Rapid Impact Evaluation

Fruiteq - Burkina Faso

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Root Capital is a nonprofit agricultural lender that grows rural prosperity in poor, environmentally vulnerable places in Africa and Latin America by lending capital, delivering financial training and strengthening market connections for small and growing agricultural businesses. As of the end of 2012, Root Capital had loaned $489 million to 429 businesses reaching 500,000 farm families, or a total of 2.6 million individuals.

Our impact and metrics program has two prongs: our portfolio-wide social and environmental due diligence, and detailed case studies with individual clients. Root Capital's loan officers use our Social and Environmental Scorecards to evaluate clients' social and environmental practices and their access to alternate sources of finance. The scorecards function as both a negative screen, filtering out undesirable practices, and a threshold test in which the loan officer must affirmatively identify how the client's business, and our support of that business, is expected to create positive impact. Our impact team synthesizes these ratings to categorize our portfolio of loans by type and depth of impact and to refine the client selection criteria moving forward.

In 2011, we began to supplement this portfolio-wide approach with deeper studies of selected clients to evaluate whether and how our client agricultural businesses support farmer livelihoods, to verify that we are truly reaching under-served businesses, and to inform our assumptions about what social and environmental practices truly create positive impacts. These case studies are primarily intended to estimate two levels of impact: the impact of our lending on clients, and the impacts of our clients on the incomes of the small-scale farmers whom our clients serve. We qualitatively describe other types of social and economic impacts on farmers. Finally, we situate these impacts within the broader context of the country and value chain, to illustrate how agricultural businesses, end-buyers of agricultural product and financiers like Root Capital work together to grow rural prosperity for small-scale farmers.

These studies both inform and serve as pilots for larger impact studies that we are conducting in 2013. Future studies will include more structured surveys of a larger number of farmers, and will cover additional issues such as gender inclusion and the environment.

This study was conducted by an independent researcher, Batamaka Somé, a Burkinabé anthropologist working at the University of Illinois at Urbana-Champaign and as a consultant with the Bill & Melinda Gates Foundation. Mr. Somé spent three weeks in October 2011 conducting qualitative research with Fruiteq staff, suppliers, competitors and other community members. For more information on the methodology and lessons to inform qualitative research design, see Appendices A and B.

Contents

Overview

Fruiteq is a private enterprise based in Burkina Faso that sources Fair Trade- and organic-certified mangoes from 830 small-scale farmers in Burkina Faso, Mali and Ivory Coast. It was founded in 2005 and became the first Burkinabé mango exporter to achieve EUREPGAP (now GlobalG.A.P.) certification, thereby enabling it to access premium prices from European supermarkets, as opposed to selling into the less lucrative wholesale market.

From 2005 through 2009, Fruiteq sold all of its mangoes to, and received all of its financing from, AgroFair, a Dutch importer and distributor of Fair Trade fruit. When AgroFair's market share of mangoes in Europe began to decline in 2009, the two organizations agreed that Fruiteq should seek relationships with additional importers and find an alternative source of financing. Fruiteq established contracts with several other Dutch buyers, but the buyers did not offer financing as AgroFair had. Consequently, Fruiteq found itself unable to fulfill its contracts with its new buyers because it lacked the cash to purchase sufficient volumes of mangoes.

After twice applying for and being denied loans from local banks, Fruiteq approached Root Capital, which provided an initial loan of $181,000 to Fruiteq in 2010. This loan helped the enterprise more than triple its mango purchases from farmers. Sales subsequently jumped from $437,000 in 2009 to $1.5 million in 2010. In 2011, Root Capital provided a second loan of $450,000 to finance Fruiteq's projected growth to $2.6 million in sales. This time, the outcome was different.

Political conflict in Ivory Coast in 2011 rendered Fruiteq's export route, the port of Abidjan, inaccessible from Burkina Faso. Fruiteq worked hard to find alternative shipping arrangements, which ultimately resulted in losses of nearly 45 percent of total volume. A coup d'état in Mali in 2012 exacerbated the problems from 2011.

Despite the difficult operating environment, Fruiteq has been able to offer a variety of social and economic benefits to its community. As the first mango organization in Burkina Faso to export into the lucrative European market, we estimate that Fruiteq is responsible for a **43 percent increase in income** for its 830 farmer suppliers. While volumes vary, we estimate that Fruiteq farmers on average earned a total of $865 for their entire mango production in 2012, which is $260 above what each would have earned selling exclusively to the local market. This extra income is significant considering that Burkina Faso's annual per capital Gross National Income (GNI) is less than $600.

Without Fruiteq, farmers' only option would be to sell their mangoes into the local market, which pays $0.04 per kilogram for the majority of mangoes and up to $0.06 per kilogram for the highest quality mangoes. Because of Fruiteq, farmers can sell their mangoes of varying qualities into the following three price-differentiated markets:

- An estimated 10 percent of farmers' mangoes are "export quality" and are sold through a local farmer's association, Union Paysanne de Producteurs de Fruits et Legumes de la Comoe (UPPFL) to Fruiteq for $0.19 per kilogram, or three times more than the local market price. The average farmer earned $275 from these export mangoes in 2012.
- 20 percent of the mangoes are considered medium quality and are sold through UPPFL to another Burkinabé company (Burkinature, also a Root Capital client) for $0.065 per kilogram. Fruiteq

indirectly facilitates access to this processed mango market because UPPFL's continued viability is so tied to Fruiteq. On average, Fruiteq's suppliers earned $190 for these mangoes in 2012.

