

This report offers an English summary of the Landbouw-Economisch Bericht 2002. It presents a survey of the economic state of Dutch agriculture and horticulture. 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 subsectors are analysed.

# Agricultural Economic Report

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ISSN 0924-0764

Price € 9,-

## Preface

This summary of the "Landbouw-Economisch Bericht 2002" 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 divisions of the Institute. The report is coordinated and edited by the Public Issues Division. The final draft of the 2002 edition of the report was completed in May 2002.

The Hague, July 2002



The Director,  
Prof. L.C. Zachariasse

July 2002

### ABSTRACT

AGRICULTURAL ECONOMIC REPORT 2002 OF THE NETHERLANDS: SUMMARY

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The Hague, Agricultural Economics Research Institute (LEI), 2002

ISSN 0924-0764

28p., fig., tab.

This report offers an English summary of the Landbouw-Economisch Bericht 2002. It presents a survey of the economic state of Dutch agriculture and horticulture. 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 subsectors are analysed.

Design and production: The Key Agency, Amsterdam

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# 1

## Economic and Political Framework

### 1.1 General Situation

In the past year there has been a clear slowing down in the growth of the world economy. Only in Sub-Saharan Africa and Southern Asia has the growth tempo remained constant. The recovery that was outlined for the last quarter of 2001 in the United States was thwarted by the terrorist attacks of 11 September on New York and Washington that shocked the world. A recovery is expected for 2002, particularly in the United States and the EU, but up to now developments have remained well behind expectations.

The euro was quite weak in 2001 compared to the dollar, which was advantageous for the exports of the euro-countries, but this did contribute to the inflation in the EU. Partly in connection with the development of the world economy, the growth in the EU remained limited to around 1.5%, half of what it was in 2000. The outlook for 2002 shows no improvement.

Some advances were made towards European integration. A statute was accepted for a European partnership, the *Societas Europea*. A Convention for the future of Europe was installed to set up recommendations for the decision-making structure in the enlarged European Union. The negotiations for joining with the candidate member states in Central and Eastern Europe, including Poland, Slovenia, Hungary, the Czech Republic and Slovakia, is mostly on schedule, despite some sensitive issues, among which agriculture and regional policy. The cooperation between the EU and other countries has gradually intensified. In this way, the preferential approach for most products was broadened in 2001 for the least developed countries, while for sugar, rice and bananas there are still limitations.

Partly under the influence of the developments in the world economy, the growth of the Dutch economy in 2001 declined to only 1%, less than a third of the growth in previous years. The weak growth went hand in hand with increased inflation, relatively increasing labour costs and a decreasing productivity in business. For 2002 and 2003 a recovery of economic growth, decreasing inflation and a slightly increasing unemployment level are expected.

In the spring of 2001 there was an outbreak of the highly contagious Foot and Mouth Disease in the Netherlands. On several thousand farms livestock had to be destroyed and in a particular region – a large section of the Veluwe in the centre of the country – was more or less placed in quarantine for many weeks. The economic damage, which was not limited to agriculture, was estimated at around one billion euros. In particular the extensive culling of livestock summoned widespread resistance in society and reinforced the call for an adaptation of the non-vaccination policy of the EU. Meanwhile some modest steps have been taken in this direction.

A field of tension can be defined between the increased load of social demands on the agricultural production process on the one hand and the decrease of income support by the EU on the other hand. Simultaneously, the scope for policy-making of the member states for the purpose of shaping their own policy for the agricultural sector has gradually become smaller, which became evident as a result of criticism from Brussels to certain introduced measures designed to stimulate the sustainability of the sector.

## 1.2 Agriculture in the World

In the past five years the number of undernourished people in the world has declined by around 40 million, which is noticeably below the World Food Summit objectives formulated at the time. Despite the improvement, it can be said of 93 of the 125 developing countries that they are experiencing structural food shortages. The relatively steep growth of the population in various parts of the world increases the difficulty of driving back the hunger. Furthermore, the availability of sufficient water continues to be a stumbling block for the necessary growth of food production.

World agricultural production in 2001 was about as extensive as the year before. A drop in the crop production is compensated by a rise in livestock products. A limited decline per capita can be determined. Only in South America was there an improvement. Furthermore, the agricultural production per capita in Eastern Europe increased relatively sharply; this is however still lower than it was around 1990. The world market prices for agricultural products remained generally quite low in 2001.

The international trade in agricultural products is increasingly influenced by stricter demands with regard to the safety for people and livestock in the importing country and through 'ethical' conditions in relation to environment, animal welfare and working conditions. The strengthening of demands serves to further advance the development of large agricultural chains, because more clarity can be achieved regarding the manner of production. Both in the retail trade as well as the production of food there is a strong concentration partly due to this factor.

The support of the authorities for agricultural production, given in percentages of production value, shows a slight decrease in the past few years and is clearly less than in the period 1986-1988. A shift in price support towards direct payments can be noticed, which is seen as an improvement from the point of view of distortions in trade. Australia and New Zealand are the least protective towards their farmers. The support for agriculture in the United States is still less than in the EU, but the difference has declined in recent years.

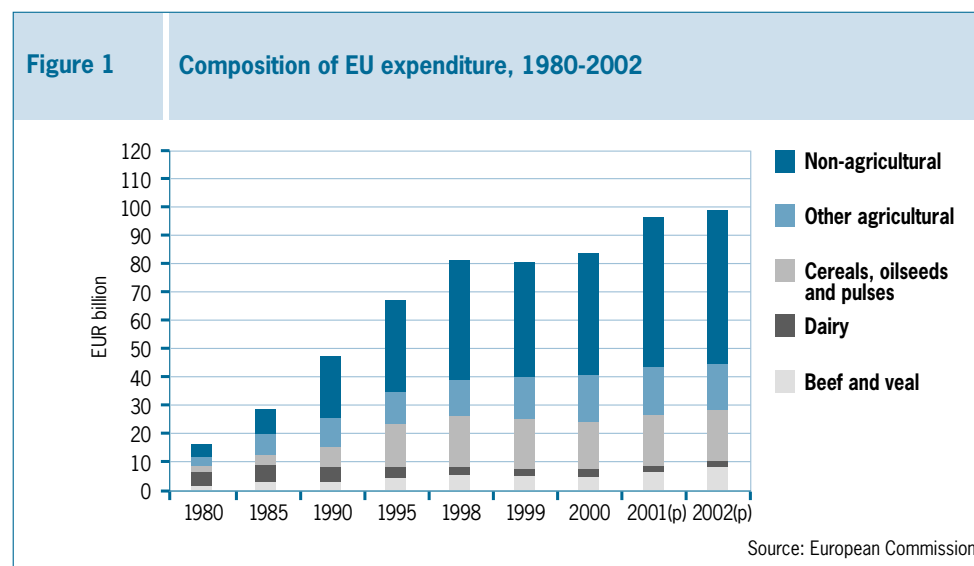
During the WTO summit in Doha in November 2001 it was decided to embark on a broad new round in terms of the liberalisation of world trade. Of particular importance here is the fact that China has meanwhile joined the WTO, which has strengthened the position of developing countries. The ecological and social aspects of international trade will also be negotiated. Regarding agriculture, negotiations will focus on further reduction of export support, increasing market access and decreasing trade distortive internal support. The EU is more reserved on these points than the United States.

## 1.3 Agriculture in the European Union

With the establishment of the general food law, the EU has achieved one of the central proposals from the White Paper on Food Safety. According to the proposal, the business sector is primarily responsible for food safety. The member states should ascertain if the businesses sufficiently check safety (supervision of supervision). In the near future, firms must register from whom they have purchased raw materials and to whom end products are delivered. The European Food Safety Authority, which has a monitoring, advice and information function, is already in operation.

In the Netherlands, the Voedsel- en Waren Autoriteit ('Food and Goods Authorities'; VWA) has been set up, which mainly has a surveillant and advisory task.

