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Supplying Improved Seed to Farmers in Rural Kenya: The Case of Freshco Kenya Ltd.

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Abstract

Freshco, a small producer and distributor of hybrid maize seed and macadamia seedlings, was one of the first private companies to enter the Kenya seed market after its liberalization. Currently, the company produces and markets six high yielding maize varieties that are suited for diverse agro-ecological conditions. Despite the company's encouraging growth in the local maize seed market, Freshco's executives recognize the need to scale up operations to stay competitive. The company's challenge is to recognize business opportunities and customer needs in an environment susceptible to ecological, political, and socioeconomic change.

Keywords: Kenya, seed industry, smallholder farmers, scenario planning.

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Introduction

As 2006 closes, the team at Freshco Kenya Ltd. (“Freshco”) celebrates its third consecutive profitable year. Morale at the Kenya-based seed company is high—revenue has shot up 30% over the past year, and the company is preparing to release three new, promising maize varieties. Freshco’s CEO, Gichanga Karanja, “Captain Karanja”, is a confident man with a broad smile who likes to tell his team that “nothing is impossible.”

But the maize seed industry presents a completely new set of challenges. Competition is fierce, and government bureaucracy and poor infrastructure add to the difficulties. Captain Karanja knows that Freshco needs to scale up operations, but how should this growth be achieved? And equally important, how should Freshco prepare for the upcoming changes in the industry and in Kenya, changes that will have important consequences for the business? These questions occupy the staff members as they embark on a new year of operation in 2007.

Welcome to Freshco

Freshco, a small producer and distributor of hybrid maize seed and macadamia seedlings, was one of the first private companies to enter the Kenya seed market after its liberalization in 1996. The government-run monopoly, Kenya Seed Company, was converted to a private company and other businesses were permitted to join the competitive private sector. Captain Karanja and his business partner, Peter Munga, started the company in 1996 by selling macadamia seedlings to growers for Equatorial Nut Processors, a macadamia processing business owned by acquaintances. Freshco entered the maize seed market in 1997 as a distributor for Pioneer Hi-Bred International and later for Monsanto, but its management soon realized the company could be more profitable by building in-house capacity to grow and sell its own hybrid maize varieties. Freshco seized the opportunity to become a local Kenyan seed producer and sold its first line of Freshco branded seed in 2002. Since then, gross profits have increased 369%, from USD\$73,924 in 2002 to USD \$272,467 in 2006 (exchange rate in March 2007, USD \$1 = 68.9 Kenyan shillings), and market share has grown from an estimated 0.25% in 2004 to 1.5% in 2006.

Freshco’s mission is “to increase the wealth of our shareholders by increasing the wealth of small scale farmers through provision of quality seed and other improved planting materials” (Freshco’s *Marketing Plan 2007*). The company focuses on providing quality products that deliver new breeding technologies and maize varieties into the hands of its customers. Its vision is to be the most preferred producer and supplier of seed in East Africa. In addition to supplying high quality seed and planting material, Freshco prides itself on being close to smallholder farmers and providing agricultural advice as part of its customer service. Captain Karanja encourages his two sales agronomists, David and Amos, to be in constant

contact with the retailers selling the company's seeds and the farmers purchasing them. In Captain Karanja's mind, Freshco's job does not end once its product leaves the store shelf; its job goes all the way to when the farmer harvests cobs heavy with swollen kernels of maize. This credo is embodied in the company's slogan: *Our Technology. Your Wealth.*

Macroenvironment in Kenya

Freshco is headquartered in Nairobi, the capital of Kenya, a country with a population of 34.7 million. There are 42 ethnic groups in the country, the Kikuyu being the majority, while other major groups include Luhya, Luo, Kalenjin, and Kamba. The Rift Valley is the most populated province; one-fourth of the population lives and works in this region (CIA, 2007).

Kenya's current president, Emilio Mwai Kibaki, was elected in 2002, the third president of the country since independence from the British in 1963. Kibaki's national policy centers on promoting the domestic private sector and reaching out to international economies. Foreign investors have gained confidence during his leadership, and rural households have begun to commercialize their agricultural output. Real GDP growth increased from a near standstill in 2002 to 4.6% in 2004 and 5.7% in 2005. Income per capita increased significantly to US\$530 in the same period (World Bank, 2006). Table 1 gives the macroeconomic indicators for Kenya from 2000 to 2005.

Table 1: Kenya's macroeconomic indicators

Indicators	2000	2001	2002	2003	2004	2005
Population (million)	30.69	31.36	32.04	32.73	33.47	34.26
Annual population growth (annual %)	2.23	2.17	2.13	2.14	2.22	2.33
GDP (current US\$ billion)	12.71	13.06	13.19	15.04	16.09	17.98
GDP growth (annual %)	0.60	4.38	0.40	2.77	4.34	2.80
Gross national income per capita (US\$)	430.00	420.00	400.00	430.00	480.00	530.00
Inflation, GDP deflator (annual %)	6.08	1.55	0.85	6.96	6.92	3.73
Net inflows of foreign direct investment (US\$ billion)	111.00	5.00	28.00	82.00	46.10	—
Agricultural land (% of land area)	46.32	46.49	46.49	46.58	—	—
Agriculture, value added (% of GDP)	32.36	30.65	28.27	27.79	26.75	27.36

Source: World Bank, World Development Indicators

“—” means data are unavailable.

