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## The Flower Industry in Tanzania: Production Performance and Costs

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**Abstract:** A survey was conducted to assess production levels, costs, marketing and policy regulations affecting the flower industry in Tanzania. Results indicated that rose and chrysanthemum were the main ornamental crops produced for export with yield of 908 and 145.6 million flower stems and shoot cuttings per year in 2003, respectively. The surface areas under rose and chrysanthemum cultivation increased by 328.9 and 658.3% and the corresponding production by 316.84 and 666.33% between 1997 and 2003, respectively. Greenhouse construction accounted for 50% while purchase of land and rose planting materials represented 17.7 and 12.3% of the total investment cost, respectively. Interest on loans and freight charges accounted for 19 and 16.0% of the total operational cost, respectively. All chrysanthemum shoot cuttings were directly exported to The Netherlands whereas 90% of total rose flowers were exported to Europe through European middlemen with a marketing commission of 18-30% of sales and 52% of total operational cost. The average selling prices of rose and chrysanthemum were 0.23 and 0.11 US\$ per flower stem and shoot tip cutting, respectively. Foreign growers appreciated the provision of tax exemption of five years but considered the National Agricultural Policy of 1997 being too general and not favourable to the flower industry.

**Key words:** Tanzania flower industry, production costs, marketing, agricultural policy

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### INTRODUCTION

Cut flower production constitutes a major ornamental crop business in the world with most marketed cut flowers being rose (*Rosa* × L.), carnation (*Dianthus* × L.), tulip (*Tulipa* × L.) and chrysanthemum (*Chrysanthemum* × L.) (Urban, 1998). Before 1990 and USA and European countries, especially The Netherlands, France and Germany were traditionally the principal producers of cut flowers in the world. Increasing production costs led to the transfer of flower investments to developing countries in tropics where labour is cheap and climate is favourable throughout the year. By 1990 South America (Colombia, Ecuador, Brazil) and Africa (South Africa, Kenya, Zimbabwe, Tanzania and Uganda) bypassed the developed countries in cut flower production capacity (Ortiz, 1997). In 1993/95, rose export to Europe from Tanzania, Kenya and Ecuador increased by 700, 173 and 155% in volume, respectively (Morisot, 1996). As a consequence, more European and USA growers started to invest in African and South American countries, switching on to production of non-traditional flower species, improving production techniques, certifying flower products (Urban, 1998) and demanding for re-introduction of protectionism (Urduaneta, 1994). Of all the above movements, the transfer of investment to tropics has made a rapid tremendous development.

In Tanzania, cut flower industry was started in 1986 by Tanzania Flowers Ltd. with the main flowers being carnation, euphorbia (*Euphorbia marginata* Thumb.) and bishop's weed (*Ammi majus* L.). All these flowers were cultivated in the open field. The production of cut flower rose and shoot cutting chrysanthemum started in 1992 and 1997, respectively (Semboja and Mbelwa, 1999). The number of companies producing rose cut flowers and chrysanthemum shoot cuttings in the country increased to 13 in 2003. Of these, four enterprises produced chrysanthemum for shoot cuttings. Foreign and local investors owned eight and five enterprises, respectively. More investors have shown interest to invest in flower business in the country. Flower growing being a new business in Tanzania, data on production performance, costs and marketing are limited. This problem is more serious to local potential investors who do not have experiences in flower business. This study was therefore undertaken to provide information that could guide potential investors.

### MATERIALS AND METHODS

**Description of the study area:** The study was conducted in Arusha region located in the northeastern corner of Tanzania. It lies below the equator at latitudes 2°S and 6°S and longitudes 35°E and 38°E. The region has a common

border with Kenya in the north, which makes flower export easier and cheaper. All cut flower enterprises are found in the highland areas above 1000 m a.s.l around the Meru, Hanang and Oldeani mountains in Arusha and Arumeru districts. These areas are characterised by fertile grey soils originated from recent volcanic ash, a fairly reliable average annual rainfall of 1000-1200 mm, temperatures of 17-30°C and relative humidity of 50-70%.

Planting materials and cut flowers are cultivated in plastic greenhouses, either in soil or soilless culture. The most common used soilless materials include coconut peat and volcanic turfs. The farms are relatively near to two international airports, namely the Kilimanjaro International Airport (KIA) in Arusha, Tanzania and Jomo Kenyatta International Airport (JKIA) in Nairobi, Kenya.

