roughly halved between the mid-1980s and the year 2001, but that reduction has now come to a halt. For each unit of crop output, the use has fallen by about two-thirds over a period of 15 years.

The environmental impact of these agents has been greatly reduced, partly through the application of different spraying methods that were made compulsory by legal measures. Over the course of the 1990s, the number of chemical agents permitted for use in agriculture and horticulture has been reduced from over 300 to fewer than 200, but this number has been increasing again in recent years.

Table 4		Development of environmental impact of agriculture and horticulture, 1995-2004				
	1995	2000	2001	2002	2003	2004 (p)
Use of crop protection agents (in million kg of active substance*)	12.61	11.38	9.42	9.70	9.55	10.66
Greenhouse gas emissions (in billion kg CO ₂ equivalents)	31.1	27.2	26.5	25.6	25.0	25.2
Supply of nitrogen (N, kg per hectare)	472	394	380	353	354	361
Supply of phosphates (P ₂ O ₅ , kg per hectare)	140	125	119	108	112	105
Ammonia emissions (x million kg)	179	139	129	123	117	121
*) source: Plant Protection Service		Source: RIVM/CBS (Statistics Netherlands), Milieucompendium, various years;				

Agriculture and horticulture account for approximately 12% of the total Dutch emissions of greenhouse gases. More than two-thirds of this is nitrous oxide and methane, which are released in livestock production. The rest is CO₂, the majority of which comes from greenhouse horticulture. All three emissions have shown signs of decline in recent years (table 4), particularly due to the shrinking number of cattle under the influence of manure policy and milk quotas and through energy savings in greenhouse horticulture. The latter is encouraged by the high energy prices. Work is being done on creating greenhouses that require much less energy than the current ones, possibly even producing energy. Greenhouse horticulture could be benefited by participation in trade in CO₂ emission rights. The high energy prices and the greenhouse gas policy also present opportunities in the sphere of bio-fuels. Due to the high land prices, however, the question is whether the Netherlands has a strong position for the cultivation of crops for bio-fuels. There are certainly opportunities for the production of energy from residual flows, probably including manure.

The mineral losses from Dutch agriculture have more than halved over a period of 20 years, chiefly due to a reduction in the supply (table 4). The use of artificial fertilisers in particular has been greatly reduced, and there is also a clear reduction in the quantity of minerals in animal manure. Besides the manure policy, the milk quota system has also played an important role in this.

A new manure policy came into effect in early 2006. Broadly speaking, this policy comprises a system of manure and animal production rights, through which manure production in its entirety is kept under control, and a system of usage or supply standards for nitrogen and phosphates. The mineral declaration system that forced farmers to be economical in their use of minerals has been abolished. Until at least the end of 2009, and subject to a number of conditions, 250 kg of nitrogen from animal manure may be applied per hectare of grassland in the Netherlands instead of the normal quantity of 170 kg per hectare as prescribed by the EU nitrate directive. Approximately 26,000 holdings have indicated that they would like to make use of this so-called derogation. Balanced fertilisation is the aim with regard to phosphates. The expectation is that the new policy will make it possible to achieve the objectives relating to water quality. The level of nitrogen in the surface water has been falling for quite some time, but the increase of the surface phosphate-saturated soil is still persisting. The new manure policy brings more expense for livestock farmers than the 'old' policy.

The EU's Water Framework Directive, which must be implemented by 2009, and the announced Soil Framework Directive make a solution for the mineral problem even more urgent.

The ammonia emissions from Dutch livestock have almost halved since 1990. In 2004, these emissions still amounted to approximately 120 million kg (table 4). In line with EU agreements, these emissions must be reduced to 114 million kg by 2010. For the time being, it looks like this objective will be achieved, but further reductions are needed with an eye to protecting the natural environment. From 2007, pigs and chickens on large holdings must be housed in low-emission stalls. This obligation will gradually be extended, but for the time being will continue to be limited to new stalls for pigs and chickens. Both the spatial component of the ammonia policy and the 'odour policy' are gradually being relaxed in order to offer farms more development opportunities.

The production of waste (excluding manure) by agriculture and horticulture has been stable for the last few years. The vast majority of this waste – almost 97% – is reused. It is conceivable that part of this waste could be used for energy production in the future. Besides straw, mushroom cultivation makes the greatest contribution to agricultural and horticultural waste production.

