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# PERSPECTIVES

May 2017

## 2016 YEAR IN REVIEW



## 2017 IFDC Training Calendar

<b>Developing Private Sector Agro-Input Markets: Designing and Implementing Targeted Input Subsidies (French Edition)</b>	Dakar, Senegal	June 5 - 9
<b>Nitrogen Fertilizer Production Technology</b>	London, UK	June 26 - 30
<b>Technology Advances in Agricultural Production, Water, and Nutrient Management</b>	USA (Alabama, Arkansas, Illinois, Missouri, Tennessee, and Washington, D.C.)	August 21 - September 1
<b>Phosphate Fertilizer Production Technology</b>	Marrakech, Morocco	October 2 - 6
<b>Integrated High-Value Technologies in Crop Production</b>	USA (Alabama, Georgia, and Florida)	October 16 - 26
<b>Improving Fertilizer Quality for Highly Productive Agriculture and Balanced Nutrition</b>	Arusha, Tanzania	November 6 - 10
<b>Improving Fertilizer Use Efficiency for Climate-Smart Agriculture</b>	Bangkok, Thailand	December 4 - 8



## PERSPECTIVES

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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.

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## ACRONYMS

**2SCALE** – Toward Sustainable Clusters in Agribusiness through Learning in Entrepreneurship  
**AAPI** – Accelerating Agriculture Productivity Improvement  
**AVPI** – Accelerating Vegetable Productivity Improvement  
**CATALIST** – Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability  
**C4CP** – USAID C4 Cotton Partnership  
**GAP** – good agricultural practices  
**FAI** – Fertilizer Association of India  
**FAO** – Food and Agriculture Organization of the United Nations  
**FDP** – fertilizer deep placement

**FDP MD** – Feed the Future USAID Mali Scaling Up Fertilizer Deep Placement and Microdosing Technologies  
**FSI+** – Fertilizer Sector Improvement  
**KIT** – Royal Tropical Institute  
**ISSD** – Integrated Seed Sector Development  
**M4P** – Making Markets Work for the Poor  
**REACH** – Resilient Efficient Agribusiness Chains  
**SDGs** – Sustainable Development Goals  
**SMEs** – small- and medium-sized enterprises  
**UDP** – urea deep placement  
**USAID** – United States Agency for International Development  
**WAFP** – West Africa Fertilizer Program

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## THE PRESIDENT'S PERSPECTIVE



You may also note we have consolidated our annual report into *Perspectives*. Toward the end of this issue, you will find our 2016 Year in Review, which features highlights from 2016, success stories, and other information about the past year (p. 15).

Just like in our farmers' fields, change may be the only constant we know, but IFDC is committed to adapting, innovating, and moving forward to meet the needs of all our stakeholders worldwide.

**J. Scott Angle**  
IFDC President and CEO



# GLOBAL BRIEFS

The following briefs showcase news from around the organization. For the full interactive experience of these and other pieces in *Perspectives*, subscribe to our online magazine at [bit.ly/IFDCPerspectives](http://bit.ly/IFDCPerspectives).

## ASIA

### Mechanizing Deep Placement



The Fertilizer Sector Improvement (FSI+) project in Myanmar is working with John Deere and Khedut Engineering of India to develop a machine that simultaneously plants rice seeds and applies fertilizer briquettes. The machines are now in the field-testing stage with very promising results. Read more: <http://bit.ly/FSIMyanmar>

### BANGLADESHI FARMER QUADRUPLES INCOME

After attending trainings hosted by IFDC's Accelerating Vegetable Productivity Improvement (AVPI) project, Anwara Begum convinced her husband to implement good agricultural practices (GAP) and fertilizer deep placement (FDP) on their family farm. The resulting



yields significantly increased their gross income. Read more: <http://bit.ly/AnwaraStory>

## EAST AND SOUTHERN AFRICA

### Charcoal is Cool



Technology innovation is helping dairy farmers in Kenya keep their milk fresh, even without refrigerators or electricity. The Toward Sustainable Clusters in Agribusiness through Learning in Entrepreneurship (2SCALE) team is exploring financing options for the technology, which uses charcoal and water to create a cooling effect for up to four 50-liter milk cans. In field testing, farmers experienced dramatic results, with spoilage falling from over 50 percent to less than 5 percent. Read more: <http://bit.ly/CoolCharcoal>

### A Very Dairy Documentary



IFDC's 2SCALE project has released a documentary highlighting a project-brokered partnership between dairy processor Family Milk (which buys raw milk from farmers) and feed manufacturer AKF. Watch the entire documentary here: <http://bit.ly/DairyDocumentary>

### SOYBEANS FOR SMALLHOLDERS



A soybean partnership in Mozambique is expected to grow rapidly throughout the rest of 2017. Beginning with one cluster in Nampula, the partnership now involves 10,000 farmers (65 percent women), a trader, a field processor, and agro-dealers who receive support from 2SCALE. Read more: <http://bit.ly/SmallholderSoybeans>

