Chapter 6:  CASE STUDIES: UPGRADING FOR THE DOMESTIC MARKET AND FOR TRADITIONAL EXPORT COMMODITIES

INTRODUCTION
This chapter provides a series of short case studies addressing challenges and experiences of upgrading quality, food safety, and other standards in supply chains involving African smallholder farmers. The foci here are on supply chains for selected (agro-industrial) domestic markets and those involving upgrades of traditional (bulk) export commodities. The policy dialogue on standards and African agriculture (and trade) has often been dominated by attention to market access problems into some of the world’s most discerning markets—including those for fresh fruits and vegetables and involving high-end (northern) European supermarkets—providing a very narrow and, frequently, negative picture of the role of standards, typically characterizing them as trade or market “barriers.” In that high-flying world, standards are typically cast as a constraint, a source of added costs and risks, and as a gatekeeper through which few African smallholders can pass.

This, of course, hardly represents the full spectrum of markets and “buyer requirements” that African smallholders do or could encounter. This chapter seeks to bring this dialogue a bit down to earth, highlighting a series of examples where the pertinent standards are within close reach of African smallholders and the market intermediaries with whom they trade. Not all the cases are success stories or ones where the sustainability of evident progress is assured. Most of these cases highlight attempts and challenges to upgrade production and postharvest systems from baselines resembling level 1 in our conceptual framework to a status resembling either level 2 or 3 in that framework. It is our contention that in relation to the large majority of African smallholders, this space is really “where the action is” or should be from a development assistance perspective given the potential to involve large numbers of farmers, the generally higher rates of success, and the potentially very large welfare gains associated with improving product quality and food safety in domestic markets. The cases presented here are the following:

Case 1: “Let the Sun Shine In”: Quality Upgrading and Improved Market Links in Uganda’s Sunflower Subsector
Case 2: “Milking Opportunities” in Informal and Formal Dairy Value Chains
Case 3: Brewing Up Productivity and Income Gains Linked to Sorghum
Case 4: Africa’s Groundnut Trade and European Union (EU) Mycotoxin Standards
Case 5: Rwanda—Gaining a Place in the “Specialty” Coffee Market

CASE 1: “LET THE SUN SHINE IN”: QUALITY UPGRAADING AND IMPROVED MARKET LINKAGES IN UGANDA’S SUNFLOWER SUBSECTOR

Sunflower was introduced in Uganda in the 1920s. By the 1960s, it was widely grown throughout the country, with the crop variously being promoted by private, cooperative, and religious organizations. After a period of civil disorder, the Government of Uganda (GoU) led efforts to revitalize the sector in the late 1980s, including through the release of an improved open-pollinated variety—Sunfola—which had been developed by the National Agricultural Research Organization (NARO).

Sunflower is grown primarily in Uganda’s northern and eastern regions, areas where the majority of Uganda’s poor are located. Boosting sunflower production was therefore seen by the GoU and several donors as a prospective poverty-reduction tool. At the same time, domestic demand for vegetable oils was growing rapidly, with a high level of dependence on imported products. Increased sunflower production could thus contribute to import substitution. Over the past decade, a number of development agencies have supported interventions in Uganda’s sunflower subsector, sometimes in collaboration with GoU entities and...
sometimes with more directed support to private-sector processors. The collective experience has generally been positive, with achievements in technology adoption, production expansion, farmer welfare gains, and import substitution. Upwards of 85,000 smallholder farmers have been incorporated into one or more coordinated supply chains. The sustained progress in this subsector contrasts sharply with the variable results and more volatile experiences of Ugandan farmers being supported for higher-value supply chains. The simple upgrades involved here—centered primarily upon the use of improved seed varieties and some modest tasks of quality screening—represent relatively easy steps that can be taken by most smallholder farmers. While the rewards for individual farmers are not exceptionally high, they have proven to be reliable, and the changes have not burdened farmers with added risks. Overall, the costs of achieving quality upgrades by these farmers have been very modest on a per beneficiary basis, especially when compared with many other recent schemes to raise standards in Ugandan agriculture and trade.

Selected Intervention Experiences

The International Fund for Agricultural Development (IFAD) has been supporting Uganda’s sunflower subsector for an extended period. Its Vegetable Oil Development Project (VDOP), implemented by the Ministry of Agriculture, Animal Industries, and Fisheries (MAAIF), provided support between 1998 and 2008. Major foci of the program included adaptive varietal research by NARO, planting seed multiplication and distribution and the mobilization of farmer groups (through the Uganda Oilseeds Producers and Processors Association—UOSPA), extension support through District Agricultural Offices, and the promotion of small-scale sunflower oil pressing. Considerable progress was achieved on the agronomic and group organization aspects, although the experience in promoting the ram oil press technology was more mixed, with many of the introduced machines being in disuse by the end of the program (IFAD 2010a). An alternative to the Sunfola variety did not emerge from the research. That variety had good production characteristics yet relatively low oil content and therefore was less attractive to large-scale vegetable oil processors.

