

# Agricultural Economic Report 2013

Summary



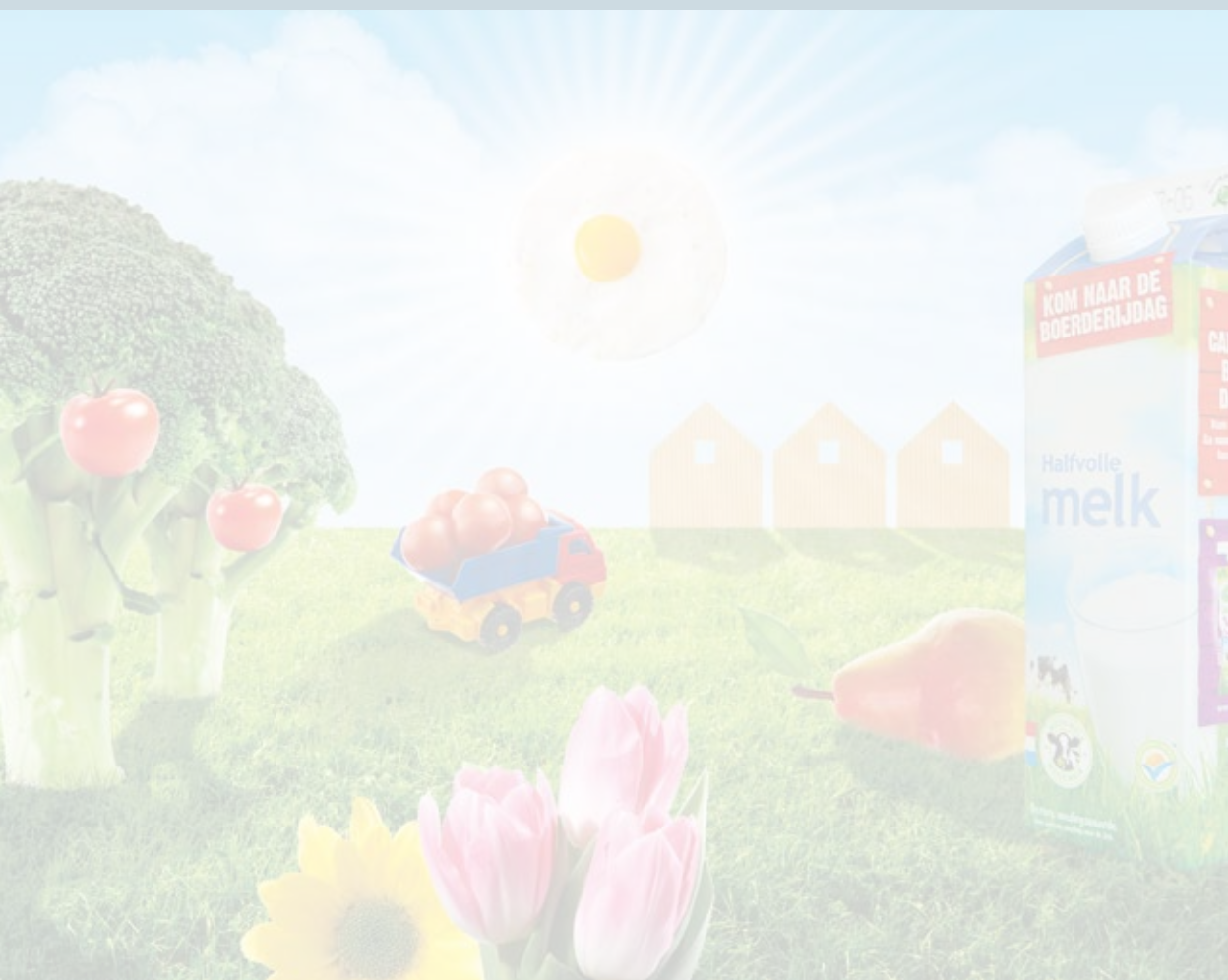
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Summary



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ISSN 0924-0764  
Price € 9,-

July 2013

#### ABSTRACT

#### AGRICULTURAL ECONOMIC REPORT 2013 OF THE NETHERLANDS: SUMMARY

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The Hague, Agricultural Economics Research Institute (LEI), 2013

ISSN 0924-0764

32 p., fig., tab.

This report offers an English summary of the *Landbouw-Economisch Bericht 2013*. 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.

Design and production: The KEY Agency, Schiphol-Rijk

# Preface

This summary of the *Landbouw-Economisch Bericht 2013* 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 outline of the publication is similar to previous years.

The complete report, which is available only in Dutch, is based on data and contributions from the various research fields of the institute. The report has been coordinated and edited by the International Policy research field. The final draft of the 2013 Dutch edition of the report was completed in May 2013.

The Hague, July 2013

The Director,

A handwritten signature in blue ink, appearing to read 'L.C. van Staalduinen', written in a cursive style.

Ir. L.C. van Staalduinen

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# The international context of the Dutch agricultural sector



## 1.1 Global economic developments

The disappointing development of the global economy in 2011 was followed by a further decline in growth in 2012. There are not as yet any indications of a structural recovery in the developed countries. The growth in the global economy was largely due to developments in Asia's emerging countries. The growth in the US economy was largely due to the upswing in the housing market and the provision of support to the financial sector. These developments resulted in increasing domestic consumption.

The economic downturn that was manifested in the eurozone in 2012 continued and is still continuing in 2013. However, concerns about the disintegration of the eurozone were alleviated. This has resulted in increased confidence, although this remains fragile. Unemployment has reached record levels and still continues to increase. Employment also continues to fall in the USA. In contrast to the eurozone, where strict agreements have resulted in the reduction of government deficits to 3.5% of income, the US government deficit is still in excess of 8%. Therefore, the US national debt is also increasing more rapidly than in Europe.

International goods trade increased by 2.3% in 2012, considerably less than the 5.6% growth in 2011. A recovery is expected in 2013 and 2014, when growth is forecast of 4.25 and 6.25% respectively. However, the forecasts for growth in the segments of international trade of relevance to the Netherlands - whereby countries and product groups of a relatively great importance to Dutch exports are assigned a greater weighting - are much lower in 2013 and 2014, and are expected to amount to 2.75 and 5% respectively. This is largely due to Dutch trade's main focus on the weak eurozone. The high price of oil, between USD 100 and 120 a barrel, and the increase in the exchange rate of the euro against the trading partners' currencies are also impeding the weak European economy.

## 1.2 The Netherlands

Forecasts indicate that the Dutch economy will contract by 0.5% in 2013, largely due to disappointing domestic spending. The positive contribution made by exports did not fully balance the decline in Dutch domestic spending. In addition to the fall in spending, the low levels of business and housing investments also contributed to the contraction

of the Dutch economy. The Dutch economy has not, in fact, grown since the second quarter of 2011. The forecasts indicate that after an initial stabilisation in the first six months of 2013, the economy will begin to recover later in the year and may continue its recovery in 2014. This growth will largely be due to an increase in exports resulting from a slight recovery in international trade.

Unemployment will increase sharply to more than 6% of the working population in 2013. The unemployment since 2012 is due to reasons other than those in the preceding years. In contrast to 2011 and 2012, when the increase in unemployment was largely due to the increasing numbers of people entering the labour market, from the end of 2012 unemployment primarily increased due to a decline in the number of jobs.

### *Abolition of commodity and industrial boards*

The current Government intends to abolish the commodity and industrial boards, a move which will mark the end of a number of special institutions formed for the agricultural sector in 1950.

The primary duty of these boards was to 'serve the public interest by promoting the operations of the businesses for which the boards were formed' in a time in which there was a need to assign organisations of employers and employees part of the responsibility for the country's socio-economic policy. This need was particularly great in the post-war period, when it was necessary to concentrate on the recovery and reconstruction of the country's economy.

