

# IFDC

*A QUARTERLY MAGAZINE*

Volume 39, Number 3 • 2014 • An update on the work and progress of IFDC

# Climate Change and Agricultural Development



- Turning a Problem into an Opportunity
- Professional's Column: Greenhouse Gas Research at IFDC
- Featured Blog: Alleviating Climate Change - One Farmer at a Time

# IFDC Quarterly Magazine

© 2014, IFDC. All rights reserved.

The *IFDC Magazine* is a quarterly publication of the International Fertilizer Development Center (IFDC). Unless otherwise noted, printed material published in the *IFDC Magazine* is in the public domain and may be freely reproduced. Source acknowledgment and a copy of any reproduction are requested. Electronic versions in English and French are available at [www.ifdc.org](http://www.ifdc.org).

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.

## EDITOR IN CHIEF

Sharon Singh

## EDITOR

James Thigpen

## GRAPHIC DESIGN/LAYOUT

Victoria L. Antoine

## GRAPHIC DESIGN

Heather Gasaway

## PRODUCTION COORDINATION

Donna Venable

## DISTRIBUTION

Jane Goss and David Wright

## WRITERS

Feyikemi Adurogbangba-Osho, Solomon Duah, Kelli Glasgow, Courtney Greene, Jared McCoy, James Thigpen and Ajay Varadachary

## CONTRIBUTORS

Thomas Hager and John Wendt

## PHOTOGRAPHERS

Feyikemi Adurogbangba-Osho, Guljamal Chokmorova, Paul Ishaku, Jyldyz Niyazalieva, Meg Ross, Ajay Varadachary and Rieke Weel

## BOARD OF DIRECTORS

M. Peter McPherson (USA), Board Chair  
Gerard J. Doornbos (Netherlands), Vice Chair  
Mohamed Badraoui (Morocco)  
Margaret Catley-Carlson (Canada)  
Jimmy G. Cheek (USA)  
Josué Dioné (Mali)  
Agnes M. Kalibata (Rwanda)  
Mark E. Keenum (USA)  
Steven Leath (USA)  
Patrick J. Murphy (USA)  
Mortimer Hugh Neufville (USA)  
Rhoda Peace Tumusiime (Uganda)  
Vo-Tong Xuan (Vietnam)

## PRESIDENT AND CHIEF EXECUTIVE OFFICER

Amit H. Roy - Ex Officio Member

## SECRETARY TO THE BOARD/ LEGAL COUNSEL

Vincent McAlister - Ex Officio Member

## IFDC DIVISIONS

EurAsia (EAD)  
East and Southern Africa (ESAFD)  
North and West Africa (NWAFFD)  
Office of Programs (OP)

## FREQUENTLY USED ACRONYMS

<b>2SCALE:</b> Toward Sustainable Clusters in Agribusiness through Learning in Entrepreneurship	<b>FSI:</b> Fertilizer Sector Improvement
<b>AAPI:</b> Accelerating Agriculture Productivity Improvement	<b>GDP:</b> gross domestic product
<b>AFADA:</b> Albanian Fertilizer and Agribusiness Dealers Association	<b>GHG:</b> greenhouse gas
<b>AGRA:</b> Alliance for a Green Revolution in Africa	<b>IFAD:</b> International Fund for Agricultural Development
<b>C4CP:</b> C4 Cotton Partnership	<b>IPCC:</b> Intergovernmental Panel on Climate Change
<b>CAADP:</b> Comprehensive Africa Agriculture Development Programme	<b>IRRI:</b> International Rice Research Institute
<b>CASE:</b> Competitive Agricultural Systems and Enterprises	<b>ISFM:</b> integrated soil fertility management
<b>CATALIST-2:</b> Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability	<b>KAED:</b> Kyrgyz Agro-Input Enterprise Development
<b>DGIS:</b> Directorate-General for International Cooperation (Netherlands)	<b>PAN-PNSEB:</b> National Subsidized Fertilizer Program in Burundi
<b>ECOWAS:</b> Economic Community of West African States	<b>PPP:</b> Public-Private Partnership
<b>FAO:</b> Food and Agriculture Organization of the United Nations	<b>SMN:</b> secondary and micronutrients
<b>FDP:</b> fertilizer deep placement	<b>TVA:</b> Tennessee Valley Authority
	<b>UDP:</b> urea deep placement
	<b>USAID:</b> U.S. Agency for International Development
	<b>VFRC:</b> Virtual Fertilizer Research Center
	<b>WACIP:</b> West Africa Cotton Improvement Program
	<b>WAEMU:</b> West African Economic and Monetary Union
	<b>WAFP:</b> West Africa Fertilizer Program

# FEATURE

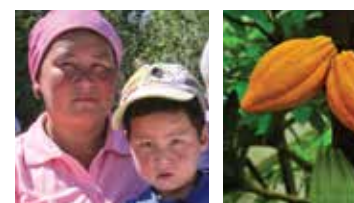
Climate Change and Agricultural Development:  
Turning a Problem into an Opportunity



# CONTENTS

## ARTICLES

- 2** Timeline of IFDC's Third Decade
- 4** Strengthening the Whole
- 11** KAED – Beneficiary Spotlight
- 12** Boosting Rice Production in Myanmar
- 15** CATALIST-2: A Megacluster Approach
- 16** IFDC Partners with Kenyan Government to Accelerate Agriculture
- 16** PAN-PNSEB Project Achieves Twice its Target
- 17** Omission Trials Highlight SMN Importance
- 19** A Bright Future and a New Dawn
- 20** USAID and IFDC Advance Cotton Sector Development in West and Central Africa
- 20** PRODIB: Success in Burkina Faso
- 21** 2SCALE Phases Out Activities in Togo
- 21** IFDC Helps Open Fertilizer Monitoring Center
- 23** M. Peter McPherson: A Portrait of a Leader
- 24** Digital Focus
- 25** Professional's Column
- 26** VFRC Hosts Fertilizer Dialogue in Washington, D.C.
- 27** Board News
- 28** Parting Shot
- 29** Book Announcement



## BRIEFS

- 10** EurAsia Division Briefs
- 14** East and Southern Africa Division Briefs
- 18** North and West Africa Division Briefs



**Correction:** On page 28 of the 2013 IFDC Annual Report, the Swiss Agency for Development and Cooperation should be included in the list of donors for the CATALIST-2 project.

# 1995



**IFDC provides fertilizer for NASA Space Shuttle missions.** One of several National Aeronautics and Space Administration (NASA) space shuttle missions that used IFDC-developed fertilizer for research, the mission explored the relationship between plants that require no synthetic fertilizers and those that do.



**ISFM introduced in West Africa.** Integrated soil fertility management (ISFM) was introduced in West Africa through a two-phase project that ultimately benefited over 2,500 smallholder farm families.



**IFDC helps Venezuela privatize its fertilizer sector.** Through 1999 IFDC aided Petroquímica de Venezuela S.A.'s overhaul of its facilities, increasing production and efficiency through extensive training of its staff.

# 1997



**IFDC and AFADA lobby to ease fertilizer importation restrictions in Albania.** IFDC, working with the Albanian Fertilizer and Agribusiness Dealers Association (AFADA) and the Albanian government, advocated the passage of sweeping fertilizer import legislation that halved the tariffs and value-added taxes on 11 key agricultural inputs.

# 1998



**USAID appoints team to review IFDC operations.** The team's report noted, "IFDC is the only nonprofit, international organization that can mobilize the whole range of fertilizer, agronomic and agribusiness knowledge and experience to achieve its goals. Its activities span from the characterization of raw materials to the manufacture of fertilizers, to problems and issues of nutrient management for crop production and soil fertility – and finally, environmental protection."

# 1999



**IFDC celebrates its 25th anniversary.** Summarizing IFDC's impact over its first 25 years, Dr. Nyle Brady, Emeritus Professor at Cornell University and former director general of the International Rice Research Institute (IRRI) noted, "IFDC ... has helped farmers and

their national and international compatriots gain a better understanding of the critical role of plant nutrients in helping the world feed itself ... the international accomplishments of this Center have clearly shown that this is an institution with a global mandate and with a truly global impact."



**IFDC recognized for its work as 20th century comes to an end.** In the Special Millennium Issue of *Farm Chemicals International*, IFDC was recognized as "one of the top ten organizations that shaped the world during the past century."



**IFDC helps reduce Bangladeshi agriculture trade tariffs.** Through the United States Agency for International Development (USAID)-funded Agro-based Industries and Technology Development Project (ATDP), IFDC advocated legislation that reduced tariffs in 25 categories related to agribusiness.



**IFDC launches the ANMAT project.** The Adapting Nutrient Management Technologies (ANMAT) project promoted the adoption of fertilizer deep placement (FDP) throughout Bangladesh, Cambodia and Vietnam, with over 600,000 farmers adopting FDP technology throughout the targeted countries.

# 2000



**ISFM expands across West Africa.** In 2000, a project extension of an earlier ISFM project encouraged farmers in the Sahel to adopt ISFM technology. By 2002, nearly 2,000 farmers were participating in the adoption of ISFM in seven countries.