The area of organic agriculture increased by 1.3% in 2005, and is approaching 50,000 hectares. This corresponds with 2.5% of the total area. The number of organically-producing holdings in 2005 was almost 1,380. This figure has been declining for a number of years.

Structural developments in agriculture and horticulture

4.1 Number and size of farms

In May 2005, the number of farms (agricultural and horticultural) in the Netherlands was almost 2.5% lower than a year previously. This decline was a little less than the average (3%) of the previous ten years. Over the last five years, the number of specialised intensive livestock productions in particular has diminished sharply (by over 5% per year), principally due to buying-up schemes to reduce the manure surplus. The numbers of greenhouse horticultural holdings and dairy farms have also fallen sharply, by almost 5% and more than 4% per year respectively. The reduction of the number of specialised arable farms remained limited to 2% per year.

Since 1990, the number of holdings has declined by more than a third. The number of small businesses – i.e. businesses with fewer than 70 DSU (Dutch size units) – declined the most, by almost half in fact. The number of medium-sized businesses (between 70 and 150 DSU) increased between 1990 and 1995, but has been declining again since then. The number of businesses with more than 150 DSU is more or less stable.

A small proportion of the businesses continues to grow to a size that clearly exceeds the normal family farm. The number of these so-called “mega farms” tripled between 1994 and 2004 but still amounts to just 1.5% of the total. A lower limit of 500 DSU is used as the reference point, equating to approximately 320 dairy cows, 12,500 pigs, 160,000 laying hens, 340 hectares of arable land or 3.5 hectares of horticultural greenhouses. The share of the mega farms in the total production capacity amounted to almost 17% in 2004 (in 1994: 5%), but their share in the total area remained limited to 3.5%. This difference is brought about by the fact that most mega farms can be found in greenhouse horticulture. The mega farms are typically more than ten times bigger than the average Dutch agricultural or horticultural holding. The most important advantage of increases in scale lies in the lower labour costs per product unit.

4.2 Labour, land and capital

A total of 236,000 people worked in the agricultural and horticultural sectors in 2005, almost 20% fewer than in 1990 (table 5). Almost half the labour volume concerns the heads of the businesses. The number of other family workers has declined the most sharply, but this is partly because some of them have become the head of the business within the framework of a partnership. The number of non-family workers grew strongly during the 1990s, particularly as a result of the expansion of greenhouse horticulture. This was coupled with an increase in the average number of labour units per holding. This development made an about-turn around the year 2000. The educational level of the Dutch farmers and growers is still improving: in 1996, 46% had a secondary or higher level of education; this figure had already risen to 65% in 2005. In general, the potential business successors have a higher level of education than the current heads of the businesses.

Table 5 Number of workers in agriculture and horticulture, 1995-2005

	Index (1991=100)				Number (x 1,000)
	1995	2000	2002	2005	2005
Total number of workers	96	97	90	82	235.8
Family workers	93	84	77	72	167.5
of whom: heads of business	101	92	87	84	122.6
other family members	79	70	59	53	44.9
Non-family workers ^{a)}	107	151	140	119	68.3

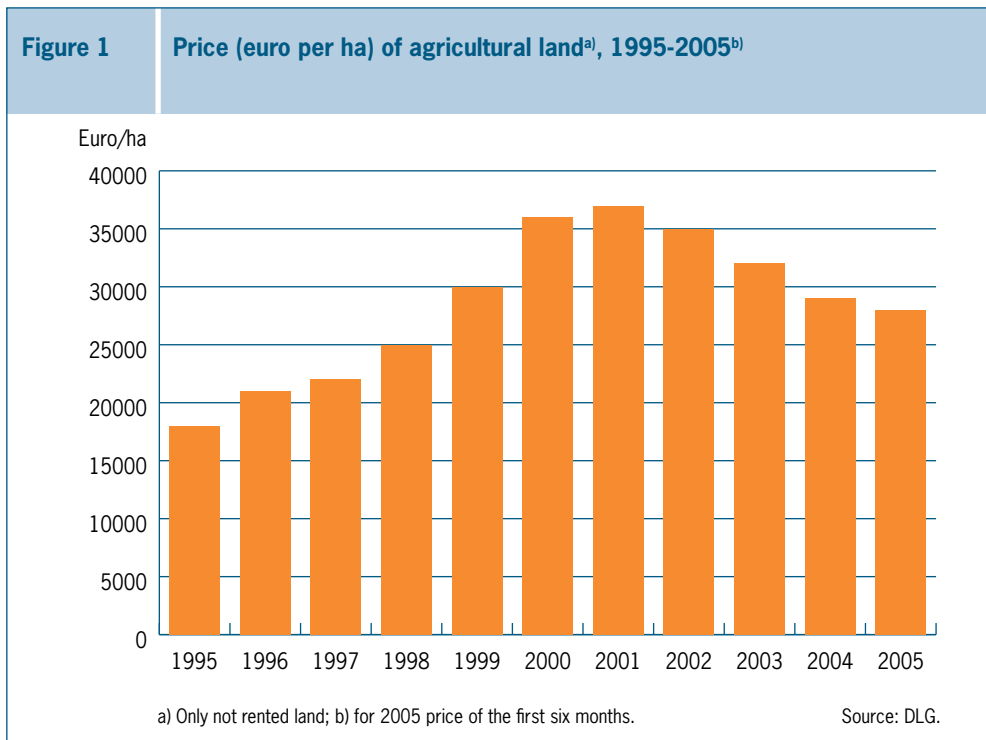
a) Excluding the workers who do not work on a regular basis.