- The remaining 70 percent of farmers' harvests are sold to the local market for $0.04 per kilogram, which contributed $400 to the average Fruiteq farmer's income in 2012.

Using the premiums from its sales of Fair Trade mangoes, Fruiteq paid for the following community projects:

- A house for the village midwife in Takaledougou, where the majority of Fruiteq's producers live. Previously she commuted 15 kilometers to get to the health clinic. Now that the midwife lives within the community, there have been fewer complications during childbirth, resulting in fewer infant and maternal fatalities.
- Potable water wells in the villages of Banfora and Takaledougou to bring drinking water to 3,000 villagers who previously drank river water as their main source. Prior to having access to the wells, women had to walk three to five kilometers to obtain potable water during the dry season.
- A small diesel engine for the village of Takaledougou that produces electricity to power food processing equipment such as grinding mills and vegetable or nut oil presses. This is a particularly useful time- and energy-saving device for women who otherwise do this work manually.
- An ambulance, available to 50,000 people in Banfora and the surrounding communities. The ambulance enables sick and injured people in the community to be transported to health centers in Bobo-Dioulasso and Ouagadougou to get higher quality medical care than is available in Banfora.
- A pharmacy in Takaledougou to cut down on the use of counterfeit drugs and improved patient care in the village.

Residents of Takaledougou fill their water cans at the pumps built with the social premium from Fruiteq's Fair Trade mangoes

While Root Capital began financing fresh fruits and vegetables in 2008, this is the first case study we have conducted in the sector and it provides practical lessons on the appropriate loan structure and risks particular to the fresh fruits and vegetables value chain.

- Perishable products such as fresh fruits and vegetables present greater financing risks than coffee and other non-perishable value chains that Root Capital has traditionally financed. Mangoes can become damaged at every point in the value chain from pest infestation, poor transport conditions (e.g., poor ventilation, temperature control, bumpy roads) and delays in shipments. Working with partners in the value chain who are trustworthy and have a proven track record of high standards can mitigate these risks.

- Regions such as West Africa, where civil conflicts are common, present challenges even to well-run companies like Fruiteq. Despite the difficulties Fruiteq encountered during the 2011 and 2012 export seasons, the business approached a solution to the crises as a collaborative effort with its buyers and with Root Capital and has set realistic targets and payment schedules based on conservative assumptions. This reaction highlights the added importance of screening entrepreneurs and their management teams for qualities such as honesty and transparency when lending in risky geographies.
- Farmer loyalty is particularly important to "extreme SME"[1] agricultural businesses working in volatile contexts such as the West African mango value chain. When Fruiteq's only export port closed in 2011 and it took on higher transportation costs, farmers voted to charge Fruiteq a lower price for their mangoes than they had previously negotiated. This helped Fruiteq mitigate the economic damage it sustained, and demonstrated farmers' loyalty to the organization and belief in its capacity to provide benefits in the long term.
- The loyalty stems from the clear value farmers derive from working with Fruiteq. While the main impact of Fruiteq is the price premium it pays to farmers for their high quality mangoes, farmers understand that its very existence gives them access to stable markets, further increasing their income. While Fruiteq's struggles continue, farmers perceive it as an anchor institution in the community that provides clear economic benefit, valuable social services and stability in an environment of extreme political and economic risk.

[1] The term "extreme SME" was coined by the Monitor Group in their 2012 report, "Promise and Progress: Market Based Solutions to Poverty in Africa" to describe African small or medium enterprises that work in extremely difficult operating environments. Extreme SMEs face the standard challenges of operating in Africa (e.g., difficulty accessing finance, attracting and retaining staff, and achieving economies of scale) plus a second set of challenges in working with a supplier or customer base with severely limited resources, that is hard to reach, and about which too little is known. They typically operate with low and volatile margins.

Context: Mangoes in Burkina Faso

Landlocked in West Africa, Burkina Faso is among the poorest countries in the one of the world's poorest regions, ranking 181 out of 187 on the 2011 Human Development Index. Per capita gross national income in 2011 was estimated at US$570,[2] compared with US$1,255 for sub-Saharan Africa overall. The majority of Burkinabé people do not have a formal education and the national literacy rate is 26 percent,[3] with significantly lower levels in rural areas.

Agriculture plays an important role in Burkina Faso's economy, and therefore offers a particularly promising opportunity for economic development. The agriculture sector represents 34 percent of Burkina Faso's GDP and employs 78 percent of the workforce, but only receives 12 percent of commercial lending in the country. Cotton is the dominant cash crop, with peanuts, shea nuts and sesame also major contributors to exports. Mango is a favorite fruit commonly consumed within the country, but because mangoes are fragile and therefore difficult to transport, mango has not traditionally been a major export crop.

Mango seedlings grow at a farm in Takaledougou. The highest quality mangoes that these trees ultimately yield will be sold to Fruiteq for the European export market.