The national agricultural policy gave an additional reason and motivation for the formation of boards for agriculture and food supplies. This policy was, in particular, given shape in the crisis years on the introduction of market and price regulations for a range of products. The industrial and commodity boards enabled the agricultural sector to exert an influence on the preparation and joint implementation of government policy. The boards made use of the competences laid down by the relevant legislation in implementing this policy. This would not have been feasible for private organisations based on voluntary membership of businesses and persons active in the sector. The foundation of the EU and the shaping of European agricultural policy, in particular in the form of market regulations for each product in the nineteen-sixties, resulted in an expansion of the duties of the boards and the government's allocation of joint administrative duties to the boards.

The House of Parliament had already approved the abolition of the boards in 2011. The mandatory financing levies, in particular, have undermined support for these bodies. The boards' public duties will be transferred to the Ministry of Economic Affairs. The business community can opt to make arrangements, for its own account, for the performance of other duties (such as the provision of information, promotion of their sector and the representation of their interests), for example by the formation of sectoral organisations.



# Developments in the Dutch agricultural chains



## 2.1 The agricultural complex and food industry

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In 2011, the entirety of the agricultural and food economic activities - the agricultural complex - accounted for approximately 10% of the total national added value and national employment (Table 1). Just over half of these activities are to a greater or lesser extent directly related to Dutch agriculture and horticulture. The remainder relates to horticulturists, forestry and the supply and distribution of international raw materials. Employment offered by the agricultural complex, as based on national raw materials, fell to 369,000 working years between 2001 and 2011. Pasture-based livestock farming remains the largest sub-complex within the agricultural complex that is based on national raw materials; this complex' contribution to the added value of the agricultural complex as based on national raw materials is about 30%, whilst its contribution to employment is nearly 34%.

**Table 1**

**Gross value added and employment of the Dutch agricultural complex, 2001 and 2011**

	Gross value added <sup>a</sup> (EUR billion)		Employment (1,000 labour units)	
	2001	2011 (p)	2001	2011 (p)
<b>Agricultural complex <sup>b</sup></b>	40.6	52.0	719	675
<i>Share in national total</i>	10.2%	9.9%	10.8%	10.0%
Gardening, agricultural services and forestry	3.8	4.1	72	48
<i>Share in national total</i>	0.9%	0.8%	1.1%	0.7%
Foreign agricultural raw materials	15.3	22.1	227	258
<i>Share in national total</i>	3.8%	4.2%	3.4%	3.8%
Processing industry	6.6	8.8	74	67
Supply	4.0	5.6	69	74
Distribution	4.7	7.7	84	117
Agricultural complex (based on domestic agricultural raw materials)	21.5	25.8	420	369
<i>Share in national total</i>	5.4%	4.9%	6.3%	5.5%
Agriculture and horticulture	7.6	7.0	188	151
Processing industry	3.2	4.8	50	38
Input manufacturing	8.1	10.8	136	125
Distribution	2.6	3.2	46	55

p: preliminary.

a In current prices;

b based on domestic and foreign agricultural raw materials (including gardening, agricultural services, forestry, cocoa, alcohol and tobacco).

Source: LEI.

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A substantial part of the operations in the agricultural production chain is related to exports. The significance of these exports to the total agricultural complex' added value and employment remained at a steady 65% in the period from 2001 to 2009, and in 2011 increased to 67.7% of employment and to 67.3% of added value.

The food and beverages industry was comprised of 4,355 businesses in 2010, all of which are involved either directly or indirectly in the production and sale of food and beverages. The industry has over 155,000 employees and a turnover of almost 59 billion euros.

## 2.2 Supply industries

### *Fertiliser*

The Netherlands is an important producer and exporter of fertilisers, in particular nitrogenous fertilisers. In 2011, the Netherlands produced 1.5 million tonnes of nitrogenous fertilisers (N) and 122,500 tonnes of phosphate fertilisers ( $P_2O_5$ ). More than 90% of Dutch production is exported. The sector is an important supplier of the primary agricultural and horticultural sector and is closely related to the livestock farming sector. The fertiliser industry generates turnover of approximately 1 billion euros and provides jobs to 2,000 employees.

The Netherlands now has only a handful of fertiliser manufacturers, namely ICL Fertilizers Europe, OCI Nitrogen, Yara and Rosier Nederland. All these businesses have a foreign parent company: the last Dutch fertiliser business was taken over by a foreign company in 2010, when DSM Agro, until then a division of the DSM chemical company, was acquired by the Egyptian Orascom Construction Industries (OCI) construction company.

### *Animal feed*

The animal feed industry is the third largest segment of the food and beverages industry, after the dairy industry and the abattoirs and the meat-processing industry (Table 2). The animal feed industry is closely related to these two industries. The animal feed industry is an important supplier of cattle, pig and poultry feeds to the Dutch livestock farming sector. Increases in scale have taken place in the animal feed industry in recent years, largely due to mergers and takeovers in response to the contraction of the market and, in particular, the decline in the pig population. The Dutch animal feed industry's main products are pig feeds (40%), followed by poultry feeds (27%) and cattle feeds (24%).

	<b>Number of businesses</b>	<b>Number of jobs (x 1,000)</b>	<b>Net turnover (mill. euros)</b>
Industry	45,565	893.6	268,891
Food and beverages industry	4,355	155.6	58,736
Of which:			
Abattoirs and meat-processing industry	495	23.5	8,209
- Abattoirs (excluding poultry abattoirs)	270	9.6	3,870
- Poultry abattoirs	50	5.6	2,074
- Meat processing	180	8.3	2,265
Fish processing industry	125	3.2	704
Vegetable and fruit processing industry	140	9.1	4,474
Edible oils and fats industry	35	2.8	5,058
Dairy industry	275	13.7	8,845
Flour industry	100	3.3	2,010
Bread and other farinaceous products industry	2,345	48.0	4,155
Animal feed industry	175	8.0	6,194
Chocolate and confectionery industry	125	7.6	4,122
Beverages industry	165	8.3	4,698
Tobacco industry	15	3.2	3,207

Source: CBS.

Dutch animal feed businesses produce about 14.5 million tonnes of feed, less than 10% of the total EU production of almost 152 million tonnes in 2011. Denmark, France and Spain are the EU's largest producers in what is still a greatly fragmented European market. Each of these Member States produces more than 20 million tonnes per annum. The Netherlands was the EU's sixth largest producer in 2011, with an output just a little below that of Italy and the UK. Mergers and takeovers have resulted in the formation of a number of large Dutch multinationals that rank among the top European businesses, such as Forfarmers, Agrifirm and De Heus Voeders.

### *Greenhouse horticulture suppliers*

The greenhouse construction industry is, together with the greenhouse installation and technical equipment industry, closely related to the greenhouse horticulture sector. Many greenhouse construction companies are also active abroad: about half of their turnover from outside the Netherlands is generated in Western Europe. Many Dutch greenhouse construction companies are also active in Russia, Turkey, Mexico, East Africa and the Far East, where they have leading positions in their respective markets. Estimates indicate that about 80% of all greenhouses in use outside Europe are of Dutch origins. Forecasts indicate further growth, in particular in these regions, while the Dutch market will remain stable or may even contract slightly. Greenhouse construction in the Netherlands is

confronted with difficult conditions due to the continuing poor results recorded by the Dutch greenhouse horticulture sector, which have compelled many growers to cut back their investments to a low level.

