ADC Commercialisation Bulletin # 6

HOT PEPPER

Marketing

1
Markets

Fresh chilli and hot pepper exports have been increasing to Europe over the last five years although the market is still small and mainly consists of consumers from ?ethnic minorities?. There are literally dozens of different types of hot peppers, varying in colour, appearance, taste, and, more importantly, ?hotness?. Demand for individual types has been traditionally tied to the ethnicity of the consumer. For example Asians in the UK prefer green cayenne types of hot chilli and red scotch bonnet types of hot pepper, whilst Dutch Surinamese consumers prefer yellow hot peppers. Germany imports mostly ?Turkish? types demanded by the large Turkish immigrant community.

Uganda exports Scotch Bonnet peppers mostly to the United Kingdom and Holland and green chilli to the UK (although this bulletin does not consider green chilli). Imports from Uganda are highest during the winter season because hot peppers are produced in Dutch Greenhouses and, to a lesser extent, in Mediterranean countries during the summer months.

2
Customers

Scotch Bonnet hot pepper, the type of hot pepper which Uganda is producing, is a product consumed mainly by the ethnic market in the UK and Holland. This is a small product whose market could easily be saturated when Ugandan production more than doubles in a season. Most of the hot pepper produced in Uganda is sold to the UK market, mainly in the wholesale market which sells primarily to Caribbean, Asian and other immigrant consumers. Customers are becoming more aware of the product from Uganda as a result of market promotion by the IDEA Project.

Hot pepper is imported almost exclusively by specialist ethnic importers in the UK, Holland, Belgium and France. They generally are small importers with premises in city wholesale markets and no access to supermarket sales.

3
Volumes

According to ADC export statistics, Ugandan export volumes have increased from a very low level in 1991-95 to an average of 8 tonnes per month in 1996 and 13 tonnes per month in November 1997. Exports are expected to continue increasing in 1998.

Hot pepper is not differentiated from other fresh chilli in official EU import statistics, so it is difficult to get a reliable estimate of the total market for Scotch Bonnet peppers. Discussions with importers in different countries suggest that annual imports to Europe are 500-800 tonnes per annum and some importers believe that future volume expansion of Scotch Bonnet is limited. Since most production is speculative, without formal supply contracts, the market is characterised by gluts and shortages.

4
Prices

Prices have remained relatively stable over the last three years. Wholesale prices in the UK are generally about ? 2.00 per kilogram, although higher quality product (such as that received from Holland and Spain) can generally earn 10 to 20 percent above this amount. In 1997, prices were highest during the first three months of the year, averaging ? 2.50-? 3.00 per kilogram, before dropping to more normal prices of ? 1.90 to ? 2.10 per kilogram for the rest of the year. When over-production threatens prices, the importers invariably cut back on orders until stability returns, often leaving speculative growers with unsold peppers.

5
Competition

In the overall hot pepper market, competition is fierce with many countries supplying various hot pepper types to all major markets. The UK import market is noted for its much larger number of suppliers compared to the US. EU suppliers (mostly the Netherlands and Spain) provide over 50 percent of demand, while various African (Ghana, Uganda, Gambia), Caribbean (Grenada, St. Lucia, Dominica, Jamaica, Surinam) and Latin American (Brazil, Costa Rica) suppliers make up the balance.

Uganda has steadily increased its share of the UK market for Scotch Bonnet pepper at the expense of the traditionally large suppliers in the Caribbean (St. Lucia, Dominica, Grenada, Barbados, and Jamaica). The Netherlands and Spain produce top quality product in greenhouses and receive premium prices. The highest volumes from these two suppliers are during the period August-November. Ugandan product quality, price, and availability have all been well received by importers. In the near future, Uganda should be the dominant overseas supplier of Scotch Bonnet peppers to the UK and European markets.

Production

6
Method

Hot pepper is a warm season vegetable with a relatively long growing period for maximum production. Peppers are adapted to a wide range of temperatures and rainfall amounts. They are usually a rain fed crop, but can also be grown under irrigation. However, water logging for even a short period of time may cause the plant to shed its leaves and high humidity may encourage the growth of fungi.

Ideal conditions for pepper growing are deep, well drained, medium textured soil with plenty of organic matter and high fertility (i.e. sandy loam is preferable). Establishing a field of hot pepper can be done either by transplantation or direct seeding. Growers in Uganda are advised to use transplants. Pepper seed is usually germinated on beds. A shed should be erected over the seedlings to protect them from heavy rains and excessive sunlight. This shed can be built using spear grass or banana leaves. Before sowing, seeds should be treated with fungicide. This helps to prevent ants from carrying away the seeds and helps control damping off disease.

To produce seedlings, place seeds in a in furrow 2-3 inches wide. Cover the seeds lightly and water them. Seedlings will be ready for transplanting in 4-5 weeks, when they are about 4-6 inches high. They should be hardened off by reducing water and exposing them to sun one week before planting. Farmers usually plant pepper seedlings at a spacing of 3 feet apart within rows and 4 feet apart between rows. ADC recommends

two rows per one metre wide bed. Remember to transplant at the beginning of the rainy season if irrigation is not available.

