IFDC
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Strong **Markets**
A FOUNDATION FOR AGRICULTURAL DEVELOPMENT

INTRODUCING SCOTT ANGLE

NEW EQUIPMENT
Increases Farmers' BUSINESS

ICT for AGRICULTURE

Improving Fertilizer Use **in Burundi**

IFDC Quarterly Magazine

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IFDC is a public international organization, governed by a board of directors with representation from developed and developing countries. The nonprofit Center is supported by various bilateral and multilateral aid agencies, private foundations and national governments. IFDC focuses on increasing and sustaining food security and agricultural productivity in developing countries through the development and transfer of effective and environmentally sound crop nutrient technology and agribusiness expertise.

THIS ISSUE

BRIEFS

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FROM THE CORNER OFFICE

Bountiful Harvests Are Only the Beginning

As I take the helm of the International Fertilizer Development Center (IFDC), the organization's core mission remains the same: helping farmers nutritiously feed the world as they make a good living.

How? Ensuring farmers have access to input and output markets.

We assist farmers in obtaining fertilizers and crop protection products to increase yields. But bountiful harvests are only the beginning. It is also necessary to link producers to income-generating opportunities.

Making Farming Affordable

Getting the right fertilizers and other resources into farmers' hands is vital to boosting food production. We accomplish this in many ways, whether in easing fertilizer tariffs or training agro-dealers. Our goal is to make smallholder farming more affordable and profitable.

At the foundation of it all, we research fertilizer's influence on soil, plant and human health. It's about increasing production on a per-hectare basis with special attention paid to human nutrition and environmental sustainability.

Ensuring Food for Generations to Come

Surplus yields become spoiled crops if farming families have nowhere to sell or store their excess harvest. To increase access to profitable markets, IFDC supports agribusiness clusters. These link farmers to buyers, technical support providers, banks and other partners that help them commercialize their produce.

With higher earnings, farmers can pay their children's school fees, afford healthcare and provide nutritious meals to their families. Meeting these and other basic needs greatly influences the next generation's success.

Engaging these entrepreneurs with competitive markets drives economic development and determines food security for years to come.

J. Scott Angle
IFDC President and CEO

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From Subsistence to Business

Highlights

Market linkages are essential in farming success.

Farmers must increase and sustain yields to build profit.

Vibrant markets are dependent on strong infrastructure systems.

The development practitioners circle talks a lot about soil fertility, the environment and innovation. We care deeply about ensuring farmers have the tools to grow a bountiful harvest. We stress the importance of judicious fertilizer use to safeguard our environment. We teach better ways to manage pests and crop disease. We train agro-dealers to stock the best merchandise for their clientele, helping them help farmers. What often gets lost is building strong market linkages.

Viable market linkages are fundamental to agricultural development. As the world devotes less and less land to farming – and as the younger generation seeks jobs in urban centers – the farmers who remain bear a greater burden than ever. Ten billion will not be fed by subsistence agriculture. The big-picture solution: growing more food and getting it into a sustainable market. One without the other results in either wasted crops or unfilled food demand.

According to Dr. Joshua Ariga, IFDC senior economist, there are fundamental needs for a strong market, including: surplus crops, reliable infrastructure and linkages to viable points-of-sale under a favorable policy environment.

> Our main goal is to help farmers increase their income while supplying society's basic needs.

Surplus Crops

"Our main goal is to help farmers increase their incomes while supplying society's basic needs," says Ariga. "Many farmers need to re-think their objectives. The crops you grow – they're not just for your family now. Your farm is a business, and growing surplus crops is necessary. But this doesn't happen by accident."

IFDC helps by giving entrepreneurial farmers tools for increasing and sustaining yields. We teach good agricultural practices (GAP) to increase soil fertility, connect farmers to agro-dealers who sell improved seeds and appropriate fertilizers and offer training in crop protection application. These tools enable producers to grow enough to feed their families and have plenty left for selling.

Crop surpluses benefit both farmers and consumers. They create revenue opportunities to expand farm enterprises and provide food for consumers who may otherwise not have enough. Yet, growing more food is not the end of the solution. For these benefits to take place, the road between the farm and the table must be well-paved.

Reliable Infrastructure

Poor infrastructure often plagues farmers wanting to get their crops to market. Sometimes producers lack proper processing and storage facilities. In other situations, farmers lack information on markets and prices for their produce. And other times poor roads hamper travel. Many harvests are spoiled because some farmers must travel long, uncared-for roads that damage their crops. Whatever the case, vibrant markets require strong infrastructure systems.

Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability (CATALIST-2), an IFDC project in sub-Saharan Africa, is one of several projects helping farmers store crops. It introduced PICS bags, developed by Purdue University to keep maize fresh and pest-free for up to three years. Another initiative backed by IFDC brings processing to cassava farmers. A mobile processing unit meets producers, buys their crops and processes the tuber into starch on the spot before it spoils.

One IFDC partnership in Malawi encouraged farmers to participate in improving infrastructure by offering fertilizer vouchers in exchange for work. The farmers in the community would pitch in to revitalize bridges and roads. This project did not simply save farmers money. It helped their hard work pay off. The effort successfully gave farmers both the inputs they needed to increase yields and accessibility to sell excess crops at a market. Yields increased by around 60 percent during the program, and the participants appreciated the better access to markets, schools and hospitals provided by the improved roads.

Viable Points-of-Sale

"You grow surplus to sell," says Ariga. "But of course, there are better times to sell than others. And some buyers look for specific quality. That's where IFDC can help." IFDC's approach to market development significantly shifted in the early 1990s during its Albania mission. Creating strong markets quickly became the organization's forte. Our current Toward Sustainable Clusters in Agribusiness through Learning in Entrepreneurship (2SCALE) project best exhibits this. By connecting more than 50 public-private partnerships with around 250,000 farmers, IFDC and its partners develop and strengthen the agriculture sector in eight African nations.

2SCALE has injected millions of dollars into local economies – much of which goes straight into farmers' pockets. How? We connect farmers and buyers by helping both parties take the last step in networking. For farmers, this means growing enough of the right crops in the right way for the best quality. The "pull" of the market creates demand for increased innovation, technology dissemination and job (services) creation. Neither quantity nor quality is lacking when we connect them to buyers who can process and monetize crops in the market. 2SCALE partner Shalem Investments demonstrates this well. Recently, Shalem secured a contract from East African Maltings to supply 5,000 tons of sorghum to brew an increasingly popular beer, *Senator Keg*. More than 7,000 farmers will sell U.S. $1.7 million worth of sorghum to Shalem. IFDC ensures training programs give farmers the knowledge and skills to meet the quantity and quality required by the contract.

