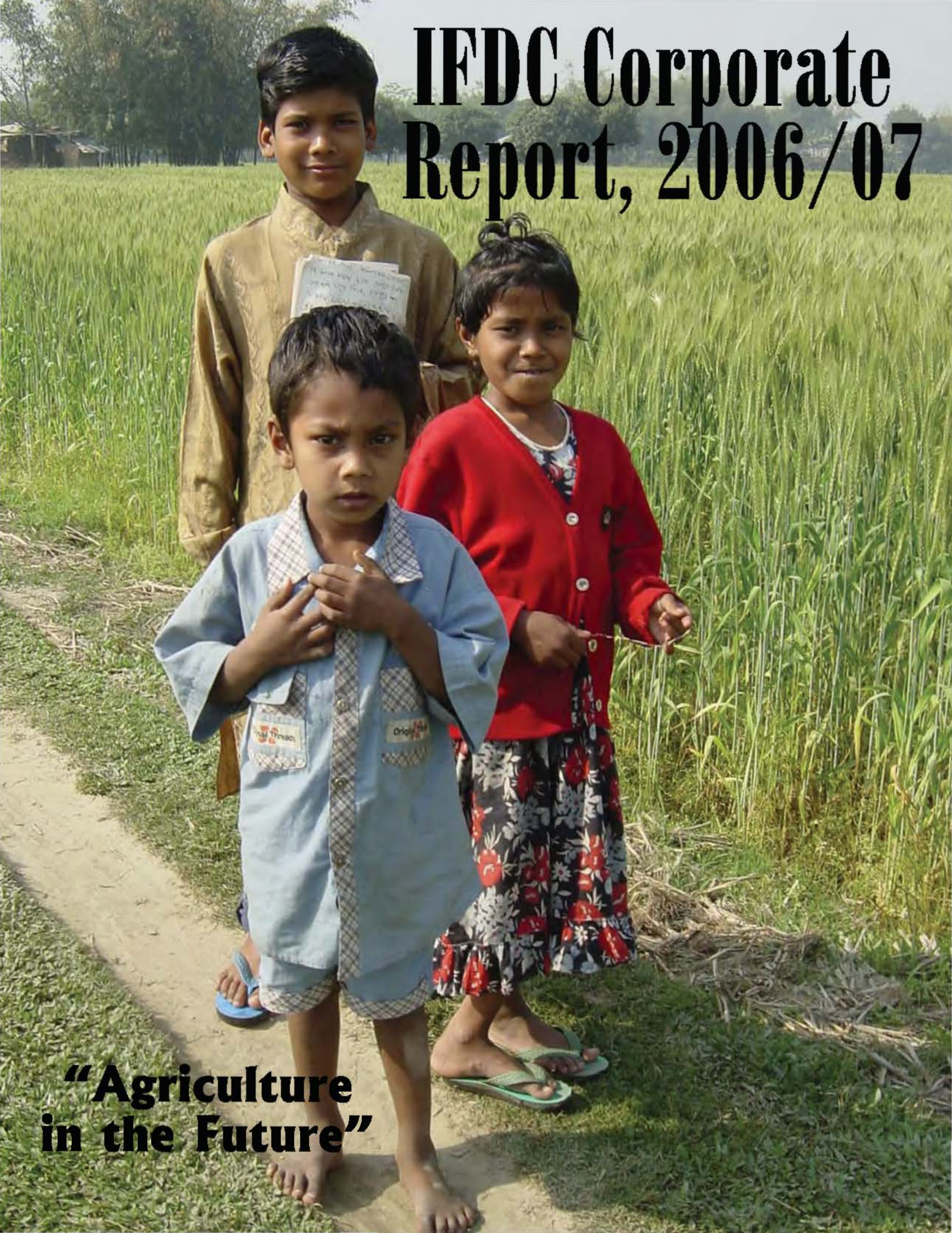
IFDC Corporate Report, 2006/07



"Agriculture in the Future"

Corporate Report 2006/07 – Agriculture in the Future

Acronyms

AAK—Association of Agribusinessmen of Kyrgyzstan
AAT—Agribusiness Association of Tajikistan
ABIPs—Agribusiness Information Points
ABMC—Association and Business Management Center
AFA—Arab Fertilizer Association
AfDB—African Development Bank
AGRA—Alliance for a Green Revolution in Africa
AIMs—Agricultural Input Markets
AIMS—Agricultural Input Markets Strengthening
AISP—Agricultural Input Supply Program
ALPs—Alternative Livelihood Programs
AMEDD—Malian Association for Rural Development
AMPS—Agricultural Marketing and Production Support
ANMAT—Adapting Nutrient Management Technologies
APEP—Agricultural Productivity Enhancement Program
APROVEB—Banana Producers and Dealers Association
ASAP—Accelerated Sustainable Agriculture Program
ASSIAHOC—Association of Onion Importers of Cotonou
AUC—African Union Commission
BDS—Business Development Services
BSAIDD—Batken and Sughd Agri-Input Dairy Development
CAADP—Comprehensive Africa Agriculture Development Program
CAN—Business Support Center for Farm Associations
CAP—Certified Agribusiness Professional
CASE—Competitive Agricultural Systems and Enterprises
CATALIST—Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability
CBS—Cluster and Business Support
CEPAGRI—Agricultural Promotion Center
CIMMYT—International Maize and Wheat Improvement Center
CLUSA—Cooperative League of the United States of America
CNFA—Citizens Network for Foreign Affairs
COMESA—Common Market for Eastern and Southern Africa
CPIDS—Cereal Production Information and Decision Support Systems
CPPs—crop protection products
CSD-ISFM—Combating Soil Fertility Decline to Implement Smallholder Agricultural Intensification
DAI—Development Alternatives, Incorporated
DAP—diammonium phosphate
DFID—Department for International Development
DGIS—Directorate-General for Development Cooperation
DMP—Desert Margins Project
DNEA—National Directorate of Agrarian Extension
DNSA—National Directorate of Agrarian Services
DOAE—Department of Agricultural Extension
ECOWAS—Economic Community of West African States
EMPRENDA—Empowering Private Enterprise in the Development of Agriculture
EU—European Union
FAO—Food and Agriculture Organization of the United Nations
FARA—Forum for Agricultural Research in Africa
FARMS—Food for Agricultural Revitalization and Market Systems
FFP—Food for Progress
GAPTO—Ghana Agricultural Producers and Traders Organization
GIS—Geographic Information System
IAEA—International Atomic Energy Agency
IARCs—International Agricultural Research Centers
ICRISAT—International Crops Research Institute for the Semi-Arid Tropics
IFA—International Fertilizer Industry Association
IFAD—International Fund for Agricultural Development
IFDC—An International Center for Soil Fertility and Agricultural Development
IIAM—Agricultural Research Institute of Mozambique
IITA—International Institute for Tropical Agriculture
ISFM—Integrated Soil Fertility Management
KAED—Kyrgyz Agro-Input Enterprise Development Project
MAAHF—Ministry of Agriculture, Animal Health, and Food (Afghanistan)
MAIL—Ministry of Agriculture, Irrigation, and Livestock (Afghanistan)

MAPI/PRODEPAM—Mali Agricultural Production Initiative
MARKETS—Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites
MIR—Marketing Inputs Regionally
MIS—market information system
MISTOWA—Market Information Systems and Traders' Organizations in West Africa
MLF—Microloan Fund
MoCN—Ministry of Counter Narcotics (Afghanistan)
MRRD—Ministry of Reconstruction and Rural Development (Afghanistan)
MSME—Micro, Small, and Medium Enterprises
N—Nitrogen
NARES—National Agricultural Research and Extension Systems
NARS—National Agricultural Research System
NCBA—National Cooperative Business Association
NEPAD—New Partnership for Africa's Development
NGOs—nongovernmental organizations
NPK—nitrogen, phosphorus, potassium
P_2O_5—Phosphorus
PADL/CLK—Projet d'Appui au Développment Local des Provinces de la Comoé, de la Léraba et du Kénédougou
PDRDP-B/K—Projet de Développement Rural Décentralisé et Participatif dans les Provinces du Bazega et du Kadiogo
PDRSO—Projet de Développment Rural du Sud-Ouest
PR—phosphate rock
PRDSS—phosphate rock decision support system
RADP—Romania Agribusiness Development Program
RAMP—Rebuilding Agricultural Markets Program
RAS—Regional Advisory Services
RECs—Regional Economic Communities
ROESAO—Network of Economic Operators in the Food Industry
SAADA—Strategic Alliance for Agricultural Development in Africa
SG-2000—Sasakawa Global-2000
SMS—short message services
TSBF-CIAT—Tropical Soil Biology and Fertility Institute-International Center for Tropical Agriculture
UDP—urea deep placement
UEMOA—West African Economic and Monetary Union
UN—United Nations
USAID—U.S. Agency for International Development
USDA—U.S. Department of Agriculture
WACIP—West Africa Cotton Improvement Program
WAFF—Farmers for the Future in West Africa

Message From the Board Chairman and the President & Chief Executive Officer

Agriculture in the Future—Food, Feed, Fiber, and ... Fuel

We have traditionally thought of agriculture as providing the "3 Fs": food, feed, and fiber. Now there is a "4th F"—fuel. The increased demand for biofuel is driving up world food and fertilizer prices. By mid-2007 cereal prices had increased 4.6% over 2006 prices, according to the 2007 United Nations IPCC[1] report. More startling, *Fertilizer Week* reports that urea prices have increased by 44% this year.

M. Peter McPherson

There is not enough maize to meet demand and fertilizer is too costly for many farmers; this affects poor people disproportionately.

The world has about 800 million cars and 800 million undernourished people in developing countries, according to IPCC.

Global warming appears to be a reality. Many agencies are starting to address how climate change affects food supplies and water resources. Ironically, climate change may affect Sub-Saharan Africa more than most other inhabited regions—even though it pollutes the air less, because of its relatively few industries and vehicles.

Amit H. Roy

Some predict that future wars will be about water, not oil. They may be right. Water is a huge issue across much of Africa. Rainfall is unreliable and lakes are shrinking. Changes in temperature and rainfall may lower already inadequate farm yields in some African countries by 50% by 2020.

The Sahara Desert is expanding south at about 0.8 km per month. Lake Chad is shrinking rapidly. So are Lake Victoria and Lake Tanganyika in the Great Lakes Region of central Africa. The world's longest freshwater lake, Lake Tanganyika, has receded so much that ships can no longer bring needed goods into port. Our CATALIST[2] project is addressing soil fertility issues in the Great Lakes areas of Rwanda, Burundi, Uganda, Tanzania, and the Democratic Republic of Congo.

Climate change is also expected to increase the incidence of malaria unless we find a way to deal with the disease. Although we often associate drought with Africa, temperature and rainfall changes will also expand some flooded areas where malaria-bearing mosquitoes thrive.

The world population is increasing by 1 million people about every 4th or 5th day, adding 75 to 80 million people every year. To feed that many people, we must grow more food on less land with shorter growing seasons. It is a daunting task.

