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IFDC Report

An update on the work and progress of IFDC

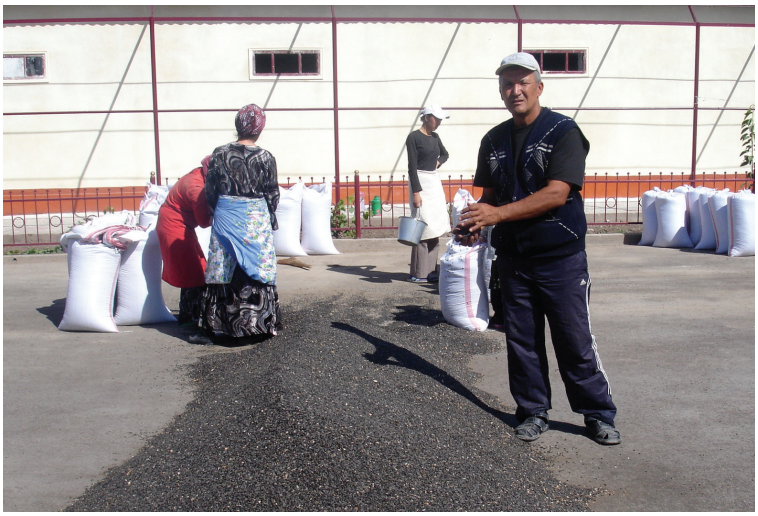
Core Competency: Partnerships Generate Progress and Sustainability

Since its inception, IFDC has led or participated in partnerships in order to help improve the lives of those with whom the Center works and serves. These partnerships have taken many forms, but the common thread is the intent to help smallholder farmers and others move from the poverty cycle to the prosperity cycle.

Donors and Collaborators

IFDC partners with its donors on projects of mutual importance across the developing world. For example, IFDC has had strong relationships with the U.S. Agency for International Development (USAID) and the Foreign Ministry of the Netherlands' Directorate-General for International Cooperation (DGIS) for more than 25 years. USAID has funded IFDC projects in Eurasia and Africa and DGIS and numerous Dutch embassies have funded projects across Africa. IFDC receives funding from other bilateral and multilateral aid agencies, private foundations and national governments.

IFDC collaborates with organizations that are also dedicated to the mission of alleviating hunger and building sustainable food security in developing countries. These partners include international agricultural research centers and numerous international, national and non-governmental organizations (NGOs). IFDC also engages and stimulates the participation of private sector partners in agricultural development through public-private partnerships (PPPs).



Kyrgyz businessman Kurbanaly Mitiev, beneficiary of the Global Development Alliance program, dries sunflower seeds for packaging.

These partnerships help meet program development challenges through the sharing of physical resources and the blending of human capital. The resulting knowledge, expertise, relationships and on-the-ground manpower make IFDC and its partners highly effective managers and implementers of results-driven initiatives.

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FEATURED ARTICLES

IFDC Report

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IFDC is a public international organization, governed by an international 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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US Ambassador Meets EDF Beneficiaries and Poultry Farmers in Southern Kyrgyzstan

U.S. Ambassador Pamela Spratlen shakes hands with potato farmer Baltabal Akchalov, EDF beneficiary.

Beneficiaries of the joint U.S./Kyrgyz Economic Development Fund (EDF) in the Osh province of southern Kyrgyzstan met with representatives of the U.S. government, including Pamela Spratlen, U.S. ambassador to the Kyrgyz Republic; Carey Gordon, USAID mission director-Bishkek; Daniel Rosenblum, USAID program coordinator for Europe and Eurasia (based in Washington, D.C.); and Dean Fisher, USAID budget officer.

EDF beneficiaries and poultry farmers learned first-hand about USAID assistance programs in the agricultural sector, including a Global Development Alliance (GDA) project with Oasis Agro, a poultry technology dissemination company, and the $4.1 million grant under the EDF. Both initiatives are being implemented by IFDC's Kyrgyz Agro-Input Enterprise Development (KAED) Follow-On project.

The U.S. government representatives saw the intervention results in a local potato field and heard farmers' impressions and concerns. The farmers expressed gratitude to USAID and project implementers for the help provided during critical times, which gave them the opportunity to grow their businesses and succeed in becoming full-fledged agricultural market participants. Ambassador Spratlen called the work under EDF "a great success," while Rosenblum called KAED "a great project."

IFDC Divisions: EurAsia (EAD) • East and Southern Africa (ESAFD) • North and West Africa (NWAFD) • Research and Development (RDD)
Acronyms: AGRA - Alliance for a Green Revolution in Africa • AUC - African Union Commission • COMESA - Common Market for Eastern and Southern Africa • DGIS - Netherlands' Directorate General for International Cooperation • ha - hectare(s) • FBO - farmer-based organization(s) • IPM - integrated pest management • ISFM - integrated soil fertility management • kg - kilogram(s) • MoU - Memorandum of Understanding • mt - metric ton(s) • USAID - U.S. Agency for International Development

Efforts Accelerate to Develop Mechanical Applicators for Fertilizer Deep Placement

The Accelerating Agriculture Productivity Improvement (AAPI) project, funded by USAID/Bangladesh and implemented by IFDC in close collaboration with the Bangladesh Department of Agricultural Extension, is engaged in rapid diffusion of fertilizer deep placement (FDP) technology. FDP technology involves considerable physical effort to hand-place fertilizer briquettes near the root zone of rice plants. The physical labor involved in the hand placement of the fertilizer is the primary constraint to increasing farmer adoption of FDP.

Nonetheless, the FDP technology has been highly successful in Bangladesh and there is growing interest in the technology in other rice-producing countries including Cambodia, India and Vietnam. FDP technology is now being used on over 600,000 hectares (ha) of farmland in Bangladesh (about 12 percent of the total land used to produce irrigated rice). Farmers are seeing yield increases of 800 to 1,200 kilograms per hectare (kg/ha). Labor is intensive during the initial placement of the fertilizer briquettes but is reduced later because there are fewer weeds, pests and diseases with this technology. Less fertilizer is used, which saves the farmer and the government money, and less fertilizer is lost as runoff, which is good for the environment.

In order to mitigate the labor issue constraining the further adoption of FDP, the AAPI project is aggressively working to develop a mechanical applicator. The project is teaming with the Bangladesh Rice Research Institute and the Bangladesh Agricultural Research Institute to develop prototypes. The Ministry of Agriculture (MoA) has supported the manufacture and dissemination of some 7,000 applicators. But placement of the fertilizer briquettes is of paramount importance; none of the prototypes have yet yielded the precision placement that is required to achieve efficiency in FDP technology. Several different applicators have been developed, but scientists and farmers have not been satisfied with the results. Additional research and development are needed.