## NORTH AND WEST AFRICA

### Project Propels Fertilizer Supply in West Africa



Since 2012, the United States Agency for International Development West Africa Fertilizer Program (USAID WAFP) has increased the availability and use of affordable, quality fertilizer throughout West Africa. Ending in July 2017, project interventions focused on empowering the private sector, providing crop- and site-specific fertilizer recommendations, enabling adoption of fertilizer regulations, and stimulating fertilizer policy dialogue and advocacy. These efforts have empowered a region where quality fertilizer circulates more freely and efficiently. Read more: <http://bit.ly/USAIDWAFP>

### REGIONAL DIALOGUE FOSTERS FERTILIZER ACCESS AND GOOD AGRICULTURAL PRACTICES

More than 160 participants from 24 countries shared ideas and experiences on providing fertilizer recommendations for smallholder farmers during a regional forum in

Lomé, Togo. The forum, "From Soil Analysis to Delivering More Profitable Fertilizers to Farmers," was organized by the IFDC-implemented USAID Four-Country Cotton Partnership (USAID C4CP), USAID WAFP, and



Feed the Future Ghana Agricultural Technology Transfer (ATT) Project. USAID C4CP also held a regional workshop on "Dissemination of Good Agricultural Practices and Post-Harvest Technologies and Advocacy Tools" in Benin. Read more: <http://bit.ly/WAFPforum> and <http://bit.ly/USAIDC4CP>

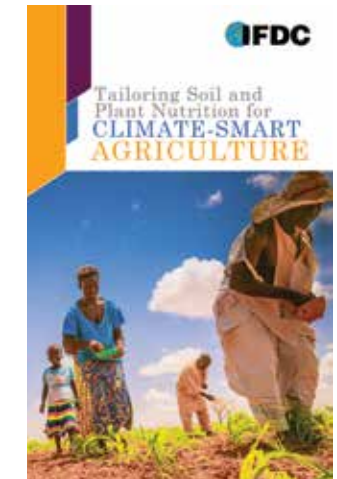
### ATT Project Delivers



Among the many technologies introduced by the successful Feed the Future Ghana ATT project, multi-crop shellers purchased by agricultural entrepreneurs with project assistance are delivering lucrative results. Sule Adongo, one of the farmers who invested in the technology, made upwards of \$4,000 during the last season. Read more of ATT's impacts and Adongo's story here: <http://bit.ly/SuleAdongo>

## GLOBAL

### Climate-Smart Agriculture



IFDC has released a new brochure detailing the organization's approaches toward mitigating fertilizer's effects on climate change while increasing global food security. Read the brochure online: <http://joom.ag/9xjW>

### IFDC STRATEGIC PLAN 2017-2021

IFDC is embarking on a new strategic plan, developed with input from more than 1,000 stakeholders worldwide. The plan outlines new initiatives that are critical to IFDC's mission and future as well as emphasizes the institution's continued core focus in soil and fertilizer research and development. View the plan: <http://bit.ly/IFDCstrategy>



# FARMERS REACH HIGHER IN UGANDA

REACH-UGANDA EXPECTED OUTCOMES

1,200 FARMER GROUPS AND 120 FARMER BUSINESS GROUPS ACHIEVE THEIR FINANCIAL OBJECTIVES.

10,000 FARMERS AND 50 FARMER BUSINESS GROUPS INCREASE USE OF AT LEAST TWO AGRICULTURAL SUPPORT SERVICES.

26,000 POTATO AND RICE FARMERS INCREASE THEIR YIELDS TO AT LEAST 65% OF THE OPTIMAL LEVEL.

30,000 MARKET-ORIENTED FARMERS COLLECTIVELY SELL THEIR PRODUCE TO LEAD FIRMS.

18,000 FARMERS ADOPT AND USE STRATEGIES THAT BUILD RESILIENCE.

A SUPPORTIVE REGULATORY ENVIRONMENT IS IN PLACE AT THE DISTRICT LEVEL.

10 LEAD FIRMS TRANSFER PRIMARY PROCESSING, QUALITY CONTROL ACTIVITIES, AND EMPLOYMENT DOWN THE CHAIN IN THEIR BUSINESS MODELS.

More than 40,000 farmers and agribusinesses in the rice and potato value chains of Uganda will experience stronger market engagement and agriculture support services as a result of the new IFDC project Resilient Efficient Agribusiness Chains (REACH) Uganda. With funding from the Embassy of the Kingdom of the Netherlands in Uganda, REACH-Uganda will sustainably integrate smallholder farmers into the commercial supply chains of lead firms and small and medium enterprises.

REACH-Uganda launched during March 2017, along with the Dutch-funded Integrated Seed Sector Development (ISSD) Plus project. During the projects' launch event, Henk Jan Bakker, Dutch Ambassador to Uganda, said, "Uganda's agriculture sector has a great potential to transform the country and the livelihood of Ugandans. Using our Dutch experience and success in agriculture, we believe that by the end of 2020, at least 350,000 households will be positively impacted by the projects."

