Dutch agricultural development and its importance to China

A comparative analysis

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This report is a comparative analysis between the agricultural sector in the Yangtze Delta in China and that in the Netherlands. This analysis is based on two general studies and a number of case studies. Agriculture is analysed as part of the agribusiness and against the background of the development of the economy as a whole. Furthermore the roles of agricultural policies in China and the EU are highlighted. The report is divided into two parts. Part one contains a comparison on regional level and deals with: exogenous factors affecting agriculture, production factors in the primary sector, market and price policies, agrifood chains and the institutional framework. Part two contains a comparison for the subsectors dairy and horticulture. The subjects in this part are: size and specialisation, technology and processing and marketing. Finally a number of conclusions are drawn with regard to two leading questions: 'What can China learn from the Netherlands?' and 'What does China offer in the way of business opportunities for Dutch agriculture?'

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Preface

'The Experience of Holland Agricultural Development and Its Importance to China' is a joint research project of the Institute of Agricultural Economics of the Chinese Agricultural Academy of Sciences (IAE-CAAS) in Beijing and the Agricultural Economics Research Institute (LEI) of Wageningen University and Research Centre in The Hague. The Chinese Ministry of Agriculture, the Dutch Ministry of Foreign Affairs (Asian Facility) and the Dutch Ministry of Agriculture, Nature Management and Fisheries jointly finance the project. The main objectives of the project are:

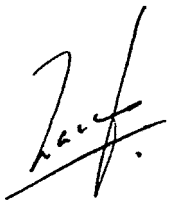
- to reveal the causes of the large difference in agricultural productivity between China and the Netherlands, and to find ways to improve the efficiency of Chinese agriculture;
- to analyse the developments in Chinese agriculture with special reference to market opportunities for Dutch agribusiness.

This report is one of the results of the project. It contains a comparative analysis between the agricultural sector in the Netherlands and that in China and in particular the Yangtze Delta. This comparison is based on the following studies that have been carried out in the framework of this project:

- growing Strong, the development of the Dutch agricultural sector; background and prospects;
- the evolution of Dutch greenhouse horticulture;
- development of dairy farming in the Netherlands in the period 1960-2000;
- recent agriculture in the Yangtze Delta: A general review;
- mission report: Shanghai, Wujiang and Chongming;
- Shanghai consumer studies, with attention to livestock, dairy and horticulture products;
- agriculture in Wujiang: An overview;
- agriculture in Chongming: An overview.

This comparison consists of two parts. In the first part a comparison is made on the 'country' level. In the comparison with the Yangtze Delta many aspects on the country level are taken into account. Part two contains a comparison on a sub-sector level. This part focuses on two sectors: the dairy sector and horticulture sector. The report has been written by the Chinese and Dutch co-ordinator of the project respectively Prof. Li Weimin (IAE-CAAS) and Jaap Post (LEI-Wageningen UR).

The Managing Director of LEI,



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Summary

The joint research project 'The experience of Holland agricultural development and its importance to China' intends to answer two questions:

- How has the Netherlands - a very small country in Europe - become an important agricultural exporter in the world market? What is its 'secret'?
- China, with almost 1.3 billion people, has experienced a period of fast economic growth lasting two decades. China's entry into the WTO will open a huge market to all countries. What are the market opportunities for Dutch agribusiness?

This report is a summary aimed at comparing the agricultural systems of China (with the Yangtze Delta as a case) and the Netherlands. A comparison can be carried out in numerous facets. This brief report can only touch on some of the most important aspects. The report is based on the following reports carried out in the framework of this project:

- growing Strong, the development of the Dutch agricultural sector; background and prospects;
- recent agriculture in the Yangtze Delta, a general review;
- mission report: Shanghai, Wujiang and Chongming;
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Part 1 Comparison at regional level

1. Positioning of the Yangtze Delta and the Netherlands

The Yangtze Delta is located on the east and the Netherlands on the west of the Eurasian continent. Both are situated at the mouth of a big river and both have a big port: Rotterdam, the first port in the world and Shanghai, the rapidly growing second port (still far behind Hong Kong) of China. Both regions are more or less the same size and are densely populated. Income per capita in the Netherlands is high, while in the Yangtze Delta it is high compared with China as a whole, both in the urban area as well as in the rural area, and it is increasing fast. The market for agricultural products and food in the Netherlands is saturated for most products while it is an early stage of development for many products in the Yangtze Delta.

However, the population of the Yangtze Delta is much bigger than that of the Netherlands. Agricultural land productivity in both regions is relatively high, whereas labour productivity in agriculture is much higher in the Netherlands compared to the Yangtze Delta. The Netherlands is an important net exporter of agricultural and food products; the external trade in agricultural and food products of the Yangtze Delta region was limited for a long time but is now growing fast.

2. Exogenous factors

A number of exogenous factors affect the development of agriculture. In this section some important factors will be mentioned.

- *Climate and soil,* both can be described as favourable for the two regions. The soil is generally fertile and the climate is temperate. Rainfall is sufficient. This makes both regions suitable for a wide range of crops. The Yangtze Delta has higher temperatures and more sunshine, which means longer crop production periods. Two, three or more crops a year are possible in this area.
- *Location*, both regions are located near big consumer markets. For the Netherlands these consumer markets are partly situated in the Netherlands itself and partly in the neighbouring countries. Within the EU market, Germany and other high-income countries are major importers of Dutch foods, flowers, and other agricultural products. This explains partly why the Netherlands is more active than the Yangtze Delta on export markets. For the Yangtze Delta region the consumer market for agricultural and food products within the region is much bigger than for the Netherlands, due to its very high population density (more than twice that of the Netherlands). The Delta region has been one of major suppliers of agrifoods to Japan and South Korea, and has many traditional links with Hong Kong (although not as close as the Pearl River Delta, Guangdong).
- *Transportation network*, low costs for transportation and storage are important factors in serving consumer markets. The Netherlands has deep-water harbours and a well-developed network of canals for the supply of raw materials for agricultural production. This is particularly important for the Netherlands in view of the composition of production of the agricultural and food sector. For the primary sector the import of feedstuffs should be mentioned in this respect. In addition, the Netherlands and neighbouring countries have a dense network of motorways and railways. The problem is that motorways are sometimes so congested that extra transport time is needed. The capacity of temperature-controlled equipment is sufficient for the storage and transport of frozen and perishable products. The region of the Yangtze Delta has several deep-water harbours. They are becoming increasingly important because of the growth in the volume of external trade. For internal transport a wide network of canals and other waterways is available. Since the 1980s, great progress has been achieved in the network of motorways and railways. Further improvements are underway. A big new international airport was opened in east Shanghai (Pudong) in the year 2000. There is a growing demand for cold warehousing and transport facilities of frozen and perishable foods. Compared to China as a whole, the majority of households, even in the rural area, have a refrigerator. The transportation system for the transport of agricultural products and food from inland provinces to the Yangtze Delta region needs further improvement as transport costs are relatively high.