We must learn to harvest pollutants to use as nutrients. We must recycle urban waste to extract nutrients. We must learn how to neutralize the heavy metals in urban waste. We must harvest water from runoff. We must not

[1] Intergovernmental Panel on Climate Change.
[2] Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability.

waste anything. IFDC is conducting research on these and other key issues in our headquarters laboratories right now including increased and sustainable agricultural production and broad-based economic growth.

Soil nutrient deficiency is the greatest detriment to food production in Sub-Saharan Africa. An IFDC challenge is to improve the efficiency of fertilizer use. This includes adding micro- and secondary nutrients such as boron, copper, and zinc.

Our friend Dr. Norman Borlaug was right when he said that improved seeds are "the catalysts that ignited the Green Revolution" and mineral fertilizer the "fuel" that powers it. We must find ways to reduce costs and make fertilizers more accessible to farmers.

We're studying the effect of climate change on farming practices through our NENA[3] projects in Morocco and Syria. Crop modeling is vital in predicting rainfall and other crop variables. The livelihoods of thousands of farmers depend on the reliability of this decision-support tool, developed through years of research.

Former UN Secretary General Kofi Annan called for a "uniquely African Green Revolution" in 2004. The Africa Fertilizer Summit in June 2006 addressed the African food crisis. The *Abuja Declaration on Fertilizer for an African Green Revolution*, drawn up at the historic meeting, declared fertilizer, both mineral and organic, a "strategic commodity without borders"—meaning that all cross-border taxes and tariffs should be eliminated.

Africa's Green Revolution must differ from that of Asia, which was blessed with better education, resources, infrastructure, and governance. Increased yields of only two crops—rice and wheat—tripled food production, igniting Asia's Green Revolution.

Africa doesn't have those advantages. An African Green Revolution must address many crops, including beans, maize, cassava, rice, bananas, and sweet potatoes. These crops are grown in a wide range of agroecological areas.

Biotechnology can help us develop crops that extract nutrients from the soil more efficiently and also help develop high-yielding, disease- and pest-resistant varieties that will improve food security, alleviate poverty, and conserve the environment.

The African Union and AGRA[4] have endorsed biotechnology as one solution to the difficult issues that Africa faces. A Freedom to Innovate plan—meaning that each country must decide for itself whether or not to use biotechnology—is being considered.

There is some good news. There have been gains in economic growth across the African continent. Ghana has reduced hunger from 37% to 12% since the Millennium Development Goals were formulated. Mozambique has made remarkable gains in recovering from the effects of civil conflicts. Note that these are examples of people and governments working to address their own problems, with the partnership of the global community. IFDC is proud to work in these countries.

The challenge is substantial, but the world has overcome great difficulties before. An important part of the solutions will come from and be driven by developing countries and their people, partnering with the global community. Technology and market development are central to IFDC's work as we help with these critical matters.

M. Peter McPherson
Chairman, IFDC Board of Directors

Amit H. Roy
IFDC President and CEO

[3]Near East and North Africa (Cereal Production Information and Decision Support Systems).
[4]Alliance for the Green Revolution in Africa.

Multiple Honors to Dr. Norman Borlaug, Nobel Laureate and Former IFDC Board Member

Dr. Norman E. Borlaug, Nobel Peace Prize Laureate and former IFDC Board member, has recently received three honors for his lifetime of achievements in increasing the world's food supply.

In 2007 Borlaug was awarded the U.S. Congressional Gold Medal. In 2006 Texas A&M University established the Norman E. Borlaug Institute for International Agriculture, and *The Man Who Fed the World,* a new biography documenting Borlaug's scientific and humanitarian achievements, was published.

President George W. Bush and Speaker of the House Nancy Pelosi presented the Congressional Gold Medal—the highest civilian honor in the United States—to Borlaug on July 17, 2007. The ceremony was in the U.S. Capitol Rotunda in Washington D.C.

"The most fitting tribute we can offer this good man is to renew ourselves to his life's work and lead a second Green Revolution that feeds the world, and today we'll make a pledge to do so."
—President George W. Bush when Dr. Borlaug received the U.S. Congressional Gold Medal

In addition to the Congressional Gold Medal, Borlaug has also received the Nobel Peace Prize and the Presidential Medal of Freedom—an accomplishment that only four other people in history share: Mother Teresa, Martin Luther King Jr., Nelson Mandela, and Elie Wiesel. Other recipients of the Congressional Gold Medal include George Washington, Dr. Jonas Salk, Rosa Parks, and Thomas Edison.

President Bush said, "The most fitting tribute we can offer this good man is to renew ourselves to his life's work, and lead a second Green Revolution that feeds the world, and today we'll make a pledge to do so."

"We cannot lose sight of the enormous job before us to feed 10 billion people, 90 percent of whom will begin life in a developing country, and many in poverty," Borlaug said in his acceptance speech.

President George W. Bush awarded Dr. Norman Borlaug the U.S. Congressional Gold Medal in a ceremony at the Capitol Rotunda in Washington, D.C., on July 17, 2007. Examining the medal are Speaker of the House Nancy Pelosi, Borlaug, Bush, and Senate Majority Leader Harry Reid.

World Food Prize photo

"It is within America's technical and financial power to help end this human tragedy and injustice, if we set our hearts and minds to the task."

U.S. Senate Majority Leader Harry Reid said, "The name Norman Borlaug may not be known in many households on earth, but his life's work has reached almost every kitchen table on earth."

Texas A&M University established the Norman E. Borlaug Institute for International Agriculture in September 2006. The new institute replaces Texas A&M's Office of International Agriculture.

Texas A&M and Monsanto Company have also announced the new Borlaug-Monsanto Chair for Plant Breeding and International Crop Improvement. Funding is from a $2.5 million endowment from Monsanto; $2 million will finance the Chair. The remaining $500,000 will endow an assistantship fund to support graduate research by young scientists pursuing careers in plant breeding and cotton improvement and production.

Nobel Laureate Norman Borlaug in a field with African children.

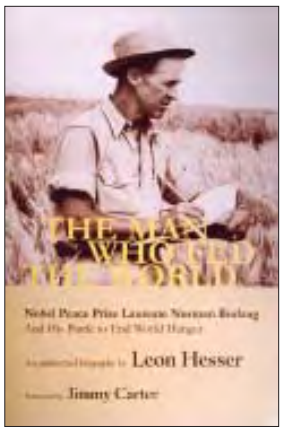
Borlaug is Distinguished Professor of International Agriculture at Texas A&M.

The Man Who Fed The World was published in September 2006 by Durban House Publishing Co., in Dallas, Texas. The author, Leon Hesser, is a former U.S. Foreign Service Officer who worked with Borlaug to increase wheat production in Pakistan in the 1960s.

"Reading *The Man Who Fed the World* is a chance for you to listen to Dr. Borlaug and see his career unfold," wrote Dr. Ed Runge of Texas A&M in a book review published in *Crops, Soils, Agronomy News*. "It is a must read for everyone in agriculture, particularly agronomists, plant breeders, and soil scientists." Runge serves on the IFDC Board of Directors.

Hesser wrote how Borlaug's childhood on an Iowa farm led to his career as an agricultural scientist focusing on global food crises.

Former U.S. President Jimmy Carter wrote in the book's foreword, "My good friend Norman Borlaug has accomplished more than any other one individual in history in the battle to end world hunger."



Borlaug, often called the "Father of the Green Revolution," received the 1970 Nobel Prize for developing improved wheat varieties that spread rapidly throughout Asia, Latin America, and the Near and Middle East. In 1986 he founded the World Food Prize to recognize life-saving achievements that increase the quantity, quality, or availability of the world's food. Now celebrating its 20th anniversary, the Prize is often called the "Nobel Prize of Food and Agriculture."

Borlaug served on the IFDC Board of Directors from 1994 to 2003. He has called improved seeds the "catalyst that ignited the Green Revolution" and mineral fertilizer the "fuel" that powers it.

Borlaug, 93, is President of the Sasakawa Africa Association. He continues to work and travels extensively in Africa for Sasakawa and for the International Maize and Wheat Improvement Center, based in Mexico. His work is now dedicated to sparking a Green Revolution in Africa.

"We cannot lose sight of the enormous job before us to feed 10 billion people, 90 percent of whom will begin life in a developing country, and many in poverty."

IFDC in Asia

AMPS Project Strengthens Afghanistan's Agri-Input System

IFDC completed the Agricultural Marketing and Production Support (AMPS) project in Afghanistan in 2006. AMPS was a continuation, with some revision of objectives and implementation strategies, of the earlier Agricultural Input Supply Program (AISP).[1] The market-based approach of AMPS supported the Afghan government's efforts to increase farmer participation in the production of legal crops.

AMPS encouraged the growing of marketable crops in 10 provinces of eastern, southern, and northern Afghanistan. Farmers were provided a package of agricultural inputs: vegetable, wheat, and maize seeds; fertilizers; and technical leaflets. Postharvest support—packaging materials and business linkages—was provided to help farmers make a profit.

A cooperating farmer in the AMPS project.

IFDC implemented AISP/AMPS, which were financed through a $32.5 million grant from the U.S. Agency for International Development (USAID) and £3 million from the UK's Department for International Development (DFID). The USAID-funded Alternative Livelihood Projects (ALPs) in the northern, eastern, and southern regions coordinated variety selection and helped distribute packages. The Ministry of Agriculture, Irrigation, and Livestock (MAIL) selected beneficiaries. Private agri-input dealers were involved in sourcing and supplying inputs to farmers via a voucher program.

AMPS objectives included:

- Increase yields and quality of legal crops.
- Ensure the efficient marketing of these crops.
- Improve MAIL capacity to serve farmers.

The input packages, with seeds (vegetable) in airtight containers, went to 206,433 farmers.[2] Because of security problems, maize inputs were shipped directly to district capitals for distribution. Fertilizer quality was ensured by

[1]The AISP program, implemented from August to December 2005, covered all 34 provinces. The program increased food production rapidly by supplying wheat, onion, or potato seeds and fertilizer (25 kg DAP for basal application and 50 kg urea for topdressing) to grow one jerib (0.2 ha) of land.

[2]AISP and AMPS technical packages were distributed to more than 700,000 farmers.

specifying the nutrient content in the procurement contracts and comparing conformity with internationally traded products.

AMPS solicited bids from private agri-input dealers, who had been trained through the previous IFDC project. Bids were critical to contracting with established and reliable dealers, who could meet delivery schedules with quality inputs.

Some perishable produce required improved packaging and handling. Two distribution activities were used for marketing the produce: farm to local market and local market to final destination.

ALP staff surveyed farmers that received vegetable seeds and fertilizer. Farmers were generally satisfied with the performance of eggplant, tomato, cucumber, okra, and watermelon seeds. Beneficiaries rated the technical leaflets as very good to excellent. About 85% of the farmers interviewed sold vegetables to local traders and in the district markets. AMPS had a positive impact on farm families and emerging agri-input dealers.

The AMPS packages included urea and DAP fertilizers.