**IFDC provides emergency relief in Kosovo.** USAID granted IFDC \$750,000 in emergency funds to assess and aid in the import and distribution of agro-inputs for

Kosovo's upcoming 2000 cropping season. IFDC also organized a private-sector distribution and dealer network.

# 2001



**The KAED project is launched.** The USAID-funded Kyrgyz Agro-Input Enterprise Development (KAED) project set the stage for seed production, information systems implementation and policy reform. One of IFDC's most versatile and successful projects, IFDC phased out activities in 2014.

# 2002



**IFDC introduces its first agro-input voucher program in Afghanistan.** A 2002 editorial in the *New York Times* stated, "What is needed now [in Afghanistan] is aid directed at reviving agriculture and trade..." At that time, IFDC was

already actively engaged in Afghanistan, introducing its first agro-input voucher program.



**IFDC helps grow national economies through holistic market development.**

IFDC had refined its market development efforts to become a linchpin of efforts in building or reshaping nations by the early 2000s. In 2002, IFDC was actively building markets in Afghanistan, Albania, Azerbaijan, Ghana, Kosovo, Kyrgyzstan, Malawi and Nigeria.

# 2003



**IFDC promotes prosperity through training.** By 2003, IFDC was a renowned expert in specialized training. One of that year's training programs drew 51 participants from eight transitioning nations: Albania, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan – representing the entirety of Central Asia.

# 2004



**IFDC introduces the CASE solution to market development.** The Competitive Agricultural Systems and Enterprises (CASE) solution strengthens capacities at every level of a value chain. By mid-2005, more than 100,000 farmers in West Africa had adopted the CASE approach, increasing their incomes by 20-50 percent.



**IFDC develops PRDSS.** In 2004, a group of scientists and programmers from IFDC developed a phosphate rock decision support system (PRDSS). The PRDSS predicts the economic feasibility of various forms of phosphate rock for direct application to crops. See our interactive timeline at [ifdc.org/history/about](http://ifdc.org/history/about).

It was 1995. Dr. Amit Roy, who had only been president and CEO for three years, remembers that time as a difficult one for IFDC. Finances were tight. Fertilizer was not *en vogue*. And, despite the growing need for agricultural development in Africa and South Asia, development was not on the minds of those whose eyes were focused on the Middle East. There was a moment in that decade where many thought IFDC would not make it. But the Center prevailed, and the third decade became one of the most defining in IFDC's history.

# IFDC's Third Decade Strengthening the Whole

Little did anyone know at the time, but the Center's second decade had prepared it to conquer these difficulties. The organization's focus had shifted to market development. It did not take long after that for the leading minds to see that developing a nation's entire agriculture sector – from farm to fork, as we like to say – drives development of its people, from the poorest to the richest. It betters

incomes. It increases access to education. Youth stop leaving the farms for the city, seeing the family farm as an entrepreneurial opportunity. And IFDC created an approach that took all this into account: CASE.

Introduced near the end of the decade after six years of development, the CASE approach takes all actors on a specific value chain into account and links them together (everyone from the financier to farmer). CASE gives smallholder farmers



The CASE approach has roots in IFDC's holistic work in Albania – from improving fertilizer importation (top) to connecting farmers to markets (bottom).





knowledge and tools to increase the amount and quality of their crops. It then links them to other farmers and profitable markets where they can sell their surplus produce. By the end of the third decade, more than 100,000 farmers were benefiting from the CASE approach. Incomes for many of these farmers increased by up to 50 percent.

The CASE approach grew from its first project (From Thousands to Millions) into being the linchpin of one of IFDC's most heavily funded (and arguably most successful) projects, 2SCALE. Funded by the Netherlands Directorate-General for International Cooperation (DGIS) and private sector enterprises through 2017, 2SCALE develops agribusiness clusters (groups of professional farmers planting the same crop) and enables them to engage in profitable markets. 2SCALE aims to reach 1.15 million farmers by the end of the project.

CASE shaped IFDC's third decade and continues to define our mission. The creation of CASE taught us that survival comes by innovation. Innovation drove IFDC's success in the fourth decade, and it fuels its future. 🌍



Building markets holistically started in Albania. IFDC staff who worked there remember literally creating the fertilizer market from scratch to feed the fledgling agriculture sector. That experience gave a rare insight into the holistic needs of a growing economy. Albania (see *IFDC Magazine* 39.2) was a great success, and the experience of building the sector helped IFDC realize, as was said in a promotional video at the time, "If it can be done in Albania, it can be done anywhere." That optimism created CASE.

CASE integrates farmers into value chains organized around specific crops or commodities. A value chain links the numerous steps that a product takes from the farmer to the ultimate consumer. In these commodity value chains, IFDC not only helps strengthen and professionalize smallholder farmers but supports growth in the agro-input, processing and marketing industries that facilitate agribusiness expansion.



# Climate and Agricultural TURNING INTO AN

# Change

## Development

A PROBLEM

OPPORTUNITY



The effects of climate change often seem far-off: melting icecaps in the Antarctic, more frequent cyclones in South Asia and the expanding Sahara Desert. But climate change affects everyone. Small joys, such as happy hour at the local pub, for example, may not be so joyous in the near future. Agave plants in Tequila, Mexico, are facing harsher, drier summers. In contrast, the Maldives exemplify the extreme side of climate change: from falling biodiversity to rising sea levels which could entirely inundate the coral-based islands. While humanity can survive without

happy hour tequila and vacations in the tropics, climate change threatens the basic human need of food. With global cooperation, this threat can be transformed into an opportunity for a sustainable future with a highly resilient agricultural system.

The United Nations Intergovernmental Panel on Climate Change (IPCC) recently released a report stating that if action is not taken now, climate change could severely threaten the world's food supply. The world's 500 million or so smallholder farms are expected to feel the harshest effects, thereby severely damaging the food supply for approximately 2 billion already food-insecure and malnourished people.

“Climate change can be mitigated. But only if citizens and states everywhere recognize the value of cross-border collaboration ... and accept that people's well-being cannot be left ... to national responses alone.”

– United Nations Development Program report summary



Bangladeshi farmers harvest rice in a cyclone-ravaged deepwater rice field. Photo: Flickr.com/IRRI

Feeding a projected population of 9.6 billion in 2050 in the face of climate change will be one of the greatest challenges the current generation has ever faced. There is good news, though. Agriculture, the answer to humanity's most basic need, is also the answer to both mitigating and adapting to climate change. In fact, the IPCC notes that climate-smart agriculture could eliminate nearly all of agriculture's total GHG emissions currently associated with agriculture. However, this would require collective action.

The Chicago Council sets a good example of a coalescing of leaders to effect sustainable climate change policy. At the 2014 Chicago Council's Global

The initiative unites public and private organizations to “harness climate data in ways that will increase the resilience of America's food system and help reduce the contribution of the nation's agriculture sector to climate change.”

Intensifying agriculture is a double-edged sword. The previously mentioned IPCC report notes that agriculture, including land clearing and forestry, constitutes 25 percent of human-induced greenhouse gas (GHG) emissions, which are seen as a root cause of climate change. At the same time, the Chicago Council report notes that by 2050 agricultural production must increase by at least 60 percent to feed the earth's additional 2-billion-stronger population.

Food Security Symposium, a bipartisan group of scientific, business and policy leaders released a report to urge the United States government to “take action to curb the risks climate change poses to global food security.” The report, *Advancing Global Food Security in the Face of a Changing Climate*, argues that global food systems are fighting against two opposing parallel forces, rising population and increased climate change. One of the best weapons against these forces, the report argues, is to bolster agricultural research on climate adaptation and mitigation. U.S. President Barack Obama recently demonstrated this idea by announcing a new climate data initiative with a focus on food resilience.

To feed and nourish the world in the face of climate change, global agricultural research and development must focus not only on technologies that mitigate and adapt to climate changes but also those that are accessible to small farmers and can sustainably increase yields and incomes. Fertilizer is a good place to start.

Mineral fertilizers have been one of the main driving forces for increased crop yield, agricultural productivity and reduced labor requirement. Roughly half of today's world food supplies depend on synthetic nitrogenous compounds. Since fertilizer production and use constitute 40 percent of agricultural GHG emissions, increased efficiencies have great potential to improve the GHG balance. Emissions can be directly reduced by more efficient nutrient delivery and indirectly by decreasing the need for additional land clearing (as yields increase per unit area).

A powerful example of these multi-dimensional benefits is the deep placement of nitrogen (N) fertilizers as briquettes into the soil instead of broadcasting prilled N fertilizers on the soil. IFDC tests – currently ongoing in Bangladesh and at headquarters – are showing that the use of FDP reduces fertilizer GHG emissions, while 15 percent higher yields are obtained with 35 percent less fertilizer use. These benefits have led to the adoption of deep placement by nearly two million Bangladeshi farming households, along with an increasing number of farmers across Africa. The technology exemplifies the synergy needed to both increase food production and reduce climate change's effects.