## 2.3 Processing industry

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### *New, large dairy factory in the making*

Last year the Netherlands' A-ware Food Group and New Zealand's Fonterra dairy multinational announced their intention to pool their knowledge for the construction of a cheese and ingredients factory in the Netherlands. Their collaboration will be governed by a cooperative agreement that has been concluded for an indefinite period of time. The A-ware family business is active in the ripening, slicing, packaging, storage and transport of cheese products. A-ware processes approximately 200,000 tonnes of cheese per annum. The concern and its 1,700 permanent employees generated turnover of 1.2 billion euros in 2012, making the business one of the largest of its kind. Fonterra, with a turnover of 19.8 billion NZ dollars and more than 17,000 employees, is one of the world's largest dairy businesses. Fonterra, which began operations in New Zealand, markets its products in more than 100 countries.

### *Meat-processing company VION under pressure*

Not all takeovers and mergers result in success, as is demonstrated by VION's history. During the past decades this concern evolved into Europe's largest meat processor, largely due to takeovers of competing companies in the Netherlands, Germany and the UK. VION acquired important positions in each of these countries within a relatively short period of time. The advance of one of the Netherlands' largest food companies began in 2002, when it took over Germany's largest private abattoir company, Moxsel, followed by the takeover of Dumeco, the Netherlands' largest abattoir company, in 2004. The last major takeover was of the UK's Grampian Foods Group in 2008. On the takeover of this meat concern, which had recorded losses for many years, VION almost found its Waterloo. VION's meat operations in the UK, which were brought under VION Food UK, generated turnover of more than 1.3 billion euros and resulted in its position as the leader in its market.

VION operates in a market which is confronted with surplus abattoir and meat-processing capacity, pressure on prices, an explosive increase in pig prices and pig procurement prices and the supermarkets' unwillingness to pay more than the minimum for their meat. Moreover the supermarkets have extended their credit periods, as a result of which VION was confronted with cash flow problems.

VION has initiated a reorganisation programme in which it will divest all its food operations in the UK and say farewell to a number of non-core activities. In the future,

VION will focus its operations exclusively on Food in the Netherlands and Germany and on Ingredients around the world. VION is seeking a new shareholder or joint shareholder for Ingredients, which has 6,000 employees and strong and healthy financial foundations, to assist in the further development and growth of Ingredient's operations.

#### *CSM divests divisions*

CSM has divested its baking ingredients division which had operations in Europe and North America. This division was sold for more than 1 billion to the US Rhône Capital L.L.C. private equity investment firm, which also acquired the CSM company name. On the sale of its bakery division CSM has lost more than three-quarters of its turnover, more than 3.3 billion euros in 2012. CSM is still the leader in the bakery ingredients global market and is a player in the global bioplastics market. The concern has operations in 28 countries in Europe, North America, South America, Asia and Africa. CSM will, provided that the competition authorities give their final approval for the takeover, adopt a new company name and transform itself entirely into a biotechnology company. The company currently generates turnover of 700 million euros from its deliveries of bioplastics. The proceeds from the sale of the bakery division will be allocated to the expansion of the biotechnology operations.

## 2.4 Wholesale

The wholesale agricultural products sector, with turnover of more than 103 billion euros, 110,000 employees and almost 14,000 businesses, is an important component of the agricultural complex. The wholesale food segment, with turnover of more than 67 billion euros, is the largest segment in this wholesale sector. The wholesale agricultural products and livestock segment has a strong focus on markets outside the Netherlands: almost half of its turnover (47%) is generated by exports, as compared to the almost one-third for the wholesale food segment. Although the wholesale sector is currently characterised by mergers and takeovers, the sector is still strongly fragmented.

Businesses in the wholesale agricultural products and livestock segment generate an average turnover of more than 6 million euros and have an average workforce of more than 5 employees. More than half (55%) of the number of businesses active in the sector are single-person businesses. Just 15 businesses have 100 or more employees. Businesses in the wholesale food segment generate an average turnover of approximately 9 million euros and have an average of 10 employees. Almost 85 businesses have 100 employees, largely due to the food services wholesale segment that is highly concentrated and which is dominated by the 10 largest businesses which jointly account for approximately 70% of the market.

## 2.5 Retail and consumption

The food and beverages retail sector recorded a 2.3% increase in turnover in 2012 from the previous year. Prices increased by 2.2% and consumer spending increased by 0.1%. The supermarkets exhibited a better performance than the total retail sector. Specialist food and beverage outlets were compelled, as in previous years, to settle for less in 2012: they had to be satisfied with a 2.4% decline in turnover. This has resulted in a further increase in the supermarkets' lead over the specialist stores.

Total household spending (excluding the hospitality sector) increased by 1% to a little over 271 billion euros in 2011. Expenditure on food and beverages amounted to almost 41 billion euros, a share of 15%. Household spending in the hospitality sector amounted to 11.5 billion euros in 2011.

## 2.6 Exports and imports

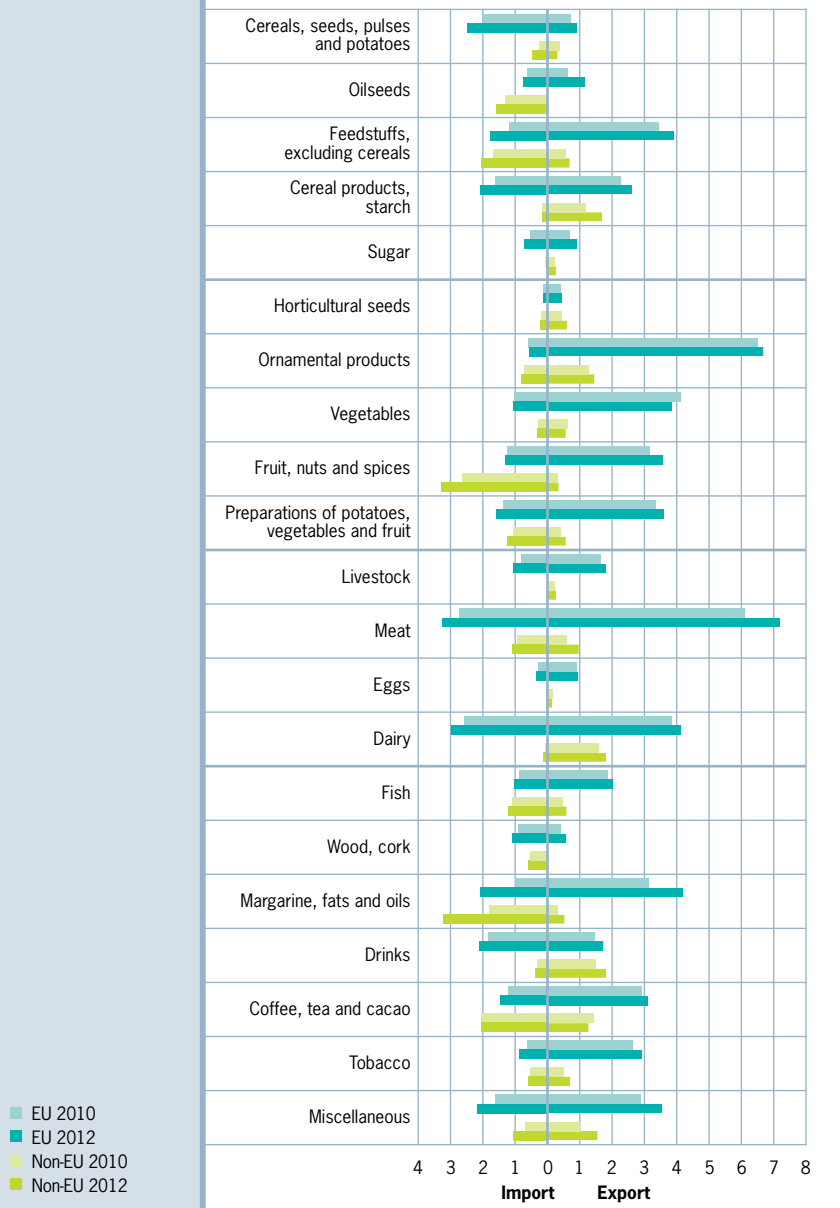
In analogy with 2011, Dutch agricultural trade once again grew in 2012. The total import value and total export value of agricultural products both increased, by 5.7% and 4.4% respectively. As a result, total imports amounted to 51.3 billion euros and total exports to 76.2 billion euros. The agricultural trade surplus increased by 0.5 billion euros (2%).