Fertilizer Sold to Afghan Farmers is Acceptable, IFDC Headquarters' Analysis Shows

IFDC has provided fertilizers, seeds, and support to more than 700,000 farmers in Afghanistan through the Agricultural Marketing and Production Support (AMPS) project. Because Afghanistan's government does not have regulatory controls for agricultural inputs, IFDC randomly collected 330 samples of diammonium phosphate (DAP) that private agri-input dealers were supplying to farmers in 2006. Also, 22 urea samples were selected. The samples were shipped to IFDC headquarters in Muscle Shoals, AL, U.S.A. to analyze their nitrogen (N) and phosphate (P_2O_5) content.

None of the samples were adulterated. The average N content was 17.3% in the DAP and 46.5% in the urea. From 16% to 18% N is acceptable in DAP and 45% to 48% in urea. The average P_2O_5 content in the DAP samples was 45.6%. From 42% to 48% P_2O_5 is acceptable.

"Through this test, IFDC ensured that the fertilizers that Afghan farmers were using were of high quality and met international standards," says Dr. Deborah Hellums, Coordinator—Field Projects.

IFDC scientists conducting the analyses were Dr. Rick Austin, Coordinator—Analytical Services; Dr. Ray Diamond, Consultant; Celia Calvo, Senior Analyst—Laboratory; and Hellums.

IFDC headquarters staff analyzed the Afghanistan fertilizer samples. Left to right: Dr. Rick Austin; Amanda Lambert, former IFDC Analyst—Laboratory; Wendie Bible, Analyst—Laboratory; and Celia Calvo.

IFDC Helps Build Agricultural Markets in Afghanistan

IFDC is helping Afghanistan develop its agri-input marketing system through the Accelerated Sustainable Agriculture Program (ASAP) in partnership with the U.S.-based Chemonics International. ASAP builds on the success of the Rebuilding Agricultural Markets Program (RAMP), a program to improve Afghanistan's food security that began in 2003 and ended in June 2006. The U. S. Agency for International Development (USAID) funded both RAMP and ASAP, with Chemonics as the lead implementing agency.

"Decades of turmoil have left Afghanistan with almost no industry, little trade, and little infrastructure for agricultural development," says Dr. Har Bhajan Singh, IFDC Senior Marketing Specialist.

Agriculture accounts for more than 50% of Afghanistan's gross domestic product; 80% of the country's population is rural.

IFDC developed a curriculum of business classes through RAMP to train more than 1,700 agri-input dealers. Trainees received free agribusiness literature and were taught to develop business linkages.

"We'll train 600 to 700 more dealers through ASAP," Singh says.

Like RAMP, ASAP will develop agri-input dealer associations in Afghanistan. IFDC helped local

ASAP will link agri-input dealers and farmers in Afghanistan.

Afghan children transporting sacks of fertilizer.

"Decades of turmoil have left Afghanistan with almost no industry, little trade, and little infrastructure for agricultural development," says Dr. Har Bhajan Singh, IFDC Senior Marketing Specialist.

agri-input dealers establish one national and seven regional trade associations through RAMP. Trainees met with agricultural associations and companies and learned about regional marketing during study tours to Pakistan and India. Today, several trainees are doing business with contacts made on the study tours.

Durukhshan Association, a successful agribusiness in Afghanistan, was ASAP's main partner in establishing dealer networks. In May 2007, the association selected 300 private sector entrepreneurs who will, with ASAP support, establish rural farm stores and provide inputs and services to more than 150,000 farmers.

ASAP organized an AgFair in April 2007 that attracted about 60,000 people. The fair catalyzed much needed investment in the agriculture sector, facilitated trade, and introduced new technologies to Afghan farmers and agri-input dealers.

Agriculture accounts for more than 50% of Afghanistan's gross domestic product; 80% of the country's population is rural.

An Afghan farmer carries a sack of fertilizer on his bicycle.

"Agri-input trade has increased more than 100% through better business practices introduced by RAMP," Singh says.

ASAP will expand on these accomplishments by developing market-led value chains and improving fertilizer quality control.

IFDC will link agri-input dealers and farmers to increase the production and value of grapes, raisins, apricots, pomegranates, almonds, walnuts, pistachios, sheep for wool, and goats for cashmere.

"ASAP will add value to raw fruits by processing them into industrial products," Singh says. "For example, tomato juice is more profitable than tomatoes."

IFDC will also facilitate two fertilizer-testing laboratories and train lab technicians and inspectors in quality control.

"Afghanistan's government does not currently have fertilizer-testing facilities," Singh says. "Farmers have been complaining about poor-quality products. We're building the government's capacity to ensure high-quality fertilizer."

IFDC will continue work through ASAP until 2010.

Headquarters' Research Improves Technology Flow to Afghan Farmers

More than 25 years of war and drought have devastated agriculture in Afghanistan. IFDC is implementing the Food for Agricultural Revitalization and Market Systems (FARMS) project in Afghanistan, funded by the U.S. Department of Agriculture, to support development of the agricultural sector. The Afghanistan Ministry of Agriculture, Irrigation, and Livestock (MAIL) is IFDC's partner in the FARMS project.

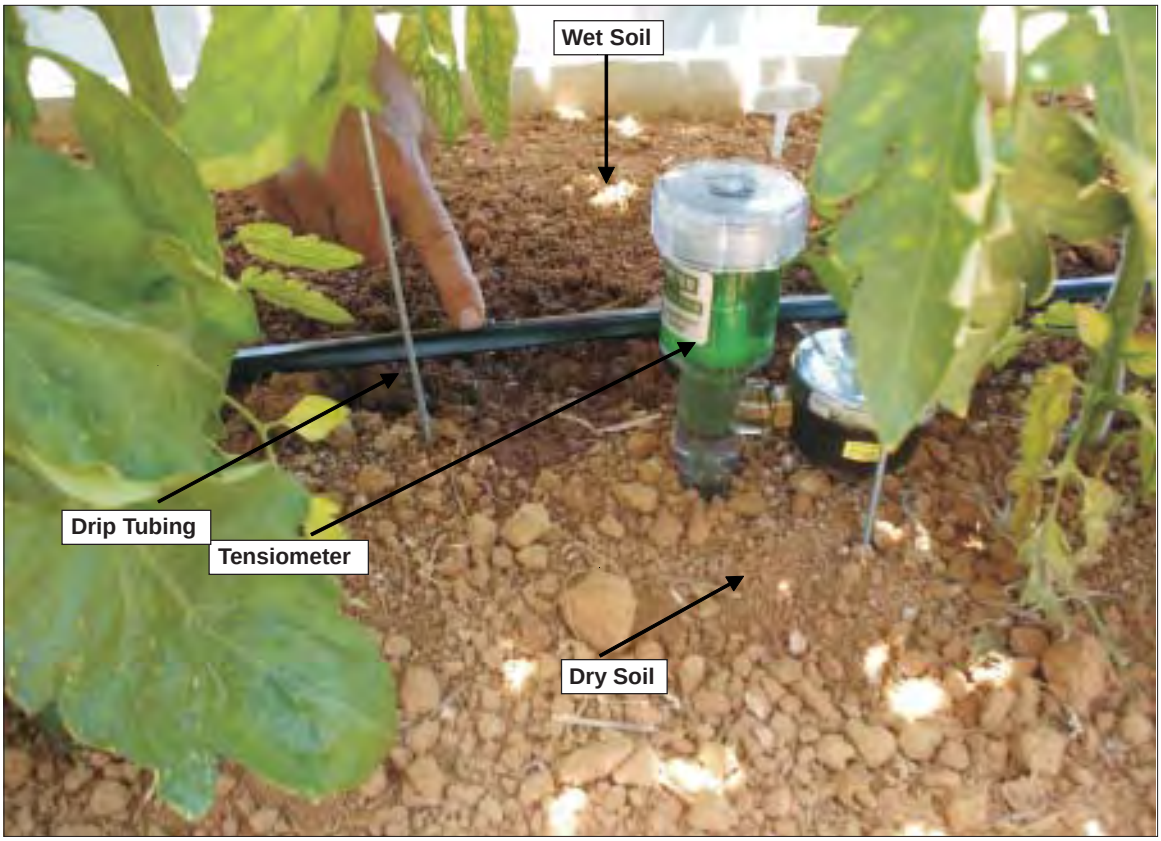
Afghanistan's most pressing agricultural problem is inadequate furrow and flood-type irrigation systems. Both systems limit the area and productivity of irrigated agriculture.

"To grow more fruits and vegetables on less land, Afghan farmers must change from their traditional irrigation methods that have field application efficiencies of 50% or less," says Dr. Steven Kovach, Program Leader in IFDC's Soil and Nutrient Dynamics Program.

"FARMS recommends a micro-irrigation system with drip and mini-sprinklers that have 80% to 90% field application efficiencies."

Kovach and other IFDC scientists support FARMS through greenhouse research at IFDC headquarters in Muscle Shoals, Alabama, U.S.A. They use a bucket drip system in conjunction with different fertilization schemes: "fertigation," or injection of fertilizers through drip irrigation, incorporation of fertilizer granules in the soil, and deep placement of fertilizer tablets. The purpose is to improve water and nutrient efficiencies. FARMS research to develop drip irrigation systems for vegetable production is conducted in Afghanistan in cooperation with MAIL scientists.

Installation of the bucket drip system at IFDC headquarters' greenhouses by (left to right) Ronald Smith, Senior Technician—Greenhouse Services; Vaughn Henry, Senior Technician—Greenhouse Services; and Dr. Upendra Singh, Senior Scientist—Systems Modeling (Soil Fertility).



Drip irrigation tubing with emitters spaced 30 cm apart. A tensiometer is used to monitor soil moisture status. Note that with drip irrigation, only about 30% of the cropped area is watered.

Water is applied to research tomato plants being irrigated by the bucket drip system in the greenhouses at IFDC headquarters.

IFDC and MAIL staff placing drip tubing for the bucket drip system at the Quargha Research Station, Kabul, Afghanistan.

Water being applied by the bucket drip system at the Quargha Research Station. Homayoun Watan, who is in charge of FARMS Research and Extension project (right, pointing), explains the irrigation system to Dr. M. Aziz Osmanzai, Director of the Agriculture Research Institute, MAIL.

IFDC Monetizes Commodities to Improve Afghanistan's Crop Production

IFDC "monetized," or sold, more than 15,000 tons of agricultural commodities to entrepreneurs in the private sector and used the earnings to stimulate local farm production in Afghanistan. About 5,150 tons of soybean oil were sold in Afghanistan and 10,000 tons of soybeans in Pakistan from December 2005 to May 2006 through a grant from the U.S. Department of Agriculture's Food For Progress program. IFDC used all proceeds to implement the Food for Agricultural Revitalization and Market Systems (FARMS) project in Afghanistan.

"IFDC introduces technologies and nutrient management practices through FARMS to improve crop production for staple crops such as wheat and maize, and higher value crops such as oilseed and vegetables," says Dr. Deborah Hellums, IFDC Coordinator—Field Projects. "We also plan to work with Afghanistan's milling industry to improve the quality of milled wheat and identify new markets.

"Wheat trials have been established to demonstrate improved varieties, proper fertilizer use, and insect and disease control on 5 research stations and 120 farms."

FARMS is collaborating with Afghanistan's Ministry of Agriculture, Irrigation, and Livestock (MAIL) to determine best practices to increase crop production. Local IFDC and MAIL staff gather information on crop growth to test crop simulation models.

