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MOVING FROM SUBSISTENCE TO COMMERCIAL FARMING IN UGANDA

Agricultural Productivity Enhancement Program Final Report

JUNE 2008

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APEP / NANCY HEDIN

Hybrid Robusta coffee trees resistant to coffee wilt disease are grown in “mother gardens” by lead firm processor-exporters. Under APEP, they were made available to farmers below cost through partnering agreements with lead firms.

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APEP / MATTHEW EDWARDS

Through its training and demonstration program, APEP partner Kyagalanyi Coffee in Mukono district has helped more than 3,000 farmers register for Utz-Certified status.

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FRONT COVER: APEP technology transfer to farmers aimed to improve the quality and quantity of their crop yields (maize, in this photo) and link them directly and sustainably to consumers.

APEP

BACK COVER: Families are the main growers of cotton in Uganda. APEP training for cotton farmers was comprehensive, covering everything from spacing seeds, to identifying and scouting for cotton pests, proper application of pesticide through improved technology (knapsack sprayers), and bulk marketing to ginners.

APEP



USAID / MATT HERRICK



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TOP: Across all commodity subsectors, APEP low-input technology transfer focused on improved basic agronomic practices, such as weeding and seed sowing in rows.

CENTER: Through its partnership with lead firm Mukwano, and in collaboration with the Government of Uganda, APEP helped sunflower out-growers in the north raise a high-quality, high-yielding sunflower variety, PAN 7351.

BOTTOM: Coffee, a high value export crop, is crucial to the livelihoods of hundreds of thousands of Ugandan farmers. Raising quality and quantity of yields was a priority mission under APEP.

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EXECUTIVE SUMMARY

AGRICULTURE IN UGANDA: GREAT NEED AND TREMENDOUS OPPORTUNITY

Uganda — the “Pearl of Africa”¹ — is, according to the United Nations, one of the world’s 50 poorest countries based on indices such as per capita income (38 percent of Uganda’s 30 million people live on less than one dollar per day), health and nutrition, life expectancy, and, critically, *volumes of agricultural production and export*. Uganda’s economy is agriculture-based: farming employs some 70 percent of the people, contributes 85 percent of export earnings, and accounts for 29 percent of the gross domestic product (GDP).

Though the overall poverty rate in Uganda has fallen in recent years,² farmers — about 4 million households, half classed as

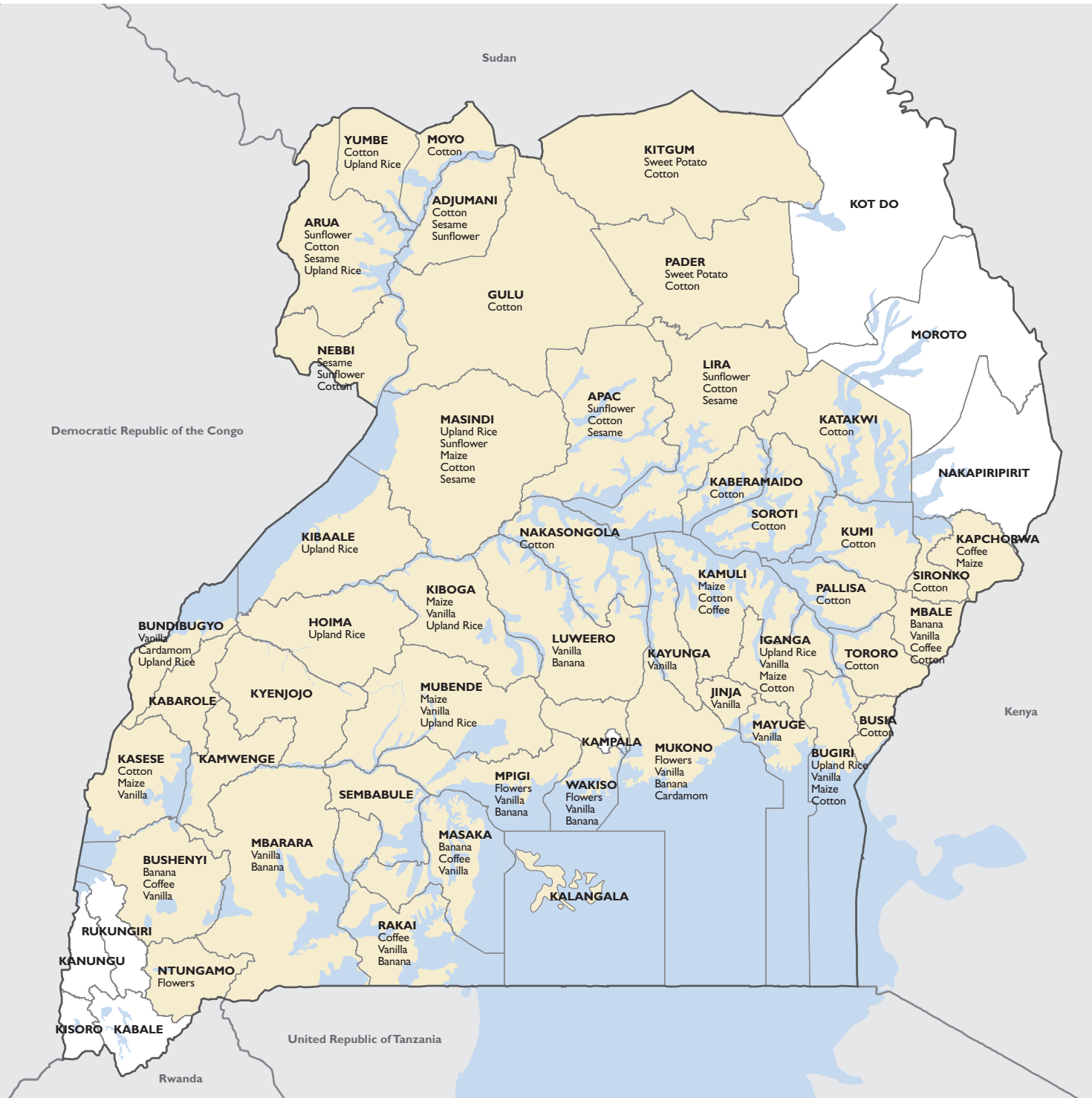
“subsistence” — remain chronically poor, reflecting the weak state of the agriculture sector. Despite the Government of Uganda’s (GOU) commitment to raise agriculture’s share of the national budget, investment in agriculture is declining, as is agriculture’s contribution to overall GDP growth. The average income in Uganda for non-farm households is 70 percent higher than for farm families.

Uganda is not alone in this predicament: agricultural productivity in sub-Saharan Africa overall has declined sharply in the past 40 years and is now the lowest in the world — a stark departure from the 1960s, when the region was a major agricultural exporter. That history testifies to Uganda’s potential to take on a healthy share of regional and global trade once again, espe-

1. So called by Winston Churchill

2. Due to heads of household shifting into non-farm self-employment

AGRICULTURAL PRODUCTIVITY ENHANCEMENT PROJECT GEOGRAPHIC PRESENCE



USAID/UGANDA'S STRATEGIC OBJECTIVE 7 IMPERATIVES

- Increase farm productivity
- Increase farm business efficiency
- Improve the enabling environment for agriculture

APEP IMPLEMENTING TEAM

- Chemonics International Inc.
- National Cooperative Business Association/Cooperative League of the USA
- Institute for International Agriculture at Michigan State University
- International Fertilizer Development Center
- International Technology Investment, Ltd.
- The Mitchell Group

cially given its two rainy seasons and excellent growing conditions for many staple and export crops. The GOU, the donor community, pro-farmer political movements, and farmers themselves are working to bring agriculture back as the engine of growth via an African “green revolution,” based on scientific approaches to enhance productivity that are also environmentally friendly and manageable by farming communities.³ Without these efforts to add volume and value to Uganda’s cash crops, the country will be caught in a cycle of low-skill, low-value production, consigning rural populations to a daily struggle to survive.

THE VALUE CHAIN APPROACH

To achieve growth in the rural economy — necessary to support Uganda’s overall growth — farmers must achieve significant improvements in productivity, market access, and competitiveness. The donor community, especially USAID, has supported the farm sector since the 1990s, when Uganda recovered from a long period of political unrest. Since 2000, USAID has consolidated agricultural assistance under its Strategic Objective 7: Expanded Sustainable Economic Opportunities for Rural Sector Growth. From 2003 to 2008, the Agricultural Productivity Enhancement Program (APEP) was USAID’s flagship project under this objective, with a particular focus on strengthening the commercial viability of selected cash

and food crops via the integrated commodity system, or value chain, approach.

Simply stated, the value chain approach recognizes the importance of sound private-sector, market-driven business strategies to achieve sustainable growth. APEP’s value chain approach centered on creating a critical mass of capable local producers (smallholder farmers) and support industries, such as input suppliers, and linking them to local, regional, and international markets. This was not a new approach: USAID and other donor projects had been working along these lines in earlier projects, such as Investment in Developing Export Agriculture (IDEA), from 1995 to 2004. IDEA was the seminal effort in reshaping farmers’ thinking about linking to markets. It also catalyzed private-sector leadership in agribusiness, previously dominated by the government (e.g., seed and other inputs). APEP represented the next step in value chain evolution: it leveraged knowledge about cropping systems and markets to determine a “best-bet” portfolio of commodities that could generate sustainable jobs, income, and rural enterprises, and then infused those commodity chains with value in terms of knowledge and skills to strengthen their commercial viability.

Four measures of APEP impact were tracked during the life of the project, shown in the chart on the following page.

3. See G. Pascal Zachary, “The Coming Revolution in Africa,” *Wilson Quarterly*, Winter 2008

APEP KEY PROJECT INDICATORS

Indicator	Life-of-Project Target	Life-of-Project Actual	Percent of Target Achieved
Percentage increase in APEP-supported household income	40%	61%	153%
Number of APEP-supported households	250,000	360,127	144%
Number of APEP-supported jobs created	80,000	81,045	101%
Number of APEP-supported enterprises created	600	920	153%

CHOOSING WHERE AND HOW TO ADD VALUE

APEP applied the theory that, working up the commodity value chain, technology transfer at the farm level to improve quality and productivity can create a critical mass of commercially oriented farmers, who in turn will understand and adopt an approach to output marketing that links them sustainably to demand, through a lead corporate buyer or other mechanism. Working backward down the chain, a buyer and/or processor who is supplied by market-oriented farmers will invest in that higher-quality supply in a variety of win-win scenarios for both producer and purchaser.

The theory required APEP to work at all stages of the agribusiness value chain, from research through technology development and transfer to sales, combining different interventions for each commodity depending upon its particular critical needs. APEP's main interventions provided demonstrations and training for farmers in improved low-

and high-input technologies;⁴ upgraded post-harvest handling techniques; expanded access to production inputs and credit; and created producer organizations (POs) to raise farmer technology adoption rates, improve farm and enterprise efficiency through bulk sales, and link farmers sustainably to demand through commercial buyers, processors, and exporters.

A key element of APEP's success in reaching a mass audience of farmers across a number of commodity subsectors was its Strategic Activities Fund (SAF) — a \$3.8 million pool the project used to invest in partnerships with private sector agribusinesses, both Ugandan and multinational. These partnerships were vehicles for farmer training, PO formation, and crop promotion activities, all via direct links to smallholders. APEP data show that SAF investments of \$3,075,575 leveraged \$12,880,216 in private-sector funds across 85 partnerships, about a 3-to-1 ratio on average.⁵

4. Low-input technologies require small investments of time and equipment, such as timely seed planting, correct plant spacing, weeding, and improved post-harvest handling (e.g., crib storage). High-input technologies include the low-input package plus the use of hybrid seed, fertilizer, and herbicides.

5. On a commodity basis, leveraging ratios for SAFs were highest for upland rice, followed by barley, coffee, cotton, and sunflowers.



Through its work with the Uganda Flower Exporters' Association, APEP has helped Uganda diversify from traditional sweetheart roses and become a recognized high-quality brand on the international market.

SAF funding enabled APEP to attract corporate partners who were needed not only to supplement project funds, but to take ownership of commercialization activities. The SAF was also valuable for outreach in conflict-affected areas.

RESULTS THAT VALIDATE THE THEORY

APEP advanced and consolidated a model for farmer demonstration and training that tied smallholders directly to buyers, often through producer organizations. The model allowed for lead farmers⁶ to manage demonstration plots in thousands of Ugandan communities⁷ that produced yields ranging from 100 to 150 percent higher than the baseline for low-input annual crops, and

130 to 500 percent higher than the baseline for tree crops. Adoption rates for improved technologies under this model were high, ranging from 40 to 100 percent, depending on the type of growing and marketing arrangements associated with the crop (farmers who are out-growers for a specific buyer have higher adoption rates). Significant value was added to APEP-assisted commodities in terms of volume and quality, especially in the coffee, cotton, sunflower, vanilla, and upland rice subsectors.⁸

The producer organization model was also important in securing increased sales at higher prices for commodity farmers. Before APEP, a farmer would typically sell his product to a middleman

6. Lead farmers are those chosen, by virtue of their commitment to adopting improved technologies, to host the APEP-sponsored farming demonstration plots that serve as training sites for collaborating farmers.

7. On average, 10,000 demonstration plots were planted per year; benefiting 250,000 farmers.

8. Yields for high-input demos range from 250-300% higher for annual crops and 350-1200% higher for tree crops compared to farmer baseline yields. Despite this magnitude of improvement, the adoption rates for high-input technology were disappointingly low.

based on his need for cash that day, rather than any understanding of the market and his position in it. Producer organizations teach farmers how to perform the middleman functions, handle their crops after harvest to preserve both quality and quantity, bulk their sales for higher prices, and link and sell directly to processors/exporters, securing corporate ties for the future.

Under APEP, producer organizations encouraged the participation of women in all aspects of building the farm enterprise. Women perform the lion's share of work on rural farms, and their success in adopting and propagating improved techniques in the long term is essential to sustaining producer organization achievements in commodity volume and quality. APEP encouraged women to participate as lead farmers, site coordinators, and farm committee executives, and to otherwise lead by example. Ultimately, the best offense against entrenched gender inequality is to involve women in overall efforts to raise rural household incomes.

APEP's value chain model demonstrated an effective use of public funds to leverage private partners in sustainable rural economic growth strategies. Nongovernmental organizations (NGOs) and institutes of higher learning were also brought into APEP via the Strategic Activities Fund to enhance productivity and access to markets. The International Institute of Tropical Agriculture delivered specialized knowledge and training to

the banana sector under a SAF agreement. Similarly, Makerere University designed vital training in applied tropical floriculture. Through its field attachment program, funded by a SAF agreement, the university deployed 235 agriculture students around the country to work in tandem with APEP clients.