The balance in Dutch agricultural trade is generated entirely by trade with EU Member States. Germany is the Netherlands' most important trading partner for both imports and exports of agricultural produce. Germany receives 26% of the Netherlands' exports of agricultural products and supplies 19% of the Netherlands' imports. The majority of the exports to Germany are vegetables and fruit, ornamental plants, dairy products, eggs and meat. Most of the imports from Germany are dairy products, meat, cereal and cereal preparations. Most of these dairy imports are unprocessed milk, whey and skimmed milk powder, which the food and beverages industry uses as ingredients. The Netherlands' other important agricultural trading partners are Belgium, France and the UK. The European Union's 27 Member States jointly account for more than 80% of Dutch agricultural exports and more than 60% of Dutch agricultural imports.

The balance of the export value less the import value in agricultural trade with countries outside the European Union is negative. The imports from these countries consist of oil seeds, animal feed ingredients, fruit and tropical fruit, and coffee and cocoa beans. Most of the exports to these countries are processed products, such as dairy products, beverages, coffee, tea, cocoa products and ornamental plants (Figure 1).

Figure 1

Dutch agricultural imports and exports by product with the EU and with third countries, 2010 and 2012 (billion euros)



Source: Statistics Netherlands, calculations by LEI.

# Rural area policy and nature policy



## 3.1 Rural area policy

3

The *Agenda Vitaal Platteland* (Agenda for a Living Countryside), which was drawn up in 2004, specifies the policy tasks for the economic, ecological and socio-cultural aspects of rural life. The national government concluded administrative agreements with the individual provinces for the performance of these tasks in the period between 2007 and 2013. The financial resources of the ministries and other parties, including the provinces, EU, municipalities, water boards, social organisations and private individuals, have been aggregated in the *Investeringsbudget Landelijk Gebied* (ILG, the Rural Area Investment Budget). Government funding of approximately 3.5 billion euros was made available for the 2007-2013 period. The provinces bear the responsibility for the implementation of the ILG. However, pursuant to one element of the economy measures implemented by the Rutte I Government (October 2010 - April 2012) the government has terminated the ILG administrative agreements. The Government also intended to decentralise the nature policy. The relevant agreements have been laid down in the settlement agreements that the government concluded with all provinces at the end of 2012. The provinces have been allocated a budget for nature management, the implementation of the decentralised nature policy and the fulfilment of the mandatory legal obligations arising from the ILG period.

### *Catch-up in the utilisation of the RDP II budget*

The EC has allocated almost 600 million euros from the European Agricultural Fund for Rural Development (EAFRD) to the Netherlands' Rural Development Programme 2007-2013 (RDP II). These funds need to be allocated to the contra financing of rural measures grouped on four 'axes'. However, no more than about 60% of this EAFRD budget was actually utilised in the period between 2007 and 2011. The 'improving the competitiveness of the agricultural and forestry sector' axis, in particular, lagged behind the average with a utilisation rate of no more than 40%, while expenditure on the 'improving the environment and the countryside' and implementation of the 'LEADER' approach axes scored better, with a utilisation rate of 70%. The under-utilisation of the EAFRD budget is due both to the continuing financial crisis, as a result of which many farms are reticent to make investments, and to the government's economy measures in the nature policy, both of which resulted in delays in the implementation of RDP II.



A number of measures designed to rectify the under-utilisation of the EAFRD budget were implemented in 2011. Following the implementation of these measures much of the shortfall has been made up and financial commitments for the allocation of the total remaining EAFRD budget have been entered into in 2012.

#### *Preparations for RDP III have begun*

Work is now also in full swing on the preparations for the Netherlands' Rural Development Programme 2014-2020 (RDP III). The Netherlands intends to focus largely on innovations that will need to enhance the durability and competitive strength of the agricultural sector. This approach will result in a lower budget for general rural development, which has primarily been allocated to the tourism infrastructure and village renewal schemes. Due to the slow decision-making on the reform of the CAP, RDP III will probably not be initiated at the beginning of 2014.

### 3.2 **Water safety policy**

The Delta Programme, which was initiated in 2010, is intended both to protect the current and following generations from floods and to guarantee continued adequate fresh water supplies for the Netherlands. These two objectives are coming under pressure due to the rising sea level, variations in river water discharges, falling ground levels and salinisation. The Delta scenarios outline four alternatives for the Netherlands in 2050. These give an impression of the consequences these changes could have for the development of the country's economy and use of space. These changes confront the agricultural and horticultural sector with threats due to the uncertainty about freshwater supplies, but also offer the sector opportunities for an improvement of its competitive position relative to other European agricultural regions. This improvement will be offered by an increase in the sector's potential yields due to the longer cultivation seasons and higher temperatures that will result from climate change.

The Dutch agricultural and horticultural sector can play an important role in the Delta Programme by virtue of the sector's high adaptive and innovative capacity. Potential measures include increasing the moisture buffer in the root zone (by increasing the humus content of the soil), improving the irrigation efficiency (by means of trickle irrigation and other techniques) and storing water (either by individual farms or groups of farms). These measures will enable the sector to continue its development in the longer term, even in the event of a change in freshwater supplies.

### 3.3 **Nature policy**

The National Ecological Network (NEN) continues to increase in size. The NEN encompassed some 577,000 ha of nature areas on 31 December 2011, an increase of

more than 7,000 ha in the space of one year. This increase was primarily due to the completion of the layout of 6,700 ha, the management of which was then transferred to nature conservation organisations and *Staatsbosbeheer*, the Dutch Forestry Service. The NEN's acreage of land under agricultural nature management increased virtually no further in 2011. Should the expansion of the NEN continue at the same pace as in 2011 then the NEN may be expected to achieve its planned form by 2021.

The economy measures the Rutte I Government intended to implement in the nature policy were withdrawn by the Rutte II Government. An extra amount of 200 million euros has been reserved for nature in 2013.

#### *Government announces its new vision of nature policy*

Following the implementation of the decentralisation of nature policy, the Government intends to take the next step and plans to submit its new long-term vision of nature policy to the House of Parliament at the beginning of 2014. The Government is introducing its new vision with the intention of accommodating three important developments that will exert a great influence on the future of the nature policy. The first of these changes relates to the active role that the public, companies and social organisations both can and wish to play. This includes, for example, community gardens, collectives of farmers and members of the public to manage the rural areas, and companies which invest in the reduction of the ecological footprint of their products. The second change relates to climate change and its consequences for the Dutch ecosystems. The third and last change relates to the growing awareness of the feasibility of social and ecological gains that can be achieved by a more intelligent combination of nature and other social interests.

#### *Collectives are assigned a pivotal role in the modernisation of agricultural nature management*

The Government intends to modernise the Netherlands' agricultural nature management. This is to be completed within the near future and prior to the introduction of its new vision of nature. The Government, in close consultation with the provinces, plans to amend the current system of grants for agricultural nature management in a manner that brings it more into line with international biodiversity objectives. This will assign a pivotal role to a region-oriented approach in which collectives and other parties will jointly plan the management of the relevant region. The Government's objectives for the new system are the achievement of a further improvement in the ecological effectiveness as compared to the economic efficiency and the reduction of the implementation costs.

