



## ***Microcredit and Crop Agriculture: New Technologies and Other Innovations to Address Food Insecurity Among the Poor***

In the morning of Wednesday, April 8, **Shadreck Mapfumo**, Vice President, MicroEnsure, South Africa, chaired the workshop on “Microcredit and Crop Agriculture: New Technologies and Other Innovations to Address Food Insecurity Among the Poor.” In addition to Mapfumo, this workshop featured three highly regarded regional practitioners in agriculture, business development and finance, **John Kihia**, Country Director for KickStart International in Kenya; **Helen Kithinji**, General Manager of Faulu Kenya and **Michael Njuguna**, Director of Finance and Business Development for the Africa Harvest Biotech Foundation International in Kenya. This panel discussion provided the audience with a comprehensive overview of some of the most innovative programs that are currently in place to address the needs of small farmers in Africa, helping them scale up their yields and secure the best prices for their crops.

Important themes that came up throughout this fascinating discussion were the need for awareness building and training to engage small farmers in new technologies; understanding the needs and planting cycles of the agricultural community in order to design and develop financial products and agricultural interventions that are relevant to farmers; mitigating risks associated with agricultural activities; and the importance of collaboration with key stakeholders and experts throughout the agricultural value chain.

The panel discussion on microcredit and crop agriculture began with remarks from **John Kihia**, Country Director for KickStart International in Kenya, who shared his experiences providing water irrigation systems to farmers in Africa. “I want to lead the talk with a question of water as a major obstacle to food security for small-scale farmers. For years, most of the small-scale farmers have always been looking up in the skies for rain as an agricultural input, and therefore, we’ve done very, very little agriculture water management,” Mr. Kihia began.

“About 70% of the operations in Africa are in the rural areas, and they are small-scale farmers. They generally live as families on small plots ranging between one-half of an acre to five acres. ... They do not have enough food to eat, and that’s why quite often we find food coming into Africa, rather than the other way around; there are very few other sources of income [in rural Africa]. In fact you can go to a village and find that it is only the policeman and a teacher who have a salaried job. Other people are busy [working] on their small pieces of land. ... They are entrepreneurial and they are very ready and willing to invest their time and energy. ... So in aggregate, there is a massive reservoir of unrecognized and unexploited human capital waiting for a practical opportunity,” he described.

“The fact is: there is huge agriculture potential for these people. However, we find that they are still suffering from terrible food shortages .... About 40% of what they

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10:45 AM – 12:15 PM

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Panel:

*Chair and Panelist: Mr. Shadreck Mapfumo, Vice President, MicroEnsure, South Africa*

*Mr. John Kihia, Country Director, Kenya, KickStart International, Kenya*

*Ms. Helen Kithinji, General Manager, Faulu Kenya*

*Mr. Michael Njuguna, Director Finance and Business Development, Africa Harvest Biotech Foundation International (AHBFI), Kenya*

harvest goes to waste. So, what's the problem?" Mr. Kiria asks. "There are quite a number of problems that have been identified by people in various sectors. They include seeds, fertility, knowledge, information about markets, access to markets, and infrastructure."

Only 4% of land in Africa is irrigated, so most farmers rely on the one or two rainy seasons each year for their yields, resulting in periods of feast or famine. If irrigation is added into the equation, farmers will be able to produce three to five crop cycles every year, and plant high-value crops instead of only low-yield drought-resistant crops. Then supply and demand will be aligned.

KickStart is a social enterprise. "We identify profitable businesses in rural areas in which [local] people can engage. ... Our engineers design the required capital equipment which will open up that opportunity, then we establish a supply chain from manufacturing to distribution, and then we work with local dealerships. We go out to rural areas, and [we work with] people who are already selling agricultural items to farmers ... [to deliver] our products. Then we create awareness ... and demand, and we assess the impact because what we want to see is social change. It's not just that we're selling a product, it's the impact that we have on the people. We can then exit the market and let the market forces continue working."