**Building on Past Success**  
From 2012 to 2016, IFDC assisted 70,235 farmers in increasing their income by 50 percent through the CATALIST-Uganda project. REACH-Uganda will leverage the farmer networks developed under CATALIST and transform them into effective business structures.

**Making Markets Work for the Poor**  
Resource-poor farmers are active market participants with underutilized potential. REACH-Uganda will employ Making Markets Work for the Poor (M4P), which seeks to change the way that markets work so that poor people are included in the benefits of growth and economic development. IFDC will partner with Cardno Emerging Markets, a private sector business development and market engagement firm, to implement M4P and connect low-income entrepreneurs to large commercial firms. Ultimately, REACH will link 30,000

farmers to 25-50 lead firms and small- and medium-sized enterprises, creating a win-win situation for both farmers and businesses.

**Integrating Productivity, Profitability, and Resilience**  
Smallholders will boost their productivity through REACH technical assistance, capacity building, and enhanced market access. REACH will increase the profitability of all actors in the value chain by tightening linkages and building resilience to reduce risks from market or climate shocks. Through this integration, REACH will encourage farmers to operate in a more market-driven manner, producing what they can profitably sell.

According to David Slane, REACH Chief of Party, for every euro donors invest, REACH farmers will generate an additional six euros in income.

REACH also will promote increased roles for women and youth in potato and rice value chains.

Project partners include Cardno Emerging Markets, the Ugandan Ministry of Agriculture, Animal Industry, and Fisheries, the National Agricultural Research Organization, and Royal Tropical Institute (KIT).

# Woman-Led Field School Reaches African Youth

In a small greenhouse in Nigeria, young agricultural entrepreneurs from all over the country gather around an unlikely teacher to learn about vegetable production and farm management. Yinka Adesola, though trained at the master's level in geology, is committed to solving Nigeria's food security issues by empowering the next generation to grow and sell more food with the tools and knowledge she learned from IFDC's 2SCALE project.

Adesola realized early in her career that if Nigeria were to feed itself and meet the needs of its domestic market, farm yields would need to be boosted. And with the aging producer population, she knew that young people held the

key to unlocking Nigeria's agricultural potential.

"I found myself on the farm because, for me, I found agriculture to be fabulous. I've found the most important thing to combat in my country is hunger... by learning to feed ourselves, we may be able to satisfy our domestic market," Adesola remarked.

Attending trainings sponsored by IFDC's 2SCALE project, Adesola learned how to increase farm productivity with good agricultural practices and integrated soil fertility management. She was also taught business management strategies such as in marketing and selling crops. In addition, the project linked her

with East-West Seed, a company that breeds and produces high-quality vegetable seeds for tropical conditions. According to Adesola, "[East-West Seed's] tropicalized variety has proven to be outstanding in terms of yield and resistance to local diseases."

When she returned from the trainings, Adesola recognized that she could not keep her new knowledge to herself if she wanted to make a difference: "I wanted to hold other trainings to attract more youth to agriculture, to show that agriculture is a lucrative business." Thus, the Entrepreneur Youth Multipurpose Cooperative was born.



« Ce que nous entreprenons ici est à très petite échelle », admet Adola, mais impliquer, former et renforcer les jeunes « est une voie de sortie à notre crise alimentaire. »

Initially, youth would come for a month-long training, which Adesola learned was not enough time to train a qualified farm manager. Now, every three months, trainees from across Nigeria come to learn vegetable production and farm management.

Surprisingly, many of her trainees have already graduated from university. They are seeing that agriculture can often

be very lucrative. In addition, Adesola admonishes youth of the necessity to "get your hands dirty," but emphasizes that "farming is a lucrative business if you know your market, and if you can meet its requirement in volume and quality."

For Adesola, "The future is bright for agriculture, [but] what the youth need are facilities to produce in." In her

view, training farms like her own are filling the gap for information sharing, but opportunities exist for improved financing for young agricultural entrepreneurs.

"What we are doing here is on a very small scale," Adesola admits, but involving, training, and empowering youth "is a way out of our food crisis."



# BIG Dreams

FOR AGRO-INPUT  
SHOP OWNER

DAW HAY MUN  
HNIN WAI  
- Trainee

“ I WANT TO SUSTAIN  
MY BUSINESS IN THE FUTURE  
AND TO HELP MY FARMER  
CUSTOMERS INCREASE THEIR  
INCOME USING THE  
KNOWLEDGE I NOW HAVE  
ABOUT AGRICULTURAL  
PRODUCTS AND FARMING  
TECHNOLOGY.

“ I WANT TO BE  
SEEN AS ONE OF THE  
SUCCESSFUL WOMEN  
ENTREPRENEURS IN  
MYANMAR.