#### *Decline in acreage under agricultural nature management halted in 2010*

The acreage under agricultural nature management had been slowly decreasing in recent

years. This decline was halted in 2010. At the end of that year, the acreage under agricultural nature management was just under 62,000 ha, with nearly 45% under collective management. This collective management is often carried out by agricultural nature management cooperatives (ANCs). The Netherlands has between 125 and 150 ANCs. This form of collective management, which has increased rapidly in the past 15 years, offers both economic and ecological benefits. Collective management reduces the costs of transactions for the ANCs, their members and the government. The increases in scale result in increased ecological effectiveness, which is of particular benefit to grassland bird management. It should be noted that the activities of these agricultural nature management cooperatives extend beyond solely nature management: they increasingly fulfil the role of a 'regional partner' and cooperate with parties including nature organisations and local authorities in issues such as the development and/or management of sections of the National Ecological Network.

# Agriculture and the environment



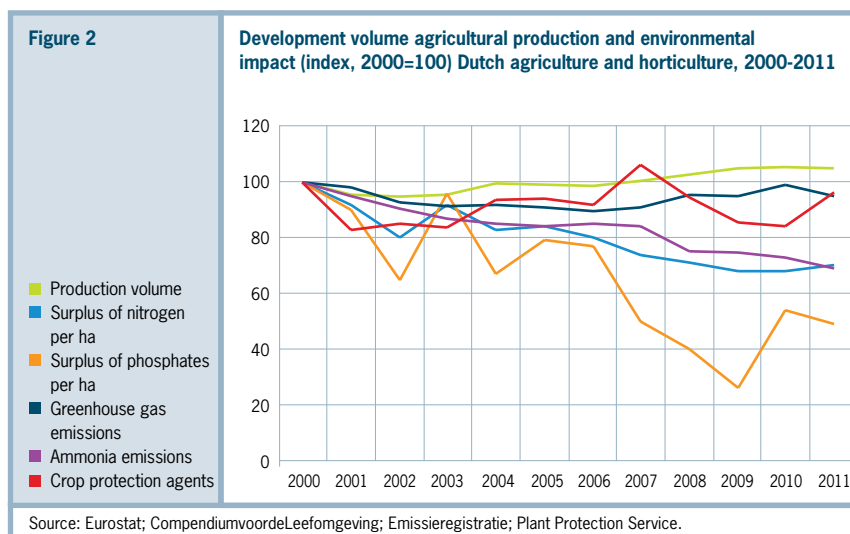
## 4.1 General overview

The environmental impact of the primary agricultural and horticultural sector as revealed by the various indicators varies widely (Figure 2). While the greenhouse gas and ammonia emissions declined in 2011, the phosphate and nitrogen surpluses remained virtually stable and the use of crop protection agents increased. All-in-all, the reduction of the sector's environmental impact would appear to have slowed in recent years.

The annual fluctuations in the environmental impact are in part due to variations in the weather. Rainy summers, such as the summer of 2011, result in an increased use of fungicides to control the dreaded *Phytophthora* potato blight. Mild winters result in a fall in energy consumption and, in turn, CO<sub>2</sub> emissions.

When viewed over the longer term there is an evident decline in the primary agricultural and horticultural sector's environmental impact, especially when the increased production is taken into account. However, in the coming years a great deal of effort will be required to achieve in particular the manure and minerals targets.

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## 4.2 Crop protection agents

In 2011, the Dutch agricultural and horticultural sector's use of chemical crop protection agents increased by almost 15 percent from the level in the previous year. This increase was observed in all categories of agents, although the percentage increase was largest for weed control agents and fungicides, the two largest categories in terms of the use of active ingredients. It is striking to note that the use of soil disinfectants has increased again since 2010, precisely the category in which a spectacular decline had been achieved in the past following the imposition of prohibitions on agents.

Total sales declined by 51 percent in 2011 as compared to 1985, although the question is then whether the increase observed in 2011 was an incident or is indicative of developments that will result in an increasing use in the coming years. The summer of 2011 was wet, which will in any case explain part of the observed increase in the use of soil disinfectants. However, this is less applicable to soil disinfectants designed to control nematodes, as the development of nematodes is less dependent on the weather. There are also suggestions that the health of the soil is declining in various regions, in part due to the more intensive cultivation plans introduced for arable farming. This could impose upward pressure on the use of agents.

### *Formulation of supplementary crop protection policy*

The *2nd Nota Duurzame Gewasbescherming 'Gezonde groei, duurzame oogst'* (Sustainable Crop Protection Memorandum: 'Healthy Growth, Sustainable Harvest') document was submitted to the House of Parliament in May 2013. This Memorandum contains supplements to the current policy. The *Nationaal Actieplan voor duurzaam gebruik van gewasbeschermingsmiddelen* (National Plan of Action for the sustainable use of crop protection agents), which the Netherlands submitted to the European Commission in 2012, is an integral element of the supplementary policy.

The 2nd Memorandum reveals that the Government's ambition is 'to comply with all national and international requirements governing the environment and water, food safety, public health and working conditions by no later than 2023'. At the same time, the Government intends to offer the agricultural and horticultural sector permanent economic prospects by enhancing the sector's competitive strength. The spearheads include integral crop protection for all growers from 2014, the improvement of the quality of the surface waters and the further reduction of residues in foods.

### 4.3 Greenhouse gas emissions and energy use

The Netherlands' emissions of greenhouse gases amounted to 194 Mtonnes of CO<sub>2</sub> equivalents in 2011. This is a reduction of more than 7% from the previous year, which is largely due to the lower energy consumption in the mild winter months of 2011. The emissions of the two other main greenhouse gases, methane and nitrous oxide, remained virtually unchanged from 2010. With these carbon dioxide emissions the Netherlands remains below the agreement reached in the Kyoto Protocol, which states that the Netherlands' emissions may not exceed a maximum of 200 Mtonnes of CO<sub>2</sub> equivalents in 2012.

The primary agricultural and horticultural sector accounts for between about 12 and 13% of the Netherlands' total greenhouse gas emissions. The decline of CO<sub>2</sub> emissions in 2011 as compared to the previous year was largely due to the horticultural sector's lower CO<sub>2</sub> emissions.

The gradual decline in nitrous oxide emissions since 1990, in particular from manure and fertilisers, is largely due to the manure policy that has resulted in a sharp decline in the application of manure and fertilisers per hectare of land. Although emissions of carbon dioxide and methane greenhouse gases also fell gradually until about the middle of the first decade of this century, methane emissions have since increased following the renewed growth of the cattle population. The increase in carbon dioxide emissions is largely due to the horticultural sector's increased CO<sub>2</sub> emissions resulting both from the horticultural operations and the generation of electricity.

The emissions fluctuate widely from year to year. On average, the agricultural and horticultural sector's emissions have declined by 0.9% per annum since 1990. The movements in emissions during the coming years will depend on a variety of factors, including the developments in the cattle population following the abolition of milk quotas, the further detailing of the manure policy and the scope of the greenhouse horticulture sector's energy generation operations.

#### *Further improvement in the greenhouse horticulture sector's energy efficiency*

The Dutch greenhouse horticulture sector is a large consumer of energy and accounts for some 80% of the primary agricultural and horticultural sector's total consumption of energy. In 2011, the energy efficiency - the ratio of the consumption of primary fuel and the production output - was 52% higher than in 1990. This improvement is due both to the 33% reduction in the consumption of primary fuel per m<sup>2</sup> and to the 40% increase in production per m<sup>2</sup>. The sector's combined heat and power plants make a large contribution to the improvement in the energy efficiency and account for more than one-third of the improvement since 1990. The ultimate objective is to achieve a 57% improvement in the energy efficiency in 2020 as compared to 1990. The feasibility of the achievement of this target is in part dependent on the retention of the current level of sales of electricity generated by combined heat and power plants.

