

## Appendix 7: Floriculture for a blooming Africa?

By: Carin van der Lans, PPO<sup>21</sup>

*Protected horticulture is rapidly expanding in developing countries. In Eastern Africa floriculture even seems to be booming business. This paper focuses on how the development of the floriculture industry contributes to local economic development in several African countries. An impression is given of Kenya and Ethiopia, two East-African countries with a young industry, as well of South-Africa, which is a country with a much more mature industry. As an example of the impact of a commercial intervention on a developing industry, this case ends with a description of the spin-off of an IPM project in Ethiopia.*

### 1. Introduction

From the 90's floriculture started to develop in several East-African countries. The industry has grown enormously in Kenya and Ethiopia, but also in Uganda and Zimbabwe is floriculture. Production is mainly export driven in these countries: flower production is much cheaper than it is in The Netherlands, even when transport (airfreight) costs to the Dutch auction are taken into account. This makes it interesting for Dutch growers to start a production site in East-Africa. After these first Dutch initiatives also local entrepreneurs started to produce for the European market.

There is one country in Africa where floriculture has a much longer history, going back to the early 1940's: South-Africa (RSA). The industry in this country has become quite independent and mature. While East-African flowers are mainly being exported to Europe, in South Africa the local market still is of major importance; only one third of all flowers are being exported. As a result of the Apartheid regime most countries boycotted trade, which was the main reason and trigger for the development of a local supply industry.

### 2. Floriculture industry development in Africa

The following three African cases of development of the floricultural cluster describes how (local and foreign) initiatives have contributed to the development of the floral industry in each country. The development phase of the floricultural sector differs per country. The development of the local floriculture activities (cluster) can partly be explained by this difference in development phase.

For Ethiopia an example is given of a Dutch intervention in the floral industry: IPM

#### South-Africa

South Africa has a surface area of 1.2 million km<sup>2</sup> and 28.7 million inhabitants (population growth: 0.28%). In 2001 ornamental production area was around 1.050 ha. Protea is the main cut flower. Recent years rose production strongly developed, into around 80 ha. Other important flowers are chrysanthemum, dianthus, gladiolus, lily, lisianthus, limonium and gypsophylla. Production in greenhouses is increasing. The number of producers is around

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<sup>21</sup> Wageningen UR Greenhouse Horticulture, P.O. Box 20, 2665 ZG Bleiswijk, The Netherlands  
www.glastuinbouw.wur.nl

1,000, with a high content of Dutchmen on the big companies. The so-called established companies are founded by Dutch emigrants. Therefore, many flowers and plants growers have Dutch roots. The ornamental companies are located around the big cities and airports, particularly around Johannesburg, Cape Town and Durban.

The floricultural sector in this country can profit from the good common economic structure, a huge workforce at relatively low cost (around 40% unemployment), low-cost energy and generally favorable weather conditions.

There are about 15 industry-leading cut flower companies and less than 10 potted plant companies. Their cultivation is becoming more professional. Companies invest in modern climate controlled greenhouses, high quality planting material, new production methods, to produce a good, year-round exportable product. Some companies invested in own laboratory facilities for propagation and breeding. Also a growing number of companies produce according to certificate schemes of EurepGAP and Hazard Analysis Critical Control Points (HACCP) and try to improve logistics, information management and storage facilities. To make year production and export more interesting, a large number of newer companies cooperate for marketing and export. Increasingly direct business is done with retail chains abroad.

However, the majority of South-African farms is of the type medium-size and small, and is characterized by low-technology. These are outdated companies, small companies and companies with a wide range of flowers. They are unable to export, so produce mainly for the local market.

The ornamental industry has developed into a mature, rather independent industry with hardly any dependency from other countries. Due to the Apartheid regime most countries boycotted trade. This made it necessary to develop a local supply industry, local producers associations and an own knowledge infrastructure. A complete independent industry was built up, as well as the cluster around it. Nowadays all inputs are locally available, except for innovative high-technology investments.