Access to the right inputs ( fertilizers, seeds, herbicides, etc.) has always played a vital role in the success of IFDC’s partner farmers. Because of this, IFDC focuses on developing agro-dealers into competent sellers, able to give the best agricultural advice to farmers while providing high-quality and appropriate inputs.

In line with this focus, IFDC’s Fertilizer Sector Improvement (FSI+) project in Myanmar collaborated with Syngenta to conduct agro-input retailer training programs in the Delta regions of Yangon, Bago, and Ayeyarwaddy, and in all townships in Southern Shan State. The trainings aim to transform agro-input retailers from simple family shops into modern one-stop-shop agribusinesses where farmers can come to buy appropriate inputs and learn good agricultural practices (GAPs) from the store owners. In addition, trainees learned advanced business management practices, such as marketing, networking, and bookkeeping.

One trainee, Daw Hay Mun Hnin Wai, runs her family’s agro-input business in the Bago Region of Myanmar. Attending the training gave her a new perspective and inspired her to take the first steps toward selling her products to rural areas by expanding her shop’s presence into more townships. In addition, she and another attendee decided to start a new business to increase awareness of GAPs.

“I want to sustain my business in the future and to help my farmer customers increase their income using the knowledge I now have about agricultural products and farming technology,” said Daw Hay Mun. “I want to be seen as one of the successful women entrepreneurs in Myanmar.”

The FSI+ project ensures that women play vital roles in project trainings and other activities. According to Grahame Hunter, FSI+ Chief of Party, “Women comprised more than 45 percent of training participants in 2016. Involving and empowering them will continue to be a major project focus in the future.”

# New Publications

## GENDER MAINSTREAMING IN AGRIBUSINESS PARTNERSHIPS

Inclusive agribusinesses will play a critical role in the coming decades, not only to feed 10 billion people by 2050, but also to create job opportunities and improve livelihoods for those least integrated into economic channels.

2SCALE has been strengthening agribusiness linkages to profitable markets. A key part of its success, the project engages and empowers women entrepreneurs. Women comprise 37 percent of the smallholder farmers assisted by the project, while 29 percent of the small- and medium-sized

enterprises (SMEs) engaged by 2SCALE are women-owned.

To share its approach to gender and in celebration of International Women's Day on March 8, 2017, 2SCALE published *Gender Mainstreaming in Agribusiness Partnerships: Insights from 2SCALE*. The publication highlights case studies and outlines lessons learned. It is the first in a series of 2SCALE thematic papers.

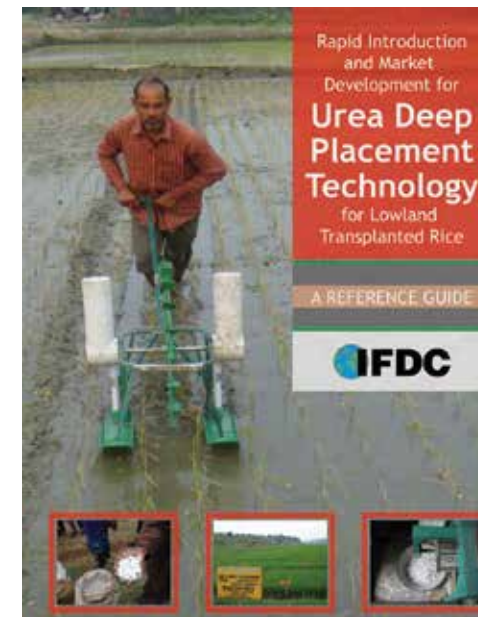
The Netherlands-funded 2SCALE program is an incubator for inclusive agribusiness that aims to improve rural

livelihoods and food and nutrition security across nine sub-Saharan countries. 2SCALE offers a range of support services to private partners – companies and farmer groups – enabling them to produce, transform, and supply quality food products to local, national, and regional end-user markets, including base-of-the pyramid (low-income) consumers.

Read the paper online at:  
<https://joom.ag/nm7W>



## NEW MANUAL GUIDES IMPLEMENTATION OF UREA DEEP PLACEMENT PROGRAMS



Designed for resource-poor farmers cultivating lowland rice, urea deep placement (UDP) is a nutrient management technology that accomplishes what agriculture must do in a changing climate: increase yields and profitability and reduce pollution. The deep point placement of urea briquettes delivers more nitrogen to the plant and reduces fertilizer use, water contamination, and greenhouse gas emissions. Additionally, farmers experience about 15-20% higher yields. More than 2 million farmers and retailers in Bangladesh are experiencing increased production and income using the technology, and results are being replicated in several countries in sub-Saharan Africa.