- *Markets,* important differences exist in the development of the consumer markets for agricultural and food products between both regions. The market system and chains are well organised in the Netherlands. The high efficiency of its auctions is well known in the world. A limited and decreasing number of supermarkets dominates the retail market. The markets for food in the Netherlands are becoming more and more saturated. The increase in population is limited and the share of agricultural and food products in consumer expenditure is small. The volume of demand is hardly increasing; however, the composition of demand is changing due to changes in consumer behaviour with more attention for food safety. The consumer market is also becoming more and more diversified. Due to food shortages the agricultural marketing system was strictly controlled by the government in China from the early 1950s to mid-1980s, and was managed mainly by the state-owned enterprises. Efficiency was low. During the 1990s there was a rapid rise in the number of supermarkets. Foreign supermarkets, also from the Netherlands, entered the market. However, for a number of reasons it appeared difficult for these foreign companies to compete with the domestic supermarkets. Despite improvements, the efficiency of the distribution system is still low. The lack of efficiency of the food distribution system is partly due to the numerous layers of distributors between the manufacturer and the retailer. Recently foreign hypermarkets entered the market. These hypermarkets keep prices low through efficient supply chain management. The hypermarkets have relatively more import products in their stock. The market for agricultural and food products has been growing fast since the reform. This has been stimulated by population growth (including a great number of migrant workers) and income even much more. Consumer patterns and habits are also changing, especially among the younger generation in cities. Food safety is also a major concern. This is associated with the relatively high income and education level in the Delta.

3. Production factors in the primary sector

The success of the Dutch agricultural sector can partly be explained by the policies of the government and the farmers unions to improve the quality of the production factors and the farm structure. These policies were seen as an important instrument to increase labour productivity and therefore farmer's income and competitiveness.

In the region of the Yangtze Delta policies were more directed to an increase in land productivity. In this respect food safety at the regional/provincial level played an important role. Nowadays policies are more directed at stimulating the production of those products, which have a comparative advantage on domestic and international markets. In this section we will deal with the production factors land and water, labour and capital and finally the farm structure in which the production factors are combined.

3.1 Land and water

Property and land use rights. Land in the Netherlands is private property, although the government can also be a landowner. A basis for efficient land use is the land register that makes clear who is the owner of the land. In the Netherlands all land is entered in the land register. There is a whole legal system of institutions for the regulation of property and land use rights. Tenants can rent land (and farm buildings) for a long period of time. They must take good care of the rented land: at the end of the tenure the tenant will be paid for amelioration.

In the Yangtze Delta, just as in China as a whole, rural land belongs to the collective. Village leaders allocate land-use rights among village households based on family size and labour availability. There are some differences in implementation of the household responsibility system (HRS). Land can be contracted for 30 years in most regions. However, land-plot adjustments within a village are frequent because of changes in population. Uncertainty in land use discourages physical inputs to land.

- *Land use planning*

  In the Netherlands there is a system of land use planning in which the central, provincial and municipal government are involved respectively. Every ten years the plan is renewed. The plan at local level indicates what kinds of land use are allowed and which are not. This gives a certain protection for agriculture against high land prices. Cropland is very limited for the densely populated Yangtze Delta region. The land-plot per farm household is extremely small, but land planning has been a weak link in China. This puts the local authorities in a very difficult situation. The land administration can hardly make long-term and comprehensive plans for land use or control land abuse, due to the following factors:

- as income increases, farmers need more living space for building their new houses. To attract investors to develop local economy, large areas are 'planned' for industrial zones. This often results in abuse of the best cropland;
- urban development and infrastructure need considerable space from the farm sector. The former (infrastructure) is of state ownership, while the latter (farmland) belongs to the collective. It is difficult to align the interests of both parties;
- the local authorities demand sustainable use of natural resources, but they have no means of controlling any waste of land and punish those who violate the laws or regulations.

- *Land consolidation and water management*
  District water boards in the Netherlands are responsible for proper water management, i.e. the protection of the inhabitants against the danger of flooding, regulating the amount of water and taking care of the quality of the water. The inhabitants choose the members of the boards. The district water boards are the oldest public bodies in the Netherlands, dating from the 14th century. Requirements for proper land use have changed over the years as a result of mechanisation, the introduction of new crops, different management systems etc. For this reason land consolidation plays an important role. Land consolidation is based on a law partly subsidised by the central government and stakeholders are involved in the development of the land consolidation plan.

The direct income from land is very small in the Yangtze Delta. Most farmers have become part-time workers (see 3.2) and they pay less attention to land consolidation and improvement. Heavy use of agri-chemicals as well as industrial discharges have resulted in water pollution of soil and water (the Taihu Lake suffers the most). This has been included in the 'black list' of the national Environment administration, but the situation has not changed at the time of writing this report.

3.2 Labour and farm

Agricultural employment in the Netherlands has decreased since the 1950s. To prevent and reduce hidden unemployment in agriculture, growth in non-agricultural employment in the rural area was necessary. The government stimulated employment in rural areas by improving transport infrastructure, developing industrial zones, subsidising the establishment of firms by low land prices, transferring government services from overcrowded areas in the west of the country to provinces in the north and south of the country etc. The increase in non-agricultural employment stimulated the exodus from agriculture and by this the increase in agricultural productivity.

In the Yangtze Delta the pull factors for a reduction in the agricultural population was less striking. This was partly due to a rather strict separation between the urban and rural population based on the Household Registration System that was introduced in the 1950s. The non-agricultural employment was concentrated in the urban areas; most of the food industry was even located there. Until the end of the 1970s migration from the rural to

the urban area was not allowed or only possible under certain conditions. Recently the possibilities to migrate to the urban area have increased. The development of the TVEs (Town and Village Enterprises), initiated by the government, gained speed in the mid-1980s. The TVEs have been very successful in this region and created many new jobs outside agriculture. However, the majority of workers in these TVEs keeps their status of 'rural people' and stayed as part-time farmers in agriculture.