Major challenges to economic growth remain because of the country's poor infrastructure and banking system as well as its agroclimatic challenges. Despite extensive investments in infrastructure projects by the government and external

financiers, Kenya's roads and electricity system are of poor quality. This shortcoming directly impacts production costs for the economy in general and is a drawback for investors. Also, the banking system in Kenya is unable to meet the needs of many small and medium-sized enterprises for credit and technical advice. Commercial banks either avoid lending to the agribusiness sector because of the higher transaction costs and difficulties in assessing and managing risks or lend money at high interest rates. Cyclical droughts have plagued Kenya historically and food scarcity from the current prolonged droughts in most of Kenya has pushed food prices up.

Kibaki's government sees the agricultural sector as a primary means to increase per-capita income, generate employment and develop trade. Currently, it is revitalizing and diversifying the agricultural sector, making it more commercially oriented and capable of attracting private investment and competing in international markets.

The Agriculture Sector in Kenya

Agriculture has always been the mainstay of Kenya's economy. It is the major source of livelihood in rural areas, where most of the population lives, and it employs approximately three-fourths of the labor force (CIA, 2007). Agriculture accounted for 30% of the country's GDP during the past six years, although in recent years its share has decreased. To increase agricultural productivity, Kibaki's government has encouraged farmers to adopt quality inputs such as hybrid seeds and modern farming practices.

Kenya's territory is divided into various agroecological zones ranging from the lowland to highland zones. The lowland zone, or the semiarid and arid areas, lies in the east and northeast of Kenya, covering about 80% of the land surface and occupied by about 20% of Kenya's population. The low amounts of rainfall and low soil fertility in these regions prohibit any economic gains from growing staple food crops. The Kenyan highlands, however, have a more favorable agroecology for crop production and better market opportunities. Annual rainfall supports the growing season and the well-drained soils are suitable for growing wheat and maize. The area has a diversity of farming systems, varying from subsistence farming to export-oriented commercial farming.

The Maize Seed Industry in Kenya

Maize is the staple crop of Kenya's agriculture sector. It is grown on 30% of arable land and constitutes 3% of Kenya's GDP. Nearly every small farmer grows maize, and Kenyans consume an average of 98 kg per person per year (Nyoro et al., 2004). Production has been increased by the better varieties created through the introduction of scientific plant breeding in formal laboratories, yet farmers'

traditional methods of selecting and saving seeds from their own maize crops continues. Although many Kenyan farmers still use this informal system of seed acquisition today, a formal market system has been gaining ground in recent decades. Kenya liberalized the seed industry in 1996, converting the government-run Kenya Seed Company (KSC) into a private seed company. This allowed newly formed private Kenyan seed companies to join the field along with international corporations. KSC has continued to dominate the market, however, and 10 years after liberalization, more than half of the company's shares continue to be held by the government (Nambiro et al., 2004).

The Kenya Agricultural Research Institute (KARI) conducts most maize seed variety development within Kenya, and international agriculture research centers such as the International Center for the Improvement of Maize and Wheat (CIMMYT) also contribute breeding research and new germplasm. The process of releasing a new variety of seed can take 10 or more years from the beginning of breeding experiments to final passage through performance trials. The release of new varieties is regulated by the Kenya Plant Health Inspectorate Service (KEPHIS). KEPHIS holds National Performance Trials to test the quality of each new variety before it is released for sale on the national market. Because breeding research and development is time consuming and costly, most local private companies have not invested in this aspect of seed production. When new varieties are under development, KARI makes arrangements with private companies to pass on breeding rights. The companies then take the new varieties through performance trials, and once the varieties are released, begin multiplying the seed for sale to Kenyan farmers.

The improved varieties that are being sold by companies contain extensive improvements over farmer-saved seeds. Most of the varieties being sold are hybrids. A hybrid plant is produced by crossing two different parents to produce an offspring that has characteristics of both parents. Hybrid maize varieties are, in general, higher yielding than OPVs, but new seed must be purchased each year because kernels that are replanted will not contain the same characteristics or yield. Seeds that are saved by farmers have lower yields and may not contain the disease resistance or other traits that are bred into hybrids by the research centers.

Most seed companies use farmers with large land holdings to grow the seed they sell. When this seed is harvested, the companies have it sorted to remove any kernels that do not meet size standards. Once the seed has been sorted, it is treated with chemicals to protect it from insects and mold, coated with a dye to distinguish it from food maize, and packaged. Because all seed sold in the formal sector must be certified by KEPHIS, this agency is involved at every step of the preparation process. To achieve certification, seed companies must submit forms, pay fees, and request visits by KEPHIS inspectors at different stages in the growing, harvesting, and packaging cycle. This process can be burdensome to seed companies but is

constructed to maintain quality assurances and prevent poor quality seed from entering the market.

Seed that has been grown in one season is prepared for sale to the farmers for planting in the subsequent season. It reaches smallholder farmers through agricultural supply retailers, called stockists, who are located within town centers. In addition to selling seeds these stockists also sell fertilizers, pesticides, and livestock supplies. Seed companies deliver to the stores of stockists, and smallholder farmers visit stockists to purchase seeds and other agricultural input needs. Seed companies may also sell directly to large farmers that are growing maize for the commercial market, to nongovernmental organizations (NGOs) that distribute seeds to program participants, or to institutional buyers such as schools or prisons. The characteristic structure of the seed industry in most African countries is illustrated in Figure 1.