The SAF also added to the donor community's knowledge of, and experience in, working with value chains in conflict-affected zones, such as northern Uganda. There, APEP's partnership with Mukwano Industries (via A.K. Oils and Fats) allowed internally displaced farmers to engage in productive and profitable work growing sunflowers, and become permanent suppliers of market demand and generators of cash income.

TAILORED INCENTIVES, STRATEGIC PARTNERSHIPS

Not all agriculture-based economies are the same, but in Uganda's — dominated by subsistence farmers, cash-based with little available commercial credit, weak government institutions, and low education levels — APEP has shown that there is no single approach to value chain strengthening that fits all commodities or producer type. Each targeted commodity subsector requires its own incentive scheme and set of appropriate benefit flows: depending on the market, incentives can be offered at the farm level through the producer organization model, through a lead firm, or through another off-take market avenue, such as

“ APEP worked mostly with pre-commercial farmers to get them to understand the parameters of going from A (subsistence) to B (profitability). But the big problem is that we lack the conditions of trade – capital, investors. We can identify the progressive farmers, but without credit can we really help them? Banks are not interested in farming; they like hotels and cars. The members of the parliamentary agriculture committee don’t understand agriculture. Donors are the ones who make a difference through public-private partnerships. ”

**FRED MUDUULI,
DIRECTOR OF KEITH
ASSOCIATES AND
MEMBER OF CROP LIFE
UGANDA**

millers for rice. The input supply facet of each value chain needs its own evaluation to ensure that both product and product knowledge flow to producers. APEP arrived at a way to think about and analyze the menu of options to build value chains, but the analysis has to be done for each crop, taking into consideration all the dysfunctions of a cash-based, pre-commercial system as well as the levers a project can pull to re-position producers in the commodity chain.

APEP demonstrated that technology transfer through the producer organization model is effective: it is the best approach for finding the lead farmer who can direct the “school in the field” that substitutes for formal agricultural training. Without worrying about adoption rates for low- versus high-technology inputs — this performance curve is explained by other variables — farmer demonstrations get visible proof of the equation “improved practices = cash” down to the last person in a sub-county, and allow for that last person to self-select for commercial interest in farming. Whether the producer organizations go on to bulk marketing their output or joining to bulk purchase inputs will depend on the market structure for the crops they are engaged in; regardless, the model works for technology transfer.

APEP reinforced the primacy of the corporate link: whether working backward along the chain to the farmer, or forward through a farmer depot committee, all interventions must

directly or indirectly support this link. Even in the case of rice and bananas, where hundreds, if not thousands, of middlemen traders dominate the off-take markets, APEP looked for ways to strengthen the connection between growers and the best-price buyers in their areas. It was impossible in many cases to encourage investment by the off-takers in markets where typical out-grower arrangements were impossible to sustain; nevertheless, producer organizations sustained their requirements for knowledge and inputs, raising quality and quantity for the end buyer.

A Strategic Activities Fund or other public finance mechanism can be used to catalyze highly productive, market-enhancing partnerships. SAF agreements can be brought into any juncture of the value chain — lead firm, research institute, input supplier, out-grower scheme — to make things happen (like distributing hybrid seed) that otherwise would languish. SAF agreements were viewed by beneficiaries not as handouts, but as devices that enabled both producers and buyers/processors to perform their proper roles in value chains. The lack of credit generally, and of farm loan products specifically, is repeatedly brought up as a critical constraint in Uganda’s agricultural sector, and is a reaffirming rationale for using public money (as loan guarantees as well as in partnerships) to achieve real market results in the farm sector (see quote at left).

From field trials of improved varieties, to widespread adoption through lead farmer demonstrations, APEP supported national efforts to vastly increase the production of upland rice.

APEP



APEP’s work in the North with Mukwano (in sunflower) and Dunavant (in cotton) shows that it is possible to have effective partnerships in post-conflict zones. In the case of Mukwano, what made the partnership so successful was not just its excess industrial capacity and the thousands of displaced farmers needing improved livelihoods, but the willingness of the corporate partner to invest in importing hybrid seed *if* APEP could supply the needed extension through its producer organization model. APEP was able to make the cost-benefit analysis turn out in favor of the sunflower farmers — a win-win for all. The hybrid seed changed the old pattern for both Mukwano and farmers; Dunavant is now looking for the same sort of transformational change in the cotton sector.

APEP has shed more light on “soft variables” — sociological and psychological aspects of the

behavior of smallholder farmers in a country like Uganda — where past and present conditions create aversion to risk. When asked directly why they do not spend their money on high-technology inputs that will clearly pay for themselves many times over, farmers’ answers invariably combine two factors: the overwhelming priority to satisfy basic needs, such as food, clothing, housing, medical care, and education; and the fear of what tomorrow may bring. If the worst should happen in terms of weather or prices, the farmer is alone, without resources. Without security, farmers are loath to invest in something that may not, given *their* experience in life, work out.

For this reason, APEP has made trust and confidence-building part of its value chain approach: it is implied in every intervention up and down the chain. Producers need to have trust and

PARTNERS IN UGANDA'S AGRICULTURAL DEVELOPMENT

Denmark, through DANIDA's Agriculture Sector Program, provides assistance for training and education, research, household-level production, rural financial services, and support for the Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF).

The World Bank program in agriculture is the lead supporter of development of the National Agricultural Advisory Service (NAADS) and the National Agricultural Research Organization (NARO).

The United Kingdom's Department for International Development (DFID) also provides budget support to NAADS, and supports research and training for specific commodity development.

The European Union supports NAADS and various subsectors, including rural microfinance, tea, livestock, and trade development.

Several other donors support the agriculture sector; such as the Royal Netherlands Embassy, the Swedish International Development Agency, and other groups involved in private sector and environmental/natural resource management..

confidence in the technology they adopt, in the market links they are encouraged to seek and use, and in each other as people who work together. Buyers must have confidence that they can source the quantity of product, with the required quality, they need to generate profits and pay good prices to farmers. Trust and confidence are much easier to build in a fully-functioning market system with all the support pillars in place, but APEP has shown that the process cannot be ignored, even when many of those supporting pillars — credit, education, national extension systems, research — are absent or not functioning well.

APEP's experience provides insight into the process of building human capacity in a "starting from scratch" context such as Uganda. APEP train-

ing was cross-referenced, so to speak: when cotton farmers are trained to identify and scout for pests, they are also learning to value and patronize the input sector. When loan officers come to farmer business management training, they learn about farming, while growers learn about the cost and real value of money. When APEP makes a research grant to an international partner, that partner strengthens its Ugandan counterpart. By tackling training at all value chain levels, keeping the focus on a strengthened market linkage both on the demand and the supply side, individual actors in the chain acquire a broader frame of reference and are more ready to function in the enterprise environment.



APEP

Continuing the work of the IDEA project in the maize subsector, APEP concentrated on forming producer organizations and teaching farmers to handle their crops correctly post harvest, and to bulk for sale to processors.

CHAPTER ONE

UGANDA'S RURAL ECONOMY

THE FARMING SYSTEM

About 21 percent of Uganda's 236,000 square km (roughly the size of Oregon) is arable, and farmers enjoy two growing seasons, with harvests in June and January. Nearly two-thirds of the country's 4 million rural households produce food largely for their own consumption, in some combination with cash crops, on an average of less than 2 hectares of land. The main food crops are matooke, cassava, sweet potato, and various vegetables (beans) and cereals (maize, millet); major cash crops are coffee, cotton, tobacco, and tea. Newer cash crops include upland (non-irrigated) rice, sunflower, spices (vanilla), cut flowers, and sesame. Banana, very important to the Ugandan diet, is both a cash and food crop. Women, in addition to their childrearing and household management duties, provide most of the labor to bring in

these crops; they also head about 25 percent of rural households.

Overall, poverty in Uganda has been falling in recent years, except in rural areas, where the rate remains high, especially in the conflict-ravaged north, where 61 percent of the population is classified as poor. Some 46 percent of farmers who produce only food crops are poor, as opposed to 34 percent of those who produce cash crops.

Farmers are poor because they are generally unproductive and uncompetitive in local, regional, and international markets. Technology used in the farm sector is very low, as indicated by APEP's use of improved seed and fertilizer as "high-technology inputs" across the board in farm demonstrations. The use of both organic and chemical fertilizers by Ugandan farmers is extremely low; this, coupled with ever-increasing

pressure to produce more for an ever-increasing population, is depleting soil fertility at a fast clip. Agronomic best practices, such as proper plant spacing, weeding, mulching, and pruning, are not in wide use, and intercropping — such as bananas with coffee — for greater productivity is not well understood. Inability to manage pests and disease, together with poor post-harvest handling, often result in substantial crop losses.

The farm market system is also inefficient and uncompetitive. Farmers typically lack direct access to their end markets: each farmer acts on his or her own, selling to middlemen either at the farm gate or at village buying centers. The price given by the middleman has to do with maximizing his own profit at the expense of the farmer, who has imperfect or no knowledge about his competitive position in a given market. Farmers do not know how to organize themselves to gain marketing knowledge and leverage. The government-run cooperative system to produce, harvest, and sell commodities imploded long ago and was not replaced with a market-oriented infrastructure. At the time of APEP design, direct corporate links to the farmer — along with private-sector involvement in the technology extension effort, input supply, and post-harvest practices — were badly needed to jumpstart the process of adding value to farming practices, products, and prices.

THE APEP DESIGN PHASE

Recognizing that APEP had to coalesce, synthesize, and somewhat revolutionize many and varied ongoing approaches to farm commercialization across a range of donors and programs, some time was taken up front to arrive at a list of commodity subsectors that could:

1. Affect enough people to create a rural income multiplier effect; that is, increase rural purchasing power enough that demand for local goods and services expands enterprises and creates jobs.
2. Raise quality and productivity to respond to existing consumer demand, meaning that inputs and technologies are available to producers to satisfy buyers and traders, and processors and exporters up the supply chain.
3. Tap into core groups of sophisticated local buyers, bio-physical (soil fertility) and human capacity at the farm level, and support from research institutions, finance providers, and farmer entrepreneurs.

The APEP project design team applied another filter to commodity selection: “SCRIP,”⁹ a framework for understanding how particular land uses affect ecosystems, and arriving at trade-offs that satisfy livelihood needs while serving environmental objectives.

9. Strategic Criteria for Rural Investments in Productivity (SCRIP) is a USAID-funded program in Uganda implemented by the International Food Policy Research Institute (IFPRI) in collaboration with Makerere University Faculty of Agriculture, the Institute for Environment and Natural Resources, and other partners.

When all the criteria, in costs, and benefits were factored, the APEP design team settled on 10 commodities in two categories:

- Category 1: coffee, vanilla, banana, and greenhouse flowers.
- Category 2: cotton, oilseeds (sesame, sunflower), and grains (upland rice, maize, barley).

Coffee and cotton would be the main consumers of APEP resources in terms of financial support and direct APEP management of activities. Farm-level interventions for coffee and cotton would be very intensive.

The other commodities had high potential in exchange for moderate resource allocations; activity management could be shared with private sector partners.

This mix balances commodities with a strong export market (coffee, cotton, flowers) with traditional crops grown by a large number of farmers for the domestic market (rice, maize, banana). Geographically, the commodity mix involves 56 of Uganda's then 80 districts, including the long-term conflict-affected districts of Gulu, Kitgum, Pader, Apac and Lira in the north, as well as short-term



Ripe and unripe coffee cherries side by side on the same branch at a lead farmer's coffee shamba. Cherries must be monitored daily and picked at just the right time.

APEP/NANCY HEDIN

Using tarpaulins for drying coffee, instead of the bare ground, were part of the low-input technology packages used by coffee farmers to improve the quality and price of their yields.

APEP



conflict districts in the Eastern Teso area.

Having chosen the commodities, APEP had to decide how best to work at the farm level to raise productivity, develop the farm enterprise model among smallholders, and improve the agribusiness service picture by building knowledge and services in the input supply sector. Producer organizations would be the vehicle in most cases, but they would be formed, directed, and strengthened in different ways, depending on the structure of the market. Variations in how markets operate in Uganda for APEP target commodities can be summarized as follows:

Mass Production, Many Buyers (rice, banana, maize). This model governs commodities that are mass-produced for domestic consumption. Traders abound who

deal in maize and banana, and the competition among small, medium, and large rice millers for product is intense. This market is something of a free-for-all; farmer organization would improve farm gate prices.

The Lead Firm Market (coffee, sesame). Under this model, farmers produce for a corporate buyer who will process and/or export the commodity to reach the final consumer. In the absence of direct links to the lead firm, a farmer sells instead to a middleman, who offers a steeply discounted price pre-harvest that the farmer accepts because of his or her immediate need for cash. The middleman then sells the crop to lead firms for a premium over the farm gate price.

Managed Producer-Lead Firm Market Link (cotton). For most of the life of APEP, the cotton

sector worked on a zone system, whereby producers were grouped into eight geographic areas and grew cotton only for the ginners in their zone. In return, ginners provided significant extension services and input supply. By project close, the zoning system had been suspended and the cotton market had reverted to its previous predatory state; a market model that suits both producers and ginners has yet to be identified.

Lead Firms with Out-Growers (sunflower, barley). Under this variation, the lead firm has a direct connection to farmers through inputs it supplies, often in the form of seeds and follow-up extension help with farm practices. Because of the extension, quality is higher, and the farmer is guaranteed a minimum price at harvest (though the ceiling price is dictated by the market).

Grower-Exporters. This is the model for the flower and vanilla industries. Flower growers are concentrated near the Entebbe

airport, and they bulk export to Holland three times weekly. Vanilla grower-exporters are more dispersed, but attempt to control quality and quantity collectively.

The initial focus on commodity *buyers* gave APEP insights into market dimensions — the capacity to absorb higher quantities of higher-quality product — and pricing structures (market information). Understanding the buyers in each sector, along with good agronomic practices, was part of the value APEP planned on bringing to the production end of commodity value chains.

Often under APEP, a lead firm or equivalent partner would spearhead formation and strengthening of producer organizations to raise crop quality and quantity, and improve market efficiency. However, each commodity required its own national business strategy; APEP remained flexible, adapting its productivity model to the needs of each subsector and even meeting individual client needs within a subsector.



ARTEP

To regain its historical global market share, Ugandan coffee needs to be recognized as a high-quality brand. Here, women perform a final quality control check before green coffee beans are exported to a roaster.

CHAPTER TWO

RAISING FARM PRODUCTIVITY AND MARKET EFFICIENCY

KEYS TO PRODUCTION UNIT

1. Technology generation
2. Technology transfer
3. Post-harvest handling
4. Input supply
5. Extension and adoption
6. Agricultural finance
7. Producer organizations

KEYS TO MARKET OUTPUT

1. Corporate linkages
2. Private sector involvement
3. Agricultural finance
4. Agro-processing and branding
(not APEP interventions)
5. Enabling environment

KEYS TO PRODUCTION AND MARKET EFFICIENCY

APEP identified seven essential functions of healthy commodity production, listed at left.

