



MARKETING OF VEGETABLES IN CHINA CASESTUDY TIANJIN

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PREFACE

The development of China towards a market led economy has substantially stimulated vegetable production. Within a short period, the vegetable industry has shifted from a shortage to a surplus economy and has to meet an increasing demand for high quality food, due to consumer concerns with respect to health and environment. In Tianjin, the fourth largest city of China, the vegetable production is mainly based on small size, single-household units. In this context LEI took the initiative for a project to improve the vegetable supply chain in Tianjin. For that purpose a consortium of Dutch and Chinese research institutions and private companies was established. The project, carried out from November 2000 till November 2002, was supported by the Asia-facility, a subsidy programme of the Dutch government to strengthen the co-operation between the Netherlands and countries in Asia. The project resulted in direct improvements in the vegetable supply chain with respect to production and marketing by seminars, courses and on-the-job training. The project progress and results are described in a concise final report "Strengthening research and extension on sustainable vegetable production and marketing in Tianjin" and separate reports on (a) marketing, (b) consumer preferences, (c) the use of agro-chemicals (farm monitoring), and (d) extension in Tianjin.

This report includes a description of the changes in the market structure in the last twenty years in China, the introduction of Dutch vegetables in Tianjin, an analysis of the export opportunities for Chinese growers and an evaluation of the marketing activities of the "Tianjin Agricultural Demonstration Centre (TADC)".

We express our thanks to our Dutch and Chinese partners in the project, in particular the staff of the institutions and companies who were directly involved in the project as well as the growers at the different project locations. We would also like to thank the Tianjin government for its valuable financial and institutional support.

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SUMMARY

Tianjin vegetable production and market structure

Tianjin is one of the major cities of China, located about 120 kilometres southeast of Beijing with a population of about 10 million. It is one of the four towns in China that have the status of province. About 40 % of area in this urban rural conglomerate is in use for agriculture, but the contribution to the local economy is rather low. The development of Tianjin vegetable production can be separated into two stages: before and after the economic reform. During the central planning period, the Tianjin government had a detailed planning for the allocation of the vegetable production, the selection of crops and varieties and the distribution. Following the economic reform policy of the central government, the state-owned production and distribution system was dismantled and a large number of open street markets and wholesale markets came into development. There are currently four centre wholesale markets in Tianjin, amongst 16 middle size wholesale markets and hundreds of small local wholesale markets.

During the 1990s the area of protected land increased substantially resulting in an explosive growth of the production of vegetables. Within a short period the Tianjin vegetable industry shifted from a shortage to a surplus economy. As a result of the rising income and some severe food contamination incidents, the Chinese consumers are becoming increasingly concerned about food quality and safety. In response to that the Tianjin government started a new program in 1999 called "Pollution Free Vegetables" (PFV). The PFV programme is enhancing the production of healthier food by the introduction of certain production standards. The standards are lower than those of the "Green Food" certificate that is issued by the Central Ministry of Agriculture.

The introduction of Dutch varieties

In the framework of the Asia facility (a Dutch subsidy programme) a project has been carried out to support the Tianjin vegetable sector in developing a client oriented production and marketing approach by introducing the supply chain concept. For that purpose a consortium of Dutch and Chinese research institutions and private companies have been established. The major Chinese partner in the project was Tianjin Agricultural Demonstration Centre for New and Advanced Technology (TADC), which is part of the Tianjin Academy of Agricultural Sciences. The demonstration centre has modern facilities for tissue culture, a nursery greenhouse, two large French double-deck green houses (total 10,000 m²), 22 Chinese "sunlight" greenhouses (cultivated area 350 - 550 m²), ten cool stores and facilities for sorting and packaging. In addition to TADC, two other locations in Tianjin municipality, Liu Fu and Dang Cheng in Xinkou town were included in the project. In total a number of 80 greenhouses were included in the project, most of them Chinese "sunlight greenhouses", plastic covered greenhouses of about one mu (1 mu = 667 m²). The project (Rijk Zwaan) provided the growers with seeds Dutch varieties of mini cucumber, tomato, sweet pepper and eggplant. Although the Dutch varieties are known for their strong resistance against diseases, it appeared difficult for the growers in Tianjin to control diseases and pests. The yields were on an average far below the results in other production regions in China. In the spring season 2001 the average yield of tomatoes was about 3.5 - 6.5 kg per m², for mini-cucumber 2.5 - 5.0 kg and for eggplant and sweet pepper even less than 2 kg per m². The sweet red peppers grown in the autumn season of 2001 were harvested before colouring red, because of the high heating costs and the decreasing prices. The poor results in Tianjin were partly caused by unfavourable physical (soil and water quality) and climatic conditions, but more important was the lack of knowledge, experience and skills of the staff and the workers in the greenhouses.

Market prices

The market prices for vegetables fluctuate considerably over the seasons. Generally speaking, prices are high in winter and early spring, and are low in the summer. Vegetable prices reach their peak during Chinese Spring Festival, normally in the beginning of February. TADC got relatively high prices due to some specific features of its products. Firstly, TADC is selling its products under the PFV label, meaning that the products meet the standards of Pollution Free Vegetables. Secondly, TADC sells a major part of its products sorted according to certain grading standards.

The third reason for the high prices is the variety of the crops. TADC is mainly selling Dutch varieties, which are rather popular in the Chinese market. The average price of the Dutch varieties is higher than that of the Chinese varieties, in particular for mini cucumber. Both mini-cucumber and cherry tomato are perceived as very tasteful and consumed as fruit. The introduction of sweet coloured pepper was not that successful, partly because of consumer preference for green peppers and the fact that TADC did not succeed in getting the red peppers ready for harvesting at the spring festival. There were also severe problems in selling the Dutch variety of eggplant, because the consumers in Tianjin preferred the traditional round shaped eggplants above the long shaped Dutch variety.

Export

Shouguang, the capital of Shandong province, is one of the biggest vegetable production and marketing bases in China. Traders at the Shouguang markets are mainly focusing on domestic customers and ship vegetables to all major towns in China. In the winter season the vegetables are traded from the South to the North via Shouguang and in the summer time vice-versa. A growing part of the vegetables produced in China is exported. The major importers of Chinese vegetables are Japan, South Korea, Russia and other Southeast Asian countries. Chinese vegetable exports to Japan are based on the advantage of lower production costs while the trade to Russia and Southeast Asia is mainly based on the advantages of differences in growing seasons. The export to Japan consists mainly of long shelf life and processed products while to Russia and South-east Asia mainly fresh produce are exported. Russian traders have more specific grading requirements for tomatoes than the southeast traders. Japanese customs are most strict in terms of residue checks. The most common transport mean over land is trucks. With the improvement of infrastructure in China, it is expected that the transport time will shorten in the near future, which will encourage the trade of fresh vegetables.

Tianjin Agricultural Demonstration Centre for New and Advanced Technologies

At the start of the project TADC sold its produce mainly via wholesale and street markets. During the project period TADC succeeded in finding new outlets. Contracts have been concluded with retailers, supermarket chains and traders. An agreement was signed with an exporter to Russia. In order to strengthen its position on the market, TADC established a commercial subsidiary "Tianjin Nongpeng Agricultural Development Co. Ltd". Nongpeng is responsible for the commercial functions of TADC and strengthened its position as an intermediate between growers and traders. Over the year 2001 TADC sold about 40% of the production to supermarkets, 30% through the wholesale market and the rest at TADC itself. It is expected that they will expand their clientele, conclude new contracts with supermarkets, retailers and traders and sell more produce via wholesale markets in Tianjin and Beijing. To ensure sufficient supply TADC founded an association of public and private rural enterprises in vegetable growing, "Tianjin Country Special Technological Confraternity" (CSTC). To improve the logistics TADC has invested in sorting, grading and packaging equipment and is planning to purchase a cold storage truck. The centre and its associates focus on the top-level market with Dutch and Chinese vegetables of high quality.

Recommendations

In order to improve the competitive position of TADC/Nong Peng in the vegetable market it is highly recommended by the Dutch project team to focus on quality: a higher price for Dutch varieties can only be realized if the quality of the produce is excellent, because there is an abundant supply of Chinese vegetables with an average quality. Product certification, grading, sorting, packing and cooling are important elements in such a quality strategy. The 'Pollution Free Vegetables' certificate is for the clients a guarantee for high quality produce, which can be strengthened by adequate grading and packing. The major bottleneck in the TADC vegetable supply chain, however, is not in marketing and logistics, but in farm practices. The first years of the production of Dutch varieties in Tianjin have shown that there is a lack of knowledge on growing techniques at TADC and the other project locations, resulting in low yields and low quality produce. It will be absolutely necessary to improve crop management in order to acquire and maintain a sustainable position on the market.

1 PROJECT BACKGROUND

Problem statement

The transition of China towards a market led economy has substantially stimulated vegetable production. Within a short period, the vegetable industry has shifted from a shortage to a surplus economy and has to meet now an increasing demand for high quality food due to consumer concerns with respect to health and environment. In Tianjin, one of largest cities of China about 120 km southeast of Beijing, the vegetable production is mainly based on small size, single-household units. The major market outlets are the large urban centres of Tianjin and Beijing, but Tianjin is also the second largest harbour of China (next to Shanghai) which creates opportunities for exporting vegetables to the South-East Asian markets (including Japan). However, currently the vegetable sector is hampered by the use of low quality seeds and inadequate production and marketing approaches. The research and extension infrastructure, which should support the growers in these fields, is insufficiently market oriented and does not effectively reach the growers.

Objectives

In this context the Tianjin Academy of Agricultural Sciences (TAAS), which plays an important role in the development of the agricultural sector in Tianjin, looked at possibilities for support by Dutch institutions and companies given the advanced horticultural industry in the Netherlands. A Dutch subsidy programme for enhancing public-private partnership between the Netherlands and Asian countries ("Asia facility") gave the opportunity for starting a joint project in the vegetable sector. For that purpose a consortium of Dutch and Chinese research institutions and private companies was established. The major objectives of the project were:

- To strengthen the research and extension capacities of TAAS;
- To foster the development of sustainable vegetable production by small growers in Tianjin;
- To improve the effectiveness and efficiency of the vegetable marketing chain in the Tianjin area.