### *Combined heat and power plants meet some 10% of the Netherlands' electricity demand*

The greenhouse horticulture sector is an important electricity producer and net supplier of electricity as expressed in terms of the sales less procurement of electricity. The electricity is generated by combined heat and power plants. This form of electricity generation utilises the heat released during the process, which distinguishes these plants from conventional power stations that lose more than half the energy in the fuel they consume as waste heat.

The greenhouse horticulture sector's electricity generation capacity increased to almost 3,000 MW<sub>e</sub> in 2011. During the years from 2009-2011, the sector generated an average of 11 to 12 billion kWh a year - equivalent to some 10% of the Netherlands' total consumption of electricity.

Combined heat and power plants have a large influence on the greenhouse horticulture sector's energy costs and energy efficiency. The price horticulturists needed to pay for natural gas more than doubled in the years between 2002 and 2010. However, the net energy costs as expressed as procurement less sales were only about 20% higher in 2010 as compared to 2002. As a result, the greenhouse horticulture sector's use of combined heat and power plants and the associated sales of electricity have enabled the sector to limit the increase in its energy costs.

#### **4.4 Manure and mineral policy**

The net nitrogen production in animal manure (after the deduction of gaseous emissions, such as ammonia) fell by 30% during the period between 1990 (604 million kg) and 2005 (423 million kg). Nitrogen production subsequently increased again, primarily due to the larger numbers of animals other than beef cattle. In 2011, the total nitrogen production decreased by about 2% from the level in the previous year. This decline was observed in all sectors, with the exception of the pig farming sector which produced more nitrogen due to an increase in the number of pigs. The nitrogen excretion ceiling (a maximum gross production of nitrogen of 504 million kg in 2002) that the EU imposed on the Netherlands was never transgressed in the years after 2002.

Phosphate production in animal manure fell by 35% in the years between 1990 (260 million kg) and 2005 (170 million kg). Phosphate production subsequently increased again to levels which transgressed the phosphate excretion ceiling (173 million kg, the phosphate production in 2002) by between 2 and 3% in 2008 to 2010 inclusive. This increase was due to the larger number of animals and the higher phosphorus content of animal feeds, in particular feed for the pig farming sector. Phosphate production fell again by more than 9 million kg to 170 million kg of phosphate in 2011, a level below the phosphate excretion ceiling. The beef cattle farming sector

accounted for two-thirds of this decline, which achieved almost 75% of its reduction (4.4 million kg) by switching to animal feed with a lower phosphorous content. The remaining more than 25% was due to a decline in the number of animals. In addition, phosphate production by poultry fell as a result of a decline in numbers and by fattening pigs as result of improved feed conversion rates and an on-average lower phosphorous content of by-products.

The supply of minerals to Dutch agricultural land is declining due to the increasing exports of manure, in particular of poultry manure. Exports increased by 65% between 2006 (17 million kg of phosphate) and 2012 (28 million kg of phosphate).

The decline in the supply of nitrogen and phosphate to agricultural land came to a halt after 2008. The decline has ceased as exports and processing of dry manure have reached the maximum levels, exports and processing of manure slurry have yet to lift off and further substantial reductions in the application of fertiliser are probably not feasible.

The number of animals is currently limited by milk quotas (dairy farming) and animal production rights (pig and poultry farming). Pursuant to the prevailing *Fertiliser Act* and European decision-making, both instruments will be abolished in 2015. This could result in an upward pressure on manure production and, as a result, the manure surplus and manure market.

#### 4.5 Ammonia

In 1999, ammonia emissions had fallen to half the level in 1990 (163 as compared to 333 kilotonnes of ammonia). This decline was largely due to the low-emission application of animal manure and a fall in the number of animals. In 2009, ammonia emissions had fallen to just one-third (108 kilotonnes) of the level in 1990, largely due to the reduction of ammonia emissions on the application of animal manure to arable land and grass land and to the increased exports and processing of manure, in particular poultry manure. In 2011, the agricultural sector's emissions fell to 100 kilotonnes of ammonia, 10 kilotonnes of which (one-quarter lower than in 1990) originated from fertiliser. As a result, the Netherlands total ammonia emissions (the ammonia emissions from the agricultural and non-agricultural sectors) amounted to 117 kilotonnes in 2011, 11 kilotonnes lower than the 128 kilotonnes ceiling prescribed by the European National Emission Ceiling Directive (NEC). This ceiling is still applicable, although it will be adjusted downwards within the near future, probably to 100 kilotonnes.



# Structure of the primary agricultural and horticultural sector



## 5.1 Number of holdings

The number of agricultural and horticultural businesses fell by almost 1,600 between 2011 and 2012, to just under 69,000 (Table 3). This is equivalent to a decline of 2.2%, lower than the average annual decrease in the years since the turn of the century (2.9%). The decrease in the number of holdings varies greatly between the sectors, ranging from a limited decline in the number of arable farming holdings and grazing livestock holdings (including dairy farming) to a sharp decline in the other sectors. These variations are largely related to the degree to which the holdings are land-based. The rate of the decline increases with the sector's intensity of operations and independence from land-based operations. The decline in the number of holdings in sectors with essentially land-based operations (arable farming and grazing livestock farms) was almost one-fifth in the period between 2000 and 2012, as compared to more than two-fifths in the horticultural and intensive livestock farming sectors. However, the greatest contraction was observed in the number of combined holdings (almost 60%), a decline which confirms that the structural developments in the agricultural and horticultural sector since the nineteen-fifties are characterised by specialisation together with increases of scale.

When viewed over a somewhat longer period of time, the difference in the rates of the decline of holdings in the land-based and less land-based sectors is not very great: the number of holdings in the more land-based sectors declined by 48% between 1980 and 2010, while the number of holdings in the less land-based sectors declined by 55% in the same period. The most important forces behind the continuing decline in the number of holdings are the age distribution of the holders, the availability of a successor and technological developments including labour-saving developments. The fairly large decline in the number of non-land-based holdings since the turn of the century is due to factors including environmental and animal welfare policy (such as mandatory investments) and developments in the market (potential sales outlets and prices).

The decline in the number of holdings is primarily due to their more-or-less voluntary termination at the time the next generation would need to take over but refrains from doing so in view of the moderate income prospects. Forced termination in the form of a bankruptcy is still rare. More than 800 agricultural and horticultural holdings have been declared bankrupt since 2000, equivalent to almost 3% of the total decline in the number of holdings. The sharp increase in the number of bankruptcies in the overall Dutch economy since the beginning of the economic crisis in 2008 is also reflected in the

agricultural and horticultural sector. By far the most bankruptcies were in the plant sectors (approximately 90% in the past four years). Most of these were probably greenhouse horticulture holdings.