The success of global agricultural development hinges on strong markets. Even the Green Revolution, with its technological advances and bountiful harvests, would be Norman Borlaug's forgotten dream had the crops not been supported by eager markets. Feeding a projected 10 billion people is no easy task. In our endeavors to boost yields, protect the environment and empower smallholders, strong markets are the lynchpin. If food can get to the market, the world can be fed.

#didyouknow

IFDC took on a holistic approach to market development after the Center's involvement in Albania.

Scott Angle

An Interview With IFDC's New **President & CEO**

Welcoming Scott Angle

IFDC welcomed Dr. J. Scott Angle as the organization's new president and CEO in October. Angle is an internationally known soil scientist and former Fulbright scholar. He previously served as dean of the College of Agricultural and Environmental Sciences at the University of Georgia. We sat down with Dr. Angle to discuss his background, engaging youth in agriculture and the challenge of feeding a hungry world.

How did you first get involved in agriculture?

Before college, I had no agriculture background. I grew up in the suburbs and lived in Baltimore City for several years. My passion was golfing. I aspired to be a golf course superintendent. So when I began studying turf management at the University of Maryland, most of my courses were taught in the College of Agriculture. My research focus gradually evolved into more traditional agriculture from there.

I consider myself a farmer. I own a farm west of Baltimore that's used primarily for forages and hay. But I never grew up on a farm or thought I'd spend my career in agriculture.

What drew you to IFDC?

I was attracted to IFDC's mission. I think we all believe in feeding the world. To do this, we'll need to more than double the amount of food produced over the next 35 years. Fertilizer is one of the major technologies allowing the planet to feed itself. I was driven to IFDC because of its unique focus on using efficient and environmentally friendly fertilizers to achieve this goal. I was also looking to lead a large organization with a global focus.

How does your background as a soil scientist and educator influence your approach to development?

The only way we're going to feed the world will be through technology and education. There's very little land left to cultivate. There'll be significantly less water in the future. Going forward, we'll have fewer natural resources available. So there are two options left. One is to develop new technologies permitting us to be more productive on a per-hectare basis. That's where fertilizers come in. And secondly, we must train people to effectively use the information that is developed on the research side. And that's exactly what IFDC does. It develops and conducts research and validates the information in the laboratory and the field. It then has a pretty sophisticated mechanism to communicate this knowledge to people who need it – whether it's a large government or smallholder farm.

You've spoken a lot about fostering opportunities for youth in agriculture. Why youth?

I worry a lot about the next generation of farmers, and it's not just farmers – it's the whole agribusiness sector. As I've traveled, I've noticed that the attitude is very similar, whether it's in the middle of Rwanda or the middle of the United States. Young people just don't see this as a desirable career anymore – despite the profession's ability to change the world. So as dean of agriculture at the University of Georgia (UGA), I worked to change that perception. At IFDC, I'll be able to expand that focus into countries other than just the United States. We must get more young people into agriculture. We have to let them know agriculture is not just about plowing the fields or milking a cow. It's high technology. It's the use of very sophisticated knowledge and information to increase yields. So unless we can find a way to encourage, educate and incentivize the next generation to move into this profession, doubling our food supply will be an even more daunting challenge.

What "big" global issues do you think fertilizer can address?

The issues vary depending on location. In some areas, we need to focus on fertilizers and the environment. Fertilizer is overused in some parts of Asia because it's subsidized. Farmers may use more than the recommended amount because it's so cheap. That excess fertilizer ends up in the atmosphere, runs off as surface water or causes eutrophication. It can even leach into groundwater, creating a number of other challenges.

Fertilizer use plays a crucial role in regards to climate change. We must promote more efficient fertilizer technologies and practices to reduce climate impact. And at the same time, increase crop production. These issues go hand-in-hand. But I'm confident. With the right training and fertilizer access, farmers will judiciously apply fertilizer. This not only benefits the environment, but can actually be more affordable for smallholder producers.

In other areas, lack of fertilizers limits yields. Many countries in Africa only use 10 percent of the recommended amount needed for adequate crop productivity. To ensure farmers in these countries have access to fertilizers, we must work with our partners in the industry to facilitate proper supply and distribution mechanisms. And we must help governments and farmers understand fertilizer's important role in achieving national food security.

Beyond these issues, there's another area of fertilizer that's becoming extremely important: micronutrients. When you apply nitrogen, phosphorus and potassium (NPK, the nutrients needed in the highest amounts), the crops will extract nutrients like copper, nickel and zinc from the soil. But we're not replacing those micronutrients or trace elements. Some soils, after many years of cropping, now produce zinc-deficient food. So the individuals consuming that food also become zinc deficient. A number of human health problems are associated with foods deficient in these micronutrients. Therefore, using properly balanced products can re-fertilize soils with trace elements so the food will be healthier for human consumption. Many of these trace elements are important for preventing or sometimes even curing diseases. So fertilizer is going to be incredibly important for meeting both the caloric and nutritional needs of our growing population.

Do you think we can feed nearly 10 billion by 2050? What will it take?

For over 200 years, predictions of pending famine have not materialized, at least not due to our ability to produce enough food to feed the planet. Many remain hungry and malnourished, but it's not because insufficient food is produced globally. Yet, this paradigm is changing. The population is rapidly growing, and consumers are demanding more food and food that contains more nutrients. There is scant new land to cultivate and there will be less water available in the future to support crop growth. We must be willing to commit to do what is necessary to avoid famine over the coming 35 years.

Our only hope to feed a hungry world is to produce more food and feed on a per-hectare basis. In my opinion, investing in research and education are the only tools we have to double food productivity between now and 2050. Enhanced plant genetics to improve water uptake and increase disease and pest resistance are examples of technologies that will make the next jump in post-Green Revolution technologies. And fertilizer will be one of the most important innovations for reaching this goal. Fertilizers are a fundamental building block of crop productivity. IFDC will play an important role in ensuring that crop productivity is maximized via supply of plant nutrients. We still have a couple of decades left to go, and we are far from global food security, but I'm confident we can do it.