More mangoes are consumed globally than any other tropical fruit after the banana. Global mango production has doubled since 1980 to approximately 35 million metric tons in 2009. The majority of mangoes are produced in Asia (77 percent), followed by Latin America (13 percent) and Africa (10

2 World Bank Atlas method.

3 2009 estimate, U.S. State Department.

percent).[4] Rising consumer appetite for mangoes, particularly in Europe, has boosted demand for exported mango from countries throughout the developing world. From 2001 to 2010, global mango exports increased 54 percent in volume (from 715,000 to 1.1 million metric tons) and more than five times in value (US$96 million to US$490 million).

Annual mango production in Burkina Faso is estimated at 160,000 metric tons.[5] Despite rapid growth in mango exports (Burkina mango exports increased 15-fold[6] between 2001 and 2010), only two percent of the country's mangoes reach the lucrative export markets.

There are approximately 160 varieties of mango in the world, eleven of which are produced in Burkina Faso. Of those, only three (Kent, Keitt and Amelie) meet the taste and aesthetic demands of European and U.S. markets. The remaining varieties are consumed by producers, sold into the local market or simply left on the tree. In the vernacular of the Burkinabé mango farmers and buyers, there is a clear distinction between "carton mango" (the lowest quality mango), "crate mango" (medium quality) and "export mango" (highest quality), and these differences are reflected in the prices paid to farmers for each class (see Table 1).

Table 1: Burkina Faso mango prices by quality and market

Buyers	Type	Price to producers	Quality
Merchants ("Jula") for local consumption	"Carton mango"	US$0.04 per kg.	Low, non-exportable
Processors for juice or dried mango	"Crate mango"	US$0.065 per kg.	Medium, not exportable as fresh fruit; exportable if processed
Exporters	"Export mango"	US$0.19 per kg.	High, exportable

The mango value chain that has evolved in Burkina Faso over the last decade is complex and precise, with each link in the chain performing a highly specialized function. Only 20 to 30 percent of all mangoes are considered to be of export quality.[7] Thus, harvesting them at just the right time, avoiding pests both pre- and post-harvest and keeping them cool and bruise-free throughout their long journey to Europe are essential elements of a successful mango export chain.

4 UNCTAD INFOCOMM

5 COLEACP Information Letter No. 5, May 2010.

6 From 200 to 3,300 metric tons.

7 Damene, page 168.

Fruiteq History

Fruiteq is a private enterprise based in Burkina Faso that exports Fair Trade- and organic-certified mangoes from Burkina Faso, Mali and Ivory Coast. It is one of two Fair Trade and organic mango exporters in Burkina Faso (the other is also a Root Capital client, Burkinature, which exports dried and processed mangoes).

Fruiteq was founded in 2005 by AgroFair, a Dutch importer and distributor of Fair Trade fruit to Europe, and West Africa Fair Fruit (WAFF), an organization based in Ghana that assists producers and exporters. Fruiteq was created when a union of producers that intended to aggregate and export smallholder farmers' mangoes through AgroFair was unable to fulfill its mission. The union's losses and poor quality control threatened AgroFair's mango supply. To increase the stability of its supply chain, AgroFair financed and helped launch Fruiteq as a private company. Fruiteq was the first Burkinabé mango exporter to achieve EUREPGAP (now GlobalG.A.P.) certification, which assures good agricultural practices including traceability, soil management, pest management and responsible water use. In 2003, EUREPGAP certification became a requirement for any fresh produce to be sold in European supermarkets.

In 2009, Fruiteq joined with Technical Assistance for Sustainable Trade & Environment (TASTE, a Dutch NGO) and a Dutch individual (the former general manager of Fruiteq) to create a new entity, SBA Fruiteq. SBA Fruiteq is registered as a Dutch foundation. Zongo Adama, the charismatic general manager, is an agronomist by training with more than ten years of experience in the fruit export business. Mr. Adama is the face of Fruiteq, responsible for marketing, packaging, and exporting as well as overall management of the company. Fruiteq's production manager, Traore Oscar, is responsible for working with Fruiteq's producers and managing the packing process. He has 15 years of experience in the fresh fruit export business, including purchasing fruit from farmers and overseeing fruit ripening facilities. The third member of the management team, Koando Aïssata, is responsible for all of the administrative and finance functions of the business.

During the first five years of operations, Fruiteq marketed all of its produce and received all of its financing through AgroFair. But when AgroFair's market for Fair Trade mangoes began to decline in 2009, Fruiteq found itself with a surplus of high-quality mangoes that it ultimately had to dump onto wholesale markets at drastically reduced prices. In response, AgroFair and Fruiteq mutually agreed that Fruiteq should seek relationships with additional European importers. Since then, Fruiteq has successfully developed contracts with three large Dutch importers, Eosta, Solfruit and Nature's Pride.

AgroFair could no longer provide financing and Fruiteq's cash flow could not keep up with demand for its mangoes. By 2009, Fruiteq received more orders from buyers than it could fill. Together, Fruiteq and Eosta successfully applied for a trade credit loan of $300,000 from Root Capital in early 2010.