The results of the project are described in the final report "Strengthening research and extension on sustainable vegetable production and marketing in Tianjin". The report at hand mainly deals with the third objective: to support the Tianjin vegetable sector in developing a client oriented production and marketing approach by introducing the supply chain concept. In other project reports the results of a farm monitoring study (Plant Research International) and a consumer survey in Tianjin (LEI) are published. Another report provides a description of the current extension system in Tianjin and recommendations for adjustments towards a more client oriented system.

Activities

The major partners in the project were the Tianjin Agricultural Demonstration Centre for New and Advanced Technology (TADC) (a subsidiary of the Tianjin Academy of Agricultural Sciences (TAAS), Wageningen University and Research Centre (Wageningen-UR) and the Dutch seed company Rijk Zwaan. Furthermore, a group of pilot farmers has been selected from communities in Tianjin for inclusion in the demonstration and training activities. During the two years of project implementation, from November 2000 till December 2002, activities have been carried out around three dimensions: crop management, marketing and extension. The Agricultural Economics Research Institute (LEI) had the lead in the project. Rijk Zwaan provided vegetable seeds of different crops and varieties to the involved growers. Stolze BV installed a modern fertigation system in three greenhouses at the demonstration centre. Plant Research International (PRI) set up a farm monitoring system to collect and analyse data on inputs and outputs in vegetable production in Chinese greenhouses. The activities of LEI were focussed on market research and chain management and LEI staff contributed also to improvements of the demonstration and extension capacities of TADC together with the International Agricultural Centre (IAC). Staff of TAAS and the extension bureau of Xinkou town were trained in different aspects of the supply chain in the Netherlands and on-the-job in China.

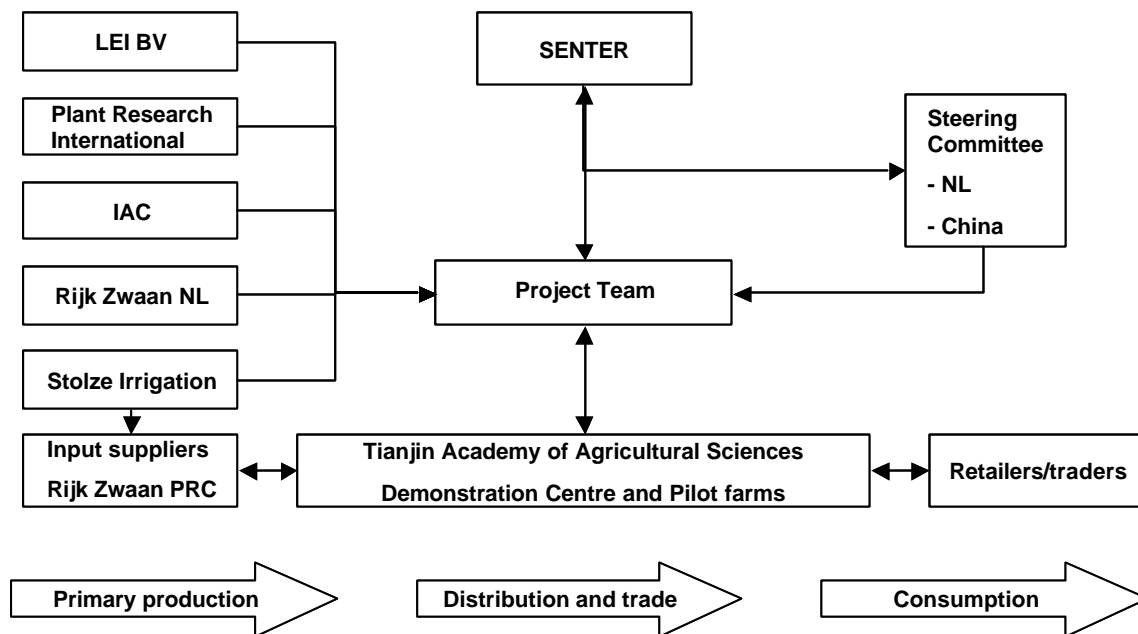


Figure 1.1 Project organisation

Contents of the report

This report describes and evaluates the marketing activities of the "Tianjin Agricultural Demonstration Centre (TADC)" during the project period (2000-2002) within the context of the dynamic economic changes in China. The following chapter gives a short overview of the major changes in the production and market structure in Tianjin following the economic reform in China during the last twenty years. Chapter 3 consist of an analysis of the production and marketing results of Dutch vegetables at TADC. Export is becoming increasingly important for Chinese horticulture and for that reason a survey on export opportunities has been carried out in the Shangdong, one of the most important Chinese provinces for vegetable production and marketing. The results are included in chapter 4. After that marketing activities of TADC are evaluated by means of a SWOT analysis, resulting in some recommendations to improve the competitive position of TADC in the Chinese vegetable sector.

The information for this report is gathered by:

- Observations and conversations during field trips;
- Written and oral information from Chinese counterparts;
- Presentations and discussions during project seminars;
- Data collection by Chinese counterparts.

2 TIANJIN VEGETABLE PRODUCTION AND MARKETING

2.1 Tianjin introduction

Tianjin is one of the major cities of China, located about 120 kilometres southeast of Beijing. The Tianjin conglomerate has a population of about 10 million and is one of the four towns in China that have the status of province (like Beijing, Shanghai and Chongqing). Tianjin is the largest industrial centre of Northern China. It has the fifth container harbour of China and a large cargo airport. Foreign companies consider the Tianjin Economic Development Zone (TEDA) as an attractive location for investments. More than a quarter of the hundred largest companies in the world have branch in Tianjin. As a result the average income per capita in Tianjin ranks on the fourth place after Guangdong, Shanghai and Beijing.

About 40 % of area in this urban rural conglomerate is in use for agriculture, but the contribution to the local economy is rather low. In the last two decennia the production has increased a lot thanks to land reform and liberalisation. The processing industry, however, is still lagging in development. One of the spearheads in the agricultural development is the dairy industry. Multinationals like Friesland Coberco, Parmalat en Nestle and large Chinese dairies as well produce in Tianjin milk and milk products for the Chinese market. The Tianjin municipality government supports the modernisation of vegetable, fruit and flower industry in order to strengthen its position on the domestic market and foreign markets, like Southern Korea and Japan, as well.



Figure 2.1 Location of Tianjin in China

2.2 The reform of the marketing structure in Tianjin

The development of Tianjin vegetable production can be separated into two stages: before and after the economic reform. Although China's reform started in the late 1970s, the real liberalisation for vegetable sector began only in the late 1980s. During the central planning period, the Tianjin government had a detailed planning for the allocation of the vegetable production, the selection of crops and varieties and the distribution. The main marketing policy before 1990 was "Total Procurement and Total Sale": "Total Procurement" refers to "the total production of all farmers is purchased" and "Total Sale" refers to "the total purchased production is sold". The Tianjin Vegetable Company (TVC) played a centre role in the implementation of this policy. In all vegetable production regions, TVC had its own vegetable collecting stations. Farmers could only deliver their produce to these collecting stations or to the "Supply & Marketing Co-operative", which was also controlled by the government, at fixed prices. At the distribution side, the TVC had a vegetable distribution centre (total 12) in each urban district. After having received the vegetables from the collecting stations, these distribution centres redistributed the vegetables to all state-owned vegetable shops (around 300), where consumers could buy the vegetables at government (subsidised) prices. The flow chart of Tianjin vegetable supply chain in the pre-reform period is given in Figure 2.1. Every year, the Tianjin municipality government had to allocate a huge amount of budget to the TVC in order to compensate its operational costs and losses. Despite that, this central planning system did not ensure effective production and distribution of vegetables, given the shortage of vegetables among the urban consumers.

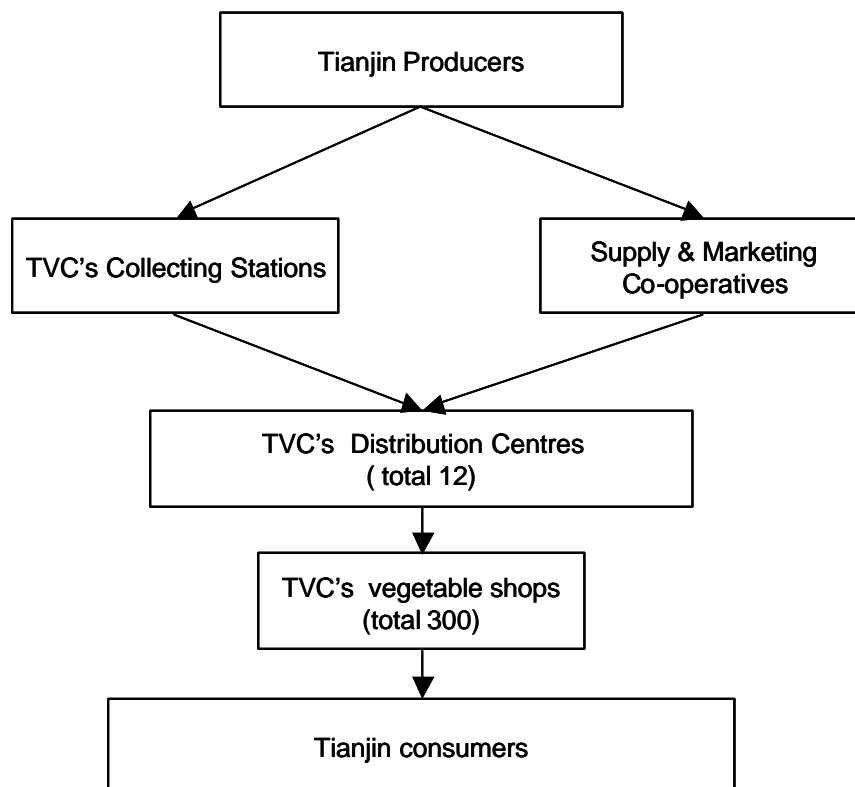


Figure 2.2 The flow of vegetables in Tianjin during the Central Planning Period

Following the economic reform policy of the central government Tianjin government gradually reduced the fiscal subsidies to TVC starting in 1991 and by 1993 TVC became a completely independent commercial company. The traditional distribution centres and vegetable shops were either closed down or used for other purposes. While the old market system was shutting down, open (street) markets and wholesale markets were rapidly developed with the government permission and even encouragement. Currently, Tianjin has four large wholesale markets,

sixteen middle sized wholesale markets and hundreds of small local street markets. In 1999, the total vegetable transaction volume was around two million tons, of which half was traded at the four big wholesale markets.