BRIQUETTE PRODUCTION

"Very Profitable" in Bangladesh

Story Highlights

Entrepreneurs operate more than 1,200 fertilizer briquetting machines.

Briquette Machine Owners earned an average gross profit of U.S. $5,000 in the 2015 *Boro* season.

We often call fertilizer deep placement (FDP) a "triple-win" for farmers. For the past five years, IFDC's Accelerating Agriculture Productivity Improvement in Bangladesh (AAPI) project proved time and again that the technology improves yields, lowers farmer investment and reduces climate risks. What can be overlooked is the behind-the-scenes supply of FDP's central component: fertilizer briquettes. Entrepreneurs operate more than 1,200 fertilizer briquetting machines to supply the demand of nearly 2 million rice and vegetable farmers. And according to a recent survey conducted by IFDC Agribusiness Specialist Ian Gregory, producing briquettes can be "very profitable."

The assessment included a 10 percent random sample survey of 39 briquette machine owners (BMOs) and eight retailers in six districts covered by the AAPI project. The results gave remarkable insights into the benefits incurred by these entrepreneurs. For those operating machines at above 50 percent capacity (180 metric tons [mt]), entrepreneurs can expect gross margins 13 percent higher than for prilled urea. Across all those surveyed, BMOs earned an average gross profit of Bangladesh Taka (BDT) 396,000 – about U.S. $5,000 – during the 2015 *Boro* season. As Bangladesh's gross national income per capita hits just over $1,000, the briquette-making business is quite lucrative.

Moving forward, the survey report suggests strengthening those BMOs who may not be taking full advantage of their machines. Those producing at capacity can pay off their initial investment in one year and can expect a 111 percent internal rate of return. Encouraging these entrepreneurs to achieve capacity helps increase BMO incomes and ensure sustainability of the technology for Bangladesh.

Challenges to be addressed include producing a mechanized briquette applicator. While current applicators slightly reduce drudgery, a mechanized applicator would make FDP accessible by more farmers (reducing both time and money spent on labor), thus increasing the market pull for briquettes. In addition, BMOs rely heavily on AAPI for product promotion. According to the report, even dedicating 5 percent of their budget to marketing would pay off exponentially for briquette producers. This relatively small investment may greatly increase market pull.

The United States Agency for International Development (USAID)-funded AAPI project continues in an extension period until December 2016.

Kobita Pal

Hope when there wasn't any

Story Highlights

Bangladeshi vegetable producer discusses her successes.

The utilization of FDP technology increased yields.

Kobita Pal stands in her garden. Her golden sari glows as she reaches up to pick a healthy, green banana. A proud smile comes across her face.

"It wasn't always like this," she says. "Two years ago, we didn't have enough to feed one person, much less four." Kobita Pal, 35, is now a successful vegetable producer living in the Bagerhat district of Bangladesh. She has been married for 19 years, and she has a daughter, 18, and a son, 13.

Her ascent started when a neighbor advised her to talk to a non-governmental organization (NGO) offering local jobs. The organization sent her to their training center to become a village health attendant. "I worked hard," she says, "but the money wasn't good."

Her reward came when the NGO noticed her perseverance and selected her as part of their lending staff. Kobita's work ethic led to her being selected to join the Union Development Committee (UDC), which helps distribute money to the rural poor.

With the earnings from the UDC, she began to farm vegetables and fruit next to her house. In the summer of 2014, she received training from the Accelerating Agriculture Productivity Improvement-Walmart Foundation Activity (AAPI-WFA), a partnership between IFDC and Walmart that trains women to use FDP in vegetable production.

Kobita used FDP technology (locally called *Guti*) on her crops for the next three seasons. Following the first two seasons, she yielded a net profit of BDT 45,000, nearly U.S. $600.

There were setbacks in the summer 2015 season, however. "When the rains came, I thought the whole crop would be lost – and it would have been with the old way [of broadcasting fertilizer]. But we ended up breaking even, and the crops we did save were greener and healthier than my neighbors', who also spent more on fertilizer. The credit for this goes to the *Guti*."

Kobita uses her experience and influence to inspire the women in her community to use *Guti*. "IFDC changed my life – it gave me hope when there wasn't any."

AAPI Receives 15-Month Extension

project update

Story Highlights

The AAPI project changed the way farmers use fertilizer.

Nearly 3 million farmers have access to improved tech.

In September, USAID extended the AAPI project for an additional 15 months (until December 2016) to strengthen sustainability of project successes. During its initial five-year implementation, the project improved yields and increased farmer incomes, among other impacts. Ensuring a platform for the agriculture sector's continued success will be a priority during the extension.

Success from the Start

The AAPI project changed the way Bangladeshi farmers use fertilizer. In a country where rice is grown on 10.5 million hectares (ha), fertilizer can be overused, causing not only environmental damage but also great expense to the government (as urea is subsidized). AAPI introduced a technology that curtails – and in some cases reverses – these effects.

FDP is the premier technology scaled out by AAPI, promoted in the broader context of good agricultural practices and balanced fertilizer use. During the last three growing seasons, adopters covered nearly one-tenth of the rice-growing land in Bangladesh. Considered a "triple-win" solution, the technology increases yields, reduces fertilizer use and mitigates greenhouse gases. FDP demonstrates yield improvements of 800 kilograms (kg)/ha (with 30 percent less use of expensive urea) on about half of the adopted area. These farmers make about $130/ha more than those still using traditional fertilization methods.

Equipping fertilizer dealers with the capability to produce and sell urea briquettes is a key component of FDP. Those entrepreneurs provided 2 million farmers access to the improved technology. They have increased their incomes significantly – building houses, sending their children to school and enjoying a higher quality of life. In addition, the production and sale of urea briquettes saved the government of Bangladesh more than $65 million in subsidy costs during the last three years.

Next Steps

Many of the 2 million FDP adopters still lack sustainable access to fertilizer briquettes. During the extension, AAPI will work to motivate, train and develop briquette producers and retailers to meet market demand. In addition, the project will train staff from the department of agricultural extension to become knowledge resources for FDP use. Ensuring a healthy chain of supply and knowledge continues AAPI's momentum.