Since the early 1990s, the leading company in the vegetable oil sector has been the Mukwano Group, which has used a combination of imported crude palm oil and domestic raw materials to produce a range of consumer products. For many years, Mukwano sourced local raw materials on a spot market basis and largely through intermediaries as it lacked a presence in rural areas or experience working directly with farmers. Yet, by the early 2000s the company was facing difficulties procuring adequate local raw materials in competition with numerous small- and medium-scale processors. In addition, the company was dissatisfied with the quality characteristics of the Sunfola variety.

In 2003, Mukwano worked in collaboration with the Investment Development Export Agriculture project of the U.S. Agency for International Development (IDEA/USAID) and the Serere Agricultural and Animal Production Research Institute (SAARI) 70 to introduce a high-yielding, high-oil content sunflower hybrid from South Africa (PAN 7351). Based on the success of the initial efforts, the company established a partnership with the Agricultural Productivity Enhancement Program (APEP/USAID) and the National Agriculture Advisory Services (NAADS) in 2004, to expand the distribution of seed to outgrowers, and it set a coordinated company procurement model geared toward raising farmer productivity, imparting knowledge about better farmer practices and lowering the transaction costs in its procurement.

Mukwano relied on NARO to conduct the adaptability and verification tests of the new variety. Under the partnership with the institutions, the firm was in charge of the overall direction of the project, while the institutional support from APEP and NAADS focused on showing the benefits of both low- and high-technology input packages, training lead farmers and site coordinators to manage the process, and deliver messages to farmers on good agronomic practices through demonstration plots, and also via a weekly radio program (USAID 2008). APEP was implemented through a producer organization/lead farmer extension model, which was the basis for the support to sunflower production as well. By 2006, there were some 2,244 demonstration sites and 31,291 registered farmers in the scheme. Quite a few of the farmers had earlier been supported and organized into groups under the VDOP. The company entered into purchase contracts with the farmer groups, with predetermined prices. A team of purchasing agents was hired by the company to coordinate extension services, and purchase and store the crop. By 2009, the company was employing some 200 of its own extension workers.

The company procures all its local raw materials from smallholders, with farmers having an average growing area of 1.1 hectares (Elepu and Nalukenge 2007). The estimates on the number of contracted farmers vary, but the number is certainly significant. In the northern districts of Lira, Otuke,
Oyam, Kole, and Alebtong, the company estimates the number at 52,000 and expanding.\textsuperscript{71} Another report estimates the number of outgrowers involved in various schemes at 75,000 to 85,000 (Elepu 2009). Most recently, Mukwano has been introducing maize and soybeans among its outgrowers as rotational crops, complementing cash crops with food crops, in order to address concerns on food security.

While the scheme has generally been successful, it has not been without problems. For example, in the early years, some farmers did not do a proper grading of their sunflower crop and included extraneous materials (e.g., dirt, stones) in their deliveries. A combination of incentives, penalties, and increased quality inspections at collection stations largely resolved this problem. Side-selling has been a persistent issue, as the demand for sunflower seed among various processors still substantially exceeds local production. Mukwano estimated that some 40 percent of its contracted supply in 2007 was sold to competing companies. Inadequate access to the higher-yielding seed has remained a bottleneck. The Pan 7351 hybrid variety continues to be imported, with Mukwano being the main importer. In 2007, the company entered into a partnership with the Uganda National Agro Input Dealer’s Association (UNADA). Through the partnership, Mukwano agreed to make available imported hybrid seed to UNADAs regional distributors for sale to millers around the country. The Danish International Development Agency (DANIDA) provided guarantee for UNADA to purchase the hybrid seed from Mukwano.

**Evidence of Impact**

Interventions, both through institutional partnerships and through the lead firm, have provided opportunities for small-scale producers to engage in the production of sunflower. The increased supply of Sunfola seed to farmers, on which VODP played a critical role, had a clear effect on expanded cultivation. According to IFAD (2010a), the area planted with sunflower with VODP support rose from 2,102 ha in 1998/99 to 81,548 ha in 2007–08. The number of farmers reached with the program was estimated at about 206,943 in 2008, to 290,000 from 400 kg/ha to over 800 kg/ha. A second leap occurred almost a decade later as a result of the activities promoted by donors as mentioned above, including the efforts to upgrade production toward the higher-yielding variety. Domestic demand for vegetable oil continues to grow rapidly at some 9 percent per annum (IFAD 2010b).\textsuperscript{73} Thus, there remains considerable scope for further expansion of outgrower arrangements since the processing sector is still operating at well below its capacity and must still rely upon imported raw materials to supplement local supplies to meet the growing demand. There are also broad opportunities to expand yields. For example, APEP reported that in spite of demonstrated yield enhancement and cost reduction associated with high-input production technologies, their adoption by farmers was very low—of the about 34,354 farmers exposed to the program, only 172 adopted high-input production technology, and about 30,919 adopted low-input technology.\textsuperscript{74}