Due to the appearance of BSE ('mad cow disease') and Foot and Mouth Disease, for example, agricultural expenditure in the EU in 2001 was 7% higher than in 2000 (figure 1). The Dutch authorities intend to use the possibility to modulate the direct income payments, which means that part of this will be allocated for rural policy. It is not yet clear in which form this will be applied. A gradual shift from the classic market and price policy to the rural policy means that the Netherlands, which has been handing over to the EU more than it has been receiving for the past few years, will receive fewer resources from the EU. Denmark, the United Kingdom and Belgium also have a relatively small share in rural expenditure.



The European Commission has proposed to introduce direct income support in the candidate member states in the framework of the Common Agricultural Policy. The support will gradually be implemented from the moment of joining, which is anticipated in 2004.

In 2001, the volume of crop production in the EU 15 was estimated at a 3% drop, while the livestock production remains almost the same. The prices rose by 4% on average, partly due to the substantial recovery (+16) of the price of pigs. The value of the means of production purchased rose in a limited manner as a result of higher prices. The gross added value of the sector rose by 2.5%. Taking into account the inflation and the decrease in the number of workers by around 1.5%, an actual improvement in income of around 3% has been achieved in the EU. In the northern member states incomes in general rose more substantially than in the southern states.

## Development of the Dutch Agricultural Sector

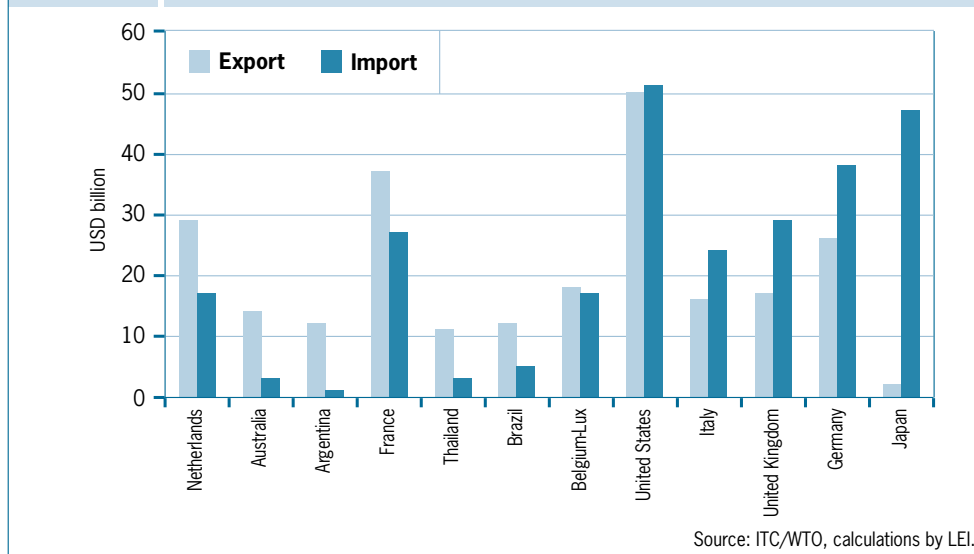
### 2.1 Consumption and Sales Structure of Foods

The consumer spending on foods in the Netherlands increased somewhat in 2001 as a result of higher prices. The share of foods in the total consumption, which has shown a tendency to decrease for some time now, remained almost the same (11.4%). Within the consumer market there are a broad range of shifts, such as a decrease in consumption of beef and veal, while the easily and quickly prepared poultry meat shows a marked increase. The consumption of vegetables and fruit, which has for years shown an increase, now seems to be stable. In contrast to this the consumption of eggs has shown an increase in the past few years. The sale of organic foods is growing fast - in 2001 it grew by 23% - but it still only has a share of 1.3% in the total consumption of foods.

The role of the supermarket in the sale of foods is becoming increasingly important, at the expense of speciality shops. In 2001 the supermarkets' share in the total sales had increased to around 80%. In the past few years the speciality shops dealing in potatoes, vegetables and fruit have had to forego their territory to a certain extent. Around 80% of all meat sales also take place in supermarkets, while the butchers' share has meanwhile dropped to around 15%. In the sale of organic foods the supermarkets had a larger share than the organic foods speciality shops for the first time in 2001 with 150 million euros.

Within the Dutch retail trade a forceful concentration process is taking place. The three largest concerns presently have a market share of around 67%, while five years ago this was only 50%.

**Figure 2** Agricultural exports and imports of selected countries, annual average 1998-2000



Albert Heijn is the largest with a market share of around 28%. Albert Heijn belongs to the original Dutch Ahold concern, which has meanwhile grown into one of the largest retail trade concerns in the world. The food and beverage industry is the largest segment of the Dutch industry, with national sales of around 20 billion euros in 1999. Within this branch of business Unilever is by far the largest concern with worldwide sales of around 53 billion euros, of which 2 billion is achieved in the Netherlands. Under the influence of increasing international competition and rising costs for marketing and research and development, the companies concentrate increasingly on their core activities.

### 2.2 Agricultural Imports and Exports

The Dutch export of agricultural products and foods grew in 2001 by 5% to 45 billion euros. This corresponded with a fifth of the total export of goods. The agricultural import similarly increased, though less, so that the balance on the agricultural trade balance rose by 1 billion euros to around 19 billion euros. The Netherlands has been the largest net exporter of agricultural products and foodstuffs in the world for the past few years, followed by Australia, Argentina and France (figure 2).

**Figure 3** Agricultural imports and exports (EUR billion) by product, 1998-2001

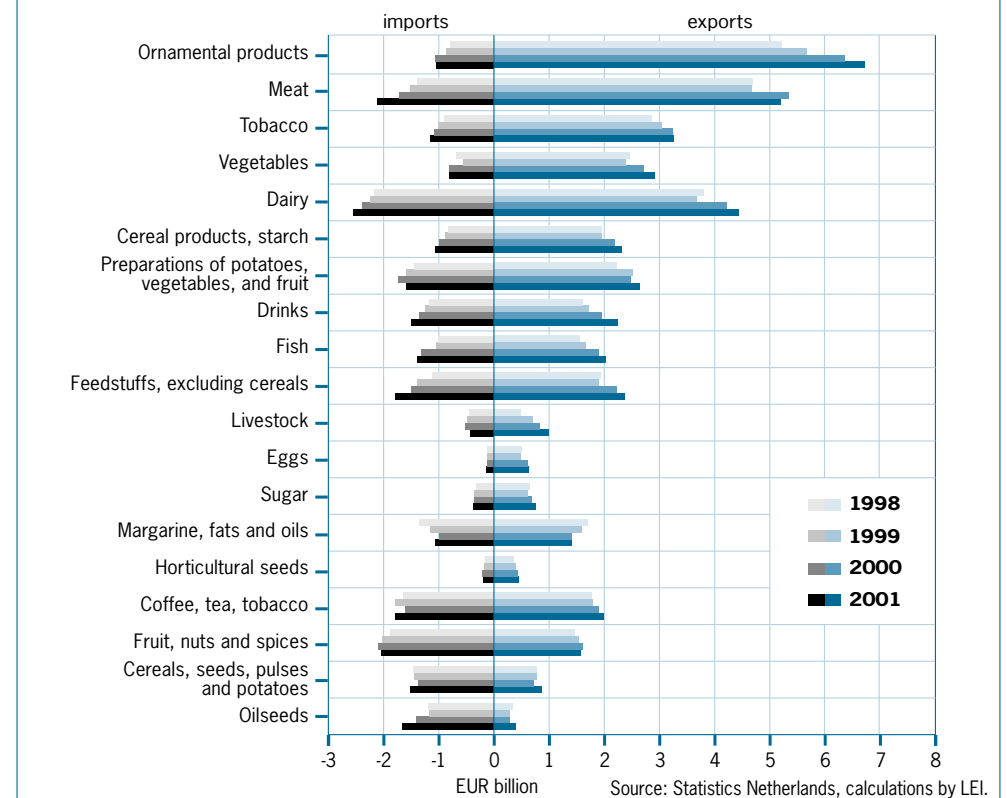


Table 1	Gross value added and employment of the Dutch agricultural complex, 1995 and 2000			
	Gross value added (EUR billion)		Employment (1,000)	
	1995	2000 (est)	1995	2000 (est)
<b>Agricultural complex a)</b>	<b>32.3</b>	<b>36.9</b>	<b>681</b>	<b>692</b>
Share in national total	12.0%	10.4%	12.0%	10.7%
Gardening, agricultural services and forestry	1.3	1.8	32	39
Processing, supply and distribution of foreign agricultural raw materials	10.9	13.4	197	222
<b>Agricultural complex (based on domestic agricultural raw materials)</b>	<b>20.2</b>	<b>21.7</b>	<b>430</b>	<b>431</b>
Share in national total	7.5%	6.1%	7.9%	6.7%
Agriculture and horticulture	8.4	7.9	189	186
Processing industry	3.0	3.9	54	49
Input manufacturing	6.5	7.1	135	140
Distribution	2.3	2.8	53	56

a) Based on domestic and foreign agricultural raw materials (including gardening, agricultural services, forestry, cocoa, alcohol and tobacco). Source: LEI.