Technology generation refers to the development of improved seed varieties, organic and inorganic fertilizers and pesticides, labor-saving farm equipment, and other inputs. Input packages containing this technology, both low and high, were developed for APEP demonstration farmers by the project's commodity specialists. Technology transfer takes place through the lead farmer/collaborating farmer demonstration system. Post-harvest handling techniques are part of the technology transfer process, and are taught on demonstration farms. Input supply becomes critical to farmer-adopters — those who take up the practices taught by APEP lead farmers and

field extensionists — going into the next planting season. Agricultural finance ideally is present to support the farmer's investment in inputs, and producer organizations are present to help him or her achieve the best price for the crop.

There are also key features to market efficiency, listed at left.

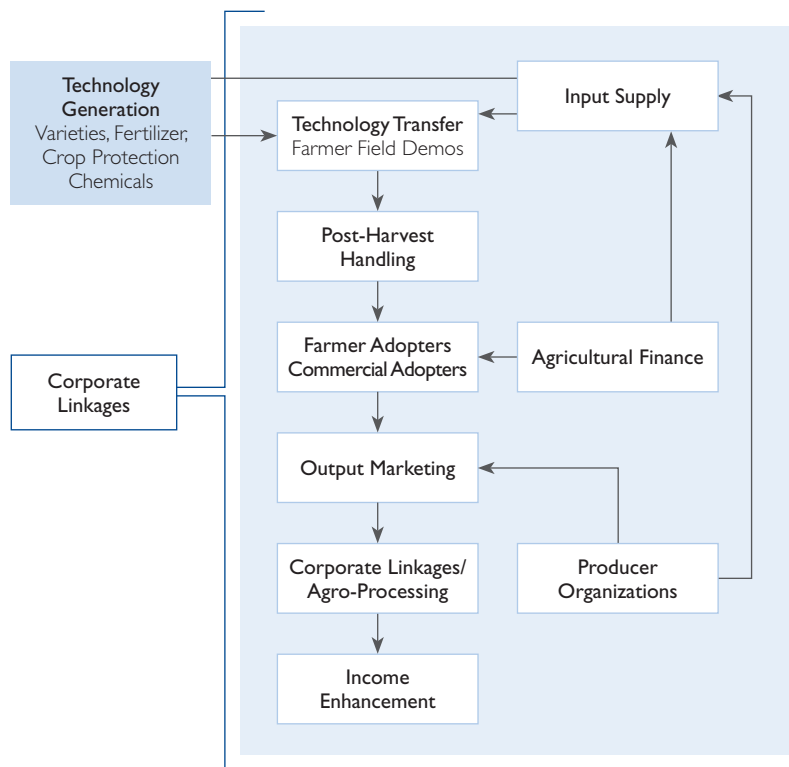
Market keys ensure that the farmers' improvements in yield and quality are captured and produce meaningful, sustainable change in the sector as a whole. Producer organizations need corporate links to sell in bulk, and the interest and involvement of the private sector (as represented, for example, in exporter or processor associations) to safeguard standards. The private microfinance sector is also critical in supplying farm credit, though farmers are increasingly meeting this demand through their own

communal savings and loan arrangements.

APEP was able to combine both production and market keys into a single model to strengthen value chains across commodity subsectors, adapting as necessary to accommodate variations in the market structure (shown below). Whether from the top down or from the bottom up, APEP's approach to technology transfer and post-harvest handling was the same, based on the initial success of IDEA with technology transfer and producer organizations, and building on that success to strengthen and broaden the scope of those organizations.

The basic aim of producer organizations is to group commercially minded farmers together — about 25 is a good number — to experience the increase in yield and quality brought by improved technologies, and to introduce the concept of working together to improve market access and prices for all. Strong POs combine for higher-level activities, such as handling their crops post-harvest in uniform ways, and then bulking them for sale to processors and/or retailers. As individual farmers earn more money, they become better candidates for agricultural finance, either through PO savings and loan schemes, microfinance programs, or ultimately, commercial banks.¹⁰

FIGURE I. APEP PRODUCTION AND MARKET KEY MODEL FOR VALUE CHAIN STRENGTHENING



10. Commercial banks, however, charge high interest rates and usually require land or buildings as collateral.



APEP

Uganda has excellent growing conditions for high-quality cotton, which is second only to coffee in importance as a cash crop to improve farmer livelihoods. The cotton value chain, however, is in disarray; APEP was able to help by creating networks of producer organizations.

PRODUCER ORGANIZATIONS DURING APEP LIFE OF PROJECT

Number of viable POs formed: 2,523

Number of depot committees formed: 202

Number of PO farmers adopting new technologies: 50,000

Credit is usually required to purchase agricultural inputs for the upcoming season; sometimes a lead firm —the corporate link — can be instrumental in organizing input supply. This has been the case in the coffee, rice, and cotton sectors. When a lead firm knows that it will profit from making inputs available and affordable to its suppliers, it has a strong motivation to distribute those packages through producer organizations; APEP capitalized on the profit motive of lead firms to infuse producer organizations with requirements to get started in higher-end production.

The production and market keys model pioneered by APEP is presented in Figure 1.

ADDING VALUE TO MASS-PRODUCED, MASS-MARKETED CROPS

In the case of commodities produced on a mass scale —

maize, rice, banana — and for which there are good internal markets with many buyers and processors, the problem of raising quality and quantity focuses on producers themselves. The IDEA project showed that producer organizations were useful vehicles for technology transfer; APEP wanted to take POs to the commercial level, where they would contract with established buyers, manage post-harvest handling and storage, buy and distribute inputs in bulk, hire and pay employees, and monitor training and extension.

APEP worked across the entire nation in all target commodity sectors on producer organization formation and business strengthening. Two examples of APEP’s approach and success are provided by the Kamuli Commercial Farmers Association and the Kiboga Commercial Farmers Association, described below.

Variations on the producer organization model as applied to rice and banana are also described in this section.

Case Study: The Kamuli Commercial Farmers Association

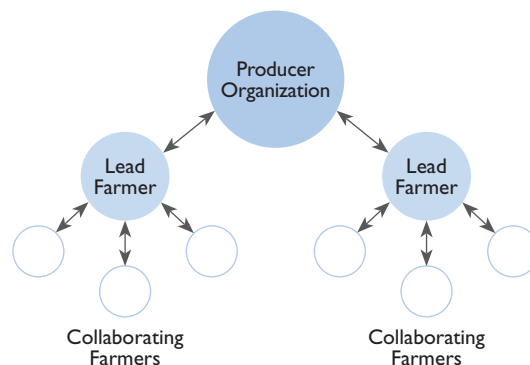
An excellent example of how a producer organization (Figure 2) evolved into a commercially viable entity can be found in the Kamuli District of central Uganda. Two enterprising farmers there had worked with the IDEA project on grain-growing technology transfer. In 2004, APEP contacted them again and asked them to come to a meeting to discuss the new project; they were also asked to bring anyone along whom they thought might be interested in the producer-organization approach to improving their farm incomes.

Some 27 farmers showed up for this initial contact meeting, which is the first of several critical screening activities in the continuum of APEP producer organization development. At the contact meeting, APEP producer organization facilitators/trainers

(POTs) ask farmers to talk about why they farm, the limitations they face in their daily work, and the things they would like to see improved. In the case of Kamuli — and in most other districts — farmers universally agreed they wanted to make both food and money, but were frustrated by lack of access to markets, inputs, and knowledge. When that consensus was reached, APEP facilitators explained what the project could offer them: help accessing markets and inputs through technology transfer for higher-quality yields. The APEP trainers also explained what APEP would not offer them: cash or handouts of free inputs. When that is made explicit, some farmers drop out of the meeting; those left are promised only training. A next meeting is scheduled, giving area farmers another chance to talk up the producer organization opportunity in the villages.

At the second meeting in Kamuli, 115 farmers came. Again, APEP PO trainers stressed that the initiative to grow and sell must come from the farmers themselves: APEP would only facilitate the producers' own commitment to succeed. They were also told more about organizing POs: that they would have to form smaller groups, decide on a management structure (chairperson, secretary, treasurer), and choose lead farmers to host technology transfer demonstration plots and to serve as the main venue for extension services. Criteria were set for lead farmer eligibility: they must be full time farmers, cannot also be

FIGURE 2. SIMPLE PRODUCER ORGANIZATION



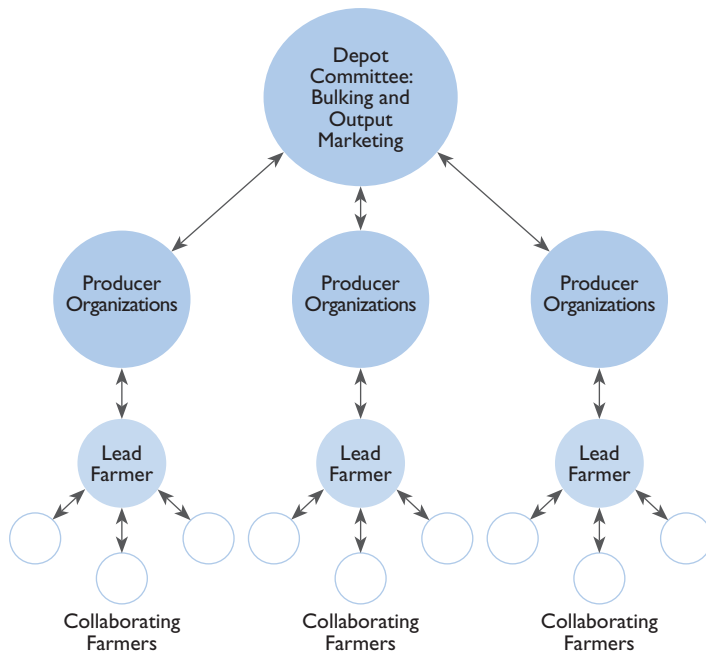
PO managers, and must be centrally located so that all collaborating farmers could access their demonstration plots. A follow-on meeting was scheduled.

At the third meeting, 140 farmers split into producer groups of 15 to 20, based on which farmers wanted to work together. Each group chose a lead farmer, who was to receive the low- and high-demonstration inputs provided by APEP. In Kamuli, each PO has its own focus — coffee, maize, rice — depending on the priorities of the member farmers. APEP then provided two producer organization trainers who would work with the groups on technology transfer and output marketing. POTs concentrated their training at two main junctures: the lead farmer and the depot committee. POTs concentrated their training at two main junctures: the lead farmer and the depot committee.

The Lead Farmer. A lead farmer must not only adhere strictly to the regime for low- and high-input technology demonstration plots, but must also be effective in getting collaborating farmers, who are not directly benefiting from the demonstration, to subsequently adopt improved practices. He or she has to communicate a vision of a better future that farmers will trust and accept. The time horizon of most very poor people is short: they plan and plant for the season. The PO asks farmers to look at their position now, think several years ahead, and plan to get there — with APEP training, but also with increasing responsibility to monitor themselves.

The Depot Committee. The depot committee (DC) is one of the higher functions of producer organizations (Figure 3). Typically serving about 10 POs, the

FIGURE 3. DEPOT COMMITTEE FUNCTIONS



Buyambe farmers gather in front of their savings and credit cooperative, which has 387 members, to discuss life before and after APEP. Wilbur Zikurabe is seated in the front row, far left. Monique Kabito is in the back row, center. Buyambe PO Trainer David Balizindwire is in the foreground, at right.



APEP / NANCY HEDIN

depot committee is responsible for bulking and marketing the output of its member farmers. In Kamuli, there are 13 depot committees, each with a management committee composed of a chairperson, depot manager (who is paid in part by commission on sales), treasurer, marketing officer, and secretary. The DC is in full gear toward the end of each season, when it organizes bulking at sub-stores and starts collecting market research on local prices as well as prices in the next largest district (Jinja) and the capital, Kampala. The DC oversees commercial contracts with buyers and makes sure that the terms and conditions for supply are met.

The depot committee is the chief vehicle for communicating to farmers the relationship between markets and price, and according to Buyambe Sub-county DC Treasurer Tefriro Ssenyange, this was a critical gap in knowledge

that APEP helped them to overcome. Now, he says, where they sell depends on who will give the best price — as opposed to who will buy today — especially in the competitive rice market.

The input and farm credit situations in Kamuli have also been affected by the success of the producer organizations. APEP looked at the possibility of locating an input supplier within the Kamuli Commercial Farmers Association, but the farmers were too busy to take on that function. Instead, the local input stockist in Kamuli received training and support in order to meet increasing demand from the farmers.

But another critical agribusiness function — farm credit — was handled inside the Kamuli PO model with APEP's help. Buyambe Savings and Credit Cooperative Society (SACCO), which

started with 45 members and now has 387 (essentially the same farmers who participate in bulk-ing for the sub-county’s DC), is thriving. Initially, the Buy-ambe SACCO had to overcome hesitation and mistrust that carried over from the government’s earlier cooperative system, which gave farmers receipts for crops, which in theory were good for cash, but which were never converted. Members must make an initial capital contribution of 10,000 Ugandan shillings (USh) and maintain a minimum balance of USh 10,000. In return, they can borrow up to five times their savings for an agricultural or business loan, which have different repayment terms.

The Kamuli farmers — 5,178, grouped into 28 POs and 22 DCs — have come a long way on the road to commercial strength. When asked to say how they were most helped by APEP, a group of Buyambe farmers¹¹ provided this list:

1. Technology to improve yields
2. Quality assurance to improve price
3. Learning how to work and plan together
4. Creating friendships

Referring to her ability pay to school fees, Buyambe farmer Monique Kabito said, “It was only through the process of working together that we found we could educate our children.” When

asked about the sustainability of their organization, farmer Wilbur Zikurabe said, “We are really focused now. There is no way we can even think of going back.”

Another Example: The Kiboga Commercial Farmers Association

The IDEA project first worked in the Kiboga District in the late 1990s, focusing on large-scale farms (five acres or more) that were ready to engage in commercial volumes of production. The chief commodity was then, and still is, maize. Lead farmer demonstrations, which were very successful, centered on higher yields through improved varieties. From an initial group of four, the association grew to 38, then progressed steadily to include the 185 large-scale farmers in the district. With bank loans guaranteed by IDEA, the farmers followed through on demonstrations by buying fertilizer and improved seed; they had no problem seeing the advantages of adopting the high-tech inputs.

Then, in 2000, there was a bumper crop of maize, not only in Kiboga but nation- and region- wide. Prices crashed, and in 2001, the Kiboga farmers association crashed as well. Said one PO trainer, “It was like a tree with very big branches but no trunk: the farmers were all big and had no reason to try to stay together. They all diversified out of maize and went their separate ways.”