There are around 600 open markets spread over the rural and urban areas of Tianjin. Farmers are free to deliver their produce to the open markets or the wholesale markets are directly to retailers or traders. Transaction prices are not fixed by the government anymore, but formulated on the spot at the markets through bargaining. More than one third of Tianjin vegetables is estimated to be transported to the Northeast and North-west of China, taking advantage of the seasonal differences in the vegetable supply compared with Tianjin. The current vegetable flow chart in Tianjin is presented in figure 2.3.

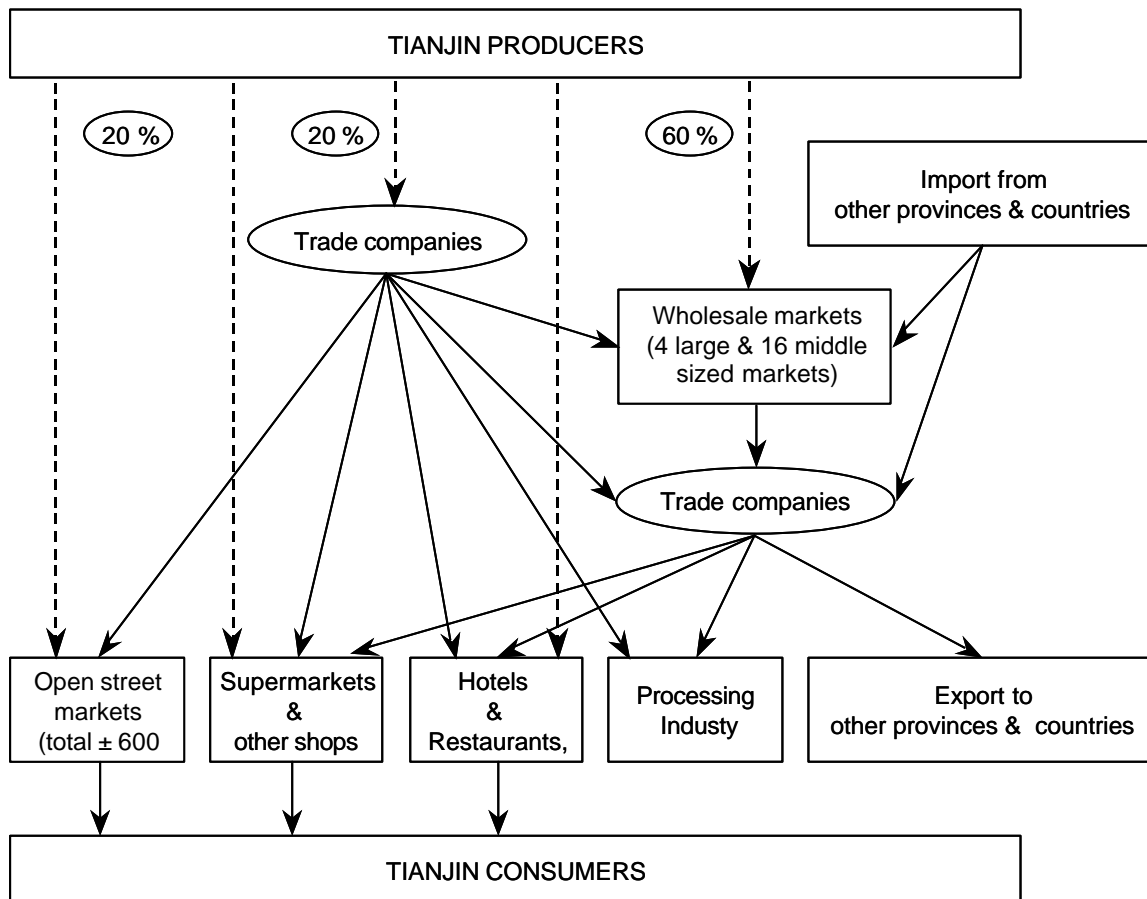


Figure 2.3 Current flow of vegetables in Tianjin

2.3 Recent developments in the Tianjin vegetable sector

In addition to the market reform the Tianjin government set up special funds for the vegetable sector to stimulate the use of new varieties and new technologies and for the development of protected land. A series of new varieties was introduced and the number of vegetable varieties sharply increased to about 200 in the year 2000 from the original 30 before the reform. The sown area of vegetables increased continuously during the last three decades and now ranks at the third place, after wheat and maize. In the 1970s and 1980s, most of the vegetables were grown in the open field. In 1987 the protected vegetable area was only 5,000 mu (1 mu = 0,067 ha; 1 ha = 15 mu). During the 1990s, the area of protected land expanded substantially. In 1996 the area was 42,000 mu and in 1999 more than 300,000 mu, of which 62,000 mu green houses, 58,000 mu large plastic tunnels and 180,000 mu small tunnels. The production of vegetables showed an

explosive growth since 1985 and reached 5,200,000 tons in 1999, as it is shown in figure 2.4. Within a short period, Tianjin vegetable industry shifted from a shortage to a surplus economy.

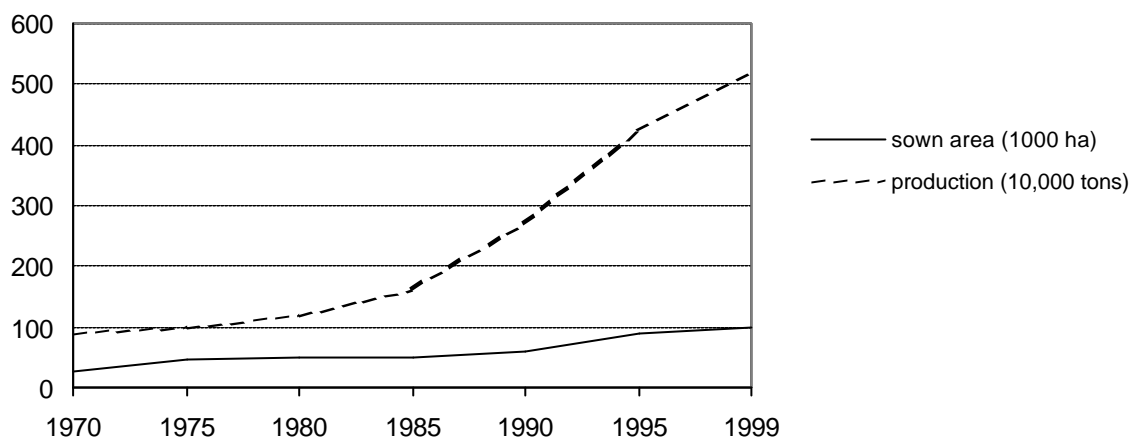


Figure 2.4. The Development of Tianjin Vegetable Production and Sown Area since 1970
(Source: Fifty Years of Tianjin)

2.4 Food safety policy in Tianjin

As a result of the rising income and some severe incidents with food contamination, the Chinese consumers are becoming more concerned about the quality and safety of vegetables. In response to that Tianjin government started a new programme in 1999 called "Pollution Free Vegetables" (PFV). The PFV programme is enhancing the production of healthier food by the introduction of certain production standards. The PFV programme is an initiative of the Tianjin government and the standards for getting a PFV certificate are lower than those of the "Green Food" certificate that was issued by the Central Ministry of Agriculture. In order to obtain the certificate, various criteria have to be met with respect to:

- Production environment;
- Production technology;
- Product quality.

The production environment refers to the quality of soil, ground and irrigation water and air. The criteria for the production technology include regulations with respect to pest and disease control, the use of pesticides, the promotion of Integrated Pest Management (IPM), crop rotation and the use of organic fertilisers. The product quality for non-pollution vegetables is regulated in standards with respect to the product appearance, packaging and labelling and a sanitary index, mainly referring to the contents of heavy metals (As, Hg, Cd, Pb, F, etc.) and chemical residues. The criteria are enacted by the Tianjin Agricultural Bureau. This bureau is also responsible for the implementation of the programme and for issuing the "Pollution Free Vegetables" production certificates. Up to now, 35 production sites have obtained this certificate, which allows them to sell their produce under the PFV label. The total area of PFV amounts to about 20,000 Mu with a yearly production of about 50,000 tons of vegetables. With government support, three distribution centres have been set up for specially marketing the Pollution Free Vegetables, while several supermarkets also have special shelves for these products.

3 THE INTRODUCTION OF DUTCH VEGETABLES IN TIANJIN

3.1 Production conditions

The major counterpart in the project was Tianjin Agricultural Demonstration Centre for New and Advanced Technology (TADC). TADC was founded by TAAS in 1998 with financial support of the Tianjin government to foster the introduction of new technologies from other provinces in China and from foreign countries. The total area of the demonstration centre is 44 hectares. The demonstration centre has modern facilities for tissue culture, a nursery greenhouse, two large French double-deck green houses (total 10,000 m²), 22 Chinese "sunlight" greenhouses (cultivated area 350 - 550 m²), ten cool stores and facilities for sorting and packaging. In addition to that the centre has a demonstration hall and several meeting rooms. A large part of the area is in use for fruit, vegetables and flowers in the open, but the intention is to construct gradually more (different types of) greenhouses. The greenhouses in the project were built in 1998/99. In autumn 2002 twelve plastic tunnels (of about 600 m²) were built in order to increase the production capacity.