To accelerate the development process, AAPI has engaged universities in Bangladesh and the United States to participate in research to design a suitable applicator through a small grants program. On May 25, Ishrat Jahan, IFDC resident representative and AAPI project coordinator, signed an agreement with the Agricultural Engineering and Technology Department of Bangladesh Agricultural University in Mymensingh for development of an improved applicator. A second grant was awarded to Bangladesh University of Engineering and Technology on June 11. In addition a grant to North Dakota State University in the United States is pending.

CATALIST Hosts Food Security Event in Kinshasa

Food security in the Democratic Republic of Congo (DRC) remains the least assured of any nation in the world. The United Nations (U.N.) Human Development Report 2011 estimated that more than two million tons of food are imported annually. This costs the Congolese government the equivalent of US $1 billion per year. Despite these imports, 70 percent of the DRC's more than 60 million people still lack food security.

Prices for basic food staples continue to rise worldwide and there is no indication that the situation will improve. Countries such as the DRC that depend on imports will become even more dependent and poor.

According to Professor Roger Ntoto of the University of Kinshasa, "even products such as beans that were once locally produced in sufficient quantity are imported today. The import index on beans has more than doubled in three years."

Because of the critical importance of food security, IFDC's Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability (CATALIST) project hosted a two-day conference June 28-29 in the DRC's capital city of Kinshasa. More than 400 people attended the event including representatives of the Congolese government, embassies, donors, international agricultural organizations and farmer organizations.

Donors attending included the European Union and the Belgian Technical Cooperation. Also attending were representatives of the Food and Agriculture Organization (FAO) of the United Nations and the World Food Programme.

The unprecedented event was accompanied by a large media campaign prior to and during the conference. Eighteen speakers addressed the five conference sub-themes:

- Food security – an emergency in the DRC.
- Food security is possible through soil fertilization.
- Development of profitable agricultural value chains – a condition to food security.
- Ensuring food security through new agriculture techniques reconciles man and the environment.
- Primary steps toward food security.

According to Dr. Henk Breman, CATALIST's chief of party, there has been a slight increase in fertilizer use in the North Kivu and South Kivu provinces where IFDC is working. "An event like this was required for the DRC because too many Congolese think that their soils are still fertile even though the country is using less fertilizer than any other country in the world – less than one kilogram per hectare per year," Breman said. "Another incorrect belief is that fertilizer is dangerous to humans and the soil. CATALIST has been working to counter these misperceptions and provide useful information about fertilizer to the Congolese population. Nevertheless, agricultural development in the DRC is still hindered by the lack of an enabling national policy environment."

Alain Huart, one of the key organizers of the event, told the assembled crowd, "Food security in the DRC will contribute to solving social issues and the displaced population will want to go back to making a living in agriculture."

CATALIST Chief of Party Dr. Henk Breman, second from right, speaks to Kinshasa conference attendees about improving the soil with fertilizer. The project is funded by the Royal Embassy of the Netherlands.

Organizations supporting the Collaborative Partnership on Forests for the International Year of Forests, 2011, include:

- Center for International Forestry Research
- Convention on Biological Diversity
- Food and Agriculture Organization of the United Nations
- Global Environment Fund
- Global Network for Forest Science Cooperation
- International Tropical Timber Organization
- International Union for Conservation of Nature
- United Nations Convention to Combat Desertification
- United Nations Development Programme
- United Nations Environment Programme
- United Nations Framework Convention on Climate Change
- World Agroforestry Centre

CATALIST/SEW Project Participates in the United Nations' International Year of Forests, 2011

The Sustainable Energy Production through Woodlots and Agroforestry in the Albertine Rift (SEW) project, financed by the Embassy of the Kingdom of the Netherlands in Rwanda and implemented by IFDC, recognizes and supports the U.N.'s International Year of Forests, 2011.

According to the U.N. website, the International Year of Forests, 2011, is intended to convey the theme of "Forests for People," celebrating the central role of people in the sustainable development, management and conservation of the world's forests. Information provided on the U.N. site (http://www.un.org/en/events/iyof2011/) regarding the International Year of Forests, 2011, includes:

- Forests cover 31 percent of total land area.
- 1.6 billion people earn their livelihoods from forests.
- 30 percent of forests are used for wood and non-wood products.
- Forests are home to 300 million people around the world.
- Trade in forest products was estimated at US $327 billion in 2004.
- Forests are home to 80 percent of terrestrial biodiversity.

Several of these facts are representative of the SEW project and its focus. SEW complements IFDC's CATALIST project's food production program by adding two components – private woodlots and agroforestry for energy production at the farm level. SEW promotes sustainable energy production based on reforestation and on professionalization of the fuel wood and charcoal sectors in the Albertine Rift region of Central Africa. Processing and marketing of both agricultural and wood products are handled through value chains with improved efficiencies.

SEW is working to preserve environmental and biodiversity hotspots by reducing pressure on forest clearance. The area under agroforestry is being increased and soil erosion has been reduced. Over the life of the project, more than 40 million tree seedlings will be planted. The aim is to plant 20,000 ha of forest and agroforestry trees by the end of 2011: 6,660 ha in Burundi; 6,660 ha in Rwanda; 3,350 ha in the DRC's North Kivu province and 3,450 ha in DRC's South Kivu province. Reforestation will create favorable conditions for biodiversity conservation and the integrated management of natural resources.

Charcoal is a main source of fuel for cooking in Burundi, the DRC and Rwanda. Traditional methods of charcoal production are energy-inefficient, resulting in the loss of much of the wood in production while also damaging the environment. Through field training sessions, CATALIST/SEW is introducing improved kilns that increase the amount of charcoal produced while using less wood. The improved kilns create less atmospheric pollution, generate more fuel-efficient charcoal and provide more income for charcoal producers.

The CATALIST and SEW projects share the goal of agricultural intensification through the improvement of soil fertility management, product marketing and a decrease in competition between food and energy production.

The overall objective of the SEW project is to improve the availability of and access to sustainable energy in the Albertine Rift. IFDC recognizes that forests are vital to the survival and well-being of people everywhere.

Photo: Planting trees during Rwanda's National Tree Week. Notice the prepared holes on the hills in the background. These were established on several hillsides for people to plant trees.

Rice Cooperative Receives Loan Through Inventory Credit System

Rice farmers belonging to the Mukunguri Rice Growers Cooperative in Rwanda can now access credit using their harvest as a guarantee for the borrowed funds.

The cooperative received a loan of Rwf 150 million (US $252,000) from the Rwanda branch of Kenya Commercial Bank (KCB) through an inventory credit system facilitated by IFDC's CATALIST project. Since its inception, CATALIST has promoted the inventory credit system in the Great Lakes Region of Central Africa.

In Rwanda, commercial banks account for only three to four percent of loans to the agriculture sector. KCB is likely the first commercial bank in the country to finance an inventory credit system (also known as *"warrantage"* in French).