11. Musa Zikurabe, Wilbur Kazibwe, Joel Waiswa, Ronald Kabali, Monique Kabito, and Robert Mpachibi.

GETTING CONNECTED: AN ANALYSIS OF APEP PRODUCER ORGANIZATION NETWORKS

Social network analysis (SNA) is a way of seeing what happens when groups in a community — such as producer organizations under the APEP model — make a voluntary commitment to work toward a common goal. SNA specifically looks at how relationships, or interactions, between and among community members change over time as a result of their involvement in a shared network.

The series of pictures at right maps interactions among farm producer organizations and the main value chain actors — agricultural extension agents, input suppliers, and commodity exporters — in Kamuli during the period 2004-2007. In Year 1, SNA shows that the Kamuli producer organizations are linked strongly to only two other actors: the middleman, who buys the crop from the farmers (principally rice, in Year 1); and Self-Help International, an NGO in Kamuli providing farmers with assistance on food security, micro-finance, and health and sanitation. The producer organizations are not interacting, or connected to, the input supplier (Kamuli Farmer Center), the maize exporter (Afro-Kai), the coffee exporter (UGACOF), the government agricultural extension service (NAADS), or a rural savings and credit cooperative (Buyamba).

In Year 2, with help from APEP, the initial group of POs has formed a depot committee: the Buyamba DC. Through the DC, all the producers are now connected directly with both the technical assistance provider Self-Help International and the main maize exporter, Afro-Kai. They are also sourcing inputs from the Kamuli Farmer Center. The middleman in Kamuli is not connected to the producers in Year 2; the depot committee has taken over that role, and through storing and bulking, is performing the function of the middleman for a better return to the farmer.

In Year 3, the initial group of producer organizations, through its DC, has added a link with

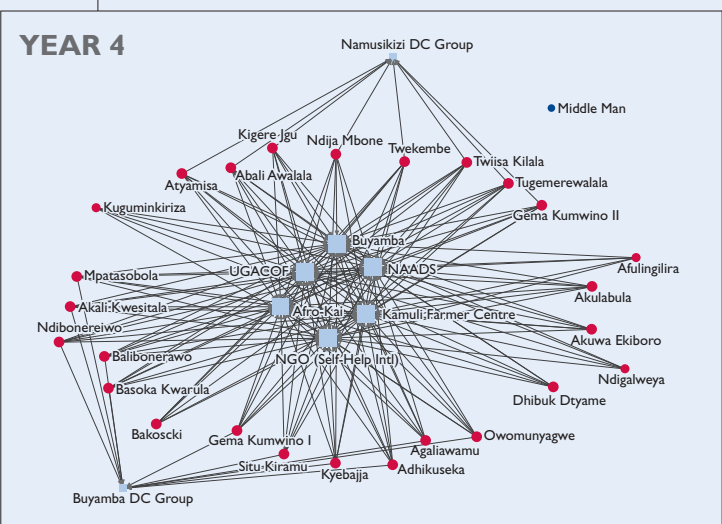
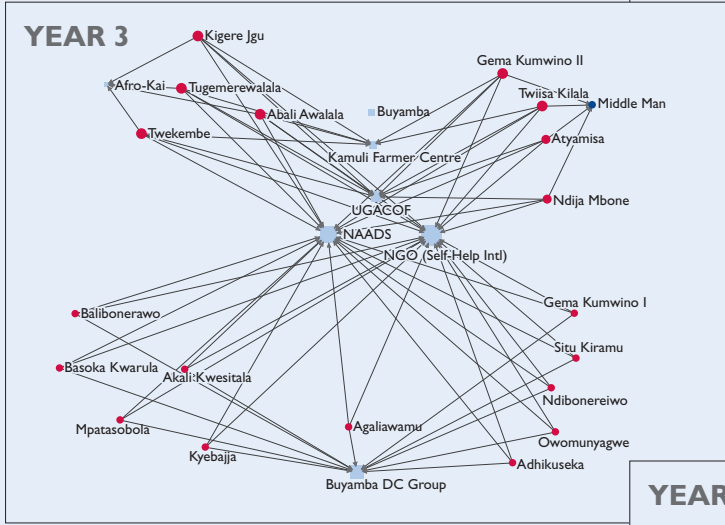
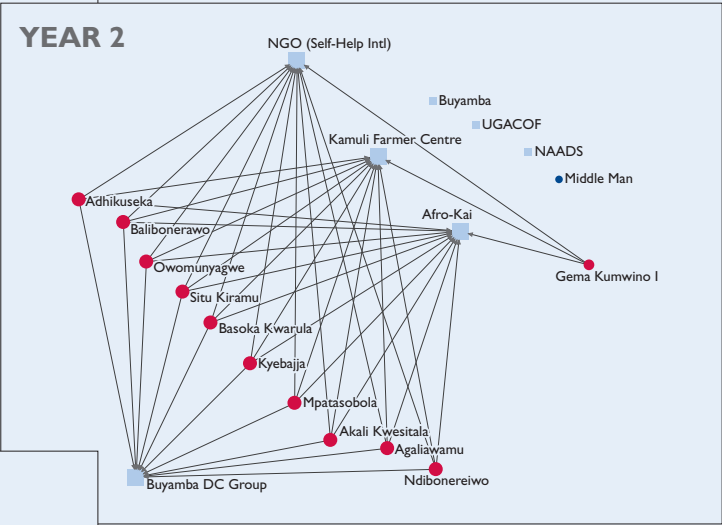
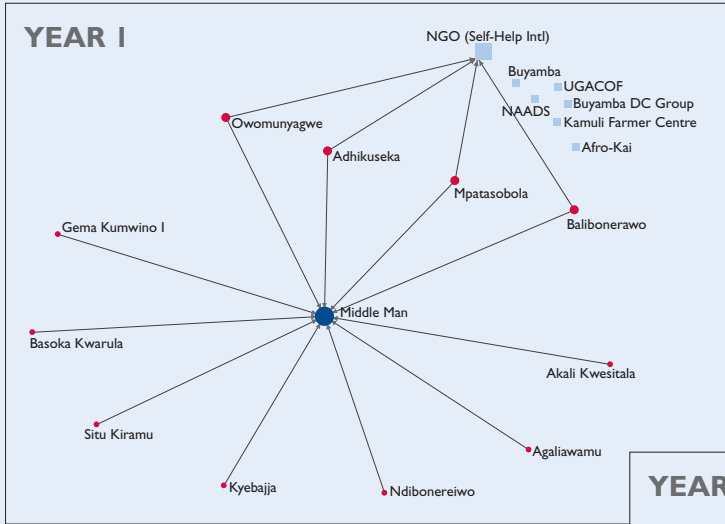
NAADS (the diagram can't tell us how or why, but we presume it is a beneficial connection because it is voluntary). At the same time, new producer organizations are coming into the community in Year 3, bringing with them their relationship to a middleman. However, they also are connected somehow to a coffee exporter, UGACOF, and are bringing that relationship into the network.

In Year 4, we see that the middleman has again disappeared, while the connection to UGACOF now spans the entire network. Farmers affiliated with producer organizations in the Kamuli region are now directly linked to buyers of their coffee, rice, and maize and have also formed a relationship with a rural savings and credit cooperative. We can conclude that participation in the Kamuli PO network allowed farmers to transmit their positive direct connection to a lead firm/exporter across all producer organizations, and that similarly, participation in the Kamuli network allowed farmers to deactivate their negative relationship to a middleman. The middleman may return at some point with the arrival of new entrants to the network, but the likelihood of long-term interaction between the middleman and Kamuli farmers is unlikely in the face of positive, direct connections to the main buyer.

In general terms, this networks analysis highlights that through producer organization networks, farmers were able to make one-on-one connections with lead firm/exporters, input suppliers, and rural savings and credit cooperatives that will continue to benefit them regardless of the life of NGO and/or government assistance projects.

Data collected by David Balizindwire and Edward Gita, contractors, USAID Uganda APEP

Network modeling performed by Mark Lubell, associate professor, Department of Environmental Science and Policy, University of California, Davis



SUCCESS STORY

The Importance of Vision



APEP / NANCY HEDIN

Mr. Abed Magoba's initiative reinvigorated Ntwetwe sub-county producer organizations after a leadership crisis caused them to lose faith in their market linkages. Magoba helped farmers to act on their ownership of the producer organizations, and make them work again to their advantage.

Abed Magoba is depot manager for the Ntwetwe sub-county producer organizations in Kiboga District. The POs in Ntwetwe were adept at techniques to improve yields of maize, and by the time APEP arrived in 2004, they were ready to go commercial.

Bulk marketing by the DC for the seven Ntwetwe POs resulted in sales of 1,000 mt of grain in season 2005A, and 405 mt in season 2005B — wonderful achievements. But in 2006, the POs did not sell through the DC. What happened?

Magoba explains that the POs had elected as DC chairman a leading farmer in their sub-county who was also a grain trader. It became apparent in 2006 that he was using his position and connection to the POs to strengthen his own trading position rather than getting farmers the best price. Farmers quickly lost confidence in the DC and did not send their maize for bulking.

Not wanting to see their hard work — especially the work of defining long-term goals and strategies to attain those goals — go by the wayside, Magoba went door to door to speak with all the PO farmers individually to see whether he was alone in still prizing the PO commercial vision. He wasn't. The farmers had seen great success in 2005 and wanted a way to repeat that success.

Magoba reiterated the APEP message that they all had ownership of the commercialization process. Together, using the problem-solving training they had been given by APEP, they could begin again to make their vision real.

Magoba called an extraordinary meeting of all DC members, PO management team members, and lead farmers to discuss the situation. At that meeting, confronted with his non-performance, the chairman agreed to step down and make good on his commitments to POs. A new chairman was elected. At the same meeting, the seven POs decided to sub-divide into two DCs that would better suit the logistical challenges they faced (they were at opposite ends of a road in disrepair).

The Ntwetwe POs and DC are now operating at full speed.

APEP AND UPLAND RICE

- Number of SAF partnerships: 6
- Number of rice producer organizations strengthened: 198
- Number of rice farmers trained: 51,780
- Increase in acres under rice: 6,070

The missing tree trunk, in APEP's formulation, was the thousands of smallholders in Kiboga who had not been the focus of the initial farmer association. APEP decided to begin afresh in Kiboga with smallholders who were receptive to the message about technology transfer for better yields.

The process of PO formation began again with a group of about 80 farmers. They were people who lived close to each other, saw each other regularly, and were able to confidently choose lead farmers under whom to work and train. They also shared a desire to make money, which they could do better together than separately. Their previous exposure to improved productivity practices was also valuable in setting the stage for the next intervention.

The Kiboga Commercial Farmers Association began in 2004 with 4 producer organizations; they now have 56, divided among 8 depot committees. They operate in only 3 sub-counties out of 14, but they are major players on the grain-trading scene in Kiboga. They trade actively among themselves to meet the terms of the contracts they conclude with buyers — subcontracting, in effect, with each other to procure surpluses they need. Many of the lead farmers now act as agronomists and quality controllers for their PO members: they know who is producing how much of what, and how much more they could take on. This knowledge is fed back to the depot committee, which allows the committee

to strategize about how to make more money.

The Kiboga experience shows the importance of the screening process in PO formation: participants must have powerful incentives to stay together through market ups and downs, which means commitment to each other and to a vision of a profitable future.

ADDING VALUE WHEN MASS PRODUCTION RESULTS IN UNDER-SUPPLY: THE EXAMPLE OF UPLAND RICE

According to the Africa Rice Center (WARDA), during the past decade, rice has become the most rapidly growing food source in sub-Saharan Africa. The continent has become important in international rice markets, accounting for 32 percent of global imports in 2006, with a record 9 million tons (in 2007, Uganda alone imported 67,000 mt). Africa's emergence as a big rice importer is explained by rapid population growth, rising incomes, and a shift in consumer tastes toward rice, especially in urban areas.

Rice is a cash crop for small and medium farmers in East Africa, but farmers have traditionally been constrained by the low yield and comparatively poor quality of the traditional rice variety. This variety has a hard time competing with weeds and birds, and is vulnerable to drought and general soil infertility. Population growth and needs for cash have led to extended periods of

cropping in many areas, adding to these problems.

In the 1990s, WARDA developed “New Rice for Africa” (NERICA) by crossing African and Asian rice varieties. NERICA varieties have high yield potentials (traditionally, rice yields in upland systems average about one ton per hectare) and short growth cycles, and they resist pests and do well in the rain-fed environments (upland, as opposed to watery lowland environments) where most rice farmers operate. They also have higher protein content than most imported varieties.

Given the potential of the many NERICA varieties to both provide food security and fuel economic growth, USAID, through IDEA, took the lead in importing trial samples and later commercial basic seed from West Africa. The success of those efforts led a number of donors and NGOs — including USAID through APEP — to join in disseminating the improved seed types, with WARDA providing the channel for pure seeds and guidance on multiplication techniques. In 2006, an estimated 200,000 ha were under NERICA cultivation in sub-Saharan Africa. In Uganda, Vice President Gilbert Bukenya personally took up the cause of promoting NERICA varieties as part of the country’s poverty alleviation and agricultural modernization efforts.

The well-publicized introduction of NERICA varieties in Uganda was not matched by a concerted technology transfer program to

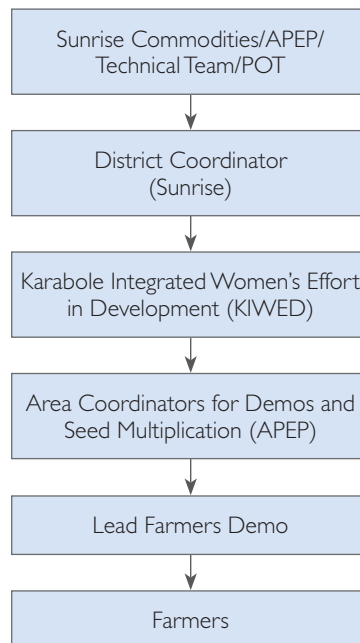
give farmers the needed training in new agronomic practices to support the seed. Where farmers were trained, technology adoption rates were high, and production increased from 2001 to 2005. But demand continued to far outstrip supply, and entrepreneurs who were new entrants or had diversified out of other kinds of grain processing into rice milling were operating well under capacity.