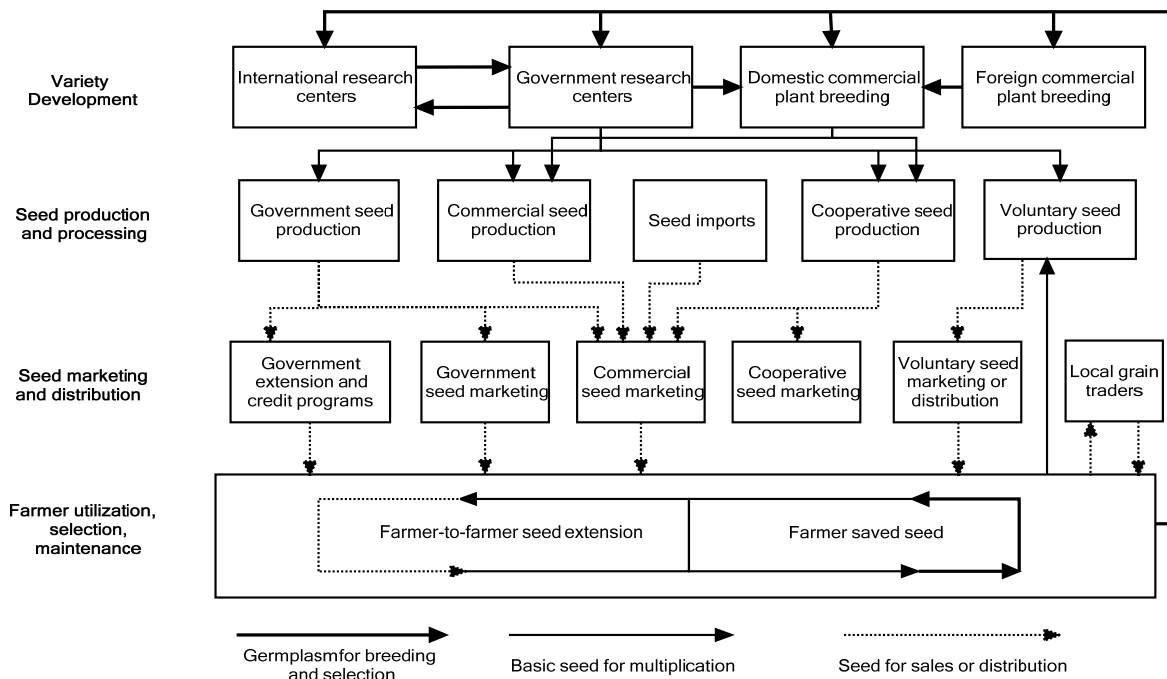


Figure 1: Characteristic seed system in African countries (Tripp 2001)

Maize is planted in Kenya at the start of the long rains, usually in March. Seed companies stock enough inventory in stores before the rainy seasons to satisfy customer demand. In areas where there is an additional short rainy season that will support a second crop, from October to December, farmers also plant in October. The periodic surge in seed purchases causes the majority of activity and profits to occur in brief periods of time, with long periods of low activity and profit during the rest of the year.

Competitors in Kenya's Seed Industry

The number of varieties available to Kenyan farmers has increased greatly since liberalization of the seed sector. In addition to popular varieties sold by KSC that have been on the market for many years, farmers can now choose seeds from multinational companies and domestic suppliers. Many farmers also continue to obtain seeds from the informal sector.

Former parastatal: After many years as the only seed provider in the country, KSC remains the largest shareholder in the seed market. According to internal Freshco documents, KSC continues to hold approximately 90% of the maize seed market, or over 15,000 tons.

Multinational corporations: Pioneer Hi-Bred International and Monsanto continue to sell their product lines in Kenya, along with Pannar Seed, a multinational seed company based in South Africa. These companies are selling varieties developed for other parts of the world but have the resources to invest in research and development for Kenyan varieties if they decide the potential in Kenya is great enough. Combined, multinational corporations hold 6.75% of the maize seed market, according to Freshco documents.

Domestic companies: Other domestic seed companies are Oil Crops Development Ltd. and Western Seed Company, while there are many smaller producers. These companies are all trying to increase their sales. Based on Freshco's internal document, *Marketing Plan 2007*, market share data for other competitors in 2004 are listed in Table 2. The company document also notes that Freshco's estimated market share rose to 1.5% in 2006.

Table 2: Maize seed market shares in 2004

Company	Market Share	Amount (MT)
Pioneer Hi-bred Seeds	3.00%	600
Monsanto	2.00%	400
Pannar Seeds	1.75%	350
Western Seed	0.75%	150
Oil Crops Development Ltd	0.50%	100
Freshco	0.25%	50
Others	0.10%	20
TOTAL	8.35%	1670

Informal sector and community-based seed systems: Not all farmers have adopted the use of improved seed (either hybrids or OPVs) due to a lack of education, inability to purchase seed, limited or no access to stockists, or other reasons. In addition, some farmers that do plant hybrid seed may also continue to plant local

OPVs to complement the characteristics of their purchased seed. Adoption of hybrid varieties ranges from above 90% in areas where maize grows well to about 30% in areas that are difficult for maize production (Smale et al., 2006). Some NGOs also encourage community-based seed systems, in which community members produce seed that is not certified by national authorities but does adhere to certain standards identified and controlled by community members.