"I want to go straight to the impact that we have with [our irrigation] pumps by sharing a case study of a young couple," he said, "Felix and his wife. Felix moved from a rural area and came to Nairobi because of the perceived problems that, in the rural area, there are no chances of generating money. He was employed in a small food kiosk. He could see people bringing in tomatoes and vegetables, and he could see the amount of money that was being paid. He thought of the small piece of land he had at home, and he went back home and bought a pump and he started irrigating. Now he's making more than \$1,000 a month, and he permanently employs three people. If you go there when they are harvesting their French beans, you'll find about 10 people working on their plots. Now they are buying more seeds, they are buying more fertilizers and other agrochemicals. "

"Felix is not alone," he added. "By the end of February 2010, we had more than 144,000 Felixes. In total, they had created about 93,000 businesses – getting about 469 people out of poverty. Together, these people are pumping into the economy USD \$93.8 million annually. So when you look at the potential of Africa – because basically we have just scratched the surface – the potential is huge. The challenge is tough in getting to these people. It is estimated that the population of Africa will have grown to 1.5 billion by 2050, and therefore these people need more food. If you are only irrigating 5% of all the land, we won't be able to feed these people, so you need to irrigate more and more land. ... We estimate that the [potential number of] people who can basically use a pump [in Sub-Saharan Africa] range between 13 and 15 million."

"We really need financing in order to help us get there," he concluded. ... "We lack a proper financing product that we can say aligns with the times when farmers harvest, and gives a grace period within which a farmer will plant and wait until the crop is ready, and then take it out into the market. We also need to improve on the financial infrastructure so that these people have greater access to these financing activities. Therefore, what I'm looking out for at this Summit are partners with whom we can

explore these opportunities, so that we can reach these 13 to 15 million people in Sub-Saharan Africa.”

The second speaker on the panel was **Michael Njuguna**, Director of Finance and Business Development for the Africa Harvest Biotech Foundation International in Kenya, who described his organization’s innovative and successful efforts to create a value chain approach to agriculture by introducing plant tissue culture to banana farmers<sup>1</sup>. “Banana farmers in Kenya, and generally in Eastern Africa, face a number of constraints,” Mr. Njuguna recounted. ... “In some of the studies we have done, we have seen that some farmers can lose up to 40% [of their harvest] due to poor handling ... and limited access to the market. ... In the late 90s, the banana industry was being devastated in this country, so we decided that we were going to introduce ‘[plant] tissue culture’ among the rural households. Now, [plant] tissue culture is superior to the conventional way of cultivating because you can get large quantities of clean planting materials. They also have shorter harvest cycles, and substantial reduction in losses from pests and diseases because they are clean. Generally they yield bigger bunches, and you can coordinate the marketing more effectively because they tend to mature at the same time.”

He explained, “Our approach ... is what we call the ‘whole value chain’ approach. In this whole value chain, you create awareness and carry out a baseline survey to establish the status of the target community. After awareness creation, we also ... ensure the plantlets are available to those who are interested. We train them on how to grow, on good agronomic practices, orchard management, post-harvest management and treatment, and finally, marketing.”

“What happened is that we realized, of course, that no one organization can do everything,” he shared. ... “So we had a range of organizations, some of them providing extension and technical support to the farmers – like our organization – working with the Ministry of Agriculture and [other] agricultural research institutes. Then we had private sector labs that were providing the [plant] tissue culture– and for your information, tissue culture is not genetically modified. ... We also had other players providing credit, such as Equity Bank. Then we have marketing and input supply, which was funded by Rockefeller, IDRC, DuPont and currently ... it’s being funded by Alliance for Green Revolution in Africa.”

Mr. Njuguna outlined, “‘Awareness-creation’ basically entailed bringing farmers together ... forming groups, getting them registered with social services, training them on technology, and arranging farmer-to-farmer exchange visits – or what you may call traveling workshops. What we have found over time is that farmers learn a lot more from visiting fellow farmers than [from] meeting with ex-pats who come and tell them about a new technology.”

