ADC Commercialisation Bulletin #4

Fresh Cut Roses

Marketing

1
Markets

The European market is the major outlet for roses grown in Uganda, although small quantities are occasionally shipped to the Gulf countries and South Africa. Sixty percent of rose sales in Europe are of the sweetheart (small-flowered) varieties, followed by 35 percent hybrid tea (large-flowered), and 5 percent spray and minis.

2
Customers

The Dutch flower auctions remain the most important 'customer' for many African exporters, although some exporters sell direct to importers elsewhere in Europe. The Aalsmeer Flower Auction and Flower Auction Holland (BVH) are the two biggest flower auctions in Europe and the biggest importers. Most flowers sold on the Dutch auctions are re-exported to other European countries, principally Germany.

The Teleflower Auction (TFA), set up by East African Flowers, is also a major buyer of roses from Uganda, and there are a number of specialist importers/wholesalers who buy from East and Southern Africa for re-conditioning and sale either through the auctions or to direct buyers.

Supermarkets are increasing their market share of retail sales, and have entered into direct contracts with some large rose growers in Kenya and Zimbabwe.

3
Volumes

The total volume of EU rose imports increased from 1,755 million stems in 1991 to 2,849 million stems in 1996. The overall market is actually much larger as there is substantial domestic production. The Netherlands is the largest import market. Of the total 1,529 million stems the EU imported from non-EU suppliers, it imported 72 percent. Much of these imports are reexported to other EU members and other countries (Eastern Europe, etc.). See Table 1 for EU imports by country from extra-EU and member states.

The European rose market is expected to continue to grow, with small-flowered varieties maintaining their dominant market share. Some industry sources estimate that demand will increase a further 150 million stems per year over the next 3 to 5 years. Another 100 hectares of production area are required to offset this increased demand. East African countries, because of their climatic advantages and relative proximity to the market, will be in the best position to take advantage of this. Despite their high cost of production, last year (1997) the Dutch went ahead and expanded production, showing the competitiveness attached to quality.

Table 1: 1996 Imports of Fresh Cut Roses, millions of stems

	Extra-EU	Intra-EU*	Total
Netherlands	1,096	26	1,122
Germany	209	694	903
France	30	184	214
UK	108	79	186
Austria	2	93	95
Italy	36	53	89
Sweden	21	55	76
Belgium	2	66	68
Denmark	<1	55	55
Other EU	25	16	41
Total	1,529	1,320	2,849

* includes both domestic production and re-exports of extra-EU products
Source: EUROSTAT

4
Prices

Most sales through the Netherlands are determined using the auction system. Deductions from the sales price varies by the type of import system used:

Dutch Auctioneers: Clearing costs and transport to auction of Dfl 1-3 per box + cost for store facilities; repacking at the auction of Dfl 2-4 cents per stem; auction commission 7.2% (Auction Flora) with bucket hire and other costs about 10% from the total selling price

Import Auctioneers (Tele Flower Auction): Clearing and transport to auction of Dfl 1-3 per box + cost for store facilities; repacking of Dfl 2-4 cents per stem; auction provisions of 7% from the sale price

Sales through Import Companies: If sold directly to exporters, wholesalers and supermarkets -- clearing costs similar to auction; 2-4% for repacking by importer; 5-10% for importer commission. If sales are not direct, but through importers, add auction provision costs.

Of course, an exporter has the option of shipping directly to a wholesaler or supermarket, in which case only transport and clearing costs would be incurred.

Flower prices vary depending on variety, quality, season, and source. Average 1996 rose auction prices are given in Table 2 and Table 3 for the top ten imported varieties of large and small flowered roses. *(1997 average exchange rate, US$1.00 - NLG 1.96)*

Table 2: Top Ten Varieties of Imported Large Flowered Roses Sold on the Dutch Flower Auctions in 1996 (imports sales, total sales, and average prices)

Variety	Sales (000s of stems)		Average Price (Dutch Guilders/stem)	
	Imports	Total	Imports	Total
First Red	35,139	140,793	0.54	0.72
Noblesse	22,767	34,606	0.42	0.46
Prophyta	22,959	66,325	0.31	0.37
Saphir	18,421	18,902	0.31	0.31
Konfetti	15,487	17,220	0.47	0.49
Tineke	9,942	19,485	0.43	0.48
C. Prophyta	9,497	17,389	0.31	0.40
Suplesse	8,397	12,738	0.33	0.38
Minuette	8,179	11,283	0.35	0.33
Pailine	6,773	14,891	0.34	0.38
Total Selected	157,561	353,632	0.40	0.53
Total Large Flowering	239,810	819,306	0.41	0.56