Inside Freshco

Captain Karanja describes Freshco's role in the Kenyan agricultural sector as increasing the wealth of small scale farmers through provision of quality seed and other improved planting materials. By having this technology within reach, farmers are able to achieve higher yields, which contributes to increased consumption, better health, and greater income generation through the sale of surplus produce. Freshco maintains a close connection to maize breeders at KARI and CIMMYT, which give the company access to new varieties.

The bottleneck in Freshco's production chain is its difficulties recruiting and retaining farmers with large enough parcels of land where its seed can be multiplied. KEPHIS regulations require isolation distances between fields used to grow certified seed and other maize crops. The number of farmers in Kenya owning tracts of land large enough for the inclusion of these isolation borders is limited.

Freshco has also found that farmers have not returned all of the seed harvested. Although the company draws up contracts with the farmers, pressing legal charges is difficult because of inadequacies in the judicial system.

Once Freshco receives the seed from its contract growers, it pays to have the seed sorted, treated, and packaged at the facilities of another seed company in Nakuru, the provincial capital of Rift Valley located a few hours away from Freshco's headquarters. The seed is then stored at a nearby storage facility before delivery to stockists.

Product Portfolio

Freshco's current product line includes three hybrid varieties that are late maturing and well suited for highland ecological zones and one hybrid variety that matures earlier and is adapted for lower altitudes. The company provides information to stockists on which varieties are best suited for which ecological zones, and stockists pass this information to farmers. Farmers then choose the varieties that are best adapted to their field conditions and that contain the desired characteristics, such as two cobs per stalk or a particular disease resistance. In addition to its current product line, Freshco is also preparing to release three new varieties: two types of

quality protein maize (QPM) and one with resistance to a parasitic weed called striga. The company plans to have these in the market by the 2008 growing season. The QPM varieties are hybrids that have higher protein content than normal varieties. One of these is a high altitude variety and the other is suited for medium altitudes with moderate rainfall. These will be the first hybrid QPM varieties in Kenya, and Freshco has an exclusive contract with KARI for these varieties. Freshco will pay royalties to KARI throughout the duration of its 10-year contract. QPM will be a valuable addition to the range of choices for farmers; in addition to helping combat protein malnutrition in humans, it can also be fed to livestock for faster growth rates.

The third new variety Freshco is planning to introduce is a striga-resistant variety bred by CIMMYT. Striga, a parasitic plant that drains soil nutrients, has infested about 80% of the farmland in western Kenya, where most maize is grown. Farmers planting in striga-infested soil may lose 20% to 80% of their yields and sometimes their entire season's labor. Experiments from CIMMYT demonstrate that the striga-resistant variety, which is coated with herbicide, can increase average yields more than fourfold at a cost of less than US\$4 per hectare. Even under unfavorable market prices, the new variety has a benefit-to-cost ratio of more than 25:1 (CIMMYT, 2007). The research institute estimates that in East and Central Africa the potential market for this new variety may be as high as 40,000 tons of seed if all striga-infested areas are included.

Freshco sells seed in one, two and five kilogram bags with English-language labeling. Freshco prices its products just below KSC's prices, although the executive team believes its products are superior to those offered by KSC. Management wants to attract more customers and gain more market acceptance before raising prices.

Human Resources

Captain Karanja is Freshco's Chief Executive Officer. There are 14 additional full-time staff members, and the company employs an additional 200 to 300 seasonal workers during the busiest times of the year. Senior staff members include a finance and administration manager, a production manager, two sales agronomists, and a processing facilities manager. Support staff includes an accountant and two administrative assistants. The company's organizational chart is shown in Figure 2.

Finances and Short-term Objectives

Freshco's sales revenue and profits have been increasing steadily since the company was founded. Sales revenue from maize seed almost doubled between 2004 and 2006. The company's breakeven point is 200 metric tons for the seed production and marketing division, and it holds an estimated 1.5% of market share. Freshco's gross profits during the period 2002-2006 are charted in Figure 3.