Enduring results in nutrition and food security go hand-in-hand with sustainable technology interventions. Over the next 15 months, AAPI staff will work to ensure that FDP and other technologies continue to help farmers increase incomes and livelihoods well into the future.

AAPI PROMOTED NEW TECHNOLOGY RESULTING IN:

DECREASED GHG EMISSIONS FROM RICE

REDUCED FERTILIZER USE BY 343,288 MT

18% HIGHER YIELDS

INCREASED FARMER INCOMES $220 PER HECTARE

IN THE LAST FIVE YEARS, THE AAPI PROJECT CONTRIBUTED TO:

21-37% FEWER FERTILIZERS APPLIED

PROJECT BENEFIT RATIO 36:1

$802 MILLION WORTH OF **EXTRA RICE** PRODUCED

Government of Bangladesh **SAVINGS** OF **$98 MILLION**

BENEFITS OF FDP IN POST-CYCLONE SIDR PROJECT CONFIRMED

A team of authors from IFDC compiled an article that summarized the results of field trials conducted during IFDC's Improved Livelihood for Sidr-Affected Rice Farmers (ILSAFARM) project (2008-2010). According to the article, UDP and NPK briquettes significantly increased the number of panicles and grain yield for rice compared with prilled urea. The *Agronomy Journal* accepted the article in September.

> "The crops we saved were greener and healthier than my neighbors', who also spent more on fertilizer. The credit for this goes to the *Guti*."
>
> Kobita Pal

Baseline Survey Completed in Myanmar

The Fertilizer Sector Improvement (FSI+) project completed a baseline survey of Burmese agriculture. It gives valuable insight into an array of issues, including gender, literacy rates and fertilizer habits, among others. The results will aid the project's success during its five-year tenure.

UDP Scaling Presented at ACIAR Conference

The Australian Center for International Agricultural Research (ACIAR) invited IFDC to present at a conference in Kathmandu, Nepal, themed on scaling technologies in South Asia. Dr. Yam Gaihre presented IFDC's experience scaling urea deep placement (UDP) in Bangladesh.

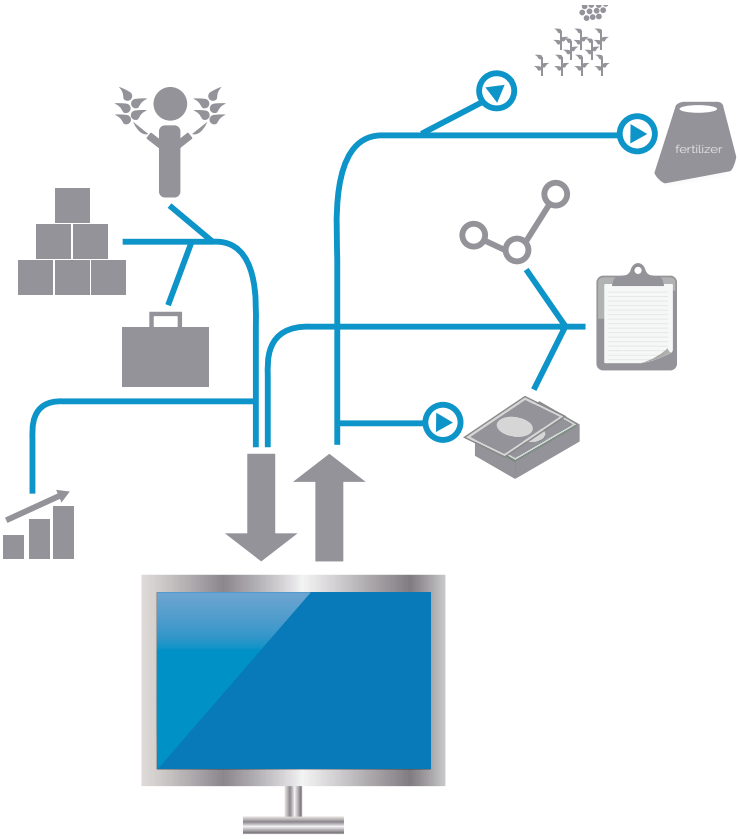
IFDC Signs MOU with SRDI

IFDC signed a memorandum of understanding (MOU) with the Soil Resource Development Institute (SRDI) in Bangladesh. IFDC and SRDI will work to improve agricultural productivity in Bangladesh on a sustainable basis, in particular focusing on sustained soil fertility management. Both organizations have agreed to collaborate on future research efforts related to site-specific fertilizer recommendations and soil health using environmentally friendly practices and technologies.

BRRI Continues Emission Trials

The Bangladesh Rice Research Institute (BRRI) will continue to measure greenhouse gas (GHG) emissions from rice fields and begin measuring methane emissions. IFDC will provide technical assistance to BRRI for the first 12 months of the project. This research is part of the government of Bangladesh's climate smart agriculture program.

ICT for **Agriculture**



Story Highlights

IFDC works with Acila Enterprises to enhance technology.

Acila introduced E-Prod software to broaden ICT tools.

IFDC promotes innovation – in agro-inputs, farming methods, agribusiness and increasingly in new tools that help make farms and businesses more efficient and profitable. One example is the organization's work under the Netherlands-funded 2SCALE project, with Acila Enterprises, based in Uganda. Acila Enterprises uses modern information and communication technology (ICT) tools to expand and diversify its business – and provides a model that can be scaled out to other companies and other countries.

Acila works with 6,000 farmers, aggregating sorghum for Uganda's largest buyer, Nile Breweries. It also has three other lines of business: selling agro-inputs, trading in foodgrains and managing an outgrower program in which smallholder farmers produce quality seed on contract to large seed houses. The company has invested heavily in expansion, tripling its warehouse space and acquiring new drying and cleaning equipment. Starting next season, it will offer grain-cleaning facilities to producer groups.

The company's target: by December 2017, 10,000 farmers (3,000 women) will be contracted to supply 8,000 tons of sorghum per season.

Through the 2SCALE partnership, IFDC is helping Acila use ICT tools to automate its operations: recordkeeping, farmer payments, quality monitoring and other functions, using E-Prod software (developed by another IFDC partner). IFDC's role includes capacity building, farmer mobilization and business linkages to enable farmers to improve yields and quality and to assist Acila in increasing volumes and competitiveness.