It must be remembered that in figure 2, unlike in most FAO trade statistics, wood, fish and ornamental crop products are involved in the calculation. Ornamental crop products make the greatest contribution to agricultural export, followed by meat and dairy products (figure 3). The Netherlands is for that matter also a major importer of dairy products. Most product groups indicated a growing (net) export in the past few years, with meat as the most important exception as a result of the outbreak of the diseases already mentioned. The Dutch agricultural export has in the past few years further been concentrated on the EU member states. In 2001 these states purchased 80% of agricultural exports. Germany was, as of old, the most important destination with a figure of around 12 billion euros in 2001.

### 2.3 The Agricultural Complex

The gross value added of the Dutch agricultural complex has risen from around 32 billion euros in 1995 to almost 37 billion in 2000. However, the share of the agricultural complex in the national total has decreased in this period, just as the share in employment (table 1). More than 35% of this value added is based on the importation of raw materials from abroad, including cacao, alcohol and tobacco. This share shows an upward trend. At the same time the Dutch agricultural complex is more dependent on export; the contribution of export to the total value added of the complex has risen from 66% in 1986 to 75% in 2000. The grassland based livestock complex contributes most to the value added of the agricultural complex. The share of this sector in the total complex is clearly decreasing, while that of the horticulture under glass complex is increasing.

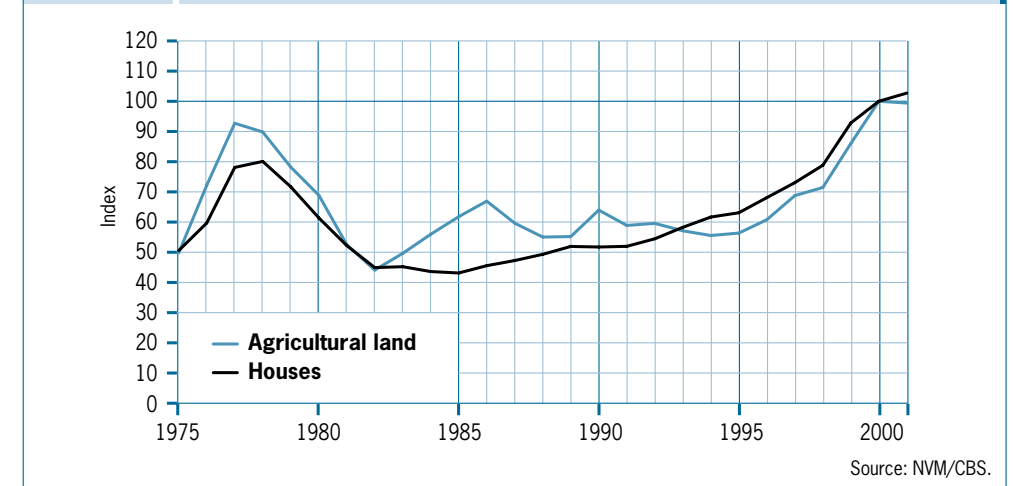
## Agriculture, Rural Areas and the Environment

### 3.1 Nature Conservation and the Countryside

The total land area of the Netherlands amounts to 3.4 million hectares, of which some 69% is used for agriculture and horticulture, 16% for woodlands, nature reserves and recreation ('green activities') and 15% for housing, business activities, and infrastructure ('red activities').

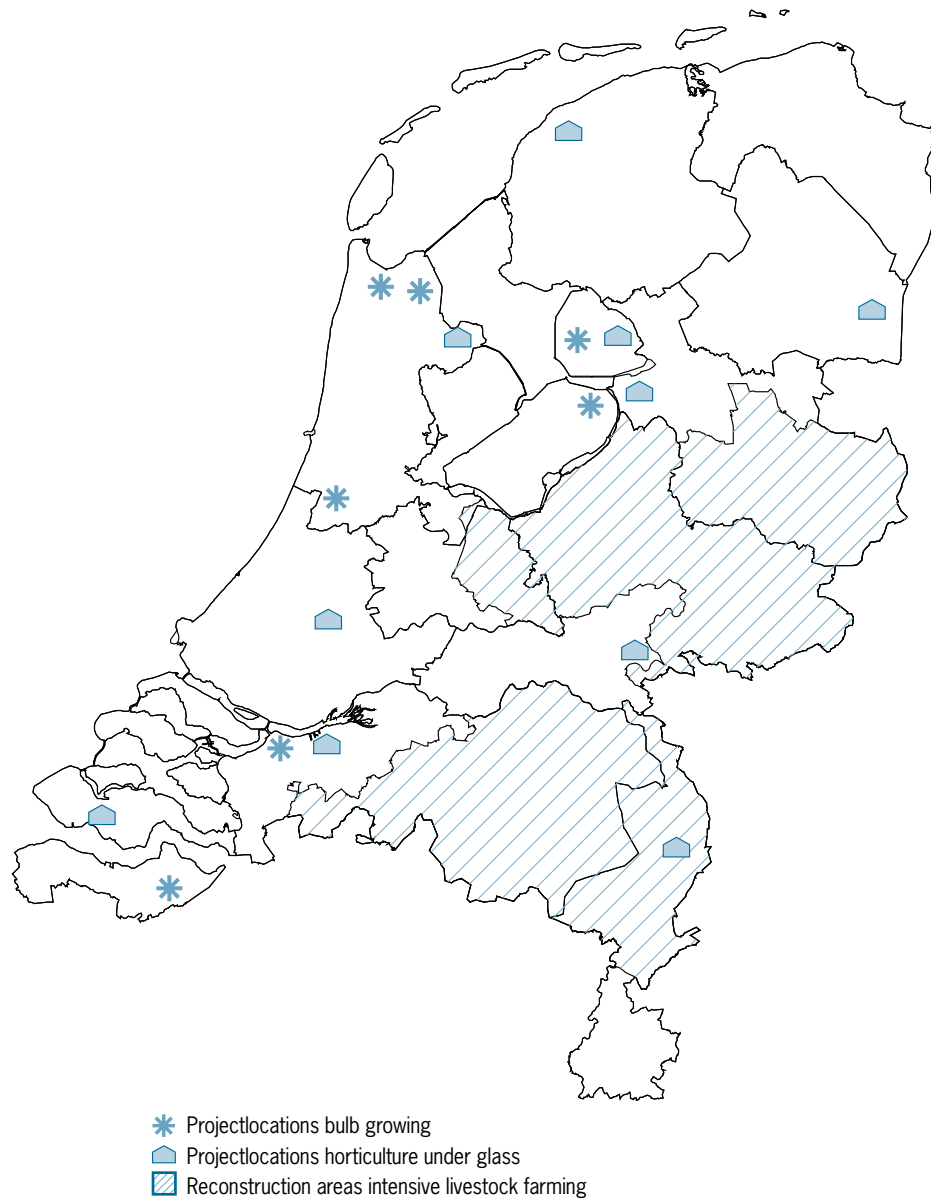
In the past few years around 100,000 hectares have been sold per year, of which 60% is destined to remain within the agricultural branch. Only a mere 10% acquires another green purpose and 7% is sold for a red purpose. Of the remaining 25% of the land sold, the purpose for which it is destined is not clear. Land sold for a red purpose cost around 110,000 euros per hectare in 2000, as against almost 40,000 euros for land with a green purpose. The actual price of agricultural land has risen sharply in the past few years, particularly due to the influence of non-agricultural demand, and reached a historic high point. The prices of agricultural land and of houses rose more or less at the same level in the past 25 years (figure 4).