**Survey of flower producing enterprises and data collection:**

The survey was conducted in April 2003 involving eight out of the 13 flower and planting material producing enterprises in Arusha and Kilimanjaro regions as shown in Table 1. Three different questionnaires were used for general managers, greenhouse managers and postharvest handling managers. The questionnaire for greenhouse managers included questions on investment cost namely, construction of greenhouses, purchase of land, planting materials, machinery and cold storage and on operational cost namely, marketing commission, freight costs and interest on loans. On the other hand, the questionnaire for greenhouse managers consisted of questions on areas under flower cultivation, yield of rose flowers and chrysanthemum shoot tip cuttings, purchase of agrochemicals and labour charges. The questionnaire for postharvest handling managers consisted of questions on quantities of flowers and shoot tips exported and selling prices. The question on suitability of the agricultural policy and other regulations to flower production business was asked to all the three groups of the respondents. Forty respondents were interviewed, six being general managers, 28 greenhouse managers and six postharvest handling managers.

Table 1: List of flower producing enterprises in Tanzania

Name of farm	Origin of investment	Flower type produced
List of surveyed enterprises		
Kiliflora Ltd.	Foreign	Cut flower rose
Tanzania flowers Ltd.	Foreign	Cut flower rose
Hortanzia Ltd.	Foreign	Cut flower rose
Arusha cuttings Ltd.	Foreign	Chrysanthemum shoot-tip cuttings
Tengeru Roses Ltd.	Local	Cut flower rose
La Fleur d'Afrique Ltd.	Local	Cut flower rose
Multiflowers Ltd.	Foreign	Chrysanthemum shoot-tip cuttings
List of enterprises which did not respond		
Continental flowers Ltd.	Local	Cut flower rose
Florisa Ltd.	Local	Cut flower rose
Green stars cuttings Ltd.	Foreign	Potted bedding plant cuttings
Dekker bruins Ltd.	Foreign	Chrysanthemum shoot-tip cuttings
Dekker bruins kilimanjaro Ltd.	Foreign	Chrysanthemum shoot-tip cuttings
Horticulture farm Ltd.	Foreign	Cut flower rose

Count and measurement data were analysed using Microsoft Excel Version 1997 based on descriptive statistics, namely sample means and mean deviations. Data on agricultural policy and regulations were descriptively analysed.

**RESULTS AND DISCUSSION**

**Cultivated areas and production levels of rose and chrysanthemum:**

The surface area under cultivation of cut flower rose increased from 31.4 to 259.5 ha and marketable rose yield from 113 to 908.3 million of flower stems in 1995 and 2003, respectively (Table 2). On the other hand, the surface area under chrysanthemum shoot tip cultivation increased from 1.2 to 9.1 ha and marketable yield of shoot tip cuttings from 19 to 145.6 million in 1997 and 2003, respectively (Table 2). According to Mutabuzi (1999) rose, chrysanthemum and carnation have the highest demand on the European market. For instance, in 1993/1995 the demand for rose, chrysanthemum and carnation was ranked as first, second and fourth of the 25 best selling flowers in the Dutch International Flower Auction.

Table 2: Evolution of surface area under cultivation and yield of cut flower rose and shoot tip chrysanthemum of seven enterprises in Tanzania from 1995 to 2003 (±MD<sup>1</sup>)

Year	Rose			Chrysanthemum		
	Area (ha)	Number of flower stems (000,000)	Number of flowers (000,000) per ha	Area (ha)	Number of shoot cutting (000,000)	Number of shoot cutting (000,000) per ha
1995	31.4±10.0	113.0±5.5	3.6 ±0.002	-	-	-
1997	60.5±15.0	217.9±10	3.6±0.001	1.2±0.8	19±0.9	15.8±0.003
2003	259.5±80.0	908.3±15	3.5±0.002	9.1±3.0	145±2.5	16.0±0.002

MD<sup>1</sup>: Mean deviation (n = 5 for cut flower rose) and (n = 2 for shoot tip chrysanthemum)

Chrysanthemum productivity was 15.8 and 16.0 shoot tip cuttings per hectare in 1997 and 2003, respectively whereas that of rose was constant at 3.5 million of flower stems per hectare per year (Table 2). According to Urban (1998), this yield is about 10 times higher than that obtained in European countries. High productivity in Tanzania is principally due to favourable climatic conditions (high radiations and low temperatures at high altitudes) at the equator, which allow production throughout the year.