Source: CBS (Statistics Netherlands) agricultural census, processed by LEI.

The area of farmland in the Netherlands declined from around 2 million hectares to just over 1.9 million hectares during the period 1990-2005. This amounts to an average annual decline of 0.3%. Almost all the reduction was due to the reduction of the area of grassland by over 120,000 hectares (10%). This was compensated by an expansion of the area of green fodder crops (primarily green maize) by over 30,000 hectares (16%) (compare table 3). The area of open field horticulture increased by over 7% to a total of a little more than 100,000 hectares, and the area of greenhouses grew by almost 8% to 10,500 hectares.

The prices of agricultural land in the Netherlands increased strongly in the second half of the 1990s (figure 1). In 2001, the average price of non-leased land reached a peak of 37,000 euros per hectare. Since then, a decline has set in, although the most recent data show a recovery. Causes of this development could include the strong economic growth in the 1990s, resulting in an increase in the need for land for non-agricultural purposes. The decline since 2001 is related to the turnaround in the economic situation, with the modifications of the EU agricultural policy and the development of incomes in land-based farming.

Between 2001 and 2005, the balance sheet value of the average agricultural and horticultural holding increased by 10% to over 1.6 million euro. The increase was primarily connected with the growth of the size of the business. The dairy farms have the greatest value with an average of over 4 million euros, thanks to the value of land and milk quotas. Almost two-thirds of the balance sheet value is covered by equity capital. On large farms, this solvency is on average lower than on smaller farms.



Production and income development

5.1 Production and income development of the entire agricultural and horticultural sector

The production volume of Dutch agriculture and horticulture was a little less in 2005 than in 2004 (see table 6). The decline was entirely due to arable farming, where the yields were in general a little lower than in 2004. The yield prices rose on a broad front, although there were also various products that became cheaper such as sugar beet, sweet peppers and veal calves. The fairly strong price increase for cattle farming products is distorted by the fact that the new EU-premiums have been incorporated into the price. The price of milk fell slightly. The result was an increase in the gross production value by approximately 3%. The prices of purchased goods and services generally rose slightly; in particular, the price of energy rose sharply (by more than 20%). Linked with this, the price of artificial fertiliser also increased.

Table 6 Gross production and value added of agriculture and horticulture in the Netherlands, 2003-2005

	Value (mio. euro)			Index 2005 (2004=100)		
	2003 (p)	2004 (p)	2005 (est)	Volume (est)	Price (est)	Value (est)
Total gross production value ^{a)}	20,602	20,494	21,096	99.5	103.5	103.0
of which arable products	2,475	2,156	2,217	97.5	105.0	102.5
horticultural products	8,124	7,759	7,980	100,0	103,0	103,0
grassland-based livestock products	4,405	4,420	4,608	100.0	104.0	104.0
intensive livestock products	3,208	3,714	3,836	102.0	101.0	103.5
Intermediate consumption (-)	11,699	12,264	12,420	99.5	101.5	101.0
Depreciations (-)	2,610	2,606	2,645			101.5
Levies ^{b)} (-)	363	374	375			100.5
Subsidies ^{b)} (+)	333	351	311			88.5
Net value added	6,262	5,601	5,967			106.5

p: preliminary; est: estimation.
a) Including agricultural contract workers and gardening; b) not product-tied.

Source: CBS, estimation 2005 by LEI.