Figure 4 Index of real prices (2000=100) of houses and agricultural land, 1975-2001



According to estimates, around 1% of agricultural buildings lose their agricultural function every year. A large number of vacated farmhouses are used as residences. In another section other business activities are developed, but this encounters limitations in terms of the authorities. Gradually this policy is becoming more flexible. There is a new regulation in operation to further the demolition of empty livestock accommodation and greenhouses in outlying areas; housing may be built to a limited extent in order to finance this.

**Figure 5** Restructuring of horticulture under glass, flower bulb growing and intensive livestock farming



Source: VROM/LNV.

The area with nature conservation by farmers is still increasing. In 2001 this involved 91,000 hectares – 8,000 hectares more than in 2000 – for which an average compensation of around 440 euros per hectare was paid by the national government. Around 20% of professional farms are occupied with agricultural nature conservation. As a source of income this conservation has a limited function: the compensation counts for around 2% of the farm revenue. An increasing number of associations have been set up by farmers and citizens, which focus on the conservation of nature and the landscape and receive governmental support for this purpose. Presently there are more than 100 associations with an average of 100 members of whom 30 are non-farmers.

In 1996 there was around 320,000 hectares of woodland in the Netherlands, of which around a fifth was exploited by private owners. The income from these farms consists mainly of subsidies. Only the larger forestry organisations reach positive results.

#### Preference for cows grazing in the meadow

From questionnaires it appears that 37% of the Dutch see the production of food as the most important rural activity. After this is the offer of rest and open space each with 24%. Economic importance, such as provision of employment and contributions to the national income score much lower. For small-scale landscapes the appreciation is much higher than for landscapes with intensive use of the land. Almost 90% of the Dutch prefer to see cows grazing in the meadow. In general Dutch citizens are positive about farmers and growers: they receive an average report grade of 7.2.

In the Fifth Policy Memorandum on Town and Country Planning – established by the Cabinet, but not yet accepted by Parliament – so-called red contours have been recorded, indicating the borders of building, and green contours for the protection of nature reserves and scenic landscapes of particular importance. Seven areas are indicated as ‘national landscape’, in which only a very limited expansion of building is permitted.

In the Green Spaces Scheme (Schema Groene Ruimte based on the previously mentioned Fifth Policy Memorandum) it was established that agriculture no longer has absolute rights in rural areas, but at the same time the important role of the sector is emphasized with respect to the conservation of the landscape. Organised agriculture has requested more clarity from the authorities with regard to which (financial) facilities are available in order to achieve ambitions in this field.

In the Cabinet proposals, the conservation of water is an important point of departure for town and country planning. For this purpose, more storage of water must be achieved on the one hand, and on the other dehydration must be reduced. Both objectives introduce limitations for the agricultural sector.

The non-land-based agricultural activities - intensive livestock farming and horticulture under glass – are concentrated as much as possible, preferably in project locations. For the expansion of bulb cultivation a similarly limited number of locations is indicated (figure 5).



The Reconstructiewet Concentratiegebieden (Dutch law on reconstruction for concentration regions) set up on 1 April 2002 offers a framework for the restructuring of intensive livestock farming in areas with a lot of pigs and poultry. Within the concentration regions there will be zones in which these branches can expand ('development zones'), zones in which intensive livestock farming must be combined with other functions ('interwoven zones') and zones where this sector must be driven back, among other things by transfers of farms ('reduction zones'). With an effective implementation of the Reconstructiewet in mind, by which billions of euros are at stake, the environmental laws concerning stench and ammonia emissions have been adjusted.

### 3.2 Environmental Issues

Under the influence of increasingly sharpening up laws, the pressure on the environment from agriculture and horticulture has decreased considerably in the past few years, even if much is still to be done to reach the ideal situation. The reduction of pressure on the environment is coupled with steadily rising costs: between 1990 and 2000 the costs associated with environmental policy for the agricultural sector have risen from around 40 million euros to around 200 million euros. This last amount comes to 2.3% of the value added of the sector, which is a little less than the average in other business. It is expected that the environmental costs for agriculture and horticulture up to 2010 will at least double and thus as percentage of the value added will clearly rise above the national average. Otherwise, a part of the environmental costs of the sector are compensated by extra subsidies from the authorities.

#### Crop protection

The use of pesticides in Dutch agriculture and horticulture decreased in 2001 by 15 to 20% and dropped below 10 million kg of active substance (table 2). The objective of the Long-term Plan for Crop Protection dating from 1992 – a halving of the consumption compared to the mid 1980s – is achieved in this way, even if it is a year later than it was meant to be. Particularly in terms of the control of weeds and fungal diseases the sector is also still very much dependent upon pesticides. This forms a reason for the authorities to further sharpen the policy in striving towards 'integrated cultivation on certified farms'. In this manner, in 2010 the environmental impact associated with the use of pesticides may be 95% lower than in 1998. Partly taking into account the large differences in consumption of pesticides between the separate growers, an effective distribution of knowledge can make an important contribution to the achievement of these goals.

Category	Use in mio. kg active substance								Objective
	1984-88	1995	1996	1997	1998	1999	2000	2001(est)	2000
Soil disinfectants	10.25	2.39	1.75	1.57	1.18	1.47	1.40	0.95	3.28
Herbicides	4.60	3.98	3.96	3.85	4.05	3.87	3.50	3.00	2.53
Fungicides	4.45	4.49	4.10	4.94	5.81	5.20	4.93	4.00	2.85
Insecticides	0.69	0.55	0.67	0.49	0.46	0.41	0.29	0.25	0.44
Other pesticides	1.31	1.20	0.80	1.16	1.18	1.05	1.26	1.10	0.86
<b>Total</b>	<b>21.3</b>	<b>12.61</b>	<b>11.28</b>	<b>12.01</b>	<b>12.68</b>	<b>11.99</b>	<b>11.38</b>	<b>9.30</b>	<b>10.65</b>

Source: LEI/Statistics Netherlands; data 1999 and 2000: PD.

#### Greenhouse gasses

The emission of greenhouse gasses from the agricultural sector comprises around 10% of the national total. When the emissions on delivery and processing are taken into account, it appears that the share of the agricultural complex is around 15%. Around 70% of the emission of the primary sector comprises methane and nitrous oxide, both of which are almost entirely for the livestock farmer's account. Otherwise, the emissions involve the release of CO<sub>2</sub>, which for 80% is at the cost of the glasshouse sector. The emission of greenhouse gasses by agriculture and horticulture has fallen by around 12% since 1995. That is more than the national objectives in this field. The decrease can to a large extent be ascribed to the reduction of livestock. Furthermore, in the past few years a reduction in CO<sub>2</sub> emissions from horticulture under glass is also detectable. This sector exerts much effort, particularly in the form of investments, in order to reduce the amount of energy per unit product; compared to 1980 this amount has almost been halved. It has been agreed that in 2010 an improvement of 65% must be achieved. It is expected that the reduction of the greenhouse gas emissions from agriculture and horticulture will continue in the next few years.

	1970	1980	1986	1990	1995	1997	1998	1999	2000 (p)
<b>(kg N/ha)</b>									
<b>Input</b>	<b>332</b>	<b>447</b>	<b>508</b>	<b>459</b>	<b>472</b>	<b>459</b>	<b>443</b>	<b>435</b>	<b>402</b>
Manure	133	190	241	239	252	240	224	226	<b>214</b>
Fertilizer	185	240	249	201	201	198	199	190	<b>168</b>
Output	167	210	243	248	228	248	212	212	<b>221</b>
Difference	165	237	265	211	244	211	223	223	<b>181</b>
<b>(kg P<sub>2</sub>O<sub>5</sub>/ha)</b>									
<b>Input</b>	<b>135</b>	<b>160</b>	<b>176</b>	<b>153</b>	<b>137</b>	<b>132</b>	<b>133</b>	<b>135</b>	<b>132</b>
Manure	80	115	128	108	101	94	92	97	<b>95</b>
Fertilizer	50	39	41	37	32	33	36	33	<b>32</b>
Output	50	66	73	71	64	70	64	65	<b>70</b>
Difference	85	94	103	82	73	62	69	70	<b>62</b>

Source: Statistics Netherlands; RVM.