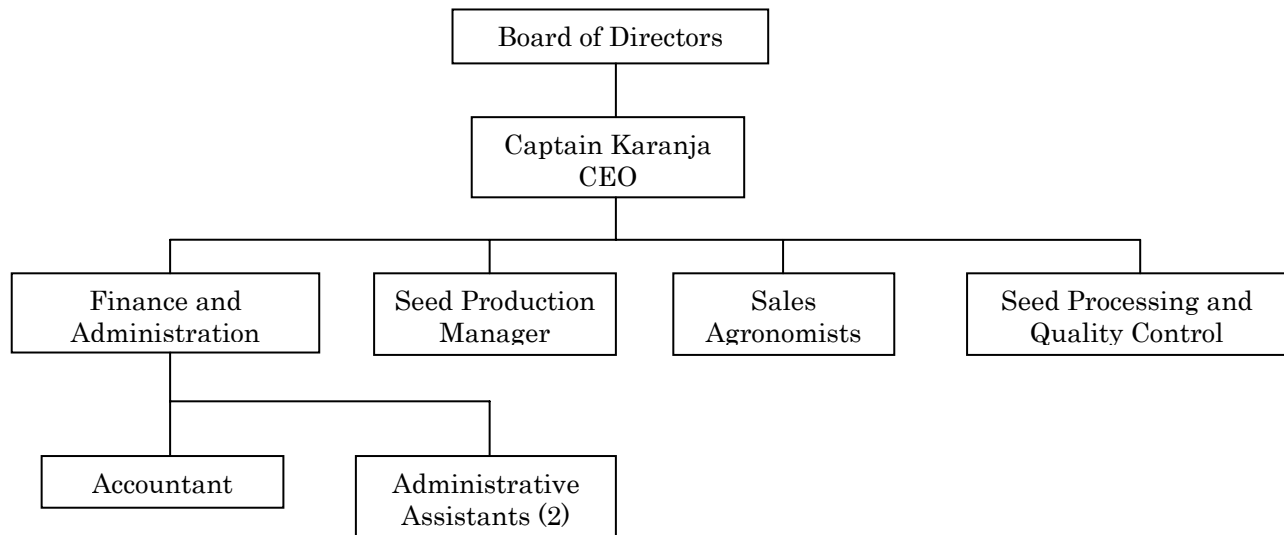


Figure 2: Freshco Organizational Chart

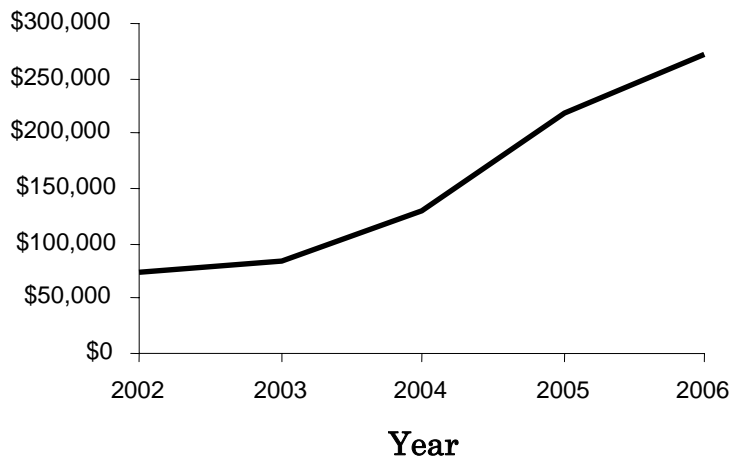


Figure 3: Freshco's Gross Profit, 2002-2006

The company's planned objectives for the short-term future are:

- Double the market share from 1.5% to 3% by the year 2009.
- Increase the number of hybrid varieties to cater for lower altitude ecological zones.
- Increase the distribution network to cover more areas in Kenya.
- Actively involve farmers in field testing of new varieties through demonstration plots.
- Increase awareness of the Freshco brand and its varieties throughout Kenya via field days, business fairs, farmers' field schools, and stakeholders meetings.
- Double the volume of seed maize production by the year 2009.

Marketing Strategy

Marketing holds high priority at Freshco. At 20% to 25% of expenditures, marketing is the biggest cost after production. Farmers who have never used Freshco seeds are reluctant to risk a season's crop on a variety they have never tried. While the company positions its products as high quality and innovative, Captain Karanja admits that marketing remains the biggest challenge for his organization. Freshco's marketing team has segmented its market by customer location (low, medium, and high altitude) and by buyer type (smallholders and commercial farmers, among others). Table 3 shows a simple metric tool used to make assessments of the different buyer segments by the marketing team. The team uses this tool to select the most attractive segments. The sales agronomists, Amos and David, then target Freshco's products at the selected segments in the major maize growing regions of Kenya, visiting customers and stockists, planting demonstration plots, and handing out promotional materials. The team tailors the price, place, and promotion of its products according to the market segment it is targeting.

Amos, who joined the company two years ago after working at various other seed companies for the past 30 years, emphasizes the importance of smallholder farmers to a small enterprise like Freshco. "The smallholder farmers are the lifelines of the company. We sell almost all our products to them," he said. He acknowledges, however, that Freshco needs to think about diversifying its market segments.

Smallholder Farmers

Freshco focuses almost exclusively on smallholder farmers. The largest segment, smallholders produce about 70% of the maize in Kenya and represent 95% of Freshco's revenues. Many farmers live in the high potential maize region of western Kenya's North Rift Valley region, which produces over 30% of the national maize. Smallholders grow maize, along with other staple crops such as legumes, tubers, bananas, cereals, and cash crops like coffee, tea, tobacco, and macadamia nuts on plots of land ranging from 0.25 to 5 acres (Ouma et al., 2002). They grow crops for subsistence, in good years producing a surplus they can sell in the local market. Most of the work is done manually, although some small farmers may have access to equipment such as tractors that they can rent as needed. The average maize yield achieved by smallholders is 1710–2250 kg per acre (RATES Center, 2003).