Depreciation and levies rose slightly and the non product-tied subsidies showed signs of decline. However, that was primarily a question of changes in payment times.

On balance, the net added value in 2005 ended up almost 370 million euros (6.5%) higher than in 2004. This compensated for almost half of the sharp fall of the previous year. Interest, rent and wages must be paid from this added value. These cost items only rose by a fraction. Having reached a historic low point in 2004, the income remaining after deductions recovered by almost 15% in 2005. However, taking inflation into account, this was still more than 15% lower than in 2001.

5.2 The results of the average agricultural and horticultural holding

The development of the results of the average agricultural and horticultural holding show great similarities with the developments at sector level. This is evident because more than 88% of the business outcomes in the years 2002-2004 originated from sales of agricultural products. This does not include the payments and animal premiums within the framework of the European agricultural policy. On average, these amount to 8,000 euros per holding, i.e. 3% of the total proceeds. The latter item is much more important in arable farming and dairy farming. In 2004, an arable farm received an average of 16,300 euros in hectare payments and animal premiums, while a dairy farm received 12,600 euros. In addition, approximately 1.5% (on average almost 4,000 euros per holding) came from secondary activities, sales from the farm and processing on site. Lastly, there are proceeds from the leasing of assets and income from operating capital.

The average farm family income from all agricultural and horticultural holdings improved according to the estimate of almost 35,000 euros per holding in 2004 to 45,000 euros in 2005 (table 7). The income from outside the holding remained virtually the same. This income makes up almost a quarter of the total income and just under half of this comes from labour; the rest comes from capital and social benefits. The savings have more than doubled.

On average more than one family has to live on the total family income. Taking this into account the total income per family was on average 47.000 euro in 2005. The distribution of incomes is large: in 2005, an estimated 14% of farming families had a negative total income and an equally large group had an income of more than 100,000 euros. In recent years, approximately a third of the families had an income that was lower than the minimum income threshold derived from social security schemes (equal to 22.300 euro).

Table 7		Results (x1,000 euros per holding) on the average agricultural and horticultural holding, 2001-2005		
		2001-2003	2004	2005 (est)
Gross returns	(+)	269.1	282.4	299.0
Paid costs and depreciations	(-)	231.3	247.7	255.0
Farm family income	(=)	37.8	34.7	45.0
Income from outside the farm	(+)	10.0	13.8	14.0
from: labour		5.3	5.6	6.0
other		4.7	8.1	8.0
Total family income	(=)	47.8	48.5	59.0
Taxes	(-)	3.7	2.2	3.0
Family spending	(-)	36.3	37.7	38.0
Savings	(=)	7.9	8.6	18.0

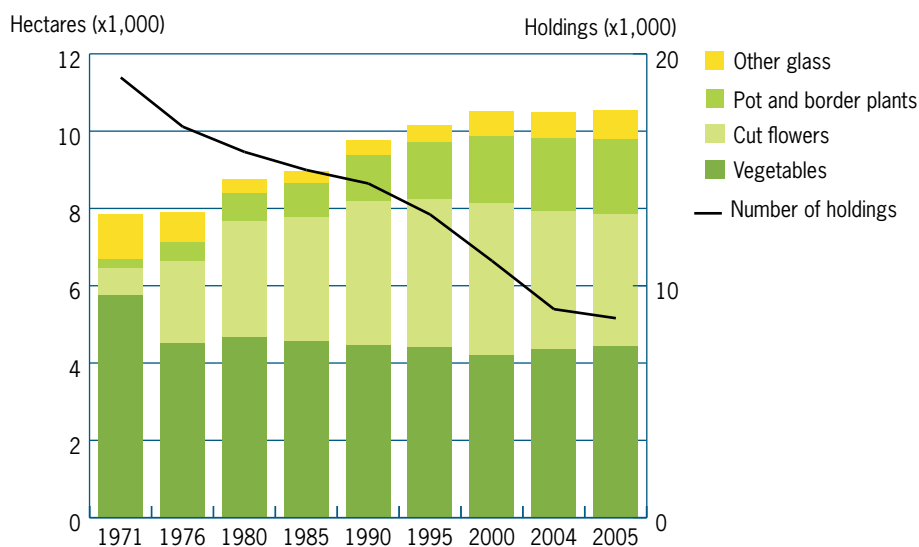
Source: Farm Accountancy Data Network.

