

## Review

# The progress and issues in the Dutch, Chinese and Kenyan floriculture industries

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The review covered the progressive trends in the floriculture industry of The Netherlands, China and Kenya. The Netherlands maintained the largest market share of 70 - 75% in the industry. However, in 2008 its export declined to 3.9%. The Netherlands had moved from the traditional production role to distribution and marketing. Annual floriculture growth in Kenya was 15% and had become the highest foreign currency earner in 2009 for the country with an export earnings of US\$464 million. Chinese total import and export of flowers in 2007 was US\$200 million and the wholesale value of production was in 2009 US\$1,172 million. China and Kenya remained net exporters of flower products and depended on outside markets for the sale of their flower products. Issues such as the environment and health, development of home market, high production and delivery costs and rising consumer demands, that had become significantly important for the sustained growth of the floriculture industry were reviewed. The prospects and the future trends of the flower industry of The Netherlands, China and Kenya were discussed.

**Key words:** Environment and health, rising consumer demand, The Netherlands, Kenya, China.

## INTRODUCTION

Floriculture as an industry began in the late 1800s in England, where flowers were grown on a large scale on the vast estates (Wikipedia, 2009.) The industry continues to advance since that period. It is a profitable agri-business throughout the world. The present day floriculture industry is very dynamic and fast growing. In the 1950s, the global flower trade was less than US \$3 billion (The flower expert, 2008). Recently, the world production of floriculture products was valued at US \$40 billion (Getu, 2009). The Netherlands, Japan, and United States of America (USA) account for nearly half of the world flower trade.

The traditional markets are getting saturated and at the same time new markets are developing in the world. It is expected that per capita consumption and production will go up worldwide because flower products influence the human feelings more than words and gifts (Papademetriou, 1998). However, a dilemma in obtaining clear insight into

the prospects for the floriculture industry exists. In almost every country in the world there is some floriculture industry. However, in many countries the available figures are not accurate (Younis, 2009).

With the rapid growth of the flower industry, issues about the environment and health, the development of the home markets, high production and delivery costs and rising consumer demands among others have drawn the attention of environmentalists, consumer groups and chain members (Getu, 2009).

These four issues are of great significance for the floriculture industry of The Netherlands, China and Kenya, thus the scope of this review is centered on the flower industry of the three countries. The current situation of the issues in each of these countries' flower industry is discussed. The three countries are chosen because of their pivotal positioning regionally and global influence in the industry. The Netherlands has the largest market share and remains the leading player in the world floriculture industry. China has emerged as a giant in the Asian block and is a large producer and exporter of floriculture products in Asia. China wholesale value of production in 2009 was US \$1,172 million (Ando, 2009). Kenya is the

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**Table 1.** Trends in the Dutch flower production industry.

Indicator	2003	2004	2005	2006	2007	2008	07/08% change
ornamental plants under glass(area in ha)	6.135	6.107	6.049	5.783	5.743	5.452	-5.1
floriculture products(area in ha)	5.756	5.713	5.599	5.381	5.327	5.047	-5.5
cut flowers (area in ha)	3.499	3.427	3.250	3.093	3.003	2.809	-6.5
pot plants (area in ha)	1.313	1.340	1.377	1.386	1.397	1.431	2.4
propagation material(area in ha)	167	159	164	154	162	144	-11.1
Other (area in ha)	777	787	808	732	749	643	-16.5
ornamental plants outdoors(area in ha)	40.296	39.797	40.076	41.463	42.412	43.656	2.8
floricultural products (area in ha)	2.607	2.528	2.573	2.603	2.573	2.581	0.3
flower bulbs (area in ha)	24.538	23.520	22.987	23.515	23.655	24.330	2.8
ornamental plants under glass(number of nurseries)	6.473	6.473	6.200	5.035	4.674	4.336	-7
ornamental plants outdoor (number of nurseries)	8.200	8.200	7.900	8.180	7.808	7.505	-4
Job opportunities	57.804	50.184	54.127	57.000	58.400	-	-
Floriculture sector(casual labor excluded)	57.8044	50.184	50.184	54127	57.000	58.400	
Production (€1.000.000)	8.805	8.750	9.130	9.941	9.954	9.743	-12.9
Floriculture	8.810	8.750	9.090	9994	9.954	9.743	-13
Number of exporters	1156	1132	1082	1012	930	911	-