IFDC has validated UDP under various research and field environments, including in greenhouse and research trials and under farmer field conditions. The manual, *Rapid Introduction and Market Development for Urea Deep Placement Technology for Lowland*

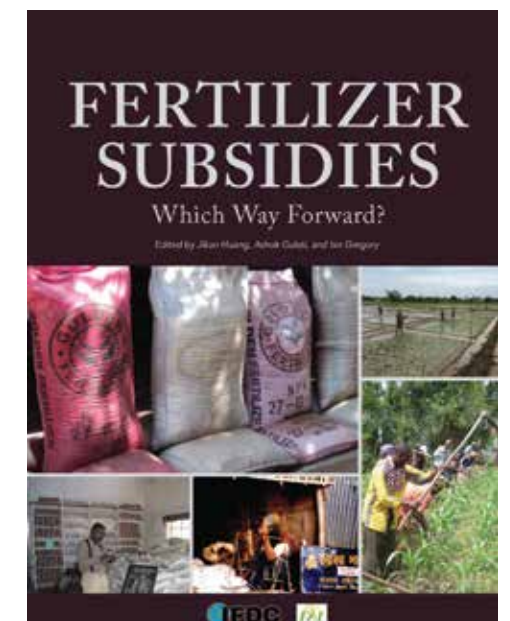
*Transplanted Rice*, provides the scientific basis for UDP technology and outlines the steps necessary for the successful introduction and commercialization of UDP into developing agriculture systems. The process is complex – both demand creation and supply system development must occur simultaneously. Approaching UDP as a new fertilizer product on the market, the manual guides users through each phase of UDP project planning and implementation.

The manual is intended for IFDC project implementers and partners who aim to strengthen food security, improve rural income, and reduce agriculture's environmental footprint. The publication is a valuable tool in expanding fertilizer nutrient management technologies that ultimately strengthen agriculture systems and the environment.

The guide, along with instructional videos on UDP application and urea briquette manufacture, is available at <http://bit.ly/udpmanual>.

## BOOK ON FERTILIZER SUBSIDIES AIMS TO ASSIST POLICYMAKERS ACROSS THE GLOBE

While fertilizer subsidies have become increasingly common across the world to stimulate supply and use of fertilizers, it remains unknown whether or not these policies are appropriate for the challenge of feeding an ever-growing population – 10 billion people by 2050. In many developed economies, fertilizer subsidies have been replaced by various fertilizer support programs. Will fertilizer subsidies remain effective as we try to eradicate global hunger and poverty while preserving the environment?



*Fertilizer Subsidies — Which Way Forward* is an analysis of fertilizer subsidies in five Asian countries (Bangladesh, China, India, Indonesia, and Pakistan) and four sub-Saharan countries (Malawi, Nigeria, Rwanda, and Tanzania) conducted by the Fertilizer Association of India (FAI) and IFDC. The analysis is an attempt to understand the impact of fertilizer subsidies on the countries' fiscal budgets, on productivity and nutrient management, and on the efficiency of fertilizer production, distribution, and consumption.

The analysis is intended to help policymakers better understand the impact of fertilizer subsidies by documenting their diversity and effectiveness across a variety of economies and geographical regions. In each section, the global structure of the fertilizer sector is presented along with country reviews and developments of fertilizer subsidy programs in the selected countries with an emphasis on years from 2000 to 2013. The country-specific sections also include lessons learned and suggestions on how to move forward.

The publication is available at <http://bit.ly/IFDCpubs>.

# EXPERT'S OPINION:

## MICRONUTRIENTS FOR PLANT FERTILIZATION

**By: Christian Dimkpa, Ph.D**  
**IFDC Scientist and Plant-Soil Biologist**

Micronutrients are plant nutrients needed in small quantities but that, nevertheless, contribute to crop productivity in significant ways. Micronutrients include zinc (Zn), iron (Fe), boron (B), copper (Cu), manganese (Mn), nickel (Ni), molybdenum (Mo), and chloride (Cl).

As highlighted in recent reports, these nutrients perform individual as well as coordinated functions in crop physiology and development. For example, some regulate enzymatic activities because certain enzymes require them to function properly. Others play a role in the formation of chlorophyll, the green pigment of plants; in photosynthesis; in cell wall

and membrane structural integrity; and in the metabolism of carbohydrates and nitrogen. Ultimately, these functions result in observable agronomic outcomes.

Unfortunately, many soils around the world suffer from one or more micronutrient deficiencies. Applying these nutrients is increasingly being demonstrated to stimulate agricultural productivity. Notably, when specific micronutrients are added to crops that have been fertilized with nitrogen (N), phosphorus (P), and/or potassium (K), additional effects on growth and yield are observed. Taken together, these benefits make micronutrients strategic in fertilizer innovation, not just

“Of the micronutrients, Zn is, arguably, the most critical for the society and environment. Zn deficiency in soil is increasingly linked to human Zn deficiency...”

for enhancing yield, but also to potentially minimize pesticides and nitrogen fertilizer footprints in the environment.