Table 3: Top Ten Varieties of Imported Small Flowered Roses Sold on the Dutch Flower Auctions in 1996 (imports sales, total sales, and average prices)

Variety	Sales (000s of stems)		Average Price (Dutch Guilders/stem)	
	Imports	Total	Imports	Total
Mercedes	69,976	112,431	0.31	0.33
Jaguar	41,681	44,635	0.34	0.34
Baronesse	20,495	27,069	0.31	0.33
Lambada	18,120	93,777	0.28	0.33
Golden Times	16,197	17,170	0.34	0.34
Rodeo	12,645	65,845	0.28	0.30
Frisco	12,362	287,936	0.28	0.30
Kiss	11,514	105,245	0.28	0.28
Vanilla	9,917	32,480	0.25	0.30
Gabriella	9,235	73,526	0.35	0.39
Total Selected	222,142	860,114	0.31	0.32
Total Large Flowering	296,609	1,742,345	0.31	0.32

5
Competition

Uganda competes in the European import markets with suppliers from Africa (many of which have been increasing production also), the Netherlands, and South America. Kenya was the largest overseas supplier of fresh cut roses to the EU in 1996, accounting for 32 percent of total stems imported from non-EU sources that year. Other major suppliers include: Israel (24%), Zimbabwe (21%), Ecuador (4%), Colombia (4%), Zambia (3%), Uganda (3%), India (2%), Tanzania (2%), Malawi (2%), the Canary Islands (2%), and Morocco (1%).

For the last five years, East African growers expected a decreased production by the Dutch due to increased costs, but last year (1997) the Netherlands managed to increase their production by almost 100 hectares. Therefore, we expect the Dutch to continue with their market dominance and the reputation to supply top quality flowers. Ugandan production has been increasing steadily. A recent survey of rose farms found that production area stands at around 70 ha in 1998. Estimated rose production area for leading African producing nations is provided below:

Kenya	400 ha	
Zimbabwe	250 ha	
Uganda	70 ha	
Zambia		40 ha
Tanzania	25 ha	
Swaziland	15 ha	
Malawi		10 ha

Studies on comparative production costs amongst rose producers in Zambia, Zimbabwe, Kenya, and Uganda showed that capital costs and unit costs of production are lower in Uganda.

Production

6
Method

The basic stages of rose production are:

1. Land preparation, including bed preparation, soil fumigation, and drainage installation.

2. Planting of rose plants. Spacing depends on the bay width of the greenhouse and the variety produced. Planting density is generally 60 to 70 thousand plants per hectare. A bed support system may be needed (wooden poles or reinforcing rods, with support wire stretched between).

3. Care of roses. Regular/daily soil analysis (water content, salts, minerals, pH levels), monitoring of humidity within greenhouses, application of fertilizers (usually through irrigation system - 'fertigation') and pesticides. Insects controlled by night time operation of sulphur evaporators.

4. Harvesting. Roses grow in flushes generally spaced 28 days to 60 days apart, depending on the variety and temperature. Flushes can be evened out by sequencing the planting and later the pruning. Pick at the exact time of petal opening. May need to be picked two to four times per day, particularly in warm climates. A flower not picked in optimum condition will not achieve Class I and will be discounted by as much as 20-30 percent. Workers will need to be trained carefully on recognizing when the flower needs to be picked (varies depending

on variety) and how to pick. Harvesters should use sharp rose shears and place flower immediately in a bucket (cleaned every day and filled with 3-4 litres of water containing bactericide). Transport to Packhouse. When the bucket is full, take to the end of the row and place on trolley (protected from the elements) with other filled buckets. Immediately move to cold store (2EC) and keep there for at least 2 hours.

5. Sorting, Packing, and Transport. Sort flowers by quality and size according to market specifications. Bunch flowers according to market specifications (10s, 20s, 25s, 50s) and trim stems to same length for each bunch. Stand bunches in water again with preservative and put back in cold store before final packing into boxes with sleeves around each bunch (see below). Boxes should be pre-cooled and transported to the airport via refrigerated truck

7
Varieties

There are many varieties of roses and new varieties are developed continuously. Rose varieties can be divided into three groups:

1. Hybrid Tea. Long and medium-stemmed, generally 50-120 cm in length, larger flower and generally more tender than Floribunda, smaller yields, shorter vase life, higher prices. New medium-stemmed roses are 50-75 cm in length and are often higher yielding with longer vase life.