Figure 3.1 Tianjin Agricultural Demonstration Centre for New and Advanced Technology

In addition to TADC, two locations in Xinkou town, Liu Fu and Dang Cheng were included in the project. In Liu Fu the village had financed the greenhouses built in 1999, while six farmers/shareholders were responsible for growing and marketing the crops. Seasonal labourers, however, provided most of the labour. The situation in Dang Chen was different. Forty growers established a Growers' Association for Pollution Free Vegetable Production on the instigation of the Xinkou Agricultural Bureau. Seven out of these forty growers built 35 new greenhouses. These seven were selected by the Bureau and received loans from an agricultural bank to build the greenhouses. The Xinkou government guaranteed these loans but the seven concerned growers were personally responsible for the repayment.

In total a number of 80 greenhouses were included in the project, most of them Chinese "sunlight greenhouses", plastic covered greenhouses of about one mu (1 mu = 667 m²). These greenhouses have a brick or clay wall of about 3 meters high and 50 - 80 meters long on the northern side and a plastic dome on the southern side, which can be covered by roll down natural fibre screens (See the pictures in this report). They provide sufficient passive solar energy collection for fall and spring and require supplemental heating in winter.



Figure 3.2 The project locations in Xinkou town: Liu Fu and Dang Cheng

The climate in Tianjin is warm, semi-dry to humid. In January the average low temperature is about minus 8 degrees Celsius and the average high temperature is about 31 degrees Celsius. Annual rainfall is on average 560 mm, 80 % of which falls between July and September. Due to the cold winter and the hot summer mostly two crops are grown each year, one from late winter until summer and another from late summer till winter.

The spring season for vegetables in non-heated greenhouses starts with sowing in January/February, transplanting takes place in March and the harvesting time last from March till July (until the heat is too much in summer). The seeds for the autumn season are sown in July/August and after transplanting in August/September the harvest last till December/January depending on the temperature.

If the greenhouse is heated, the harvesting time of the autumn crop can be extended until the new planting in March. Heating can be very profitable because of the high market prices before and during the Spring Festival (Chinese New Year) in February.

3.2 Yields per hectare

The project provided three times seed material, for the spring season 2001, the autumn/winter season 2001/2002 and the spring season 2002. The selection of crops and varieties was done in consultation between Rijk Zwaan, TADC and the growers at the other locations. The focus was on four crops: mini cucumber, medium-sized tomato, sweet pepper and eggplant of which different varieties were delivered. In December 2000, Rijk Zwaan delivered the first seed, just in time for the spring season. The seedlings were planted at TADC (11 sunlight greenhouses and 1 larger greenhouse) and two villages in XinKou town: Liu Fu village (43 sunlight greenhouses and 1 larger greenhouse) and Dang Chen village (35 sunlight greenhouses). Fifty-five of the greenhouses in these villages were built during the winter and came ready rather late for transplanting, one of the reasons for a low yield.

In August 2001 Rijk Zwaan delivered seed for the autumn/winter season, for in total 13 greenhouses at TADC, of which four with cucumber, tomato and sweet pepper each and one with eggplant. In December 2001 the seed for the spring season 2002 was delivered, sufficient for 44 greenhouses with cucumber, 44 with tomato, 9 with sweet pepper, 13 with eggplant and 3 with melon.

Most seedlings were grown in the nursery of TADC but part of it in the Chinese greenhouses at the other locations. The quality of the seedlings was, generally speaking, good, but there is still much room for improvement. In all three seasons a substantial part of the seedlings were transplanted late because the greenhouses were not yet ready for transplanting (partly still under construction). As a result the production per hectare was not as high as it was anticipated. In the spring season 2001 the average yield of tomatoes was about 3.5 - 6.5 kg per m², for mini-cucumber 2.5 – 5.0 kg and for eggplant and sweet pepper even less than 2 kg per m². The sweet red peppers grown in the autumn season of 2001 were harvested before colouring red, because of the high heating costs and the decreasing prices. The yield was poor.

Yield (kg/m²)

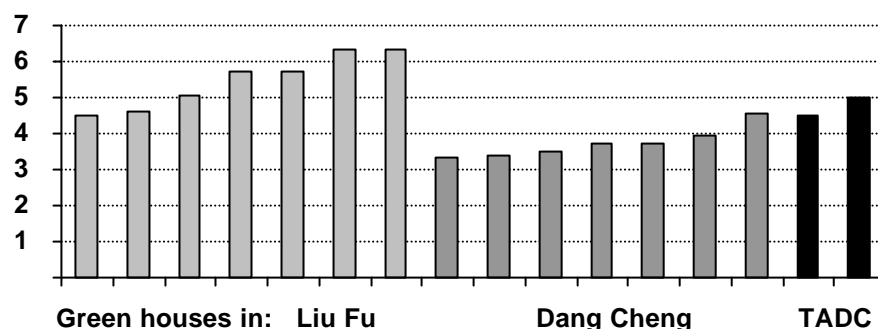


Figure 3.3 Yields per hectare tomatoes (Beril) at different locations in spring season 2001

Although the Dutch varieties are known for their strong resistance against diseases, it appeared difficult for the growers in Tianjin to control diseases and pests. In the spring season of 2002 TADC succeeded in getting a much better yield for mini-cucumber, but the results were still far below the yields in other production regions in China. The situation at the demonstration sites of Rijk Zwaan in Qingdao and Shouguang and of private growers in these regions showed that there are many possibilities for the Tianjin growers to improve the results. Yields of minimum 10 kg tomatoes or cucumber are very normal there. The poor results in Tianjin were partly caused by unfavourable physical (soil and water quality) and climatic conditions, but more important was the lack of knowledge, experience and skills of the staff and the workers in the greenhouses.

3.3 Marketing by Tianjin Agricultural Demonstration Centre

At the start of the project TADC sold its produce mainly via wholesale and street markets. During the project period TADC succeeded in finding new outlets. Contracts have been concluded with retailers, supermarket chains and traders. An agreement was signed with an exporter to Russia. In order to strengthen its position on the market, TADC established a commercial subsidiary "Tianjin Nongpeng Agricultural Development Co. Ltd". Nongpeng is responsible for the commercial functions of TADC and strengthened its position as an intermediate between growers and traders. Over the year 2001 TADC sold about 40% of the production to supermarkets, 30 % through the wholesale market and the rest at TADC itself.

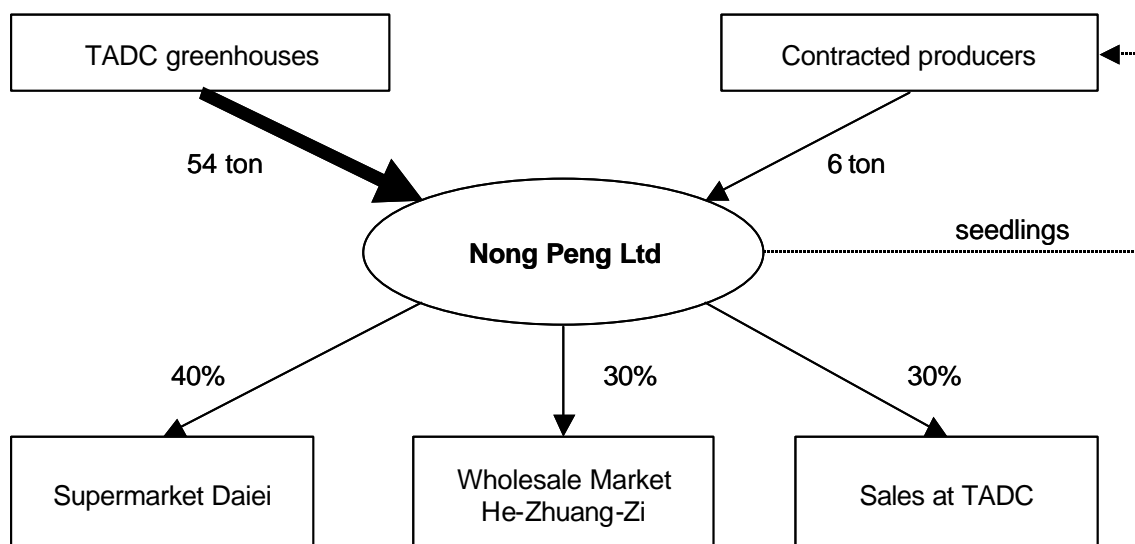


Figure 3.4 Flow chart of "Pollution Free Vegetables" from Dutch seeds through Nong Peng

Entering a new market means building good personal relations with the possible buyers. The marketing manager of TADC invests a lot of time and effort in establishing new market relations. TADC, via its commercial branch Nongpeng, provides interested supermarkets with product samples and invites the managers to the demonstration centre, to show the production and post-

BOX 3.1 Supermarket Daiei

Daiei, a Japanese joint-venture supermarket, is one of the largest supermarkets in Tianjin, ranking only behind Homeclub (US), Carrefour (France) and Chuanye (China) in terms of transaction value. Daiei started its business in Tianjin in 1995 and has currently 12 shops with each about 300m² operational area. Daiei strategy is to establish a 'fresh and live' image for its consumers by promoting its vegetables and fruit section. They think that their consumers belong to the middle classes who have a strong demand for fresh and safe vegetables. Daiei has its own cooling facilities and packaging line, and supplies more than 40 vegetables, including some new varieties like cherry tomatoes, mini cucumbers and coloured sweet peppers. Daiei does not focus on profits on vegetable sales, but wants to attract (new) clients with quality vegetables.

harvest treatment. During the promotion of a new product, TADC offers low prices to supermarkets. If the produce is not sold within a certain period, TADC takes it back and replaces it with fresh products. In that way, TADC established long term and reliable relations with a Japanese supermarket chain called "Daiei" and a local supermarket chain "Hong Fa" and became the only supplier for these supermarkets. The centre is aiming at further expansion of its network through contracts with other supermarket chains and exporters.