7
Varieties

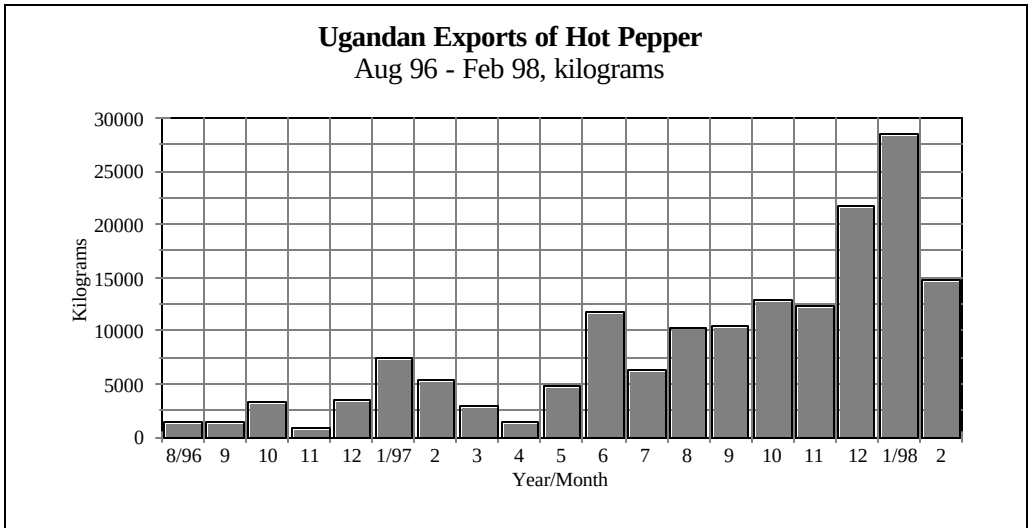
There are many varieties of hot pepper, each with its own shape, size and colour (red, orange and yellow), taste and pungency. Pepper most common in Uganda is derived from Scotch Bonnet, mainly referred to as the ?Caribbean? type. This has a rich unique flavour and is used mainly as a condiment.

Other farmers usually notice a large variation in the size and shape of the hot pepper they grow from their own seed. This variation is due to the fact that peppers are highly cross pollinated. If farmers want to obtain uniform characteristics in the hot pepper they produce, they must pay particular attention to the type and quality of hot pepper they select for seed. Hot pepper seed is not available commercially.

8
Yield

The yield varies considerably depending on a number of factors. The average expected yield is 4 to 6 tonnes per hectare. This variation in yields is brought about by lack of water during dry seasons which can lead to flower abortion.

9
Time to First Harvest / Seasonality



Hot pepper is usually harvested when full grown or when they are partially red or yellow. This takes about eight weeks from the time they are transplanted. Most harvesting should start in the last week of November and continue until the end of May, the window for best prices in the EU market. Uganda can grow hot pepper year-round, but it becomes expensive to irrigate during the dry periods. Seasonality of Ugandan exports of the period August 1996 through February 1998 is shown in Figure 1.

It is important to note that hot pepper is a perishable product. After being picked by hand with the stalk, it

should be handled carefully, particularly for the fresh export trade. Pickers should be encouraged to harvest pepper with intact stalks as this can reduce bacterial soft rot. Cleaning and disinfecting harvest containers daily will help minimize the spread of soft rot. Do not harvest in the rain or when wet.

10
Pests/Disease Prevention

Hot pepper is subject to damage from many insects, nematodes and fungal, viral and bacterial pathogens. In addition, weeds and several physiological disorders such as nutrient deficiencies can cause yield losses.

Pest control should consist of an Integrated Pest Management (IPM) system which relies on the use of all appropriate control strategies. Action is taken to prevent problems and suppress damage levels without reliance solely on chemicals. In case chemical action is relevant, it must be practiced only according to the label. Insect damage can be realized either in the nursery or the field. In the nursery, insects that attack seedlings include darkling ground beetles, cut worms and aphids. In the field, common pests are aphids, leaf minors, army worms and other caterpillars. Hot pepper is fairly tolerant of nematodes, but sizeable reduction in yields will result if the crop is not rotated.

Hot pepper is subject to a number of diseases that reduce both yield and market value of the fruit. These include bacterial spot, blight, phytophthora root rot, and gray leaf spots.

Bacterial Spot is the most common disease of hot pepper in the field. Small, yellow, slightly raised spots appear on young leaves. On older leaves, the spots are dark, water soaked and not noticeably raised. These spots can enlarge and become brown with a dark margin. Prevention is by use of tolerant varieties. If chemical control is required, use dithane.

Phytophora Root Rot. This disease causes rotting of the roots and the underground portion of the stem. The first visible symptom is rapid wilting. Death of the infected plant soon follows. Often a number of plants in a row or in a roughly circular spot in a field show symptoms at the same time. Root rot is favoured by excessive soil moisture and high temperatures. It can be effectively prevented by careful control of irrigation water, particularly in fields with heavy or poorly drained soils.