The use of fertilizers also helps to increase the efficient use of water. A number of projects led by IFDC and other organizations show that better management practices reduce agriculture's footprint in terms of GHG emissions, land and water use. Irrigation schemes such as alternate wetting and drying (AWD) and no-till agricultural systems, among many various research initiatives, show promise for climate-friendly farming. Better management overall leads to more stable and resilient forms of agricultural production. But before any technology can help

the issue, inter-governmental and climate-sensitive policies must be put in place. New research and technology fuels climate-intervention policies. As this global issue cannot be resolved by single actors, the Chicago Council has urged global public-private partnerships (PPP) to advance research and technology geared toward climate change adaptation.

On a local level, government extension services can pair up with development organizations to train farmers on climate-smart approaches to agriculture. Scientists and researchers can work together – even virtually, with the Virtual Fertilizer Research Center – to improve climate change data and solutions. On a wider scale, governments can encourage more research and unite with other governments to create trade policies easing the flow of fertilizer, crops and other commodities – tools that farmers need to make an impact.

Though nearly two million Bangladeshi farming households have adopted FDP, this success needs to be copied by many millions more. Though improved water management strategies have been adopted by many farming families across Africa, many more farmers are still unprepared for climate change. And while these are all good things, single solutions are not always global solutions. In the end, everyone plays a role in either exacerbating or mitigating climate change. Climate change is a global issue that requires global solutions. With governments, organizations and private entities working together, we can tackle the conundrums of climate change and still nutritiously feed the world.

A recent United Nations Development Program report summarizes it best: "Climate change can be mitigated. But only if citizens and states everywhere recognize the value of cross-border collaboration ... and accept that people's well-being cannot be left ... to national responses alone." 🌍

## Potential Effects of Climate Change

### AFRICA

- 20-50 percent decline in water availability by 2050.
- Some crop yields may be reduced by 15 to 20 percent.
- This could result in agricultural gross domestic product (GDP) loss of 2 to 4 percent.

### ASIA AND THE PACIFIC

- 7 out of the 10 nations at greatest risk are in Asia and the Pacific.
- 20 million Bangladeshis displaced by rising sea levels by 2050.
- 3.6 billion Asians currently at "high or extreme" risk to effects such as rising seas.

### AMERICAS

- Coffee diseases increasing in Latin America, threatening the industry.
- In the Andean countries, increased stress on water use, a primary means of electricity.
- The current drought in California is costing farmers \$1.5 billion.

BRIEFS

Results from Accelerating Agriculture Productivity Improvement's (AAPI) GHG emissions research in Bangladesh and at IFDC headquarters have been presented at several workshops and conferences worldwide. Dr. Yam Gaihre and M.R. Islam, a scientist from the Bangladesh Agricultural University, gave presentations outlining the research methods used and preliminary results of the experiments.



622

families in Kyrgyzstan's Svetlaya Polyana rural council now have access to a full basin of water as a result of land rehabilitation efforts implemented by IFDC's KAED project in partnership with Kumtor Gold Company.

“In the past, people in our village often had conflicts and fights because of lack of irrigation water. Thanks to the provided support, the lands that had not been used for 20-30 years are irrigated and wheat planted on these lands is about waist-high now.”

– Bolotbek Sulaimanov, head of Lipenka ayil okmotu in Kyrgyzstan, where a pump station was reconstructed by KAED and Kumtor Gold Company.



Joshua DeWald

has been appointed as director of IFDC's EurAsia Division and brings 18 years of international development experience to the position. DeWald previously worked with Mercy Corps and the Peace Corps.



In countries with predominately rice-based diets, such as Bangladesh, zinc deficiency threatens food security and health. The deficiency of zinc is the most widespread micronutrient deficiency in rice. AAPI research is showing promising results with the addition of zinc to fertilizer blends. Increases in both yield and zinc content in rice have been observed, with potential for increased human nutrition.

# KAED Beneficiary Spotlight

One of IFDC's successful economic growth projects marked its close at the end of the third quarter. During 13 years of work in the Kyrgyz Republic, the KAED project has focused on developing agro-input distribution systems, transferring food security-related technology to thousands of farmers, supporting seed and livestock sectors, promoting improved agricultural practices and bringing degraded land back into production. Funded by the U.S. Agency for International Development, KAED was one of IFDC's most versatile projects, successfully implementing three phases of \$20 million Economic Development Fund (EDF) programs that made a contribution to sustainable development of the agriculture sector in the country.

*Exclusive web content: View the entire photo series of farmers who benefited from the project at [ifdc.org/media-center/IFDC-Perspectives/KAED-Photo-Story](http://ifdc.org/media-center/IFDC-Perspectives/KAED-Photo-Story).*

(1) "This project has supported the Association of Livestock Breeders for many years. In 2013, KAED supported the opening of the first Animal Reproduction Biotechnology Center in the country. This brought the newest technologies that will enable further development of the livestock sector."

- **Kalmurat Djaparkulov**,  
head of the Animal Reproduction Biotechnology Center

(2) "With the help of this project I learned to manage the poultry business properly. This project has done a lot of work to promote and develop the poultry industry in southern Kyrgyzstan."

- **Asilidin Nasiridinov**,  
poultry farmer, southern Kyrgyzstan

(3) "Many times my family was on the verge of bankruptcy. We did not know how to grow vegetables in greenhouses or how to properly apply fertilizer. KAED agronomists taught us proper methods and also introduced us to compost fertilizer. Our yields have increased, and now we produce tomatoes and cucumbers of much better quality."

- **Aisha Asatova**,  
farmer in northern Kyrgyzstan

(4) "KAED agronomists conducted trainings on horticulture for farmers in our region. I grow peaches and cherries. Thanks to KAED trainings and field days, I learned proper cultivation methods. I was taught how to fight pests, and this helped me to save my harvests. I am very grateful to KAED project specialists."

- **Kamchy Koichiev**,  
farmer in southern Kyrgyzstan

(5) "Our land was not irrigated for many years. Farmers could not grow any crops here. After KAED rehabilitated our land and brought irrigation water to this site, farmers started growing many different crops. I saw this land brought back to life. We are so grateful to this project for its wonderful work."

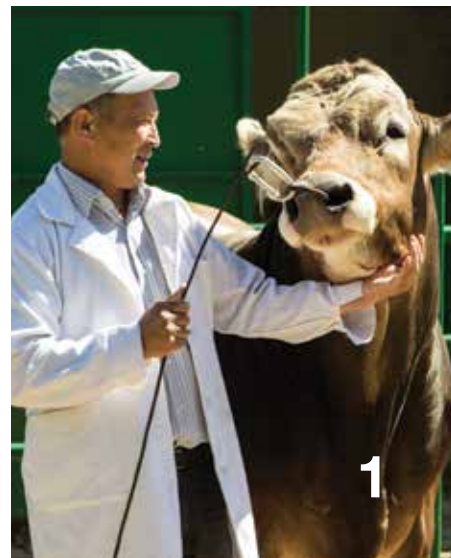
- **Zymyrat Kasymova**,  
land rehabilitation recipient, southern Kyrgyzstan

(6) "Our farm, Chabrets, received modern irrigation equipment through the EDF III program. This year Kyrgyzstan is experiencing droughts, and I realize that without this equipment we would simply lose our yields. Support that our farm received helps us to produce and supply livestock products across Kyrgyzstan. This year we even exported a batch of our products to Russia."

- **Andrei Rodikov**,  
head of Chabrets Farm

(7) "The KAED team did a remarkable job in implementing EDF programs that will definitely have a positive long-lasting effect on the agriculture of Kyrgyzstan. KAED specialists provided strong support to EDF beneficiaries throughout the entire process of implementation."

- **Turatbek Ukubaev**,  
head of Eldan Farm



1



2



3



4



5



6



7



# Boosting Rice Production in Myanmar

Earlier this year, IFDC specialists began selecting trial sites in Myanmar, testing specific agricultural conditions in order to form a tailor-made approach for helping the country's farmers. These trials are part of the Fertilizer Sector Improvement (FSI) project, funded by USAID. The project is an effort being customized specifically to support farming in Myanmar. Partners in this project include IRRI, Welthungerhilfe (WHH), Awba Group and the Fertilizer and Pesticide Association of Myanmar.

Rice is a huge part of Myanmar's culture. Agriculture makes up 38 percent of the country's GDP, and 70 percent of the working population (about 24 million people) are involved in the field. Almost eight million hectares (ha) of land in Myanmar are devoted to rice crops; that is almost 74 percent of the country's total arable land. Rice production has steadily risen since the 1960s when several non-governmental organizations (NGOs) began collaborating with local farmers. According to the Food and Agriculture Organization of the United Nations (FAO), by 2012 the country was producing close to 33 million metric tons (mt) of rice per year, an increase of about one-third in just the past 10 years. With that economic impact and that many people being affected, a boost for Myanmar's fertilizer sector means a boost for Myanmar in general.

Myanmar's rice sector represents huge potential with the introduction of improved fertilizer management, including FDP technology. With the FSI project, IFDC will help take already successful farming practices and augment them to help smallholder rice farmers in Myanmar to produce exponentially higher yields.