2. Floribunda. Short- stemmed, 35-60 cm stem length, lower prices, higher yields, better vase life.

3. Spray. Often as much as 6 flowers per stem, but generally uneconomical for long distance shipping and a limited market (same for minis).

The top ten imported rose varieties that sold on the Dutch auctions in 1996 are given in Table 2 (large flowered roses) and Table 3 (small flowered roses). The ten varieties of large flowered roses in Table 2 accounted for 66 percent of import sales and 43 percent of total sales in the auctions. Well more than eighty different variety of large flowered roses were sold on the auctions in 1996. For small flowered roses, the ten listed in Table 3 accounted for 75 percent of import volume sales and 50 percent of total volume sales on the auctions. Well more than fifty other varieties of small flowered roses also sold on the auctions that year.

Before deciding upon a variety or varieties for production, growers should analyze the market and growing characteristics of each variety carefully. Some varieties are more suited to Ugandan growing conditions and some have a proven track record in the market. Therefore before planting any variety, the grower should look for enough information concerning that particular variety because this is one of the reasons why some farms are more successful than others. Newly introduced varieties may earn high prices in the first year of production, but prices generally fall in following years. Tried and true varieties are the safest bet for a new producer. Also, choice of variety will significantly affect a farm's cost for planting materials not only for the planting material itself, but, often, for royalty payments to the breeder.

Recently, varieties like Rumba suitable for outdoor production in Uganda have been introduced on the market, offering significant potential savings in greenhouse construction costs. A few Ugandan farms are producing limited quantities of these varieties.

8
Yield

Table 4 show the top rose varieties produced in Uganda and range of yields reported by local farms. 1996 Dutch auction sales and average prices are given for comparison.

Table 4: Uganda Area Under Production, Average Yields, and Market Data from the Dutch Auctions (1996)

Ugandan Production			1996 Dutch Auction Sales			
Variety	Area (ha)	Stems/m^3	Sales (000s stems)		Average Price (DGL/stem)	
			Imports	Total	Imports	Total
First Red	13.5	130-140-200	35,139	140,793	0.54	0.72
Cream Prophyta	3.3	220-240	9,497	17,389	0.31	0.40
Rumba	3.3	120-140	no report			
Frisco*	3.0	330-350	12,362	287,936	0.28	0.30
Konfetti	3.0	150-200	15,487	17,220	0.47	0.49
Souvenir*	2.8	290-310	8,585	29,010	0.28	0.29
Gabriella*	1.5	180-220	9,235	73,526	0.35	0.39
Normal Prophyta	1.0	200-250	22,959	66,325	0.31	0.37
Sasha*	1.0	300-320	5,275	63,180	0.27	0.42
Nicole	1.0	80-110	1,605	5,658	0.72	0.70
Jaguar*	1.0	200	41,681	44,635	0.34	0.34
Versilia	1.0	150-170	3,446	7,600	0.44	0.71
Rodeo*	0.8	300-320	12,645	65,845	0.28	0.30
Vanilla*	0.8	220-260	9,917	32,480	0.25	0.30
Golden Times*	0.5	160-180	16,197	17,170	0.34	0.34
Saphir	0.5	160-180	18,421	18,902	0.31	0.31

* Small flowered roses. All others are large flowered roses.

9

Time to First Harvest/Seasonality

The first blooms appear about 4 to 5 months from planting. It takes up to one year to reach full production. Peak yields should coincide with the export season of October-April. Yield drops 10-20 percent in the later years of useful life (generally 4-5 years) of the rose plant.

10

Pests/Disease Prevention

Downey Mildew, Powdery Mildew, Gray Mold. High, Good ventilation, particularly at night, coupled with sulphur burners and appropriate fungicides, are essential.

Red Spider Mite: Regular inspection of leaves followed by application of appropriate insecticide such as Pentac before major infestation occurs.

Botrytis: Protect the heads from water which will cause botrytis in the bloom; keep irrigation below the heads of the plants. Use sulphur burners and fungicide as required.