Farm structure

In the Netherlands, as in other Western European countries, family farms dominate the farm structure. Most farmers in the Netherlands have their (main) occupation in farming. Due to structural changes not only in agriculture but also in the economy as a whole there is an ongoing process of enlarging farms. To increase the surface of the farms, the government stimulates the termination of less efficient farms of, mostly, older farmers. Many farmers increase the size of the farm (measured in value added) by intensification of land use and many improve efficiency of farming by specialisation. An increased use of pesticides and a growing production of manure accompanied this development. EU and national environmental policies are currently tackling the resulting environmental problems. The farm structure in the Yangtze Delta can be seen in the following aspects:

- *farm size and labour*
  Farmers used to be known as 'small peasants' in China. The scale of production at farm level remains very small, and their production mix differs little from each other. The size of the farms in the Yangtze Delta is only about half of the average of that of China. It is very difficult for a farmer to increase the surface of his farm as the farm is seen as a kind of insurance against the risk of unemployment. To earn higher income, many young farmers work in township and village enterprises (TVEs), so the women and the elderly are mainly responsible for the farming;
- *co-operatives and specialisation*
  There are no co-operatives or farmers' organisations in the real sense of the word in China. The farmers used to be individual workers. Specialisation in production of non-grain crops was not allowed in the past. In recent years more room for specialisation has been created (e.g. vegetables, pigs or poultry) as the possibilities for the import of cereals have increased. The number of specialised farmers is small but increasing. With the growth of the number and size of specialised livestock farms animal waste may become a problem;
- *production structure*
  Historically, livestock production (mainly pigs) was considered a sideline activity for collecting manure for field crops in the Delta. Small farmers have little room for 'structural adjustment'. There were few specialised farmers in the Yangtze Delta. The enlargement of farms has been limited due to scarce cropland, large supply of rural labour, low productivity and other factors. Local production of vegetables is not sufficient to supply the large population. Dairy cows were kept only in suburban areas to supply fresh milk to a limited number of urban consumers. The demand for high-quality 'green' vegetables and other horticultural products is growing and must be met with imports (mainly from neighbouring provinces).

3.3 Human capital formation

The development of *research, education and extension*, has been a central issue in the agricultural policies of the Netherlands for more than a century. Research, education and extension formed an integrated system in which there was a large degree of coherence and coordination between the organisations that were responsible for the different types of research, extension and education. This system made an important contribution to the increase in labour productivity in agriculture. The coherence was aimed at the effective and efficient development, transfer and application of knowledge.

The coordination came about mainly through a complex system of the representation of interests in the management of the organisations concerned. All interested parties in government and in the private sector, in particular the farmers' organisations, were represented in the management of every link in the system. An effective representation of the interests of the sector guaranteed a strong orientation towards the development of knowledge for the solution of practical problems, even within strategic and fundamental research. The intensive involvement of the Ministry of Agriculture, Nature Management and Fisheries in the running of the system guaranteed coherence between policies in the field of development and use of knowledge and technologies on the one hand, and structural policies on the other hand.

The Ministry allocates a huge amount of funds to the creation and dissemination of knowledge for agriculture and nature management. Private industry and agribusiness offer strong support to the development and application of advanced technologies in this sector. The level of education of Dutch farmers is relatively high and increasing. Intensive use is made of different kinds of extension, including extension of supplementary industries.

The level of education of the farmers in the Yangtze Delta is relatively low. The relationship with the extension services is a one-way relationship: the extension service provides the farmers with information on the initiative of the extension service. The farmers seldom approach the extension services for their problems. Besides, the development of the agricultural sector in the Delta is more directed towards specialisation; however, specialised extension services have not yet been developed. Last but not least farmers must improve their business skills. So there is space for improving the efficiency of the extension services. One of the reasons is that sectoral interest groups are not involved in the management. Coherence and coordination is poor. Three components - education, research and extension - are separate and there is little coordination from the very central level in China.

As a whole, research, extension and education are not integrated in one system. Different ministries are responsible for research, education and extension. The Ministry of Education is responsible for rural primary education, technical schools and agricultural universities. The Ministry of Science and Technology outlines the development strategies, manages and finances the 'key projects' in agricultural sphere. A very small percentage of public funding is allocated to agricultural R&D in China. China's public funding of agricultural R&D was only 0.3% of agricultural GDP, much less than that of all developing countries as a whole. The funds for agricultural extension work were probably even less.

Not all of the limited funds for strategic and fundamental research are directed to the solution of practical problems. Links between extension and research organisations hardly exist.

In addition, there are few exchanges of human capital among the three parts. The weakest point lies in the extension. Extension work is the responsibility of the Ministry of Agriculture, which applies all the achievements of universities and agricultural academies and research institutions. This method has been copied at provincial level. The extension workers have few opportunities to attend training courses or learn about recent developments in science and technology. Their equipment is often outdated, and working conditions are poor. The situation in the Yangtze Delta is better than average, but still their job is not attractive for most college students. Many extension workers wish to move to other business.

3.4 Capital

In the Netherlands agriculture is becoming more and more capital intensive. The supply of capital has never been considered a task of the government. The farmers themselves founded co-operative banks for the supply of capital at reasonable interest rates. In this respect the co-operative banks played an important role in the development of Dutch agriculture.

In addition two government policy instruments played an important role in the modernisation of Dutch agriculture:

- *The Agricultural Loan and Guarantee Fund*
  Funded in the early 1950s and still at work, it targeted profitable investments with inadequate securities in order to promote productivity and profitability of the agricultural enterprises. The aim was that skilled farmers who had less capital at their disposal should not be prevented from borrowing money for profitable investments if they did not have enough of the usual securities. In such cases the fund itself guaranteed the payment of interest and repayment of the loan. Many farmers have made use of this instrument. Nevertheless, the losses of the fund were very limited;
- *development and Reorganisation Fund*
  Its most important scheme in the 1970s and 1980s was the subsidy on the interest on loans. This was a consequence of an EU guideline aiming at the modernisation of agricultural enterprises with development possibilities. The subsidy was granted on the basis of a development plan and compensated by The European Agriculture Guidance and Guarantee Fund (EAGGF). The competitive strength of Dutch agriculture has risen thanks to the interest subsidy. By comparison the Netherlands have appealed relatively strongly to the interest subsidy, well ahead of France and former West Germany.

Also economy-wide instruments influenced the modernisation of Dutch agriculture. In this respect fiscal legislation during the period 1978-1990 to encourage industrial investment could be mentioned. Entrepreneurs who made use of this fiscal instrument were

required to pay less tax because they could deduct the investment bonus from income or corporation tax due. Many farmers made use of this facility.

In the Yangtze Delta, and in China as a whole, rural land property belongs to the collective. As land is by far the most important capital asset, the need for capital by farmers in the Yangtze Delta is much less than in the Netherlands where land is private property. In addition farms are very small and crops are more land- and labour-intensive than capital-intensive. For these reasons farms need less capital than in the Netherlands. However, because of increasing differentiation in the production pattern, the need for capital in agriculture is growing.