With rice in scarce supply, and the post-harvest handling and bulking functions of producer organizations not critical to add value, APEP decided to approach rice quality and quantity using the agribusiness processor — the rice millers — as the agents of transformational change. Typically in the rice value chain, middlemen functioned as the off-take market, buying at the farm gate and then supplying large and medium millers with paddy to process and sell. The most effective and efficient way to reach rice farmers on a national scale was through these same millers, eliminating the middlemen as much as possible by using the mill as the hub for all rice extension activities. The producer organization model was employed to provide farmer training and to demonstrate the even better results NERICA seeds give when fertilizer is used. The mills offered growers pre-season purchasing agreements as is done for out-growers; however, because of the number of selling channels available and the continued presence of middlemen traders, the model did not actually function as an out-grower scheme. Never-

theless, participating millers still benefited from increased supply in their areas, and the farmers benefited from a timely source of information about prices as well as a market link where they could be shown the difference quality standards make with respect to price.

APEP worked with 10 medium-sized millers around the country on a model of extension that looked like the example below, from APEP's public-private partnership with Sunrise Commodities Ltd. (SCL) in the Kabarole region of western Uganda.

FIGURE 4. MODEL FOR TECHNOLOGY TRANSFER IN THE RICE SUBSECTOR



In this case, SCL, a subsidiary of a major grain processor, had installed a rice mill in Kabarole District in 2004 with a capacity to mill 60 mt daily. To meet its

target, SCL needed 2,500 acres under rice production, and was looking for a means of sourcing supply. The Kabarole Integrated Women's Effort in Development (KIWED), an organization with more than 4,000 members, was positioned to help identify farmers to participate in upland rice demonstrations, and so provide access for SCL to the growing areas around its mill. Through the Strategic Activities Fund, APEP agreed to share the costs with SCL of providing inputs for demonstration and seed multiplication plots. APEP also paid a commission to a contingent of coordinators — each of whom was assigned a certain number of demonstration plots to monitor and correct course as necessary — on the basis of each successful demonstration.

To make the model work, APEP provided technical training for district and site coordinators on improved production technologies for improved seed; good agronomic practices such as planting, spacing, weeding; and post-harvest handling. Training was carried out during critical crop times: pre-season, mid-season, and at the end of growing season.

Lead farmers were trained to provide technical backstopping — field spot checks to identify both successes and gaps in collaborating farmer plots — so that farmers stayed on track.

In 2005, a total of 172 demonstration plots and 80 seed multiplication plots were estab-

A SUCCESS

Nyati Rice Millers

John Magara was in the business of milling maize before he saw the potential for rice in his home base of Hoima. He borrowed money to buy a basic rice mill and started processing and selling rice. The buying scene has become intensely competitive: agents from Kampala, three hours' drive away, come to Hoima to look for rice. To beat out the competition, Magara posts his own buyers in the field on days when farmers are likely to have rice to sell. Because he is the largest rice miller in Hoima, he has a certain advantage, but the number of smaller mills has a cumulative negative effect on his supply. When APEP approached him with a plan for organizing and training rice farmers, he was glad to point the project to the right growers: it helped APEP to raise productivity and helped Nyati to build relationships with farmers. "They call me to get the going price," he says. "They trust me because I introduced them to APEP."

Magara likes the idea of rice producer organizations bulking for sale to the mills: "It's a waste of time," he says, "for farmers to line up at the mill and wait their turn. And the larger farmers can buy up the quantities that small farmers want to sell for a small profit. That's better than the millers going village to village, or the village coming to us."

lished in Kabarole for both seasons A and B. Sunrise reported that 2,200 farmers were trained in improved technologies, 67 farmer groups were created, and 1,850 acres of rice production were established. SCL anticipated that growers would produce 2,590 t of expected paddy sales.

APEP worked across the country through 10 medium-sized millers to bring the missing farm-level extension for improved rice production. The case of APEP SAF partner Upland Rice Millers (URM) illustrates why the processors don't function as lead firms in the rice value chain.

URM, in the east-central Jinja District, purchases, processes, toll mills, packages, brands, wholesales, and retails rice. The owner, a former Ugandan ambassador to China, saw the profits to be realized by milling and selling rice in an under-supplied market, and he invested in medium-sized sophisticated milling machinery, imported from China. He trained his staff to operate and maintain the machinery and went to work solving the problem of under-supply of paddy.

The company partnered with APEP on an out-grower scheme involving 1,200 farmers in



APEP / NANCY HEDIN

Like Niyati in Hoima, Upland Rice Millers (URM) in Jinja District processes and sells rice using sophisticated equipment imported from China. Both Niyati and URM, like millers around the country, have difficulty sourcing enough rice paddy from small growers to operate at full capacity and meet growing demand.

neighboring Bukedea and Kumi Districts, each on average with 1.5 acres under upland rice. If all of the collaborating farmers adopted the improved technologies, URM estimated that the combined 2,500 acres would produce 3,500 to 5,000 t of paddy rice. With an average value of paddy rice at US\$ 400 per kilo (in 2006), the total yield would be worth approximately \$1,200,000. URM anticipated no problems with technology adoption: the real issues for farmers were input supply and bulk marketing, which APEP's producer organization model addressed.

URM, with APEP technical assistance, reached all its targets with respect to demonstration sites and farmer training in Kumi

and Budekea, but it purchased no rice from the farmers in 2006: at a critical time, URM lacked the finances to buy the harvest.¹² All the farmers succeeded in selling their crops for a good price, because they were not dependent on URM for a market. The multi-channel market links available to farmers through grain traders and mills of all sizes, together with the limited ability of most millers to finance large-scale crop purchases, are what make the rice value chain a special case in Ugandan agribusiness. Producer organizations can play a meaningful role in securing the best price for farmers in this scenario (see "Nyati Rice Millers") but only with considerably more organization in the sector overall.

12. APEP subsequently linked URM to the Uganda Development Trust, and the miller has a crop financing loan for the current season.

ADDING VALUE AT THE FARM LEVEL WITHOUT PRODUCER ORGANIZATIONS: THE CASE OF BANANA

Although the lead farmer demonstration site model was used for technology transfer in the banana sector, no producer organizations were formed or strengthened in the sector under APEP. Instead, project resources were dedicated to combating the serious threat to household and national food security caused by banana bacterial wilt (BBW), a disease endemic to Uganda. Toward that end, APEP and other development partners participated in a working group established by the Ministry of Agriculture, Animal Industry and Fisheries to raise awareness of the disease among farmers, and to demonstrate methods for coping with BBW.

APEP did undertake SAF partnerships with research institutions in support of the banana value chain. The International Network for the Improvement of Banana and Plantain (INIBAP)¹³ examined low-cost ways to control BBW on farms and to assess the necessary waiting time between eradicating infested trees and planting new material. The International Institute of Tropical Agriculture (IITA) was asked to make precise recommendations to combat “nutrient mining,” or soil depletion in connection with banana and banana-coffee intercropping. Dissemination of new hybrid varieties of banana that are disease- and pest-resistant is also a high priority in the banana subsector: through APEP, more than 35,000 clean tissue-cultured planting materials were distributed and planted.

WHEN ADDING VALUE THROUGH PRODUCER ORGANIZATIONS:

- Give priority to the screening process. PO members must self-select for interest in commercial farming. From the beginning, zoom in on the trust and confidence factor; PO members need to have faith in each other.
- Leadership is crucial. The executive committee must be focused, able to set priorities, and perform in the trading role usually reserved for middlemen. Leaders must be able to make decisions and explain them to fellow PO members.
- Ensure that the lead farmers can function as trainers of trainers, as they will be the ones to replicate the technology transfer over time.
- Make sure the PO has the skills to do business, through a DC or other mechanism. Successful buying and selling keeps the PO together.
- The PO should be able to shoulder secondary development activities, such as a SACCO, or access to health care. It will be seen as a way to grow the community.

13. INIBAP was created in 1985 as a program under the International Plant Genetic Resources Institute, supported by the Consultative Group on International Agricultural Research.

APEP AND COFFEE

- Number of SAF partnerships: 15
- Number of farmers trained: 70,000
- Increase in coffee export volumes: 10%
- Increase in coffee export value: 39%

Appropriate agronomic practices can also help banana production: APEP established 215 demonstration sites in 9 districts exposing 23,200 farmers (58 percent women) to improved banana production and maintenance practices. Adoption of these technologies increases banana bunch yields from about 10 kg to about 35-50 g.

The banana marketing system, depending as it does on thousands of middlemen, is not conducive to commercial POs, except in the case of sales for industrial purposes. It is best to add value to the chain at the farm level through lead farmers as a way to bolster the food security of rural communities and the nation as a whole. Producer organizations can be useful for technology transfer, but not for direct links to markets, which remain the purview of traders.

ADDING VALUE THROUGH THE LEAD FIRM

In the coffee, vanilla, and sesame subsectors, lead firms — major buyers and processors of commodities — are established and ready to source significantly more product from smallholders than they currently do. The problem is usually that both quality and quantity of the available production are so inferior that it does not make business sense to buy and process it. Neither does it make business sense for the lead firms to, in effect, act as extension agents, spending time, energy, and money to organize, educate, and monitor smallholders.

APEP saw that the weakness in the value chain — product quality and quantity — could be addressed using the lead firm in a way that would cement the market link between producer and buyer. With APEP taking on the burden of farmer organizing and training, it does make business sense for the corporate partner to also invest in long-term relationships with suppliers. The two examples described below are taken from the coffee subsector.

Case Study: Kyagalanyi Coffee Ltd.

The example of Kyagalanyi Coffee Company Ltd. (KCL) shows how technology transfer works with a lead firm generating technology and supervising its transfer to area farmers. KCL, located in the Mukono District northeast of Kampala, has a long history in Uganda's coffee sector under various owners (they are now a U.K.-owned company). When the coffee sector was liberalized in 1992, Uganda was exporting 4.5 million 60-kilo bags of Robusta (85 percent) and Arabica (15 percent) coffee annually; the figure now is somewhere around 2.5-3 million bags. Coffee wilt disease, low prices, and disorganized supply were decimating the sector, on which about 20 percent of Uganda's population depends for cash. KCL knew its future depended on producers raising the quality and quantity of coffee; it therefore approached APEP with "Project Nakanyonyi," a re-planting and certification training program for coffee growers in Mukono.

The mother garden at Kyagalanyi Coffee. Multiplying the number of new and disease-resistant coffee plants on coffee farmer plots is a main objective of Kyagalanyi's SAF agreement with APEP.

APEP / NANCY HEDIN



KCL was familiar with coffee-growing conditions in its sphere: the average farm is 0.5 to 2.5 ha; supports bananas, cassava, and other food crops besides coffee; and relied on old, diseased, and poorly maintained coffee trees. For a re-planting program to work, farmers would have to completely change their habits; this was especially true given that KCL's goal was to add value to its coffee with Utz Kapeh (meaning “good coffee” in Mayan) and 4C (Common Code for the Coffee Community)¹⁴ certification.

KCL and APEP partnered on Project Nakanyonyi in 2006. APEP agreed to supply the same producer organization-based approach to training that had worked so well with the Kamuli farmers and in many other places. KCL appointed a project supervisor to undertake the initial farmer registration work, which

brought some 2,000 smallholders into the project. They were organized around villages into producer groups, chose lead farmers to host coffee demonstration plots, and began working with PO trainers supplied by APEP. The organizing process took place much as it had in Kamuli, except that farmers were initially much more suspicious of KCL's motives, particularly as certification required them to record and share information about themselves and their farms. They were also skeptical that new and different practices would benefit them much.

Fortunately, KCL had worked with the GOU to establish a nursery for coffee tree varieties that had proven resistant to disease. It now had a “mother garden” from which to supply the Project Nakanyonyi farmers with new stock to replace their

14. Both Utz Kapeh and 4C are entry-level certification programs that guarantee consumers that growing and harvesting practices meet basic good-practice standards.

50-year old coffee “shambas.” The seedlings, however, were not given away: they were sold to farmers at the greatly subsidized price of US\$ 100 (75,000 were sold in 2007). That was just the beginning of the input distribution program. Both KCL and APEP realized that farmers didn’t possess equipment they would need to put their agronomic training to use. APEP donated inputs to KCL — hoes, pangas (machetes), pruners, tarpaulins, boots — which then sold them at subsidized prices. Half of the proceeds collected went to buy more inputs, and half went to support producer organization activities.

By the second year of KCL’s work with farmers, appreciable trust and confidence had built up. Of the 3,074 farmers now registered, all are 4C certified: the first to receive certification in East Africa. Of these, 1,300 are Utz Kapeh certified. Another 2,000 farmers are waiting to subscribe to Project Nakanyonyi. KCL’s project supervisor, Angello Mukasa, attributes success to the combination of the farmer input distribution plan, the visible improvement in lead farmer fields, the price KCL paid for the first year’s production (US\$ 1,000 per kilo), and the training supplied by APEP. Says Mukasa: “The point after all is not just to buy coffee; it’s to raise the image of Ugandan coffee everywhere. APEP staff have proven invaluable in attaining that key goal, and have made the going a lot easier than anticipated.”

Ankole Coffee Processors Ltd. (ACPL)

ACPL was another coffee buyer and processor that wanted to rise from the ashes of the coffee crash. Beginning in 2005, ACPL worked with APEP to organize and train the 4,300 farmers in its growing area in western Uganda. ACPL’s goals were:

- To add value to coffee via the production of specialty/gourmet, single origin, uniform coffees that would be able to compete favorably on the international market.
- To achieve higher prices for farmers through better husbandry and post-harvest practices that lead to better quality.
- To encourage farmers to work together in producer organizations to minimize input costs and be able to bargain collectively (bulk marketing).

After 2 years, ACPL had achieved Utz Kapeh certification for 2,000 of its farmers. But it still could not source an adequate supply of beans from its home-base producer organizations because of “poaching”: competitors coming to ACPL’s area can buy coffee at a higher price, as they had no investment in the production to recover (training for producer organizations, lead and collaborating farmers; supplying inputs such as tarpaulins for drying, fertilizer, and pesticides). The answer for Ankole was to train more farmers and plant more coffee; it is now expanding into neighboring zones, with a goal of

SUCCESS STORY

Trust and Confidence



Jesse Daawa has an entrepreneurial interest in building the relationship between coffee farmer and coffee exporter. By offering farmers incentives to grow Utz-certified coffee for processing at Ankole, he hopes to reduce the side-selling that undermines lead firms in the coffee subsector.

Jesse Daawa, manager for APEP partner Ankole Coffee processors in western Uganda, has understood the role of trust and confidence in successful value chain strengthening from the beginning. When he first went to register farmers in his area, he was met with cynicism. “The farmers lived through the collapse of the cooperative system in 1984-1985,” he explained. “They felt that if the government had abandoned them, why should they trust a single person coming along with plans?” Daawa saw that to be profitable, Ankole would need to build its business relationship with farmers.

The problem is complicated by the fact that farmers do not know what price they will get until after their cherries are washed and graded by Ankole — and even then, the world market will cause fluctuations.