### Mineral losses

In the past few years the mineral surplus in Dutch agriculture has decreased (table 3). In addition to the production of manure, the supply of fertilizer is also beginning to decrease. The Mineral Account System (MINAS), partly in operation in 1998 and fully in 2001, is particularly beginning to bear fruit. In this way the dairy farms subjected to this system in 1997-1999 were able to reduce the nitrogen surplus by 50 kg per hectare. On the other dairy farms this was only 20 kg. On organic dairy farms the mineral surplus is visibly lower than on the other farms, while there are also non-organic farms that have had good results in this field.

In the framework of MINAS standards apply for the maximum permitted losses per hectare. These standards will be further sharpened in 2003. The other two sections of the mineral policy are livestock rights, which will be abolished in 2005, and the system of contracts for manure disposal effective from 2002. According to the latter, livestock producers must sign a contract regarding the disposal of manure, if the production of nitrogen in animal manure rises above the supply standard of 250 kg per hectare. This is more than the EU standard of 170 kg per hectare. The Netherlands has requested exemption ('derogation') from the EU, but it is not yet clear if this will be granted.

### Ammonia emission

Particularly due to the reduction of livestock, the ammonia emission from Dutch livestock has shown a decrease from the mid 1980s that has accelerated in the past few years. In 2000 this emission amounted to 147 million kg, around 40% lower than in 1985. According to EU related agreements this emission must still drop in 2010 by about 20%. This seems achievable, partly by using fodder with less protein. The much stricter reduction objectives, as established in the fourth National Environment Policy Plan (NMP-4) of 2001, can probably only be achieved by means of a considerable reduction of livestock.

## Structure of Agriculture and Horticulture

### 4.1 Production Capacity and Farm Structure

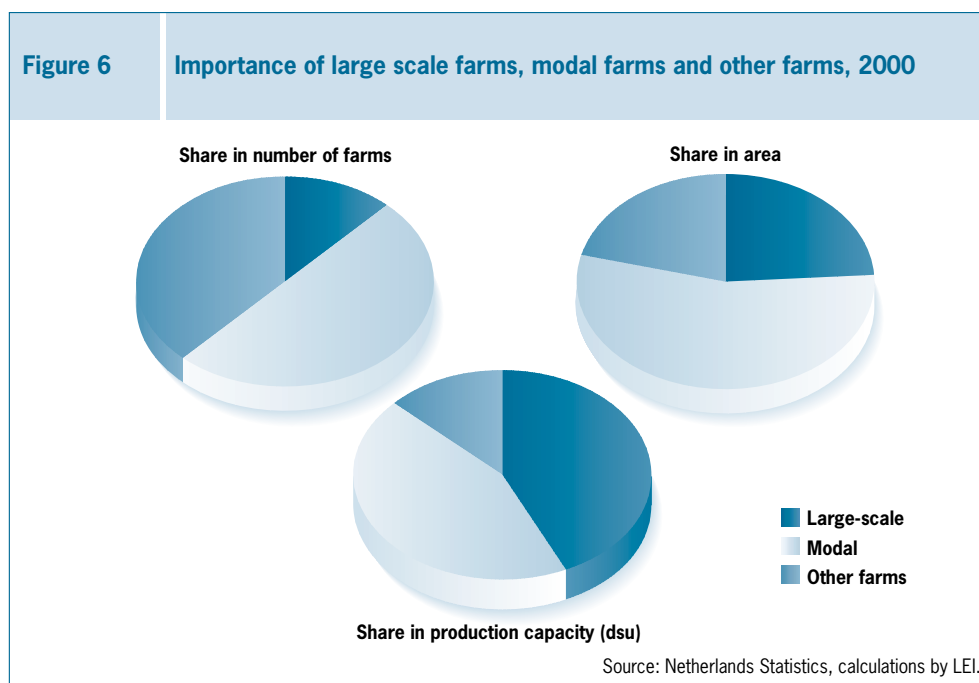
The production capacity of Dutch agriculture and horticulture, measured in Dutch size units (DSU, see Annex), shows a slight decrease from the mid 1980s. In May 2001 this capacity was 0.3% smaller than a year earlier. In the past year arable farming and intensive livestock farming have been reduced. The disadvantageous business results, but also the manure and ammonia policy, played an important role in this.

The number of farms dropped in the past year by almost 5%, this being a considerably steep decline historically seen (table 4). The steep decline in the number of farms involved in intensive livestock farming, as well as other causes already mentioned, is connected to the buying up regulations of the authorities in the framework of the manure policy. In horticulture under glass and mushroom growing a considerable scaling up is taking place.

In other sectors also the average farm size grows quickly, whereby the individual differences become larger. In order to provide a picture of this a distinction is made between large-scale, modal and other farms. While the total number is decreasing, the number of large-scale farms is increasing, this being those that are more than one and a half times larger than the average farm. With 12% of the number, the large-scale farms achieve 43% of production capacity (figure 6). Almost half the horticulture under glass and mushroom growers belongs to this group. The modal farms form the largest group, with half the total number of farms. Their share in the use of land is somewhat more than proportional, and in the production capacity is somewhat less. Most dairy farms (70%) belong to this group. The group devoted to other farms comprises 38% of all farms, but together these have a modest share (13%) in agricultural production. The large-scale farms had in the period 1997-1999 an average total family income of around 70,000 euros per family.

	Changes in % per year				Number of holdings
	1994-96	1996-98	1998-00	2000-01	2001
<b>All farms</b>	<b>-2.4</b>	<b>-2.7</b>	<b>-3.5</b>	<b>-4.8</b>	<b>92,783</b>
Glasshouse horticulture and mushroom growing	-3.3	-3.6	-4.2	<b>-7.2</b>	<b>7,830</b>
Outdoor horticulture	-2.8	-1.9	-3.7	<b>-6.2</b>	<b>9,671</b>
Arable farms	0.2	-1.4	-1.9	<b>-5.1</b>	<b>12,895</b>
Dairy farms	-3.2	-3.4	-4.6	<b>-4.2</b>	<b>25,560</b>
Other grassland based farms	-1.4	-3.2	0.9	<b>1.5</b>	<b>19,526</b>
Intensive livestock farms	-3.1	-2.1	-6.1	<b>-9.5</b>	<b>8,809</b>
Mixed farms	-3.3	-1.7	-6.7	<b>-10.7</b>	<b>8,492</b>

Source: Statistics Netherlands; calculations by LEI.



Of this almost 90% came from agricultural businesses. In the other two groups the average family income was about half as low. In the 'other farms' category half of the family incomes are earned outside the farm.

The number of organic farms increased in 2001 by 8% compared to 2000, to around 1500. The growth percentage was clearly lower than that of previous years. The expansion is particularly noticeable in the dairy-farming sector. Meanwhile around 2% of acreage is used for organic production, while the authorities aim for 10% by 2010. The costs of the changeover and lack of sales are hampering growth.

## 4.2 Labour, Land and Capital

Agriculture and horticulture offered employment to 2.7% of the working population in the Netherlands in 2001. This represented 269,000 persons, who between them had around 200,000 AWU (Agricultural Work Units). The total labour volume shows a downward trend, but less marked than the number of farms. The average labour volume per farm also gradually rises: from 1.9 AWU in 1994 to 2.2 in 2001. Almost 70% of workers are family members of the head of the farm (table 5). This share has declined in the past few years because the number of non-family workers is increasing, particularly in horticulture under glass. Furthermore, it is conspicuous that a gradually increasing number of businesses are being run by women.

The area of cultivated land in the Netherlands has decreased in the past ten years on average by 6,000 hectares (0.3%) per year. In 2000/2001 the acreage shrunk as much as 25,000 hectares, under the influence of a substantial demand for land for housing, industrial estates, infrastructure and the

**Table 5** Agricultural labor force (1,000 persons), 1994 and 2001

	1994	2001	Changes in % per year
<b>Total</b>	<b>282</b>	<b>269</b>	<b>-0.7</b>
family	221	186	-2.4
non family	61	83	4.5
Male	195	181	-1.1
entrepreneur	131	103	-3.4
other family	19	23	2.8
non family	45	55	2.9
Female	87	88	0.2
entrepreneur	18	26	5.4
other family	52	34	-5.9
non family	17	28	7.4

Source: Statistics Netherlands, calculations by LEI.

development of nature. The scarcity of land was also expressed in the price of land, which rose in 2000 to an average of almost 39,000 euros per hectare. For parcels where horticulture under glass is possible, more than twice as much is paid. In general, farms purchase land according to how large they are.