Nevertheless, it is difficult for a Chinese farmer to borrow money in case of necessity. There are now several state-owned banks and many commercial banks in China. However, it is difficult for a farmer to borrow, say, 2,000 or 5,000 Yuan to build a 1,000 m^2 plastic tunnel for vegetables, or buy a mini-tractor.

- *State investment and loans*
  The government is responsible for some public projects, at national or local level. Such projects include water conservancy, main irrigation projects and some major projects for large commodity production bases (grain, cotton, rubber, sugarcane, etc.). There are several 'programmes' which are fully funded by the budget of the central government, for example: 'Spark Programme' and 'Bumper Harvest Programme' to spread new and practical technologies, 'Torch Programme' for high technologies, 'Seed Programme' to improve seeds, and so on.
- *Rural credit co-operatives*
  China has not yet established a modern credit system. A huge amount of 'bad debts' has put state-owned banks in a difficult situation. They would not give loans, for example mortgages, to farmers having no securities for example land. Chinese farmers, in turn, like to save money for any unexpected situation in their life. The object of rural credit co-operatives should help the farmers to solve their difficulties in agricultural production. With the development of rural credit co-operative business, it is easier for individual farmers to get loans. In fact, however, only large farmers have more chance of getting loans because they have a stronger financial background to repay them.
- *Private loans*
  Smaller farmers prefer to borrow money from their relatives, neighbours or friends. The main reason for this is that they know each other very well. Other reasons include: small amount, from several hundred to a thousand Yuan; no complicated procedures; low interest rates - from zero to normal commercial rate; flexible repayment methods, etc.

4. Market and price policies

Market and price policies have played an important role in the development of agriculture (with exception of horticulture) in Western Europe. There was an agricultural crisis in the last part of the 19th century. This crisis was largely caused by the import of cheap American grain and provoked a call for protection. Germany, for one, opted for protective measures. The Netherlands, as an exporting country, sought the solution in maintaining the principle of free trade and in improving the factors of production and of the chains of production. This choice for increasing competitiveness can be seen as the starting point of modern Dutch agriculture. A second important period was the formation of the European Economic Community (EEC), later the European Union (EU) after the Second World War and the participation of the Netherlands in it. A common agricultural policy was developed with a common market and price policy as its main component. The consequence of this was that a large market arose inside the EEC without obstacles to trade between the member states but with protection of that market on the borders of the Community. That market gradually expanded over the years with the accession of new member states. All the same, the creation of the EEC has been of crucial importance for the Dutch agricultural sector as it created a big market for its agricultural products.

- *Market and price policies*
  They were quite different for the Yangtze Delta region. After collectivisation during the 1950s, a national policy of self-sufficiency was introduced. The rural population was responsible for providing the food for the urban population. The farmers were effectively taxed: they were paid low prices for mandatory sales of commodities to the government to keep food prices for the urban population low. A centrally planned distribution system was adopted for basic food products. Because of this system, trade with other provinces was controlled. As a consequence the possibilities for making use of comparative advantages within the provinces were limited as individual production brigades had to fulfil production targets formulated by the government.
- *Reforms in marketing system*
  An important change took place at the end of 1970s with the introduction of the HRS. Farmers instead of the production brigades became responsible for agricultural production and more freedom was introduced in the choice of the production plan at farm level. In addition procurement prices of grains were raised, although subsidising of urban consumers was continued. Agricultural production and productivity rose sharply until the mid-1980s. There was a temporary 'drawback' in the mid-1990s due to the re-enforcement of the grain-first policy under the 'Governor Responsibility System'. The fear of possible food shortages in future caused provincial governors to stress self-sufficiency in food grain within their provinces. This system was actually discontinued after a glut of grain arose after 1998. During this period prices of a number of products (grains with exception of rice) were above international levels.

Today farmers in some areas still have to fulfil production quota and sell the production at a protective price, mainly for grains. However, the level of the quota is limited. Besides farmers are free to buy the products on the market to fulfil their obligations. At the local level, the provincial authorities can now buy grain from other provinces to cover their needs. The purpose is to guarantee farmers' freedom to make their own production plan aimed at meeting market demands for a wider range of farm products other than grains and increasing their income. On the whole the taxation of farmers through low producer prices decreased, although, taking into account local taxes and fees the farmers are still heavily taxed.

5. Agrifood chains

5.1 Co-operatives vs. state-owned companies

In the Netherlands farmers' co-operatives play an important role to cover this 'distance' between farmers and consumers and to ensure input from other sectors. Most of the co-operatives were founded at the end of the 19th and the beginning of the 20th century, at a time when farmers were not satisfied with the performance of trade in and processing of agricultural products by private traders and processors.

The co-operatives are property of the farmers and they are responsible for their management. Activities of co-operatives cover all agrifood chains, from buying machines, fertilisers, etc., to providing capital, from processing agricultural products to trade in agricultural products and foodstuffs etc. on the world market. Through the co-operatives the farmers are able to develop countervailing power against the non-co-operative sector.

The 'distance' between farmer and consumer is becoming wider in China. Farmers buy more inputs from other economic sectors. However, the state-owned companies used to have a monopoly in this area. The lion's share of profits in this long chain has been taken over by these companies. This has many negative effects on the agricultural and food system in China as well as on farmer's income. The farmers are not well organised. Without co-operatives, they are in a weak position in buying inputs and selling and processing their products. Farmers are short of funds to improve technologies and increase production. Low income (or even poverty in some area) means low productivity and lack of competitiveness. It is also difficult for rural labour to shift to other sectors (marketing, processing, etc.).

- *TVEs and processing industry*

  In the Yangtze Delta, and moreover in China as a whole, agricultural products are mainly produced for direct consumption rather than for processing as in the Netherlands. The supply of inputs for farmers as well as the processing of and trade in agricultural products is in the hands of state-owned companies. Farmers or their wives run only trade in products for fresh consumption by consumers in the rural area. In other words, the bargaining power of the farmers is weak. There is no guarantee that trade and processing is taking place in an effective and efficient way because of monopolies. TVEs have made a great contribution to rural economic growth in the Yangtze Delta. They covered almost every profile of the urban industry, but few were involved in food processing. Just recently some changes took place, as the government lifted most hurdles. TVEs with their cheap labour, flexible mechanism and improved management are able to catch up with the state-owned companies.

5.2 Scale of production

One of the factors behind the success of the Dutch agribusiness is *the continuous process of increase in scale* of the Dutch supply and processing industry. Increase in scale leads to improved efficiency of industrial processes, i.e. lower costs per unit of product. Two kinds of economies of scale can be achieved: at the level of the location and at the level of the enterprise.