Root Capital's initial infusion of working capital contributed to Fruiteq earning a profit for the first time from its mango sales in 2010. It helped Fruiteq more than quadruple the number of containers it exported from 19 in 2009 to 88 in 2010, increase its sales by 235 percent (from $437,000 in 2009 to $1.46 million in 2010) and increase its purchases from producers by 340 percent (from $192,000 to $848,000). This jump in revenue allowed Fruiteq to bring an additional 82 farmers into its supply chain (790 suppliers in 2009 to 872 in 2010). In March 2011, Root Capital provided Fruiteq a second loan of

$450,000. At the time, 2011 sales were projected to be $2.6 million. As Table 2 summarizes, actual revenues turned out to be less than 20 percent of that amount.

Table 2: Fruiteq performance indicators, 2009 - 2011

	2009	2010	2011
Number of producers	790	872	832
Revenue	$437K	$1.5M	$476K
Payments to producers	$192K	$848K	$261K

Despite the strong performance of 2010, Fruiteq faced significant challenges in 2011 and 2012 that are symptomatic of a business dealing with a perishable product in a politically unstable setting. Political upheaval in neighboring Ivory Coast caused a closure of the border between the two countries in 2011, blocking Fruiteq's access to the Ivorian port of Abidjan via trains equipped with cold storage. Many exports from landlocked Burkina Faso halted, and Fruiteq chose to transport mangoes by truck to the ports of Tema in Ghana and Dakar in Senegal.

The resulting shipments using these alternate trade routes were disastrous for Fruiteq: high temperatures, long transit times and poor ventilation in the containers led to over-ripe mangoes and fruit fly infestations. Twenty-eight of 63 containers exported in the 2011 harvest were destroyed or sold at very low prices. Other shipments were canceled by the logistics companies, building up a backlog of mangoes that Fruiteq's facilities could not accommodate, resulting in further losses.

When the border reopened in 2011 allowing Fruiteq to ship through Abidjan, Fruiteq's prospects for the 2012 season looked promising. However, the unexpected March 2012 military coup in Mali threatened Fruiteq's production yet again. Fruiteq established a packing house in Mali in 2011 that can prepare 1,000 metric tons of conventional mangoes per year for export to Nature's Pride. At the time of writing, Fruiteq is unable to access it because of the ongoing political instability. Without access to the packing house in Mali, Fruiteq's only alternative is to use its Burkina Faso facilities, which can only accommodate 50 percent of the necessary volume.

Despite these major complications, Fruiteq communicates regularly and realistically with Root Capital, its importers and its producers. There is a clear understanding that despite the extenuating circumstances, Fruiteq is committed to paying its debts and fulfilling its contracts.

Figure 1: Map of Burkina Faso

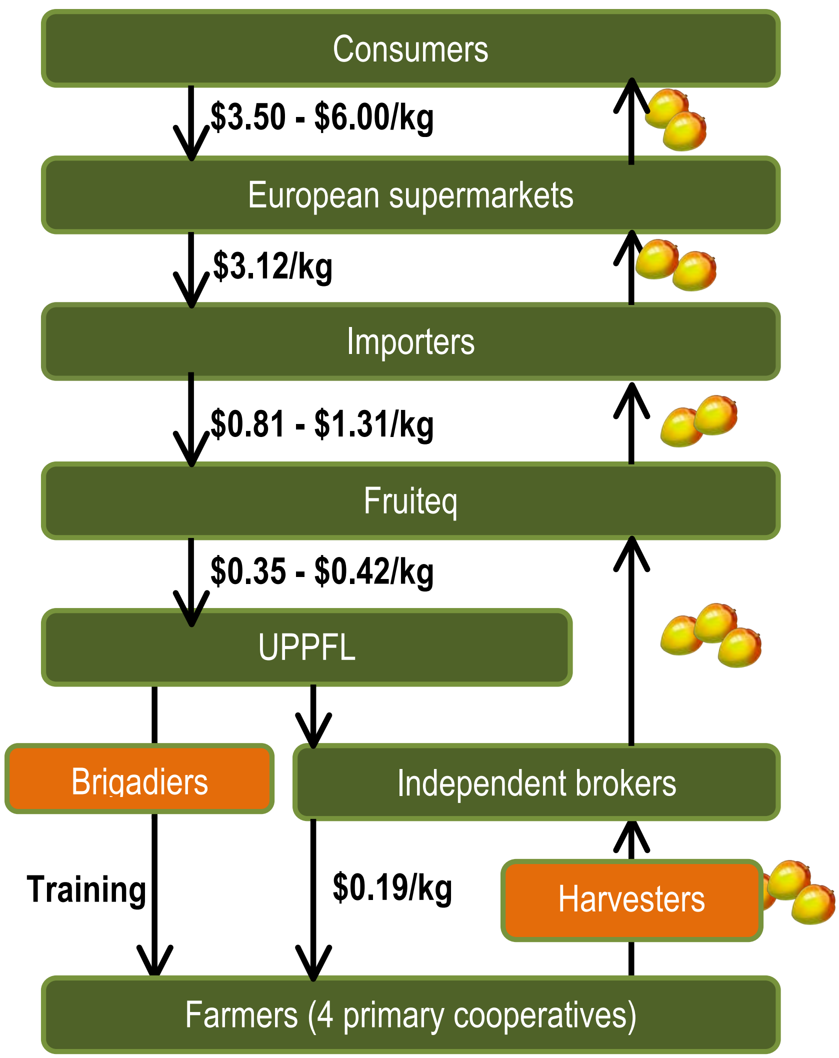
Fruiteq's Value Chain

Fruiteq is based in Bobo-Dioulasso and sources its mangoes from more than 800 smallholder producers belonging to three producer organizations in three countries:

- UPPFL in Burkina Faso provides 30 percent of Fruiteq's export volume
- CDFL of Ferkessedougou in Ivory Coast provides 25 percent of Fruiteq's exports
- Union of Yanfolila (UPSCY) in Mali provides 45 percent of Fruiteq's exports

Fruiteq's mango value chain in Burkina Faso, the focus of this report, comprises the institutional and individual players depicted in Figure 2.