"Linking those models to geographic information systems will help us develop decision-support tools, such as land suitability maps, to spread knowledge," Hellums says.

The late David Rutland of IFDC sparked FARMS's success by taking a business-like approach to the commodity-monetizing phase of the project, Hellums adds.

"David researched the markets, advertised the sales, and tracked the commodities," Hellums says. "His detailed assessment of the oil market helped us maximize the commodity proceeds."

FARMS continues to use the proceeds to develop Afghanistan's agricultural economy.

An Afghan man inspects grapes at a research station near Kabul, Afghanistan.

Inspecting a wheat trial near Kunduz, Afghanistan, are Mir Hassamuddin Hashmi (left), IFDC's Liaison to Afghanistan's Ministry of Agriculture, and Dr. Paul Wilkens, IFDC Scientist—Programmer.

Urea Deep Placement—A Win-Win Technology for Farmers and the Environment

Millions of rice farmers in Asia depend on urea fertilizer to meet the nitrogen needs of modern high-yielding varieties. Most farmers—including those in Bangladesh, Cambodia, and Vietnam—broadcast urea into the floodwater.

"Broadcasting is a highly inefficient application method because much of the nitrogen is lost and never makes its way to the roots of the growing plants," says Dr. Walter Bowen, Resident Project Coordinator of the Adapting Nutrient Management Technologies (ANMAT II) project, based in Bangladesh. ANMAT II is funded by the International Fund for Agricultural Development (IFAD).

"Low plant use of applied urea nitrogen means a low return on investment for farmers," Bowen continues. "Furthermore, the environment suffers because the release of nitrogen compounds pollutes water and contributes to global warming."

Urea deep placement (UDP) is a more efficient way to manage urea fertilizer by placing large urea briquettes into the soil after transplanting rice. IFAD is disseminating the UDP technology to farmers through partners in Bangladesh, Cambodia, and Vietnam.

Urea briquettes being manufactured in a Cambodian village.

Farmers applying urea briquettes in Bangladesh.

The UDP technology depends on production of urea briquettes in villages using locally manufactured briquette-making machines. Soon after transplanting, the briquettes are inserted 7 to 10 cm deep in the middle of every other four hills of rice. UDP increases nitrogen use efficiency by keeping most of the urea nitrogen in the soil, close to plant roots and out of the floodwater.

A vendor selling urea briquettes in Bangladesh.

The UDP technology depends on production of urea briquettes in villages using locally manufactured briquette-making machines. Soon after transplanting, the briquettes are inserted 7 to 10 cm deep in the middle of every other four hills of rice. UDP increases nitrogen use efficiency by keeping most of the urea nitrogen in the soil, close to plant roots and out of the floodwater.

In Bangladesh more than 550,000 farmers are using urea deep placement, Bowen says. In hundreds of on-farm trials, UDP technology has increased rice yields by an average of 22% when compared with broadcasting, and decreased urea use by 47%. Profits have increased by 24%. Ten Bangladeshi manufacturers have produced and sold more than 2,000 briquette-making machines.

The positive results have led the Department of Agricultural Extension to propose using Government of Bangladesh funds to support a special project to make UDP technology more widely available to farmers.

More than 6,700 farmers now use UDP in Vietnam. The country now has 4 machine manufacturers, 12 pellet producers, and 4 retailers.

UDP was only recently introduced to Cambodia, but more than 200 farmers are using it.

Farmers harvesting rice in Bangladesh.

IFDC in Central Asia

KAED Project Moves to Northern Kyrgyzstan After Success in the South

KAED Project Opens Karabalta Farm Store

IFDC's Kyrgyz Agro-Input Enterprise Development (KAED) project, funded by the U.S. Agency for International Development (USAID), organized a ceremony to mark the opening of a farm store in Karabalta in July 2007. The Regional Development of Agriculture project and Chuy Regional Advisory Services (RAS) collaborated with KAED.

"We want to see IFDC doing more jobs in Central Asia," said U.S. Ambassador to Kyrgyzstan, Marie L. Yovanovitch, at the opening of Kyrgyzstan's 21st agri-input retail shop.

Cutting the ribbon to open Kyrgyzstan's 21st retail store for agri-inputs—and the first in Bishkek, the nation's capital—is Marie L. Yovanovitch, U.S. Ambassador to Kyrgyzstan (orange dress). To the Ambassador's right is Abdivaliev Artyk, the store's owner; and Vladimir Pak, representative of Kyrgyzstan's Ministry of Agriculture.

Photo by Mansur Baratov of the Association of Agribusinessmen of Kyrgyzstan (AAK)

Formally opening the store was Ryspaev Toktonasyr of the Association of Agribusinessmen of Kyrgyzstan (AAK). "Jer Azygy" or "food for soil" is another name for AAK. Twenty-eight stores have already been opened and AAK plans to open at least three more.

Dr. Hiqmet Demiri, Agribusiness Specialist and KAED's Chief of Party, addressed the participants—suppliers of agri-inputs, farmers, representatives of agricultural cooperatives, international organizations, and RAS trainers.

The Karabalta farm store sells certified seeds of quality vegetables, melons, gourds, and other plants; fertilizers; crop protection products (CPPs); and veterinary medicines. Consulting services are offered on fertilizer application technologies, growing different crops, and veterinary issues.

Since KAED began in 2001, the project has increased agricultural output in southern and northern Kyrgyzstan through use of improved seeds, fertilizers, CPPs, agronomic advice, and best farmers' practices.

The KAED strategy is based on the premise that transparency and quality of information are the foundations for enhancing business. AAK also teaches basic economic concepts and collaborates with public authorities to improve policies.

"We want to see IFDC doing more jobs in Central Asia," said U.S. Ambassador to Kyrgyzstan, Marie L. Yovanovitch, at the opening of Kyrgyzstan's 21st agri-input retail shop.

KAED Helps Organize Agro-Industrial Field Day

IFDC's KAED project organized an outdoor agricultural equipment show in June 2007 in Chuy, Kyrgyzstan. The field day was funded by USAID in collaboration with the German company, Amazone Ltd.

Such forums help develop agro-industrial companies, cooperatives, and farms in Kyrgyzstan. The field days link dealers and farmers to agricultural machinery manufacturers, demonstrate quality agricultural equipment, and help reduce input and operating costs. Participants visited demonstration fields and observed improved cropping and harvesting machinery and new technologies.

"A shortage of agricultural machinery and lack of up-to-date technology are the main problems of Kyrgyz agriculture," said Kambaraly Kasymov, First Deputy Minister of Agriculture, Water Management, and Reprocessing Industry, in his opening remarks.

Ken McNamara, a USAID representative for the Central Asian Republics, and Dr. Hiqmet Demiri, KAED Chief of Party, also addressed the farmers and representatives of agricultural cooperatives, financial institutions, international organizations, and technical service companies.

"The field day encouraged establishment of an association of agro-technical service companies that will lobby for the interests of agricultural machinery and technical service companies in Kyrgyzstan," Demiri said.

KAED staff (from left) A. Aslanov, D. Djumabaev, and Chief of Party Dr. Hiqmet Demiri at the Amazone Ltd. Field Day in Chuy, Kyrgyzstan.

"The field day encouraged establishment of an association of agro-technical service companies that will lobby for the interests of agricultural machinery and technical service companies in Kyrgyzstan," Demiri said.

As a result of the 1-day outdoor show, the Amazone representative in Kyrgyzstan sold a seeding machine for €22,000 ($30,323) and agreed to supply two seeding machines and one fertilizer spreader. "The total amount of deals concluded at the field day came to €80,700, or $111,232," said Manas Samatov of Amazone.

"Farm shows like this are an excellent way to promote products to customers," Manas said. "It's better for farmers to see a product in person than in a magazine."

KAED staff D. Djumabaev speaks to the crowd at the Agro-Industrial Field Day in Chuy, Kyrgyzstan.

"A shortage of agricultural machinery and lack of up-to-date technology are the main problems of Kyrgyz agriculture," said Kambaraly Kasymov, First Deputy Minister of Agriculture, in his opening remarks.

KAED Organizes Trade Missions

KAED has organized 10 international and regional trade missions since its 2001 inception. About 75 agribusiness professionals have participated.

The 11th trade mission of Kyrgyz agro companies to Almaty, Kazakhstan, was in December 2006.

The delegation consisted of companies from both northern and southern Kyrgyzstan that supply fertilizers, crop protection products, veterinary medicines, and improved seeds.

The group visited a cattle farm to observe a new breed of cattle from the Netherlands. Deals were made to supply mineral fertilizers and veterinary medicine. Negotiations on supply of artificial insemination straws and embryos to Kazakhstan are underway. The Nookat cooperative is negotiating with the Kazakh company ARS to supply 18 tons of improved potato seeds from the Netherlands in 2008.

Participants visiting Jivprom, an experimental cattle breeding farm.

Participants visiting a seed farm to observe corn and soybean growing and packaging.

KAED Holds Animal Husbandry Workshop

IFDC's KAED project, funded by USAID, hosted a 2-week animal husbandry workshop in June-July 2007.

Participants, mainly veterinarians and cattle breeders, were shown new methods of veterinary science including antibiotic use and mastitis treatment. Dr. Eran Raizman, a professor at Purdue University, U.S.A., conducted the workshop. Topics included basic epidemiology concepts, herd sampling strategies, calf management, biosecurity, and vaccination.

Dr. Hiqmet Demiri, KAED Chief of Party, presented certificates to workshop participants.

KAED works to develop input markets in northern Kyrgyzstan and integrates agricultural input markets country-wide. The KAED goal is to stimulate Kyrgyzstan's growth in agricultural output by promoting private-sector investment in agricultural input technologies and marketing.

KAED Holds Graduation Ceremony

A graduation ceremony was held in July 2007 for 24 trainees who completed the Certified Agribusiness Professional (CAP) program, a 7-month training session that KAED organized.

The graduates, professionals from the private sector, received training in leadership, planning, financial management, and marketing.

Opening the ceremony was Kambaraly Kasymov, First Deputy Minister of Agriculture. Other presenters included Pat Shapiro, USAID Country Representative to Kyrgyzstan, and Dr. Hiqmet Demiri, KAED Chief of Party.

The next CAP program will be from September 2007 to March 2008.

Twenty-four journalists from southern Kyrgyzstan participated in a USAID-organized media tour in Jalalabat. Here, IFDC/KAED agronomist Ubaidullo Ubaidullaiev explains how new wheat varieties perform in Kyrgyzstan and why farmers should buy improved wheat seed. A similar media tour was held in Bishkek in May.

KAED photo by Mahabbat Alymkulova

Success Stories from the Batken and Sughd Agri-Input Dairy Development Project

IFDC Helps Farmers and Agri-Input Dealers in Tajikistan Access Financial Resources

Farmers and agri-input dealers in Tajikistan are getting a new credit line through a partnership of the Agribusiness Association of Tajikistan (AAT) and Microloan Fund (MLF) MicroInvest. The partnership will improve economic and social stability in Tajikistan by supporting small-scale entrepreneurs in the agricultural sector.