- Economies of scale at the level of the *location* are always product-specific. Increase at the level of the location was achieved through autonomous growth or through the combining of productive capacity after a take-over or merger.
- Economies at the level of the *enterprise* are mainly connected with non-material factors such as management and organisation, knowledge, experience and brands. These last mentioned factors can be used for a wide range of different products and become more important in the course of time.
- The increase in scale that determined the development of the Dutch supply and processing industries for most of the 20th century was initially a process of the concentration of production activities.
- C*o-operatives* have always played an important role in this process as cost reduction by large-scale production usually directly benefits the members of the co-operative. Continuous technological progress in production and transport has been of great importance in this process of concentration.

The scale of the supply and processing industry in the Yangtze Delta is also small. Some of the reasons in the past were that the government invested mostly in heavy industry, most farm products were under state control, people with limited income preferred to buy non-processed foods, and so on. An increase in the production of the supply and processing industry can be expected, in particular with respect to livestock production. This is due to a further increase in the consumption of animal products and changes in the agricultural production structure. The production share of specialised households and large commercial operations will increase. These farms and enterprises buy quality feeds from Chinese feed mills.

5.3 Internationalisation

Internationalisation and even globalisation of economy is a general trend in the modern world. This seems to be what happened in the Netherlands decades ago. Internationalisation can assume a variety of forms: exports *and imports* of products, issuing a license for knowledge or a brand, and foreign investments in production. In the case of the latter, an enterprise can opt for a joint venture with another enterprise, for the take-over of an existing factory, or for setting up a complete new company. The Dutch agriculture and food industry is very international in its orientation. In this respect, not only the export of products must be mentioned; it is also increasingly common for the companies to have production facilities abroad. Internationalisation can be seen as a growth strategy for the Dutch food industry.

As enterprises in the Dutch food industry expanded in the 20th century, they supplemented their export strategy with a strategy of foreign production, thus achieving economies of scale. To promote the export of agricultural and horticultural goods and processed foods, good knowledge about the target countries is necessary. To provide timely and reliable information to the Dutch agribusiness, the Department of Trade and Industry of the Dutch Ministry of Agriculture has established agricultural consulates in 35 countries in the world. The great success of the Dutch agricultural export has been based on the principle of comparative advantage and as a consequence to import a large quantity of land-intensive farm products. The extensive livestock and poultry sector cannot grow without big imports of feed grains, the application of this principle and the development of new advantages especially in R&D and marketing. This strategy has proved very successful for the last fifty years. This trade strategy is one of the most important 'secrets' in the success of the Dutch agrifood sector.

The international orientation of China's agricultural sector has been low. For a long time agricultural policies were directed at grain self-sufficiency even at provincial level. This made it difficult to make use of national and regional comparative advantages. As a consequence China's international agricultural trade was limited in size. In 1999 its share in China's total trade was about 7% and in world agricultural trade just under 3%. The policy goal of grain self-sufficiency on the national level was reduced to 95% in the 1990s. New possibilities for inter-regional trade in grains were also allowed. One of the effects of these changes was that during the late 1990s the Yangtze Delta could make more use of its comparative advantages.

New challenges after WTO

After its WTO accession China will greatly accelerate the reform and opening up process. This event will bring the country's agriculture into the field of the global competition and internationalisation. More foreign retail and processing companies will enter into Chinese market. An essential adjustment of agricultural production structure will be necessary in the coming years. The entire agribusiness chain must be transformed to meet the competition from abroad. As possibilities for making use of competitive advantages between and within regions are increasing, the area under land-intensive crops is declining fast in Shanghai, Jiangsu and Zhejiang. Production is becoming more diversified, and more farmers are specialised in more profitable products, including vegetables, flowers, poultry, and some export-oriented crops. However the quality of farm products must be upgraded to meet the demands of the world market. The food industry must grow fast to increase the value added of farm products. In this phase of development, internationalisation of the food industry in the Yangtze Delta is playing a minor role. The great potential of China's market will gradually be translated into actual purchasing power, so as to provide a huge open market to all countries and regions of the world.

Agricultural production structure will see a remarkable change in China, especially in the Yangtze Delta. The following trends can be expected:

- more land-intensive agricultural products (in particular grains and feed) will be imported;

- more labour intensive products like intensive livestock products, vegetables and other horticultural goods will be produced for export to neighbouring countries;
- food processing and drink industry will grow in size with more TVEs involved in this sector;
- more foreign capital will be poured into the production of some sectors with fast-growing demand (e.g. flower and dairy industry);
- it can be also expected that agriculture in the Yangtze Delta will become more capital-intensive in the coming decades. New knowledge and technologies will be applied in the specialised farms. Their number will increase, while less-competitive farmers will shift to other businesses. The total number of farmers will decline. Urbanisation is gathering speed and more urban residents (commonly with a higher income) mean a greater demand for better and diversified foods. This was the common trend in the developed countries, which will not be different in the Yangtze Delta.

6. Institutional framework

Institutions play an important role in the economic performance of the agribusiness. Some characteristics of the economic order of the Netherlands are a free, entrepreneurial organised production and distribution, competition that is generally regarded as desirable and which is promoted by the government and a continuous consultation between government and interest groups. All these characteristics also apply to agribusiness. In particular the public-private cooperation is an important factor behind the success of the agricultural sector: it is the oil that keeps the machine running smoothly. In this respect two kinds of statutory industrial organisations - the Agricultural Board (until the 1990s) and the Commodity Boards played an important role.

In the Agricultural Board the farmers' organisations and the organisations of the employees in agriculture are represented, while the organisations in the whole chain from producer to retailer are represented in the Commodity boards. The Crown appoints the chairperson of the Boards. The Boards have autonomous tasks, regulatory responsibilities and advise the government and the other members of their industry. The Commodity Boards want to offer services tailored to the demands of the industry, in order to strengthen its competitiveness. The Agricultural Board could be seen as a part of a relatively closed agricultural policy system (Green Front). This system has played an important role in the modernisation of agriculture. The system was characterised by close relations between the agribusiness, politics and the civil service apparatus. The agricultural policy was formulated by a small group of administrators and politicians who represented a joint mission: the development of Dutch agriculture and horticulture. There was a social consensus on that mission.

In recent decades China has been moving from a centrally planned economy to a socialist market economy opening the windows to the world economy. An important first step was the introduction of the Household Responsibility System (HRS) in 1979. By this system every farm household gets land and takes up the responsibility for their production decisions. The introduction of the HRS effectively boosted agricultural production for some years. During the years of the closed economy and even until recently, food self-sufficiency even at provincial level was an important policy aim. In 1999 the grain self-sufficiency policy was scrapped and nowadays each part of the country is encouraged to develop according its own comparative advantages.