Mukwano has indicated that about 40,000 hectares are planted by its outgrowers, yielding some 40,000 to 50,000 tons of sunflower seed per year. Investments in the scheme, from APEP alone, through grant agreements with the company are estimated at US$85,000 during the period 2004–07, to support nearly 1,600 demonstration sites.\textsuperscript{72} Support to SAARI reached about US$12,000 for the evaluation, identification, and introduction of the high-yielding hybrid. In 2007, the project supported the efforts of a new investor, Sanyu Agro Industries Ltd., through a grant agreement (US$18,300) to set a sunflower scheme for 3,000 outgrowers in 2007–08. APEP also supported A.K. Oils & Fats Limited from 2005 to 2007 through grants totaling nearly $75,000 to develop 2,900 demonstration plots for high yielding hybrids. Those plots targeted over 30,000 outgrowers.

Overall, sunflower production in Uganda has increased dramatically since the early 1990s (figure 6.1). A major leap occurred in the early 1990s, which coincides with the efforts to upgrade production through the adoption of the improved variety Sunfola, resulting in significant increases in yields—in the late 1990s the national average yield doubled, increasing from 400 kg/ha to over 800 kg/ha. A second leap occurred almost a decade later as a result of the activities promoted by donors as mentioned above, including the efforts to upgrade production toward the higher-yielding variety. Domestic demand for vegetable oil continues to grow rapidly at some 9 percent per annum (IFAD 2010b).\textsuperscript{73} Thus, there remains considerable scope for further expansion of outgrower arrangements since the processing sector is still operating at well below its capacity and must still rely upon imported raw materials to supplement local supplies to meet the growing demand. There are also broad opportunities to expand yields. For example, APEP reported that in spite of demonstrated yield enhancement and cost reduction associated with high-input production technologies, their adoption by farmers was very low—of the about 34,354 farmers exposed to the program, only 172 adopted high-input production technology, and about 30,919 adopted low-input technology.\textsuperscript{74}

---

\textsuperscript{71} Northern Uganda’s New Agricultural Chapter, July 2010. Mukwano’s website http://www.mukwano.com/agriculture/agric_in_northern_ug.php

\textsuperscript{72} APEP estimated the company’s matching contributions at about $285,000.

\textsuperscript{73} The sector has benefited from important recent investments. For example, in 2007 A.K. Oils & Fats (U) Ltd (affiliated with the Mukwano Group) constructed a new oil mill in Lira, with an investment of approximately US$1.4 million, doubling the company’s capacity, and also another plant in Tanzania. In 2008, a new sunflower oil processing plant opened in Uganda, mainly for production of sunflower cake, with a very large processing capacity (around 100,000 tons of sunflower cake annually).

\textsuperscript{74} Low-input production technologies comprise basically the use of hybrid seeds, timing planning and weeding, correct plant density, and so forth, but relatively low or no use of fertilizer.
For farmers there have been evident benefits from participating in the sunflower outgrower schemes. A survey by Elepu and Nalukenge (2007) found participating farmers to have much better access to advisory services and reliable market outlets than did nonparticipants in similar locations. The incremental incomes from sunflower haven’t been exceptionally high, but yields have been relatively reliable and prices are determined prior to plantings. Elepu and Nalukenge (2007) found reported gross profit per acre to be significantly higher among the farmers participating in the contract scheme than the noncontracted farmers growing sunflower (USh 20,456/acre vs. negative 7,775/acre).

APEP reported increased yields from adoption of hybrid seed (and low input technologies) from 250–350 kg/acre with the traditional variety to 575–600 kg/acre with the improved system during the 2006/07 season, and net incomes considerably higher among farmers adopting the hybrid. Similarly, the impact evaluation of VODP project carried out in 2008 reported the emergence of the contracting scheme as one of the factors affecting the performance of the project—the adoption of the new variety produced a higher yield and commanded a higher price than the open-pollinated variety (OPV) Sunfola being distributed by VODP and was thus more profitable for farmers.75

Development agency and private sector efforts to promote smallholder sunflower production and upgrade quality through improved seeds and farming practices have certainly paid off. Although there are many challenges ahead, including concerns about soil fertility, ensuring the sustainable distribution of hybrid seeds, and finding the right balance between cash and food crop production, there are certainly positive prospects for the sector and the engagement of more farmers. IFAD is planning a second phase VODP, and USAID’s new investment in Uganda—the Livelihoods and Enterprises for Agricultural Development (LEAD) project that started in 2008—has continued its support to sunflower outgrower schemes.