Some pesticides and insecticides may be harmful to certain varieties of roses. Check with the breeder before applying chemicals or test an application on a small area of the variety before spraying the entire crop.

11
Fertilizer Requirements

Soil analysis should be conducted regularly and levels of required fertilizer will vary depending on the nursery. If nutrient deficiencies are found, fertilizer applications will be required. Basic elements required are nitrogen, phosphorous, calcium, magnesium, and sulphur. Supplementary elements are iron, manganese, copper, zinc, boron and molybdenum (trace). Fertilizer applications are typically done through irrigation lines ('fertigation').

12
Water Requirements

A rose farm will need a good irrigation system installed which typically also applies fertilizer to the crop. As with fertilizers, soil should be monitored frequently (daily) for moisture content. Irrigation systems should be designed to avoid spraying water on the heads of plants which will cause botrytis.

Along with water requirements during harvesting and packing, a rose farm is a high water consuming operation. Therefore, a large and reliable source of water should be available on-site.

13
Product Specifications

Quality is of utmost concern. Auction roses are judged based on: freshness, flower uniformity, stem thickness, strength and width, freedom from disease, freedom from growth disorders, vase life, and grading uniformity.

All flowers supplied to the auction must meet one of the two classes. Class I requires that all parts of roses offered for sale at auction be: fresh; not damaged; free from pests and diseases; free from any residues; free from growth disorders, like bull heads, crooked grown necks or symptoms of deficiency; stems sufficiently straight and strong enough to carry the flower. All flowers which do not comply with Class I regulations, may be offered for auction as Class II provided that they are: nearly fresh; only slightly damaged; only slightly affected by pests and diseases; nearly free from any residue; have only slight growth disorders (flat buds and bull heads may be offered as Class II, provided they comply with Class II regulations in every other sense); of such a quality that they will have ornamental value after handling and that they will maintain this value for a

reasonable time. For both classes, 5 percent may show slight defects, provided that their uniformity is not affected. All defects will be announced at time of auction.

Grading of bunches is done by stem length (inclusive of bud); the minimum stem length in the bunch is indicated. Flowers need to be of uniform maturity and flower buds need to be graded on an even height level. Stems need to be of uniform thickness, strength and length. The permitted difference in length may not be more than 10% of the shortest stem in the bunch or batch, with a maximum of 5 cm. Requirements for each batch include: uniform bunches; units (boxes/buckets) must be uniform; and the units must be packed full. Depending on the variety of rose, maturity levels for cutting are recommended.

14
Packaging

Prior to boxing, trim stems and wrap bunches of 20 in kraft paper. Depending on variety, each box contains 18-30 bunches (360-600 roses) with a weight of about 15 kg. Boxes should be stapled on site from prefab sheets. Landed Entebbe prices for standard 12-14 kg cartons range from US$1.60 to US$2.80 each, with 17-kg cartons costing US$3.20/each. Kraft bunch wrapping paper costs around US$1.60/kg, equivalent to US$0.04 per bunch.

Some farms use aquapacks. These have an additional rental/freight cost of around 3 Dfl cents/stem, with reported premiums for aquapacks ranging from nothing to 8 Dfl cents per stem. Since aquapacks eliminate the need for retrimming in Europe (normally 2 cms are removed), there is a weight advantage from aquapacks that is offset by added water. There is also savings in auction preparation costs of Dfl 2.4 cents for Sweethearts and Dfl 2,6 cents for HTs.

On most Dutch auctions, roses are packed as 20 stems per bunch unless otherwise specified. Each auction will indicate packing units and also how the packing must be done. The batch marking method is decided by each auction.

Investment

15
Cost of Production

Table 5 provides estimates of production costs for Ugandan rose farms from a 1996 survey.

16
Profitability

Using sample data for a five-hectare Ugandan rose farm and adding in the packaging, freight, and marketing costs, an estimate of farm profitability (US$/ha) can be made for various types of roses (see Table 6). Note that these three costs make up more than 50 percent of total costs.

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Investment Requirements

Table 7 gives investment estimates compiled by ABN AMRO for a five-hectare Ugandan rose farm completed in two phases. The figures are illustrative only and will vary depending on project. Feasibility studies prepared for other potential Ugandan rose farms show investment costs for developing a two to three-hectare farm

ranging from US$1.3 million to US$1.7 million. A recent study of Ugandan flower farms shows investment costs ranging from US$26.55/$m^2$ to US$39.25/$m^2$ for two to six-hectare farms.