The FSI project has specific agricultural and economic aspects to explore and strengthen. The project seeks to improve access to FDP technology for 80,000 smallholder farmers and also teach them techniques that have proven beneficial in other IFDC projects worldwide. The project's main route is a productivity one, focusing on setting up private sector management of fertilizer and fertilizer supplies such as FDP technology. Farmers using FDP technology

in other countries experienced crop yields improved by 15-20 percent while simultaneously using one-third less fertilizer. The 80,000 targeted farmers in Myanmar will benefit from field research

to measure impact of the technology for their land.

The trial sites in this monsoon season will provide demonstrations of FDP technology and its benefits. Farmer training and field days will motivate farmers to adopt the technology, which should encourage manufacturers and distributors to produce, stock and sell the products and create a supply for farmers. The intention is to establish small businesses with briquetting machines spread out at township level or in selected large fertilizer businesses. As shown in IFDC's work in Bangladesh, either option has its benefits and challenges. As for practical applications in the farmers' fields, progress is being made on mechanical implements for using FDP. While FDP is certainly an improvement on broadcast fertilizing, surveys in Bangladesh found that the hand applicator for FDP takes just as much effort to use as manual application. A less strenuous implement will further encourage adoption of these fertilizing practices.

Myanmar's rice production is strong and can only grow from here. The FSI project is just the catalyst to make that happen. A boon is coming for Myanmar's fields, its rice, its economy and its people. 🌱



BRIEFS

IFDC launched the Shape and Lead Challenge in Burundi, the Democratic Republic of the Congo and Rwanda in July. Shape and Lead is an online community that brings together small and medium enterprises, cooperatives, financiers, mentors and coaches active in the agriculture sector. The challenge selected agricultural entrepreneurs to receive training, mentoring and many other benefits to help them become leaders in their value chains.



IFDC and several partners launched the “National Platform for Dialogue and Promotion of Fertilizer Use” in Mozambique in July. The platform will help build a strong fertilizer supply and distribution chain and promote greater agro-input use by smallholder farmers. Over 120 delegates participated in the launch meeting, representing government agencies, research centers, private firms (fertilizer, seed, logistics, finance), NGOs, donors and farmer groups.



In July, IFDC President and CEO Dr. Amit Roy spoke at the Sasakawa Africa Association Symposium. His message, “Sustaining Agricultural Productivity,” highlighted successes in Bangladesh and sub-Saharan Africa and challenged the global community to intensify its commitment to agriculture.

*Dr. Amit Roy discusses events of the meeting with VERC board member Ruth Oniang'o and IFDC board member Rhoda Peace Tumusiime.*

Over the last year, CATALIST-2 supported:

**70**  
*agribusinesses*  
around  
**14**  
*commodities*  
reaching  
**170,000**  
*farmers.*

In Ethiopia, 2SCALE is helping farmers double sesame production in the next few years. Demonstration plots were established to show the benefits of recommended farming practices such as improved seed varieties and fertilizer. At demonstration sites in two of the country’s most important sesame areas, yields rose from 480-500 kg/ha to 1,375 kg/ha. The results impressed the zonal administration and the Ministry of Agriculture, which has announced plans to scale up the demonstrations to new sites in these areas and to other sesame areas across Ethiopia.



Since 2012, the Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability-2 (CATALIST-2) project has worked to promote agribusiness cluster development, market integration and agricultural intensification. The main objective of the project is to increase food security in sub-Saharan Africa by bolstering the income and production of around one-million farmers in central Africa's great lakes region.

Recently, the CATALIST-2 project has begun supporting megaclusters so as to reach the objective of one million farmers by 2016. Where the project previously worked with conventional clusters that focus on a single value chain or commodity (such as maize for livestock feed), the focus has evolved to create megaclusters that focus on one or several value chains or commodities in a single geographic or agro-climatic region. A megacluster could possibly involve several value chains for a single commodity based on several conventional small clusters. For example, a megacluster can engage both seed producers and feed producers in a specific value chain, such as maize. It can also address another crop in rotation with maize, such as soybean. A small cluster on soybean may join the same megacluster. In such a case, farmers are the same, but the buyers may be different.

# CATALIST-2: A Megacluster Approach

SDC Helps Project  
Improve M&E System


IFDC and its partners select megaclusters by first identifying a specific geographic or agro-climatic and socio-economic region with opportunities for specific marketable agricultural commodities. The partners then identify various value-chain stakeholders, production and market issues and collaboration opportunities. Once individual clusters are identified, megacluster coaches and stakeholders develop cluster-specific business plans that fit into a master megacluster action plan that addresses cross-cutting issues, such as poor access to seeds or to finance. Each megacluster is under the responsibility of a megacluster coach, who is employed by IFDC and collaborates with partner NGOs.

By engaging multiple value chains in a specific location and partnering with governments, non-governmental organizations and other partners in the

public and private sectors, CATALIST-2 engages substantially more farmers – and thus the number of farmers experiencing increased incomes.

The project addresses cross-cutting issues at district and national levels, working with ministries of agriculture, universities and research and extension services. Together with the Netherlands' Ministry of Foreign Affairs and the Swiss Agency for Development and Cooperation (SDC), CATALIST-2 has been able to strengthen internal capacity of the project team regarding these cross-cutting issues. With SDC support, The CATALIST-2 M&E specialist was able to attend the International Programme for Development Evaluation at Carleton University, enabling the project to improve its M&E system. Both donors have provided valuable support on the topic of gender and social inclusion now that the project is working on mainstreaming these issues throughout its activities.

Involving these higher-level stakeholders sustains impact throughout and beyond the project implementation period.

CATALIST-2 is funded by The Netherlands' Ministry of Foreign Affairs and the Swiss Agency for Development and Cooperation (SDC). 



## IFDC Partners with Kenyan Government to Accelerate Agriculture

IFDC and the Kenyan government have signed an accreditation agreement formalizing their shared commitment to sustainable agricultural development in the country. The agreement establishes Kenya as a “host” country to IFDC. IFDC’s priorities are those of Kenya – ensuring that fertilizer, training and agricultural technologies reach the farmers that need them the most.

“Agriculture is the engine that drives Kenya’s economy,” said Dr. Amit Roy, IFDC president and CEO in a statement prior to the event. “Our valued partnership with the Kenyan government will keep that locomotive roaring.”

IFDC’s collaboration with the Kenyan Ministry of Agriculture began in the early 1990s with joint projects on fertilizer market liberalization and training programs on agro-input market development. The portfolio soon expanded to address soil and crop management, input policy, output markets, agribusiness development and other areas. In 2009, Nairobi became IFDC’s regional headquarters for its East and Southern Africa Division.

Sixty percent of Kenyans rely on agriculture for their livelihoods. In an address during the signing ceremony, Ambassador Amina



*Ambassador Amina Mohamed, Cabinet Secretary for Foreign Affairs and International Trade, Government of Kenya (right), and Rob Groot, director of IFDC’s East and Southern Africa Division (left), during the accreditation signing ceremony.*

Mohamed, Cabinet Secretary for Foreign Affairs and International Trade, Government of Kenya, said, “...IFDC’s work in strengthening Kenya’s fertilizer sector will directly contribute towards making this country food secure.”

IFDC efforts in Kenya currently center on working with the Ministry of Agriculture to better target fertilizer subsidies, strengthen agro-input policies, support agribusiness development and build capacity among farmer organizations. 🌍

---

## PAN-PNSEB Project Achieves Twice its Target

The support project to the National Subsidized Fertilizer Program in Burundi (PAN-PNSEB) aims to open the agricultural market of Burundi to private

the management of fertilizer distribution from the Burundian government to the private sector. The transfer is stimulating fertilizer demand, improving access to and reducing prices of fertilizer.

IFDC, through the PAN-PNSEB project funded by the Netherlands’ Ministry of Foreign Affairs, provides support to the Burundian Ministry of Agriculture for the integrated implementation of PNSEB. This support covers several key areas: institutional support and capacity building, communication and information sharing, operationalization and progressive computerization of the subsidy system, research and testing of improved fertilizer formulations and other ISFM technologies, development of input and output markets and engagement with farming cooperatives and producers’ associations.



Where the previous subsidy program often left farmers paying full price for limited amounts of fertilizer, PAN-PNSEB is granting easier access to vouchers while still requiring a tangible commitment from farmers. The program

sector participation, increasing investment in the nation’s most significant economic sector. Since the implementation of PAN-PNSEB in 2013, more than 650,000 farmers have registered – twice the target. With the goal of supporting farmers by increasing food security by raising agricultural productivity and rural incomes, this program has transferred

offers incentives for farmers, such as a three-week turn-around time for their trade, which offsets their initial monetary commitment to the program. Farmers are also given more autonomy within PAN-PNSEB in that they are free to use fertilizer on any crop. This is a significant asset to this demand-driven commercial system.