	2000	2005	2010	2012	Change (%) 2011-2012
Number of agricultural and horticultural farms (x 1,000)	97,389	81,750	72,234	68,810	-2.2
Number of workers (x 1,000)	280.9	235.7	212.0	198.0	-5.2
Area of farmland (x 1,000 ha)	1,975.5	1,937.7	1,872.3	1,841.7	-0.9

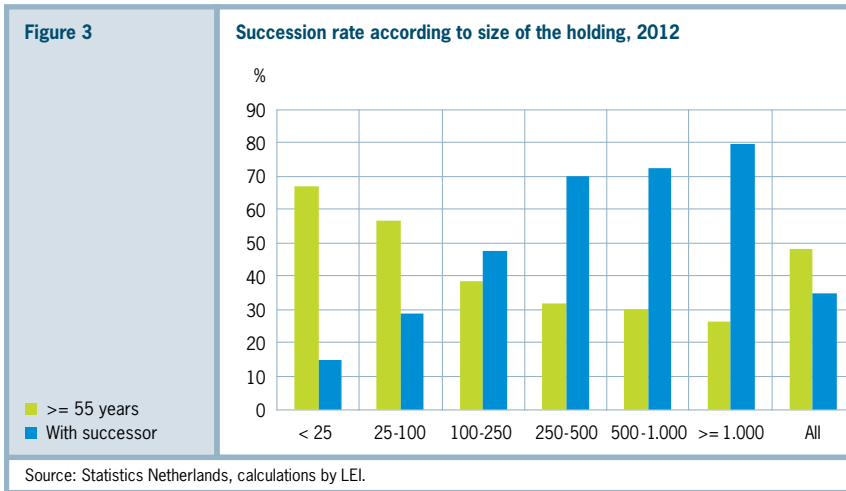
Source: CBS (Statistics Netherlands) agricultural census, processed by LEI.

## 5.2 Takeover of holdings by family members

Following a slight decrease in the succession rate from 32% in 2000 to 29% in 2008, the rate increased again to 35% in 2012 (Figure 3). This increase is due to developments in the operating results, holding structures, the economy in general and the prospects. The agricultural and horticultural sector's operating results have increased slightly in the past ten years, although this is not applicable to all sub-sectors. This improvement is in part due to the increases of scale since the turn of the century, which have been particularly large in the non-land-based sectors. The impact of the economic crisis on the agricultural and horticultural sector would also appear to be much smaller than the impact on many other sectors: moreover the longer prospects for the agricultural and horticultural sector are not unfavourable. Younger agriculturalists may also be interested in taking over a holding following the sharp increase in the rate of unemployment that limits the options for their choice of an alternative career.

The interest in taking over a holding is largely determined by its size. The succession rate increases rapidly with increase in size, from 25% for the smaller holdings to 79% for the larger holdings (Figure 3). The interest in taking over the holding was particularly marked for the smaller and larger holdings. In the latter case this will largely be due to the favourable estimates of the income prospects within the agricultural and horticultural sector. The interest in taking over the smaller holdings will probably be due to reasons other than the agricultural operations. Continuing these smaller holdings will become more interesting in view of the less favourable economic conditions, as well as the continued eligibility for farm payments.

The type of holding also plays a role in the degree of interest in taking over the holding. The succession rate ranges from 18% for other grazing livestock farms, about 30% for arable farms and greenhouse horticulture holdings, 43% for intensive livestock farms to 64% for dairy farms. The fairly high rate for dairy farms is probably among other reasons



due to the fact that many older holders without a successor will already have terminated their milk operations, as a result of which many farms now continue in the form of other grazing livestock or arable farms. The other grazing livestock farm segment also constitutes a fairly large group of fairly small farms (more than one-quarter of the total number of holdings) with a somewhat older holder who does not have a successor. These characteristics are also shared by a fairly large number of arable farms.

#### *Financial analysis of holding succession*

Virtually all agricultural and horticultural holdings are taken over by a member of the family. Taking over an agricultural holding is not simple, due to problems including the low returns, increasing size of holdings, more businesslike family relationships and the stringent requirements imposed on bank loans.

The increasing size of holdings confronts successors with the need to finance larger takeover sums. As a result, future holders need more time to collect the necessary capital and the current holders need to continue working on their holding for a longer period of time: in 2012, one-fifth of all agricultural and horticultural holdings were run by holders older than 65. The increasing share of the value of land on the balance sheet also raises a barrier to a successful takeover. Additional capital needs to be financed for the purchase of extra land at the time of the takeover, and the high price of land can create a barrier.

In general, holdings taken over in recent years are larger and more modern than other holdings, but also have the worst equity position. The increase in equity will, in addition to the revaluation of the assets, need to be achieved largely from the holding's cash flow. These funds are needed for three main purposes: investments, the formation of reserves

and family expenditure. When loan capital also needs to be raised for new investments the financiers will assess the application for a loan in terms of the holder's entrepreneurship, the cash flow *and* the holding's solvency. New investments in increases in scale and the modernisation of holdings could ultimately result in an increased payment capacity: holdings financed with a large amount of loan capital will need to allocate a larger portion of their income to the payment of interest on and the redemption of loans to the capital providers. Long periods of low sale prices could confront holdings with a large amount of loan capital, in particular, with liquidity and continuity problems - as was the case in the horticultural sector in recent years. The continuation of these holdings is then in jeopardy.

Dairy and arable farms have invested a large amount of capital in their land. Price increases result in increasing land prices over the course of the years. These increases have a favourable effect on the farms' equity and solvency. This is also the reason why the share of family loans in the loan capital is much larger in the land-based sectors as compared to the average for the entire sector. These family loans play an important role in meeting the conditions attached to taking over holdings in these sectors. As interest rates on family loans are usually lower than on other long-term loans from institutions such as banks, these holdings are able to retain more of their income.

### 5.3 Labour and land

The number of jobs provided by the primary agricultural and horticultural sector, expressed in terms of employees working on a regular basis, has declined by 30% since the turn of the century, from 281,000 to 198,000 in 2012. During this same period the decline in the number of family workers was, on balance, essentially in line with the decline in the number of permanent employees, as a result of which the latter group's share of the total number of employees working on a regular basis has remained unchanged at 30%. This decline in permanent employees has in part been compensated by an increase in flexible labour.

The average labour required per holding has increased as a result of the increase in the holdings' size but, conversely, has decreased as a result of increasing labour productivity. The increase in labour due to size is slightly larger than the decrease due to productivity, as a result of which the average workforce per holding has gradually increased over the years from 1.9 employees at the beginning of the nineteen-nineties to 2.3 employees per holding in recent years.

The total acreage of cultivated land in use by registered agricultural and horticultural holdings decreased in the past year by almost 17,000 ha (-0.9%) to 1.84 million ha (Table 3). This decrease was primarily due to the decline in the acreage of arable land. The acreage allocated to horticulture (outdoor and under glass) decreased, while the acreage allocated to grassland and feed crops remained unchanged. The largest change

in the use of land since the turn of the century was in the acreage of arable land, which has fallen by 114,000 ha to 521,000 ha in 2012, a decline of 18%. The acreage arable farms allocate to the most important groups of crops other than vegetables has fallen, marking the end of a period in which the acreage allocated to arable crops had increased. The acreage allocated to arable crops had increased by approximately 70,000 ha during the period between 1980 and 2000, in part due to the land that became available for the cultivation of marketable crops during the initial period of the limitation of dairy farming on the introduction of production quotas.

Of the total of area of cultivated land 54% is now used for grassland (permanent, temporary and natural grassland), 13% for green fodder crops, 28% for other arable land, 5% for open-field horticulture and 0.5% for greenhouse horticulture.

# Production and income development



## 6.1 Production and income development in the agricultural and horticultural sector

The primary Dutch agriculture and horticulture sector's gross production value of 26.5 billion euros in 2012 was more than 4% higher than in 2011. This growth was, in analogy with 2011, largely due to the higher prices across virtually the entire board. The production output remained virtually unchanged from the previous year.

The value of the procured goods and services purchased increased less than the increase in production value. Animal feed prices increased further following the sharp increase in 2011: compound feed, in particular, increased in price. The price increases of other means of production, including energy, were limited to a maximum of 3%. This is in part due to the fact that a large number of cost items are comprised of inflation-linked services, whereby the rate of inflation, notwithstanding the increase in the VAT rate, also remained just under 3% in 2012.