In the Netherlands a reasonably strict legislative protection is available for tenants of agricultural land, including the lease price. This protection is increasingly a point of discussion. It appears that in the future only tenants will be protected, for whom leaseholding is of great importance for their very existence. This refers to an estimated 14,000 farms with, in total, some 350,000 hectares of leasehold.

In the years 1997-1999 around a quarter of agricultural and horticultural businesses invested less than 5,000 euros per year, while around 20% invested more than 75,000 euros. More than half of the investments were financed by new loans. The average balance total of all Dutch agricultural and horticultural businesses amounted to 1.1 million euros in 2000, almost 60% more than 10 years previously. The rise in value of the land and the growth of the business dimensions contributed in particular to this. The solvency percentage, which in sectors with a lot of land is higher on average than in sectors with little land, has dropped during these ten years from 73% to 69%.

The family income earned from the farm holding in all agricultural and horticultural holdings in 2001 is estimated, on average, at 36,000 euros per farm. Added to this is around 14,000 euros from income outside the farm. This income from outside the farm has become increasingly important in the past few years. In spite of this, around a quarter of the families in the agricultural sector in the recent past have a total income below the Dutch poverty line of around 20,000 euros. The total income in 2001 in general was sufficient for the consumption needs of agrarian families, ensuring that on average around 7,000 euros could be saved.

## Market and Income Developments in the Various Sectors

### 5.1 Results of the Primary Sector

The production volume of Dutch agriculture and horticulture dropped in 2001 by around 3% (table 6). The outbreak of Foot and Mouth Disease in particular had a major influence: the production level in beef farming and calf-fattening fell by 10 to 15% as a result. Milk production results were slightly higher. The production of pork similarly decreased as a result of the ban on transportation, as a consequence of which the pigs could not be slaughtered on time. In the horticultural sector the production volume remained at around the same level; only fruit production decreased rather sharply. The same applied to arable farming, as a result of lower yields per hectare.

Due to lower production, the prices rose in a broad sense, by around 6% on average. Potatoes and onions in particular became much more expensive. Within the horticultural sector only flower bulbs were cheaper and in livestock farming this applied only to eggs and beef. The drop in demand was the cause of this.

The production value rose as a result by 3%. The value of the goods and services purchased increased by 2%; in contrast to the smaller volume the prices in general were higher. Energy and fertilizer in particular were substantially more expensive. Partly due to compensation paid within the framework of the outbreak of Foot and Mouth Disease, the net added value increased by around 3%. Taking into account a slight increase in salaries paid, interest and rent, and the considerable reduction in the number of farms, the average income of Dutch farmers and growers after adjustment for inflation rose in 2001 by a few percent. Due to the considerable drop in 1998 and 1999 the income remains however around a quarter lower than in the years 1995-1997.

Table 6	Value added of agriculture and horticulture in the Netherlands, 1998-2001					
	Value added in EUR billion			Index (2001 (2000=100))		
	1999 (p)	2000 (p)	2001 (est)	volume (est)	price (est)	value (est)
Production value, total	18.5	19.3	19.9	97	106	103
Horticultural products	7.2	7.6	7.8	100	103	103
Arable products	2.2	2.0	2.3	93	124	115
Grassland based livestock products	4.0	4.0	3.9	100	98	98
Intensive livestock products	3.6	4.1	4.3	94	112	105
Other	1.5	1.5	1.6	101	101	102
Intermediate consumption (goods and services)	10.1	10.5	10.9	98	106	104
Gross value added	8.4	8.8	9.0	97	105	102
Net value added	6.1	6.1	6.3	-	-	103

p) Preliminary; est.) estimation. Source: Statistics Netherlands; 2001 estimation LEI.

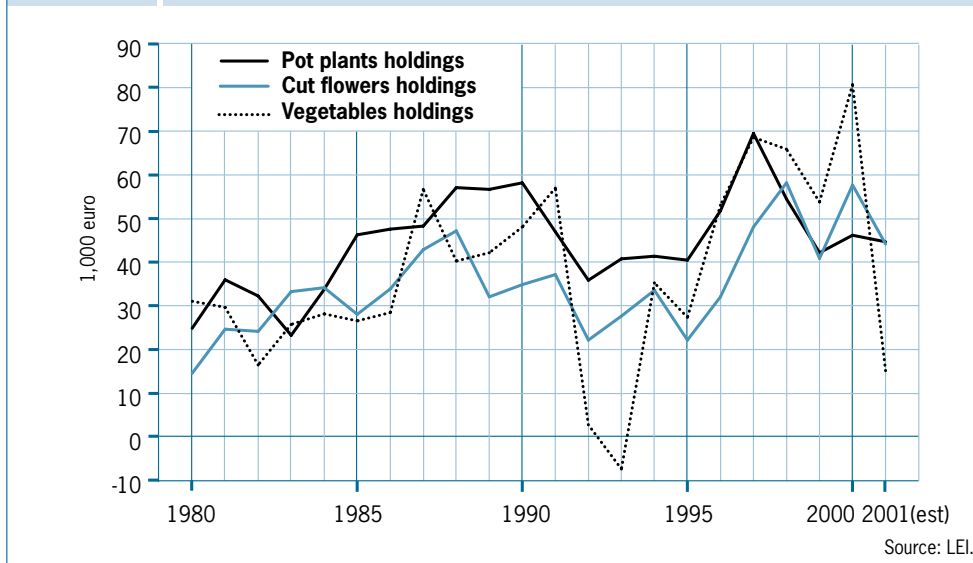
### 5.2 Horticulture under Glass and Mushroom Growing

Horticulture under glass and mushroom growing together account for a quarter of the total production capacity of Dutch agriculture and horticulture. The surface area of glass, which increased substantially in the period 1995-2000, has decreased somewhat in the past few years. The number of greenhouse horticulture holdings has continued to fall and in 2001 comprised around 7,400. Almost 3,300 of these specialise in cut flowers, 2,500 in vegetables and around 1,600 in pot plants. Within the horticulture under glass sector a rapid upscaling is taking place: the average glasshouse horticulture holding meanwhile consists of almost 1.5 hectares of glass. The number of mushroom growers likewise continues to fall and consisted in 2001 of 480. The total surface area of mushrooms has stabilised somewhat in the past few years.

The total production value of horticulture under glass decreased somewhat in 2001. This was entirely due to vegetables under glass, which were substantially cheaper. With regard to tomatoes in particular, Spain is becoming an increasingly strong competitor. The cultivation of cut flowers, increasingly sold via supermarkets, showed little change in price in relation to volume compared to 2000. In the pot plant and bedding plant sector both the volume and the average price rose slightly. Per balance the total production value of horticulture in 2001 was slightly lower than in the previous year. The value of mushroom production remained at the same level.

Table 7	Dutch family farm incomes and savings, 1996-2001					
	Family farm income per entrepreneur (1,000 euro)			Savings per farm (1,000 euro)		
	1996-2000	2000/01	2001/02(est)	1996-2000	2000/01	2001/02(est)
Vegetables under glass <sup>a)</sup>	64	81	15	33	42	-42
Cut flower holdings <sup>a)</sup>	47	58	44	16	25	0
Pot plant holdings <sup>a)</sup>	53	46	45	24	12	7
Mushroom growers	37	47	40	8	9	1
Outdoor horticulture holdings <sup>a)</sup>	32	29	32-42	6	-1	3-13
Fruit growers <sup>a)</sup>	16	33	33-43	-3	9	7-17
Bulb growers <sup>a)</sup>	57	63	55-65	37	46	40-50
Tree nurseries	45	42	42-50	17	13	14-23
Arable farms	23	13	33	0	-14	13
Dairy farms	22	25	24	7	11	9
Pig breeding farms	22	35	12	3	25	-10
Pig fattening farms	9	31	-10	-6	22	-20
Closed pig (breeding and fattening) farms	27	53	5	11	51	-18
Poultry egg farms	41	58	32	23	56	10
Poultry meat farms	14	16	45	-6	1	38

a) Calendar year. Source: LEI.