Countrywide research on new fertilizer formulations has produced encouraging results. The next phase aims to develop improved blends for the main crops and the principal climatic zones. Subsidizing many types of fertilizers would, however, require a computerized voucher system for efficient delivery and accurate accounting – both of which are essential for a sustainable commercial system. 🌍

Developing more efficient fertilizers is key to achieving increased agricultural productivity. Recent studies by IFDC in Africa have found that traditional NPK (nitrogen, phosphorus, potassium) fertilizers are lacking in other essential nutrients and are not providing farmers with optimal returns to fertilizer investments. ISFM requires using fertilizers formulated for particular soil conditions and crop demands, which often includes nutrients not found in NPK fertilizers. Balanced fertilizers combine NPK and secondary and micronutrients (SMNs) to achieve optimal plant nutrition and increased net farmer income.

Liebig's Law states that the amount of the scarcest nutrient limits response to other nutrients. N, P and K are the most expensive nutrients because they are required in the largest quantities, but other deficient nutrients often limit NPK response. Fertilizer omission trials help determine which SMNs should be added to provide the most economically beneficial fertilizer to each farmer. In an omission trial, all nutrients that are potentially deficient, based on soil tests, are included in one treatment. Each subsequent treatment omits only one nutrient. The decrease in yield after removing a nutrient can be used to assess its economic importance. For example, trials in Burundi show that maize is often poorly responsive to NPK alone, but is highly responsive when sulfur, zinc, boron, copper and dolomitic limestone are added to NPK. Omission trials show the greatest response to copper, boron, zinc and dolomite, but less response to K and sulfur. This information is then used to formulate a balanced maize fertilizer.

SMNs are relatively inexpensive compared to N, P and K because they are required in lesser quantities. Balanced fertilizers can lead to a great increase in yield and net farm income. The table below shows results obtained in several countries.

## Omission Trials Highlight SMN Importance

Crops vary in their nutrient requirements and responses to SMNs. Soil mapping is essential to identifying areas where various nutrients are likely to be deficient. Already, the countries

of Burundi, Ethiopia and Rwanda have been mapped, as well as areas of project operation in Uganda. These maps show that sulfur, zinc and boron deficiencies are the rule rather than the exception. In Rwanda and Burundi, large areas of soil acidity have also been identified, along with associated deficiencies in calcium and magnesium. Modest doses of dolomitic limestone, with rates chosen to address calcium and magnesium deficiencies rather than to correct for soil acidity, have so far been evaluated only in Burundi and have resulted in large yield increases. Omission trials are required in order to find economically viable fertilizers.

The costs of trials and mapping are small in comparison to the value of the increased yields obtained. Moving forward, expanding the blending of more balanced fertilizers and the availability of SMNs to farmers is a priority. Several African nations have already made blending balanced fertilizers an active priority. Blenders in Ethiopia, Kenya, Mozambique and Zambia are already able to blend fertilizers targeted to crop and soil requirements. IFDC is actively working with blenders and various governments to make targeted fertilizer blends available to smallholder farmers.

### Highlights from the trials:

- Various crops and locations have differing nutrient needs.
- Site- and crop-targeted fertilizer blends that include SMNs can increase yields as much as 70 percent over traditional blends.
- Most crops respond well to sulfur, zinc, boron and copper, which can replace more expensive nutrients, allowing farmers to increase net profits.

Crop	Country	Number of Sites	NP(K) Only	NP(K) with Secondary/ Micronutrients	Yield Increase Due to SMNs	% Yield Increase	SMNs Contributing to Response
Maize	<b>Burundi</b>		--yield average, mt ha <sup>-1</sup> --		mt ha <sup>-1</sup>		
Maize	<b>Mozambique</b>	44	3.1	5.3	2.2	71%	Dolomite*, S, Zn, B, Cu
Maize	<b>Ethiopia</b>	17	3.0	4.2	1.2	40%	Mg, S, Zn, B
Maize	<b>Malawi</b>	9	5.6	6.7	1.1	20%	S, Zn, B
Wheat	<b>Ethiopia</b>	29	3.7	5.1	1.4	38%	S, Zn
Rice	<b>Rwanda</b>	39	3.8	5.2	1.4	37%	S, Zn, B, Cu
Beans	<b>Burundi</b>	25	4.3	5.9	1.6	37%	S, Zn, B, Cu
Potato	<b>Burundi</b>	47	2.0	3.0	1.0	50%	Dolomite, S, Zn, B
Potato	<b>Rwanda</b> (Burera district)	24	16.6	22.6	6.0	36%	Dolomite, S, Zn, B
		13	22.7	32.2	9.5	42%	S, Zn, B

\*Dolomite is a type of lime containing Ca and Mg

BRIEFS



IFDC is collaborating with the Embassy of the Kingdom of the Netherlands and Solidaridad West Africa on the Cocoa Rehabilitation and Intensification Programme (CORIP) in Ghana, the world's second largest producer of cocoa. The program seeks to provide a sustainable productivity increase for Ghana's cocoa farmers by improving their access to training, improved planting material, fertilizers and other inputs, in addition to providing technical support. This will be accomplished through the establishment and operation of Rural Service Centers (knowledge and input hubs) throughout Ghana. Key partners include several private sector cocoa companies, the Ghana Cocoa Board (COCOBOD)/the Cocoa Research Institute of Ghana (CRIG) and the Dutch Sustainable Trade Initiative (IDH).



During a visit to the IFDC Nigeria office, Nigerian Minister of Agriculture and Rural Development Dr. Akinwumi Adesina (right) practices registering a farmer for the Federal Government's Growth Enhancement Support (GES) scheme using "Touch and Pay" (TAP) technology. The technology allows for farmer enrollment and redemption in the government's fertilizer subsidy program without requiring a network connection. "TAP allows our farmers to redeem their inputs in areas where there are no networks, simply by using Android phones as smart cards," Adesina said. "Just tap it on the phone and all the allocation shows up, and the farmers redeem their seeds and fertilizer without any network. It's revolutionary. We are the first in the world to do it." Adesina was named an "honorary enumerator" during his visit.



IFDC is working with Nigerian Breweries and Psaltry International Ltd. to improve cassava production with farmers in Nigeria. The partnership guarantees a market for the farmers and cassava starch for the Nigerian Breweries. Psaltry International Ltd. will buy cassava from the farmers and will process it into a starch for Nigerian Breweries, who will then make a cassava-based beer from the crops these farmers grow. The farmers will also receive improved cassava cuttings and training for best practices. The initiative is part of the public-private partnership (PPP) program 2SCALE.

**3,500**  
smallholder farmers are learning "good agronomic practices" through the Nigeria Agro-Input Support project. IFDC is teaming with Syngenta Nigeria to develop the private sector input market. The project will link agro-dealers with a set of Syngenta solutions that include crop protection products and seeds.



GhanaVeg, an initiative of the Embassy of the Kingdom of the Netherlands, works to provide Ghanaian farmers and entrepreneurs with the support they need to grow and sell quality, healthy vegetables. Speaking at the launch of the project's business initiatives, the Netherlands Minister for Foreign Trade and Development Cooperation, Ms. Lilianne Ploumen, said, "The quality of the agriculture sector in Ghana depends on collaboration

between stakeholders, and improving the management of vegetable chains is crucial." GhanaVeg will focus on collaboration between vegetable farmers and companies that commercialize the crops in both local and international markets. The project will also provide technical advice and innovations to farmers and collaborating companies. IFDC is implementing the initiative in collaboration with the Center for Development Innovation and the Netherlands African Business Council.

The Nigerian Government's Growth Enhancement Support (GES) scheme is helping farmers access agricultural inputs at a subsidized price. IFDC is implementing the "Touch and Pay" (TAP) pilot project to ease farmer registration into the GES. Below are the stories of two family farmers benefiting from the program.

## A Bright Future and a New Dawn

believes that he will be able to redeem his desired inputs without facing the challenges he experienced in the previous year. Now, Audu Ibrahim's future looks bright.

In 1982, Audu Ibrahim ventured into farming to support his growing family. His 2.4-hectare farm, located behind his homestead in the village of Passali in Nigeria, boasts of beans,



cassava, sesame and maize. However, Audu recently began to experience low crop yields due to his land's declining soil fertility. This made it difficult for Audu to meet his household's needs.

Despite the opportunities provided under the Nigerian government's GES scheme, Audu was unable to purchase subsidized inputs in 2013, because he was not registered properly.

This year, Audu has more to smile about. Through his farmer group, Audu learned about TAP technology, which utilizes tablet computers to capture information about each farmer registered into the GES. "I have enjoyed being registered using the TAP technology," he says. "The enumerators took my photograph, collected my farm details and gave me a TAP card in less than seven minutes, helping me save time and move on to other activities of the day."

Audu states that because his TAP card contains accurate information, he is more confident in the GES scheme and

Similarly, Rhoda Peters, a native of Karshi, participated in the enumeration phase of the GES-TAP pilot project to access fertilizer to increase crop yields. Rhoda is a mother of two and has several family members that depend on her. She states that she was reluctant to participate in the GES-TAP registration because she signed up for projects in the past that ultimately proved to be unsuccessful. In her words, "I registered with a lot of doubt in the exercise, because we have seen many projects come and go without making an actual difference."