Figure 2: Fruiteq's Value Chain in Burkina Faso



The process of getting a mango from a Burkinabé farmer's tree to the shelf of a European supermarket requires that all players successfully fulfill their roles, described here:

Importers

Fruiteq sells its mangoes to four institutional buyers, all of which are Dutch fruit importers that distribute to supermarkets throughout Europe, such as the British chain Marks & Spencer, and the Swiss chain Coop. Importers AgroFair and Eosta specialize in Fair Trade and organic mangoes, while Solfruit and Nature's Pride deal mainly in conventional mangoes. Fruiteq sells its mangoes to its buyers for between $0.81 and $1.31 per kilogram. Its costs include processing and transportation costs as well as the cost of incurring mango losses at various points.

UPPFL

UPPFL is a second-level farmers' cooperative located in the village of Takaledougou, southwest of Bobo-Dioulasso. UPPFL aggregates mangoes, cashews and vegetables from four primary-level cooperatives: ACFP, Benkadi, Sababuyauma and Tensyia. The primary-level cooperatives are located in Takaledougou, with the exception of ACFP, which is located in the larger town of Banfora. UPPFL's role in the value chain is to support the production and harvesting of the mango crop, aggregate the mangoes supplied by the primary-level cooperatives, sort and grade them, and sell them to the local market, processors and exporters, depending upon quality.

Fruiteq purchases export-quality mangoes, representing roughly 10 percent of UPPFL's total supply. In addition to purchasing mangoes, Fruiteq pays a service fee to UPPFL, which helps cover the union's operating costs and enables it to purchase assets. For example, UPPFL purchased processing equipment with the revenues from the fee, which has allowed it to provide a market for medium-quality mangoes to its members. Fruiteq frequently provides pre-financing to UPPFL, some of which is then on-lent to farmers to fill the gap between the harvest and final payments. Prior to partnering with Fruiteq, UPPFL sold mangoes only to the local market. The higher quality mangoes were sold to homes and restaurants and the lowest quality mangoes were sold as animal feed.

Brigadiers

UPPFL trains farmers using a team of four "brigadiers," seasonal employees who oversee production and train producers in applying organic pesticides, tree pruning and management skills. These agricultural technicians, generally the children of cooperative members or young members themselves, travel from farm to farm to assess the expected yield and to suggest farming techniques. They are instrumental in combating the pervasive fruit fly, which can decimate an otherwise good harvest and is one of the main concerns of the mango farmers interviewed for this study.

Brokers

UPPFL hires brokers who are independent microentrepreneurs specializing in export-mango picking and in farm-to-warehouse transportation. The brokers manage teams of seasonal mango harvesters, collect the fruit, pay the harvesters and the farmers and transport the mangoes to Fruiteq's warehouse. Fruiteq often provides brokers an advance payment to cover the collection costs, which brokers repay upon delivery of the mangoes. The brokers do not work exclusively with Fruiteq; they supply other exporters and local merchants in the area opportunistically. Regardless, there is a high level of trust ("lanaya" in the local language), between Fruiteq and its brokers, and the brokers are effective at providing the volumes of high quality mangoes that Fruiteq demands. Because they take on the price risk of the mango the moment they purchase it from the farmer, brokers must be accurate judges of mango quality so they can sell them into the appropriate markets. If Fruiteq or another exporter rejects a mango for poor quality, the broker must find another market, which will likely yield a significantly lower price.

Harvesters

At harvest time, UPPFL hires mango harvesters to pick mangoes at the producers' farms. These workers are an important link in the chain because harvesting requires specialized knowledge of handling and mango quality profiles. Successful harvesters are selective in identifying only pest-free export-quality mangoes. In our interviews, farmers criticized harvesters for being excessively strict in terms of quality when picking for Fruiteq. Harvesters are paid a flat rate equivalent to $5.55 per day, which compares favorably to other sources of rural income.

Farmers

Farmers, organized into four primary-level cooperatives, plant the mango trees and maintain them by weeding, controlling pests and applying compost. Mango farmers tend to grow a variety of other crops because mango trees are not particularly labor-intensive to maintain, and because they are susceptible to pests and other damage and are therefore relatively risky. Other crops grown include staple crops like sorghum and maize, and cash crops such as cashews, oranges, peanuts, and cotton.

Social and Economic Impact

Root Capital's impact on Fruiteq

During its first five years of operations, Fruiteq received all of its financing from its sole buyer, AgroFair. When AgroFair encountered difficulties in 2009, Fruiteq approached Root Capital, which provided Fruiteq an initial loan of $181,000 in 2010. Root Capital was Fruiteq's first source of external financing. It had applied for a bank loan twice in the past and was denied both times.