Farms in China are very small. This has to be seen in relation to some important institutions. According to the land-tenure system land was allocated to each individual farm household in the village. As the population density in the rural area was high the available area per household was limited (less than 1/4 ha per family in most counties in the Delta). Also important in this respect is the household registration system, introduced in the mid-1950s. This system prevented migration from rural to urban areas, so there was no outlet for the growing surplus rural labourers, this resulted in a growing demand for land. Nowadays the rules of this system are relieved. An additional aspect of the land-

tenure system is that there is a risk of reallocation, so farmers have less incentive to invest in land improvements.

When other conditions are kept constant, technology is the key factor to promoting agricultural productivity. A recent example is the introduction of biotechnology in the production of cotton. The use of bio-cottonseed reduces the requirements of inputs and increases production per hectare.

However, when technological conditions are unchanged, then the institutional system is the key factor to determining the efficiency and productivity of agriculture. In other words, with the given technological conditions, the efficiency of all resources used in agriculture can be enhanced by improvement of economic systems. It will therefore be interesting to make further institutional changes. In addition to changes in the institutions mentioned in the section above, other examples can be mentioned. For example, a better functioning of the extension and research system can be of great importance to increase agricultural efficiency. Another example is the farmers' organisations, which are now missing, but which could also contribute to the improvement of the performance of the agricultural sector.

Part 2 Comparison at subsector level

7. Introduction

The comparison made in this part is based on four case studies: two for the Netherlands and two for the Yangtze Delta.

For the Netherlands, the case studies were made for horticulture under glass and for the dairy sector. The regional dimension is not considered because it is of less importance in a comparison between China and the Netherlands.

The Chinese case studies deal with all sectors in the studied regions. The regions in the Yangtze Delta were limited to Wujiang City and Chongming County. The sectoral dimension has not been considered as this is not important for the region. Most counties in the region have similar cropping patterns, production structures, technologies and a common market (mainly Shanghai).

In this part of the comparison we will deal with the dairy and horticultural sectors only at the sector level. This is enough to demonstrate the differences between our two countries and to reveal the potential and business opportunities.

8. Dairy

8.1 Introduction

In the Netherlands consumption of milk and dairy products is more or less stagnating whereas in China consumption is growing fast.

Dairy plays only a very limited role in China. The consumption of milk and dairy products as well as the production of milk is limited. In the Yangtze Delta and in particular in Shanghai consumption is much higher than the Chinese average, although production is lower than average. Part of the dairy products comes from other regions in China and from abroad. According to official statistics, the per capita milk production for the provinces of Jiangsu and Zhejiang was less than 3 kg, and for Shanghai Municipality about 18 kg. The dairy industry is in its very early stages in China as a whole. The average consumption of dairy products per capita is about 6 kg a year in the country.

On the other hand, the Netherlands has a high consumption of milk and dairy products. The consumption of drink milks, all types together, amounts to about 100 kg per capita. Besides the consumption of cheese, the consumption of ice cream and other dairy products is also high. However the market for dairy products is saturated. Dairy farming is one of the major agricultural sub-sectors. The dairy processing industry and trade in dairy products is well developed. Dairy production in the Netherlands surpasses consumption and an important part of production is exported.

8.2 Size and specialisation

In the Yangtze Delta a distinction can be made between big dairy farms and with only a few milk cows. Most of the big dairy farms are state farms, which are mainly located in suburban Shanghai. Big dairy farms can also be found on Chongming Island. Most of these farms are state farms with at least 100 dairy cows. The yield per cow on these farms averages 6,000 kg milk. Farms with one or two cows can also be found in Chongming. Together they keep less than 600 cows in total. These farms are mostly also involved in other agricultural activities. Many of them work partly outside agriculture. Livestock in Wujiang is of minor importance. There is no dairy farming during the time of the study. In the Netherlands the size of milk production per farm is bigger than in a Chinese farm household but smaller than on Chinese State farms. The Dutch farms with dairy cows are, generally speaking, specialised in milk production and most dairy farmers only work in agriculture. The average number of cows per farm was 50 in 1999 and the average milk yield per cow 6,800 kg. Besides the number of farms with dairy cows is decreasing and the amount of milk production per farm is increasing continuously. Over the last 25 years the number of cows per farm more than doubled and the milk production per cow increased by nearly 50%.

8.3 Technology

All state farms with dairy cows in the Yangtze Delta use milking machines. Milking in the private dairy farms is done manually.

The technology used in dairy farming in the Netherlands has mainly been aimed at increasing labour productivity. Three interrelated methods of achieving this can be distinguished:

- firstly, the increase of the number of cows per farm. This took part by enlarging the area of the farms and by increasing the number of cows per hectare. This last development was made possible by improving the production of feed, partly by increasing the use of fertilisers;
- secondly, the increase in milk production per cow. This was achieved, among others, by artificial insemination, concentrate feeding, cow identification for individual feeding and embryo transplantation;
- thirdly, the decline in the demand of labour. Important technologies in this respect were the introduction of the milking machines, the loose housing system with cubicles and the milking robot. An important change was also the introduction of the milk cooling tank and the change in the transport of milk to the processing industry. As a result the production of milk per hour of labour rose from less than 20 kg in 1965 to more than 100 kg in 1999. Besides milk quality was improved, among others, by milk control.

The modernisation process took part in close cooperation with the extension service, the agricultural banks and the processing industry. However, the initiative and responsibility for the modernisation was with the individual farmer. The government stimulated modernisation by interest subsidies (EU agricultural policies) and by guaranteeing loans. Nowadays government policies increasingly affect the production process by minimising the negative effects of dairy production as well as stimulating the production of a good living environment for pasture birds, a nice landscape etc.

8.4 Processing and marketing

Milk processing in the Yangtze Delta is not very well developed. Most of the milk processing takes place in suburban Shanghai. Chongming Island does not even have a milk processing plant. All the milk of Chongming has to be transported across the Yangtze River to Shanghai. Consequently consumption of milk and dairy products in Chongming is very limited. Dairy products for local consumption in Chongming have to be transported from Shanghai to the island. Due to the high transport costs of milk it was difficult for the state farms of Chongming to compete with the neighbouring suburban farms in Shanghai. This was reflected in the sharp decline of cow number over the past decade.