In terms of business operation, TADC delivers the vegetables on demand. They receive daily orders from the Daiei distribution centre by fax, in which it is indicated what products are needed at what supermarkets the next day. In the fax reference prices are listed. These are negotiable. In case of major differences in opinion Nongpeng staff will contact Daiei. The products are delivered daily at Daiei's distribution centre. Daiei is paying TADC at the end of each month .

BOX 3.2 Wholesale market He-Zhuang-Zi

He-Zhuang-Zi (HZZ) was a vegetable village situated in Xinqing district, Tianjin. At the end of the 1980s, the Tianjin government started to promote the development of local market activities. Under this encouraging policy, in 1986, several HZZ farmers were gathering at a piece of spare land to sell their own vegetables. Gradually, more farmers joined and later on also private vendors. As the market expanded, the local government legalised the market and the transaction activities became more standardised. Today, HZZ wholesale market is one of the largest wholesale markets in Tianjin with a daily flow of around 1,000 trucks and 30,000 traders from more than 200 cities and counties all over China. The daily transaction volume is about one million kg. 70% of the vegetables traded in this market remains in Tianjin while 30% of it is transported to other provinces. Small private traders, who own or rent big trucks to collect vegetables in Tianjin or other provinces, dominate the market. The supply and demand on the market depends on regional price differences. The prices are fixed on the spot at the market through bargaining. The HZZ market management is rather well informed on the real market prices. They employ three people who collect price information for the major traded vegetables and report that information daily to the Information Centre of Central Ministry of Agriculture. There are ambitious plans for improvement of the market with governmental support. The Tianjin government has already allocated loans for HZZ for the improvement of the market infrastructure, such as expanding the cooling and packaging facilities.



Figure 3.5 He-Zhuang-Zi Wholesale Market and Daiei Supermarket

Grading and Packing

In 2002 TADC installed 10 cold stores with a capacity of about 1000 m³ what will reduce the post-harvest losses and makes it possible to anticipate more adequately to the fluctuations in the market. A major part of the production is sorted according to certain grading standards. Since there are no official criteria available, grading and sorting are based on TADC's own grading standards, introduced by Rijk Zwaan. The first grade products are sold to supermarkets; the second at the wholesale market, and the third quality is sold at street markets. TADC has 2 weight-grading machines for tomato and cucumber. Most of the produce is sold in bulk in plastic trays; a small part (about 10 %) is packed, in small cellophane-wrapped portions for supermarkets

or in so-called gift boxes, special cardboard boxes for 5 till 10 kilograms of vegetables. Both TADC and Xinkou town packages are sealed with 'Pollution Free Vegetables' labels.

BOX 3.3 Supermarket Carrefour

Although there are three Carrefour shops in Tianjin, its management is centralised in the Beijing Carrefour office. Therefore, an interview is conducted at Beijing with Carrefour's vegetable-purchasing manager. In Beijing, there is one distribution centre responsible for all Carrefour shops in Beijing and Tianjin. Around 70% of their vegetables are directly purchased from farmers, while the rest comes from local wholesale markets. There is no package and sorting works carried out by Carrefour, so their prices can compete with open markets. Their strategy is to attract more consumers to their shops by promoting a lower price image from vegetables. Carrefour makes profit on consumers' purchase of other than vegetables products.

New Year plays an important role in Chinese life. People give each other presents and also companies and governmental organisations give presents to their staff, amongst other things gift boxes with fruit and vegetables. In the weeks before and during the spring festival of 2002 TADC sold about 5,500 present boxes with vegetables. In the week of Spring Festival (week 5) almost 2,000 boxes were sold (figure 3.6). The average price per box was almost 90 RMB (=12.50 Euro). The profit margin per gift box is estimated on about 20% in average, but much more during spring festival

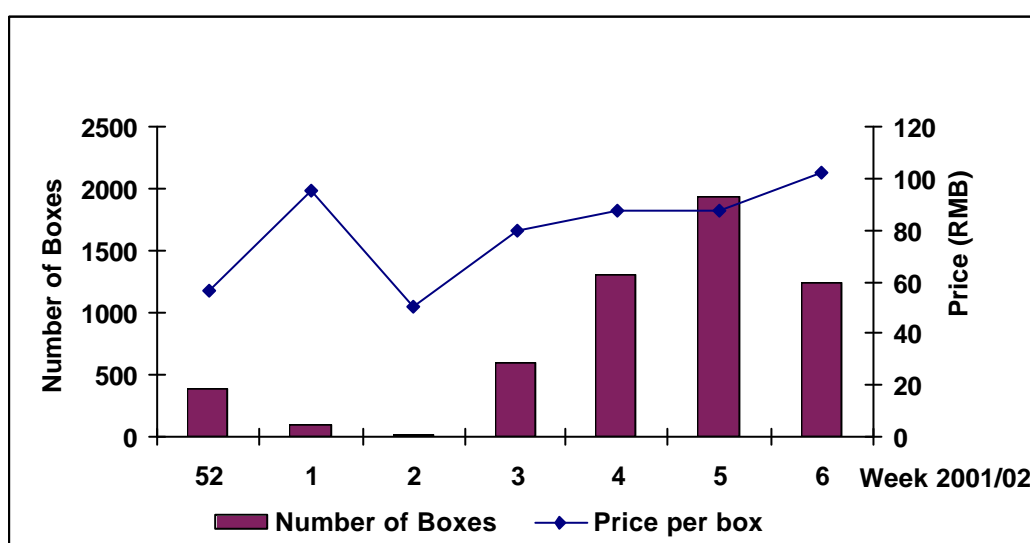


Figure 3.6 Sales of gift boxes before the Springfestival of 2002

The products sold by TADC are grown in the greenhouses of the centre itself or by other growers. For that purpose Nong Peng concludes contracts with individual producers and producers' organizations. TADC provides these growers with the seedlings of Dutch varieties. According to Chinese law, the producers receive a guaranteed minimum price for their products. The minimum purchase price for tomatoes and mini-cucumbers in 2001 was 1 RMB/kg. The prices paid for mini-cucumber in the season 2001 was 2 RMB/kg, while for tomatoes the daily wholesale market price was followed. During Chinese New Year or Spring Festival a higher collection price for cucumber was paid, because of the higher market price at that time.

Turnover Nong Peng Co. Ltd.

In 2001 Nong Peng sold about 60 tons of Dutch vegetables. Half of it was mini-cucumber (see table 3.4). About 90% of the total sales were grown by TADC, 10% by other producers. Sales are increasing rapidly; in the spring season of 2002 already more than 85 tons were sold, of which about 70% from TADC and 30% from other production areas.

	2001	2002 (spring season)
Mini-cucumber	30.0	46.0
Tomato	17.5	16.0
Coloured pepper	7.5	2.7
Eggplant	5.3	1.0
Total	60.3	85.7

Table 3.1 Data of sales of Dutch vegetables by Nong Peng in tonnes

In addition to the Dutch vegetables Nong Peng sold 140 tonnes of Chinese vegetables. Especially before and during the Spring festival, Nong Peng bought vegetables from other regions, in particular from Shouguang in Shandong province. Nong Peng expects a 30% growth in sales from TADC and 70% from the other production areas.

Xinkou town

The distribution flow in Xinkou town is different from TADC. The growers in both project locations are rather dependent on a few middlemen who collect their products at farm gate or at the wholesale market. The middlemen ship the produces to ShangDong province or further to the South, depending on the season. It is estimated that about half of the production in Xinkou town is sold to middleman, about 20% to local supermarkets or to companies/ organisations (including gift boxes) and the rest via the local wholesale market and street markets. The limited number of middlemen causes problems for the growers in Xinkou town, because they have a huge influence on the market, because the growers have only a few alternatives.

3.4 Prices

The market prices for vegetables fluctuate considerably over the seasons. Generally speaking, prices are high in winter and early spring, and are low in the summer. They reach their peak during Chinese Spring Festival, normally in the beginning of February. The price differences over seasons are presented in figure 3.7. The relatively high prices of TADC are due to some specific features of its products. First TADC is selling its products under the PFV label, meaning that the products meet the standards of Pollution Free Vegetables. Secondly, TADC sells a major part of its products sorted according to certain grading standards. The third reason for the high prices is the variety of the crops. TADC is mainly selling Dutch varieties, which are rather popular in the Chinese market.

Table 3.2 gives an overview of the price differences in spring 2001. It shows that it is very profitable to grade the produce; the price of the first grade is on an average two to three times the price of third grade products. Above that, the average price of the Dutch varieties is higher than that of the Chinese varieties, in particular for mini cucumber. Both mini-cucumber and cherry tomato are perceived as very tasteful and are consumed as fruit. The introduction of sweet coloured pepper was not that successful, partly because of consumers' preference for green peppers and the fact that TADC did not succeed in getting the red peppers ready for harvesting at the spring festival. There were also severe problems in selling the Dutch variety of eggplant, because the consumers in Tianjin preferred the traditional round shaped eggplants above the long shaped Dutch variety.