Some more characteristics and data about the South-African floral cluster:

- The local market is well developed, which makes marketing of flowers simple. There is a Flower Auction in Johannesburg, the largest auction in Africa. 60-70 % of the flowers are traded at this auction. Buyers are florists and wholesalers. Wholesalers distribute the flowers around the country. Around 30-40% of the flowers are exported or sold directly from the farm.
- Several producers and exporters organizations are set up. These associations support the growers with news, research, grower meetings, cooperation between growers, and organize conferences, tours and seminars. Some associations work together with other supporting organizations, for example to get support at arranging the air freight. All activities of the associations contribute to the professionalizing of the flower industry.
- Knowledge is readily available. The Agricultural Research Council (ARC) is the most important cross-cutting agricultural research Institute in South Africa. In some underlying centers research and knowledge transfer is done, also for the flower industry. Also the University of KwaZulu-Natal and the Department of agriculture, Cedara, undertake ornamentals research. Some knowledge must be obtained from the Netherlands.
- All inputs can be bought in the country itself. There are a number of specialized suppliers for ornamental horticulture. There is local production of plant material (cuttings and tissue culture), both for local use and for export. In order to meet the quality standards of the market, the exporting flower farms import a lot of the needed input. This regard innovative high-technology, which is not

local available, like modern greenhouses, cooling facilities, sorting and packaging machinery, and R&D.

The South-African government has no specific programs in the field of horticulture. Government is actively promoting “Black Economic Empowerment” (BEE) in the agricultural industry. According to Agri-BEE-policy black South-Africans should get involved in floral industry, as owner, manager, farmer, supplier, exporter, etcetera. The program resulted in the development of some new ornamental farms, with at the moment ten large-sized farms and many micro-business farms.

### *Summary*

The floriculture industry of South-Africa has developed into a stabile, adult and complete cluster. The economic boycott due to the Apartheid regime is one of the most determining factors in this development; it forced South-Africa to build up the industry and the cluster around it by herself. Most inputs are locally available. Modern, exporting farms buy high-technology from Dutch suppliers.

### **Kenya**

Kenya is situated at the equator, which means that there are no seasons. This makes the country very interesting for horticulture. Kenya has a surface area of 0.58 million km<sup>2</sup> and 38.6 million inhabitants. The most important and well-known flower production area is around Lake Naivasha. Other important areas are around Kinangop, Nakuru, Mount Elgon, Kitale, Eldoret, Kericho, Limuru, Kiambu, Athi Plains, Thika and the region of Mount Kenya. In these areas floriculture has lead to an important growth in the economic activities: around 50,000 to 60,000 people work in the primary industry and another 500,000 people in the related industries like supply, transport, packing, financial services, etcetera.

The first initiatives in flower production took place in the mid 80's, when some Dutchmen started to produce roses in Kenya. The favorable climate as well as the availability of an international airport - which was already available in that period because of the large number of tourists that visited Kenya - played a very important role in their choice.

Since the 90's the industry developed explosively. Nowadays there are about 140 flower producing companies at a total area of around 2,100 ha greenhouses and 400 ha outdoor production. Over 90% of the export flowers are grown in greenhouses (plastic tunnels). The 25 largest companies produce 75% of total export, mainly rose (1400 ha). Also dianthus, statice, alstroemeria, lily and hypericum are grown.

There are considerable differences in size and technical level between the various farms. The large and medium-sized enterprises are owned and managed by Europeans. The trend is that the high-level management at these farms is being fulfilled by Kenyans. The farms vary in size between 20 and 100 ha and employ between 250 and 6,000 people. The production techniques at these companies are quite advanced. The greenhouses are of steel stands, some produce their own plant material, and the owners invest in post-harvest facilities and conditioned transport.

There are also small sized farms (5-20 ha), which are owned by indigenous Kenyans. These farms produce the less capital intensive flowers and export only part of the year (to the Dutch auction). The farms have insufficient finances, knowledge and management competencies for future development. They also need assistance for the future in co-operation in marketing and sales, technical assistance, financing for inputs, and advice in the field of irrigation and cooling.

The first Dutch investments in floriculture have lead to a huge spin-off in a period of two decades; a lot of local economic activities have set up since then. Although several inputs still

must be imported from abroad, the local flower cluster has developed rather well. Some characteristics about the Kenyan floral industry and cluster are:

- Various local and foreign (Dutch) growers and investors have invested in recent years in new production companies. Sometimes these are joint ventures.
- The Kenya Plant Health Inspection Service (KEPHIS) is set up for phytosanitary checks. The organization takes care of the needed export certificates, and also works at variety protection, seed certification, and analysis of soil, water, agricultural products, fertilizers and pesticides.
- Several producer (and exporter) organizations are set up to stimulate development and professionalizing of the industry, among others the Kenyan Flower Council (KFC). The associations support the growers in marketing and technical field, and stimulate them to meet international standards, to self regulate safe work and production circumstances according to local and international standards, to link producers and exporters, etcetera.
- With the accreditation of KFC, Kenya has the first foreign certification body for the Kenyan flower industry and for the industries in neighboring countries.
- Various inputs are locally available (often from joint ventures with foreign companies), like greenhouses, shadow nets, irrigation and cooling techniques, computers fertilizers, herbicides, transport, harvest cooling techniques, packaging materials and other supplies for post-harvest handling. Most planting material still has to be imported, but some large companies started to develop their own stock of plant material.
- Some small local companies supply irrigation systems and computers to the farms. Local people do the installation of these systems. About one fourth of the installation techniques are locally produced.
- Packaging materials, labels, trays and other value adding products are being produced in Kenya. This industry is growing.
- Two local, large companies supplying natural predators for IPM have started business. These are Real IPM Company and Dudutech. Real IPM also produces and develops bio pesticides. Because of this local availability of natural enemies, the need for biological control agents has grown. Foreign companies initiated joint ventures in Kenya that visit the flower farms in order to support the growers with IPM.

Despite the local availability of several suppliers, European and Israeli suppliers still play an important role in Kenya. A number of European suppliers have settled, i.e. propagation companies, breeders, traders, exporters and suppliers. Most of the greenhouses and installation techniques are imported, as well as fertilizers, pesticides and various other inputs. Also almost all planting material is imported, mainly from The Netherlands. For growing advice Israeli and Dutch advisors visit the farms on a regularly basis. And, most knowledge is being imported from Western countries.

Almost all flowers are marketed in West-Europe, with about three quarters through the Dutch auction.

### *Summary*

In Kenya the floriculture industry has developed into a rather adult and stabile industry. All kind of floriculture related companies and associations in the cluster were set up locally, sometimes in joint ventures with Dutch companies. The presence of various supplying companies, producer organizations, laboratory services, etcetera has contributed to further economic development of the Kenya.

### Ethiopia

The floriculture industry in Ethiopia is the youngest of the three countries. The country has a surface area of 1.12 million km<sup>2</sup> and 72.8 million inhabitants. Production is mainly located at the central plains, in a circle of 50-100 km from Addis Ababa and in the environment of Lake Ziway.

After the fall of the communist regime the government introduced at the beginning of the 90's a free market policy. Private companies were allowed in the agricultural sector and the government started to attract foreign investors in order to obtain foreign exchange for economic growth, to create jobs and to develop new economic activities (i.e. supplying industry). In five years time the industry rapidly developed into 900 ha this year. Almost half of all these new companies are of foreign ownership, mainly Dutchmen, Indians and Israelis. Out of 90 farms are 20 of Dutch origin.

The floral industry has created a lot of jobs in this short period. About 16,500 people work at the farms and about 66,500 people in the related industries. Also new services have arisen in surrounding villages, like shops, hotels, restaurants, which changed the local environments. The result is a large labor migration from areas with low levels of employment.

There are three types of flower companies in Ethiopia: summer flowers (which were already grown during the communistic regime), roses in greenhouses and cuttings in greenhouses (chrysanthemum, poinsettia's). Rose is the main cut flower and is grown at 80% of the production area. Production of it is being modernized and becoming more sustainable. Experiments are done with production in coco and beads, and with IPM.

As the flower industry is a relatively young one, the surrounding cluster has to be developed. Almost all of the inputs must be imported, but a very small local cluster is present:

- Some local small-scale enterprises deliver irrigation systems and computers. Labor to install is often done by locals.
- With the setup of joint ventures local production of plant material is increasing. These are high-tech, sophisticated companies.
- Value-adding products like packaging materials are partly produced in Ethiopia. These are mostly cardboard products.
- Some producer and exporter associations are set up to professionalize the industry and support the members. They have developed a code of conduct - including requirements at the field of labor and environment - which is a requirement in obtaining an export license. Also courses are given and growers are stimulated to exchange experiences. Other tasks and gains of the associations are the collective agreements for air cargo and administrative issues with the airlines, more regular charter cargo flight by Ethiopian Airlines, and collective purchase of inputs like agrochemicals and smaller equipment.
- Since 2009 there is an extra handling and storage compartment at Bole International Airport, which has lead to extra employment.
- With Dutch PSOM subsidy a number of Dutch companies started to cooperate with local companies. Companies have set up for propagation of young plants, for production of other flowers than rose (e.g. Lily, freesia, filler cut flowers), for breeding of indigenous wild flowers and a tissue culture company. This has led to new employment. Also local people get trained and attention is paid to sustainability.
- A phytosanitary laboratory is being set up to check export flowers for harmful organisms or pesticide residues.