Although cut flower industry is currently restricted to the Arusha and Kilimanjaro regions in northern Tanzania, high altitude areas in other regions like Iringa, Mbeya and Morogoro, experiencing similar climatic conditions have potential for the production of cut flowers such as rose, chrysanthemum and carnation. In these regions, land is cheaper and can be easily obtained. Moreover, truck travel distance from Iringa region to Dar es Salaam is similar to that from Arusha to Nairobi, Kenya. This means that flower production in Iringa, Morogoro and Mbeya regions could utilise Dar es International Airport, which has more cargo flights than KIA in Kilimanjaro.

**Investment and operational costs:** The construction of greenhouses is considered the most expensive, accounting for more than 50% of total investment cost (Table 3). However, the average cost of greenhouse construction in Tanzania is 5 US\$ m<sup>-2</sup> compared to 100-200 US\$ m<sup>-2</sup> in Europe. In Europe, greenhouses are more sophisticated, as they are usually constructed of glass cover and comprise of heating, photosynthetic and photoperiodic lighting facilities. It has been estimated that in Europe, heating alone accounts for 30% of total operational cost (Urban, 1998). Unlike in Europe, greenhouses in Tanzania are simpler, constructed of wooden supports with polyethylene cover. Only greenhouses for the production of chrysanthemum shoot tip cuttings are equipped with photoperiodic lighting to inhibit flower initiation.

Other investment costs include purchase of land and rose planting materials, which represent 18 and 12%, respectively (Table 3). Although land seems expensive, most foreign investors consider it being cheap as compared to their countries of origin. On the other hand, growers import planting materials of new varieties but propagate their own planting materials of other varieties. This enables them to reduce the costs of plant imports.

The major operational cost is marketing commission, which represents 52% of total operational cost (Table 3) and 18 to 20% of total sales. The commission increases up to 30% when middlemen perform aqua packing. On the other hand, freight charges account for 16% of total

Table 3: Major components of investment and operational costs levels estimated from five and two rose cut flower and chrysanthemum shoot tip enterprises in Tanzania from 1995 to 2003

Investment cost item	Cost level (%)±MD <sup>1</sup>	Operational cost item	Cost level (%)±MD <sup>1</sup>
Greenhouse	50.9±5.6	Market commission	52.0±0.2
Land	17.7±4.5	Interest on loans	19.0±3.0
Planting materials	12.3±3.6	Freight charges	16.0±0.1
Machinery	10.4±4.1	Agrochemical	4.2±4.0
Cold storage rooms	4.0±0.5	Labour charges	3.4±3.5
Others	4.7±2.5	Others	39.4±6.0
Total (%)	100.0		100.0

<sup>1</sup>: Mean deviation (n = 7)

operational costs. Average freight charges to Europe range from 1.3 to 2.0 US\$ kg<sup>-1</sup> of flowers. As a result of more cargo flights, freight charges at Jomo Kenyatta International Airport (JKIA) in Kenya are cheaper (1.3-1.5 US\$ kg<sup>-1</sup> of flowers) compared to 1.8-2.0 US\$ kg<sup>-1</sup> of flowers or shoot tip cuttings at Kilimanjaro International Airport (KIA) in Arusha.

Agrochemicals cost about 4.2% of total operational costs (Table 3). The main problem is that most effective pesticides for the control of flower pests are not registered in Tanzania. New pesticides must be tested by the Tropical Pesticides Research Institute (TPRI) in Arusha prior to registration. A grower must pay a fee of US\$ 5,000.00 for the new pesticide of his/her preference to be tested for the purpose of registration.