Developments in the various sectors

6.1 Greenhouse horticulture and mushroom farming

Together with mushroom farming, greenhouse horticulture had a 22% share in the added value in 2004, and a share of 17.5% in employment for the agro-complex as a whole, where based on domestic raw materials. Both shares are gradually increasing due to the expansion of the sector. The area of greenhouse horticulture has grown from 7,370 hectares in 1971 to 10,540 hectares in 2005 (figure 2). This growth was entirely due to ornamental plant cultivation; the area of greenhouse vegetable cultivation shrank from 5,275 hectares to 4,430 hectares during the period stated. Between 1971 and 2000, the area used for the cultivation of cut flowers grew from 715 hectares to 3,925 hectares, but has started to decline again since then. The area used for pot plants – amounting to 1,925 hectares in 2005 – is still growing. The number of greenhouse horticultural holdings almost halved between 1971 and 2005 (figure 2). The average area covered by greenhouses is a little over 1.2 hectares per holding, and this is expected to increase to 2.5 hectares within ten years.

Figure 2 Area and number of holdings with horticulture under glass, 1971-2005



Source: CBS, calculations by LEI.

The production value of greenhouse horticulture was approximately 6% higher in 2005 than in 2004, amounting to a little under 5 billion euros. The production value of greenhouse-grown vegetables and pot plants increased by 9% and 8% respectively, while the growth in cut flower cultivation was limited to 4%. However, the costs increased more sharply, particularly due to the increase in the price of gas by almost 40%. Profitability and income were therefore put under pressure. Within greenhouse vegetable holdings, the average income from the farm fell from over 42,000 euros in 2004 to an estimated 9,000 euros in 2005. Within cut flower holdings, the fall was limited to around 4,000 euros, leaving a farm family income of 44,000 euros. The average farm family income of the pot plant holdings declined from 67,000 euros to 61,000 euros. The savings were on average negative for the three groups of holdings, as they were in 2004. On average, more than one family needs to live on the farm income from greenhouse horticulture holdings. Taking into account the income earned outside the farm, the average total income per family on horticultural holdings amounted to approximately 39,000 euros in 2005. The comment can be made in this regard that, in contrast with other sectors, incomes from outside the farm in greenhouse horticulture play a less important role, even on smaller holdings.

There are major differences between the families with regard to incomes. Approximately 30% of the families working in greenhouse horticulture had a negative total income in 2005. On the other hand, around 10% of the families had an income of over 100,000 euros. In recent years, greenhouse horticulturalists have mainly invested in assimilation lighting equipment, mobile cultivation systems and robots.

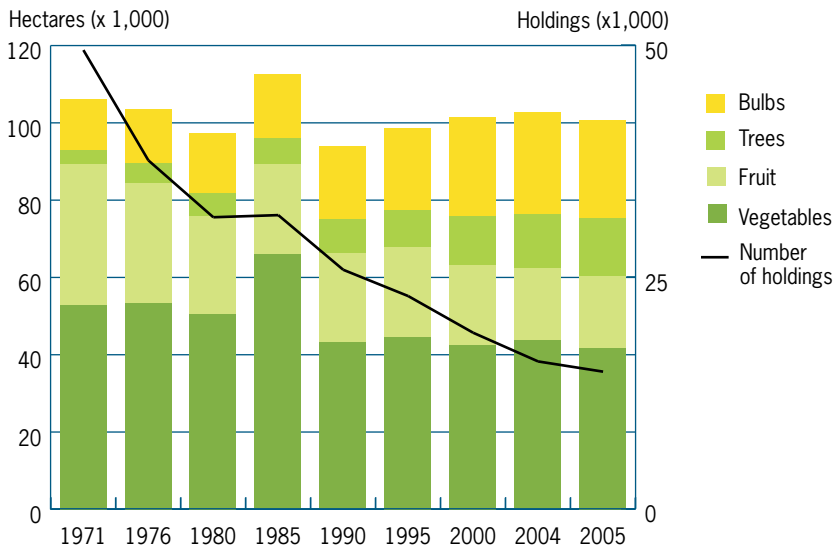
In 1971, there were around 1,600 holdings growing mushrooms; in 2005, there were only 330. The total area used for mushroom cultivation increased from 650,000 m² in 1971 to more than 1 million m² in 1995 before falling again to 770,000 m² in 2005. The production value of mushroom farming was approximately 11% lower in 2005 than the year before, amounting to 235 million euros. Due to increasing competition, particularly from Poland, the production value has fallen by more than a quarter since 2000. The average farm family income fell from just under 50,000 euros in 2004 to approximately 30,000 euros in 2005, and the savings were negative.