Fruiteq uses Root Capital's loans to pay UPPFL in advance of receiving mangoes, which gives the cooperative sufficient cash to purchase mangoes from its farmer members at a competitive price. Each week, Fruiteq pre-pays UPPFL the value of the expected harvest for the following week. This improves the social impact of the business because the farmers earn higher income earlier than would otherwise be possible. Furthermore, side-selling is minimized as farmers are committed to selling their mangoes to Fruiteq as part of their financing arrangement.

Root Capital's first loan in early 2010 contributed to Fruiteq earning a profit for the first time from its mango sales. It helped Fruiteq increase the number of containers it exported from 19 in 2009 to 88, its sales by 235 percent, its purchases from producers by 340 percent and its farmer suppliers by 10 percent from 2009 to 2010.

Despite this strong performance, this study uncovered areas in which Root Capital could improve. During the 2010-2011 harvest, Fruiteq received a late loan disbursement because of Root Capital's delay in completing the necessary paperwork. As a result, Fruiteq had problems fulfilling contracts and paying its farmer suppliers on time. While the problems were ultimately resolved, the experience underscores the importance of timely loans for both agricultural businesses and the farmer households with which they work.

Fruiteq and UPPFL's Impact on Farmers

Farmers report that Fruiteq offers a higher price for mangoes than they previously received. Prior to Fruiteq's existence, the premium export market was inaccessible. Most mangoes were sold for US$0.04 per kilogram into the local market, with the highest quality mangoes fetching a price of $0.06 per kilogram.

We estimate that farmers earn a 43 percent income premium above the local market because of the existence of Fruiteq. While volumes vary, we estimate that **the average Fruiteq farmer earned a total of $865 for their entire mango production** in 2012. If Fruiteq did not exist and the entire harvest went to the local market, average farmer income would drop to $605 for the same volume. This **$260 price differential** is significant, particularly considering Burkina Faso's annual per capita GNI of less than $600. We calculate this price premium based on farmers' sales of different quality mangoes into three markets:

- Export mango: Fruiteq offers $0.19 per kilogram of mango, a price which is three times the local market price, for the roughly 10 percent of mangoes it accepts as export quality. Assuming farmers sold 10 percent of their total harvest as export mango in 2012, the average farmer earned **$275** in income by selling to Fruiteq.

- Crate mango: By investing in a dry-processing plant, UPPFL enables its farmers to access the dried mango market, another segment of the higher-value export market. As imperfections are not an issue for dried and processed fruit, farmers can sell medium-quality mangoes rejected by Fruiteq to Burkinature, which in turn exports the dried fruit as Fair Trade and organic. Because Fruiteq is instrumental to the solvency of UPPFL, Fruiteq is considered to be indirectly responsible for the additional price premium farmers earn selling their mangoes to Burkinature. Moreover, Burkinature is also a client of Root Capital. Farmers are paid $0.065 per kilogram for this medium quality, or "crate mango." Assuming farmers sold 20 percent of their total harvest to Burkinature in 2012, they earned **$190** in income beyond the $275 they earned by selling to Fruiteq.
- Carton mango: Finally, we estimate that on average, farmers sold the remaining 70 percent of their 2012 harvest to the local market at $0.04 per kilogram, thereby earning **$400** in income from this channel.

As one Takaledougou farmer explains, "In the past, nobody invested their hope in mango as a serious source of income. Now we have expectations, which are mostly met, thanks to Fruiteq."

Perhaps the farmer included the caveat that expectations are "mostly met" by Fruiteq because of the extremely high standards of the export market, the only market that Fruiteq offers, and therefore the high number of mangoes rejected at the farm level. One farmer explained, "What I care about is my money. Be it Fruiteq or another buyer, they're all the same. They only select a limited amount of the production and leave the rest to the jula [merchants] who offer unacceptably low prices."

Despite some complaints, the majority of farmers in our interviews report that Fruiteq offers fair prices that are higher than the prices offered by other buyers.

A Fruiteq supplier tends to his mango trees. Fruiteq enables farmers to earn an average of 43% higher income from their mangoes than previously.

Livelihood Impacts

Mango farmers use their earnings to finance a variety of household activities. Some invest in a microenterprise or purchase items, like motorcycles or plow oxen and carts, to increase their earning power. Others use their earnings to satisfy basic family needs, such buying food, paying for healthcare or building a brick home. Still others pay for children's educational expenses, which speaks to the intergenerational investments made possible by higher incomes. Education is considered especially important in the mango farming community. Farmers send their children to school so that they do not have to turn to farming, which is considered a profession of relatively low status.

Beyond price, the farmers we interviewed are concerned with diminishing mango yields caused by fruit flies. The fruit fly, Bactrocera invadens, that devastates Burkina Faso's mango orchards was first identified in West Africa in 2004, after appearing in East Africa the previous year. Studies estimate that it has caused losses of between 50 to 85 percent of total mango production in West Africa.[8] Because the eggs are laid under the mango skin, they are difficult to detect without experience and training. If the infected mangoes are not properly disposed of, the infestation will move to newer mangoes, either healthy ones growing on the trees, or export-quality mangoes traveling on the same pallet. Destroying and segregating infected mangoes as early as possible in the production cycle is critical, as it is a wasted expense to harvest, process, pack and ship mangoes that ultimately will be rejected.