When smallholders need to purchase seeds, they choose the variety based on their past experiences, advice from stockists, and neighbor recommendations. Opinion leaders are influential in disseminating information about new crop techniques and varieties among their peers. The most popular varieties meet criteria such as high yield; large grain size; resistance to diseases, pests, and drought; and good taste and ease of cooking. In general, smallholders prefer to buy seeds in 2 kg bags, which is

Table 3: Freshco's evaluation of its buyer segments

Features	Smallholder Farmers	Commercial Farmers	Institutional Buyers		NGOs
			Schools	Govt.	
<i>Demand concerns</i>					
Market size (+)	5	3	2	2	4
Market growth (+)	5	1	3	3	4
Stability of demand (+)	5	4	2	2	3
Purchasing power (+)	1	3	4	4	5
Presence of informal sector (−)	1	4	3	3	5
<i>Geography</i>					
Geographical dispersion (−)	1	4	3	3	5
High-land variety preference	5	5	5	4	2
Mid-land variety preference	5	4	4	3	2
Low-land variety preference	2	1	4	4	5
<i>Marketing concerns</i>					
Ease of access (+)	5	4	3	1	2
Training needs (−)	1	3	2	5	5
Visibility of promotion(+)	4	2	5	1	3
Word of mouth (+)	5	4	3	1	2
<i>Financial concerns</i>					
Margin per quantity (+)	2	4	3	3	5
Packaging costs (−)	1	4	3	3	1
Transaction costs (−)	2	2	4	3	5
Payment issues (−)	2	1	5	5	5

Key: 1 = Unattractive, 2 = Somewhat unattractive, 3 = Neutral, 4 = Somewhat attractive, 5 = Attractive

enough for their farm, although significant portions also like the 10 kg bags because the price per kilogram is less (Ouma et al., 2002).

To reach this segment, Freshco uses a combination push/pull strategy. From October to January, Freshco markets its products to farmers directly. The company plants about 200 demonstration plots across the country each year to attract new customers. Farmers selected to host these demonstrations receive free seeds, pesticide, and other inputs from Freshco in exchange for showcasing Freshco's crop on their land. The sales agronomists also visit these plots periodically to ensure they are adhering to company standards. The company also provides some extension services, including training farmers on the best methods for growing Freshco's maize seeds and for controlling pests and diseases.

From February to April, Freshco turns its attention to the stockists, who command enormous credibility among farmers. Freshco promotes its products to this influential group mostly through agricultural trade shows, which are usually hosted

by NGOs, KARI, or other companies, and through in-person visits to explain the benefits of Freshco products. The company also offers a 5% margin to stockists on farmer sales, double what KSC offers. In addition, the sales agronomists give stockists promotional items, such as t-shirts, calendars, and posters. At the start of the growing season, Freshco transports its seeds to its stockists countrywide from its central storage facility in Nakuru. Usually, larger stockists get the first delivery and distribute seeds to smaller stockists. Delivery on Kenya's roads is often challenging, and transportation costs run high.

Commercial Farmers

Freshco derives 5% of its revenues from commercial farmers, most of whom grow from 50 to over 100 acres of maize. This segment produces about 30% of the maize in Kenya and operates farms purely for profit. The large-scale commercial farmers (over 100 acres of land) own storage facilities on site and rely on capital-intensive machinery, such as plows and maize shellers, for most operations and hire workers for the rest. Their heavy investments in equipment provide them access to formal credit through their ability to offer attractive collateral to banks. They focus exclusively on maize and produce about 2250 to 2700 kg per acre (RATES Center, 2003). Among commercial maize farmers, almost 100% are using improved hybrid varieties.

Despite the attractiveness of selling to commercial farmers, accessing this segment is resource-intensive and presents marketing challenges. Because they buy such a large quantity of seeds (100 kg on average), commercial farmers are pursued by many companies and often do not entertain offers from less well-known companies like Freshco. Freshco's sales agronomists usually make several house visits to each potential customer, although many times just arranging a visit is a challenge in itself.

Nongovernmental Organizations

A new potential market segment for Freshco is NGOs, which established a presence in Kenya in the 1990s and in recent years have reinvigorated their efforts. NGOs buy maize seed in bulk, often paying higher than market prices, and redistribute the seeds to small farmers in disaster or poverty-stricken regions in Kenya. Because of their development focus, NGOs are willing to purchase seeds from lesser-known local seed companies in an effort to stimulate the local economy. Despite this goal, they tend to purchase from companies with whom they already have established ties. Also, because their purchases are dependent on funding levels and the conditions in target regions each year, they remain variable customers.

Freshco does not currently have ties with NGOs, but Captain Karanja and the sales agronomists believe that this segment will become increasingly important in the future. As a result, they are exploring ways to market to this segment.

Institutional Buyers

Institutional buyers include government institutions, prisons, and schools, all of which purchase in bulk. Government institutions prefer drought-tolerant varieties that they can distribute to marginal areas. Freshco currently does not sell these varieties but plans to commercialize one for 2008. These institutions buy from intermediary traders, who negotiate prices with the seed companies. Differentiation is difficult because of limited access to these institutions. Schools usually buy commercial grain, but sometimes they will grow maize to educate students about farming techniques. Students' exposure to maize seeds can lead to their sharing their experiences with parents. Schools usually buy a different variety each year, however, so demand is inconsistent. KSC has traditionally dominated this segment. While selling to institutional buyers has several advantages, Freshco knows that the process of becoming a supplier and negotiating contracts is bureaucratic and time-consuming.