### "TAP helped agro-dealer representatives assist me more quickly"

– Rhoda Peters, GES-TAP beneficiary

However, she noted that this project was different. She was amazed when she came to the redemption center with her TAP card and saw that the project was a reality. She says, "I saw my picture on the computer when they tapped my card."

Highlighting another benefit of the project, Rhoda explained, "TAP helped agro-dealer representatives assist me more quickly." She collected her inputs in less than five minutes of arriving at the redemption center. Expressing her satisfaction with the initiative and hope for increasing food production, she sang a praise song in her mother tongue, which translates to: "it is a new dawn for us farmers." 🌅



# USAID and IFDC Advance Cotton Sector Development in West and Central Africa



Cotton is grown in West and Central Africa by an estimated 10 to 15 million smallholder farmers. Much of this cotton is produced in a group of countries known as the C4: Benin, Burkina Faso, Chad and Mali. USAID began funding the West Africa Cotton Improvement Program (WACIP) in December 2006 to support cotton farmers in the C4 region. Project implementation was led by IFDC and ended in December 2013.

WACIP worked to increase productivity and profitability in the C4 countries and in Senegal. The project advanced agricultural practices in hopes of improving farmers' yields and building a better support network for them, which included better access to foreign markets. Additionally, WACIP conducted research to improve the quality of cotton seed and provided training sessions for farmers.

"About 1.5 million cotton farmers benefited from WACIP training," said Moustapha Niang, C4 Cotton Partnership (C4CP) chief of party. "Another success was the improvement of ginning operations for three pilot plants. The resulting significant returns led West African cotton companies to adopt new technologies. To build on these successes, USAID approved a new project – C4CP. Partnerships are at the heart of the project."

IFDC is partnering with Cultural Practice LLC and the International Centre for development oriented Research in Agriculture to implement C4CP. The partners will collaborate with local, national and regional organizations and institutions to improve agricultural productivity, forge and strengthen

partnerships and increase social and economic benefits for women associated with the production and marketing of cotton. C4CP will collaborate closely with the West African Economic and Monetary Union (WAEMU) to reinforce its capacity to serve as a regional platform for cotton sector development in West Africa. WAEMU promotes economic integration in the region. This network will also include farmer organizations, research institutions, private enterprises and public and private extension and advisory service providers.

"USAID C4CP will specifically address the challenges women face in cotton-producing households," Niang says. "Helping women increase their incomes will have a significant impact on families' nutrition and health."

USAID C4CP will support women cotton farmers by developing gender-responsive training materials, which will include curricula for household-level training. Additionally, the project will explore the feasibility of promoting organic cotton production.

The project expects to increase the number of trained food security enterprises, multiply the number of farmers using new technologies and build the number of individuals receiving training in sustainably increasing agricultural productivity. USAID C4CP will also target policy reform by forming partnerships with representatives from public and private institutions to participate in conferences, workshops and forums on cotton sector improvement and success. 🌱

## PRODIB: Success in Burkina Faso

The Professionalization of Agro-Input Dealers of Burkina Faso (PRODIB) project successfully achieved its objective: to increase agricultural production and incomes for 375,000 smallholder farmers in Burkina Faso. PRODIB is funded by the Alliance for a Green Revolution in Africa (AGRA). By the end of the project in April 2014, more than 413,000 smallholder farmers had increased access to agro-inputs. Additionally, these farmers saw their incomes increase by more than 88,000 FCFA (about U.S. \$179) per year. To achieve this success, the project trained trainers, seed producers and inspectors and developed a training manual. PRODIB established more than 220 new stores in rural areas. The project also assisted in arranging technology fairs and demonstrations so that farmers and agro-input dealers could exchange technical information. Moreover, PRODIB facilitated an increase in membership of the Association of Agro-Input Wholesalers and Retailers in Burkina Faso (AGRODIA) and the active participation of its members.

## Anticipated Achievements of C4CP

**100** food security enterprises and organizations strengthened

**95,000** farmers applying new technologies

**160,000** individuals receiving training in agricultural productivity

The 2SCALE project's success in Togo has been evident from its beginning. Efforts in Togo have included market networking and production development. This project has led to increases in maize yields from 1.2 to 5 mt/ha and from 2.3 to 6.5 mt/ha in rice yields. Average sales have increased from 295 to 700 mt for maize.

Throughout the project, IFDC has been utilizing the CASE solution to give farmers both the knowledge and tools they need to increase both the quality of their crops and their connection to profitable markets in which to sell these crops.

IFDC has been progressively reducing the number of project-supported clusters, continually focusing on expanding partnerships to support sustainability and long-term success. The network created through 2SCALE is farmer-funded and serves to provide a venue for the exchange of information, a platform for training and a forum for advocacy.

## 2SCALE Phases Out Activities in Togo

Throughout the project in Togo, staff have focused on a sensitization program to ensure that farmers are aware of and prepared for the withdrawal of 2SCALE. Specifically, staff have been working with farmers to develop personalized business plans based on individual strengths and weaknesses.

The exit plan also included workshops that help to increase both the number of new partnerships and to bolster existing ones. 2SCALE has continued to provide financial and technical support throughout the transition to ensure clusters remain active and profitable after the end of the project. The exit plan has proven to be successful as closed clusters are still open and have proven to be self-sustaining.

As 2SCALE exits Togo, IFDC reflects on the differences the project has made by improving the lives of individual households and the overall success of communities. Lessons learned in this project will be useful while

pursuing future endeavors: relationship building takes time, having more partners involved in a project is ultimately more successful, new clusters require full-time support, CASE is successful and risk management is crucial to success. 🌍



## IFDC Helps Open Fertilizer Monitoring Center

A new laboratory has opened in Accra, Ghana. Researchers there will monitor the quality of fertilizers by providing top-quality research in four major areas: laboratory testing, environmental quality monitoring, hydro surveying and environmental training. The laboratory was funded by Envaserv Research Consult (ERC) and has received support from the USAID West Africa Fertilizer Program (USAID WAFP), IFDC and the Plant Protection and Regulatory Services Directorate (PPRSD) of Ghana's Ministry of Food and Agriculture (MoFA). The opening of the lab was celebrated by Members of Parliament, as well as the WAFP chief of party. These leaders expressed goals for the lab, such as partnership with MoFA, in addition to collaboration with other Economic Community of West African States (ECOWAS) countries to improve the quality of fertilizers available, increase environmental awareness and expand operations. 🌍



After a decade of service, Peter McPherson is stepping down as chairman of the IFDC board of directors. His insight and dedication to IFDC's mission have been important in driving the organization's growth, and his leadership has been crucial to our mission's success. IFDC President and CEO Dr. Amit Roy said of McPherson, "Peter has been an incredibly effective board chair. IFDC would not be where it is today without him."

Peter McPherson's Midwest roots run deep. Raised on a family farm near Lowell, Michigan, he attended and later served as president of Michigan State University, one of the nation's leading land-grant colleges. Like his mentor, John Hannah (former chair of the IFDC board), McPherson went to Washington, D.C., where he served three presidents and earned wide respect across the political spectrum. He first came to the White House as special assistant and deputy director of the Presidential Personnel Office for Gerald Ford in the mid-1970s. Then, in 1981, President Reagan appointed McPherson to the position of administrator of USAID. He became the longest-serving (and widely considered best) USAID administrator. From 1987 to 1989, McPherson served as his deputy secretary of the Treasury.

## M. Peter McPherson A Portrait of a Leader

In 1993, McPherson was appointed president of Michigan State University, where he revised the university's mission statement to reflect his idea of the effectiveness of people as solutions: "Michigan State University is a research-intensive, land-grant university of international scope where people matter." McPherson once again displayed his commitment to international work as he and his team built one of the largest study abroad programs in the country.

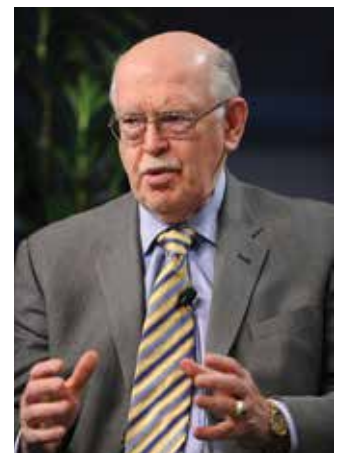
During his 11-year tenure as Michigan State University president, McPherson took a temporary leave for five months to serve as the director of Economic Policy for the Office of Reconstruction and Humanitarian Assistance in Iraq. There, he helped re-establish the central bank and a new currency and open up the commercial banks.

As founding co-chair of the Partnership to Cut Hunger and Poverty in Africa and chair of the board of Harvest Plus, McPherson supports global efforts to alleviate poverty, malnutrition and starvation. Notable also is the legacy that

he is creating as president of the Association of Public and Land-grant Universities. McPherson encourages dedication to excellence in learning, discovery and engagement and continues to lead the "globalization" of the land-grant concept, establishing various initiatives that focus on the transfer of knowledge to developing nations.