In September 2015, the company began trialing different E-Prod modules. One module automatically calculates quality-based bonuses based on multiple criteria. Another manages loans and credit recoveries for more than 3,000 farmers. This has allowed Acila to introduce input loans for the first time, advancing farmers cash to buy seeds and fertilizers for the planting season and recovering the loans at harvest.

Traditional weighing scales are being replaced by digital scales linked to the software platform. Acila pays cash on delivery, but is moving to electronic payment, with payments calculated automatically (linked to the weighing scales) and paid via mobile phone.

The company trades about 3,800 tons of grains per season: mostly sorghum but also maize, soybeans and pulse crops. The use of E-Prod has cut transaction costs substantially, allowing Acila to make profits even from very small transactions. More importantly, the software ensures that even "small" smallholders can participate in the market.

success

FERTILIZER TO FARMERS

AIMS III

Story Highlights

The AIMS project was active in Mozambique for nearly a decade.

The project improved seeds and fertilizer blends in Mozambique.

Farmer Carla Beane profited from her encounter with IFDC.

#didyouknow

Eighty percent of Mozambique's population is engaged in agriculture and most of these are smallholders.

> "There was so much maize, enough for the whole family to eat the whole year – and still enough to sell to the traders from Chimoio City."

The Agricultural Input Markets Strengthening (AIMS) programs boosted farmer productivity and built functioning markets in Mozambique for nearly a decade. AIMS III recently wrapped up activities. Now, in Mozambique's most vulnerable regions, more farmers than ever have easier access to quality inputs, at affordable prices, and are equipped with the resources to effectively boost crop productivity.

Previously, farmers in Mozambique relied heavily on traditional NPK blends not suited for their crops. AIMS III, along with the Mozambique Agro-Dealer Development Project (MADD), addressed the issue by focusing on the suppliers. In 2006, nearly 90 percent of agro-dealers sold only traditional seeds and fertilizers. Now, 37 percent of dealers sell up to four varieties, including improved seed and AIMS-developed fertilizer blends tailored to Mozambique's soils and crops. The project prioritized increasing the total number of active input suppliers. In previous years, there were only 150 active suppliers in the Beira and Nacala corridors; now, over 600 input suppliers service farmers in these regions, doubling the number of shops owned by women.

More input suppliers means easier access for farmers. Before, farmers traveled long, hard roads to get inputs, as far as 179 kilometers (km). Today, they travel no more than 60 km. Many farmers live within 30 km of the nearest dealers.

The AIMS III project also equipped farmers with the knowledge and resources necessary to truly benefit from the new technologies. Farmers were connected with government extension officers and trained agro-input dealers, and IFDC and its partners held numerous training demonstrations that provided hands-on experience with new technologies and management practices. One such farmer, Carla Beane, allowed IFDC to host a demonstration on her farm to promote an AIMS technology "package" for maize. The following season, after seeing for herself how well the technology worked, she invested her own money to use the technology on a larger area.

ACCESS.

PRODUCTIVITY.

STRONG MARKETS.

"I have been a farmer for many years, but I never harvested so much," Carla said. "There was so much maize, enough for the whole family to eat the whole year – and still enough to sell to traders from Chimoio City. I will plant my entire farm this way, using what I learned."

Carla's enthusiasm is echoed by many other farmers throughout the Beira and Nacala corridors in Mozambique, where the AIMS project was active for about nine years. The projects were funded by USAID.

project update

PAN-PNSEB

Improves Fertilizer Use in Burundi

Story Highlights

PNSEB made quality fertilizer affordable for smallholders.

Burundi saw an increase in fertilizer use.

The Project to Support the New National Fertilizer Subsidy Program in Burundi (PAN-PNSEB) was an initiative carried out by IFDC as technical assistance to the government of Burundi in the implementation of PNSEB, the government's fertilizer subsidy program. The PNSEB project, launched in March 2013, attempted to curb chronic food insecurity through increased fertilizer use.

The use of mineral fertilizers is an urgent need for farmers in Burundi. Previously, these farmers did not have sufficient means to buy fertilizers in optimal quantities. Until 2013, the use of mineral fertilizers in Burundi was 4 kg/ha, well below the 8 kg/ha average of the African continent. This still falls much lower than the 50 kg/ha target set by the *Abuja Declaration on Fertilizer for an African Green Revolution* in 2006.

By implementing PNSEB, the government of Burundi and its partners increased fertilizer use. This was accomplished by allowing smallholder producers timely access to quality mineral fertilizers in adequate quantities and at affordable prices. Conceived as a public-private partnership where the state holds only a regulatory function, PNSEB also aimed to privatize the fertilizer sector. Privatization increases the sustainability and profitability of the fertilizer supply chain, from distributor, to dealer, to farmer.

PNSEB allowed farmers to order fertilizer by paying a non-refundable deposit of 5,000 Burundian francs (FBU) per bag (about 20 percent subsidized) at the counters of PNSEB-licensed financial operators, located in all 116 municipalities of Burundi. In the first year, about 350,000 farm households (25 percent of total) bought 18,500 mt of fertilizer, more than twice the amount normally purchased before PNSEB. The year after, despite a devastating drought, demand further increased to about 20,000 mt. In the current grant year, demand remains stable despite the difficult security situation. Once conditions return to normal, demand is likely to grow to 40,000 tons per year. A survey showed most farmers were satisfied by the program. Income increases resulting from appropriate fertilizer use averaged about 18 percent.

The PAN-PNSEB project also promoted and funded a national campaign search for new fertilizer formulas fortified with micronutrients that are lacking in most of the Burundian terrain. The research, conducted jointly by experts from IFDC, the Institute of Agronomic Sciences of Burundi (ISABU) and the Ministry of Agriculture, quickly yielded positive results. So far, the results have shown yield increases of up to 70 percent, compared with the old formula.

Funded by the Embassy of the Kingdom of the Netherlands, PAN-PNSEB completed work in November 2015.

HEALTHY SEEDS BOOST PRODUCER YIELDS

Many potato farmers in Burundi lack access to quality seeds. To remedy this, the CATALIST-2 project trains producers on selecting healthy potato plants that produce good seeds. After attending a CATALIST-2 demonstration on seed selection, one farmer shared his success:

> "I saw that positive selection can bring to me a lot of profit. I planted 20 kilograms and obtained 200 kilograms of healthy seed. I am very happy and ready to continue."