The extent to which each micronutrient influences agronomic outcomes is dependent on its concentration in soil, but in general, the more lacking they are in soil, the greater the response their addition evokes in the plant. As a quick fix, individual micronutrients can be applied to crops to promptly address specific deficiency symptoms. However, the strategic use of micronutrients in fertilizers can be viewed in the context of balanced fertilization, where macronutrients (N, P, and K) form the basis of fertilization with the supplementation of one or more micronutrients, to generate a comprehensive fertilizer regime that addresses systems-level crop responses. Such balanced fertilizer regimes should, of course, be based on the results of soil and/or plant tissue testing to determine nutrient levels and associated soil and crop needs.

The relative effectiveness of each micronutrient is determined by how it is packaged and delivered to plants. The most common packaging methods are as oxides (particles) or sulfates (salts). Oxide forms are typically cheaper than sulfates, but are not as readily available to the plant. More recently, packaging as nanomaterials using oxide particles that are far smaller in size than regular oxides is being studied, with positive effects observed in crops. Differences in crop responses to packaged forms depend mainly on the rates of dissolution and availability of the active nutrients. However, regardless of how they are packaged, micronutrients can be delivered to crops either via soil or foliar treatments.

This dual possibility is convenient because many of the root biological processes requiring micronutrients to function, as well as the transport mechanisms of micronutrients into the plant cell, also happen in leaves.

Of the micronutrients, Zn is, arguably, the most critical for the society and environment. Zn deficiency in soil is increasingly linked to human Zn deficiency, which is a serious health concern in many parts of the globe, especially in areas where staple food crops grown in nutrient-poor soils form the major diets. Little Zn is used in fertilizers in today's agriculture, compared to its use in other industries. Therefore, expanding the Zn market beyond non-agro uses would promote its use in agriculture more, allowing its full socio-environmental benefits to be realized.

### OUTCOMES FROM MICRONUTRIENT APPLICATION

01 PLANT GROWTH STIMULATION (ALL)

02 PLANT YIELD IMPROVEMENT (ALL)

03 CROP NUTRITIONAL QUALITY IMPROVEMENT (ZN, FE)

04 CROP RESILIENCE ENHANCEMENT UNDER ADVERSE CONDITIONS (ZN, B, CU)

05 IMPROVEMENT IN NITROGEN USE EFFICIENCY (ZN, B, MN, MO, NI)

06 PATHOGEN SUPPRESSION OR RESISTANCE (ALL)

CHRISTIAN DIMKPA, PH.D



# 2016 YEAR IN REVIEW

## THE BIG PICTURE

In 2016, IFDC steadily progressed toward its mission to increase global food security and agricultural sustainability. With a budget of \$60 million, the organization implemented more than 30 projects and research initiatives in 25 nations. From Bangladesh to Zambia, IFDC's technology transfer, training, and market linkages assisted hundreds of thousands of agricultural entrepreneurs to better their lives through improved crop production and incomes.

The United Nations Sustainable Development Goals (SDGs) inform our work and our goals, whether we are researching breakthrough agricultural technologies and processes or implementing projects. The following pages show a few examples of how the SDGs guided our work in 2016.





At IFDC, it all starts with sustainable agriculture, which we see as the answer to the first two goals. We assist farmers to boost their crop production to nutritiously feed their families, through improved seeds, appropriate fertilizer use, and other good agricultural practices.

But IFDC believes that improved agriculture does not end with bigger yields. Our efforts follow through on ensuring that those higher yields make it to markets, and eventually to other consumers, from the base of the pyramid to the top. For example, from 2012 to 2016, our Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability (CATALIST-Uganda) project linked more than 70,000 farmers to agribusinesses, the sales from which are resulting in a 50 percent increase in their incomes. It is our aim to ensure our farmers' hard work not only puts food on the table but is profitable.



Empowering women farmers and entrepreneurs represents one of the surest routes to achieving a world free of poverty and hunger. According to the Food and Agriculture Organization (FAO) of the United Nations, if given the same access to tools and knowledge as men, yields on women's farms could increase 20-30 percent, which could provide food security for up to 150 million people.

IFDC's Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability (CATALIST-II) project, from 2012 to 2016, determined to engage and empower women farmers in Burundi, the Democratic Republic of Congo, and Rwanda. These women farmers, many of whom had access to fertilizer for the first time in their lives (through a women-focused subsidy system) increased their yields to four times the national average. But their empowerment did not stop at the farm, as they learned business management practices, received access to credit, and were linked to profitable markets. In Burundi alone, 18 sorghum cooperatives provided the nation's largest brewery with more than 10,000 tons of white sorghum, valued at \$2.6 million.



IFDC's 2SCALE project increases producer access to processing and storage technologies that reduce post-harvest losses, links its partner farmers to buyers to sell their produce, and empowers farmers to integrate into competitive value chains. From sorghum to soybeans, onions to oranges, post-harvest losses are reducing by 15 percent or more across the board – ensuring that boosted yields do not languish in fields but become nutritious food for national and international consumers.