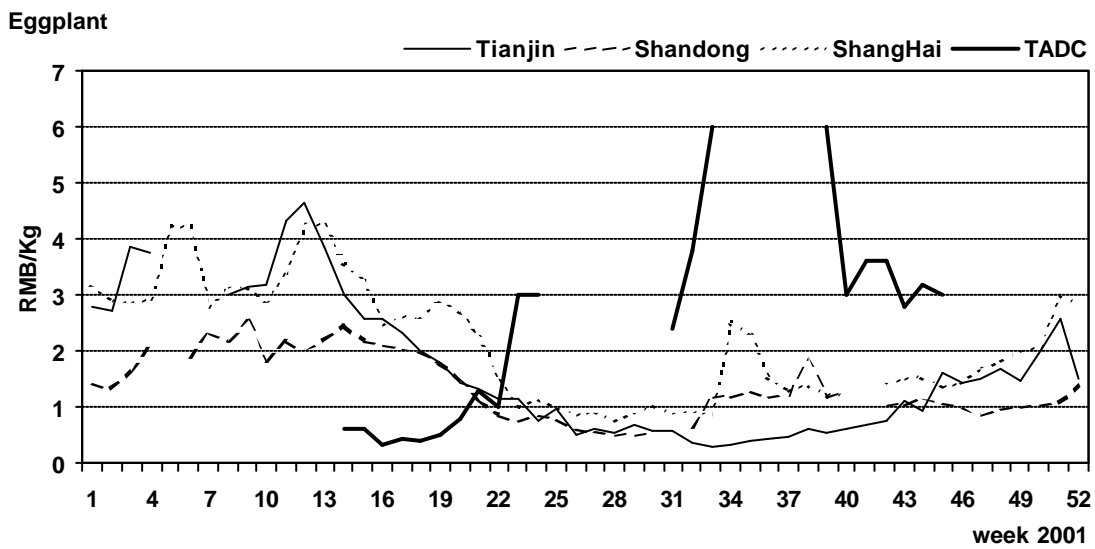
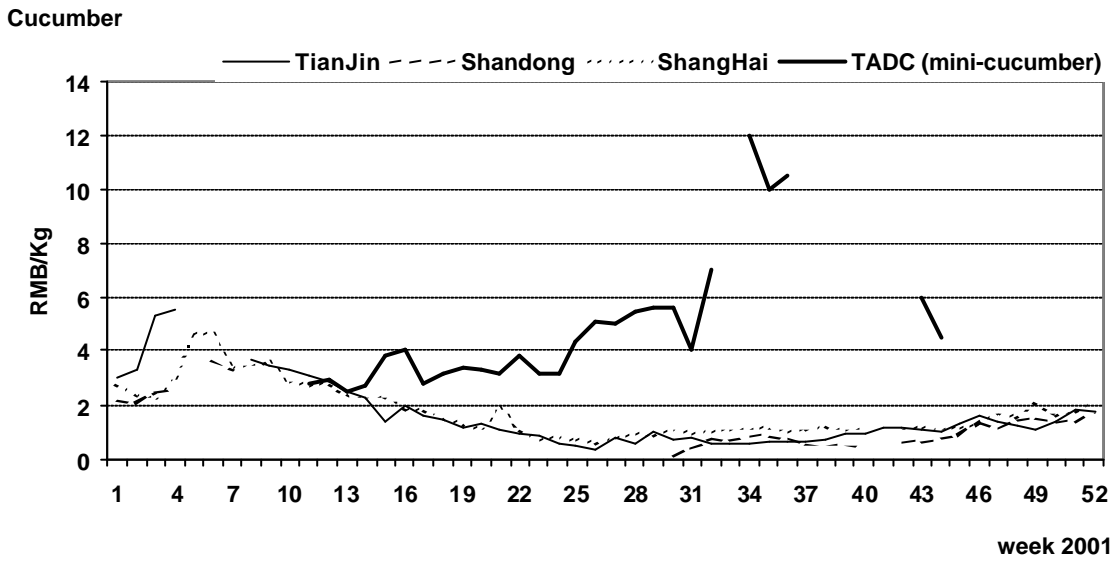
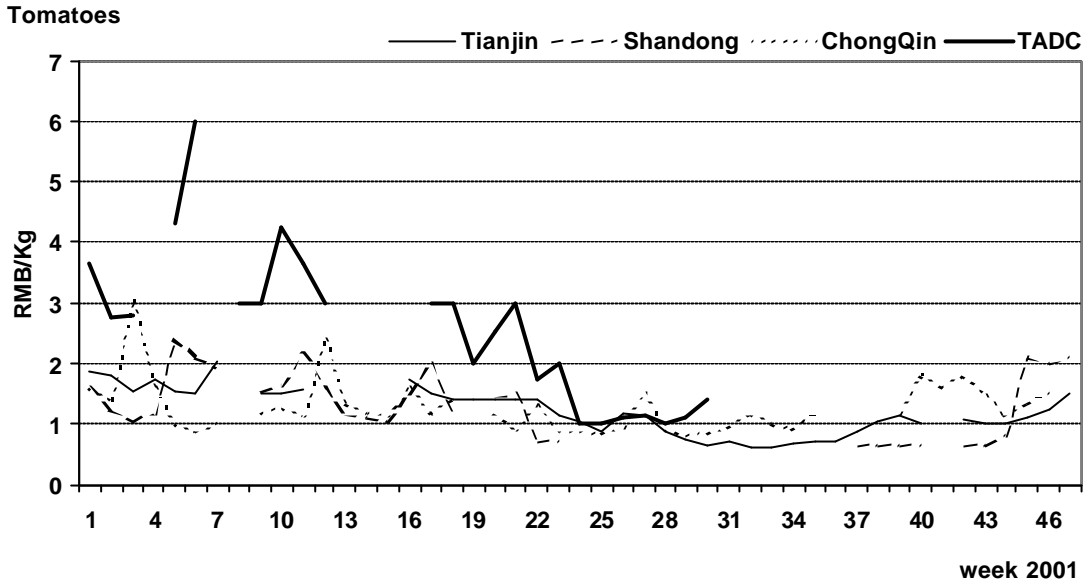


Figure 3.7 Prices received by TADC compared with average prices of some wholesalemarts

Mini cucumber

Quality grade:	Criterion	Share of production (%)	Price range (Yuan/kg)	Average price NL Varieties	Average price China varieties
First	Straight	60	2.4 - 4.0	3.6	1.2
Second	Bent	20	1.0 - 1.5	2	0.8
Third	Rest	20	0.6 - 1.0	2.1	0.5

Tomatoes

Quality grade:	Criterion	Share of production (%)	Price range (Yuan/kg)	Average price NL Varieties	Average price China varieties
First	Big	40	2.0 - 3.0	3.0	2.5
Second	Medium	30	1.0 - 1.5	2.2	2.1
Third	Small	30	0.6 - 1.0	1.0	0.9

Cherry tomatoes

Quality grade:	Criterion	Share of production (%)	Price range (Yuan/kg)	Average price NL Varieties	Average price China varieties
First	Big	60	3.0 - 6.0	6.0	4.5
Second	Medium	20	2.0 - 4.0	4.1	3.0
Third	Small	20	1.0 - 2.0	2.5	2.0

Peppers

Grade:	Criterion	Share of production (%)	Price range (Yuan/kg)	Average price NL Varieties	Average price China varieties
First	Big	50	0.8 - 3.0	3.5	2.2
Second	Medium	25	0.6 - 1.0	2.0	1.9
Third	Small	25	0.5	0.8	0.6

(Source: Nong Peng Company/TADC)

Table 3.2 Average market prices by quality and variety during the spring season of 2001

The price differences between Dutch and Chinese varieties are also recorded by Rijk Zwaan (see figure 3.8). These differences explain the rapid introduction of the Dutch vegetable seeds in China.

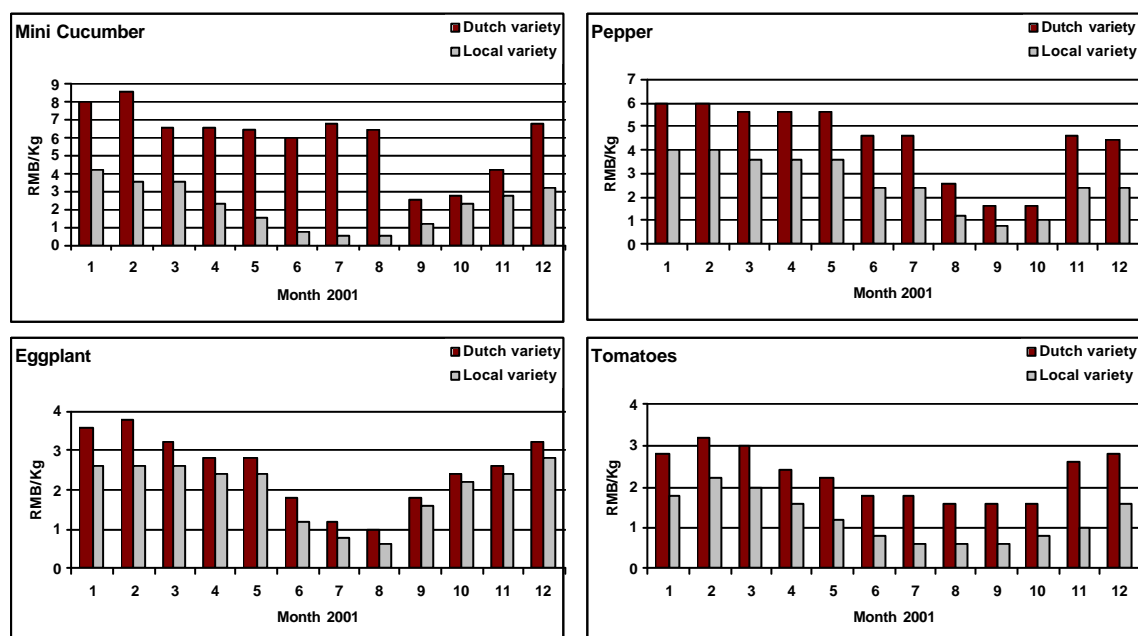


Figure 3.8 Price development of vegetables in the year 2001 in Tianjin (Source: Rijk Zwaan China)

As it is mentioned before TADC is selling its produce to supermarkets, directly to retailers and other customers at its premises and at the wholesale market. On average for all the Dutch vegetables the supermarkets pay about 2% less than the other customers who come and get the produce at TADC, while the wholesale market price is about 12% lower. The lower price at the wholesale market is partly caused by the lower quality that is sold there.

It is estimated that the consumer prices in the supermarket are about 15 – 35 % higher than the purchase prices.