The AAT was founded in December 2005 and developed through the Batken and Sughd Agri-Input Dairy Development (BSAIDD) project. IFDC implemented BSAIDD to increase incomes of cheese and dairy farmers and strengthen agri-input dealer networks in Tajikistan and Kyrgyzstan.

MLF MicroInvest is a microfinance institution that supplies small loans to low-income entrepreneurs—traders, service providers, farmers, and livestock growers.

“Credit is vital to farmers and agri-input dealers, whose operations depend on advance financing,” says Dr. Hiqmet Demiri, IFDC Agribusiness Specialist. “Farmers will use the loans to buy fertilizers and other agri-inputs before the planting season.

“Credit will help agri-input dealers increase the volume of their inventory. That means more profit.” AAT and MLF MicroInvest will help small-scale farmers and agri-input dealers access credit to buy supplies.

MLF MicroInvest was established in 2002 by the International Cooperative Development Association/ Volunteer Development Corps. MLF MicroInvest has 75 employees and is the second-largest microfinance institution in Tajikistan, with 6,005 clients and a loan portfolio of $2,111,328.

A Tajikistani farmer unloads a crate of tomatoes.

Improved Seed Varieties Help Farmers Increase Yields

Farmers increased yields by 60% to 80% on oil and feed crops through improved seed varieties and new agri-technologies introduced by the IFDC project BSAIDD in Tajikistan and Kyrgyzstan.

BSAIDD has established demonstration plots to show farmers how hybrid varieties, better technologies, and crop management can increase their incomes.

Farmers in the region often lack access to markets, credit, quality seeds, and new technologies. BSAIDD is introducing better practices and enhancing communication among farmers, millers, and agri-input suppliers.

Improved varieties and technologies have helped boost farm yields in Tajikistan and Kyrgyzstan.

AAT has conducted more than 200 training sessions and seminars for more than 3,000 farmers and agri-input dealers. AAT members have gone on study tours to Israel, Turkey, and China.

BSAIDD Trains Dairy Farmers In Livestock Development

BSAIDD is training dairy farmers in better cattle breeding to improve the quality of milk, increase yields, and prevent diseases.

A survey of 46 farmers showed that they were unskilled in feeding, cattle management, and disease prevention. Many farmers fed their cattle low-quality feed and washed them in dirty reservoirs, resulting in dehydration and diseases.

Veterinarians visited this dairy farm in Israel on a study tour sponsored by BSAIDD.

Farmers also learned better insemination practices through BSAIDD to reduce cattle infertility and infections.

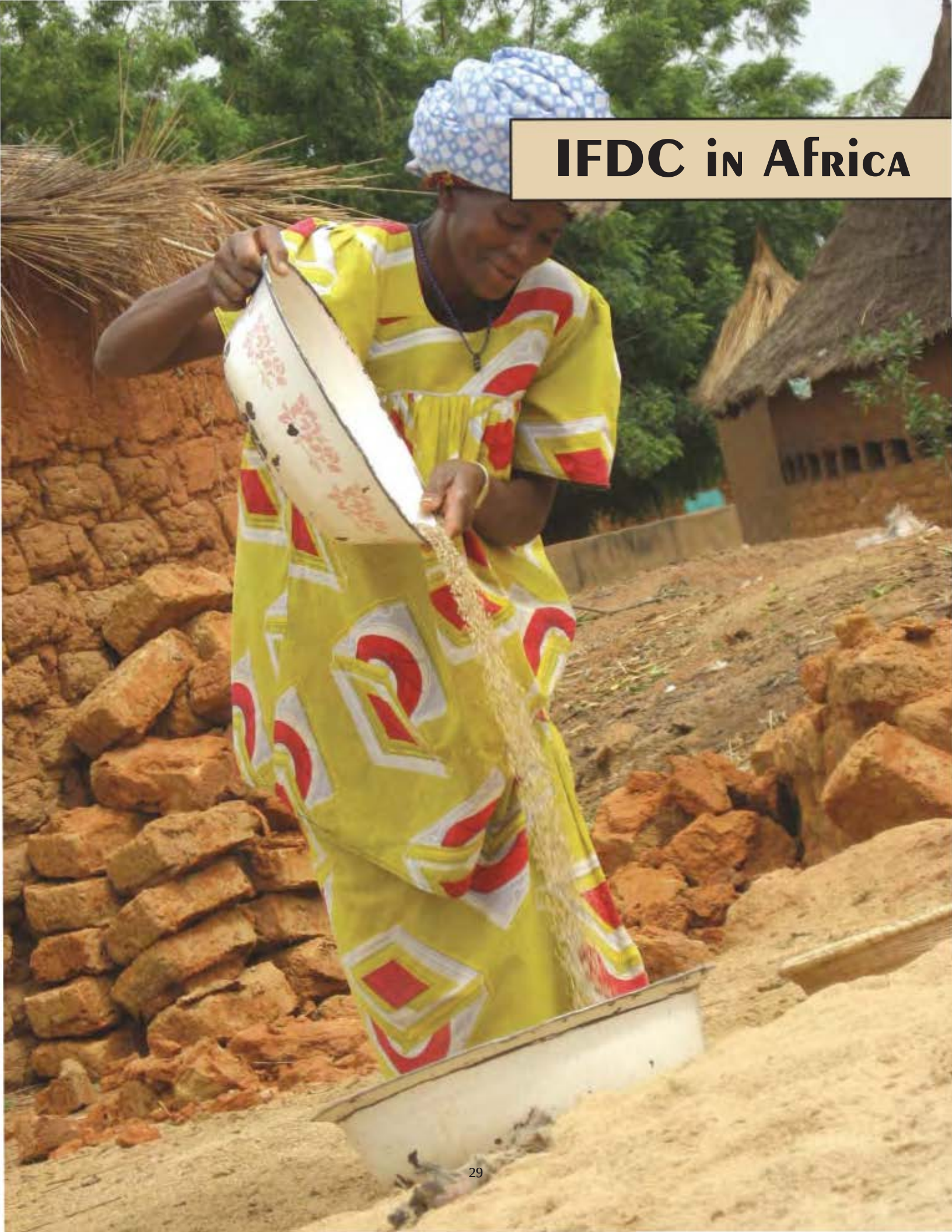
BSAIDD sent veterinarians on a study tour to Israel to observe advanced technologies and better farm management practices.

BSAIDD Helps Establish the Agribusiness Association of Tajikistan

BSAIDD helped establish the new Agribusiness Association of Tajikistan (AAT), a regional network of seed and fertilizer suppliers, in 2006. AAT is strengthening private sector entrepreneurship.

AAT has conducted more than 200 training sessions and seminars for more than 3,000 farmers and agri-input dealers. AAT members have gone on study tours to Israel, Turkey, and China.

AAT also lobbies the government to lower taxes on agricultural products and collaborates with more than 15 business associations in Tajikistan.



IFDC in Africa

The Enormity of Africa...
The Enormity of an African Green Revolution...
The Enormity of Our Challenge

Africa is enormous. So is the challenge of bringing a Green Revolution to Africa.

Second only to Asia in size, the African land mass covers more than 29.8 million square kilometers—or 22% of the world's land area. The continent could hold mainland China, the continental United States, Europe, India, Japan, Vietnam, and Bangladesh—with 1 million km^2 to spare!

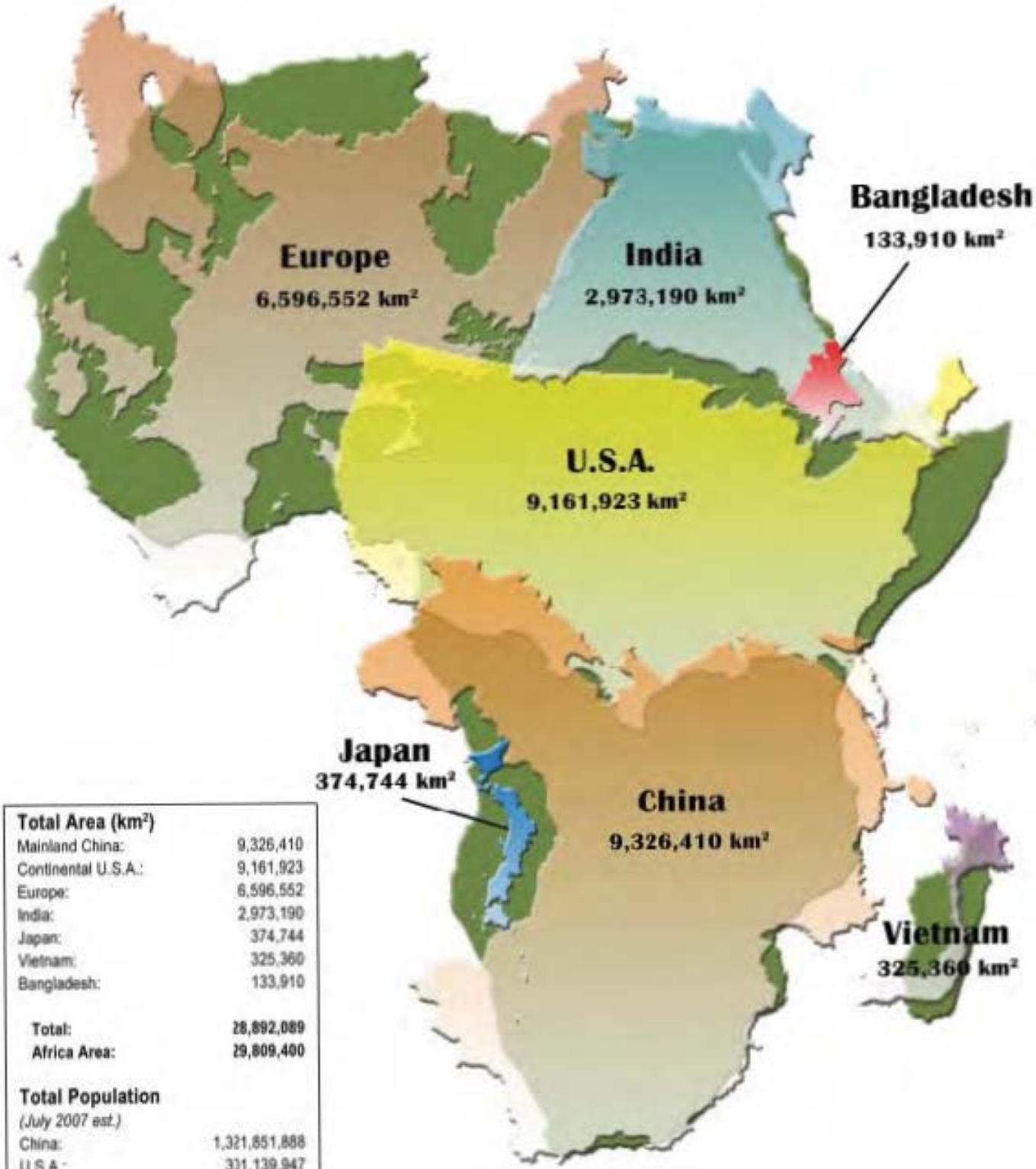
The distance from Cairo in the north to Capetown in the south is 7,730 km. Sudan, Africa's largest nation, covers more than 2.5 million km^2. The Sahara, the world's largest hot desert, covers 9 million km^2—almost as large as the United States and larger than Australia. The Sahara is expanding south at an average of 0.8 km per month.