IFDC recognizes that appropriate fertilizer use is critical for sustainable intensified agriculture production that provides for food security with minimal environmental impact. Our Fertilizer Research Program evaluated balanced plant nutrition including the use of micronutrients to enhance nitrogen nutrient use efficiency in sorghum. Greenhouse trials focused on zinc (Zn), a key nutrient for plant and human health. These trials also demonstrated Zn to aid in plant resilience to climactic stressors such as drought.

In a separate study in 2016, IFDC collected more than 2,000 georeferenced soil samples and more than 1,000 plant tissue samples from the Feed the Future zone of influence in northern Ghana. By evaluating these samples, IFDC identifies nutrient deficiencies in soils and is producing soil fertility maps to enable site-specific fertilizer recommendations for reducing improper fertilizer use and assuring balanced plant nutrition.

Initiatives like our Fertilizer Deep Placement and Microdosing (FDP MD) project are teaching farmers to use farm inputs responsibly, by promoting new technologies (FDP and MD) that increase nutrient uptake and result in higher yields per kilogram of fertilizer used. Malian smallholders applied these approaches on more than 175,000 hectares (ha) of farmland in 2016.



Knowing the improper use of fertilizer products can contribute to climate change and its impacts, IFDC puts a top priority on providing farmers with tools and training to properly apply fertilizers to their fields. Additionally, IFDC promotes farmer-accessible climate-smart technologies in its field projects.

In Bangladesh, for example, IFDC's Accelerating Agriculture Productivity Improvement (AAPI) project promoted UDP, a climate-smart fertilizer technology. More than 2 million farmers have adopted the technology, which reduces urea use by more than 30 percent while increasing rice yields by 15 percent. The improved efficiency results in a 60-80 percent decrease in nitrous oxide emissions.

# WE NEED STORIES

When asked why he believed stories were so important, best-selling author Philip Pullman responded, “Because they entertain and they teach; they help us both enjoy life and endure it. After nourishment, shelter and companionship, stories are the thing we need most in the world.”

When faced with the state of the world – the hunger, the poverty, the famines, the wars – the stories we tell give us hope and encouragement, the will to continue working for good in the world. According to recent surveys by the Gapminder Foundation, globally, more than 9 out of 10 people do not believe the world is getting better.

That is why, in 2016, IFDC has been telling stories, not about ourselves but of the farmers who, empowered by knowledge and technology, are changing their families, villages, nations, and the world. Theirs are the stories that show us our world is indeed getting better. Indeed, stories are the thing we need most in the world.

The following stories demonstrate not only that IFDC’s development approach works, but that sometimes even small changes effect big impact.



## NIGERIA: FROM THE BANK TO THE FIELD

When economist Pam Dung left his banking job of three years, he didn’t look back.

“I decided to quit my job at the bank and go into farming, and I’m enjoying it,” Dung said. “My dream is to become a renowned farmer.”

Dung, a partner with IFDC’s 2SCALE project, has been learning the ins and outs of treating agriculture as more than simply a way of life. From applying good agricultural practices to properly preparing his produce for market, Dung’s approach to the farm has completely changed. His farm is now a business, not just a source of seasonal produce.

“[Before] we knew the market for vegetables was there, but we lacked the knowledge on how to access the markets.” Now, the project has linked him to a market, to which he can sell yields six times greater than before coming in contact with the project.

Recently, his farmer organization acquired a grant of \$400,000 to establish a tomato seed farm, from which local farmers can acquire improved seeds that will produce high-quality fruit that buyers desire.

Read his full story at: <http://bit.ly/PamDung>.



## IFDC TRAINING HOSTS SUCCESSFUL STUDY TOUR

IFDC’s specialized trainings attract professionals from many fields, from farmers to non-governmental organization workers to officials from ministries of agriculture. The 2016 U.S. Study Tour, the largest in the annual event’s history, attracted more than 40 innovative farmers, agronomists, soil scientists, researchers, and extension agents from over 20 countries.

These participants visited 25 organizations, companies, and universities in six states to learn the latest in agricultural science, and guest speakers – including IFDC staff and other leaders in the U.S. agricultural industry – shared their experience with the group. Participants were introduced to five U.S. agricultural value chains: corn, cotton, rice, soya bean, and vegetable. They were exposed to technology advances in precision agriculture, biotechnology, nanotechnology, and water and nutrient management. In addition, the trip offered many networking and knowledge-sharing opportunities – and several attendees even found time to catch a Cardinals game in St. Louis, Missouri.

The study tour was one of IFDC’s most successful, to date, and according to one participant, the training was “a very excellent program...on considering the future of agriculture. I am concerned more than ever before of the need to develop new mindsets, skills, and attitudes in order to transform agriculture in developing countries. I will recommend the program to my colleagues.”

Read the whole story at: <http://bit.ly/IFDCStudyTour>.



## ETHIOPIA: WE LIKE LIKIE!

Empowering women changes the world, even one community at a time. In Ethiopia, the 2SCALE project is working with skilled women to sell nutritious food at accessible prices.