Sorghum for Senator!

2SCALE partner Shalem Investments secured a large contract from East African Maltings. Shalem will supply 5,000 tons of sorghum – worth $1.7 million – to make *Senator Keg*, Kenya's fastest-growing brand of beer. Shalem buys sorghum from 7,000 smallholder farmers and cleans and grades the grain at its facility in Meru, Kenya, before delivery. 2SCALE is working with Shalem to intensify farmer training programs to ensure improved volume and quality. Farmer field schools – a unique feature of this partnership – provide hands-on training on new varieties, crop management and post-harvest practices. Pictured above: Ruth Kinoti (right), Shalem CEO, with sorghum farmer.

Fertilizer Plant in Kenya Breaks Ground

Smallholder farmers in Kenya will soon have better access to fertilizers thanks to the construction of a fertilizer blending plant by Toyota Tsusho Fertilizers Africa. IFDC and the African Fertilizer and Agribusiness Partnership (AFAP) will serve as technical advisors on the factory's development and demonstration of crop- and soil-specific fertilizer blends. During the groundbreaking ceremony, Grace Chilande (right), IFDC fertilizer market specialist, discusses the new plant with Kenya's Deputy President William Ruto (gray jacket, red tie) and governors from neighboring counties.

AIMS III: By the Numbers

8,000 Mozambican farmers benefited from field days implemented by the USAID AIMS III project during the 2014-2015 season. Since October 2014, AIMS III held 454 technology demonstrations showcasing better seeds, fertilizer blends and planting practices. The project concluded in July 2015.

#didyouknow

ATT recently provided 100 female farmers with multi-crop planters to ease maize and soy planting.

New Equipment

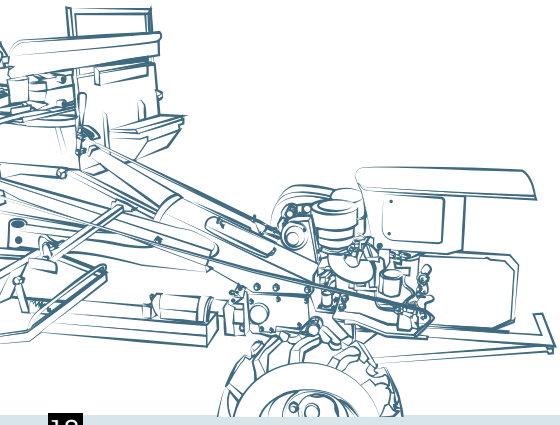
Increases Farmers' Business

Story Highlights

Farmers are boosting production with power tillers.

Project looking to increase crop production 20 to 30 percent.

Farmers are benefiting from 19 power tillers that were given by USAID. The selected farmers are part of the Tono Irrigation Scheme in the Kassena-Nankana Municipality of the Upper East Region. The 16-horsepower tillers each come with additional accessories to ease land preparation. The tillers, costing GH₵ 18,000 (about U.S. $4,700), normally would be too expensive for farmers. A grant provided through IFDC's Feed the Future Ghana Agriculture Technology Transfer project (ATT) helped, subsidizing 70 percent of the cost.



With the finances taken care of, the farmers can now get to work boosting their production. Sebastian Bagina, acting managing director of the Irrigation Company of the Upper Region (ICOUR), believes these machines will help farmers solve land preparation problems for good. To help get the most out of their boosted crop yields, IFDC teaches the farmers good agricultural practices, such as UDP. The technology results in maximum fertilizer utilization, fewer weeds and a better crop harvest.

The project aims to increase crop production by 20 to 30 percent. Blessing Kemakolam, grants manager for ATT, believes this is achievable. "As beneficiaries, you can create jobs and increase your income levels as you support other farmers who did not benefit from the facility," she said.

Dr. Bernard My-Issah, upper east regional director of the Ministry of Food and Agriculture, wants farmers to know that they own a business.

> "This time around, let us be sincere with the donors and be serious with the intervention."

In viewing their farms this way, My-Issah affirms this will drive them to gain maximum benefits. "We have tried all manner of interventions to boost farming," My-Issah says. "But I must say that when farmers do not treat their activities as a business, those interventions do not show positive impact in their lives. This time around, let us be sincere with the donors and be serious with this intervention."

Funded by USAID's Feed the Future initiative, the project introduces new agricultural technologies to increase yields across Northern Ghana. The project will continue activities through 2018.

SUCCESSFUL **TRAINING**

Leads to Expanded Agro-Inputs Shop

Story Highlights

Training program in Nigeria empowers Owoyemi Victoria.

Victoria has new goals for her agro-inputs shop.

Owoyemi Victoria is hard at work. Her agro-input shop seems alive with the chatter of farmers buying improved seeds and fertilizers. Victoria makes the rounds, speaking to each customer as old friends. A few years ago, this wasn't the case. It all started with training.

Victoria was untrained when she began her agribusiness in 2006 in Lagos State, Nigeria. She decided to relocate to the Federal Capital Territory (FCT) in Nigeria in the hopes that things would be better. It was there that Victoria discovered the Feed the Future Nigeria Agro-Inputs project, which helps the development of agribusinesses like hers.

She attended a project training program and learned more about seeds, fertilizer, crop protection products and business management. With this knowledge, Victoria was finally able to build strong relationships with veteran agribusinesses and financial agents. "The benefits I received from participating in the training workshop have improved my confidence, equipping me with the technical know-how I need. Also, through linkages with veterans in the business, I will be able to tackle technical problems better," Victoria said.

Because of IFDC's training program, Victoria now has new goals and aspirations for her business, community, future farmers and agro-dealers. She plans to begin a mentorship program for aspiring agro-dealers. This would help her in the future, because she would partner with protégés and expand her business to rural areas. "This will definitely improve accessibility and affordability of inputs to farmers, promote the growth of my business and ensure employment," she said. With the knowledge and guidance Victoria received from the training program, she can look ahead to a brighter future.

The Feed the Future Nigeria Agro-Inputs Project (2014-2017) strives to create and strengthen a privately-operated input sector. Funded by USAID and the Feed the Future Initiative, the project builds dealer capacity by helping them penetrate the market with their inputs, build their distribution channels and increase farmer awareness of their products. These will be done through capacity building and certification of agro-dealers, private sector channel development, new input technology support and improved access to finance. The project also assists the Government of Nigeria to pass and implement fertilizer law and regulations. This will be accomplished through building the inspection capacity of fertilizer regulators and through mass education of the public on the laws and regulations.