“Now, I want to show you the role of microcredit in the adoption of new innovations,” he continued. “In one of the projects, before we started the implementation ... we carried out a study. We [asked] farmers, after creating awareness, ‘How many plantlets do you intend to buy?’ and then we got the data.

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<sup>1</sup> Tissue culture is the growth of tissues and/or cells separate from the organism. [http://en.wikipedia.org/wiki/Tissue\\_culture](http://en.wikipedia.org/wiki/Tissue_culture), accessed 12/10/2010.

Then we asked them, ‘If we provide you with some microcredit to adopt this technology, how many would you want us to supply to you?’ ... The demand increased by 280% when we introduced microcredit. So microcredit has a very, very important role to play in the adoption of new innovations. Now, anytime we’re introducing a technology, we make sure that we [include] a microcredit provider.”

“We carried out a study two years ago about the [banana plant tissue culture] project that we had implemented and we realized that on average, the [plant] tissue culture households were producing 32 tons per hectare while the conventional households produced only 6-14 tons per hectare. ... One of the things we have done to increase income to the farmers is to ensure that farmers sell in kilos, as opposed to selling via ‘eyeball price-negotiation’ where you look at a bunch and say, ‘this a hundred shillings.’ By using kilos they get sometimes 2-3 times as much,” Mr. Njuguna reported.

“The project [also] had a social impact in terms of increasing household food security,” he stated. “Apart from the fruit ... being available, [which] reduced malnutrition. Most households were able to diversify and engage in other projects, and of course, there was the element of increased income.” The project also had a gender dimension in terms of economic empowerment for women, because bananas are considered to be a woman’s crop.

“We noted that some of the households that were participating were able to improve their housing,” he added, “and others were able to acquire other assets like bicycles, mobile phones and so on. The project had a significant impact when we analyzed it at the national level, because between around 1994 [and] 2004 there was an increase in banana production in the country. While the entire increase of 77% could not be attributed to [plant] tissue culture, we realized that tissue culture had served as a catalyst.”

“Finally,” Mr. Njuguna concluded, “[through this project] we have noted that small holder farmers can successfully adopt new technological innovations.... Simple technologies have the potential to have a huge impact among these resource-constrained communities. The whole-value chain intervention is effective; because if you introduce only microcredit and don’t provide other services, then obviously you cannot achieve what you desire. Finally, we believe microcredit should be considered, especially to increase adoption for highly-vulnerable households.”

The panel discussion continued with **Helen Kithinji**, General Manager of Faulu Kenya, who shared her organization’s categorical approach toward addressing food insecurity among the poor in Kenya. “There are three central constraints in attaining food security,” Ms. Kithinji outlined, “the three being availability, accessibility and adequacy. With availability, the three questions that we ask are whether there is enough food available through domestic production and imports to meet the immediate needs. The second question is whether the production is environmentally sustainable to meet long-term needs.... The third question [regarding] availability is whether the distribution systems are effective enough in reaching low income and rural communities.”

“[Regarding] accessibility, the question is whether the vulnerable in society have the purchasing power to attain food security. Most MFIs are actually in the business of

transforming lives by empowering them to be self-sustaining, having the ability to actually fend for themselves and provide their families with basic needs ... food, shelter, clothing, education, health and dignity in the community. The other question is: Can these vulnerable communities afford the minimum basic diet for an active and productive life?”

“The third component is adequacy. Does the food supply provide for differing nutritional needs? Is the food properly processed, stored and prepared? ... Other critical factors I just wanted to touch on are the ability of developing countries to do research ... [and encourage] farmers to adopt new technologies.”

“Now ... I just want to read this quote from a report that was done recently in 2009: ‘The basic tendency is for microfinance institutions to shy away because we believe that the agricultural sector is risky and therefore, putting money there and financing farmers is a risky business.’ I want to challenge us ... [to give it a chance]; for example, the value chain and some of the technologies the farmers can actually use to improve their yields, and improve [their] marketing and storage. [Then] we actually have an opportunity to lend to farmers without feeling that we are going to lose the money,” she asserted.