Figure 3.9 Different ways of marketing: counter in the supermarket and giftboxes with vegetables

Xinkou town

Compared with TADC, the average prices that the growers in Xinkou town receive are relatively low. One possible reason could be the farmers' weak bargaining power over middlemen. Another reason is that the seedlings were transplanted later in Xinkou than in TADC, which had a negative effect on product quality and harvesting season.

3.5 Gross margins of Dutch vegetables at TADC

The sustainability of a farm depends amongst other things on the profit of the crops. An indication for the profitability of the different crops gives the gross margin, i.e. the gross output per crop minus the direct costs. Labour and other general costs are not included. On the basis of the available data and additional information from TADC staff gross margins have been calculated for Dutch tomatoes, sweet pepper and mini cucumber grown in heated greenhouses at TADC. See the results in table 3.3. The data refer to the average sunlight greenhouse in Tianjin with a surface area of about 0.8 mu (= 600 m²) and two crop rotations.

The gross margins of Dutch tomato and coloured pepper are negative, meaning that the relatively high cultivation costs of Dutch varieties are not compensated by higher yields and revenues. Indeed, the yields at TADC were rather low in 2001. For mini-cucumber TADC received a gross margin of almost 8 RMB/m² (about 1 Euro/m²) and is therefore considered as an interesting cash crop (for the time being).

Table 3.4 shows average production figures in Shouguang in the province of Shandong, one of the major vegetable production areas of China. These data, provided by Rijk Zwaan branch office in China, clearly indicate that the yields at TADC are far below the possible production levels. On the basis of these production figures and the same direct costs the gross margins per crop have been recalculated. The results in table 3.5 illustrate that it is profitable for Chinese farmers to grow Dutch varieties if the crops are well managed. One of the major conclusions of the project is therefore that TADC needs to improve the crop management skills of its staff at short notice.

Table 3.3 Indicative calculation of gross margins of Dutch vegetables grown in heated greenhouses at TADC

Figures per greenhouse of 0,8 mu (ca. 600 m²) for 1 year and two crop rotations (Values in RMB)

	Tomato	Pepper	Mini-cucumber
Gross Output (= yield x average price)	8,000 kg x 2RMB = 16,000 RMB	5,000 kg x 3 RMB= 15,000 RMB	10,000 kg x 3 RMB= 30,000 RMB
Direct Costs			
Seeds	700	1300	4000
Fertilisers	840	1020	1210
Crop protection/ pesticides	380	400	650
Irrigation (only water + equipment)	1,500	1,500	1,500
Mechanical Works	4,160	3,600	4,300
Greenhouse (building + plastic)	2,200	2,200	2,200
Heating	11,500	11,500	11,500
Total Direct Costs per greenhouse	21,280	21,520	23,560
Direct Costs/kg	2.66	4.30	2.54
Direct Costs /m ²	35.47	35.87	42.27
Gross Margin/greenhouse	-5280	-6520	4640
Gross margin/kg	-0.66	-1.30	0.46
Gross margin/m ²	-8.80	-10.87	7.73

Source: TADC, 2002

Table 3.4 Yields of Dutch varieties in comparison with Chinese ones

Crops	Rijk Zwaan variety (kg/mu)	Domestic variety (kg/mu)
Tomato	14000	12000
Eggplant	15000	12000
Cucumber	14000	8000
Peppers	12000	8000

Source: Rijk Zwaan, Qingdao, China, 2002

Table 3.5 Indicative calculation of gross margins of Dutch vegetables grown in heated greenhouses in Shandong province

	Tomato	Pepper	Cucumber
Gross margin per greenhouse	6,720	14,480	16,640
Gross margin per kg	0.48	1.21	1.19
Gross margin per m ²	11.20	24.13	27.73

Based on calculations per greenhouse of 0,8 mu (ca. 600 m²) for 1 year and two crop rotations (Values in RMB). Source: TADC, Rijk Zwaan Qingdao, 2002

4 VEGETABLE EXPORT MARKETING IN SHANGDONG PROVINCE

4.1 Shouguang, a major centre of vegetable trade

A growing part of the vegetables produced in China is exported. The major importers of Chinese vegetables are Japan, South Korea, Russia and other Southeast Asian countries. Of all the vegetable export of China, about 1/3 originates from Shandong Province. Cities as Anqiu, Chongluo and Gaomi are the main production bases for Japan. Qingdao is the centre for processed vegetables export. Shouguang is one of the biggest vegetable production and marketing bases in China. There are in total 10 wholesale markets in Shouguang around a centre wholesale market. Shouguang wholesale market is open 24 hours a day, seven days a week. The peak in transactions is around 2:00 -5:00 a.m. in the early morning, which gives the traders the opportunity to ship their produce in time all over the country and abroad. Traders at the Shouguang markets are mainly focusing on domestic customers and ship vegetables to all major towns in China. In the winter season the vegetables are traded from the South to the North via Shouguang and in the summer time vice-versa. Shouguang owes its central position to the accumulation of a wide variety of vegetables that are available here for a relatively low price. The total area of vegetables in Shouguang is about 750,000 mu, of which 350,000 mu protected land cultivation. In 2001, the total transaction volume in Shouguang was about 12 billion kg. About 95% of its produce is consumed by the domestic market, 5% by foreign countries.

4.2 The major export markets

Japan and South Korea

Japan and South Korea are the most important export markets for Shandong vegetables given its geographic location. Compared with South Korea market, the entry to Japanese markets is more difficult with much stricter import regulations, but a higher profit, although less stable during the past few years. The export to Japan concerns mostly processed vegetables, like carrots, cabbage, leek, onion, cauliflower and ginger. Fresh products exported from China to Japan and Korea are garlic, onion, leek, taco and carrot. The major competitors in the Japanese market are USA, New Zealand, Thailand and South Korea. South Korea particularly produces good quality of Dutch paprika for the Japanese market.

Japanese consumers value 'fresh' very much but it is difficult to export green vegetables from China to Japan because of the long shipping time. From Qingdao to a Japanese harbour, such as Shimonoseke and Hakata, takes about 3 days. To South Korea (PuShan Harbour) it takes about 1,5 days. Exporting vegetables to Japan is getting more and more difficult the last few years, for instance because of the strict checks by the Japanese customs of all boxes with vegetables instead of a sample. There is a growing resistance in Japan to import from China because the prices of Chinese vegetables are very low compared with the cost prices of the Japanese farmers. Traders in China are complaining that the export to Japan did not change much during recent years while at the same time the vegetable production in Shandong has expanded dramatically. In 2001 they even made big losses due to a trade conflict over mushrooms and onions between China and Japan. Although the import ban has been released, the business has been recovering slowly.

The common practice is that Japanese importers conclude contracts with a processing/ trading company in Qingdao. That company makes a deal with a local company in a vegetable production base and the local company concludes contracts with individual farmers or production associations. The price paid to farmers is in general the (wholesale) market price at the day of deliverance, but there is a minimum protection price in the contract. In most cases, the Japanese companies supply the seeds to the growers. After harvesting the products are tested and qualified according to the Japanese requirements and enter the processing stages only after approval. All

1) This chapter is mainly based on interviews of a number of trading and processing companies in Shouguang and Qingdao

procedures in the factories are designed and monitored by the Japanese importing companies. According to the trading companies the margin is not very high, but the export is still profitable.

The Russian Market

Starting in the late 1990s, as the economy was recovering, an increasing amount of vegetables is exported to Russia. One trade route is over land; traders transport the produce to the Russian-China border towns, such as HaiHe in Heilongjiang Province and Manzhouli in Inner Mongolia. At the borders, the produce is sold to Russian traders. In most cases, Chinese traders do not have direct contacts with retailers in Russia and they do not know how the produce is handled and where it is sold to the consumers. The trade season lasts from October to May because Russia does not produce any vegetable during the long winter. The export concerns mainly fresh vegetables like cucumbers, tomatoes and sweet peppers.

Since 1996, traders in Shouguang have found another trade route via Suifenhe in Heilongjiang province to Russian Vladivostok. From there the produce is shipped inland Russia. Around 20 trade companies in Shouguang take this route with an average transaction volume of 2,500 tons per year each. Except for checking and testing by the Chinese customs there are no further checks by Russian agencies or customs. It takes 30-36 hours to reach Suifenhe and another 20 hours to arrive in Russian markets. During the summer, ice cubes are loaded with the vegetables for cooling and in winter quilted canvases are used to prevent freezing. Tomato, pepper, cucumber and eggplant are the major export products to Russia. Medium size tomatoes from a Dutch seed company Rijk Zwaan are popular because of the long shelf life. The Russian market requires grading and sorting. Traders normally have employees who collect the produce at farm gate in Shangdong province. They do not have a fixed network of growers, but collect what is available. They collect only first class middle size tomatoes with 7-9 cm diameter, green/orange coloured, not yet red, because of the transport time. The tomatoes are packed in carton boxes of 3.5 kg each. The farmers receive about 0.1 RMB extra for good quality. Transport costs are about 0.7 RMB per kg and the profitability is about 10%. Traders expect that the market will grow as long as the Russian economy is stable and further developing.

Hong Kong, Macao, Singapore, Malaysia and Australia

From 2000 on traders from Shouguang started to export to the Southern markets via ZhuHai and Shengzheng in Guangdong province. The trade season is from May to October when suppliers in the south cannot produce good quality produce because of the high summer temperatures. There are about 50-60 trader companies with 7-8 staff in Shouguang who are focusing on the South markets during the summer while they trade to the North during the winter season. It takes about 50 hours to arrive in Shenzhen or Zhuhai. From there the produce is shipped by importers in containers to Macao, Singapore, Malaysia and Australia but mostly to Hong Kong (about 80%). It is estimated that during the trade season in 2001, every day about 50 trucks with vegetables are shipped from Shangdong province to the South. More than half of it are tomatoes. The grading requirements are less strict than for the Russian market. They accept all size of tomatoes, preferably big size (10 cm diameter). Tomatoes are packed separately in paper and put in carton boxes of about 12 kg. Before 2000, the export consisted mostly of domestic varieties from Guangxi, but foreign varieties, in particular Rijk Zwaan-Beril tomatoes are becoming popular due to the long shelf life. The export is in the hands of traders in Shenzhen and Zhuhai who order the needed quantity and quality by telephone from the traders in Shangdong one day before shipping. All transactions are done in cash at the spot.