6.2 Open field horticulture

Open field horticulture, consisting of open-air vegetable cultivation, fruit cultivation, bulb cultivation and tree cultivation, had a share of almost 8.5% in the added value in 2004, and almost 10% in employment within the Dutch agro-complex. These shares are gradually increasing a little. The number of holdings with open field horticulture has declined by 70% since 1971, while the total area shrank by 6% (figure 3). In this regard, there were major differences between the four sub-sectors. For example, the area used for fruit cultivation has almost halved, whereas the area used for tree cultivation has almost tripled. A shift is taking place within fruit cultivation, from apples to pears. The area used for open-air vegetable cultivation has been shrinking slightly for quite some time, and in the last few years the same has happened to bulb cultivation, which had been growing fairly strongly until recently.

The production value of open field horticulture was very varied in 2005: the production value of the open-air grown vegetables (395 million euros) recovered by 10%, but that of fruit cultivation (335 million), bulb cultivation (540 million) and tree cultivation (550 million) has been declining by 7, 4 and 5% respectively. The development of incomes is related to harvest years and that doesn't always produce the same picture as the abovementioned production value in the calendar year. Thanks to considerably lower prices, the farm income per entrepreneur within open-air vegetable holdings increased strongly from 2004 to 2005, namely from an average of 23,000 euros per holding to an estimated 60 – 70,000 euros. Within fruit cultivation holdings, the average income from the farm improved from 33,000 euros to approximately 40,000 euros, and from 23,000 euros to around 35,000 euros within bulb cultivation holdings. Within tree cultivation, the average income from the farm remained stable at around 55,000 euros.

Figure 3 Area and number of holdings with horticulture in the open, 1971-2005



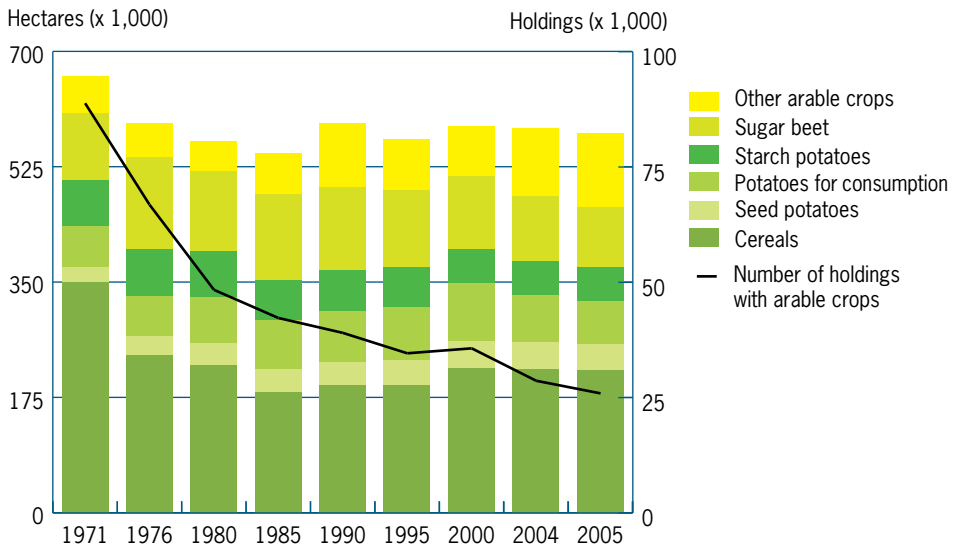
Source: CBS, calculations by LEI.

6.3 Arable farming

The arable farming complex had a share of a little less than 20% of the total added value of the whole agro-complex in 2004 and approximately 18% of the total employment. These shares are gradually shrinking. The number of holdings with arable crops has fallen since 1971, from almost 90,000 to just under 26,000 in 2005 (figure 4). Just under half of these are specialised in arable farming. The area used for arable crops (excluding green maize) shrank from 660,000 hectares to 580,000 hectares in the abovementioned period. Organic crops are grown on 7,000 of these hectares. Of all the important arable crops, only the area used for seed potatoes has increased.