The greenhouses in the example given in Table 7 are made from wooden frames with plastic covers. If metal greenhouses were constructed, costs would be significantly higher. Other building investment would include: grading and packing area, pre-cooling area, cold store, materials storage, offices, pump room, workshop, store for fertilizers and pesticides, and staff housing. Farm equipment requirements include refrigeration, sulphur evaporators, irrigation equipment, spraying equipment, laboratory equipment, defoliating machines, generators, crop

Table 5: Ugandan Rose Farm Production Costs (US$/ha)

	Farm A (5 ha)	Farm B (6 ha)	Farm C (2 ha)	Farm D (3 ha)	Farm E (5 ha)
Managers	14,400	13,000	32,400	6,800	3,600
Labourers/Supervisors	19,200	25,900	17,000	21,666	26,400
Admin/Consultants	1,680	2,300	1,000	8,000	19,200
Total Labour	35,280	41,200	50,400	36,466	49,200
Fertilisers/Agrochemicals	30,000	12,833	30,000	45,000	11,000
Electricity/Diesel	4,800	7,000	4,200	13,333	9,600
Building/Machinery Repairs	6,050	4,000	3,800	8,000	4,400
Phone/Fax	1,200	1,600	6,000	2,400	3,000
Soil Analysis	200	165	500	666	240
Total Production Costs	77,530	66,798	94,900	105,865	77,440
Depreciation	42,000	42,250	40,580	47,560	52,210
Interest	19,900	19,150	20,961	23,270	23,838
Unit Costs per Stem Sold	7.187	6.93	9.20	11.53	11.29

Table 6: Net Revenue for Sample Ugandan Rose Farm (US$/ha)

	Large-Flowered Variety	Small-Flowered Variety
Stem Yield/m^2	140	300
Average stem size (cms)	50	35
Total Stems Sold	1,400,000	2500000
Average Auction Price	0.25	0.15
Revenue	350,000	375000
Production Costs	77,530	77,530
Depreciation	42,000	42,000
Interest	19,900	19,900
Packaging */1*	8,540	10,200
Freight */2*	85,450	90,000
Marketing */3*	47,809	49,081
Total Cost	281,229	288,711
Net Revenue	68,771	86289

/1 carton cost estimated at US$2.00, Kraft paper US$1.60 (US$0.04/bunch)
/2 Freight US$1.85/kg (average 55cm=29/kg, 50cm=40/kg, 40cm=59/kg)
/3 marketing costs including clearance and all auction charges

support system, rose scissors, buckets, trolleys, grading equipment, other hand tools, and vehicles (including refrigerated truck).

In addition to land costs, there may be additional costs for land clearing and grading, drainage, construction of access roads, electrical and telephone installation. Costs for planting materials will vary widely depending on variety and whether payment of royalty to a breeder is required.

It is clear that capital investment requirements for a reasonable-sized rose farm is quite high. A well-managed farm, however, can attain substantial returns on this investment in only a short period of time.

Table 7: Investment Costs for a 5 ha Ugandan Rose Farm (two 2.5 ha phases, US$)

	Useful Life (Years)	Phase I (2.5 ha)	Phase II (+2.5 ha)	Total Cost
Land	-	62,500		62,500
Greenhouses	10	87,500	87,500	175,000
Irrigation Pumps	10	50,900	26,300	77,200
Buildings	20	126,800	18,800	145,600
Other Tech. Materials	5	14,800	12,000	26,800
Tools, Office Equipment	3	6,200		6,200
Plastic	4	25,000	25,000	50,000
Generator	10	16,200		16,200
Communication Equipment	5	19,600		19,600
Plant Materials	5	287,200	287,200	574,400
Cool Area	10	60,000		60,000
2nd hand vehicles	3	48,900		48,900
Land Preparation	6	85,700	20,000	105,700
Total		891,300	476,800	1,368,100

More Information

For additional production, postharvest and marketing information, contact ADC/IDEA. Information available at IDEA includes the course manual for "Basic Certificate Course in Applied Tropical Floriculture with Emphasis on Roses" (ADC/IDEA, 1998, 200 pages) and "Production and Marketing of Roses" (Pathfast Publishing, 1997, 132 pages).

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