Through all his work in government, the university community and also as a senior banking executive, McPherson retained a lively interest in world food issues. His interest in food security started during a short period between getting his B.A. in political science at Michigan State and going back for his law degree, when he worked with the school food program in Peru with the Peace Corps. McPherson's approach is based on a keen understanding of agricultural economics. Growing food, he realizes, is about more than feeding the hungry. It is also about raising living standards and boosting overall economic development. 🌍

*Thomas Hager contributed to this article.*



*Left: IFDC Board Chair McPherson stands with Board Member Rhoda Peace Tumusiime, Commissioner for Rural Economy and Agriculture at the African Union, and IFDC President and CEO Dr. Amit Roy at a recent board meeting. Center: McPherson visits Mississippi State University, with current USAID Administrator Rajiv Shah (right), to learn about a variety of cashew-based products developed by the university in partnership with Costco and the World Food Programme to fight child malnutrition. Right: McPherson was a featured expert at the event "U.S. Global Development Policy in the 21st Century: Implications for Reform" in March 2010.*

## Featured Blog

# Alleviating Climate Change - One Farmer at a Time

Smallholder farmers feel the effects of climate change in the hardness of their soils and the unexpected winds of the oncoming cyclone. For centuries, their farming techniques enabled them to be resilient in the face of expected weather variances. But climate change is becoming more volatile, increasing the risks and vulnerability of small farmers. While we can't stop natural disasters, we can tap into smallholders' aptitude for resilience and give them the tools and innovations to better prepare for the effects of climate change.

### 5 ways farmers can reduce climate change's impact:

*Develop resistant/reactive seeds and fertilizers:* Imagine a package of "climate smart" seeds and nutrients that resist drought and react when the rains come. Research organizations such as the Virtual Fertilizer Research Center (VFRC) make creating and scaling such a technology possible.

*Create mobile weather apps:* Mobile platforms such as mFarms are increasingly popular among smallholder farmers. While infra-structural challenges remain, weather apps could quickly be scaled up and out.

*Implement financing options:* A smallholder farmer can spend a whole planting season caring for his or her crop only to lose it to a devastating natural disaster. Crop insurance and credit lines for smallholders ensure that such events are not fatal. Many

organizations, such as the International Fund for Agricultural Development (IFAD), are actively involved in creating these safety nets.

*Improve water management technologies:* Water will be a challenge for the smallholder. And not only in the case of droughts but also flooding. Both water storage, improved evacuation technologies and increased use efficiency will be needed as climate change becomes more volatile.

*Provide smallholders proper training and access:* Smallholders need to know about climate change. Proper training raises awareness and creates a desire for access to best agricultural practices. Being prepared is the best defense against climate change.

Many organizations are already providing the above in some capacity. Climate change, especially as it affects the smallholder farmer, is topping agendas. But "words are wind," and chasing the newest development fad will not work. Helping smallholders requires dedication to recognizing and tapping into their resilience as well as improving access to tools that will help ameliorate climate change. We can do it, even if it means one farmer at a time. 🌍

Read more blogs at:  
[http://www.ifdc.org/Media\\_Center/IFDC-Perspectives/](http://www.ifdc.org/Media_Center/IFDC-Perspectives/)

## Featured Tweets



## Popular Blogs









**Sustainability Photo Contest**  
 Call for participants to share photos that demonstrate a sustainable or climate-smart farming technique or innovation.



**IFDC's First Decade**  
 Success Through Agricultural Research Technology and Transfer

We've expanded our social media presence; check us out on these outlets:

-  facebook.com/IFDCNews
-  pinterest.com/IFDCGraphics
-  bit.ly/IFDCGPlus
-  ifdcperspectives.tumblr.com
-  instagram.com/ifdcgraphics
-  twitter.com/IFDCNews

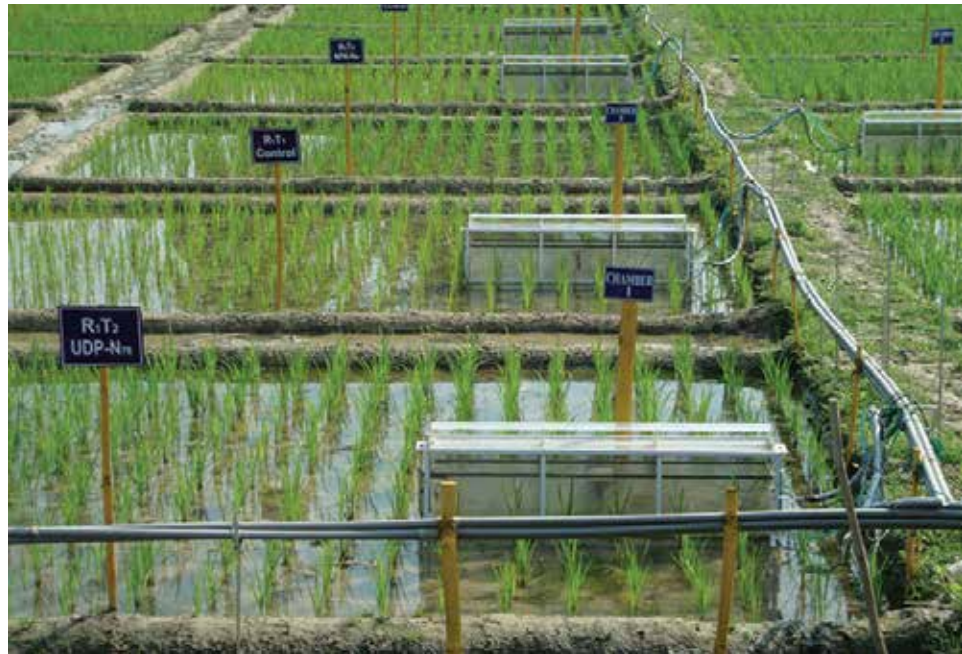
Upendra Singh

## Greenhouse Gas Research at IFDC

Improving efficiency of nitrogen fertilizer use has been the major focus of research at IFDC. Our scientists have often played a lead role in quantifying ammonia volatilization loss and denitrification loss from flooded rice fields. Over the years, we have worked on improving nitrogen use efficiency (NUE) with urea deep placement, inhibitors and slow and controlled N fertilizers including polymer- and sulfur-coated fertilizers. During 1993-1996, in partnership with the Tennessee Valley Authority (TVA) and IRRI, IFDC began GHG emission trials to quantify nitrous oxide and methane. And most recently, beginning in 2012-13, IFDC has been quantifying GHG emissions at two locations in Bangladesh and at its Muscle Shoals headquarters.

Due to our focus on improving NUE, we have placed greater emphasis on mitigating nitrous oxide ( $N_2O$ ) and nitric oxide (NO) emissions. In addition to its global warming effect, which is 298 times more potent than carbon dioxide,  $N_2O$  is now the dominant gas responsible for ozone destruction. The global mean fertilizer-induced emissions for  $N_2O$  and NO are equivalent to 0.98 million tons per year and 0.76 million tons per year, respectively. With total N fertilizer consumption at 109 million tons and increasing at 1 million tons per year, the  $N_2O$  and NO emissions are expected to increase unless mitigation options are implemented.

Our preliminary results from the ongoing GHG research have shown that  $N_2O$  and NO emissions from fertilizers can be



controlled to emissions similar to unfertilized plots. The most promising results for mitigating  $N_2O$  and NO emissions were obtained with urea deep placement (UDP) under flooded conditions where emissions were significantly lower than with broadcast application of urea. Under alternate wetting and drying conditions, UDP reduced emissions but overall emissions were higher than under continuously flooded conditions. The quantification and reduction of GHG emissions associated with management practices in rice fields in Bangladesh provide opportunities for farmers and policymakers to gain carbon credits.



To provide critical information on use and expansion of UDP under direct-seeded rice, this summer we began quantifying the effect of UDP versus conventional urea application on yield, nutrient uptake and nitrogen emissions. The GHG research facility at IFDC headquarters allows us to quickly evaluate climate-smart fertilizers and technologies that have potential to improve efficiency and reduce N emissions.