Soil health is declining rapidly in Sub-Saharan Africa. The continent loses an estimated $4 billion worth of soil nutrients per year. The highest rates of nutrient depletion—more than 60 kg/ha yearly—are in Guinea, Congo (Dem. Rep.), Angola, Rwanda, Burundi, and Uganda. Those countries, among the world's poorest, comprise 40% of the region's farmland.

The Green Revolution, which tripled farm production in Asia and Latin America, bypassed Sub-Saharan Africa—the world's only region where per capita food production has decreased over the past 30 years. Fertilizer use in Sub-Saharan Africa is the world's lowest: less than 8 kg per hectare yearly.

African Heads of State and agricultural leaders called for an *African Green Revolution* in June of 2006 at the Africa Fertilizer Summit in Abuja, Nigeria. The leaders also wrote a strategic and historic document, the *Abuja Declaration on Fertilizer for an African Green Revolution.* The Abuja Declaration calls for governments to address the soil health crisis by making available the mineral and organic fertilizers that Africa's hungry soils need. The Declaration also calls for the elimination of all cross-border taxes and tariffs on fertilizer and encourages its local manufacture, using Africa's substantial fertilizer raw materials.

IFDC is committed to the African Green Revolution. Since its inception in 1974, IFDC has worked across Africa. The first formal IFDC office in Africa opened in Togo in 1987, although IFDC staff have been posted in West Africa with other International Agricultural Research Centers since the early 1980s. Today, IFDC has more than 200 staff across Africa, with offices in Benin, Burkina Faso, Burundi, Congo (Dem. Rep.), Ethiopia, Ghana, Kenya, Mali, Morocco, Mozambique, Nigeria, Rwanda, Senegal, and Togo.



Total Area (km²)	
Mainland China:	9,326,410
Continental U.S.A.:	9,161,923
Europe:	6,596,552
India:	2,973,190
Japan:	374,744
Vietnam:	325,360
Bangladesh:	133,910
Total:	**28,892,089**
Africa Area:	**29,809,400**

Total Population (July 2007 est.)	
China:	1,321,851,888
U.S.A.:	301,139,947
Europe:	672,237,529
India:	1,129,866,154
Japan:	127,433,494
Vietnam:	85,262,356
Bangladesh:	150,448,339
Total:	**3,738,239,707**
Africa Population:	**933,248,870**

*Source: 2007. *The World Factbook.*

- Not included in the Europe outline or the area calculation are the countries of Russia and Iceland nor the Svalbard Archipelago and Jan Mayen Island.
- Compiled by Flavia Rey de Castro, IFDC Associate Geographic Information Systems (GIS) Specialist.

IFDC

AIMS Aims to Improve Agri-Input Markets in Mozambique

"Constraints to the use of agri-inputs in Mozambique are different from that in many other African countries," says Dr. Lawrence (Larry) Hammond, Chief of Party of IFDC's new Agricultural Input Markets Strengthening (AIMS) project, based in Beira, Mozambique.

"Mozambique has a low population density, with plentiful land for farming," Hammond says. "Fertilizer use is almost nonexistent, mainly because of its high cost but partly because many farmers consider the soil highly fertile. But most of it isn't. Crop yields in Mozambique are among the lowest in Africa."

AIMS works with both the public and private sectors to improve the availability of fertilizer, improved seeds, and other agri-inputs in Mozambique by lowering costs and providing training and encouragement to agri-input businesses. AIMS is sponsored by the U.S. Agency for International Development (USAID).

"The goals of AIMS are similar to those called for in the *Abuja Declaration on Fertilizer for an African Green Revolution* adopted at the Africa Fertilizer Summit in June 2006—to increase farm production through the use of agri-inputs," Hammond says.

AIMS Partners

IFDC is implementing the AIMS project in partnership with Mozambique's Ministry of Agriculture, including the National Directorate of Agrarian Services (DNSA), the Agricultural Research Institute (IIAM), the National Directorate of Agrarian Extension (DNEA), the Agricultural Promotion Center (CEPAGRI), and other national institutions.

International partners in AIMS are the International Institute for Tropical Agriculture (IITA), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and the Citizens Network for Foreign Affairs (CNFA). AIMS' activities are also interlinked with those of the project Empowering Private Enterprise in the Development of Agriculture (EMPRENDA).

About 150,000 tons of fertilizer enter Mozambique yearly through the Port of Beira—but only 23,000 tons stay in the country, and it is used by large sugar and tobacco plantations. Watching fertilizer being sacked are Dr. Larry Hammond, (left), AIMS Chief of Party; Pascoal Peira (center), Marketing Specialist, Port of Beira; and Manuel Ginga Gonçalves, AIMS Assocation Development Specialist (right).

"Our program for development of agri-input dealers initially focuses on the inland 'corridors' from the port cities of Beira and Nacala," Hammond explains. "But policy issues will have both national and regional impact."

Fertilizer Imports and Sales in Mozambique

In 2006, 150,000 tons of fertilizer entered Mozambique through Beira—but 53,000 tons were in transit to Malawi and 70,000 tons to Zimbabwe and Zambia. Only 23,000 tons stayed in Mozambique and that fertilizer was

imported and used by large sugar and tobacco plantations who can take advantage of economies of scale. About 33,000 tons entered via the northern port of Nacala; 100% was shipped by rail to Malawi.

"All fertilizer distributed by the private sector—only around 5,000 tons in 2006—is trucked in from South Africa," Hammond says. A typical urea shipment may be produced in Saudi Arabia, then sold and shipped by sea to a wholesaler who warehouses it in South Africa. The fertilizer then moves by truck in small quantities—no more than 28 tons per truck—to Maputo, Mozambique's capital. From there, it's trucked to Mozambique's few fertilizer dealers inland, such as in Chimoio or Nampula.

"Fertilizer prices are high not only because transportation costs are extremely high, but also because consumption is low," Hammond says. "Ironically, higher fertilizer use would lower the price."

A lack of credit is another problem. The government owns all land, so farmers and dealers can't use land as collateral.

"The low population density in the countryside makes it even harder for dealers," Hammond says. "They can't operate without customers. We will help dealers set up demonstration plots near their shops to show farmers the benefits of agri-inputs—making the dealers capable of supplementing information provided by extension agents for local farmers."

AIMS also trains dealers in the safe handling and use of crop protection products.

Alberto Rafael Penicela (left) started his own agri-input business after attending a training workshop in Malawi sponsored by IFDC and Sasakawa-Global 2000. Here, he and assistant Sonia Moria (to Penicela's left) serve a customer in his shop, Agricultural Supplies and Veterinary Medicines, in Chimoio, Mozambique.

Sorting seeds for quality at an agricultural cooperative in Nampula, Mozambique.

"Consolidating small purchases could lower costs," Hammond says. "A Mozambican dealer who imports 1,000 tons might consolidate his order with a 10,000-ton shipment going to Malawi and avoid the cost of road shipment from South Africa."

"AIMS will conduct studies on the feasibility of establishing a fertilizer-blending facility near the Beira port," Hammond says. "Also, Mozambique has natural gas and phosphate rock resources. We plan to study the cost of building an ammonia-urea complex."

Martin E. Mason of the USAID-funded EMPRENDA, says, “It’s a sad situation. Markets are here, but farmers can’t capitalize on them because they can’t afford—or even get—inputs.” Mason is Senior Production Adviser to the Nampula-based EMPRENDA project, which supports activities of three NGOs: the Cooperative League of the United States of America (CLUSA), the National Cooperative Business Association (NCBA), and the Business Support Center for Farm Associations (CAN).

“We’re struggling to find an economic and practical way to import fertilizer,” Mason says. “Last year we bought fertilizer that was imported from South Africa in Chimoio, about 1,500 kilometers south. After trucking the fertilizer to Nampula, our costs were $60 for a 50-kilogram bag of 14-20-0 NPK. In contrast, a farmer in the United States would pay only $25 for the same sack of fertilizer.

“Sixty dollars is a cruel price for farmers with an average family income of $80 per year,” Mason says. “We could probably put that 50-kilo bag into farmers’ hands for $25 to $30 if we could import directly to the port of Nacala, about 200 kilometers away.”

“Most farming is slash-and-burn,” Mason adds. “A farmer clears and cultivates 2 or 3 hectares for a few years, then moves on to clear more land. No tractors are available to smallholder farmers. All work is with a worn-out hoe, so few farmers can cultivate more than 3 hectares.”

Development of Local Resources

“AIMS will conduct studies on the feasibility of establishing a fertilizer-blending facility near the Beira port,” Hammond says. “Also, Mozambique has natural gas and phosphate rock resources. We plan to study the cost of building an ammonia-urea complex.”

IITA and ICRISAT in Mozambique

Chicken is a national dish in Mozambique. About half of the broilers consumed are raised in Mozambique, and half are imported from Brazil.

“Feed accounts for 75% of the cost of raising a broiler in Mozambique,” says Sicco Kolijn of IITA. “The country’s 16 commercial poultry operations use 25,000 tons of soybeans yearly. But Mozambique’s soybean production is only 5,000 tons a year.”

IITA is working through AIMS to increase the production and availability of improved soybean and cowpea seeds for agri-input dealers to market. The objective is to grow more poultry locally and reduce imports. Similarly, ICRISAT works to improve seed production of maize and groundnuts.

AIMS Partners:

Farmer Organizations are Potential Agri-Input Distributors

“The biggest problem facing our farmers is a lack of agricultural inputs,” says Moises Sebastiao Raposo, Manager of IKURU (the Makua word for “strength”), a farmer-owned organization that buys, processes, and markets sesame, groundnuts, cashew, soybeans, and beans. IKURU is comprised of 200 farmer associations with 9,000 members and is based in Nampula, in northern Mozambique.

Agri-input dealers are rare in urban centers such as Nampula—but nonexistent in the rural areas. “That’s why IKURU wants to become an input distributor,” Raposo says. “We hope to import enough fertilizer for 400 to 500 hectares in the next crop, which farmers will plant in late 2007. We plan to gradually increase imports to serve 5,000 hectares—and 1,000 farmers—within 5 years.”

Another IKURU member, the Business Support Center for Farm Associations (CAN) near Nacala, about 125 km east of Nampula, buys and sells groundnuts and sesame for 22 farm associations with 780 members.

"We've never marketed fertilizer, but we're providing farmers 20 tons of 14–21–00 NPK on credit this year," says Mussa Asostinho, CAN Manager. The Center hopes to soon form a cooperative both to identify and take advantage of new markets and to introduce new technologies and inputs.

Mussa Asostinho (center) is Manager of the Business Support Center for Farm Associations (CAN) near Nacala. For the first time, CAN is providing farmers 20 tons of fertilizer on credit.

AIMS Partners:

Nampula Agricultural Research Station

"There will be no African Green Revolution unless farmers have better access to fertilizer and other inputs," says Fernando Chitio, Regional Director of the Nampula Agricultural Research Station. The biggest problem that Mozambican farmers face is the high cost of inputs. But farmers must use fertilizer or production will continue to stagnate. "Yet recommended quantities may vary. If a farmer can harvest 3.5 tons per hectare by applying 200 kilos of P_2O_5 fertilizer, but can get 2 tons by using 50 kilos, the lower rate may make more sense economically."