The general administrative set-up of cut flower enterprises consists of General Manager, greenhouse managers, postharvest Handling Manager and skilled and unskilled labourers. Labourers represent over 80% of total workers. Labour charges account for 3.4% of total operational costs while in developed countries they vary from 20 to 30%. All investors appreciate that labour charges are cheap in Tanzania in comparison to Europe. In 1998, labour charges in Tanzania were 98 and 25 US\$ month for a skilled and unskilled labourer, respectively. In France for instance, the minimum wage for a skilled labour is about 1091 US\$ month-about 11 times higher than that in Tanzania (Urban, 1998).

**Marketing:** All chrysanthemum shoot tip cuttings were exported to The Netherlands. Ninety percent of cut flower rose flowers were exported to The Netherlands through the Dutch International Flower Auction. The remaining rose flowers were directly supplied to individual wholesalers and retailers in Germany, Norway, Sweden and England. 90% of the cut flowers pass through JKIA while only 10% pass through KIA for freight to Europe. On top of being cheap, JKIA has more reliable flights in terms of frequency and loading capacity (four cargo flights per day) while KIA is served by passenger planes only. These very often accept only half of the flower cargo, due to insufficient space.

The average selling prices of rose and chrysanthemum shoot tip cutting in Europe were 0.23 and 0.11 US\$/flower stem or shoot tip, respectively. It was high during winter and at the times of ceremonies such as Valentine's Day, Mother's Day and Christmas. Average gross revenue and profit are estimated at 36.4 and 19.7 US\$ m<sup>-2</sup> year, respectively. This revenue is about 700 times higher than that from a maize crop in the same area (Mdadila, 1995).

**Agricultural policy and regulations:** The cut flower industry is run according to the Tanzania National Agricultural Policy of 1997. The policy mentions horticultural crops as non-traditional crops such tomato, onion and cabbage. Ornamental crops are not mentioned at all in the policy. Growers consider the policy as being too general and not applicable to the flower industry. However, to attract foreign investment, foreign investors are provided with a grace period of five years. The grace period mainly covers tax exemption on imported materials. On the other hand, it was noted that several introduced municipal taxes were affecting business planning.

### CONCLUSIONS

The production of rose cut flowers and chrysanthemum shoot tip cuttings is growing rapidly in the Northern part of Tanzania. Diversification of the industry towards the southern highlands could further enhance the growth of the industry. Although the export market is currently good, it is risky to rely on only one principal buyer (The Netherlands). Thus, flower growers in Tanzania should strive to win markets in other countries. This could be achieved by increasing the production volume and diversification. The increased flower production could attract several cargo flights, hence lowering the freight charges. Moreover, certifying products by registering with the International Standard Organisation 9000 (ISO 9000), which has international recognition, would enable such exporters to penetrate and compete better in other countries. On the other hand, there is need to formulate guidelines under the existing National Agricultural Policy that specifically and actively promote the cut flower industry in Tanzania. This is

possible when various stakeholders are involved. The involvement of stakeholders is also essential in enhancing acquisition of inputs, research and market information. It is difficult for cut flower growers, in particular the locals, to successfully compete in the export market without having access to an efficient and an up-to-date communication system.

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### REFERENCES

- Mdadila, J.M., 1995. Industrial Review of Maize, Rice and Wheat: Marketing Development Bureau, Dar es Salaam, pp: 5.
- Morisot, A., 1996. Quelques observations sur la commercialisations de fleurs par les cadrans. Document INRA-ARHOM, pp: 8.
- Mutabuzi, S.K., 1999. Cutflower industry in Tanzania. A Paper Presented on 23-24, 1999 at the Cutflower Industry Workshop, Organised by International Labour Organisation at Mount Meru Hotel, Arusha, Tanzania
- Ortiz, C., 1997. Struggling U.S. Growers Denounce Trade Preferences for Colombian Flower Growers. San Diego Times.
- Semboja, H.H. and R. Mbelwa, 1999. Community and Economic Impact of Export Diversification: The Cutflower Industry in Tanzania. A Paper Presented on 23-24, 1999 at the Cutflower Industry Workshop, Organised by International Labour Organisation at Mount Meru Hotel, Arusha, Tanzania
- Urban, R., 1998. La production de fleurs coupées en Afrique de l'Est, menace pour l'horticulture européenne ou opportunité. PHM Revue Horticole, 520: 10-18
- Urdaneta, E., 1994. US Projectionists Prick Colombian Rose Growers. The Wall Street J., 15: 3.