The answer, in part, is the certification program. The Utz Kapeh label attained through the APEP-Ankole training repays the farmer’s diligence in record keeping with consistently higher prices. There is an immediate, tangible result from adopting new practices promoted by the farmer’s lead buyer:

Trust and confidence are building. But, says Daawa, “The producer organization paradigm is still new: it needs motivation and leadership. They have a huge challenge on the input side, sourcing affordable fertilizers and pesticides in five-kilo sacks. There are ideas, but they require a lot of extra work.”

Daawa would like to do more to build the confidence of a certain segment of his farmer trainees, both as farmers and as individuals. “It’s a cultural problem,” he explains. “Women cannot introduce ideas to men. There is no concept of the family enterprise. But if I can get a farmer’s wife to serve on a depot committee, she will learn to evaluate how she spends her time. The knowledge that her time has value will carry over into the sitting room, and then into the family.”

While this process goes on, Daawa has another idea: he is forming sub-PO groups of about three women each, and is helping them come up with ideas for income-generating activities they can do themselves, for their own profit. His motive is both altruistic and entrepreneurial: “I want wives to like coffee!”

WHEN ADDING VALUE THROUGH THE LEAD FIRM:

- Identify corporate partners who are not content to wait at the end of the value chain — many can adapt their business model to work with donors.
- Focus on building trust and confidence between farmers and lead firms; without it, farmers will pursue other buyers, and other markets.

doubling its pool of producers to 8,000, divided into 247 producer organizations, each with about 30 members and 2 demonstration plots.

Jesse Daawa, who manages ACPL's coffee extension, says, "Farmers who had abandoned coffee growing in the past are now on board. The success of the first project [2005-2007] has encouraged more farmers to join. That is why we are extending to other areas. We are moving from 16 zones to 22 zones, and adding Arabica demonstrations. This means an increase in the number of farmers from 4,000 to 8,000. We intend to take 3,000 more this year [2008], and gradually we will have all of them Utz Kapeh certified."

ACPL, like all other lead firms in the coffee subsector, often feels betrayed by the amount of side-selling or "poaching" that goes on: middlemen will arrive at the coffee shambas and offer a good price for the improved crop the farmer has due to his association with the lead firm. The middleman buys dried cherries, unhulled, that he will mill and mix with lesser quality cheap coffee to arrive at his particular blend. Daawa encourages POs to bring him their dried cherries

for milling at ACPL: even after he charges a fee for hulling, the farmer will receive a better price for the legitimate weight of the hulled product than the middleman paid for the dried cherries. This reinforces the idea of adding value for a return, builds loyalty among the ACPL farmers, and contributes to the overall trust and confidence between farmer and buyer.

ADDING VALUE IN A MANAGED MARKET: THE CASE OF COTTON

The cotton sector has historically been strong in Uganda, which has an excellent climate and soil for production of high-grade cotton fiber. The sector prospered in the 1960s and 1970s, producing around 86.3 thousand mt at its peak and contributing around 40 percent of Uganda's foreign exchange earnings. The political and economic turmoil surrounding the Obote and Amin years dramatically reduced cotton exports; by 2001, they accounted for only about 5.5 percent of the country's foreign exchange earnings.

Yet cotton remains important: it is second or third only to coffee as a cash crop to reduce rural poverty. If brought to its full potential, the sector could lift

APEP AND COTTON

- Number of SAF partnerships: 35
- Number of cotton producer organizations: 1,046
- Number of cotton farmers linked to ginners: 134,458

about 15 percent of the population out of poverty, according to USAID¹⁵. Ugandan production yields currently average 300 kg/acre but are thought, based on 2001 demonstration plot work, to have the potential to reach 800 to 1,000 kg/acre with good agronomic practices, seed varieties, and input technologies.

Because cotton is grown widely in Uganda and involves hundreds of thousands of farmers, some national system needed to be introduced to scale-up technology transfer quickly and effectively. If production help were focused in one or a few areas, there would be a *mêlée* as buyers rushed in to compete for the harvest. In 2003, the country was divided into eight zones, each with a certain number of ginneries of varying sizes — some 35 in all. In partnership with the lead ginner in each zone, APEP designed cotton demonstrations on a massive scale, based on its value chain model. Under this adaptation, lead ginneries were responsible to the Cotton Development Organization (CDO) and to APEP for managing and coordinating the activities in their zones. In return for their investments of time and energy in these demonstrations, the ginneries were guaranteed (through oversight by the CDO-controlled zoning system) supply from farmers in their zone.

Each demonstration involved a lead farmer with one acre for improved cotton production: half showing yields from high input and half showing low-input benefits. High- and low-input com-

ponents are grown side by side, and under the management of the same lead farmer. The farmer provides all of the labor and land required for the demonstration, and agrees to host at least three farmer field days on his or her site. In return, APEP supports the additional inputs required for the demonstrated technologies as well as the allowances for the direct site management through a site coordinator. The site coordinator is paid via a SAF agreement with APEP, but remains under the direction and line management of the ginnerie. This way, the farmer “owns” the demonstration site and feels empowered to act as a teacher to his fellow farmers, while the ginnerie retains management control through its site coordinator.

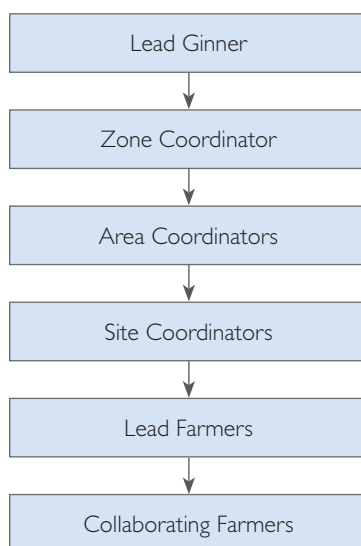
Collaborating farmers were selected by the lead farmer, based on their ability to work closely with the lead farmer and attend all field days. They were monitored by the lead farmer and supported by the zone coordinator. This way, adoptions are more closely managed than with an open field-day situation. Lead farmer effectiveness was also enhanced by the monitoring responsibility. The system also allowed the program to fix a definite field of beneficiaries and to track their performance over time.

The Theory in Practice: The Western Uganda Cotton Company Example

Western Uganda Cotton Company (WUCC) first partnered with APEP in the 2004 - 2005

15. “The Path Forward for Uganda’s Cotton and Textile Sector,” the COMPETE Project, USAID, February 2002.

FIGURE 5. MODEL FOR TECHNOLOGY TRANSFER IN THE COTTON SUBSECTOR



production season as the lead ginner in the northwest growing zone around the city of Masindi. WUCC had two partner ginners — COPCOT and Magnetic Enterprises — with whom it devised a budget for raising yields and quality in its zone.

The budget covered production management, demonstration plot training, and input supply; it was shared on a 40-40-20 basis, with Magnetic being the junior partner. Each ginner was to get a commensurate share of supply; that is, a 40-40-20 split of the total harvest.

As the lead ginner, WUCC organized 500 demonstration sites in Year 1. The sites were chosen on the basis of lead farmer qualifications: they had to be actively growing cotton and able to recruit friends and neighbors into new growing techniques. The approach was taught using a mnemonic: the “five fingers,” or five points of good agronomic practice:

1. Site selection and land preparation.
2. Proper planting in terms of time, spacing, and number of seeds.

WHEN ADDING VALUE IN A MANAGED MARKET:

- The mechanism for payment and pricing must be transparent and acceptable to both producers and buyers. Under the cotton zone system, ginners advanced cash to agents who deducted a commission for every kilo of cotton they bought from farmers. When POs wanted to bypass the agents and sell directly in bulk, the ginners did not want to pass on the money they saved from not having to pay agent commissions. The farmers felt cheated, and the ginners felt that farmers were naive about the cost of extension and other costs they were directed by the CDO to absorb.
- The market shares apportioned to players in a managed market — such as the lead and supporting ginners in the Uganda cotton zones — must be perceived as fair and workable, or there won't be cooperation.

For pest management in the cotton sector to be successful, a way had to be found to use less water in less heavy pesticide sprayers. The knapsack sprayer, pictured at right, provided the answer.



APEP

3. Use of the improved seed variety BPA2002, with attention to its needs as an early maturing plant.
4. Complete weeding and thinning of plants within 14 days of germination.
5. Pest management: scouting for pests in the field, getting the right remedy applied before damage is done.

This last point was particularly difficult: farmers did not know how to identify and manage the many insects that were destroying their crops. APEP designed and disseminated a picture guide to harmful insects that farmers could wear around their necks while in the field, and which told them which pesticide to use.

Traditional knapsack-style sprayers were not suited to Ugandan cotton, given the lack of running

water in rural areas. A knapsack sprayer requires 80 liters of water per acre, water which must be carried, often by women and children, long distances in 20-liter containers. They are also time-consuming to use, uncomfortable in the heat, and prone to breakdowns. APEP spearheaded the introduction of ultra low-volume sprayers, one for each demonstration site, which use 5 liters of water per acre, and treat one acre in 30 minutes. Farmers considered these a godsend – so useful that WUCC partnered with a local manufacturer to sell sprayers to farmers independent of the WUCC extension linkage.

In season 2004A, there was a huge increase in both acres under production and yield in WUCC's zone. Volume rose to 256,000 bales from the previous year's 120,000 bales. Lead farmer positions rotated to other sites for the upcoming season. Young people,

“ The lasting value of APEP is the extension network it left behind. Right now the CDO is using this network — they’ve never seen anything like it. And whatever the government says or does, the network is there. Because of this network I can tell you who is farming what and where, and what an individual farmer’s production limits are. I can call a meeting of farmers by parish, village, or sub-county; the network is self-sustaining – it adds value.”

**WILFRED KAMULEGEYA,
PRODUCTION MANAGER,
WESTERN UGANDA
COTTON COMPANY**

who are especially motivated by the promise of cash, were eager to participate. In Year 2, WUCC supervised 13,000 acres of cotton and some 10,000 cotton farmers.

But the second year, 2005-2006, a drought contributed to a drop in Uganda’s output to 170,000 bales, and a concomitant drop in prices for lower quality. If yields had been higher, farmers would still have made money; as it was, they blamed the ginners for somehow cheating them and immediately reduced cotton acreage. Even though prices moved back up in Year 3, the farmers did not come back to cotton in WUCC’s zone. Year 3 production for Uganda was 62,000 bales, or one fifth of Year 1’s total.

By the 2007-2008 season, the zone system was considered a failure by ginners and farmers both. The old predatory nature of the industry has not been eradicated, and with low volumes, returns on investments continued to be negative. Farmers had lost confidence in themselves, each other, and the zone regulator. The farmers did not understand the price structure of cotton, and ginners resented the fact that, even with their investment in extension and marketing agreements, “we can’t find the farmer when the price is high” (because they are side-selling). There is currently no will among the ginners to revert to a more organized system of production.

Of the 62,000 bales produced in Year 3, most came from producer organizations formed by APEP, which reaped the higher prices. Wilfred Kamulegeya, production manager for WUCC, says, “The ginners are now permanently divorced, but we are still dreaming about the big crop that’s in the hands of the farmers. I commend APEP for showing farmers it’s not about acres, but productivity per acre. The atmosphere is ripe for bulk marketing, but somebody has to do the producer organizing. It won’t be the gins: we are trying to cut overhead while we wait for the CDO to decide something.”

In 2004, the CDO’s goal of 1 million bales by 2010 seemed possible, given APEP’s leadership in stimulating extension by the ginners, and an organized structure for buying and processing. But ginners in some zones felt disadvantaged in terms of the total supply they could expect. Farmers were willing to stay with improved practices only as long as the ginners’ prices held up. When a drought occurred in the second year of the project, confidence levels were not strong enough to support the zone system. However, through APEP, both farmers and ginners have seen that producing high volume to a uniform standard and bulk marketing is the way forward. Whatever structure the sector takes next, producer organizations are sure to play a role.

A SUCCESS

Cotton in Northern Uganda: USAID-Dunavant Uganda Ltd. Global Development Alliance

APEP was instrumental in negotiating an agreement between USAID and Dunavant Uganda cotton company to improve livelihoods for 12,000 cotton farmers in northern Uganda. Launched in November 2006, the public-private partnership, or “GDA,” established an out-grower scheme for cotton, whereby farmers in areas affected by the Lord’s Resistance Army were helped with inputs and training to grow high-quality cotton for a guaranteed market at an agreed-upon price. APEP continued to provide technical assistance to farmers under the agreement on behalf of USAID, which included strengthening producer organizations as well as agronomic training in best cotton crop practices. Also in 2006, APEP concluded a separate strategic activity fund agreement with Dunavant to open an additional 736 acres of farm land near camps for internally displaced persons in the vicinity of Kitgum.

ADDING VALUE THROUGH OUT- GROWER PRODUCTION: NORTHERN UGANDA

In 1987, Joseph Kony, an ethnic Acholi from the north, began his Lord’s Resistance Army (LRA) guerrilla war against the government of President Yoweri Museveni (from the southwest) by attacking local government employees in villages in northern Uganda. LRA intimidation tactics included mass killing and disfigurement of adults and the abduction of children and youth — estimates range from 25,000 to 66,000 — to serve his army as slaves. In response,

the government moved villagers into “protected camps” where the army was better able to defend them; these camps at one time held about 1.7 million displaced persons. In 2005, a poll of humanitarian relief professionals conducted by AlertNet¹⁶ listed the north of Uganda as the second-worst “forgotten” humanitarian emergency after the war in neighboring Democratic Republic of the Congo.

In 2004, APEP began to look at the possibility of bringing its commercialization model to the north. The project was familiar with a major industrial proces-

¹⁶. A news service funded by the Reuters Foundation.

**A.K. OILS & FATS
RESPONSIBILITIES UNDER
THE SUNFLOWER OUT-
GROWER PARTNERSHIP**

- Overall accountability for project management through senior staff supervision
- Cost-sharing for workshops and extension
- Sell improved seed to farmers at cost
- Execute pre-planting contracts with registered farmers guaranteeing a fair market floor price (but not a ceiling price) for 100 percent of harvest

**APEP RESPONSIBILITIES
UNDER THE SUNFLOWER
OUT-GROWER PARTNERSHIP**

- Guide farmers to organize themselves into cluster centers
- Guide the process of selecting lead farmers
- Establish demonstration sites, provide technical input packages
- Conduct technical training
- Train farmers to set up financial and marketing records
- Communicate grain quality aspects to farmers
- Guide and supervise the process of bulk collection at cluster centers

sor there, Mukwano, with an under-used sunflower and cotton seed crushing facility; this led to a partnership that continues to benefit thousands of displaced farmers in what is still a conflict zone.