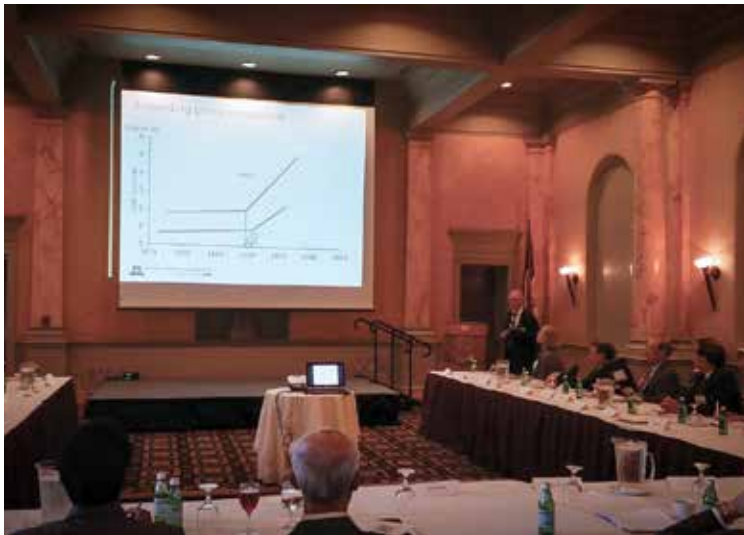
If we are to mitigate fertilizer's contribution to GHG emissions, research must be ongoing. These projects and others will enable smallholders to both adapt to and mitigate climate change. 🌱

# VFRC Hosts Fertilizer Dialogue in Washington, D.C.

In June the VFRC held a dialogue at the Cosmos Club in Washington, D.C., to raise awareness among participants of the need for developing novel fertilizer technology. To spur interest and activity, speakers discussed fertilizer-impacting issues such as energy, climate change, the growing global population and the lack of accessible nutritious food sources, among others. In response, dialogue participants – including leaders from a number of organizations, embassies and universities – called for collective action to develop novel fertilizers that address the issues highlighted by speakers.



*Cheng-I Wei, Thea Emmerling, Prem Bindraban and Steve Slack.*



*Dr. Rudy Rabbinge, VFRC board chairman, speaks on fertilizer's vital role in food security.*



*Dr. Frank Franklin presents results from his group discussion.*



*VFRC executive director Dr. Prem Bindraban introduces game-changing fertilizer technologies.*



*Dr. Amit Roy, president and CEO of IFDC, discusses global fertilizer usage.*

## IFDC Board of Directors Updates



Margaret Catley-Carlson

Margaret Catley-Carlson, patron of the Global Water Partnership and member of the IFDC board of directors since 2006, gave a keynote address at Ozwater in May. This meeting, in Brisbane, Australia, focused on policy regarding water usage, emphasizing the need for increased water re-usage. She was also featured in a video interview in May, where she stressed the importance of FDP to increase resilience of the agriculture sector – economically, via production increase, and with a beneficial water impact.



Agnes M. Kalibata

Agnes M. Kalibata, a member of the IFDC board of directors since 2008, has accepted the position of Interim President of AGRA. Kalibata served as Rwanda’s Minister of Agriculture and Animal Resources from 2009 to 2014.



Mark Keenum

Mark Keenum, president of Mississippi State University, was named to the Foundation for Food and Agricultural Research (FFAR) board of directors in July. He was then elected as vice-chairman of the board on August 7. Authorized by U.S. Congress as part of the 2014 Farm Bill, FFAR will research issues related to agriculture, food security, nutrition and renewable energy, among others. Keenum began his term on the IFDC board of directors in 2014.



Rhoda Peace Tumusiime

Rhoda Peace Tumusiime, commissioner for Rural Economy and Agriculture at the African Union and member of the IFDC board of directors since 2010, spoke at the 23rd Ordinary Session of the Assembly of the African Union Heads of State and Government, urging leaders to recommit to the Comprehensive Africa Agriculture Development Programme (CAADP) and bring agriculture to the center of attention for developmental concerns.

## VFRC Board of Advisors Updates



Ruth Oniang'o

Ruth Oniang'o, member of the VFRC Executive Committee, chair of the Sasakawa Africa Association and editor-in-chief of the *African Journal of Food*, received the Distinguished Service Award as part of the 2014 Agribusiness & Food World Forum in Cape Town, South Africa. The award honors her work in agricultural research and development and its effects throughout Africa and the world.



Juergen Voegele

Juergen Voegele, currently Senior Director of the World Bank Agriculture Global Practice, spoke on a panel at the United Nation’s World Day to Combat Desertification event in June. He shared his experiences drawing on earlier work in China and elsewhere and emphasized the importance of agricultural development in Ethiopia’s growth and poverty reduction strategy.



Canadian Co-operative Association

# PARTING SHOT

IFDC recently hosted a sustainability photo contest as part of Devex's Feeding Development campaign. Feeding Development was an online conversation held during the month of July to reimagine solutions for a food-secure future. Participants were asked to share photos that demonstrate a sustainable or climate-smart farming technique or photos that demonstrate sustainability in everyday life.

The winner of the contest is the Canadian Co-operative Association's (CCA) photo (above) of a new irrigation system in the Amhara region of Ethiopia. The system enables farmers' crops to have a more reliable water supply than the increasingly unpredictable rainfall. While financial and operational support was provided by CCA, the farmers themselves provided the physical labor to complete the construction.

See below for a sampling of submissions. A full compilation of entries can be found at <https://ifdc.exposure.co/sustainability>.



Bugs for Life



Canadian Co-operative Association



Andean Alliance for Sustainable Development



World Education



Mahamane El-hadji Toure

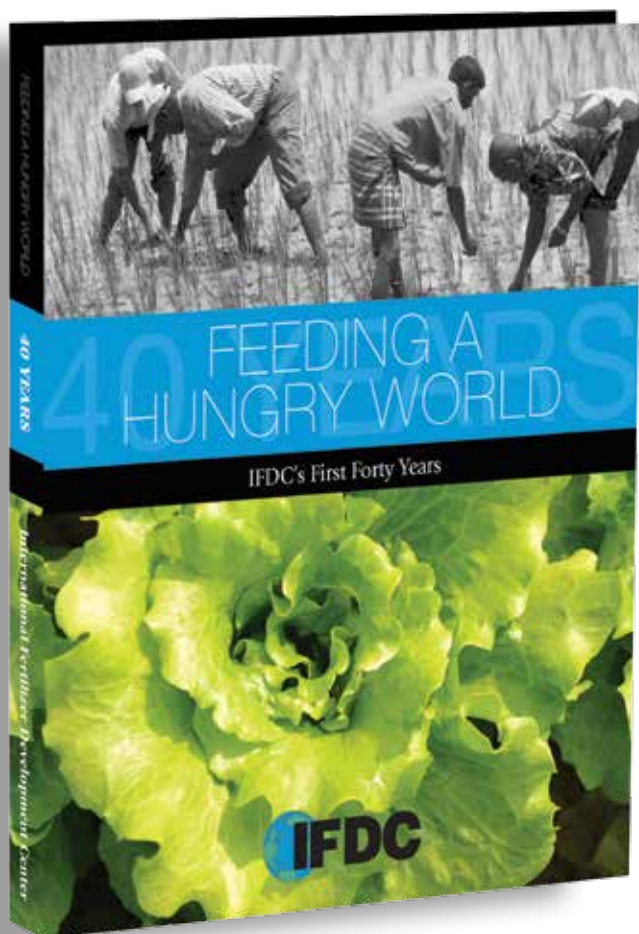
# Feeding a Hungry World: IFDC's First 40 Years

IFDC is releasing the book *Feeding a Hungry World*, chronicling the Center's history and accomplishments during its first 40 years. Through first-hand accounts and IFDC archives, author Thomas Hager (*Alchemy of Air*) sows the story of the Center's evolution from a fertilizer research and technology transfer organization to a holistic agricultural development center.

The book paints a vibrant picture of the organization's dedicated staff and leaders, from the determined Don McCune, IFDC's first director who essentially built the organization, to the energetic current president and CEO, Amit Roy, who has led IFDC into a new era of agricultural development.

"It is my hope that this account will inspire and rally the next generation of agricultural researchers and development workers to move forward fearlessly," writes Roy in the book's foreword. "We are defined by the impact we have on the world. IFDC's character is reflected in the dedication of its staff."

IFDC began with just a handful of employees. Forty years later, nearly 900 employees operate in more than 25 countries. These agronomists, geologists, soil scientists, economists, technicians, engineers, marketers, researchers and analysts are sharing the latest scientific and technological tools with farmers around the globe.



"The story of IFDC is not merely a collection of dates and facts; it's a story of resilience," writes Roy. "We have been able to survive – and thrive – under changing circumstances because of our staff's ability to create solutions that address critical world problems."

The book will be available for download for Kindle on Amazon.com and for iPad on the Apple iBooks store.



P.O. Box 2040  
Muscle Shoals, AL 35662 USA

Phone: +1(256) 381-6600  
Fax: +1(256) 381-7408  
Website: [www.ifdc.org](http://www.ifdc.org)  
E-mail: [general@ifdc.org](mailto:general@ifdc.org)  
ISSN 0149-3434



PRINTED MATTER

Non Profit  
U.S. Postage  
PAID  
Permit #3246  
Birmingham, AL  
35203

## 2014 International Training Calendar

Training Program/Workshop/Study Tour	Dates	Location	Program Fee
Bringing Balanced Fertilizers to Market: Opportunities and Constraints	October 6-10	Johannesburg, South Africa	\$1,500
Granular Fertilizers Production	November 3-7	Bangkok, Thailand	\$1,900
Promoting Innovative Composting Alternatives of Agricultural and Municipal Waste	November 24-28	Accra, Ghana	\$1,500
Agricultural Market Information Systems and ICT Platforms for Business Management Across the Value Chain	December 8-12	Arusha, Tanzania	\$1,500