An inventory credit system allows farmers to store agricultural commodities after a harvest until prices increase, thus raising their incomes. The stored crops are used as collateral for loans from banks or micro-finance institutions. The farmer's harvest remains stored in a warehouse or silo until the loan is repaid. By giving farmers access to credit when they need it most, this short-term system protects farmers against low prices.

The need for – and lack of – credit can force farmers to sell their crops to the first buyer at harvest, often at a low price due to ample supply. Then, the farmer must buy food and seeds a few months later at prices that erode or even erase any profit made from the harvested crops. A key advantage of the inventory credit system is that farmers can sell their crops in the months after the harvest, when market prices are higher.

The system is appealing to banks and other financial institutions because they can sell the stored crops if a borrower fails to repay a loan. Also, the crops usually increase in value with time.

"We intend to reach out to farmers through such incentives," said Pie Eugene Rubagumya, KCB branch manager in Muhanga, in an article by *The New Times*. "Such loans are available as long as cooperatives exhibit a high level of management and accountability."

To improve the quality of its rice, the cooperative plans to build a rice processing factory and modern storage facilities. Farmers will be able to request more funds from KCB in the future.

Rwandan Agro-Dealers Attend Learning Tour to Kenya

IFDC projects in Kenya hosted six Rwandan agro-dealers and one IFDC staff member during a learning tour to observe agro-input businesses in Kenya. Organized and funded by IFDC's Rwanda Agro-Dealer Development (RADD) project, the tour provided an opportunity for the team to study how various stakeholders involved in the agricultural sector are working together to benefit farmers. RADD is funded by the Alliance for a Green Revolution in Africa (AGRA).

The Rwandan team learned how to establish crop demonstration plots and show farmers the benefits of using agro-inputs. They visited a technology transfer demonstration plot established by IFDC's Extending Agro-Input Dealer Networks (EADN) project.

Other field trips included visits to agro-dealer shops; Equity Bank, which offers loans to agro-dealers and farmers; MEA Ltd., a fertilizer blending company; Kenya Seed Company; and the Agricultural Market Development Trust (AGMARK), an IFDC partner specializing in agro-dealer capacity building.

Alice Wamae, owner of Munya Agro-Vet Supplies in Embu, Kenya, and Jean Samvura Nepomuscene, an agro-dealer from Rwanda. Wamae is also the assistant secretary of the Embu Agro-Dealer Association.

The agro-dealers visited an EADN urea deep placement trial at the Mwea Irrigation and Agricultural Development Center.

Kenya's Ministry of Agriculture and EADN Project Train 393 Farmers

IFDC's EADN project hosted field days June 29-30 in Kenya's Gucha and Kenyenya districts. The field days were organized by the MoA and EADN staff. Demonstration plots were used to transfer proven technology to 393 farmers (182 female, 211 male).

The main objective of the field days was to reach a large number of farmers and to involve other stakeholders from whom the farmers could learn and form linkages. Stakeholders participating included the MoA's Livestock, Veterinary and Fisheries departments; the Ministry of Public Health; and numerous agro-dealers. The field day also provided a forum for the agro-dealers to market their goods and services.

The field days focused on several crops – bananas, beets, cabbage, carrots, kale, maize, onions, spinach, watermelons and wheat. MoA officers provided training on land preparation, planting, fertilizer application, pest and disease management, harvesting, post-harvest handling and storage. Farmers also received training in livestock farming, animal health, compost-making, public health and sanitation, farm record-keeping, fodder management, agroforestry, energy-saving devices and value addition for various crops.

Top Photo: Kenya Country Coordinator Francis Shivonje inspects the wheat crop in one of the EADN project's demonstration plots.

Bottom Photo: Farmers examined a demonstration field during recent EADN-sponsored field days.

Progress Update on AMITSA and AfricaFertilizer.org

During a recent briefing at IFDC headquarters, Patrice Annequin, an IFDC market information specialist, reported on the latest progress and future objectives of two of the organization's agro-input market information initiatives, the Regional Agricultural Input Market Information and Transparency System (AMITSA) and www.africafertilizer.org.

Annequin reported that mobile phone applications were recently integrated into the AMITSA system, which broadened the availability of data to nearly every farmer and agro-dealer in eastern and southern Africa. Via text messaging, price information and technical, extension or marketing messages and alerts are being distributed to more than 5,000 agro-dealers and to hundreds of thousands of farmers.

AMITSA (www.amitsa.org) plays a prominent role in promoting food security and agricultural growth in the region by providing updated data and key statistics on fertilizers, seeds and crop protection products. AMITSA was developed by IFDC in collaboration with the East African Community (EAC) and the Common Market for Eastern and Southern Africa (COMESA).

"Nearly 250 agro-dealers are providing weekly price information from their shops through a mobile java application developed by Esoko," said Annequin, referring to the Internet-based portal that allows individuals and businesses to share information quickly and efficiently.

In the briefing, Annequin reminded the audience that Africa is one of the last markets in the world to adopt widespread fertilizer use. He added that the majority of fertilizers used in Africa are applied to cash crops such as bananas, rubber, cotton, tea and coffee.

"Sub-Saharan Africa has extremely low fertilizer consumption rates, which average less than 8 kg/ha annually. Under the terms of the *Abuja Declaration on Fertilizer for an African Green Revolution*, the current goal is to increase Africa's fertilizer use to 50 kg/ha by 2015," stated Annequin.

The point was made to reinforce the value of technology-based tools such as IFDC's www.africafertilizer.org, a global Internet forum created to disseminate and exchange information on various aspects of fertilizer, soil fertility and related agricultural issues impacting Africa. The web portal provides monthly international and continental fertilizer prices in addition to price trends, analyses, news and helpful links.

Annequin explained that the africafertilizer.org team is currently focusing on building the quality and quantity of incoming data. He pointed specifically to fertilizer prices that may be seen by some as inaccurate due to the fact that national subsidy programs affect a "final" published price in some countries. "We are monitoring price data that originate from countries with fertilizer subsidies to ensure that published data accurately reflect adjusted fertilizer prices," said Annequin. "Currently, this affects pricing in the more than 30 nations that promote such subsidy programs."

AfricaFertilizer.org project partners include the African Union Commission (AUC), AGRA, FAO, the International Fertilizer Industry Association (IFA) and the New Partnership for Africa's Development (NEPAD).

"Lack of information about agro-inputs is one of the major constraints to increased input use and agricultural productivity," Annequin said. "AMITSA and AfricaFertilizer.org were created to provide much needed market information to stakeholders along the African agricultural value chain. We believe that improved access to this market data will ultimately lead to improved food security and agricultural growth across all of Africa. Open and competitive agricultural markets are key to improving food security on the continent."

Hundreds of Agriculture Researchers Evaluate Feed the Future Research Strategy

Hundreds of agriculture researchers, including IFDC scientists and economists, gathered in Washington, D.C., on June 21-23, to discuss the Feed the Future (FtF) research strategy at the "Feed the Future Research Forum: Engaging the Research Community." The forum was organized by the Association of Public and Land-Grant Universities (APLU) in collaboration with the Board for International Food and Agricultural Development (BIFAD), USAID and the U.S. Department of Agriculture (USDA).