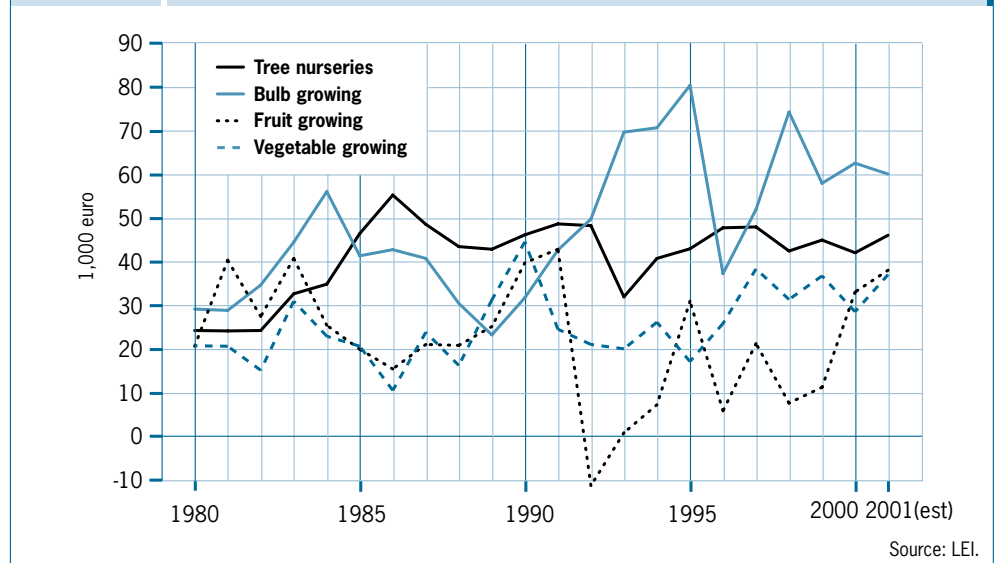
**Figure 7 Horticulture under glass: family farm income per entrepreneur, 1980-2001**

Taking this into consideration, this had, in combination with a rise in costs of 4 to 5%, the effect that the results of the vegetables under glass holdings in 2001 substantially disimproved: the average family income earned from the farm holding fell from around 80,000 euros to 15,000 euros and the savings were negative for the first time since the beginning of the 1990s (table 7 and figure 7). The average income from the cut flower growers also dropped, but clearly less sharply. Their savings amounted to around nil. The pot plant growers' income remained much the same and their savings dropped to a certain extent. The mushroom growers had just such lowering of income and drop in savings.

### 5.3 Outdoor Horticultural Production

The outdoor horticulture is a heterogeneous sector. In total this refers to around 9,700 specialist farms, of which 1,300 are outdoor vegetables holdings, 2,700 flower bulb holdings, 2000 fruit cultivation holdings, 2,400 tree nurseries and 1,300 other outdoor horticultural holdings, among them mixed holdings. The number of farms in this sector shows a decline, but the total surface area was more or less stable in the past few years.

In 2001 the total production value of outdoor horticulture was around 6% higher than in 2000. The production volume of outdoor cultivated vegetables decreased, but the yield prices were much higher. Per balance the production value appeared almost 20% higher. Due to the low harvest in the EU the prices of pears in 2001 were much higher than in 2000. The price of apples was also higher. The production value of fruit was therefore around 7% higher as a result. In flower bulb cultivation a similar

**Figure 8 Outdoor horticulture: family farm income per entrepreneur, 1980-2001**

level of production in combination with slightly higher prices led to a growth of the production value by a few percent. Tree cultivation in contrast to this showed a limited drop in production value, as a result of lower prices. In particular, the export of tree nursery products to Germany, the most important buyer, was unsatisfactory.

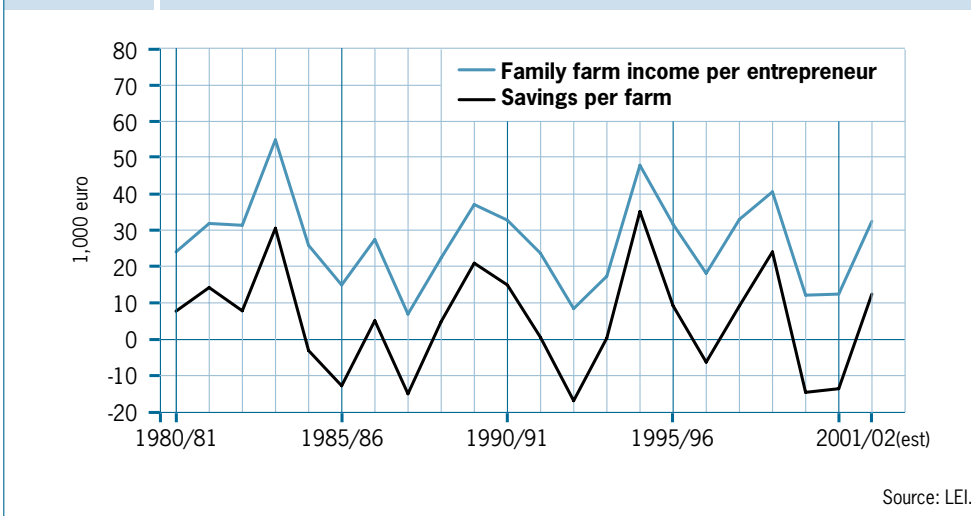
As a result of the favourable prices the income of outdoor vegetable growers in 2001 rose (table 7 and figure 8). The fruit cultivation holdings present a similar picture. Despite the improvement the financial position of many fruit cultivation holdings remains weak.

For the flower bulb growers a slightly lower income and savings are predicted, but their business results are, however, clearly better than those of other outdoor horticulture holdings. For the tree nurserymen, an improvement is estimated in both the average income and savings. In this respect it is very important that, for that part of production sold in the first half of 2002, better prices are received than in 2001.

### 5.4 Arable Farming

The acreage of arable crops has been stable in the past few years. The division across various crops varies considerably from year to year, depending on the market situation. In 2001, for example, the acreage of consumption potatoes was considerably smaller than a year before, but the grain acreage was, in fact, larger. The potato is the most important arable farming crop in the Netherlands, with a share in production value of arable farming of 35 to 40% in the past three years. In 2001 there were only 13,000 specialised arable farm holdings.

**Figure 9** Arable farming: incomes and savings, 1980-2001

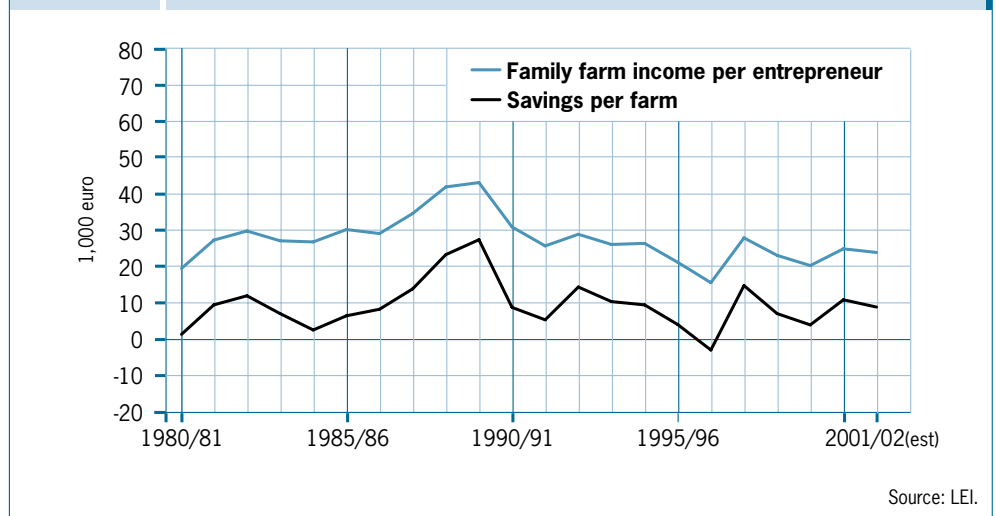


The production value of arable farming products rose by 15% in 2001. A lower production volume (-7%) through weather conditions is generously compensated by the considerable price increases of potatoes and onions. The income earned from the farm holding has recovered after a couple of very lean years to a level of on average 32,500 euros per farm (table 7 and figure 9). On average savings of 12,500 euros resulted, while in the two previous years negative savings were recorded. In the Peat District there was also a drop in income and savings were slightly negative. Arable farming in this region has a considerably deviant cropping plan with much starch potatoes. Starch potato production is quoted in the EU and both the quota and the minimum price are reduced, with a partial compensation. The swings in annual income manifest themselves in the investment level of arable farm holdings. In the past year the accent was on investment in land.