This experience provides an excellent illustration of the opportunities for achieving both commercial and developmental benefits from interventions seeking to upgrade smallholder production from levels 1 to 2 in our conceptual spectrum of market requirements. The technical and organizational challenges were straightforward. The scale of financial investment by donors and the GoU—largely in research, demonstration plots, advisory services—was rather modest in relation to the number of farmer (and Ugandan consumer) beneficiaries and the scale of production gains achieved.

75 The project also highlighted that as a result of the adoption of hybrid seed, both the market for sunflower seed and the supply of extension services became more diverse and the VODP-supported products became less attractive for farmers.
Farmers were required to make very modest adjustments. They were not asked to bear heavy financial or commercial risks. No third party was needed to certify products or production practices.

**CASE 2: “MILKING OPPORTUNITIES” IN INFORMAL AND FORMAL DAIRY VALUE CHAINS**

In recent decades, there has been a growing interest in the potential of smallholder dairy development to reduce poverty in developing countries via income and nutrition improvements. Even among the lower-end smallholders, holding just one dairy cow is acknowledged to have significant benefits in terms of household nutrition and supplemental income gains (IFAD 2005; Swanson 2009). Following the liberalization of the sector in much of sub-Saharan Africa (SSA) during the 1990s, smallholder dairy production has shown signs of considerable dynamism. Region-wide, smallholders are estimated to account for about 80 percent of raw milk production, the balance coming from medium- or large-scale commercial farms or integrated farming/processing operations.

During the past decade, there has been growing concern about the ability of African smallholders to sustain a remunerative position in national dairy value chains. One factor has been competition from imported milk powder, being widely used by processors due to logistical considerations (in contrast with procuring highly perishable raw milk). A second factor has related to standards, those laid down and enforced by both governments and the private sector. Governments have sought to protect consumers from the potential risks associated with improper milk production, handling, and adulteration. Elements of the private sector, including processors selling milk through modern supermarkets and companies producing higher value dairy products, have raised quality standards above the prevailing norm.

Addressing these challenges—and taking advantage of emerging market opportunities—has stimulated an array of donor-supported programs in dairy development within Africa, often implemented with close collaboration with the private sector. This mini case study highlights some recent experiences with dairy sector interventions in Kenya, Uganda, and Zambia. It emphasizes that the traditional challenges in smallholder dairying—related to animal husbandry, farm productivity, and realizing economies of scale in milk bulking and sale—remain the prominent focus and that there is little evidence to suggest that smallholders have been excluded from formal markets due to quality-related concerns. In fact, processors have been unable to source enough smallholder raw milk—and therefore, continue to operate at below capacity—not because of quality mismatches but because the processors frequently cannot compete with informal market channels on the basis of price and the transaction costs associated with sales.

**Challenges of Smallholder Dairy Development and the Importance of Quality and Safety Standards**

Public standards, whether mandatory or voluntary, covering milk and milk products, have been driven by concerns over public health and by a conviction that ensuring the safety of dairy products is a fundamental role of the state. But the pursuit of consumer protection objectives by encouraging the formalization of milk trade implies significant challenges, particularly as it relates to the implied required changes in production and handling practices to ensure quality milk. Additionally, other challenges include putting in place efficient and well-coordinated logistical arrangements along the chain to avoid quality deterioration and investments in infrastructure and technologies (including cooling systems). A failure in the process can easily compromise the quality of the pasteurized milk and related dairy products.

Dairy production is generally regarded as a very expensive activity. In the case of smallholder dairy development, a major challenge is the high farm-level start-up cost. The value of dairy livestock often accounts for 50 to 70 percent of investment costs, which can be particularly difficult for small-scale farmers to afford without external support or access to artificial insemination services to upgrade existing animals through breeding. Once a smallholder has been able to engage in dairy activities, the level of upgrade required to participate in formal markets will be associated with the

---

76 Detailed information on this case study is presented in Keyser, J. (forthcoming).

77 Although smallholders involved in dairy production might not be the poorest, they are certainly both poor and disadvantaged. In Kenya, for example, the average dairy farm size is 2.6 ha and supports six people; a quarter of these households are female-headed. The mean number of cattle is only three, but for about half the farms dairying is a major source of income.

78 Public approaches to provide consumer protection on the consumption of milk and milk products have included i) recommendations on the proper hygienic control of milk and milk products throughout the food chain, ii) the publication of specifications for the quality of milk, according to its intended use, including microbiological and other criteria, iii) procedures for testing and analysis, and iv) in several countries, specific provisions for the marketing of raw milk, including the banning of informal raw milk trade, particularly in urban centers.