FtF is a U.S. government initiative on global hunger and food security, with a focus on transforming the agricultural sectors in 20 target countries.

"Research conducted at America's land-grant universities and others working together with federal agencies and the global community played a significant role in meeting the food needs of the world's population during the last half of the 20th century," said Peter McPherson, APLU president, former USAID administrator and chairman of the IFDC Board of Directors. "Working together again, the federal research agencies, researchers from around the globe and faculty from the land-grants and the entire U.S. university community can find solutions to the production, nutrition and food security needs of the 21st century. The outcomes from the research forum are critical to defining both the workplan and the funding needs for this critical mission."

The FtF research strategy emphasizes agricultural research to achieve environmentally and economically sustainable crop productivity gains. In addition, the strategy focuses on improving the nutritional quality of diets while reducing agriculture's adverse impact on natural resources. Three overarching FtF research priorities are: advancing the productivity frontier; transforming production systems; and enhancing nutrition and food safety. Over 1,000 participants submitted commentary on the FtF research agenda in an online e-consultation held May 9-27.

Sponsored by APLU and BIFAD, the e-consultation provided a forum for stakeholders to offer feedback on the research strategy and to consider how best to support the initiative's goals of alleviating global poverty and hunger.

One of the challenges identified in the e-consultation was to "improve soil fertility, quality and conservation." This research challenge states, "In order to ensure the long-term productivity of soil, we must research new game-changing fertilizer technologies that increase production while preserving soil integrity."

IFDC staff and partners provided insight on the importance of new fertilizer technologies during both the e-conference and the research forum. "There is little doubt that a coordinated research effort can lead to new fertilizers with higher use efficiency – 'smart' fertilizers that release fertilizer when the plants need it," commented Rob Groot, director of IFDC's East and Southern Africa Division, during the e-consultation. "Assuming that the price of these fertilizers will not be considerably higher, this would lead to a higher return on investments in what smallholders consider expensive fertilizers – and considerable productivity increases."

India's Prime Minister Awards Roy Distinguished Alumnus Award


Dr. Amit Roy

The Indian Institute of Technology (IIT) Kharagpur, India, awarded IFDC President and Chief Executive Officer Dr. Amit Roy the 2011 Distinguished Alumnus Award. Roy was honored at the 57th Convocation on August 18.

Prime Minister Dr. Manmohan Singh presented the award. Other dignitaries attending the convocation included M.K. Narayanan, Governor of West Bengal; Mamata Banerjee, Chief Minister of West Bengal; Pranab Mukherjee, Minister of Finance; Dinesh Trivedi, Minister of Railways; V. Narayanasamy, Minister of State (PMO); and Dr. Shiv Nadar, Chairman of the IIT Kharagpur Board of Governors and Chairman of HCL Technologies.

The Institute was ranked as the best engineering college in India by *Outlook* magazine in 2009 and 2010. It is also recognized as an Institute of National Importance by the government of India. The Institute is an autonomous engineering, technology and management-oriented institute of higher education.

Attendees inspect harvested cassava and look at the IFDC-produced brochure during the launch of the Rivers State Cassava Initiative.

Rivers State Cassava Initiative

In May, the Cassava+ project expanded into the Niger Delta of Nigeria through the Rivers State Cassava Initiative (RSCI). The RSCI is being led by the Rivers State Sustainable Development Agency (RSSDA), which is partnering with IFDC, the Dutch Agricultural Development & Trading Company (DADTCO), the Shell Petroleum Development Company and Stanbic IBTC Bank.

IFDC is leading a training and development program at the village level to help participating subsistence farmers transition toward sustainable commercial cassava farming. In partnership with RSSDA, IFDC is linking these farmers to appropriate agricultural mechanization technologies, farm management techniques and seasonal credit so that they can purchase agro-inputs.

The program will increase the farmers' agricultural production, as well as generate increased incomes and opportunities through market development. IFDC is working to ensure that farmers integrate a sustainable management component into their farming systems so the land – their most valuable asset – can continue to produce for generations to come.

By linking participating smallholder farmers to a guaranteed market for their cassava, the RSCI will assist them to increase yields and incomes, reduce poverty and generate economic development. Specific RSCI benefits include: doubling cassava yields of 4,500 participating Rivers State farmers from an average of 10 metric tons per hectare (mt/ha) to 20 mt/ha; over 20,000 employed either directly or indirectly; over N1,500,000 (about $10,000) per day injected into rural villages in payment for fresh cassava tubers; increased individual farm size through a Cassava+-supported mechanization package; improved food security; and a positive contribution to the implementation of the post-conflict amnesty program for the Niger Delta.

The amnesty program, negotiated by Nigerian authorities and militants, presents a unique window of opportunity to bring peace, stability and economic development to the cassava-producing areas of Rivers State (and possibly other states in the Niger Delta as well). The development model already proven by DADTCO and IFDC in other Nigerian states can substantially improve the chances of success for the armistice and help the region transition to peace.

New Project to Strengthen the Agricultural Value Chain in the Breadbasket of Northern Ghana

Formerly one of the country's breadbaskets, the Northern Region of Ghana suffers from widespread food insecurity and poverty. Only 10 percent of the region's land area is currently cultivated, but there is great potential for the production of staple food crops such as rice and soybeans.

Agriculture in the region is largely rain-fed, causing production levels to vary according to weather conditions. Smallholder farmers have very limited access to improved seeds, quality fertilizers and the credit to purchase them. They also lack knowledge of proper crop and water management practices. Often, farmers are unable to sell their excess production because of post-harvest losses and a shortage of storage and processing facilities.

To address these issues, the Agricultural Value Chain Mentorship project is contributing to the government's objective of achieving food security and developing the region's agricultural sector into an agro-industrial economy. The goal is to transform the agricultural value chain into a highly productive, efficient, competitive and sustainable system by strengthening the capacity of agro-dealers, small and medium enterprises (SMEs) and farmer-based organizations (FBOs). Funded by AGRA and the Danish International Development Agency, the three-year project (2011-2014) targets 34,000 smallholder farmers and 680 FBOs.

The project is implemented by IFDC, the Ghana Agricultural Associations' Business and Information Center (GAABIC) and the Savanna Agricultural Research Institute (SARI). IFDC's role is to increase rice and soybean farmers' access to output markets by building the entrepreneurial and technical capacity of SMEs. This includes strengthening SMEs' linkages with domestic, national and international markets, agro-dealers, agribusiness service providers, FBOs and farmers. IFDC is increasing SMEs' access to commercial finance and farmers' access to storage facilities and processing services.