largest producer of cut flowers in Africa and the 6th in the world (Habte, 2007). Flowers in Kenya accounted for 52% of the shillings value of export in 2009 but the export fell due to drought and recession in Europe-Kenyan main market (HCDA, 2009). Therefore, the combined effects of these two factors caused an overall fall of 15% in quantity of export and 3% in value expressed in Kenya shillings (HCDA, 2009).

The Netherlands has increased its export of planting materials by 17.2 and 36.6%, to Kenya and China, respectively (Market News Services, 2008) and provided market outlet for the Chinese and Kenyan flower products.

In addition, we noted that it will be relevant to review and put together all the relevant literature on the progress (production, export and import trends) and issues concerning the environment and health, the development of the home markets, high production and delivery costs and rising consumer demands related to the flower Industry of The Netherlands, Chinese and Kenyan. The review document would serve as reference material for interested groups such as producers, consumers, environmentalists and researchers who are concerned about the issues in the industry.

The review is arranged in the following order; first the progressive trends in each industry; the issues about the environment and health, development of home market, high production and delivery costs and rising consumer demands and the future prospects and directions of each industry.

## THE DUTCH FLORICULTURE INDUSTRY: WORLD MODEL

The Dutch floriculture industry is widely known as the

leading industry in the world. It is the center for international marketing for cut flowers. The Netherlands has quite advanced methods of production and innovative marketing mechanism. The Netherlands makes up only 10% of the world's total production but the country's export volume accounts for 60% of world export (Market News Services, 2008). It has centennial experience in the flower business. Growers are supported by several services in terms of research and development, and efficient distribution system well connected by air and by ground transportations with the most important producing and consuming countries. The driving force for the success of the industry is related to the crucial role of the auctions and the well developed infrastructure.

## Production trends in the Dutch flower industry

The production share of the Dutch floriculture stands at 27% in the agriculture sector in the Netherlands. The total area of cut flowers, including propagation was 3,499 ha in 2003. This steadily decreased to 2,809 ha between 2007 and 2008. The number of ornamental plants cultivated under glass, the production of flower bulbs and propagating materials decreased considerably between 2003 and 2008 (Table 1). This indicates the weakening position of the Dutch floriculture industry in production. The industry shows a correlation between value of production and cultivation area (ha). The production in millions of euros decreased by 13% in 2008 from €9,954 million to €9,743 million. Despite the decrease in production the labor market in the industry experienced a slight increase in 2008. As the competition got stiffer, the number of exporters declined from 1,156 down to 911 between 2003 and 2008 (Flower Council of Holland, 2008). That could