Growth Strategy

Freshco already has the exclusive production and distribution rights for the QPM and striga-resistant varieties. While the potential market for these varieties is large, Freshco knows adoption will take many years. A marketing strategy to promote sales of these varieties is under development, and Captain Karanja and his team hope this will be a significant area of future growth.

Management of Freshco is planning to import vegetable seeds from India and distribute them in Kenya as another means of growth. In January of 2007, Captain Karanja traveled to India to meet with the directors of Bejo Sheetal, a medium-sized producer of vegetable seeds. He reached an importation agreement with the company, which included providing training for Freshco personnel on production techniques. This is an important step toward product diversification for the company.

Because of their high value and low transportation costs, vegetable seeds yield substantial profit margins. They also offer a good source of stable revenue for seed companies because farmers purchase vegetable seeds on a year-round basis.

The market is large, as over 90% of smallholder farmers in all regions of Kenya, except the most arid ones, grow vegetables and fruits (Muendo and Tschirley, 2004). Vegetables such as pumpkin, cowpea, kale (a type of cabbage) and amaranth (a nutritious leaf vegetable) are produced for household consumption and market

sales. Most farmers use saved seeds to grow traditional vegetables but buy exotic varieties, such as tomato and onion seeds, from stockists.

The market for vegetables is also growing with increased economic growth and greater urbanization. Currently, about six local companies sell vegetable seeds in Kenya. Three import seeds, while the others produce and import seeds. While Kenya does not have import duties, other charges add about an 18% markup to the imported seed (Muendo and Tschirley, 2004). Multinationals from Holland and South Africa also compete in the market. Because the vegetable seed market in Kenya is currently much less competitive than the maize seed market, Captain Karanja believes there is room for local companies like Freshco to enter this market and make a profit.

Freshco executives also want to export maize seed and macadamia seedlings to Uganda and Tanzania, which have climates suited for Freshco's highland maize varieties and macadamia production. The company is exploring possible collaborations with seed companies in these other countries.

Preparing for the Future

As Freshco pursues its vision of becoming a seed industry leader, the company will need to maintain a keen insight and understanding of the environment in which it operates. The East Africa region and Kenya's developing seed industry are both extremely dynamic contexts. Taking advantage of opportunities that emerge will have a major impact on Freshco's long-term profitability.

There are a number of trends either currently underway or with the potential to develop in the future that would have significant impact on Freshco: (1) revitalized interest in seed development in Africa, (2) regional integration efforts, 3) aggressive market penetration by multinationals, and (4) continued presence and impacts of NGOs in the region. Each of these trends is discussed in detail below.

Trend 1: Revitalized Interest in Seed Development in Africa

A new focus has emerged among donors, foundations, research institutions, and universities to support the development of a viable seed industry in Africa. Motivations for such interest are varied and include a perceived need to support private Kenyan seed companies that have emerged since the deregulation of the sector, greater appreciation of the benefits of public-private partnerships, new theories of alleviating hunger by sustaining access to seed, and recognition of the value in strengthening and developing seed systems.

As part of this focus, the Bill and Melinda Gates Foundation and the Rockefeller Foundation have teamed to create the Alliance for a Green Revolution for Africa

(AGRA). AGRA's first activity is the Program for Africa's Seed Systems (PASS), which will focus on developing ecologically appropriate crop varieties, training the next generation of crop breeders and agriculture scientists, and improving and networking seed and agro-input supply chains (Rockefeller Foundation, 2007).

Other interest in food security and seed sector development includes the U.S. Agency for International Development's (USAID) work with farmers, private seed producers, and farm product distributors on increasing improved variety access and usage through the Agribusiness Development Support Project. Other USAID initiatives include the Kenya Business Development Services Program, which supports small and medium-sized enterprises, and the Maize Development Program, which improves variety research. The Seeds of Development Program through Market Matters Inc. is also active in strengthening the seed industry's management and marketing capacity.

The Kenyan government, through institutions such as KARI, is also revitalizing its seed development activities. There is greater emphasis on developing ties between the public and private sectors, without which KARI research efforts risk resulting in unmarketable technologies. KARI links with the seed industry during its development and trials of varieties in addition to promoting companies during events such as farmer training and demonstration plots.

Trend 2: Regional Integration Efforts

The treaty for the establishment of the East African Community (EAC) was signed in November 1999, establishing a partnership between Kenya, Tanzania, and Uganda. The previous EAC, established in 1967 between the same countries, disintegrated in 1977. The new EAC seeks to establish a customs union, common market, monetary union, and political federation. The Customs Union Protocol, which took effect in January 2005, has largely eliminated intraregional tariffs and nontariff barriers and created common external tariffs (Busse and Shams, 2005). Steps toward market and fiscal policy integration continue, and strategies have been created for private sector and rural development, but full integration will occur sometime in the future.

In addition to the EAC, the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) was established in November 1993 between Burundi, Democratic Republic of the Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania, and Uganda. The ASARECA links members' national agricultural research institutes with the goals of "increasing the efficiency of agricultural research in the region so as to facilitate economic growth, food security and export competitiveness through productive and sustainable agriculture" (ASARECA, 2007).