GAABIC is improving agro-dealers' business management skills and their capacity to provide customers with fertilizers and seeds. SARI is training FBOs and their farmer-members in integrated soil fertility management (ISFM) and encouraging its widespread adoption.

Through the mentorship of stakeholders along the agricultural value chain, business growth and productivity are expected to continue after the project ends.

Photo: Harvesting soybeans in Northern Ghana.

Training Programs Support Togo's Agricultural Development Strategy

Two hundred agricultural professionals were recently trained as ISFM facilitators in Togo. As a result, 33 new agricultural learning centers are being established in Togo's five economic regions (Centrale, Kara, Maritime, Plateaux and Savanes) to train thousands of farmers in ISFM technologies.

The Togolese professionals attended a series of training programs on Participatory Learning and Action Research (PLAR) applied to ISFM that were conducted during March-June within the framework of the Mainstreaming Pro-Poor Fertilizer Access and Innovative Practices in West Africa project. This three-year (2010-2013) project is funded by the International Fund for Agricultural Development (IFAD) and implemented by IFDC and various partner institutions in Burkina Faso, Ghana and Togo.

The training activities were conducted to support the country's agricultural intensification efforts and to reinforce the technical capacities of the staff of the *Institut de Conseil et d'Appui Technique* (ICAT), the national institute for agricultural technical support and extension. Agricultural advisors, field technicians, extension agents, ICAT directors and regional representatives attended the training programs.

Each program involved hands-on sessions with training modules on village resource mapping; fertilizer identification and application schemes; nutrient omission trials; ISFM options validation; nutrient flows identification; field observations; farm record-keeping; and participatory evaluation of ISFM-based activities.

Francis Tamelokpo, PLAR-ISFM facilitator for IFDC, explained that ISFM combines the use of mineral and organic fertilizers with a range of soil and crop productivity-enhancing techniques, including anti-erosion activities and the use of cover crops, such as mucuna.

"The training focuses on improving trainees' facilitation capacities because they must acquaint farmers with using land maps as well as transect farming and the agricultural calendar to study production environments," said Tamelokpo. "Farmers also learn about soil types, village resources, land topography, cropping practices and cropping seasons. They must learn to detect the soil's capacity to feed the crops and to select the best fertilizer options, based on nutrient needs and available financial means."

According to project leader Dr. Jean Sogbedji, "The project objective is to contribute, through technical support, to the improvement of smallholder farmers' production and to increase their incomes. During the first year, activities have focused on capacity building to harness local knowledge and foster innovation so that farmers can make valuable and sustainable change happen in their lives. In each region of the country, the project trained 40 ICAT professionals, who then trained FBO leaders and key members. This core of indigenous trainers will then disseminate ISFM technologies to the farmers with ICAT support."

"As an immediate outcome of the training programs, ICAT-trained agents are establishing agricultural learning centers in Togo's five regions. We wanted to start implementing the ISFM tools and transferring technical knowledge with targeted farmers during the main rainy season," commented Akla Esso Pitcholo, director of ICAT Kara.

Akuwavi Ewovor, director of agricultural studies and extension at ICAT Lomé, said that the training programs coincide with the Ministry of Agriculture, Animal Husbandry and Fisheries' National Program for Agricultural Investment and Food Security (*Programme National d'Investissement Agricole et de Sécurité Alimentaire* – PNIASA). The PNIASA program serves as a framework for all interventions in the agricultural sector and aims to develop and disseminate improved technologies for sustainable agricultural intensification.

"At ICAT, we have trained technicians in the 'farmer field school' approach, which includes participatory diagnosis

to identify problems and solutions together with farmers. But PLAR-ISFM takes us one step further by enabling farmers to use scientific tools to better understand soils, fertilizers and the soil-fertilizer relationship in order to make sound fertilizer choices," said Ewovor.

Konga Kakassina, chief of extension and agricultural production services at ICAT Kara, explained, "We are still using fertilizer recommendations that are more than 40 years old while soil degradation has worsened due to over-exploitation under high population pressure. The PLAR-ISFM training enables farmers to do soil analysis without using sophisticated means and to develop fertilizer options that are site- and crop-specific."

ICAT director of operational support Ambroise Fantchede was impressed to see farmers learning about their soils through nutrient omission trials. "Using five plots with different amounts and types of fertilizer, farmers learned to identify the nutrients that limit production and define the right fertilizer options to correct nutrient deficiencies," said Fantchede. "Good diagnosis makes a huge difference. For example, in part of the Maritime region, participatory diagnosis showed that farmers have been overspending on phosphate fertilizers because their soils already have high phosphorus content."

"This training will definitely change our way of working with farmers. We used to do our own assessments and impose things on farmers," said Comlan Folikoué Agbonon, ICAT agricultural advisor. "We realize now how important it is to involve farmers in decision-making."

Nevertheless, Agbonon stressed that some follow-up activities are needed to better capitalize on the results of this training. "We need to meet at least one more time during 2011 to share knowledge, discuss problems and take corrective actions in a timely manner."

Large Photo: Sampling for soil characteristics study during PLAR-ISFM training.
Small Top Photo: Sampling for soil characteristics (deep soil).
Small Bottom Photo: Participants working on fertilizer solubility determination.

Biosolids Research Escalates: Now Includes Nitrogen Fortification

During the second quarter of 2011, IFDC researchers began field-testing nitrogen-infused biosolid fertilizer on crops in the U.S. state of Tennessee. With the assistance of the University of Tennessee's Institute of Agriculture, IFDC staff members are compiling data on this nutrient-balanced fertilizer technology.

Biosolids contain eight percent organic matter. These complex carbon compounds, when applied regularly, improve soil quality in a natural and sustainable manner. This organic matter has high phosphorus content but is severely lacking in nitrogen, limiting its ability to address more than a single primary nutrient issue.

"Nitrogen distribution in biosolids is low and uneven at only one percent of total volume," said Dr. Sampson Agyin-Birikorang, IFDC scientist and systems agronomist. "Nutrient balance is the key to the nitrogen-infused product's success." Agyin-Birikorang explained that to reach an appropriate level of nitrogen in the biosolid's natural state, the corresponding phosphorus rate would far exceed appropriate levels. The solution is to infuse nitrogen into the biosolid, balancing the ratio between the two nutrients. "Previous trials of biosolids alone were impressive, but with the addition of nitrogen, test results have the potential of being exceptional," he said.

The field trials are a continuation of research begun in mid-2010. Initial greenhouse studies showed that biosolid fertilizer exceeded the performance of conventional fertilizers, producing higher mineralization, slower nitrification rates, lower ammonia volatilization losses, less nitrogen leaching and a positive effect on soil acidification. In effect, more nitrogen remained in the soil with fewer losses to groundwater and the atmosphere. It was also noted that the nutrients are released more slowly than with conventional fertilizers, providing better-timed nutrient availability across the crop's growth cycle.