The demand for dairy products in Shanghai is relatively high and increasing. Cow milk production per capita is about three times as high as that for China as a whole. This reflects the difference in the consumption of dairy products by urban and rural residents. There are also huge differences in the consumption of dairy products between income

groups. For example high-income urban residents purchase four times as much fresh milk than low-income urban residents. In Shanghai the main products consumed are fresh milk, yoghurt and ice cream. For these products an important increase in consumption is expected in the next couple of years. Cheese consumption is low. Consumers of cheese are younger and enjoy a higher income and education and seek variety. Supermarkets are the favourite market outlets. For fresh milk home delivery is also an important distribution channel. A refrigerator is available in many households.

In the Netherlands transport and processing is largely in the hands of co-operatives, which are also specialised and owned by the farmers. The boards of the co-operatives consist of farmers who decide on the strategy of the co-operative. In the course of time the number of co-operatives has declined while the number of plants has decreased. In the 1950s nearly every major village in the dairy regions had a milk processing plant. With the improvement of the road infrastructure, the changes in the transport system and the economies of scale in milk processing, the number of processing plants declined, but each plant has become specialised in one or only a few dairy products - for example in the production of cheese, of consumption milk, of butter, skimmed milk powder etc. Cooling is a normal procedure in the whole chain on the farm, during transport and storage and in the consumer households. More than half of the production is exported. Most of the dairy production is sold on a contract basis to big retail organisations.

9. Horticulture

9.1 Introduction

Horticulture in the Yangtze Delta is becoming increasingly important. The general trend in this region is a decline in the area used for grains in favour of the area of horticultural products, in particular vegetables. This also applies to Chongming Island and Wujiang. In Chongming the area and output of vegetables in 2000 was five times higher than in 1990. In Wujiang the area of vegetables also increased considerably. Other horticultural products like fruit, flowers and nursery plants (for green cities, roads and public parks, as well as for families) also showed an increase in production.

Flower production is developing fast in the Yangtze Delta. However, there are some factors which affect its further expansion: The production cost for flower production is also high; flower growers must have special expertise; they face relatively high risks because the market is less developed and limited.

In the Netherlands horticulture plays an even greater role than in the Yangtze Delta. The area with vegetables however, has not increased in the last few decades. However, the production per m^2 rose considerably. For example the production of tomatoes per m^2 grew from 8 kg in 1954 to 47 kg in 1996. On the other hand the area with flowers, plants and bulbs increased continuously as a result of the worldwide growth in demand. The biggest share of production is exported to other countries.

9.2 Size and specialisation

In the Yangtze Delta the size of horticultural farms is limited, and mainly involves farm family labour. Another constraint has been the lack of funds and risks at market. There is no special co-operative to sell their products. There is some regional specialisation. Some villages are specialised in the production of only one or a few products. Specialisation was mainly due to the fact that the skill was inherited from generation to generation (for example, growing mini-trees for bonsai). It was also partly due to the leading role of bigger farmers and the more flexible policies of local government.

In the Netherlands the size of horticultural farms is on average much bigger than that of other farms. Most of the farms employ hired labourers. Regional specialisation also plays a role in the Netherlands. However, even more important specialisation at farm level. Most horticultural farmers are specialised in the production of only one type of vegetable or one type of flower.

9.3 Technology

To increase crop area, double or multiple cropping patterns are widely used in the Yangtze delta. Plastic tunnels are commonly used to increase the growth season for vegetables. It is possible to grow most vegetables in winter. Vegetables are grown in open areas in the summer. One of the most important technologies deals with pest and disease control. The use of agri-chemicals has had some negative consequences. Organic methods are of control are not commonly applied. Another concern is polluted water or groundwater, because the vegetables are always grown in irrigated area. Some of the consumers in Shanghai prefer 'organic vegetables' at a higher price. These kinds of vegetables are imported from the neighbouring provinces, too. An easy-to-test technology is necessary to check the quality of the farm produce. The changes in technology used in Dutch horticulture are closely related to economic and social developments. During the period of reconstruction after World War II much attention was paid to soil fertility, plant protection and improving varieties. The conversion from hotbeds to greenhouses considerably improved labour productivity. Extension and research operated as troubleshooter and problem solver for individual growers. The auctions played an important role in knowledge exchange.

The years 1965-1980 can be characterised as a period of unprecedented growth. During this period much attention was paid to greenhouse heating, climate control and planting material. Conversion to natural gas and mechanisation of climate control and harvesting/grading strongly improved labour productivity. There was a strong co-operation between government and practice. The knowledge system played a leading role in this co-operation.

The years 1980-1993 can be seen as a period of application of computer technology. The personal computer enabled the application of many new technologies like conversion to substrate culture, trickle irrigation and CO_2 application. The knowledge system strongly supported the introduction of these new technologies by providing knowledge on climate control and development of management systems. The auctions also gave support through data-processing facilities. Moreover, they developed guidelines for environment-friendly cultivation.

The years 1993-2000 can be seen as a period of change to a demand-driven economy. The knowledge system and the marketing system underwent radical changes. Both extension and research were privatised and started work on a contract basis. The horticultural sector established a research coordination bureau to translate growers' problems into research questions and to negotiate specific contracts with research stations and institutes.

9.4 Marketing

The marketing chain for fresh vegetables seems to be developing quickly in the Yangtze Delta, rising to a higher standard. The municipal as well as district (and county) authorities have set up a number of wholesale markets. It is reported that some large international supermarkets are also developing their own market channels in the production region to reduce cost and guarantee the quality of farm products. However, the open markets still

dominate the vegetable market. The main reasons for buying vegetables in the supermarkets are convenience and product cleaning. Flower consumption in Shanghai is increasing considerably, although the absolute volume remains limited. The most important users of cut flowers are companies and government agencies (for special events, etc.). Families on an average income generally buy flowers for friends (as a gift) or for important festivals. The use of flowers is expected to accelerate in the next few years. Flower consumers are younger, have a higher income, are well educated and seek more variety than the average consumer in Shanghai.

The market for horticultural products after the World War II favoured the development of the horticultural sector in the Netherlands. Liberalisation of the EU-market gave a strong impulse to export vegetables and flowers. The growth of the market and the changes in the market were translated by a growth of production and by a change in the composition of the production. The total greenhouse area in the Netherlands expanded from about 3,330 ha in 1950 to over 10,000 ha in 2000. In addition the output per m^2 increased considerably. The evolution was different for the different crop groups. In the period 1950-1965 the area expansion largely came from vegetables. In the period 1965-1980 the area expansion largely came from cut flowers. From 1980 onwards pot plants and tree nurseries were responsible for area expansion. On the other hand the production of fruits (e.g. grapes) largely disappeared.