Gray Leaf Spots. This disease, caused by stemphylium solani, appears as circular spots on leaves. The spots are at first brown, later turning white with sunken centres and reddish margins. The symptoms can appear on stems and pedicals but have not been observed on fruit. It can be easily controlled by foliar fungicides.

11
Fertilizer Requirements

Fertilizer requirements vary with soil type and previous crop history. It is recommended for Ugandan soils to add organic matter before transplanting. This should be worked into the soil to derive maximum benefits. The plants must start off and grow rapidly after transplanting or they start blooming and set fruit while they are too small. Therefore, a balanced nutrient level is required for maximum production. In general, fertilizer application at the following rates are recommended: 60-100 kgs Nitrogen, 10 kgs phosphorous, 100 kg potash.

12
Water Requirements

Hot pepper production in Uganda is mainly rain fed. If natural rainfall is lacking, supplementally irrigation (either drip or overhead) is required. To achieve maximum production, the plant should have sufficient moisture during fruit setting. Long dry periods may cause plants to shed flowers and young fruits. The plants are likely to make a rather slow recovery after drought injury. Over irrigation stimulates phytophthora and other root rotting organisms.

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Product Specifications

Since most production is geared towards export, market standards have been set in order to supply the right quality. The fruits should have similar shape, skin colour, flavour and texture. Exported fruits should be intact and sound products, both internally and externally, and free from dirt and foreign material such as pests and odours. This can be achieved with consistent grading which maintains a better quality. Damage caused mechanically or by pests should be minimal and not exceed 5 percent of the surface area. The market may not tolerate peppers showing cracks, splits and punctures.

14
Packaging

For export, 5-kilogram cartons (lidded with no staples) are generally used. Fruits in each box should be of uniform size and maturity with no overripe fruits. In the event an importer requires a mixture of red and yellow peppers, the percentages should not exceed 80 percent red and 20 percent green.

It is very important that harvest operations are closely coordinated with packing to minimize the delay between harvest and packing. An overnight delay may result in a loss of marketable fruit inoculated with bacterial soft rot.

Boxes should be labeled with: name and address of exporter, product type and variety, country of origin, class/grade,
net weight of package (kgs), and a grower identification code.

Investment

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Cost of Production

In 1997, ADC estimated the costs of production and gross margins for hot pepper production at Mubuku. These are given in Table 1.

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Profitability

ADC trials in Mubuku show that a one acre site planted in hot pepper has a gross margin of Ushs 198,600. Yields were estimated for small farmers at 3.5 MTs per acre. With improved management, commercial farmers should attain higher yields and higher gross margins. See Table 1.

Table 1: Projected Gross Margins for Ugandan Small Farmers Producing Hot Peppers (Ushs/hectare)

Revenue		
Yield[1] (kgs/ha)	8,500	
Sales Price (Ushs/kg)	400	
Total Revenue		3,400,000
Expenses		
Seed/Plants	125,000	
Land Cultivation[2]	173,750	
Fertiliser[3]	500,000	
Chemicals[4]	576,000	
Labour[5]	1,319,375	
Processing[6]	309,375	
Total Expenses		3,003,500
GROSS MARGIN		396,500

[1] Annual yield. A conservative estimate for irrigated production using good seed and basic level of inputs and weed control.

[2] Two times tractor ploughing @ Ushs 62,5000 each, plus ridge making.

[3] 20 bags of NPK @ Ushs 25,000 each.

[4] 30 kgs of Dithane + 18 litres of Dimethoate.

[5] Nursery management (Ushs 37,500 for 21 days); slashing (Ushs 25,000/ha); planting (Ushs 30,000, 150 ridges @ Ushs 200/ridge); clearing field ditches (Ushs 15,000, 5 times @ Ushs 3,000); fertilizer application (Ushs 135,000, 6 times for 150 ridges @ Ushs 150); spraying (Ushs 240,000, 960 knapsacks @ Ushs 250); irrigation (Ushs 100,000 monitoring irrigation, Ushs 50,000 per ha -- requires twice the time); weeding (Ushs 315,000, 5 times for 150 ridges @ Ushs 300 + 3 times spot weeding @Ushs 30,000)); harvesting (Ushs 318,750, for 2,125 boxes @ Ushs 150)

[6] Grading, packing, and weighing (Ushs 63,750, 200 kg per person per day @ Ushs 1,500/day); Miscellaneous (5 percent of revenue, total Ushs 225,000/ha).

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Investment Requirements

Most production in Uganda is done on a small scale, therefore the basic requirements are land and seed. Looking at estimated cost of production, it requires an estimated US $1,200/acre. A reasonable number of farmers in Kasese have started to cultivate areas larger than one acre in size, with irrigation; figures on investment and cost of production from these farms will be evaluated by ADC at the end of 1998.

More Information

Additional information on hot pepper production, postharvest handling, and marketing are available from ADC.

ADC Commercialisation Bulletins are published by the Agribusiness Development Centre of the USAID-funded Uganda?s Investment in Developing Export Agriculture (IDEA) Project. The bulletins provide potential investors with a quick reference to production and market characteristics for various nontraditional export crops. For additional technical details, contact:

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