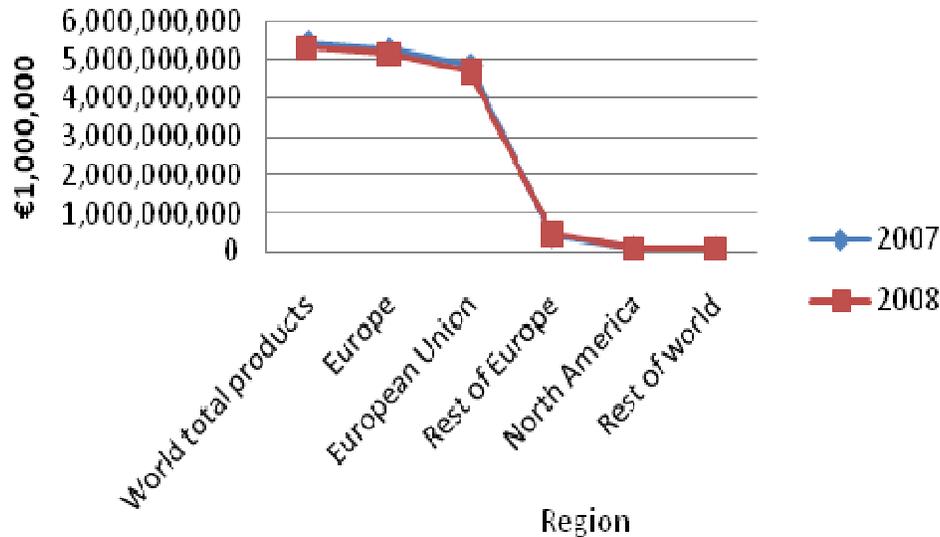


Figure 1. Export turnover of Dutch flower products in €1,000,000 value.

be related to the high logistics requirements to export large volume of flowers, so only big and economically viable exporters could survive.

### Export trends for Dutch flower products

The Netherlands play a pivotal role in the world flower industry and trade. The main export destinations for Dutch flowers are European countries, the USA and eastern Europe. African and Asian countries are the main destinations for the Dutch planting materials. Majority of planting materials for Kenyan and Chinese flower producers come from The Netherlands. Export of planting materials to Kenya and China increased to 17.2 and 36.6% respectively, in 2008, making Kenya and China the 16th and 30th destinations for Dutch planting materials in the world (Market News Services, 2008). Germany, United Kingdom, France, Italy, Belgium, and Russia were the leading destinations for Dutch flower products in 2007 and 2008. The trend in annual export value in 2007- 2008 is shown in Figure 1. The export value decreased by 3.9, 3.5, 4.7, 9.6, 19.3, and 1.6% from 2007 to 2008 for world total products, Europe, European Union, rest of Europe, North America, and rest of the world, respectively (Market News Service, 2009).

### Import and local supply for the Dutch flower industry

During the last five years, the quantities of imported cut flowers increased by 15.2% and the average price increased by 12.9%. At the same time the locally-produced stems decreased by 6.8%, while the average price increased by 8%. The total quantity of stems imported in 2008 was 3.7 billion and the locally-produced was 7.7 billion (Market

News Services, 2008). The trend in import and local production is presented in Figure 2.

### Auctions

The Dutch auctions are the largest flower market in the world. Four Dutch companies participated in the auctions in 2003 - 2007. However, in 2008 the number of Dutch auctions reduced to two. The turnover of the auctions grew in 2007/2008 at an insignificant rate of 0.3 and 4% (Flower Council of Holland, 2008) for Flora Holland flower auction and Plantation flower auction, respectively. The Dutch flower auctions use a clock system to determine the price of flower products (Wijnands, 2005).

### CHINESE FLORICULTURE INDUSTRY

The Chinese floriculture industry started in 1984. In 1996 a total acreage of 3,000 ha was put under cultivation with a yield of 1.09 billion stems (Yang et al., 1998). Due to the growth of the economy, in 2005, production in mainland China reached 600,000 ha with 28,600 ha in greenhouses. Asia has 75% of the world total cut flower production area. India and China possess the largest world available land for flower production (Baris and Uslu, 2009). However, cultivation is very inefficient and only accounts for 0.5% of the world's total supply. At present the level of floriculture research and managerial skills are limited, the annual domestic consumption level is low, available land is cheap and flower auction market is in its infancy stage. However, the industry has good-spirited entrepreneurs; large genetic diversity of indigenous flowers and plants that can be improved and introduced into the floriculture market (China Flower International trade,