Subsequent 2010 field trials near IFDC headquarters tested biosolid fertilizer on wheat crops. The trials compared yields obtained using biosolids with yields using the farmer's standard fertilizer in two soils with different organic carbon content. On the soil with lower carbon content, the biosolids delivered higher yields.

The success of these earlier tests led scientists to nitrogen infusion as a method to balance the delivery of nutrients, while taking advantage of the inherent benefits of the processed and treated biosolids.

The current field test includes 64 plots, each 20 by 30 feet. Four product variations are being tested at four different rates of nitrogen infusion. The field tests in Tennessee will be expanded to Alabama and Florida, and are expected to take three years to produce definitive data.

Seeking to collect as much practical data as possible, the technology is also being field-tested in Burundi, Ghana and Rwanda under IFDC's Africa Fertilizer Efficiency Program, which focuses on peri-urban farmers.

Agyin-Birikorang noted that if the field tests prove the technology to be effective, it should be readily accepted by developing world farmers. He suggested that as fertilizer advancements go, this is a technology that can be introduced to the farmer's field relatively quickly. "These biosolid fertilizers are being manufactured in granular form – a form of fertilizer that smallholder farmers are used to working with. This dramatically increases the potential for recognition, acceptance and adoption," he said.

Dr. Joaquin Sanabria, IFDC scientist and biometrician, added that biosolids could be viewed as a key tool in the world's fertilizer arsenal. "Biosolids in fertilizer form, especially those supplemented with additional nutrients, help us to address a number of issues," he said. "The concerns over phosphate and nitrogen use efficiency, environmental impact and natural resource conservation are all addressed to one degree or another through the use of this technology."

"Nutrient balance is the key to the nitrogen-infused product's success. Previous trials of biosolids alone were impressive, but with the addition of nitrogen, test results have the potential of being exceptional."

- Dr. Sampson Agyin-Birikorang, IFDC scientist and systems agronomist

IFDC Scientists Publish in Prestigious Journals and Books

Agronomy Journal

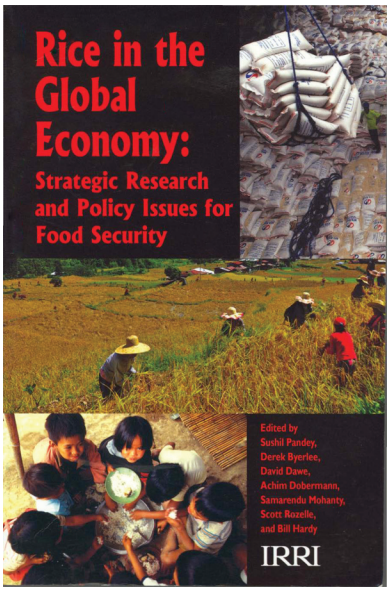
Dr. Paul Wilkens, IFDC scientist – programmer, collaborated with NASA scientists and others on a recent study – "Evaluation of Satellite-Based Modeled-Derived Daily Solar Radiation Data for the Continental United States." This paper appeared in the June issue of *Agronomy Journal* (Volume 103, Issue 4). Decision support tools for agriculture often require meteorological data as inputs, but data availability and quality are often problematic. Difficulties arise in measuring daily solar radiation because the instruments require electronic integrators, accurate sensors are expensive and calibration standards are seldom available. Daily solar radiation data from NASA/POWER was compared with instrument readings from 295 stations (observed values of daily solar radiation) and values estimated by the Weather Generator for Solar Radiation. The NASA/POWER solar data are a promising resource for studies requiring realistic accounting of historic variation.

Soil Science of America Journal

IFDC scientists Dr. Rick Austin, coordinator of analytical services; Dr. Upendra Singh, principal scientist – systems modeler; and Dr. S.H. Chien, retired principal scientist – chemistry; in collaboration with Dr. J.S. Kruse of Georgia-Pacific Corporation, discovered a technique to separate nitrogen (N) polymers from urea in a water-soluble urea-formaldehyde (ureaform) N fertilizer. With this simple technique the mineralization of the polymers per se in soil can be studied without using the sophisticated techniques that are generally not accessible to many researchers. The results showed that compared with urea alone, there was an increase in N uptake by flooded rice and a reduction in volatilization losses. These findings "Separating Nitrogen Polymers from Urea in Ureaform Fertilizer to Study Soil Nitrogen Transformations" were published in the July-August 2011 issue of the *Soil Science of America Journal* (Volume 75: Number 4).

Rice in the Global Economy: Strategic Research and Policy Issues for Food Security
published by the International Rice Research Institute (IRRI)

Dr. Upendra Singh, IFDC principal scientist – systems modeler, and Ian Gregory, retired agribusiness specialist and current IFDC consultant, collaborated with S.M. Haefele and R.J. Buresh to write a chapter for a book recently published by IRRI. Their contribution is Chapter 2.3 ("Fertilizer use, markets, and management") in *Rice in the Global Economy: Strategic Research and Policy Issues for Food Security*. Some of the topics covered in this chapter include: the role of fertilizers in rice production; phosphate fertilizers, future availability and cost; policy distortions, subsidies and improvements; and improved management of conventional fertilizer, among other subjects. According to an IRRI press release, "The book identifies five critical areas rice scientists and policymakers must make progress in – providing a stable and affordable rice supply, managing structural changes, improving efficiency in input and value chains, reducing environmental impacts and addressing rice development in lagging regions, such as Africa."



Dr. Amit Roy and Steven Van Kauwenbergh Attend Phosphate Symposium in Morocco

The *Office Chérifien des Phosphates* (OCP) hosted the first "SYMPHOS: International Symposium on Innovation and Technology in the Phosphate Industry" held May 9-13 in Marrakech, Morocco. The state-owned OCP Group is one of the world's leading exporters of phosphate rock and derivative products.

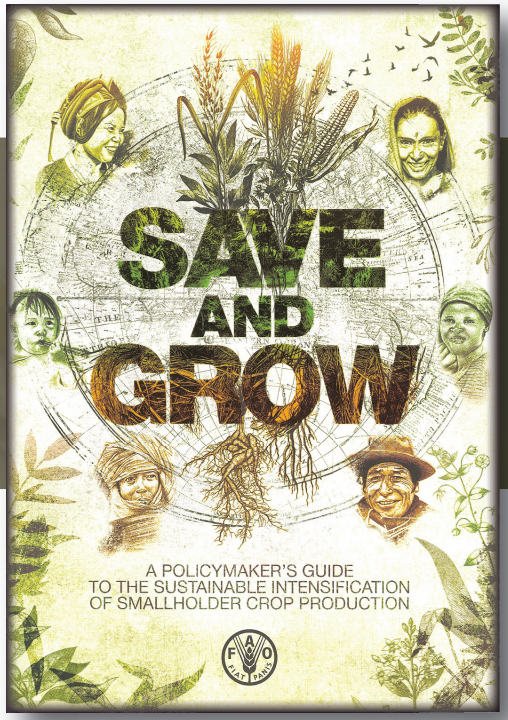
Dr. Amit Roy, IFDC president and CEO, and Steven Van Kauwenbergh, IFDC principal scientist and project leader of the Phosphate Research and Resource Initiative, attended the symposium with about 800 other participants. The event brought together equipment suppliers, industrialists, researchers and consultants working in or associated with the phosphate industry.