“At Faulu, three years ago we introduced a product called *Mavuno*, which means ‘harvesting’ in Swahili,” Ms. Kithinji shared. “We studied the cycles of different crops across the country and we structured products in line with the cycles of income that the farmers receive. If we are able to understand the dynamics, and also partner with organizations that are able to help the farmers increase their yields, it’s actually an area that we can support. The essence of the *Mavuno* loan ... is [that] the term is matched with the harvesting of the crops (i.e. how long it takes to harvest).”

“I’ll give an example of the province called North Shrift in Kenya ... [where we work with farmers to] structure a loan product where the principal payment is due at the end of the nine-months [of the maize growing cycle]. ... [When the farmers] harvest and deliver the maize, they’re able to pay us. We also ... look at other crops. For example, in other areas of Kenya you’ll find three-month cycle crops, like potatoes and tomatoes. We do product differentiation so we’re able to also finance these farmers ... [through loan products that apply to their crop cycles],” she explained.

“*Mavuno*, today, contributes 20% of Faulu’s outstanding loan balance, and with that we are able to impact about 23,000 families in three regions of Kenya. What I would propose is that MFIs look into portfolio diversification across crop types and regions, farmers’ education through partnerships with ex-pats (so that they are able to improve their yield) and product differentiation,” Ms. Kitigi concluded. “When we do that, then we’ll be able to mitigate the risks in the agricultural sector and be able to support the quest for achieving food security in Africa and the world over.”

The final speaker was **Shadreck Mapfumo**, Vice President of MicroEnsure in South Africa, who chaired the discussion, and took the role of a panelist as well. Using local examples, his comments addressed how offering “weather index insurance” mitigates risk and unlocks credit to benefit small farmers.

Mr. Mapfumo explained, “What normally happens if you’re a farmer in a position where you only have land, labor, and rain - which they depend on, whether it has rained or not – you start getting an increase in yield the moment you bring in microcredit. To bring in microcredit, there is need for risk management .... [If] you bring in crop weather index insurance ... microfinance institutions become more willing to offer loans. Once the farmers are given loans, they are able to buy adequate and high quality inputs. The moment they use high quality inputs ... you also find some contract farming organizations interested in coming and contracting with these types of farmers – because they know they are going to get high quality outputs. What we can see here is that insurance has given them access to microcredit, but it has also given them access to a market for them to sell their products.”

“I want to share with you a story about Harry Kafawulund of Malawi,” he continued. “This is a gentleman who—before he got involved with the program, which was financed by Opportunity International Bank of Malawi—used to take grain from his storage, use that grain, and the following year would get a yield. But then, when he got weather index insurance, together with microcredit from Opportunity Bank, he was able to move to an improved house. When we asked him if he had thought about the opportunity that he had been presented with, what he said to us was, ‘The benefits for me are a better living standard and better food. I have been able to build a better house, and I have bought an ox-cart from last year’s earnings. This would not have been possible before.’ ... What did microcredit combined with weather index insurance do for Harry? He got a loan; he got higher quality inputs and a secure contract farming arrangement, which gave him agronomic training and relatively high prices.”

“Other innovations that can promote agriculture are warehouse receipts combined with microcredit, in which case the farmer can actually be given microcredit as a lump-sum consumer loan. When the farmer puts his crop in the warehouse, he can actually get some loans which can supplement his livelihood, so that when the prices are high, he can take advantage of that. One of the things that we think can also be helpful even with warehouse receipts, is using [technologies such as] cell phone systems and internet systems to advise farmers of the prices, to advise farmers of good agronomic practices, and also even to advise farmers of insurance payouts. ... All of these technologies are easily available to the rich, but we think that they can be adopted and be used to transform the lives of the small farmer [as well],” Mr. Mapfumo suggested.