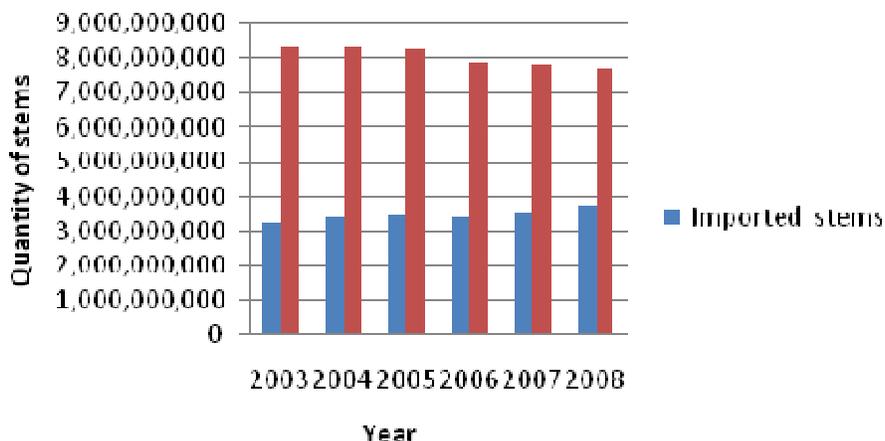


Figure 2. Quantity of imported and locally-produced flower stems.

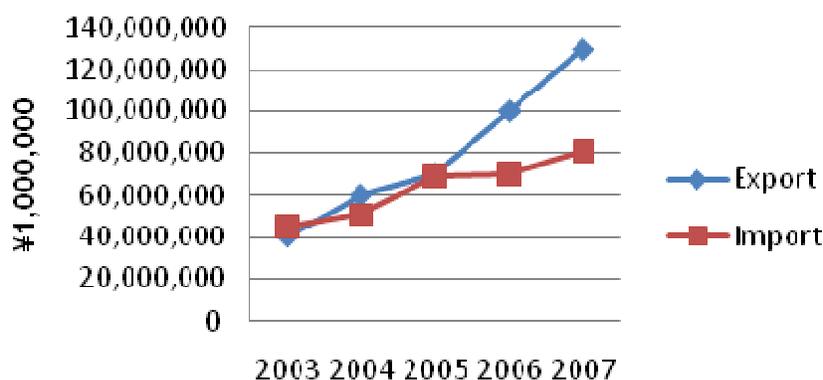


Figure 3. Trends of Chinese flower export and import in 2003-2007 (Exchange rate RMB6.74 to US\$1.0).

2007).

### Trends in the international flower trade

China's cut flower market had grown nearly 20 times in the last decade and had become a major producer of flowers. Export and import of flower products increases annually (Xiangyu et al., 2007). Between 2004 and 2006, the market grew at an annual rate of more than 20%. In 2006, flower export reached ¥100,000,000 and import value of ¥70,000,000 (Figure 3).

### Floriculture progress in China

Chinese floriculture industry is growing like wild fire (Kargbo et al., 2009). Different regions/provinces compete in the flower production and trade, resulting in economic boom. Yunnan province accounts for 50% of the Chinese domestic market with an output of 4.1 billion

stems per year (Clements-Hunt, 2004). Guangdong, Zhejiang, Fujian, Yunnan and Shanghai accounted for 79% of the total exports of flowers in 2007. The export market share of Guangdong and Zhejiang was 54% with an export value slightly over US \$26 million each. Yunnan and Fujian had almost an even value of US \$19 million while exports growth rate of Henan and Hainan was 133.6 and 66.7%, respectively (Xu et al., 2008). Qingzhou city is the largest flower market in China with 5 km flower stands and shops. Guo (2008) of the Weifang Daily reported that 3,000 agents designated as "messengers of flowers" have cropped up to promote the market.

To gain greater market share, online marketing of flowers is on the rise with twenty-six companies already selling flower products online (Liu, 2008), and land transportation across the borders. For instance, Kunming Jinyuan flower company shipped 140 tons of fresh cut flowers to Bangkok by land transportation lowering transportation cost by 60% (Baidu Flower, 2008). Due to the perishable nature of flowers, success on the flower market depends on efficient transportation system (DIPP, 2009).