Case Study: Mukwano (A.K. Oils & Fats) Sunflower Out-Grower Scheme

Mukwano (which means “friendship” in Luganda) is a long-established Asian-owned edible oil and soap manufacturer in Uganda. Its subsidiary in northern Uganda, A.K. Oils & Fats, is a major processor of raw sunflowers. The company has continued to operate during the past 20 years despite hostilities, though at less than capacity because of the low yield of the sunflower variety (Sunfola) traditionally grown in the north.

In the spring of 2004, A.K. Oils & Fats’ medium-term business plan called for a 100,000 mt sunflower procurement from local farmers, a 13-fold increase. Yet the 250,000 sunflower farmers in the area were unable to buy improved seed in the quantity that would make a difference to the company; moreover, Mukwano had no extension model to transfer knowledge to farmers on good agronomic practices. The company realized the best way to move forward was to somehow work backward to introduce sustainable, cost-effective, and modern technologies to raise productivity; provide incentives to eliminate middlemen in the marketing chain; and impart knowledge of good farming practices to farmers while building on

the Mukwano household name to provide the trust required in off-take pricing.

Mukwano leveraged contacts made through the IDEA project to cement a partnership with APEP to demonstrate a hybrid variety of sunflower seed, PAN 7351, to farmers in Lira, Apac, and Masindi Districts, all in the north. The initial plan called for 600 demonstration sites throughout the target districts, serving at least 9,000 registered farmers. Under the partnership, A.K. Oils would maintain overall direction of the project through its chief extension officer and site coordinators, and would also offer farmers who adopted the technology a pre-planting floor price for their harvests. APEP would in turn adapt and apply its producer organization/lead farmer extension model to show the benefits of both low- and high-technology input packages; train lead farmers and site coordinators to manage the process; and put out messages to farmers on good agronomic practices in writing and via a weekly radio program.

The out-grower scheme took off: in 2005, there were 1,700 demonstrations for 29,000 registered growers. In 2006, there were 2,244 demonstrations for 31,291 registered farmers, a number that has remained somewhat stable. For the first time, a large group of small-scale farmers was engaged in an out-grower model under contract to an off-taker (A.K. Oils & Fats) who offered a guaranteed minimum price before planting. The company estimates that its purchase of grains

WHEN ADDING VALUE THROUGH AN OUT-GROWER SCHEME:

- The public-private partnership should offer the corporate partner a strong link back to growers that it otherwise won't have.
- Offer the corporate partner a way to mitigate risk by assuming the costs of training and technology transfer, and helping with management and monitoring.
- Extension must be market-oriented: be sure to communicate to farmers their parameters on quality and quantity
- Farmer confidence has to be raised by their link to the market through the pre-season price and off-take arrangements
- The extension has to be cost-effective in the face of strong competition (the poaching problem)

in 2006-2007 gave its 31,000 farmers a collective income of US\$ 5.3 billion (U.S. \$3 million).

A.K. Oils & Fats was subsequently a victim of its own success: the company estimates that about 40 percent of its farmers' yield was "poached" in 2007; that is, sold to millers from other areas who could offer a better price because they had not made any investment in the crop. A.K. Oils & Fats saw that the out-grower scheme was not sustainable without a further large intervention in the sunflower sector. Again, it partnered with APEP on a hybrid sunflower distribution scheme that would "cool the market," allowing would-be poachers to develop their own out-grower schemes or otherwise source enough product to make poaching unnecessary. Under the scheme, the parent company,

Mukwano — the only importer of PAN 7351 — made available 80 mt of hybrid seed available to UNADA's regional distributors for sale to millers around the country. Mukwano is now working with Monsanto on a longer-term solution to the seed sourcing problem. In the meantime, sunflower farmers in northern districts are thriving. Says Masindi District sunflower PO Trainer Emmanuel Kairagura: "Farmers are coming to us asking how they can join in the out-grower scheme. Farmer-to-farmer training and adoption are now both very good. And the message about commercialization is very clear to farmers after working with sunflower for Mukwano. Farmers can't bargain collectively as sunflower out-growers, but they can when it comes to maize and beans, where the market is different."

FLORICULTURE IN UGANDA

- Fourth largest grower in Africa
- Annual revenue of \$35 million
- Growing at 14 percent annually
- Employs 6,000 people (60 percent women)
- 202 ha in production
- 35 varieties of rose cuttings
- Markets: Holland, Germany, United Kingdom, Sweden, Italy

“ APEP guided growers in the right direction against their will. Their attitude was ‘Let’s all go our own way; I’ll get help if I need it from someone.’ Their business makes them secretive and proprietary. But the flowers are exported as ‘Ugandan.’ If quality suffers in one place, all growers suffer. They need to see their common stake in the Ugandan brand. ”

**ROBINA SSONKKO,
COORDINATOR AND
KEY RESOURCE PERSON
FOR APPLIED TROPICAL
FLORICULTURE AT
MAKERERE UNIVERSITY**

ADDING VALUE THROUGH A GROWER-EXPORTER ASSOCIATION

Case Study: The Uganda Flower Exporters’ Association

In the early to mid-1990s, the GOU took an interest in promoting nontraditional exports, among them, flowers. Neighboring Kenya had a very profitable and mature floriculture industry, and its growing conditions are not as favorable as those in Uganda. By 1997, 16 flower growers were operating around Lake Victoria, near Entebbe airport. Prices were initially high: 30 cents per stem. Several growers, thinking prices would stay high, spent recklessly; when prices dropped, they could not repay their start-up loans. Only 2 of the original 16 are in business today.

The industry survived this initial winnowing with help from a Bank of Uganda rescue fund that helped new entrants take over collapsed farms. Meanwhile, the Uganda Flower Exporters’ Association (UFEA), established in 1995 under the IDEA project, had not disbanded. Under APEP, it took on renewed purpose: to help growers understand their market segment — which is not the same as Kenya’s — and how to supply that segment with the quality and quantity that will make commercialization viable.

Copying the Kenya production model had been a mistake: Kenya’s climate is suited for hybrid tea roses, and Uganda’s for the smaller “sweetheart” and “intermediate” roses. UFEA’s strategic plan was to increase the value per unit of the right variety of flowers through research and training, and by articulating a code of common practice which would assure compliance of Ugandan growers with international industry standards (MPS¹⁷ and EurepGAP¹⁸). The key vehicle for training and compliance is the Applied Tropical Floriculture (ATF) course.

UFEA had already, under IDEA, sponsored the ATF course in partnership with Makerere University’s Department of Crop Science. Robina Ssonkko of that department adapted the course to suit the needs and skills of working people, while maintaining a focus on the knowledge level necessary to raise horticultural production and quality: growing, harvesting, grading, packing, and marketing flowers to Europe.

Most participants are middle-level flower farm supervisors and managers, but government officers in the agricultural inspection department are also invited to attend, along with representatives of NARO and Makerere University. UFEA and APEP put together the list of participants for each of the ATF’s 13 mod-

17. *Milieu Programma Sierteelt* (MPS) was created in 1993 to reduce the environmental impact of the floriculture sector. The program analyzes a farm’s pesticide use, recycling practices, and energy and water use, which a company must register monthly. Each year, 30 percent of the participating farms are subjected to a random inspection.

18. EurepGAP is a private-sector body composed of producers and retailers that sets voluntary standards for the certification of agricultural products around the globe. Standards are pre-farm-gate, meaning certification covers production from before the seed is planted until the product leaves the farm. EurepGAP is a business-to-business label and is therefore not directly visible to consumers.

“ Without APEP, the flower industry and UFEA would never have come as far. Everyone was busy with his own problems; no one had the time or money to set up a supporting structure, especially the training center. I have sent 20 people to the ATF course; they come back with a new mindset, one of ownership. The study tours made a real change in outlook: they see that what they do has an impact at the other end, in the European market. ”

**JAQUES SCHRIER,
MANAGING DIRECTOR
ROYAL VAN ZANTEN
UGANDA AND UFEA
CHAIRMAN**

BASHIR KASEKENDE, VANEX FIELD DIRECTOR

“How do you convince farmers to grow vanilla in the context of price shocks, poaching, sophisticated market requirements, and the need for long-range planning and vision? You have to build trust. They understand they can't access the market individually. VANEX gets them together with companies before the buying season to talk about the world market and where prices are. And then at buying time, our weekly radio program tells farmers not to accept anything less than the going price.

We make sure the vanilla producer organizations have all the information they need to understand the market (like The Vanilla Report), so they don't feel exploited. The technical team we have doing extension in the POs is really good. Their messages are reinforced with a weekly radio program. Producers are comfortable that prices will improve in the long run.

Vanilla is going to go a long way toward changing farmers' outlook, from just surviving to being businessmen. Vanilla is a crop you grow only to sell; you can't eat it. So you'll grow more or less in response to the market, but you'll understand it's for the long term.”

ules, which are taught over the course of a year.

Study tours were a special part of the course; participants at the farm manager level were selected to spend a week observing improved production techniques at Kenyan flower farms, followed by a week-long “market contact” trip to Amsterdam to see how sales and distribution are handled at the other end of the value chain. Since Ugandan flowers arrive in Amsterdam three times a week via Entebbe, the participants were able to see their products unpacked and evaluated by marketers. Those comments were recorded and became “action items” upon return to Uganda.

In addition to building Ugandan capacity through the ATF course, UFEA does critical research

to help solve the most serious problems faced by the industry as a whole. For example, all growers incur damage from the pest known as spider mite, but compliance with marketing standards requires reduced use of pesticides on flowers. UFEA, via APEP, contracted with a Kenyan “bio-prospecting” firm, Real IPM, to find out whether any natural biological enemies of the spider mite existed in Uganda. Fortunately, one does, and Real IPM demonstrated to growers how to “mass-rear” this helpful insect. Two farms are mass-rearing spider mite predators, and others are preparing to follow suit.

UFEA has also done seminal research into alternative, affordable media for growing flowers. With funding from UNIDO and APEP, UFEA conducted trials



APEP / MATTHEW EDWARDS

Bashir Kasekende demonstrates hand pollination of a vanilla plant on an APEP-supported demonstration plot.

“ In 1998, we were moving around in the dark. Now, anyone who wants to start in the flower industry can get all the information he needs from UFEA. APEP was very, very instrumental in strengthening UFEA, and via UFEA, the growers. ”

**STANLEY MULUMBA,
MANAGING DIRECTOR,
UGAROSE**

of various substrates to replace imported cocoa peat at two farms during two years. Eventually, pumice, which is cheap and locally available, was found to work well.

Growers have found the organizing power of UFEA especially important in connection with lobbying the Ministry of Tourism, Trade, and Industry on incentives to bring more growers into the sector. This is because operating expenses are high — cold chain and transport, particularly — and either more growers must come in to share the costs, or the GOU must make good on a promised set of incentives (e.g., a tax exemption promised in 2007 has not been put into effect).

THE UGANDA VANILLA EXPORTERS’ ASSOCIATION

The vanilla sector in Uganda was initially developed under IDEA much like coffee, with a lead firm buying and processing the production of thousands of smallholders. Unlike coffee, there were only two main growing districts in the country — Mukono and Bundibugyo — and only a few lead firms interested in making the commitment to work with a donor on capacity-building among smallholders. The IDEA project worked with those lead firms on farmer demonstrations from 1995 through 2003, involving around 30,000 farmers, with remarkable success. Exports of vanilla rose from 5 t in 1995 to 120 tons of high-quality cured product in 2003, with an aggregate value of more than \$25 million. Much of that wealth did

The vanilla boom of 2003 was short-lived; now, vanilla farmers, with help from APEP partner VANEX, must learn to compete on the international market by building the brand recognition of Ugandan vanilla.

APEP / MATTHEW EDWARDS



indeed accrue to the smallholder, making vanilla even more attractive as a means to raise rural incomes.

As it happened, the very high prices of 2003 were caused by a temporary shortage in the supply of vanilla, owing to climatic and political upheaval in Madagascar, the leading source of vanilla exports. Nevertheless, farmers, middlemen traders, and some exporters, in the rush to make fast money, picked (or stole from fields) and sold green, unripe vanilla as quickly as possible. Uganda, which had been building its reputation as a supplier of quality vanilla, was instead flooding the market with inferior product. An enviable chance to capture export market share for the long term was lost. When the price plummeted in 2004, farmers abandoned the crop.

A few of the vanilla exporters, not wanting to see the subsector collapse entirely, approached APEP for help to organize a recovery. The key was to find a way to safeguard standards for production and processing, and to create a marketing platform to help Uganda promote a recognizable and reliable brand. They formed the Uganda Vanilla Exporter's Association (VANEX) to take on the task of reviving, for the long-term, high-quality smallholder vanilla production.

Like UFEA, VANEX positioned itself to address all the needs of the industry, but focused on two immediate needs:

1. *Enhanced production support.* Outreach to farmers and farmers' associations, providing information on growing, husbandry, and harvesting techniques; providing ac-

cess to market information; discouraging early harvests. Developing best practices for processing vanilla and assisting existing processors with their activities.

2. *Marketing and industry support.* Maintaining a database of international buyers; liaising with them regularly to keep them apprised of industry news in Uganda and to encourage purchases from Uganda; assisting in exporter-buyer liaisons, attending trade fairs; assisting in the resolution of disputes. Maintaining accurate market information and disseminating it through the Web site and other sources. Educating the public about the vanilla industry in Uganda.

Falling back on APEP's technology transfer through lead farmer demonstration, VANEX set up 60 demonstration plots in key vanilla-producing districts, concentrating efforts where production was highest. It designed a training-of-trainers program to build up a core of extension providers linked to the demonstration plots. Eight regional coordinators were deployed to oversee the collection of data at the demonstration plots and check

on the performance of farmers. Field work was reinforced by a 30-minute weekly radio program in three regions, in three local languages, to follow up on technology transfer and announce meetings to farmers.

At the marketing level, VANEX put together a database of international buyers to encourage purchases from Uganda. To further raise its profile, VANEX sent representatives to international vanilla trade fairs, such as the World Vanilla Business Congress, which covers technical, commercial, and marketing topics. VANEX also hosts and maintains a Web site, www.ugandavanilla.com.

From a low of 65 t in 2004, Uganda exported 277 t of cured vanilla in 2007 — this at a time when prices remain low, which farmers usually take to mean there is no market. Confidence is the key factor in the steady increase of vanilla production, which VANEX built up with farmers through intensive training. Between February 2005 and November 2007, VANEX conducted 1,088 training sessions, or 362 per year on average. The number of farmers reached by the end of 2007 was more than

WHEN ADDING VALUE THROUGH AN ASSOCIATION:

- Keep the focus on industry-level problems that cannot be solved by individual members
- Promote the association brand as a core mission
- Build capacity to uphold standards

A SUCCESS Adding Spice

Uganda Crop Industries Ltd. (UCIL), which owns an agricultural estate in Mukono District, is a major producer and processor of vanilla. It had worked with IDEA on vanilla extension for neighboring smallholders and was looking for other high-value spices that grow in shady, humid conditions. Cardamom, which has strong markets in South Asia and the Middle East, is easily grown in Uganda, and requires little processing before export.