The symposium was timely considering the recent debate about phosphate availability in the future. Van Kauwenbergh is the author of a global phosphate rock reserve and resource study, *World Phosphate Rock Reserves and Resources*, released by IFDC in September 2010.

Experts from academia and leading phosphate and fertilizer companies were the featured speakers. The participants were presented with new information on improving phosphate rock mining, handling, beneficiation and conversion to fertilizers, among other topics.

Save and Grow:

"In Order to Grow, Agriculture Must Learn to Save"



Producing enough food to feed an ever-growing population depends on a new farming model that uses environmentally friendly techniques to protect and build the natural resource base, according to *Save and Grow*, a new book from FAO. Published by FAO's Plant Production and Protection Division, *Save and Grow* promotes sustainable crop production intensification (SCPI).

"Agricultural intensification on existing low-intensity farmland must be increased through the adoption of high-yielding crop varieties and better farm management, including the correct and efficient use of fertilizer and other inputs," stated Dr. Amit Roy, IFDC president and CEO. "We are working to develop new fertilizers that provide vital nutrients to crops using fewer natural resources." Roy is a member of the publication's steering committee and a collaborating author for the chapter on soil health.

Food production in developing countries increased from 800 million tons in 1961 to more than 2.2 billion tons in 2000 due to modern agricultural technologies such as improved crop varieties and chemical fertilizers. However, intensive cropping over decades has degraded soil nutrients and depleted water and other resources; yields of major food crops are declining.

Save and Grow presents a new paradigm: "In order to grow, agriculture must learn to save." SCPI is based partly on conservation agriculture, which minimizes plowing and involves covering crops with plant residues. Other techniques include precision irrigation and fertilizer application, integrated pest management (IPM) and ISFM.

For more information on *Save and Grow*, visit www.fao.org/ag/save-and-grow/.

Spotlight: Research and Development Division's Greenhouse Services (GS) Unit

GS unit experiments in 2011 have ranged from biofortification to fertilizer volatilization. The center photo shows the process of planting sorghum repeatedly in the same soil to deplete the soil of nutrients for future experiments.

Global TraPs Meets on Phosphorus Management

The third workshop of the Global TraPs project was held August 29-30 in Zurich, Switzerland. About 70 participants from more than a dozen countries gathered to explore how humans can more sustainably manage phosphorus (P), particularly phosphate fertilizer.

Through case studies, Global TraPs work groups are examining the sustainable management of P – a key to ensuring food security and improving environmental quality. Co-leaders of the five-year project (2010-2015) are "practice" leader Dr. Amit H. Roy, president and CEO of IFDC, and "science" leader Professor Roland W. Scholz, head of the Institute for Environmental Decisions at the Swiss Federal Institute of Technology (ETH Zurich).

"Science" participants are researchers from various disciplines with an interest in P management. "Practice" participants are producers and users of P, along with those facilitating their efforts, such as extension and development organizations.

Workshop participants came from several organizations including IFDC, ETH, FAO, the International Plant Nutrition Institute, the United Nations Environment Programme, mineral fertilizer and agricultural trading company Keytrade AG, as well as universities in Austria, Canada, China, Germany, Japan, South Africa, Switzerland, the United Kingdom and Vietnam.

Global TraPs participants are organized into groups called nodes, which represent different phases of the life cycle of P products – exploration, mining, processing, use, dissipation and recycling and cross-cutting issues.

GLOBAL TraPs

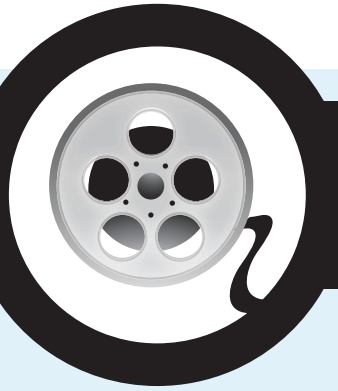
TRANSDISCIPLINARY PROCESSES FOR SUSTAINABLE PHOSPHORUS MANAGEMENT

The goals of the workshop were to:

- Develop guiding questions for each project node.
- Define a list of questions about critical aspects of P sustainability in each node, keeping systemic and contextual factors in mind, to identify research and knowledge gaps.
- Provide a forum for a pre-competitive discourse and learning among actors from practice, science and other stakeholders.

During the workshop, a new Global TraPs logo was unveiled (shown above), and Dr. Deborah Hellums was named Global TraPs "practice" manager. She is the senior program support specialist and program leader for IFDC's Agro-Economics Program.

IFDC Releases New Videos



IFDC has produced several new videos about the organization, its projects and fertilizer. The following videos can be found at IFDC's Video Gallery (www.ifdc.org/Media_Info/Video_Gallery).

An Innovative Trail for Rice Production

"An Innovative Trail for Rice Production" highlights the impact of the USAID-funded Improved Livelihood for Sidr-Affected Rice Farmers (ILSAFARM) project in Bangladesh.

The Land of a Thousand Hills

"The Land of a Thousand Hills" describes the work of the USAID-funded Privatization of Rwanda's Fertilizer Import and Distribution System (PReFER) project.

MAKALA

The educational and inspirational film, "MAKALA," illustrates improved carbonization and agroforestry techniques being implemented in Burundi, DRC and Rwanda through the CATALIST/SEW project, which is funded by DGIS.

Patrick J. Murphy Interview

In an interview, Patrick J. Murphy, IFDC Board of Directors member, discusses IFDC's growth and its role in the future of agricultural development. Murphy chairs the board's Audit Committee and is a member of the Africa, Budget and Executive committees.

The Primary Nutrients in Plant Growth: Potassium

"The Primary Nutrients in Plant Growth: Potassium" is the latest in IFDC's video series on fertilizers. The video is narrated by John Shields, interim director of the Research and Development Division. The next video in the series will discuss secondary nutrients and micronutrients.

Core Competency *(Continued from Page 1)*

Memoranda of Understanding

While IFDC's projects are governed by contracts between IFDC and its donor or donors, memoranda of understanding (MoU) govern other relationships. IFDC has signed a number of these memoranda in recent years. For example, a continental MoU was signed in 2010 between IFDC and the AUC.

The MoU formalizes the collaboration between the AUC and IFDC in their mutual goal of transforming African agriculture. The two organizations share a vision – a transformed agricultural sector that provides the basis for sustainable growth and prosperity, food security and poverty reduction on the African continent.