**Table 2.** Export volume and value: 1980 - 2009 selected years.

Year	Volume (kg)	Value in KSH 1.000.000
1980	7422	227,
1985	10,000	463
1990	14,425	940
1995	29,374	3,642
1996	35,212	4,366
1997	35,853	4,900
1998	30,221	4,857
1999	36,992	7,235
2000	38,757	8,650
2001	41,396	10,627
2002	52,106	14,792
2003	60,982,885.36	16,500
2004	70,666,260.72	18,700
2005	81,217,831.59	22,900
2006	86,480,002.13	23,600
2007	91,192,726.00	42,400
2008	118,626,644	34,308
2009	120,394,968	37,086

Note: KSH means Kenya Shillings (Exchange rate KSH74.0 to US\$1.0).

## KENYAN FLORICULTURE INDUSTRY

Kenya used to be the fourth world's largest exporter of flowers (Wijnands, 2005) but it declined to 6th position (Habte, 2007) due to price fall in the international market. Kenya still controls 60% of the African flower trade (Shivoga, 2009). The export of horticultural products has moved from being the second source of foreign exchange earner after tourism (Gross, 2002) to becoming the first earner of foreign exchange (Njoka and Reuters, 2008). Kenyan main flower market is the Netherlands where 2/3 of the products are sold through the auction. The direct marketing strategy to supermarkets has increased the industry's profitability and competitiveness in the EU markets.

The industry has grown rapidly in recent years by 12 - 15% per annum. This is due to great improvement in its logistics and infrastructure. Production is mainly under glasshouses. 70% of the production value comes from roses. Kenya roses yield is 70% higher than The Netherlands' (East African Standard, 2006). Kenya surpassed Colombia, Ecuador, and Israel in volumes of export to the EU (Dolan et al., 2002) in recent years. The Kenyan flower industry has strong collaboration with over 26 government and nongovernment agencies, both domestic and international (HCDA, 2007). However, the industry depends solely on foreign countries for both production materials and market for its products. This poses a huge challenge to the future sustainability of the industry. Kenya flower future industry survival depends largely on its capacity to nurture and develop its domestic market

and research but this will take a long time because the country's economy is weak

## Production and export trends of Kenyan flowers

The different climatic zones in Kenya, low production cost, plenty space for large companies and low labor cost place it at an advantage compared to The Netherlands. The climate is conducive for all year round cultivation.

The export trends are summarized in Table 2. In 2006, cut flower accounted for 55% (KSHS 23.6 billion) of export market share value of horticultural products. The export value almost doubled in 2007 to KSHS 42.4 billion (HCDA, 2007) but declined in 2009 to KSH 37.1billion (HCDA, 2009) due to drought and recession in the EU markets

## ISSUES IN THE FLORICULTURE INDUSTRY OF THE NETHERLANDS, CHINA AND KENYA

A number of issues have great impact on the flower industry. For instance, the importance of sustaining quality products, assortment, availability, capital, competition, pest and disease management have been addressed widely by many experts. Four key issues that need to be addressed adequately are: the environmental and health challenge; development of home market, high production and delivery cost and the rising consumer demands.

### Environmental and health challenge

Environmental issues such as water quality, greenhouse emissions (Scott, 2003), chemicals and exotic pests have been implicated as factors that pose a great challenge to the future of the industry. Cut flowers have loose regulatory status in the importing countries because they are not edible crops and are exempted from regulations on pesticide residues, hence they are not inspected for residues (Tenenbaum, 2002) though they carry 50 times more the amount of pesticides allowed on foods (Donohoe, 2008). The consequences of these chemicals are likely to be fairly significant although not exactly known in developing countries such as Kenya and China due to poor data documentation.

Every year in China, 2,480,000 tons pesticide and fertilizer drain into the Zhu River This has seriously polluted the river and coastal waters in Guangdong Province (Yang, 2007). This water is irrigated for flower production. This situation is likely to have negative effect on Chinese flower products in the international markets.