Feed the Future
Nigeria Agro-Inputs Project

PENETRATING THE MARKET • BUILDING DISTRIBUTION • INCREASING AWARENESS •

C4CP DEVELOPS COTTON SECTOR

project update

Story Highlights

IFDC is helping C-4 countries boost cotton production.

USAID C4CP seeks to increase the revenue of cotton producers.

The Northwest and Central regions of Africa feature some of the continent's most favorable soils. In Benin, Burkina Faso, Chad and Mali, commonly referred to as the Cotton-4 (C-4) countries, an estimated 10 to 15 million farmers work these fertile lands to produce cotton, a hotly desired cash crop. In cooperation with USAID, IFDC is working to boost cotton production for C-4 farmers by advocating for administrative and legal policies that benefit the smallholder farmer, initiating farmer-level trainings that reach both men and women, strengthening the capacity of national research and development networks and developing and disseminating new technologies.

The ultimate goal of the USAID C-4 Cotton Partnership (USAID C4CP) is to increase the revenue of cotton producers in the targeted zones of the C-4 countries. Therefore, IFDC designed and implemented multiple training modules emphasizing GAP and post-harvest technology. To go along with these farmer-level trainings, the program organized and delivered region-specific workshops on soil fertility for soil scientists. At the government level, the project fostered the creation of four National Advisory Committees (one for each C-4 country) that meet annually, in an effort to boost the development of a productive cotton market. Following that, a Regional Consultative Committee was created and held its first meeting, with 200 C-4 representatives in attendance.

One of IFDC's central tenets is inclusive development. The C4CP project pursued this by advancing economic and social benefits for women. To begin the project, a study was conducted on gender roles in the cotton value chains of each of the C-4 countries. All training modules developed were gender-sensitive, with a number of them being specifically tailored toward women cotton producers. Nearly 20 percent of the senior trainers were women, and 22 women-only (or women-dominated) demonstration farms were established throughout the C-4 countries. This effort was in line with the United Nations' newly established Sustainable Development Goals (SDGs) for ending poverty and hunger by 2030, specifically Goal 5, the achievement of gender equality and empowerment of women.

As the project continues, and the cotton sector develops, more and more producers in the C-4 will have access to the resources, technology and knowledge necessary to produce more cotton and further increase revenues.

INCREASING COTTON PRODUCTION & REVENUES

UDP BRINGS HOPE TO FARMERS IN MALI

In the Sikasso region of Mali, where soils are distressed after generations of harrowing, farmers must work with poor soil quality. As a remedy, IFDC is training farmers in this region to use UDP technology, which the locals call "bonbon ni." After seeing its benefits firsthand, Rokiatou Diallo, president of the Niena Women Cooperative of Rice Producers, championed the technology and promoted its use to other women in her village.

> "The issue of fertilizer is all the more burning now that our lands are no longer fertile. Today, with UDP, we begin to see hope."
>
> Rokiatou Diallo

2SCALE Holds Conference in The Hague, Netherlands

2SCALE held a conference, 'Food for thought: Made in Africa, for Africa!' in The Hague, Netherlands, on October 27. Representatives from Benin, Ethiopia, Ghana, Kenya, Nigeria and Uganda attended, as well as others who had an interest in learning how to succeed in agribusiness and food security. Attendees discussed market-oriented innovations in African agriculture, the food industry, local sourcing and solutions for smallholder farmers.

WAFP Maps Plan to Distribute Soil Testing Kits

The USAID West Africa Fertilizer Program (WAFP) recently met with private sector and farmer organization agents to review and evaluate the existing backlog of mobile soil testing kits and develop a roadmap for their efficient use in West Africa. WAFP's soil fertility management specialist, Jean Ekwe, emphasized the need for rapid soil testing to diagnose nutrient needs and identify soil conditions impeding plant growth. In the end, the private sector was encouraged to take full advantage of the potential business opportunities created by the importation, distribution and use of these kits.

2SCALE Improves Cassava Market

A 2SCALE initiative in Nigeria opened a market for cassava farmers. Farmers make "chips," which are sold to agents representing 2SCALE partner Psaltry International. Psaltry converts the chips into starch and maltose syrup for sale to Heineken subsidiary Nigerian Breweries. This model is well-suited for areas with poor infrastructure, where small quantities are transported – for example, 20 kg by bicycle rather than 10 tons by truck.

PROFESSIONAL'S CORNER

As chief of party of the 2SCALE program, implemented by IFDC, the International Centre for Development-Oriented Research in Agriculture (ICRA) and the BoP Innovation Center, I see 2SCALE as an incubator for inclusive business, defined as any sustainable and commercially viable business that seeks to involve low-income communities in its agricultural value chain, in a way that is benefiting them (in analogy to the definition by the World Business Council for Sustainable Development).

2SCALE partners with private companies in the agri-food sector that are willing (and, to a large extent, able) to make a difference by involving smallholder farmers, or by offering quality food products to low-income consumers. 2SCALE mainly assists to complete the "extra mile" the private partners are already willing to go. This also means that we do not have a typical solution at hand: no miracle technology, no fixed ideas on the organizational systems or institutional arrangements that make a value chain work. This has not always been so easy to accept for an organization like IFDC, with its highly valued portfolio of technology-driven (fertilizer) or otherwise rather specific and focused (e.g., agro-input dealer training) programs. But I simply believe food product markets are a good entry point to "pull" demand for agro-inputs and services.

While we are ready to complement our private partners in all sorts of domains, we are only doing a few things ourselves. Part of what we do ourselves is what we value most, and this can be summarized as building trust and relationships, or strengthening networks. We focus on networks at two levels:

1. The very local level, which involves the smallholder farmers, and all relevant other local actors at proximity, which can add value to the product that goes through the value chain, including decreasing its cost; we call this the agribusiness cluster.

2. The network that involves the most relevant actors along the value chain, which brings the product to a target market. We call this the value chain network (or value system, in case of multiple-related value chains).