IFDC has also signed MoUs with many regional organizations, including the Economic Community of West African States (ECOWAS). The 2009 MoU reinforces cooperation in their work to further promote agricultural development, improve economic growth, reduce poverty, enhance food security and stop the degradation of natural resources through appropriate and sustainable soil fertility management practices and agricultural policies. Other regional organizations with which IFDC has MoUs include COMESA and the Economic Community of the Great Lakes Countries.

There are also MoUs in effect between IFDC and several countries. For example, IFDC and the government of Mozambique signed a memorandum in February 2011 to formalize their joint commitment to improve agricultural productivity through sound and sustainable soil nutrient management practices and agricultural policies.

IFDC signed a similar MoU with Benin in 2009 and recently signed a joint communiqué with the new nation of South Sudan (along with the government of the Netherlands, USAID and AGRA).

The MoU between IFDC and the Africa Middle East federation of CropLife International was renewed in 2009 for a second five-year term. The partnership provides support for farmers involved in agro-processing and focuses on agricultural sustainability.

Highlights of the first MoU include the development of manuals for training of trainers, the safe use of crop protection products and IPM. The agreement also strengthened agro-input dealer associations in Africa.

Farmer, Producer and Agro-Dealer Organizations and Associations

Within its projects, IFDC also partners with farmers' and producers' organizations. For example, in the Albertine Rift region of Africa, CATALIST is partnering with dozens of organizations, including ASOFAR and CAPAD in Burundi, COOCENKI and LOFEPACO in the DRC and IMBARAGA and ARDI in Rwanda.

An IMBARAGA member holds maize from a demonstration plot in Rwanda established through a partnership with the CATALIST project.

These partnerships center on building the professionalism of the organizations and training members in agricultural best practices. These and other partners also work with CATALIST project staff to manage on-farm demonstration plots and farmer field schools.

Over the course of the project, nearly 200,000 farmers have received training. In addition, over 600 trainers have been trained; they will help spread knowledge, information and technology to thousands of additional farmers across the Great Lakes region.

Among the topics covered in the CATALIST trainings are ISFM, agro-dealer development, market development, business planning, facilitation skills and inventory credit systems.

IFDC has a long-standing commitment to building agricultural linkages through the development of producer and agro-dealer associations. Association development is a powerful tool to assist both agro-dealers and farmers in developing their businesses. IFDC has helped start agro-dealer, fertilizer, seed and crop protection product trade associations.

For example, IFDC helped establish the Association of Agribusinessmen of Kyrgyzstan (AAK) in 2002. The AAK represents and coordinates the work of more than 140 producers, suppliers and agro-dealers. The association focuses on three areas – protection of rights and interests, networking and training.

IFDC also helped start the Albanian Fertilizer and Agribusiness Dealers Association (AFADA) in 1993. The success of AFADA inspired other agribusinesses to form trade associations along industry lines.

IFDC also supported the Albania Association and Business Management Center (ABMC), which was established in 2001 and is funded by 11 agribusiness associations. The ABMC has been a focal point for IFDC-implemented activities under the USDA's Food for Progress program.

As a component of the Food for Agricultural Revitalization and Market Systems (FARMS) project in Afghanistan, IFDC organized the formation of the Afghanistan Flour Mills Association. This was the country's first association of commercial and public sector mills.

A final example is GAABIC. GAABIC was established in 2006 as a common resource center for members of the Apex Farmers Organization of Ghana, Ghana Agricultural Input Dealers Association and CropLife Ghana. GAABIC offers a training and business center. Members also can register their phones to receive short message service alerts on offers to sell and to buy agricultural inputs and products.

Through several of its projects, IFDC has also helped establish market information systems (MIS) to link farmers, produce buyers, agro-dealers and other members of the agricultural value chain. An example is AMITSA, a joint initiative of IFDC, EAC and COMESA.

IFDC and the Natural and Soil Science Interface at ETH Zürich are co-leaders of Global TraPs (see additional information about Global TraPs on page 17). Global TraPs is studying phosphorus use, management and sustainability from a supply chain perspective through a transdisciplinary process involving experts from academia, industry, governments, NGOs, etc. The goal of the five-year project is to build knowledge about how to transition toward more sustainable phosphorus use.

A successful agro-dealer in Ghana represents the best of public-private partnerships.

Public-Private Partnerships

Working with NEPAD, AUC, the government of Nigeria, the Rockefeller Foundation and others, IFDC implemented the Africa Fertilizer Summit, held in Nigeria in 2006. Over 1,100 participants attended the Summit including five African heads of state, 15 ministers of agriculture, 17 members of the Summit's Eminent Persons Advisory Committee and hundreds of leaders of international organizations, agricultural research centers and private sector companies.

The Summit was one of the largest meetings in history to focus on Africa's food issues. Heads of state and governments called for the elimination of all taxes and tariffs on fertilizer in the historic *Abuja Declaration*. Summit participants also agreed on 12 resolutions designed to increase fertilizer use five-fold within 10 years.

The Summit created opportunities for agencies to address the complex issues of removing yield constraints and improving soil fertility and food security in Africa. Since the Summit, NEPAD and IFDC have worked together to monitor progress on the *Abuja Declaration* resolutions.

The Virtual Fertilizer Research Center (VFRC) was launched by IFDC in 2010. The VFRC is a global research initiative to coordinate the creation of the next generation of fertilizers and production technologies. The VFRC's international Board of Advisors will meet for the third time in early November.

In a number of its projects, IFDC has entered into PPPs. One example is in Kyrgyzstan, where IFDC is part of a PPP with Eurasia Group under the framework of USAID's Global Development Alliance. The PPP has several components, including demonstration fields and agricultural machinery demonstrations.

In Nigeria, the Cassava+ project is a PPP between IFDC and DADTCO. IFDC works with smallholder farmers to provide cassava to DADTCO's processing facilities. Cassava cake and high-quality cassava flour are produced and sold to commercial and household products manufacturers (such as the global brewer SABMiller). The PPP was expanded recently in Nigeria's Rivers State (see article on page 10 for further details).

Partnerships of all forms have been a key to IFDC's success to date and will continue to be critical to its future success.

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International Year of Forests, 2011

IFDC and its primary agro-forestry project, Sustainable Energy Production Through Woodlots and Agroforestry (SEW), celebrate the United Nations' International Year of Forests.

World Food Day, October 16, 2011

FAO celebrates World Food Day each year on October 16, the date of FAO's founding in 1945. The theme of World Food Day 2011 is "Food prices - From crisis to stability." For more information, see FAO's World Food Day website.

2011 International Training Calendar

Training Program	Dates	Location	Program Fee (USD)
Nitrogen Fertilizer Production Technology (with IFA)	October 3-7	Seville, Spain	$2,500
Linking Farmers to Markets in Africa	November 21-25	Accra, Ghana	$1,200
Assessing Indigenous Fertilizer Production Opportunities in Africa	December 5-9	Arusha, Tanzania	$1,200