**Following are a few key comments from the Q&A session:**

**Question:** “My questions are for Michael Njuguna, and there are two. Could you talk a little bit about the challenges that you have experienced in the project you were implementing? Secondly, did the project address the issues of market access, or market linkages? As we know, when you have a group of producers concentrated in an area and producing the same product, that might have implications on the pricing. Could you talk a little bit about that? Thank you.”

**Answer from Mr. Njuguna:** “I’ll just mention one challenge. The first one was for the farmers to accept the technology, because the [plant] tissue culture comes as a small potted plant from the lab. When you show the farmers, you tell them that it will grow to become a banana. And they say, ‘No, no this is a flower. Can you prove to us that it can grow to become a banana?’ Every place we went, we learned that you

have to do a demonstration in order for them to accept that it can grow to become a banana. Also, there was the issue of availability of diverse cultivars that the farmers required. A farmer would tell me, ‘you know I like a type called Moraru, but you don’t have that particular of variety in [plant] tissue culture.’ There are quite a number of challenges, but those are some of them.”

“When it comes to market access, we had a very interesting experience in which we brought farmers together to form a private marketing company called TC Bell. You’ll be happy to know that while that company had to be supported initially, right now it is breaking even, and it is providing services to farmers as a private company. Farmers have bought shares. In fact, two weeks ago they held their first annual general meeting for farmers with shares and had audited financial statements. The TC Bell company is addressing the issue of marketing. What is important is that the company has reduced the number of intermediaries within the marketing chain. Instead of having five to ten people handling the same crop, you have only one company and that way, farmers can have a better return on their investment.”

**Question:** In my country, Tanzania, contract farming arrangements have not been that successful because the farmers do not have the bargaining power at the end during the harvesting. Most of them are being exploited very badly, to an extent that now the government has decided to learn the inputs itself.... So I wonder—what arrangement do you have here in regard to contract farming? Can they change the prices according to the world prices, or do they stay to the prices [established] when they entered the contract?

**Answer from Mr. Mapfumo:** “[Regarding the question] on contract farming arrangements. ... Where the contract farming organization would be allowed to give inputs to the farmers—a good example is Malawi where you find that the government has said, ‘The contract farming organization cannot issue interest to the farmers.’ Then what the farmers need to do is get a loan from a financial institution so that they can be able to finance their inputs. Then they enter into a minimum-price type contract – so they just enter and say ‘OK, you will give me a minimum price of this, but if the price that other people are offering is better than what you’re offering, I will go with them.’ ... Contract farming itself still has some challenges, which is the reason we’re talking about warehouse receipts as another solution which could also help with the issue of prices.”

**Question:** “How is Faulu cooperating with KickStart and similar organizations to make sure that each one is doing the right job at the right time so that we have the whole value chain for all the firms working quite well?”

**Answer from Ms. Kithinji:** “In terms of ... increasing the yield and storage and insurance, for example, we do partner with them [other experts and organizations] because our role is to provide the finance. So we will go to, for example, one organization, and we identify a certain group of farmers. They will provide the capacity, build the technology, and then we will do the financing. If it has something to do with maize, we would partner with an organization that is specialized in that area, and we work together that way.”

**Answer from Mr. Kihia:** “[Regarding] general knowledge that farmers have on water management. I think the first thing that we intended to do is to get farmers to

understand that water is a necessary input that people need to invest in. ... In any business, if somebody doesn't have control over the different variables ... [that affect them,] then they cannot assure anybody that they're going to actually get something to the market. So we have spent quite a number of years doing that."



"In terms of the products, we do need to be specialists. If we are a jack of all trades, it becomes really difficult for us to deliver, and as an organization we have really committed ourselves to pursue the area of irrigation as an addition to what farmers would require in order to increase their productivity. However, we are partnering with other companies – seed companies, fertilizer companies – so that they can deliver their pieces of knowledge. Whenever we have field days, we hold those field days with other companies and we will all be able to tell the farmers what different inputs can do for their productivity."



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