We also focus on the wider business environment that impacts, for instance, on the supply side of informational and financial services. Rules and regulations, while critically important, are not so much our territory. We prefer to stick as much as possible to the micro-economic foundations of inclusive and competitive strategy (cf. Michael Porter), and leave the advocacy to our private partners, or to other programs.

Networks are the foundation for more concrete advisory work, for training and capacity strengthening and for collective action, including the joint creation of those innovations that match local conditions.
The importance of networks for innovation is well-described, albeit mostly for other parts of the world (see, for instance, the work of Bengt-Ake Lundvall). But networks that matter also require smart facilitators that know how to navigate in extremely complex and sometimes outright chaotic competitive playing fields. One of the trickiest challenges is the relationship between the lead partner and 2SCALE on the one hand, and the smallholder farmer and 2SCALE on the other hand. Both rightfully claim our support: we need to strengthen the championship by the lead partner, and the bargaining power of the farmers. The 2SCALE program continuously deals with such tensions. We have learned to take every partnership as a framework that evolves over time and progressively allows for the next steps in inclusive business.

Arno Maatman

Please have a look at 2scale.org to get a feeling of the partnerships that we are working on, and to read my blog.

> "Part of what we do ourselves is what we value most, and this can be summarized as building trust and relationships or strengthening networks."

SOCIAL MEDIA HIGHLIGHTS

2SCALE FEATURED IN *FARMING FIRST* STORY COLLECTION

The SDGs were recently adopted at a special summit convened by the United Nations. On the heels of the Millennium Development Goals, the 17 SDGs will shape global development for the next 15 years. When considering policy-shaping ideas such as the SDGs, it's always important to listen to the farmer. "The SDGs and Me," multimedia stories from ten farmers all over the world, ask how they want to see the SDGs move from ideas to action.

Published by *Farming First*, these stories anticipate and celebrate the upcoming adoption of the SDGs. IFDC submitted a story from our 2SCALE project to the collection. Bernadette Sossou is a vegetable farmer from Benin who has been steadily improving the size and infrastructure of her farm. Supported by the 2SCALE project (implemented by IFDC, ICRA and BoPInc), Bernadette was linked to agricultural financing and sustainable markets, enabling her to receive a profit of 6 million CFA francs. Read her and other farmers' stories at "The SDGs and Me" (farmingfirst.org/sdgs-and-me).

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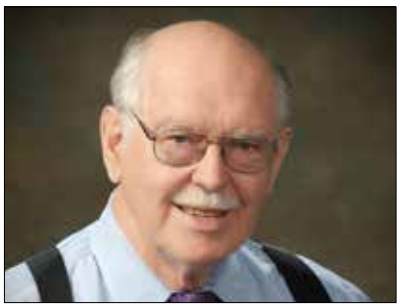
IFDC & VFRC BOARD UPDATES

IFDC

Agnes Kalibata, IFDC board member since 2008 and president of the Alliance for a Green Revolution in Africa (AGRA), appeared on CNN on October 16 with Alex Reid of the Gates Foundation to discuss World Food Day. She also spoke at the International Fund for Agricultural Development (IFAD)'s First Global Policy Engagement Forum to discuss Africa's Agricultural Transformation and the SDGs.

Rhoda Peace Tumusiime, African Union (AU) Commissioner for Rural Economy and Agriculture, gave the closing speech at the First Global Summit on Food Fortification on September 11. She also attended the African Union Commission's Specialized Technical Committee on Agriculture, Rural Development, Water, and Environment in October, where Africa's role regarding the SDGs was widely discussed. On October 30, Tumusiime spoke during the Africa Day for Food and Nutrition Security in Kampala, Uganda. Tumusiime is a member of the IFDC board of directors.

Margaret Catley-Carlson, an IFDC board member since 2006 and patron of the Global Water Partnership, took part in the UBC Dialogues at the University of British Columbia on October 7. This year's focus, "Water Worries," discussed topics such as the steps needed to protect quality and quantity of water supplies.



Peter McPherson, President of the Association of Public and Land-Grant Universities (APLU), spoke at the Board for International Food and Agricultural Development (BIFAD) meeting on "Crossroads: Science, Innovation, Markets, and Policy for Feeding the World." He discussed the deep commitment and partnership of universities in helping USAID fight hunger and poverty. McPherson is chairman emeritus of the IFDC board of directors and serves on the Virtual Fertilizer Research Center (VFRC) board of advisors.

VFRC

Marco Ferroni, Executive Director of Syngenta Foundation for Sustainable Agriculture and member of the VFRC board of advisors, gave a presentation at the Crawford Fund Conference in August titled "Partnerships for Impact at Scale" and participated in a symposium at the Borlaug Dialogue/World Food Prize in Des Moines, Iowa. In addition, Ferroni recently spoke at Rothamsted Experimental Station (UK), Wageningen University (Netherlands) and at a meeting organized by the Asian Development Bank. New smallholder initiatives initiated by members of his team include a weather insurance pilot project in India and agricultural extension via radio in minority languages in Kenya.

Ruth Oniang'o, Chairperson of Sasakawa Africa Association (SAA) and the Sasakawa Africa Fund for Extension Education (SAFE), published an op-ed piece in conjunction with this year's World Food Prize in October. She discussed the need to convince boys and (particularly) girls to embrace farming and agriculture as professions. She is a member of the VFRC board of advisors.

PARTING SHOT

IFDC President and CEO Scott Angle visited project areas in Ghana where he met local staff and smallholder farmers.

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2016 INTERNATIONAL TRAINING CALENDAR

Advanced Application of DSSAT	Addis Ababa, Ethiopia	March 2-9
Developing Private Sector Agro-Input Markets: Designing and Implementing Targeted Input Subsidies	Arusha, Tanzania	May 30 - June 3
Linking Farmers to Markets in Africa (French Edition)	Abidjan, Côte d'Ivoire	July 11-15
Technology Advances in Agricultural Production, Water and Nutrient Management	USA (Alabama, Arkansas, Iowa, Missouri, Tennessee & Washington, D.C.)	August 22 - September 2
Bringing Balanced Fertilizers to the Market: Opportunities and Constraints	Johannesburg, South Africa	October 3-7
Granular Fertilizers Production	Bangkok, Thailand	November 7-11
Promoting Agriculture Technology to Improve Productivity and Net Returns for Smallholder Farmers	Accra, Ghana	December 5-9