The production value of arable crops was 2-3% higher in 2005 than in 2004 (see table 6). Potatoes have the largest share in this (30-35%), followed by sugar beet (10-15%). The physical yields were in general a little lower in 2005. However, prices increased on a broad front, with sugar beet as the most important exception. The prices of potatoes and onions rose particularly strongly in relation to the very low level of 2004. The year 2005 thus saw a strong recovery of incomes in arable farming. The average farm family income doubled, yet still remained just under 20,000 euros. The average savings were once again negative. Within starch potato farms, the average income from the farm lay between 25,000 and 30,000 euros, both in 2004 and 2005. Approximately a quarter of the arable farming

Figure 4 Area and number of holdings with arable crops, 1971-2005



Source: CBS, calculations by LEI

families had a negative income in 2005, while one third had a total income of more than 50,000 euros. This includes the incomes from outside the farm; approximately 60% of the arable farms have additional income from outside the farm, mainly from labour. On average, the total income per family was 35.000 euro in 2005.

6.4 Grassland-based livestock production

Grassland-based livestock farming consists of dairy, beef cattle (excluding veal calves), horse, sheep and goat farming. The complex relating to pasture-based livestock farming is still the most important within the entire agro-complex, with a share of over 28% of the total added value in 2004, and almost 33% of employment. These shares are gradually shrinking.

In total, approximately 4.8 million grazing animals are kept on about 1.34 million hectares of farmland (grass and fodder crops) in the Netherlands. Since the introduction of the milk quota in 1984, the number of dairy cattle has gradually declined to a little over 1.4 million (table 8). The sheep population was growing until about 1990, but then started to shrink again under the influence of the EU's agricultural policy. The goat population is growing strongly. The exact number of horses in the Netherlands is not known, but the impression is that this has increased fairly strongly in recent years. The number of holdings with dairy cattle is declining by 4 or 5% per year; there were still 23,500 holdings with dairy cattle in 2005.

Table 8	Areas, animals and holdings with animals in grassland-based livestock farming, 1971-2005					
	Change per year (%)				Number	Change (%)
	1971-1980	1980-1990	1990-2000	2000-2005	2005	2004-2005
Area (x 1,000 hectares)						
Grassland	-1.1	-0.9	-0.8	-0.1	1,008	+2.5
Green maize	+26.3	+3.9	+0.5	+2.5	248	+4.4
Animals (x 1,000)						
Dairy cattle	+2.4	-2.2	-2.2	-1.0	1,433	-2.5
Beef cattle	.	+7.0	-8.6	-6.6	129	+3.7
Other cattle	+1.4	-0.3	-2.2	-2.5	1,408	+0.1
Sheep	+4.6	+7.1	-2.6	+0.8	1,363	+10.3
Goats	.	.	+11.4	+10.3	292	+3.5
Holdings with:						
Dairy cattle	-5.3	-3.5	-4.6	-4.4	23,530	-3.3
Beef cattle	.	+1.6	-6.1	-3.5	8,100	+2.1
Sheep	.	+1.1	-3.6	-4.5	13,710	-4.7
Goats	.	.	+3.8	+3.7	4,558	+0.6

Source: CBS (Statistics Netherlands) agricultural census, processed by LEI.

The production value of pasture-based livestock production was about 4% higher in 2005 than in 2004, amounting to over 4.5 billion euros (see table 6). Almost 80% of this related to milk. The milk price declined slightly, but that decline was amply compensated by the new dairy premium provided within the framework of the EU agricultural policy. In addition, the cattle price rose considerably. Consequently, the results of the dairy sector were relatively favourable in 2005. The average farm family income improved from 44,000 to 60,000 euros. Approximately 12,000 euros of income from outside the farm can be added to this. After payment of taxes and family expenditure, an average of a little over 37,000 euros in savings remains, 15,000 euros more than a year previously. On average there are 1.15 families per holding, leaving a total income per family of 68,000 euro in 2005.

In contrast with the past, the incomes of the organic dairy farms have been lagging behind those of conventional dairy farms in recent years. The larger dairy farms in particular invest a great deal, and are growing relatively fast. A large proportion of the investments relates to the milk quota, the price of which amounted to an average of 49 euros per 100 kg of fat in 2005. The scale of the trade in quotas corresponded with approximately 4% of the total Dutch quota.