Roses grown in the Netherlands emit 5.8 times carbon dioxide (CO<sub>2</sub>) than roses in Kenya (Williams, 2007). This suggests that production of roses in Kenya is more environmental friendly than in The Netherlands. Also the study of Williams (2007) revealed that the production and

delivery of 12,000 cut stems of roses by air can emit 2,200 kg CO<sub>2</sub>. This shows that even when flowers are environmentally produced, moving them from one place to another by air can result to environmental pollution.

Annually, 5% of Kenyan income goes to methyl bromide importation alone (Fedha, 2009). This Methyl bromide is so toxic that it kills all soil borne pests and developing countries have agreed to end its use by 2015 (FAO, 2002). Kenya imports around 95% of these pesticides. What is disturbing is that Kenya uses 5% of its foreign exchange earnings to import this harmful substance. Most of the pesticides sold in the Kenya market are not registered with the Kenyan government (PAN UK2006a) so many peoples' health had been affected by the illegal trade. However, the Kenyan Flower Council (KFC) was formed with a Code of Practice to address the issue (PAN UK, 2006b).

Lake Naivasha is source of water for irrigation for flowers in Kenya. This lake is shrinking and is polluted by the chemical drainage from flower farms. The tones of flowers flown out of Kenya to Europe go with the lake. Unless something is done urgently the existence of the people and aquatic organism is threatened. Conservation of the environment has underscored great attention in the global platform with environmentalists and consumers of agricultural products demanding for new approaches to the production of flower products that will not compromise environmental safety. The focus then has to be on best production practices and enforcing legislations, conventions and policies that ensure clean environment.

### Development of home market

The floriculture industry changes rapidly as a result of globalization. The global trade of floriculture products few years ago was confined within borders. Presently, the world has become a global village and all borders and world market expanded due to improved and efficient air transport system (Mathee et al., 2005). In the early 1970s and 1980s, the demand for flower was higher than the production. Floriculture then became a booming enterprise. In the 1990s, new markets and more producers entered the international trade. Demand then stabilized mostly in the high consuming countries like Germany, France, UK, Sweden and Japan. This attracted competition in these markets (USITC, 2003). Developing countries in Africa, Asia, Eastern Europe and South America emerged as new competitors for the international markets.

At present, world production of flowers has exceeded demand and that has generated fierce competition resulting in a large price fall of 25% in the EU markets. The domestic markets for China and Kenya are virtually weak and remain unexploited. The increase in consumer wealth, population and improved standard of living in China and Kenya are promising for the future growth of their local flower markets.

Producers in these two countries presently are net exporters of fresh flower products to and net importers of planting and production materials from The Netherlands, but consumers in The Netherlands are increasingly demanding high quality products produced under best agricultural practices from China and Kenya. This poses challenges for China and Kenya. Total dependency on the international markets will not be sustainable in the long run and there is the risk of the international market to collapse. Thus, the focus for China and Kenya should be centered on development of home markets, exploiting and developing new germplasm, flowers that will be of high demand in the international market

### High production and delivery cost

The cost for inputs, heating and cooling and delivery services continues to increase. This increases production costs for growers, distributors and exporters. At the same time, the average cut flower price in most international markets declined by 20% (Haw, 2008). A huge challenge is confronting chain members on how to stay in the business in the face of a rising consumer demands. Consumers want high quality products at affordable prices. This requires keeping production cost as low as possible without compromising quality. Producers in China and Kenya compete in this global market by exploiting the available relatively cheap labor and land in order to keep the production cost as low as possible. However, they have great difficulty to meet the cost of air freight which is very high.

Considering the perishable nature of the products, huge logistics are needed to transport them and the high weight to the value ratio makes them costly to transport. Rao (2006) stated that producers in third world such as China and Kenya will incur huge international loss by failing to meet the timely delivery of flowers due to inefficient supply chain management. Air connection is a huge challenge for producers located far from their markets. For instance, air freight, handling, and marketing costs in Europe accounted for 50 and 62% of Kenyan and Ugandan flowers, respectively (ABN AMRO records, 1995). The study of Baidu (2008) found that it could be 60% cheaper to transport flower by road than by air from China to Bangkok. This suggests that road transport is a potential cost effective way to move flowers across borders. In the face of these uncertainties, it is essential to work smart, exploit nearby virgin markets and develop land and sea transport. Also development of varieties that are tolerant to the stress of long shipping and storage can reduce the cost of freight in the future.