The East and Central Africa Program for Agricultural Policy Analysis (ECAPAPA) is a program within ASARECA that coordinates regional efforts in seed regulation harmonization. The initiative focuses on easing the movement of seed and germplasm across national boundaries and creating regional seed markets to benefit the public, private, and consumer sectors (Minde, 2003). An initial project in 1999, “Harmonization of Seed Policies and Regulations in Eastern Africa,” made strides to reduce barriers between Kenya, Tanzania, and Uganda. It is anticipated that the project will be reinvigorated and ultimately the remaining countries in ASARECA will be incorporated into a larger regional harmonization program.

These regional integration efforts present numerous opportunities and challenges to Kenyan seed companies such as Freshco. The full repercussions of the initiatives will emerge as systems become established off the groundwork that has been laid to date. Regional integration and harmonization of seed regulations will allow for ease of access to new markets and land for seed production. Tanzania and Uganda have lower land and labor costs than Kenya does; Uganda especially has favorable growing conditions. Challenges can arise, however, as competitors from neighboring countries enter the Kenyan market.

Trend 3: Aggressive Market Penetration by Multinationals

Companies such as Cargill, Monsanto, Pannar, Pioneer, and Syngenta are world leaders in seed research, development, production, marketing, and sales. They typically have large budgets devoted to advertising and promotional activities. Local Kenyan seed companies currently have an advantage in that they better understand local conditions and needs. Multinational companies have established varieties and the resources to continue their modification for Kenya’s agroecological conditions.

Currently, market penetration efforts by multinationals are modest. If they see opportunities in the expanding seed market, however, they have vast resources to penetrate the market and can become formidable competitors to Freshco. If the EAC is fully implemented as discussed above, multinational seed companies can seek to enter this larger market, as the benefits that would serve local companies would also attract international competition. Currently KSC dominates the seed sector; even it could come under stiff competition, however, should multinationals increase their efforts in the region.

Institutions such as the African Agricultural Technology Foundation (AATF) in Nairobi are working to develop public–private partnerships with multinational companies that place negotiated royalty free technologies in the hands of national research institutes, local companies, and ultimately local farmers. Adopting an open approach toward collaboration with multinationals in seed distribution or licensed technology production could be beneficial to Freshco in the future.

Trend 4: Continued Presence and Impacts of NGOs in the Region

The provision of seed aid, distinct from food aid, has been a phenomenon in East Africa since the early 1990s (Sperling, 2000). Seeds in such programs primarily consist of maize and, to a lesser extent, beans and other drought tolerant crops. Such aid is generally referred to as “seed and tools” programs, designed to help farmers recover after times of food shortages. The effectiveness of such programs in Kenya has been questioned, as seeds are often provided late, transparency can be limited, and the quantities supplied are small (Sperling, 2000). Kenyan smallholders routinely suffer droughts and poor environmental conditions, in addition to continuing issues of limited seed access, small plots, high seed costs, and poorly adapted varieties. The routine provision of seed in Kenya goes beyond the purpose of seed aid while not effectively succeeding in improving the overall smallholder condition.

For the seed industry, NGO presence and involvement in seed aid and seed development programs in East Africa can be both a help and a hindrance. In addition to Kenya, seed aid programs are also routinely conducted in Ethiopia, Somalia, and Sudan. Given the country’s stability, many NGOs continue to be based in Kenya while working in the broader region. Tensions and environmental factors in the region suggest NGOs will likely remain significant players in Kenya for years to come. NGOs are also working on development-focused seed programs such as extension services and “seed loans.” As noted previously, the presence of a sizeable NGO market can benefit Kenyan seed companies such as Freshco.

Though NGOs provide an additional market segment for the seed industry, they can also distort the seed market by offering seeds free of charge. This practice tends not only to inflate market prices but also to make farmers less willing or inclined to purchase seeds. Some NGOs do provide hybrid seed, though given their high value, farmers often sell them to purchase other goods (Muhammad et al., 2003). Even when higher yields are recognized, smallholders often lack the financial resources to purchase hybrids independently. Many NGOs continue to prefer supplying and marketing OPVs, which also decreases knowledge of hybrid benefits and adoption. NGOs have also been criticized for stifling emerging agro-input dealers and higher yields by promoting low-cost and low-input organic farming.

Given the complexities of NGO involvement in seed aid and development programs, they simultaneously offer potential profits for the seed industry while undermining the development of a viable seed sector. Moreover, program priorities and availability of funding often evolve, and the future could see NGOs that focus on rural enterprise development and income-generating activities. This support would help farmers acquire the funds to purchase seeds but reduce the amount of seed NGOs purchase from seed companies. Ultimately NGOs represent a double-edged sword that Freshco will continue to battle.

Conclusion

Freshco Kenya Ltd. is relatively young in the Kenyan private agricultural sector. Staff members' combined expertise and experience demonstrates, however, the potential to not only recognize business opportunities but also customer needs in an environment susceptible to ecological, political, and socioeconomic change.

While they focus on producing quality seeds, Captain Karanja and his team's presence throughout the supply chain is just one of the tactics pertinent to the dynamism of agribusinesses. Through creative thinking and careful market analysis, Freshco can engage in ventures structured to respond to specific market demands and fluctuations. Indeed, with new varieties on the horizon and increased interest in African seed enterprise development, the emerging private agricultural sector in Kenya has the blueprint for success in place. All that is required now, Captain Karanja counsels his staff, is determination. "Nothing is impossible," he reminds his colleagues.

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