UCIL and APEP partnered to show vanilla farmers how to intercrop cardamom. During three years, UCIL distributed some 300,000 seedlings to more than 3,000 farmers, and established nurseries in growing areas to propagate seedlings. Mansoor Nadir, managing director of UCIL, says, "Our business model depends on small farmers. Our long-term goal is to have them very diversified on their plots, with a marketing board and good extension system. APEP's help with vanilla and cardamom kick-started that whole evolution and brought our relationship with farmers to a new level."

36,000, of which 30 percent were women.

VANEX acted among farmers as a guarantor for Ugandan vanilla quality, continuously updating and sensitizing farmers about legal and market requirements. Farmers felt that there was a basis for sustainability through VANEX.

At the close of APEP, VANEX has scaled back to bare bones, hoping that the foundation it laid with respect to agronomic practices, production, processing, and marketing will be sustainable.

APEP'S APPROACH TO INPUT SUPPLY AND FARM CREDIT

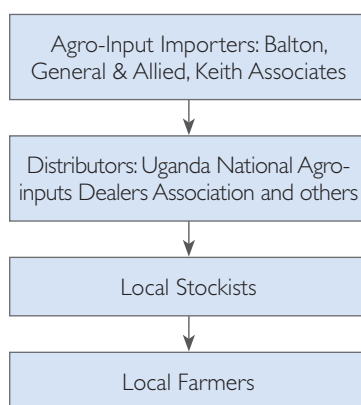
The Input Market. The agricultural input sector was liberalized in Uganda in the 1990s, along with the rest of the economy, but private-sector seed and other input companies did not rush in to take over for the government; the internal market was just too small, and start-up costs for new companies too high. USAID and other donors stepped in to help establish the input industry with grants to Ugandan seed companies and help with structuring this segment of the farm market. Distribution was the focus: getting the inputs to smallholder farmers through a network of

“ Remember that UNADA works in the context of a fully liberalized trading environment and a fully privatized banking sector. We have to build demand, expand markets, and create awareness of ways to access credit. APEP had the excellent idea of doing this through the depot committees, using them as input suppliers. The national mobilization meetings APEP sponsors are also going a long way to raise demand for inputs.”

**WILFRED THEMBO,
UNADA EXECUTIVE
SECRETARY**

rural stockists, whose quality, prices, and continued inventory were a function of membership in the newly formed Uganda National Agro-Inputs Dealers Association (UNADA).

FIGURE 6. STRUCTURE OF INPUT SUPPLY SECTOR

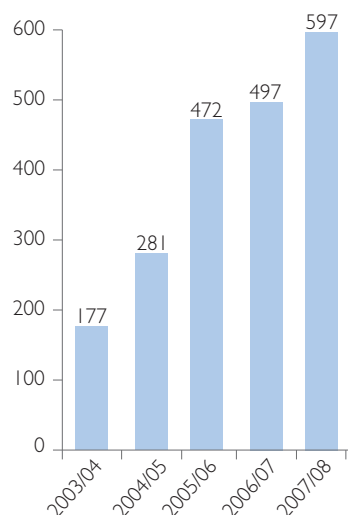


In the input supply chain, UNADA sits just below the major importers of inputs in Uganda. While the importers deal with major commercial farmers, smallholders are dependent on local retailers in towns and villages. This is the weakest link in the supply chain: those retailers cannot afford to keep much inventory, as they must pay cash for all their supplies. Moreover, they lack solid training in safe use of inputs and may not be able to match a particular product to a particular problem.

APEP — with its stress on productivity enhancements through agricultural inputs such as improved seed, fertilizer, and pesticides — strengthened the link between input suppliers and farmers, often through the rural stockist system pioneered by the IDEA project. The needs

of the farmers in the commodity subsectors drove the type of assistance on input supply: larger, better organized farmers were trained to source inputs in bulk through their depot committees, while others would do better going through their local lead firm (in the case of out-growers). Whatever the scenario, APEP made sure that those buying and handling inputs were trained in their safe use. This was especially important for stockists: APEP trained just under 600 stockists in seed technology, fertilizer application, and pesticide handling so they could better advise clients on what to use for which problem, and how.

FIGURE 7. RURAL INPUT STOCKISTS TRAINED AND LINKED TO SUPPLIERS



Farm Credit. The fact that inputs must be purchased in cash, whether the buyer is an individual stockist or a depot committee, is a major limiting factor in the industry. To alleviate this problem for UNADA stockists who had received training in credit

Business management training for producer organizations — especially depot committees — was critical to their success. Even at this beginning stage, agribusiness requires detailed record-keeping, aggressive pursuit of market information, and ability to comply with contract terms.



management, APEP arranged a credit guarantee program. Using a separate pool of money, APEP backed input retailers who paid importers 50 percent down on an order, and 50 percent within 60 days. Any default would be covered by APEP, with a commitment on the part of UNADA to try to recover the debt from its member. The default rate under this program has been in the single digits.

APEP also tackled the problem of price transparency by making market information available to UNADA members through a monthly newsletter, published in cooperation with the International Fertilizer Development Corporation. The newsletter's popularity was an indication of the demand for information, which was also apparent at joint UNADA-APEP mobilization meetings held around the

country to promote the safe use of inputs.

Commercial farmers in Uganda, as everywhere else, need access to credit to improve and expand their businesses, but Ugandan banks in general are not interested in agribusiness lending, especially on the microfinance level. They also charge prohibitively high interest rates and usually require land or buildings as collateral. By training bank staff and farmers, APEP has helped tone down the mutual suspicion with which they regard each other. One bank in particular, Centenary, had a long history of lending to farmers, including a large number of IDEA client farmers who subsequently defaulted on loans in connection with the crash of maize prices in 2001. Nevertheless, APEP approached Centenary with a proposal to train loan officers to assess and

differentiate the risks associated with various crops: which have the strongest markets, are less vulnerable to changes in weather, require fewer inputs, and so on. The training was welcomed, and APEP is now providing Centenary loan officers with commodity reference guides that detail crop agronomy, show the cropping calendar, and explain input requirements, market economics, and inherent financing risks.

APEP also works with farmers to make them “bankable”: they have to be able to make a profit after repaying both principal and interest, or they are simply borrowing to expand inefficiency from the bank’s point of view. APEP business and credit management training for farmers, as for loan officers, stresses the importance of productivity as a loan criterion, rather than simply the scale of farming. Whereas traditional loan criteria examine collateral ownership and management, now the concept of profitability is factored in: do both the bank and the farmer understand the costs of production, the cost of

money, and the margin of profit that can be expected? Farmers who are bankable look to APEP to be linked to interested loan officers in their areas, and APEP has been very successful in making that link.

When APEP started in 2004, there were six banking outlets engaged in agricultural credit; there are now 21 commercial credit outlets with combined portfolios of some \$2.6 million per season. These outlets lend on the production side, meaning they make loans to farmers to support their crop production. APEP has also been instrumental in trade finance, an area where banks are not yet active (six service points, providing credit to Upland Rice Millers and NASECO seeds, among others), as well as in agro-input credit (for seven seed companies) and agro-equipment leasing (one outlet providing credit to the Kapchorwa Commercial Farmers Association). The total number of outlets providing agricultural credit with support from APEP is now 35.



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Participant trainees under APEP numbered some 365,000, across the spectrum of agribusiness disciplines. Training was both formal and informal, including farmers working in their fields and post-graduate students sponsored to continue study at Makerere University in Kampala.

ADDRESSING POLICY, RESEARCH, AND TRAINING IN AGRICULTURAL DEVELOPMENT

For commercialization at the farm level to truly take hold, Uganda's policy, research, and training environments must also be market-oriented. To support these elements of the "enabling environment," APEP generated insights, accessed expertise, and facilitated links that were often instrumental in moving policies forward, and focusing research on critical market needs.

For example, APEP worked with Uganda's National Planning Authority and the Office of Vice President Bukenya on a national rice strategy as part of the "Prosperity for All" program. The strategy was launched in March 2008, and will benefit from the considerable work already accomplished with rice growers and processors through SAF agreements and farmer extension. As a corollary APEP, with help from DANIDA and the Uganda Commodity Exchange,

articulated quality standards to be implemented by the Uganda Rice Processors Association, an influential group of 11 large-scale millers and rice traders.

APEP provided technical assistance to the GOU to arrive at a framework for biotechnology and bio-safety policies, which received Cabinet approval in April 2008. The task now is to develop corresponding legislation and regulations.

APEP, working through Crop Life Uganda and UNADA, gave teeth to the 2006 Agricultural Chemical Control Act with regulations that call for licensing agro-input dealers and maintaining standards with respect to the place of business and the ability of dealers to advise farmers on safe use of agrochemicals.

APEP worked to secure Organization for Economic Coopera-

Matooke is a staple food crop grown on mass scale all across Uganda. APEP's work with the International Institute of Tropical Agriculture helped to ensure that trucks like the one pictured continue to move *matooke* from field to town.



tion and Development (OECD) accreditation for the Ugandan seed sector. Uganda-origin maize varieties, in particular, were planted at selected sites, and specific plant descriptors were developed to document these seed lines for export.

As was the case with policy support, research sponsored by APEP had to be linked directly to a critical need in a target commodity sector, often with participation of the industry (for appropriate flower varieties) and/or growers (to introduce hybrid banana and coffee plants that can resist disease). In the cotton sector, APEP sponsored research conducted by the Northern Uganda Organic Producers and Processors Association into “bio-rational” pesticides to treat organically grown cotton in Loro. The results will be used to obtain

registration of the best treatments in pest-control packages for the sector. In the rice sector, APEP partnered with the Africa 2000 Network to conduct production trials using simple pest management technology — mixing seed with wood ash — to control termite infestations.

APEP's strategy with regard to agricultural training was to design education and outreach programs that were farmer-driven and commercially oriented. One of APEP's main undertakings was the field attachment (internship) program administered jointly with Makerere University's Faculty of Agriculture. During the life of the project, APEP and Makerere University placed 236 undergraduate students with commercial cotton ginners, coffee processors, rice growers, flower exporters, the National

“ The Agricultural Chemical Control Act of 2006 addresses the very serious problem of fake pesticides and herbicides being sold to farmers. But the MAAIF had to draft corresponding regulations and statutes to govern our industry. The responsible technical committee in the MAAIF needed help. APEP stepped in, and soon the final statutes will go to the minister for approval. There are praises all over; the [agrochemical] commissioner is really happy. ”

FRED MUDUULI, CROP LIFE BOARD CHAIR

Agricultural Research Organization (NARO), crop and seed producers, and other high-value crop farm operations. The interns also received training from APEP in how to form farmer groups, conduct group training, manage demonstration plots, collect farm data, and continue farmer education through appropriate means, such as radio programs.

The field attachment program, evaluated in 2007, was found to be a useful adjunct to students' theoretical training. The most frequently cited practical value of the field attachments was concrete knowledge of the hardships faced by smallholder farmers. The students also appreciated the opportunities to make connections with potential employers and to show that they had something to offer commercial enterprises. The university has found the program to be so valuable that a field attachment is now necessary to graduate from the

Faculty of Agriculture; students are monitored by university staff during their assignments and graded on their contributions to their host firms or institutions.

APEP also sponsored post-graduate students (16 M.S. and 4 Ph.D. candidates) from Makerere University, NARO, and NAADS to continue their studies, some at U.S. universities. APEP sponsored a variety of short courses for working professionals — seed company personnel, extension staff, commodity specialists — all focused on strengthening market supply and demand. The total number of participants trained by APEP during the project totals just under 370,000. As part of its effort to make the training long-lasting, APEP developed “technology packages” for each of its target commodities, fully detailing the technology transfer and practices that were taught by the project.



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Good agronomic practices, like the weeding being performed here by APEP-supported upland rice growers, can dramatically improve farmers' productivity, and with it, their standard of living.

THE FUTURE OF AGRIBUSINESS VALUE CHAIN STRENGTHENING IN UGANDA

The APEP project represents an important phase in the evolution of Uganda's agriculture sector. Through the producer organization extension model, APEP showed how to reach entire commodity subsectors with effective and sustainable technology transfer. It showed how a USAID-funded technical assistance project can partner with lead firms and other market off-takers to strengthen profits and farm gate prices. And APEP clearly demonstrated that one size does not fit all when it comes to commodity value chains: each requires its own detailed analysis.

APEP has shown that there are parallel evolutions in farmer psychology and farm technology that occur under donor-funded value chain projects. Producer organizations were rooted in and dependent on their members' own vision of their future: home budget priorities, cost-benefit

calculations, and speed toward full commercialization are all under their control, not donor control. Farmers' investments of time and money in new technology keep pace with those factors; that is, satisfying basic needs for food, housing, clothing, education, health care, labor, and so on will influence whether farmers save and invest in high technology inputs, even when it is clear that their investment will be returned many times over.

Ugandan farmer psychology is also influenced by the lack of stable and transparent government support. Many remember village-level combat at the time of Idi Amin's and Obote II's downfall, and most have lived through successive and contradictory government approaches to organizing agricultural production. Few have benefited from the GOU's farm extension services, and even fewer understand how their

The Kamuli Farmers Supply Centre benefitted from APEP training to strengthen both knowledge about and availability of inputs to boost productivity for a variety of staple crops. Kamuli farmers increased their demand for inputs through APEP technology transfer training.

APEP / NANCY HEDIN



production relates to prices they receive at harvest. Many rushed to produce a crop that had a high price in a given season, only to experience a subsequent market crash; when price dynamics are opaque, mistrust and cynicism are the result. Even the commercially minded farmer feels alone and exposed, given the lack of supporting infrastructure such as national extension and agricultural research institutes (if there is a pest/disease problem), and rising operating costs with no help in sight in terms of roads, local taxation, and agricultural finance. The total farm system is absent.

Given that absence, APEP's cross-training in various disciplines across value chain players is especially instructive for future agribusiness projects. Because of the difficulty of scheduling consultancies, and the sequencing that goes into work planning,

donors often segment or "stove-pipe" their technical assistance, such that PO management is done in one quarter, finance training in another, and so on. APEP has helped to build a small cadre of "total farm" PO trainers who know enough about the agronomics of most key crops to provide extension as needed on a range of issues, including inputs and finance. Future technical assistance teams should work hand-in-hand with producer organization trainers and managers, site coordinators, and lead farmers to continue to build their crop knowledge and their access to and understanding of market information, and to help them organize for power in the market. That way, technology is transferred and human capacity to use it is built along parallel tracks, filling critical gaps in commodity value chain systems sustainably, no matter what the future brings.



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