The auctions played an important role in the development of Dutch horticulture. The auctions, co-operatives of growers, were a selling place for horticultural products. However, the functions of the auctions were broader. The auction was also an important meeting place for growers providing them with access to market information and enabling them to exchange technical experiences with each other. In addition, the auctions play a crucial role in the financial transactions between growers and traders. The auctions guarantee the growers payment for their products. The traders on the other hand are not allowed to transport their products before providing a payment guarantee to the auction. Next, the auctions were asked to withhold a small percentage of each grower's sales as fund raising for research. Further the process of market expansion was accompanied by sales promotion by the auctions. The auctions also played an important role in the provision of management information to their members/growers. Lastly the auctions introduced tracing and tracking systems and promoted the environmental consciousness of the greenhouse sector.

A major development in the 1980s was the emergence of big supermarket chains disturbing established relationships between supply and demand. Initially they responded with mergers in order to restore mutual competition among the supermarkets. On the other hand they started experiments with price/supply negotiations through agencies. At the same time the supermarkets started making production contracts with individual growers. In the 1990s the market for horticultural products changed further from supply-driven to demand-driven market. Growers' associations were established to meet the specific needs of exporters or supermarkets. The auctions developed from a market place to a market partner: price negotiations with exporters and buying departments of supermarkets became more common. Chain integration was the result of the above-mentioned developments. Cooperation in product development between producer and retailer became more and more common practice.

10. Conclusions

The objectives of this project are twofold:
- What can China learn from Dutch agriculture?
- What business opportunities does China offer Dutch agriculture?

There is a close relationship between these two objectives: where China can learn from the Netherlands are mostly also the fields for business opportunities for the Dutch agribusiness. In this part of the comparative analysis we will make some conclusions focussing on the business opportunities for Dutch agribusiness.

The consumer market for agricultural and food products is growing fast and is changing in composition. This is due to urbanisation and income growth. As a consequence important changes are taking place in the agricultural production structure and in the marketing and distribution systems. These developments offer opportunities for foreign companies, in particular after the accession of China to the WTO. However it has to be realised that not only trade policies but also factors such as local policies and bureaucracies can restrict entrance and functioning of foreign companies in the Chinese market and work in favour of domestic companies. However it is interesting for the Netherlands that agricultural production and consumer markets are increasing in products in which the Netherlands have comparative advantage. Two types of opportunities can be distinguished: opportunities in the consumer market and opportunities in the development of Chinese agribusiness.

There are opportunities for the export of Dutch products to the Chinese consumer market. However, these possibilities seem to be limited due to the distance to this market. In this respect the development of (foreign) hypermarkets may prove interesting as they have relatively more import products in their stock.

Most of the opportunities are concerned with the development of the Chinese agribusiness. These possibilities have to be seen in close relation to the development of the Chinese consumer market and the development of the Chinese agricultural and economic policies. The improvement of the efficiency of the distribution system will probably result in a reduction of the number of layers in the distribution system and stimulate enlargement and specialisation of farms. Three kinds of 'opportunities' can be mentioned.

Many of the opportunities are concerned with the transfer of knowledge and technology. This transfer can take several forms: transfer of technology embodied in products, transfer of knowledge as such, and a combination of both. Best prospects seem to exist for the transfer of the combination of embodied and disembodied technology.

In addition contributions can be made with respect to management and marketing. Improvement of management systems will contribute to the economic efficiency of the agricultural sector. The same applies to marketing systems. The improvement of these systems will increase the efficiency in the product chain and reduce farm-retail margins.

Lastly not only technology transfer and improvement in management systems but also changes in institutions can boost economic efficiency. Up till now there have been a number of institutions in China that hamper economic efficiency of the agricultural sector. Many of them are concerned with the use of the production factors labour, capital and land and water. In this respect China can learn from the institutions that function in the Netherlands.

The dairy sector is a good example of an agricultural sector where China can learn from the Netherlands. The consumption of dairy products is expected to expand considerably in the next ten years, largely due to strong income growth and rapid urbanisation. The urban population consume more dairy products than the rural population, while high-income urban residents drink four times as much milk as low-income urban residents. The growing demand requires not only an increase in dairy production but also the development and improvement of the whole chain from producer to consumer.

From the different development stages of the dairy sector in China, differentiated technologies are needed in this big market:

- the development of the primary sector might go into the direction of specialised family farms in the hilly regions;
- for big dairy farms (mainly state farms) with hired labourers in peri-urban regions. More advanced technologies will be introduced to improve their quality and efficiency;
- more advanced technologies are also urgently needed to improve the feed base in the traditional agricultural areas that have newly developed dairy herds, e.g. the supplies of high-yielding grass seeds, silage etc.

The scale of the dairy processing industry is limited and will probably only increase gradually. Business opportunities exist for the whole chain from feed production, feed conservation and storage, feeding techniques and feeding equipment in the first part of the chain up to marketing and distribution at the end of the chain. For the chain as a whole it is important to strengthen veterinary services to prevent disease and to meet hygiene standards. This offers business opportunities for supply industries, not only for the supply of products, although this should be combined with transfer of technology and knowledge (management, marketing etc.). In addition opportunities for the export of dairy products to China will improve as import tariffs are reduced according to the WTO accession agreement. The import tariffs for butter, yoghurt and sweetened milk will be reduced from 50 to 10%, for cheese from 50 to 12%, for milk powder from 25 to 10% and for ice cream from 45 to 19%.

The horticultural sector is a second sector where China can learn from the Netherlands. Further growth of this sector in China can be expected for a number of reasons. In the horticultural sector too, attention must be paid to the development and improvement of the whole chain from producer to consumer. In the primary sector the development has two sides; one is the development of small-scale horticulture using more traditional techniques and the other is the development of bigger units of production using more modern techniques and equipment. The improvement of vegetable production, among others, by using better seed and introducing new varieties will play an important role. The Chinese market has great potential for floricultural products. Important business

opportunities exist in this sector however, although these opportunities have been limited until now due a lack in the protection of breeder's rights.

The food pattern of the Chinese population is changing, partly due to the popularity of fast food companies like McDonalds, Kentucky Fried Chicken, Domino, Pizza Hut, etc. This will have not only an impact on the consumer behaviour of young people, but in the longer term also on the older generation (mainly in large cities). In this respect an increase of the consumption of bread and dairy products might be expected. The demand for high quality potatoes will also increase further. Until now it has seemed to be difficult for Chinese farmers to meet the quality standards of the fast food companies. Business opportunities exist not only for seed potatoes, but also for the processing industry etc.

As a consequence of the growth of wealth, an increasing number of people worry more about their health and the quality of food products. This is the reason for the small but increasing market for organic products. However it is difficult for China to meet the quality standards, partly due to the lack of a well functioning system of inspection. This offers business opportunities for the development of a market chain of organic products, especially in the more wealthy eastern part of China.

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