6.5 Intensive livestock production

Intensive livestock production consists of pig farming, laying hens, poultry for slaughter, and veal production. The intensive livestock production complex had a share of almost 22% of both the added value and employment within the entire agro-complex in 2004. In the early 1970s, there were just over 6 million pigs in the Netherlands. This number has increased to over 15 million in 1997, after which the influence of the manure policy in particular brought about a reduction in the pig population to a little over 11 million in 2005 (table 9). The Dutch chicken population reached its peak in 1999 with almost 105 million hens. Since then, there has been a reduction in the population due to the manure policy, outbreaks of infectious diseases and a deterioration in competitiveness. Veal production is still growing: in 1995, there were 670,000 veal calves in the Netherlands, and more than 800,000 in 2005. The number of holdings active in intensive livestock production has been declining fairly sharply for quite some time (table 9). Consequently, there has been a strong trend of scale increased. The average pig farm had approximately 540 animals in 1980, and almost 2000 animals in 2005. The broiler farms had an average of 80,000 birds in 2005, compared with 46,000 ten years earlier.

	Change per year (%)				Number	Change (%)
	1971-1980	1980-1990	1990-2000	2000-2005	2005	2004-2005
Animals (x 1,000)						
Pigs	+5.7	+3.2	-0.6	-2.9	11,312	+1.4
of which: breeding sows	+6.1	+2.1	-1.2	-3.5	946	-0.8
porkers	+5.4	+3.0	-0.8	-3.3	5,504	+2.3
Poultry	+3.2	+1.4	+1.1	-2.2	95,467	+8.5
of which: laying hens	+4.5	+2.2	-0.2	-1.3	30,513	+12.1
broilers	+1.2	+0.6	+2.2	-2.7	44,496	+0.5
Veal calves	+2.5	+0.3	+2.7	+1.1	829	+8.3
Holdings with:						
Pigs	-5.2	-4.0	-6.8	-7.8	9,690	-3.5
Poultry	-16.3	-3.7	-3.8	-4.9	3,224	+8.5
Veal calves	-7.3	-2.1	+2.4	+2.9	3,329	+10.7

Source: CBS (Statistics Netherlands) agricultural census, processed by LEI.

Producer prices went up in the intensive livestock production sector in 2005 (see table 6). Egg prices rose by 1%, the price of broilers by 6.5% and the price of pigs by 5%. Only veal calves became cheaper (-9%). Together with the decline in the feed costs, this led to a further increase of the already relatively favourable incomes in the pig farming sector. The average farm income from pig breeding farms rose from 77,000 euros in 2004 to 110,000 euros in 2005, while that of the closed pig farms increased from 118,000 euros to 136,000 euros. However, due to the high price of piglets, the incomes of the porker farmers fell from an average of almost 60,000 euros to a little over 40,000 euros. Considerable savings were made on all types of pig farms. The average income per family for all pig farming types was 115,000 euro in 2005. Almost half of the families had an income over 100,000 euro, 10% had less than 25,000 euro to spend.

Although the farm incomes of laying hen farmers showed signs of improvement, they generally remained negative: they improved from an average of -76,000 euros in 2004 to -15,000 euros in 2005. The average income on broiler farms rose from less than 4,000 euros in 2004 to almost 100,000 euros. The incomes of veal farms fell from an average of almost 40,000 euros to 33,000 euros.

Definitions

Dutch size units (DSU)

A unit describing the economic size of agricultural holdings. The DSU is based on the standard gross margins (SGM), which are calculated by deducting related specific costs from the gross returns per hectare or per animal. The SGM is expressed in euro (current prices). On the EU level, the size of farms is not measured in SGM, but in the more workable European Size Units (ESU). DSU is the Dutch variant of the ESU. The DSU is recalculated frequently in such a way that the average farm size in DSU corresponds to the development of the volume of the added value of the average farm. The 2000 DSU equals a SGM of about 1,400 euro. Some examples (on the basis of the DSU 2000): 1 ha winter wheat = 0.843 DSU; 1 ha sugar beet = 1.76 DSU; 1 dairy cow = 1.21 DSU; 1 sow = 0.254 DSU, 1 ha cherry tomatoes under glass = 225 DSU and 1 ha roses = 277.9 DSU.

Family farm income

Income for the farm family arising from the farm business; this is a remuneration for the labour of all family members as well as the private capital and land.

Gross value added

Gross returns minus purchased goods and services (excluding depreciation).

Net value added

Gross returns minus costs of goods and services purchased from other sectors (including depreciation).

Savings

The part of total income which has not been used for consumption or personal taxes, but is added to net worth.

Solvency

Net value in % of total capital.

Specialised farm

Farm on which more than two thirds of production originates from one sector.

Total income

Family farm income plus income from non farm activities and social security benefits paid to the farmer and his spouse.