With partner firm GUTS Agro, 2SCALE devised a marketing plan – called the Likie model – to promote Supermoms, a highly nutritious baby food, to low-income consumers. The Likie model targets entrepreneurial women, helping them become micro-franchisees who engage potential customers and distribute the product.

Affectionately called “Likie Ladies,” these women work hard to promote their business – but also promote nutrition. One group even performed guerilla marketing campaigns at schools, teaching the benefits of the product and the importance of good nutrition.

One Likie Lady, Elsa Kebede, who has a nursing degree and runs her Likie business on the side, garnered sales exceeding \$1,000 less than two months after taking on the business opportunity.

Another Likie Lady sums it up well, “I am making more money than ever before, [and now] I can provide better for my children.”

Read the full story at: <http://bit.ly/LikieLadies>.



## BANGLADESH: ASHRAF ALI SEIZES THE DAY

It was only a few years ago that Ashraf Ali farmed a small half-hectare of land. His crop production barely got food on the table, much less paid the bills. For years he searched for extra work and was eventually compelled to take out loans.

Now, he stands proudly, pouring granulated urea into a machine that changed his life. After receiving a tip from a local extension agent, Ali jumped on a deal to buy a urea briquetting machine – going so far as to mortgage some of his land to another farmer.

After attending several trainings on operation, maintenance, and business practices, Ali was set. He was the only urea briquette producer when he started his business, and now his gross seasonal earnings can exceed \$1,500.

“Starting a fertilizer business with my own briquetting machine was a blessing for me and my family,” Ali said.

With the extra capital, Ali paid back financing on the machine, expanded his farm, and built a new house. With the steady income, Ali and his family finally have stability.

Read his whole story here: <http://bit.ly/AshrafAli>.

# 2016

## FINANCIAL HIGHLIGHTS

### Balance Sheet - For the year ended December 31, 2016

	U.S. \$'000
<b>Assets:</b>	
Cash and cash equivalents	4,076
Contracts receivable, net of allowance for doubtful account	7,190
Other receivables	391
Supplies inventory	35
Prepaid expenses and advances	519
Total current assets	<u>12,199</u>
Buildings and equipment, net	99
Contributions receivable, noncurrent	
Total assets	<u><u>12,298</u></u>
<b>Liability and Net Assets:</b>	
Accounts payable	703
Accrued salary, w/holding and leave	1,292
Deferred revenue	12,527
Other liabilities	
Total current liabilities	<u>14,522</u>
Unrestricted net assets	(2,232)
Permanently restricted net assets	8
Total liabilities and net assets	<u><u>12,298</u></u>

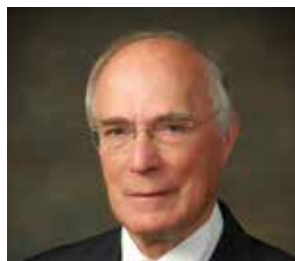
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ACDI/VOCA	International Fund for Agricultural Development (IFAD)
Africa Rice Center	International Institute for Tropical Agriculture (IITA)
African Fertilizer and Agribusiness Partnership (AFAP)	International Potash Corp (ICPUSA)
Alliance for a Green Revolution in Africa (AGRA)	Islamic Development Bank
Bangladesh Rice Research Institute (BRRI)	Netherlands Ministry for Development Cooperation (DGIS)
Centre for Development Innovation (CDI)	OCP S.A.
Chemonics International, Inc.	Rutgers University
Context Global Development	Saudi Basic Industries Corporation (SABIC)
Development Alternatives, Inc. (DAI)	Solidaridad West Africa (SWA)
Embassies of the Kingdom of the Netherlands	Swiss Agency for Development and Cooperation (SDC)
Embassy of Ireland	The Fertilizer Institute (TFI)
Federal Government of Nigeria	United Nations Office for Project Development (UNOPS - LIFT)
IDH Sustainable Trade Initiative (IDH)	United States Agency for International Development (USAID)
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	Wal-Mart Foundation, Inc.
International Fertilizer Association (IFA)	
International Food Policy Research Institute (IFPRI)	

### Statement of Revenue and Expenses - For the year ended December 31, 2016

	U.S. \$'000
<b>Revenue and Support:</b>	
ACDI/VOCA	285
AGRA	424
AFAP	167
Chemonics International, Inc.	210
CDI	331
DAI	359
Dutch Embassies	16,298
IFA	86
Embassy of Ireland (Irish Aid)	93
DGIS	9,327
TFI	140
SWA	199
SDC	2,500
Wal-Mart Foundation, Inc.	9
UNOPS-LIFT	1,022
USAID	24,572
Others	4,026
Total revenues and support	<u>60,048</u>
<b>Expenses</b>	
Research and development	2,976
Field projects	42,748
Capacity building	6,312
VFRC	143
Support activities	7,797
Total expenses	<u>59,976</u>
Increase in unrestricted net assets	<u><u>72</u></u>

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