Through its team of four brigadiers who train groups of 25 farmers as local trainers, UPPFL offers agronomic assistance to help farmers manage the fruit fly. The training focuses on methods to quarantine infected fruit and apply organic insecticides. One farmer interviewed in our study explained, "I used to think that the mango worms derived from God's punishment. It's only recently that I knew that the fruit fly is the destructive agent. Thanks to the training received, I now gather and bury all fallen and rotten mangoes in order to avoid spreading the mango disease."

Fruiteq's Impact on the Community

Using the Fair Trade premium earned from mango sales, Fruiteq sponsors several community projects aimed at improving health as well as improving the daily lives of villagers, particularly women, by providing access to time-saving services.

Fruiteq used its Fair Trade social premium to build a house for the village midwife in Takaledougou.

[8] STDF Briefing, January 2010 and UNCTAD Infocomm Commodity Profile: Mango.

To improve maternal and newborn health, Fruiteq built a home for the village midwife in Takaledougou. While she previously had to travel 15 kilometers to the health center, her new proximity has resulted in fewer infant deaths and fewer mothers in need of urgent care. Fruiteq also purchased an ambulance, available to 50,000 people, for Banfora and the surrounding communities. The ambulance enables sick and injured people in the community to be transported to health centers in Bobo-Dioulasso and Ouagadougou to get higher quality medical care than is available in Banfora. It also used its Fair Trade premium to sponsor a pharmacy in Takaledougou, which has cut down on the use of counterfeit drugs and has consequently improved patient care in the village.

An ambulance, bought with the social premium from Fruiteq's mangoes, brings improved emergency care to residents of Banfora and the surrounding towns.

Fruiteq has developed two projects that save time for women in the villages of Banfora and Takaledougou. By building potable water wells in Banfora and Takaledougou, it brought drinking water to 3,000 villagers who previously only had access to nearby river water, or had to walk up to five kilometers during the dry season to fetch potable water. Fruiteq also installed a small diesel engine that produces electricity to power food processing equipment such as grinding mills and vegetable or nut oil presses, battery chargers and welding and carpentry equipment in Takaledougou. This community power supply has a particularly significant impact on women in the village, as it saves them time in processing food, one of their most time-consuming household responsibilities.

While many farmers benefit from these projects, some benefit more than others. The majority of farmers live in and around the village of Takaledougou and, as UPPFL's farmer members vote democratically on how to invest the social premiums, community investments have been concentrated in Takaledougou. Farmers supplying to Fruiteq who live outside of Takaledougou experience a feeling of inequity that may reduce their loyalty to Fruiteq.

The Importance of Loyalty to Fruiteq

After the closure of the border between Burkina Faso and Ivory Coast in 2011, Fruiteq lost access to the port of Abidjan, the only existing outlet for its mangoes. Fruiteq had a decision to make: either skip the 2011 export season, wreaking havoc on farmers' livelihoods and jeopardizing its own reputation and trustworthiness with both farmers and buyers, or find an alternative means to ship the mangoes.

Fruiteq chose to transport the mangoes by truck to ports in Ghana and Senegal, a long, expensive and risky journey from Fruiteq's headquarters. At significant cost, Fruiteq searched across West Africa for trucks with cold storage for the journey, ultimately finding a transporter in Morocco. Fruiteq's farmer suppliers responded to Fruiteq's commitment to keep the business going by unanimously voting at their general assembly meeting to reduce the payments from Fruiteq that year by more than ten percent of the initially agreed-upon price.

Fruiteq's production manager at the time recalls learning that the farmers made the decision to reduce their payments in support of the company's efforts to overcome the crisis. "This unfortunate crisis did cost our company a lot, but it made us stronger," he said.

This reaction to the crisis speaks to the long-term value farmers perceive in their relationship with Fruiteq. They understand that despite their own economic hardships, accepting a lower price will enable Fruiteq to survive, which will ensure they have a reliable outlet from their export quality-mangoes in the long term.

Conclusion

Fruiteq, like all of the agricultural businesses in Root Capital's portfolio, confronts challenges related to weather, price fluctuations, difficult economic environments, farmer side-selling and logistics in their daily operations. Beyond these standard challenges, in the past two years, Fruiteq's only export route was closed because of a civil war in one country, its largest processing plant and storage facility became inaccessible due to a coup d'état in another country, and nearly 50 percent of its annual production was ruined because of a national transportation failure. Such extraordinary challenges are all too common to "extreme SMEs," which strive to overcome the challenges presented in their volatile and unsupportive operating environments.

Part of Fruiteq's ability to survive such crises can be attributed to the support it has earned from its farmer suppliers. This loyalty stems from the clear value farmers derive from working with Fruiteq. While the main impact of Fruiteq is the price premium it pays to farmers for their high quality mangoes, farmers understand that its very existence gives them access to agronomic training, which improves their yields, and to stable markets, which further increases their income. Furthermore, institutions like Root Capital are key to the survival of extreme SMEs, as difficulty accessing finance is a main barrier to growth and stability.

While Fruiteq's struggles continue, farmers perceive it to be an anchor institution in the community, one that provides clear economic benefit, valuable social services and stability in an environment of extreme political and economic risk. It offers important lessons to other agricultural businesses and to lenders such as Root Capital about the importance of transparent and upfront communication during crises, while maintaining a strong commitment to its social mission to improve the livelihoods of its farmer suppliers.