As a result of these developments the gross added value increased by almost 8% as compared to 2011. As the depreciation charges and grants remained virtually unchanged the net added value increased by more than 12% to 5.8 billion euros. The decline in the number of employees in the agricultural and horticultural sector resulted in a decline in the paid wage costs, as a result of which the total of the factor costs (wages, interest charges and leases) fell further during the year. As a result, the remaining income increased by more than 40% to 2.3 billion euros, the highest level in the past five years.

This forecast recovery follows a disappointing 2011 as viewed from an economic perspective. Arable farmers recorded an increase in their income to near the record level of 2010, which was due to the substantial increase in the prices of potatoes and onions following the lower prices in 2011. The greenhouse horticulture sector also benefited from the higher price of vegetables and flowers and was to some extent able to recover from the poor results in 2011. The pig farming sector recorded an on-average better result due to the higher price of piglets. Egg farmers recorded excellent results due to the high egg prices. 2012 was a poorer year for dairy farmers, as after two

years of higher incomes they were confronted with a decline in their income caused by the higher feed costs and lower milk price.

### *Income distribution*

Holding income varies greatly, in part due to differences in the size and structure of the holdings. In spite of the forecast recovery of income in 2012, more than 20% of the agricultural and horticultural sector's holdings recorded a negative holding income per unpaid annual labour unit (ALU). Fattening pig and flower bulb holdings, which recorded disappointing results across the board, are relatively strongly represented in this group. This group also includes fruit growers, who were confronted with frost damage, and greenhouse vegetable holdings. Conversely, some holdings recorded an income of more than 75,000 euros per unpaid ALU. Arable farmers and egg farmers were strongly represented in this group due to higher yield prices of potatoes, onions, cereals and eggs. The larger holdings were more strongly represented in the group of the 20% of holdings with the highest incomes.

Incomes can also fluctuate widely from year to year. Egg farmers had been relatively strongly represented in the group with the lowest incomes in 2011. This large fluctuation in their income was in part due to the EU prohibition on keeping laying hens in traditional cage housing that entered into force on 1 January 2012. This changeover in the egg farming sector was accompanied by a reduction of the hen population, particularly in Germany, which in turn resulted in a shortage in the egg market. Sow farmers, greenhouse vegetable holders - as a result of the EHEC crisis - and fruit growers were also represented in above-average numbers in the group of holdings with the 20% lowest income. However, and in spite of the moderate average income, 20% of the entrepreneurs recorded an income in 2011 of more than 60,000 euros per unpaid ALU. Pot plant growers, flower bulb growers and fattening pig farmers were more strongly represented in this group, in contrast to 2012, when the last two of these sub-sectors were still ranked amongst the 'losers'. Larger holdings are included in both the groups with the highest and the lowest income.

### *Calculated and paid costs*

The agricultural and horticultural sector does not remunerate the deployment of own labour and capital in line with the market. The agricultural and horticultural sector records a low yield on net assets, a yield that is largely based on the revaluation of land. On average, just 47% of the calculated costs of own labour and capital are reimbursed from the holding's income. When the income payments are disregarded this reimbursement amounts to no more than about one-quarter of the costs. However, once again these figures vary widely. The income from outside the holding, including income from employment, amounts to an average (for all holdings) of about 19,000 euros per holding (Table 4). This constituted an important supplement to the holding's income

during the period from 2007 to 2011. On average, income from outside the holding accounts for almost one-third of the holder's income. Once again, the variations in this income between categories of holding are large, in particular between the categories that recorded the lowest operating results in the period from 2007 to 2011, namely the greenhouse horticulture and pig farming sectors. The average income from outside the holding in the pig farming sector amounts to more than 20,000 euros, an income which is an important supplement for covering part of the family expenditure.

Paid costs account for a continually increasing proportion of the costs incurred by all agricultural and horticultural sectors and increased to more than 80% in the period between 2007 and 2011. The non-land based sectors, pig farming sector and greenhouse horticulture sector, are still confronted with the highest proportion of paid costs. The land-based holdings have traditionally made more use of own labour and capital. Increases in scale have resulted in a substantial increase in the proportion of paid costs, in particular in the dairy farming sector. Because holdings pay a larger proportion of their proceeds to costs their income margin declines. This is in turn increasing the holdings' sensitivity - and vulnerability - to fluctuations in their proceeds and costs, a development which emphasises the increasing importance of and attention to risk management for agricultural and horticultural holdings.

<b>Table 4</b>		<b>Results (x 1,000 euros per holding) on the average agricultural and horticultural holding, 2001-2012</b>			
	<b>2001-2005</b>	<b>2006-2010</b>	<b>2011</b>	<b>2012(r)</b>	
Gross returns	275.0	388.2	496.7	534.0	
<i>of which agricultural production</i>	95.0	90.6	90.4	90.5	
<i>subsidies</i>	3.2	5.0	4.4	4.2	
<i>secondary activities</i>	1.8	4.4	5.2	5.3	
Paid costs and depreciations	239.1	345.5	455.4	470.0	
Special benefits and charges	1.3	-0.3	0.0	0.0	
<b>Operating income</b>	<b>37.1</b>	<b>42.5</b>	<b>41.4</b>	<b>64.0</b>	
Idem per unpaid labour force unit	25.9	29.6	28.4	44.0	
Income from outside the farm	11.8	19.1	19.5	19.0	
<i>of which labour</i>	5.7	9.0	10.0	10.0	
<i>other income</i>	6.1	10.1	9.5	9.0	
<b>Total income</b>	<b>48.9</b>	<b>61.6</b>	<b>60.9</b>	<b>83.0</b>	
Taxes	3.5	5.5	3.7	4.0	
Family spending	37.2	47.2	52.5	52.0	
Savings	8.1	8.9	4.7	27.0	

Source: Farm Accountancy Data Network.



## 6.2 Sustainable investments

The Ministry of Economic Affairs makes use of grants and/or tax schemes to provide incentives for sustainable investments in the agricultural and horticultural sector and the fisheries. The Ministry monitors this policy by carrying out annual calculations of the share of sustainable investments - investments that make use of the schemes and grants that promote and provide incentives for sustainability - in the total investments in sheds, greenhouses, machines and installations.

In 2011, 20% of the investments were sustainable investments, a share that had still been 36% in 2010. This 36% is precisely on the target for the share of sustainable investments in 2013, as based on total investments of 3.7 billion euros. This target had originally been set at 60%, but was adjusted downwards as the initial target was too ambitious. In 2011, total investments increased by 7% from the level in the previous year. Conversely, sustainable investments fell by 40% to 727 million euros.

The greenhouse horticulture sector's sustainable investments have already been declining since 2007, due to the sector's moderate to poor financial results. Sustainable investments by the agricultural sector, which accounts for about three-quarters of all sustainable investments, fell to 550 million euros in 2011, largely due to fewer investments in sustainable sheds. Investments in sustainable pig and poultry sheds, in particular, fell sharply. Conversely, investments in sustainable dairy sheds increased slightly. The deterioration in the economic conditions of, in particular, the pig and egg farming sectors has contributed to the fall in sustainable investments. In addition, the absolute peak in the poultry farming sector's investments in alternative housing systems took place in 2010, in anticipation of the prohibition on cages that entered into force on 1 January 2012.

# Definitions

## *Standard output (SO)*

The standard output (SO) is a new criterion for the economic size of agricultural holdings. The SO is the standardised average annual output (in euros) per hectare or animal generated by the crop or animal category. Farm payments and subsidies are not included in the standards. The SO is revised at regular intervals within the context of the EU typology. The 2004 price level is applicable to the years from 2000 to 2009, and the 2007 price level (based on the years from 2005 to 2009) to 2010 and successive years. A revision of the price level can result in shifts of holdings between size classes and types of holdings.

## *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.

## *Total income*

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



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