### 5.5 Grassland-Based Livestock Farming

In 2001 there were still around 45,000 land-based livestock holdings in the Netherlands, about one third less than in 1980. In the numbers for 2001 there were around 25,500 specialised dairy farms. Furthermore, there is the group 'other grazing livestock farms', which have a more mixed character, with around 15,000 of an important nature. The others are represented by specialised sheep farms (around 700), goat farms (250) and grassland farms (3,400). What is noticeable is the considerable growth of goat keeping: since 1996 the number of goats in the Netherlands has more than doubled. The business results in grassland based livestock farming are strongly determined by the development

**Figure 10** Dairy farms: incomes and savings, 1980-2001



and the implementation of European agricultural policy. This policy offers protection against the uncertain development of the world market, where the price formation in the second half-year was under considerable pressure. The export of butter and low-fat milk powder was particularly affected, while cheese export remained relatively on the same level. Due to the Foot and Mouth Disease outbreak Dutch milk production in 2001 was around 5% lower than in 2000, but the price of milk improved by a comparable percentage.

The problems on the EU beef market, which to a large extent were caused by the drop in consumption as a result of BSE and by the Foot and Mouth outbreak, led to a drop in beef production in the Netherlands by a quarter, which also had to be sold for lower prices on average. Partly due to the problems regarding beef, mutton gained favour with European consumers, which resulted in the highest prices for lambs in the past ten years. The effect of this is, in accordance with the applicable regulations, to a certain extent counteracted by the lowering of ewe premiums.

These things considered, the consequence was that the value of milk production on dairy farms increased, but the other revenue declined. Partly due to the rise in costs, in particular of quota and fodder, the average business income of dairy farmers decreased slightly in 2001/02 (table 7 and figure 10). The organic dairy farmers on average achieve clearly better results than their colleagues on common farms, as a result of higher milk prices. Sheep farmers were able to maintain their results at a constant level; the balance per ewe remained unchanged in 2001/02 compared to the rather favourable level of the previous year. Due to the changes in the EU beef policy and the problems on the beef market the profitability of the cattle-fattening farm has been under pressure for the past few years.

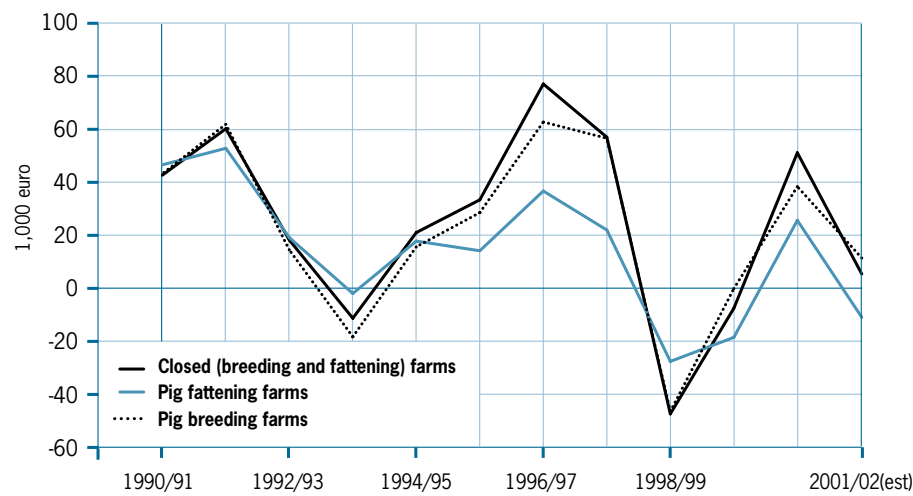
## 5.6 Intensive Livestock Farming

Intensive livestock farming comprises around 20% of the production value of Dutch agriculture and horticulture in the past few years and relates for around 60% to pig production.

The number of farms in the pig sector is falling considerably: between 1996 and 2001 it dropped by 25% to 5,500 specialised farms. This goes hand in hand with a substantial upscaling. The same applies to poultry keeping, where the number of farms has decreased less dramatically. In 2001 there were still 1,700 specialised poultry farms. Besides this, intensive livestock farming comprises 1,00 calf-fattening units.

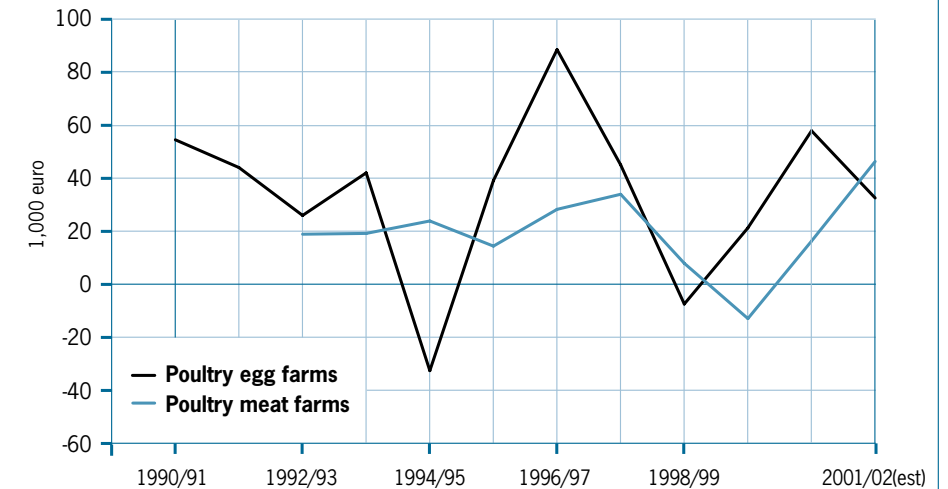
Partly because there is rarely market and price support for intensive livestock farming, this sector is characterised by sharp price and income fluctuations. Due to the ban on animal transportation during the outbreak of Foot and Mouth pig farmers could not sell their animals on time, which resulted in a decrease in production. The yield prices in the calendar year 2001 were on average higher than in 2000. The production of poultry meat shows a similar picture. The production of eggs increased and the price decreased. In the case of veal a reduction in production was accompanied by similarly stable prices. Most calf fatteners do not notice an immediate difference, due to the fact that around 90% of calves are kept on contract basis. The calf fatterer receives compensation for housing and rearing the calves and therefore the market risk is low.

Figure 11 Pig farms: family farm income per entrepreneur, 1990-2001



Source: LEI.

Figure 12 Poultry farms: family farm income per entrepreneur, 1990-2001



Source: LEI.

Because the prices in the pig sector in production year 2001/2002, other than on calendar year basis, were on average lower than in the previous year and the costs were higher, the results were under extreme pressure. The average family income earned from the farm holding declined substantially and the savings were negative (table 7 and figure 11). The poultry egg farms showed a clear rise in income in 2000/2001, with on average positive savings, which in the following year were followed by a decrease. The broiler farms showed an upward trend in both years and came up to a high level for this sector in terms of income (figure 12).

## 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 ecu/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 value added of the average farm. The 1998 DSU equals a SGM of about EUR 1,390. Some examples (on the basis of the DSU 1998): 1 ha winter wheat = 0.91 DSU; 1 ha sugar beet = 1.91 DSU; 1 dairy cow = 1.288 DSU; 1 sow = 0.288 DSU and 1 ha round tomatoes under glass = 128.78 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.

### **Total income**

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