### Rising consumer demand

As the flower business expands, production increases, supply outweighs demand, and consumers response

becomes more unpredictable demanding high standard products that offer diversity in colour, good texture, forms as well as better performance in interior environment (Hadiwigeno, 1998), long shelf life and sweet smell (Redfern and Riungu, 2007). For instance for many years, roses in Kenya dominated the EU market but now, consumers in the EU have expressed concerns about the scentless nature of the roses.

Consumers taste could be influenced by several factors. Example, Dutch rose consumers turned to other flower products when the price of red rose sky rocked to €2.65 per stem in 2006 (Plasmeijer and Yanai, 2006). That resulted to heavy losses to suppliers. To meet consumer demands, supermarkets put pressure on suppliers and the pressure is passed down the chain creating a more risky work environment (Edwards, 2007) for producers in China and Kenya. Vasgar (2006) concluded that the rising demand for flowers had led to trade off between economy and environment in the industry.

Consumers are aware of the global pattern of labor rights, occupational safety and health and environmental abuses and have pressed on for sustainable cultivation of flowers, these efforts have given birth to the establishment of best production practices and ethical measures in the industry. Fair trade has become the yardstick to measure best flowers. However, majority of farm owners in China and Kenya have not signed up to the fair trade legislation.

The Netherlands has incorporated fair trade flowers in its auction sales at the beginning of 2008 (Hoek, 2007) and 700 companies have signed up to the model (Van Wiel, 2007). Flower and plants can now be bought under the label fair flowers fair plants (FFP).

## THE FUTURE PROSPECTS AND TRENDS OF THE FLOWER INDUSTRY OF THE NETHERLANDS, CHINA AND KENYA

The prospects of the global floriculture industry are promising but prices will remain volatile. Competition for existing and virgin market will rise. Small holders will disappear except in virgin producing countries. The new trend shows the cost of production is increasing while the overall consumption is declining. Therefore, there is need to shift more attention to consumption oriented approaches. Quality, cost and diversity of products will be determinants for survival in the industry. Consumer demand for fair traded flowers shall take a front stage. Good production practices, competitive advantages and strategic behavior will determine the sustainability of the industry. Modern distribution will dominate the market with new business drivers. Different product concepts and positioning (flowers and plants arrangements) that will satisfy the increasing consumer demand for variation in personal gifts and taste will account for a significant percentage of the turnover of the flower market.

The Netherlands continues to maintain its influence in

the global industry but faces threats from new marketing outlets such as direct sourcing of supermarkets from producers and new distribution centers. The Netherlands will need to strengthen its innovations in distribution and marketing. The Netherlands will need to specialize in products that do not compete with the ones coming from low labor cost countries such as China and Kenya, etc, to maintain its influence.

China has the potential to become the largest world producer of flowers in the near future because of the large investment directed in the industry by the government, excellent infrastructure, the existence of diverse unexploited flower plants and favorable production factors. It has the largest potential market in the world and flower consumption is expected to increase as the economy grows. Thus, the direction for the Chinese flower industry should be to develop its home market, improve the existing varieties through research, address the issue of the environment, and develop sustainable production and delivery systems.

Kenya will continue to dominate production in Africa because of the favorable investment policy for the flower industry, the production conditions and the improved infrastructure. It will remain a net exporter of flower products. Like China, it should focus on research so as to improve on its local varieties, strive to develop the home market, be innovative and become a self-bearing industry.

In conclusion, understanding and addressing the issues of the environment, home market, consumer tastes and production and delivery cost will strengthen the positioning of the Dutch, Chinese and Kenyan flower products in the competitive industry.

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