"The high cost of fertilizer is the biggest problem that farmers in Mozambique face," says Fernando Chitio, Regional Director of the Nampula Agricultural Research Station.

AIMS Project Sponsors Stakeholder Workshop in Mozambique

About 50 agricultural scientists and leaders participated in the National Stakeholders Workshop for Developing Agricultural Input Markets (AIMS) on March 22 in Beira, Mozambique. IFDC organized the workshop in collaboration with the International Institute of Tropical Agriculture (IITA), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and the Citizens Network for Foreign Affairs (CNFA). The U.S. Agency for International Development (USAID) funds the AIMS project.

"In Mozambique, the supply of inputs is a critical link to improving crop production," said Dr. Amit Roy, IFDC President and CEO, who spoke at the workshop. AIMS provides training and technical assistance to improve the efficiency and profitability of private enterprises engaged in agricultural input supply. These objectives are in line with the goals of the *Abuja Declaration on Fertilizer for an African Green Revolution,* adopted at the Africa Fertilizer Summit in June 2006.

The keynote address was delivered by Dr. Calisto Bias, General Director of the Agricultural Research Institute of Mozambique, on behalf of Erasmo C. Muhate, Minister of Agriculture. Strengthening the capabilities of the agri-input distribution system in Mozambique is of utmost importance, Dr. Bias told the participants. The current framework is weak, he said, adding that input costs are high and availability is low.

"A non-conducive policy environment, lack of rural dealer networks and market information, limited access to finance, and poor enforcement of regulatory frameworks are contributing to the under-use of inputs in Mozambique," said Dr. Balu Bumb, IFDC Program Leader and Principal Scientist—Policy, Trade, and Markets Program. He emphasized the need for public and private partnerships in his address.

Dr. Larry Hammond, AIMS Chief of Party/Marketing Specialist, pointed out that dealer development activities will initially focus on the Beira and Nacala Corridors.

Street scene in downtown Nampula, Mozambique.

From Thousands to Millions, or 1000s+: Progress in the First Year

From Thousands to Millions, or 1000s+, is an IFDC project to increase agricultural productivity and economic growth for 1 million farm families (10 million people) in West Africa. 1000s+ links farmers to markets through expansion of the Competitive Agricultural Systems and Enterprises (CASE) approach.

The CASE approach increases agricultural productivity by improving soil fertility and increasing farmers' access to input and output markets, says Dr. Arnoldus J. Maatman, Chief of Party of the IFDC Strategic Alliance for Agricultural Development in Africa. Maatman is based in Mali.

Crop yields, agricultural revenues, and farm incomes have increased dramatically, benefiting 150,000 farmers in areas where CASE has been used. 1000s+ will not only reach 1 million more farm families, it will also strengthen the capacity of 2,000 agribusiness enterprises.

1000s+ started more than a year ago and targets Benin, Burkina Faso, Ghana, Mali, Niger, Nigeria, and Togo.

"Despite the short time that 1000s+ has been in effect, we've been able to develop action plans for 30 agribusiness clusters together with local producer organizations and business support services," Maatman says. Examples of the agribusiness clusters include maize farmers in southern Mali and soybean producers in northern Nigeria.

"CASE was developed from real field- and enterprise-level learning experiences," Maatman says. "It is based on the recognition that smallholder farmers, local processors, input dealers, and warehouse managers don't know each other well. Often, they even distrust each other. That limits their potential to link to remunerative markets.

Dr. Arno Maatman (right) meeting with representatives of a farmers' cotton association in Banikoara, northern Benin.

Crop yields, agricultural revenues, and farm incomes have increased dramatically, benefiting 150,000 farmers in areas where CASE has been used. 1000s+ will not only reach 1 million more farm families, it will also strengthen the capacity of 2,000 agribusiness enterprises.

Malian women selling produce in a market.

“The CASE approach isn’t a miracle solution, but it brings participants together, develops cluster-level action plans, and progressively promotes a collective understanding of potential competitive advantages.”

In 2007, 1000s+ activities will expand to cover 60 to 70 CASE agribusiness clusters. Expected 1000s+ outputs are:

- A 50% increase in agricultural productivity and 30% income growth for 1 million rural farm households.
- A measurable increase in environmentally sustainable production on another 2 million ha of farmland.
- Improved food security through an increase in aggregated agricultural productivity of 500,000 tons of cereal equivalents.
- An increase in private sector services to farmers.
- An increase in institutional capacities of producer organizations, agro-entrepreneurs, credit and business service providers, trade associations, and national agricultural research and extension systems.

“We’ve given ourselves 5 years to arrive at those targets, but this will vary from cluster to cluster,” Maatman says. “The main difficulty is to facilitate sustainable linkages to markets.

“In principle, all field-level activities are implemented through subcontractors, local producer organizations, and business support services. This, and a low budget approach, helps ensure an ongoing process of rural innovation after the project ends.

“Circumstances in West Africa are difficult, but we have opportunities to accelerate change, target the poorest consumers, and develop new products and markets by substituting or complementing imports,” Maatman adds.

1000s+ is sponsored by the Directorate General for Development Cooperation in the Netherlands and IFDC.

Selling mangos in a Malian market.

1000s+ Promotes Agricultural Clusters and Value Chains in Mali

The IFDC project From Thousands to Millions, or 1000s+, promotes the development of agricultural clusters and competitive value chains to intensify agriculture and improve the livelihoods of rural communities through the Competitive Agricultural Systems and Enterprises (CASE) approach. Partnering with local organizations, 1000s+ provides training on advocacy and market negotiation; facilitates contractual transactions; and organizes platforms to foster dialogue, exchanges, and linkages along the value chains.

Meet some entrepreneurs who are fostering changes that improve lives in rural West Africa.

The Maize Cluster

El Hadj Moussa Traore tells the story of his enterprise, the El Hadj Moussa Traore Flour Mill of Koutiala

"The shortest road is the one that you know" is a proverb in Bambara, a local dialect of Mali. I'm glad I took the short road that led me here today. Difficult financial circumstances forced me into the cereal processing business, but now I'm doing fine. The market for processed maize is growing, and I can't even satisfy the demand.

In 2003, I was among 565 employees included in a "restructuring" program in the textile company where I worked—but really, it was a layoff. The cereal byproducts market looked promising so I decided to take the self-employment road. I used my layoff package to buy some land and four processing machines. We now produce yellow maize byproducts, particularly broken maize used to prepare a local porridge.

My team is an example of men-women parity. We have three men: the manager, the miller, and the storekeeper; and three women who screen and winnow maize.

Maize processing starts with manual screening to remove pebbles, immature grains, and other impurities. The clean grain then goes to the shelling machine, then to the mill. The bran, flour, germ, and broken grain are separated by screening and winnowing.

The years 2004 to 2006 were dark ones. I faced two big problems: a lack of reliable grain supply and finances. You're never sure that you'll get the quality and quantity of grain that you pay for. Shortages in

El Hadj Moussa Traore has started a successful processing company for maize byproducts with support from AMEDD, a 1000s+ partner in Koutiala, Mali.

weight are a serious problem. Imagine: for each 100-kilogram bag of maize that you buy, you often get only 95 to 97 kilos.

Another problem is that each bag usually has 1 or 2 kilos of impurities—pebbles and debris.

Things started to change last year, when I was introduced to the Malian Association for Rural Development, or AMEDD, an NGO based in Koutiala and a partner of 1000s+. AMEDD invited me to discuss my project and offered support.

For example, I had a ton of maize bran in stock that narrowly missed rotting. I didn't know the real value of this byproduct, which makes 23% to 30% of the production. In January 2007, I participated in a Koutiala trade fair that AMEDD organized. There, I met the local prefect, who needed maize bran for his stockyard. That was a golden deal!

The publicity I gained through the cluster activities is bearing fruit. Today, I can't even meet the growing demand. My advice is: Never miss opportunities to meet other people and expose oneself. Participate in trade fairs and exhibitions. It's a guaranteed investment!

The maize cluster makes grain procurement easier and safer. We now have the *Cooperative des exploitants motorisés de Koutiala* (Cooperative of Mechanized Producers) to negotiate contracts to assure delivery of the quality and quantity of grain needed at reasonable prices.

I can make a profit of 2,000 to 3,000 CFA [$4.20 to $6.30] on each 100-kilo bag of processed maize. In 2005, I bought 15 tons of maize and sold 75% of finished product at different prices at different periods of the year. My income was 562,500 CFA [$1,185]. In 2006, I processed 20 tons, with a profit of 1,085,500 CFA [$2,287]. I can't complain. Things are moving in the right direction.

In fact, now I use only a tenth of my production capacity because of financial limitations. But I *could* process a ton a day. That is my goal. I count on the support of AMEDD and 1000s+ to achieve it.

The Soybean Cluster

The 1000s+ project helps women of Sincina to better produce and market *soumbala*

"We produce the best *soumbala* in the region," says Aminata Dembele, Administrative Secretary of the *Association des Transformatrices de Soja de Sincina* (Association of Soybean Processors) of Sincina, a village in Koutiala District in southern Mali. "Women come from Segou, Bamako, and Mopti to buy from us. Our soumbala is also appreciated in Cote d'Ivoire and Mauritania."

Soumbala is a traditional spice made from the grain of *nere* (*Parkia biglobosa*), a native tree that grows in the forests and savannas.

"Forest products like *nere* are the main income source for rural women who traditionally have not had easy access to productive resources," says Sogoba Bougouna, AMEDD Program Manager.

"But *nere* grain was becoming scarce because of deforestation and declining productivity. The Malian Cotton Company had introduced soybean production into the region in 1998 through its diversification plan to counterbalance the impact of the cotton crisis on the farming communities, so we replaced *nere* with soybean in our

soumbala production. With 1000s+ support, we're helping the Sincina women better produce and market soumbala made from soybean."

Aminata Dembele explains, "It takes days to make the soumbala. We roast, winnow, and wash the soybeans, then boil and let them ferment."

Down on their knees, the women mash the fermented grains manually with stones for hours. They form balls, about 4 cm in diameter, that will be smoked to perfect the taste. The soumbala is then sold in the market at a price accessible to all: three balls for 25 CFA [$0.05].

"The price never changes. What varies is the size of the balls," says Binto Dembele, another AMEDD member.

The price of a 100-kg bag of soybean averaged CFA 18,000 [$38] from December to August 2006. But when processed into soumbala, the bag of soybeans sold for an average of CFA 25,000 [$53]—a profit margin of CFA 7,000 [$15].

"Each woman can produce three 100-kg bags a week, or about 24 tons of soumbala a year," says Arouna Bayoko, an AMEDD field agent.

"The women rely on their own networks to sell their products, but we're helping expand their market," Bayoko says. "The trade fairs that we organize with support from 1000s+ give them opportunities to meet and make deals with buyers from other regions and even other countries."