Appendix A: Methodology

In October 2011, Root Capital contracted Dr. Batamaka Somé, a Burkinabé anthropologist working at the University of Illinois at Urbana-Champaign, to conduct an ethnographic study at Fruiteq. Dr. Somé's unique qualifications for this work included his proficiency in several local languages, Ph.D. training conducting qualitative research with farmers in Burkina Faso, and a relentless desire to understand impact beyond first impressions. Dr. Somé conducted the following activities in October 2011:

- Reviewed documents provided by Fruiteq and Root Capital.
- Developed interview guides and other tools to collect primary data.
- Conducted qualitative interviews with the following groups of individuals over three weeks in the communities of Bobo-Dioulasso, Banfora, Takaledougou, Jommon, Takale-kòrò and Tumusseni:
    - 5 members of Fruiteq's management team and full-time staff
    - 14 Fruiteq farmer suppliers
    - 7 farmers who do not supply to Fruiteq
    - 7 seasonal employees
    - 2 mango brokers
    - Several community members not directly affiliated with Fruiteq
    - The executive board of the Burkina National Mango Producers' Union

Appendix B: Lessons to Inform Qualitative Research Design

Conducting qualitative case study research with Fruiteq helps us learn about what does and does not work in impact evaluation. Much of this learning comes from surprising or unexpected reactions of client managers and farmers. A few such reactions from the Fruiteq research include:

> *"One of the survey enumerators was asked by an old man: 'Son, who sent you? Is it the government or a development project?' When the enumerator inquired into the difference the old man said, laughing, 'If it is the government we know what to tell you and if it is a development project we also know what answer to give.'"*
>
> *–Batamaka Somé, October 2011*
>
> *"A woman thought we were doing a survey to bring assistance to the village poor. When asked if she owns a cell phone, she answered 'no,' but her 6 or 7-year-old son challenged her answer by saying 'Mom, what about your cell phone in your handbag?' She cursed the child and put him on time out."*
>
> *–Batamaka Somé, October 2011*
>
> *"Here you come to ask us the same silly questions that you go sell to aid sponsors. Now when the aid comes you keep it for yourself. I don't want to answer any question. Go take the answers for the ones we provided last year…You're all crooks of the same family. You'll ask me my name, my family size, the kind of goods I have, and so on and so on. I am tired of all this and I am not answering a question, nor will anyone else in this family."*
>
> *–Mango Farmer, October 2011*

Sometimes humorous, sometimes searing, anecdotes such as these caution us to be thoughtful and respectful as outside researchers seeking to understand local realities. They remind us of the importance of approaching farmers and our clients not as "objects of research," but as fellow human beings that bring their past experiences, perspectives and goals to the research interaction. Even something as seemingly objective as mobile-phone ownership suggests a certain level of personal wealth, which may introduce a bias if interviewees want to appear more or less well-off. The many biases inherent to social research can dramatically influence the research findings.

As Dr. Somé wrote, "The understanding of many local people, whom it would be fair to call 'development brokers,' is that development has become a business for which only the 'big shots' of development project management win. Anytime they see a researcher, they understand (rightly or wrongly) that the surveyor is a messenger of development. Thus, they provide the answers that can best market and sell their poverty and attract development perks for themselves or their village."

Root Capital is in the early stages of experimenting with approaches to impact evaluation that do not conform to these perceptions of the "development business." There are no one-size-fits-all solutions, but our guiding principle is to design impact evaluations that primarily serve as a business need for our clients while generating useful and accurate impact information.

References

Damene, Belew et al. 2008. "Fostering Chain Partnerships" from Trading Up: Building cooperation between farmers and traders in Africa. Royal Tropical Institute, Amsterdam; and International Institute of Rural Reconstruction, Nairobi.

Ekesi, Sunday. 2010. Combating Fruit Flies in Eastern and Southern Africa (COFESA): Elements of a Strategy and Action Plan for a Regional Cooperation Program. The World Bank and International Center of Insect Physiology and Ecology, Nairobi.

Food and Agriculture Organization of the United Nations. 2012, FAO Stat, faostat.fao.org/site/567/DesktopDefault.aspx?PageID=567#ancor, Rome.

Monitor Group, 2012. Promise and Progress: Market Based Solutions to Poverty in Africa.

Somé, Batamaka. 2012. Report on Root Capital Intervention Impact in Burkina Faso. Root Capital. Not published.

The World Bank. 2012. Burkina Faso Country Brief, http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/BURKINAFASOEXTN/0,,menuPK:343886~pagePK:141132~piPK:141107~theSitePK:343876,00.html, Washington, D.C.

UNCTAD. www.unctad.info/en/Infocomm/AACP-Products/COMMODITY-PROFILE---Mango/

U.S. Department of State. 2012. Bureau of African Affairs Fact Sheet, "U.S. Relations with Burkina Faso. www.state.gov/r/pa/ei/bgn/2834.htm, Washington, D.C.

van der Waal, J.W.H. and Adama Zongo. 2011. Developing a Fresh Mango Value Chain with West-African Smallholder Mango Farmers. Proceedings from III International Symposium on improving the performance of supply chains in the transitional economies, International Society for Horticultural Science (ISHS), Leuven.