4.3 Quality Monitoring and Testing

China does not have an overall grading system for vegetables. The processors, traders, or importers themselves decide upon the size and other qualifications for the products they require. Traders in Shangdong feel that the testing procedures for exporting vegetables are becoming stricter. Samples of every shipment for export have to be sent for testing to the capital Jinan while before the tests could be carried out at local level.

There is a Monitoring and Testing Centre for Agricultural Products in Shouguang, attached to Shouguang Agricultural Bureau. The centre has equipment for fast testing on pesticides, fertilisers' residues, etc. Every township in Shouguang has fast testing equipment. Every month at least 200 samples are taken at the markets. All vegetables ready for transport to big wholesale markets in Beijing (e.g. Dazhongshi) and Shanghai will be sampled for testing in Shouguang. Around 92% of the samples meet all the requirements. Most of the not-approved samples are accidents caused by farmers who harvested the products only a few days after having used low poison pesticides; officially 15 days are required between the last use of agro-chemicals and harvesting. The test results are provided to the city government and the market administrative office. It is their responsibility to take measures. There is a law implementation team affiliated to Agricultural Bureau. They decide what to do with the un-qualified products. According to the interviewed local officers the pesticides standards in China are stricter than those in Japan and South Korea. In addition to the tests for the government, the centre carries out tests for supermarkets on a commercial basis. Some supermarkets send every day a few samples, others irregularly. Supermarkets refuse suppliers if their products do not pass the test. The regulations with respect to the use of pesticides and other agro-chemicals are becoming stricter in China, since the start of the campaign for pollution free vegetables in 2001. The farmers know about that via lectures, training and leaflets from the governmental extension workers.



Figure 4.1 Preparing for export

4.4 Comparison of export markets

Based on the above description, the characteristics of the different export countries are summarized in table 4.1. Chinese vegetable exports to Japan are based on the advantage of lower production costs while the trade to Russia and Southeast Asia is mainly based on the advantages of differences in growing seasons. The export to Japan consists mainly of long shelf life and processed products while to Russia and South-east Asia mainly fresh produces are exported. Russian traders have more specific grading requirements for tomatoes than the southeast traders. Japanese customs are most strict in terms of residue checks. The most common transport mean over land is trucks. With the improvement of infrastructure in China, it is expected that the transport time will shorten in the near future, which will encourage the trade of fresh vegetables.

Table 4.1. Comparison of Chinese Vegetable export to Japan, Russia and South-east Asia

	Japan	Russia	South-east Asia
Trade seasons	All year round	October to May	May to October
Traded products	Garlic, onion, leek, taco, ginger	Tomato, sweet pepper, cucumber, eggplant	Mainly tomatoes
Product Standardisation	No quality specification for the above products	Grading requirement	Less strict in grading
Residues Testing	Total testing (all boxes)	Not available	Not available
Transport means	Ships	Trucks and then ships	Trucks
Transport time	3 days	2 days	2 days

5 THE FUTURE OF TIANJIN AGRICULTURAL DEMONSTRATION CENTRE

5.1 Introduction

TADC is very optimistic about its future marketing activities through its commercial subsidiary "Tianjin Nong Peng Agricultural Development Co. Ltd". It is expected that they will expand their clientele, conclude new contracts with supermarkets, retailers and traders and sell more via wholesale markets in Tianjin and Beijing. To ensure sufficient supply TADC founded an association of public and private rural enterprises in vegetable growing "Tianjin Country Special Technological Confraternity" (CSTC). To improve the logistics TADC has invested in sorting, grading, and packaging equipment and is planning to purchase a cold storage truck.

The situation in Xinkou town is less optimistic. The growers are focussing on production and do not have enough capacity for adequate marketing. They totally depend on a few middlemen and as consequence they receive relatively low prices. Xinkou town government is working on improving the conditions for the growers by investments in infrastructure for production and marketing but is not (yet) actively involved in marketing. TADC supports XinKou town's growers in marketing. In the following sections the opportunities and key constraints for further development of Nong Peng Co Ltd. are identified by means of a SWOT analysis. Based on this evaluation, interventions are proposed to improve the competitive position of Nong Peng Co Ltd. in the Chinese vegetable marketing chain. The analysis is mainly based on interviews with the manager of Nongpeng Co Ltd.

5.2 SWOT analysis Nong Peng Co. Ltd

Strengths:

1. Nong Peng trades only in vegetables that meet the requirements of the Pollution Free Vegetables certificate and uses that as a trade mark;
2. Nong Peng has good relations with Rijk Zwaan and therefore access to new varieties of Dutch vegetables;
3. The nursery at TADC has sufficient capacity to produce seedlings for contracted growers;
4. The grading and sorting equipment makes it possible to benefit from quality differences in the market;
5. The available cold storage facilities make it possible to better anticipate the developments in the market;
6. Nong Peng can rely on information and knowledge system through TADC.

Weaknesses:

1. Lack of knowledge and skills with respect to crop management at the production bases, resulting in relatively low yields and insufficient quality of the produce (lack of green fingers);
2. Lack of specialised salesmen: presently the employees of Nong Peng have obligations as salesmen and technicians as well;
3. Weak transportation means: a refrigerated truck is needed;
4. Administrative and organisational structure: Nong Peng is a marketing organisation within a governmental structure (TAAS/TADC). Both organisations have different missions and should therefore be clearly separated.

Opportunities:

1. There are many opportunities for selling high quality, Pollution Free Vegetables in Tianjin and Beijing as well.
2. Additional opportunities are provided by export of vegetables, especially to Russia: the required quality standards for export can be achieved by Nong Peng, resulting in a higher revenues, since the international prices are higher than local prices.

Threats:

1. Production risks: it is not yet sure that TADC and the additional contracted producers can produce the required amount of high quality vegetables;
2. Market risks: contracts with producers include statutory minimum prices, which could result in losses for Nong Peng in case of low market prices;
3. Transport risks: the product quality after transportation needs to meet the requirements of the clients. This is in particular important for export because of the long distances between production and consumption region;
4. Payment risks: Clients who do not pay the bills (defaulters).

Above mentioned aspects are placed in table 5.1.

	Strengths: 1. Trademark PFV: Pollution Free Vegetables 2. New Dutch varieties 3. Good nursery facilities 4. Cold storage facilities 5. Grading and sorting facilities 6. Information and knowledge system	Weakness: 1. Lack of green fingers; 2. Lack of specialised salesmen; 3. Weak transportation means; 4. Mixed responsibilities;
Opportunities: 1. Domestic market for high quality vegetables 2. Export markets, in particular to Russia	EXPLOIT: A. Continue quality strategy B. Continue to add value via grading sorting and packing	ADJUST: C. Improve crop management at TADC and contracted growers D. Appoint and train specialised sales managers E. Communication between product and sales managers
Threats: 1. Production risks: low yield and quality 2. Market risks: minimum prices in contracts; 3. Transport risks: quality degradation; 4. Payment risks: defaulters	IMPROVE: F. Market monitoring system; G. Contracts with producers and clients; H. Administration.	BEWARE: I. Bureaucracy J. Inflexibility

Table 4.1: Results of SWOT analysis of Nong Peng Co Ltd.

5.3 Proposed interventions

The following interventions are proposed to improve the competitive position of Nong Peng in the Chinese vegetable marketing chain:

A. Continue quality strategy;

A higher price for Dutch varieties can only be realized if the quality of the produce is excellent, because there is an abundant supply of Chinese vegetables on the market.

B. Continue to add value to product by certification, grading, sorting, packing and cooling;

The 'Pollution Free Vegetables' certificate is for the clients a guarantee for high quality produce, which can be strengthened by adequate grading and packing. Guaranteed quality supply creates the basis for sustainable relationships with supermarkets and other clients, resulting in higher market prices for the producers;

C. Improve knowledge of growing techniques at TADC and contracted growers;

The first years of the production of Dutch varieties at the TADC have shown that there is a lack of knowledge on growing techniques at TADC and the other project locations, resulting in low yields

and low quality produce. It is absolutely necessary to improve crop management in order to acquire and maintain a sustainable position on the market.

D. Appoint and train new sales managers;

In case Nong Peng wants to extend its activities it will be necessary that appoint specialized salesmen, who are responsible for establishing and maintaining the relations with the different categories of clients (supermarkets, wholesale markets, exporters).

E. Improve communication between product managers and sales managers:

To make contracts with buyers it is important for the sales managers to know the quantity, quality and period of production. On the other hand the product manager has to know the requirements of the market (which products do sell well and when). Good communication is a must.

F. Design a marketing monitoring system;

The manager of Nong Peng has a comprehensive view on the market and related activities without using a market monitoring system. Given the intentions to expand the market activities, it is recommended to establish a market monitoring system that includes recording of transactions and the collection of price data at different markets. Such a system will increase the transparency of doing business and create insight in marketing opportunities in future.

G. Improve contractual agreements with producers and clients;

In order to prevent problems on responsibilities with respect to supply and payments it is recommended to conclude clear contracts with suppliers (growers) and clients. A set of rules should made clear the responsibilities of all partners, in particular with respect on the division of risks.

H. Create a good administration;

A well functioning administration is a prerequisite for doing business in a dynamic market. This includes keeping accounts on creditors and debtors and defaulters in particular.

I. Beware of bureaucracy;

Generally speaking, government owned organisations are characterised by extensive rules and regulations that may lead to excessive bureaucracy.

J. Beware of inflexibility;

Nong Peng is a marketing organisation while TADC is a demonstration centre. They have different goals and work in a different environment. TADC carries out tests and experiments in a rather stable environment while Nong Peng needs to be flexible and to react quickly to the changing market situation.

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