Import of inputs comes mostly from Europe or Asia. Plastic tunnel greenhouses are imported from India, Israel, Spain and China. Almost all installation techniques are imported. Most fertilizers, insects, pesticides and substrate are imported; this is mainly from The Netherlands.

For the development of a horticulture knowledge infrastructure various international projects have been started as well as cooperation between knowledge institutes (in which The Netherlands play a main role). These initiatives aim to set up a practical training center and to stimulate cooperation with and between growers. The Netherlands (i.e. Wageningen UR) supports by facilitating courses in cultivation, management, IPM, European quality standards, etcetera.

#### *Summary*

The floriculture industry in Ethiopia has developed rapidly. Government plays an important role in this development by a number of measures taken. But, still a lot of the needed input has to be imported from Europe or Asia. To further develop the industry and cluster, recently several projects are set up with support of subsidies.

### **3. Integrated Pest Management in Ethiopia**

As an example of how an intervention can work out for a developing floral industry and local economic development a project of Wageningen UR Greenhouse Horticulture in Ethiopia is described. Aim of the project was the introduction and up-scaling of Integrated Pest Management at Ethiopian farms and in the floriculture industry.

#### **The intervention**

With the rapid development of the sector also public concerns within and outside Ethiopia started growing. These concerns regard the labor conditions at the farm, the environmental impact (over-exploiting water resources), and human health due to the misuse or overuse of pesticides and fertilizers. Ethiopian government as well as several research programs aims to reduce the pesticide use while maintaining agricultural productivity. In this light the Ethiopian Horticulture Producers and Exporters Organization (EPHEA) has taken the initiative to develop a code of conduct. It resulted in a project in the Ethiopia-Netherlands Horticulture Partnership Program, in which Wageningen UR and EPHEA worked together to develop a Code of Conduct. Narrowly related to this project also a project was done about Integrated Pest Management (IPM). In the project IPM was introduced at several Ethiopian farms. Also was worked at up-scaling of IPM in the industry. One of the project activities was training of growers in IPM. At the same time also extension agents and researchers were trained and supported in IPM. To provide on a regularly basis for natural enemies a supply chain was set up between a Dutch supplier of natural enemies and the growers in Ethiopia.

#### **The spin-off**

The intervention with IPM can be seen as a first step in a total new development towards sustainable production. Until now no new economic activities has resulted, but spin-off of the project has been mainly in the field of services development and capacity building: training the trainers and set up activities in Ethiopia horticultural research. The two most important resulting local social-economic activities are:

- The development of sustainable approaches for managing pests and diseases requires accurate training in specific topics. Therefore, people of EPHEA were trained to give courses around IPM. These are basic courses for staff of farms that have newly started IPM and advanced courses for already participating farms. Also EPHEA people were trained about the facilitating of study groups in which farm managers can exchange their experiences in IPM.
- As researchers, growers, field workers and students hold different sets of ecological knowledge, they can learn from each other. Therefore MSc's at Jimma University

were given attention, in order to develop ‘a new type of professionals’. This is done by linking research training with on farm trials.

As a result of the project the position of EPHEA has become stronger in the industry, because of the facilitating (training) role the association plays in IPM. Another effect is that at this moment a phytosanitaire lab is being set up which will strongly cooperate with the Dutch Plant Health Services.

Although no new agribusiness companies or other local economic activities have started, it can be expected that this will happen in a few years time. One can think of firms that produce and supply natural enemies, as well as commercial scout agents.

#### **Catalyzing and hampering factors**

In case of this project, both the Ethiopian government and the industry (EPHEA and growers) were convinced that besides the intervention of introducing IPM at the farms, it is also important to change the knowledge infrastructure (and in time other parts of the cluster). This willingness has catalyzed the introduction of IPM, which means the introduction of IPM at the farm, the setting up of training facilities at EPHEA and the linking of research training with on-farm trials.

There also have been hampering factors. During the project the introduction of IPM at local farms was hampered from the beginning by lack of knowledge of IPM. Therefore scouts and farm managers had to be trained in the application of natural enemies and in the recognition, scouting and monitoring of mite and natural enemies in the crop.

Also there were, and still are, no local companies available that can supply natural enemies. With the support of Koppert (a natural enemy firm in Holland) this problem was tackled. This company supplies on a regular basis the needed insects.

During the project it became clear that logistics of the imported insects from the airport to the farm needed to be better organized. It is extremely important that the predators reach the farms as soon as possible, without delay during transport, and are transported swiftly and under cooled conditions. Some arrangements were made for this.