Yaya Denon, a local soybean supplier, hopes that soumbala production can be developed further. "It remains a women's business. I think they should move up from traditional, local production and target the regional market. That would be good for my business too!"

Sogoba Bougouna says, "We want to introduce more mechanized production to alleviate these women's workload."

Aminata Dembele confides, "My husband has 4 wives and 13 children. Each wife must take care of herself and her children. Our soumbala production usually starts only after five in the afternoon because we work all day on our husbands' farms. We in the association help one another find the means to feed our families and ourselves."

An association member preparing soybean to be processed into soumbala, a traditional spice.

Malian women forming soumbala into 4-cm balls to be sold in the market.

CATALIST Will Intensify Farm Production In Africa's Great Lakes Region

IFDC initiated a 5-year project to improve soil fertility, enhance farm production, and increase trade in the Great Lakes Region of Central Africa in October 2006. The Dutch Embassy in Rwanda funds the project Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability (CATALIST). IFDC is implementing CATALIST in the Albertine Rift and Kagera Basin, which border Rwanda, Burundi, Congo (Dem. Rep.), Tanzania, and Uganda.

"The Great Lakes Region already has far more people than its fragile soils can support and faces perpetual crises of poverty, social instability, war, and environmental degradation," says Dr. Amit Roy, IFDC President and CEO. "The situation is worsening rapidly as deforestation intensifies and its soils are starved of nutrients."

"The Great Lakes Region already has far more people than its fragile soils can support and faces perpetual crises of poverty, social instability, war, and environmental degradation," says Dr. Amit Roy, IFDC President and CEO. "The situation is worsening rapidly as deforestation intensifies and its soils are starved of nutrients."

CATALIST is promoting peace and environmental stability by strengthening the region's agricultural sector. The project will intensify farm production and accelerate development through labor-intensive projects such as terracing, road building, and agroforestry.

CATALIST is training farmers on how to access and use mineral fertilizer while ensuring the land's environmental sustainability. The project has already helped the Rwanda Agricultural Development Authority establish 408 demonstration trials.

"Agricultural markets are underdeveloped and fragmented in the Great Lakes Region," says Dr. Balu Bumb, IFDC Program Leader and Principal Scientist—Policy, Trade, and Markets. "CATALIST will strengthen both agricultural input and output markets by training both agri-input dealers and staff of farmer organizations. We also encourage partnerships between the public and private sectors to produce and market seeds and integrate regional fertilizer markets."

More than 5,000 tons of NPK for rice farmers are being blended through business linkages, established by CATALIST, between SOPAV, a Rwandan fertilizer importer, and ICM Agribusiness, an Australian company. This increases the affordable availability of NPK and helps SOPAV gain credit to import fertilizer and develop its bulk blending capacity. CATALIST is also helping SOPAV produce and market 1- to 10-kg bags of diammonium phosphate (DAP), NPK, and urea. SOPAV will open input shops in Ruhengeri and Butare to market the small, affordable packs to retailers and farmers.

CATALIST will encourage and strengthen agri-input markets in the Great Lakes Region of Central Africa, one of the world's poorest areas.

CATALIST helped Rwanda's Ministry of Agriculture and Animal Resources form a *Strategy for Developing Fertilizer Distribution Systems in Rwanda* to identify and address constraints to fertilizer use. CATALIST has also developed pamphlets that are being translated into Kinyirwanda and Kiswahili and the monthly *Fertilizer Market Situation and Outlook Report* on world fertilizer prices and trends.

CATALIST activities also address crosscutting issues such as gender, HIV/AIDS, and rehabilitation of rural roads.

"We'll help harmonize efforts to feed the growing population of the Great Lakes Region, while preserving its rich biodiversity and the ecosystem," says Dr. Henk Breman, an IFDC agronomist and environmental specialist assigned to CATALIST.

Marketing fruits and vegetables in Rwanda.

CATALIST will accelerate development through labor-intensive works.

A Congolese farmer clears land for fertilizer trials for banana through the Banana Producers and Dealers Association (APROVEB) in Maoma, a village 15 km west of Goma, Democratic Republic of the Congo. CATALIST will provide training for APROVEB and other farmer and dealer organizations in Rwanda, Burundi, eastern Congo, western Tanzania, and Uganda.

APROVEB promotes the growing and marketing of improved banana varieties and the production of banana byproducts in the Democratic Republic of the Congo. The APROVEB President, Jean Jacques Masumbuko Butaka (orange shirt), stands with APROVEB staff and farmer cooperators in Maoma, Congo.

Soil Sampling for CATALIST Fertilizer Recommendations in Rwanda

"Soils in the Great Lakes Region are highly acidic and deficient in the three major fertilizer nutrients: nitrogen, phosphorus, and potassium (NPK)," says Dr. Upendra Singh, IFDC Senior Scientist—Systems Modeling (Soil Fertility).

"NPK and pH levels can be measured quickly and inexpensively with soil test kits.

"I train CATALIST staff to use soil tests and analytical procedures to improve fertilizer recommendations."

Dr. Upendra Singh places a soil sample in a newspaper in Rwanda (Rwanda has banned the use of plastic bags so soil samples are wrapped in newspaper, then placed in a paper sack).

IFDC's Phosphate Rock Decision Support System is Available on the Web

IFDC scientists, in collaboration with the International Atomic Energy Agency (IAEA), have developed a Phosphate Rock Decision Support System (PRDSS) to predict the feasibility of phosphate rock (PR) for direct application to crops. PRDSS is available on the FAO/IAEA Web site http://www-iswam.iaea.org/dapr/srv/en/resources. It is identified as Direct Application of Phosphate Rock.

There is a renewed worldwide interest in PR for direct application because PR is a natural raw material that is a nutrient-rich source for phosphorus, according to Dr. Upendra Singh, IFDC Senior Scientist—Systems Modeling (Soil Fertility). "Interest in PR as a natural source of phosphorus could open future markets to exports from developing countries," Singh says. Africa has abundant PR deposits.

PRDSS results from 25 years of evaluation of PR applied to crops in Latin America, Asia, and Sub-Saharan Africa. The decision support tool functions with minimal input: soil pH, PR source, and crop species. PRDSS can also use farm gate prices to determine if water-soluble phosphate or PR is more economical.

The web-based tool is user-friendly and easy to navigate, says Dr. Henk Breman, IFDC Principal Scientist and Adviser to the project Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability (CATALIST), based in Rwanda. "I have used PRDSS on the Web site to compare rock from Burundi and Tanzania. Even as a layman, I was able to obtain answers."

A technical article about the tool, "Development of a Phosphate Rock Decision Support System for Direct Application," by Suzette Smalberger, Upendra Singh, Sen H. Chien, Julio Henao, and Paul W. Wilkens, was published in the May-June 2006 issue of *Agronomy Journal*.

IFDC Headquarters Staff Use GIS to Help African Farmers

A Peruvian woman in Muscle Shoals, Alabama, is using geographic information systems (GIS) to develop maps that help African farmers improve soil fertility and increase harvests.

Inspecting maps of African countries, developed through use of GIS at IFDC headquarters in Alabama, U.S.A., are Flavia Rey de Castro (left), Paul Wilkens (center), and Julio Henao.

"I'm using GIS to make maps that support expert systems for fertilizer recommendations in Sub-Saharan and northern Africa," says Flavia Rey de Castro, Associate GIS Specialist. She is from Arequipa, Peru. "I hope to expand the use of GIS and remote sensing imagery at IFDC. Both are powerful tools that allow us to see specific characteristics in the study areas. These tools, combined with scientists' expertise, are tremendous assets in our work in developing countries."

GIS is a "system of computer software, hardware, data, and personnel to help manipulate, analyze, and present information that is tied to a spatial location" (http://www.gis.com). IFDC uses GIS to monitor research and farming sites and gather data such as weather, topography, land use, demographics and economic information, and soil type.

"GIS uses the power of the Internet and satellite technology to provide information technologies to address strategic objectives for the rural poor," says Dr. Julio Henao, IFDC Senior Scientist—Biometrics. The main objective is to improve agriculture through recommendations for increased and more efficient fertilizer use.

"After analysis and evaluation, IFDC updates geographic and attribute databases and exchanges this information with country collaborators and other agricultural organizations," Henao says.

Geographic information helps IFDC monitor nutrient mining in Sub-Saharan Africa. The purpose is to develop guidelines for fertilizer recommendations and development strategies for crop production in soil fertility management projects.

"Much of the geographic information is used to monitor and improve country and regional markets and support fertilizer policies," Henao says.

"In Morocco, GIS maps show the best management recommendations for planting date, cultivars, and nitrogen fertilizers for bread wheat, durum wheat, and barley," says Dr. Paul Wilkens, Scientist—Programmer in IFDC's Research and Market Development Division. "This will help stakeholders reduce risks and improve cereal production."

Wilkens and other IFDC scientists develop decision-support systems that link crop models to geo-spatial and climate data.

"These tools have been key in generating optimized crop recommendations for wheat and barley farmers in Morocco and Syria and fertilizer recommendation systems for farmers in Uganda," Wilkens says. IFDC develops and tests dynamic crop simulation models as part of the International Consortium for Agricultural Systems Applications.

Rey de Castro has also used GIS to map farmland in Malawi, Mozambique, and the Great Lakes countries of Burundi, Congo (Dem. Rep.), Rwanda, Tanzania, and Uganda.

GIS thematic maps have already benefited a new IFDC project in the Great Lakes Region: the CATALIST project (Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability).

"As a geographer, I find it fascinating to work at IFDC with people of varying ethnic backgrounds, languages, and disciplines," Rey de Castro says. "There is so much to learn from others, especially people who are different from me. The most rewarding aspect of my work is knowing that it's for a good cause."

One Peruvian woman in Alabama can, indeed, make a difference all the way around the world.

Study Tour Strengthens West African Trade Associations

Eight leaders of agri-input trade associations in West Africa went to Kyrgyzstan on a study tour to observe the leadership of the Association of Agribusinessmen of Kyrgyzstan (AAK) in October 2006. The study tour was organized by IFDC's Marketing Inputs Regionally (MIR) project.

MIR has trained more than 500 members of West African trade associations since 2003. The MIR project, funded by the Netherlands Government, strengthens agri-input markets by supporting trade associations.

AAK was developed by the IFDC project Kyrgyz Agro-Input Enterprise Development (KAED) in 2002. AAK is now financially independent and one of the most active private sector associations in Central Asia. The association began with 7 dealers but now has more than 200 paying members. In 2004 AAK successfully lobbied the government to remove a tax on fertilizers.

AAK briefed the West African representatives on its services, structure, management, finances, and sustainability. The representatives attended the Silk Road AgroExpo, an agri-input trade fair organized by AAK.

The West Africans represented the following associations: CropLife Côte d'Ivoire, CropLife Senegal, CropLife Nigeria, the National Seed Association of Benin, Nigerian Agri-Input Dealer Association, Association of Agri-Input Wholesalers and Retailers of Burkina Faso, African Federation of Agri-Input Trade Associations, and Cooperative for the Commercialization of Agri-Inputs and Equipment (Burkina Faso).

An AAK member briefs West African representatives on association-building.

Mobile Phones Help MISTOWA and TradeNet Link Farmers, Traders, to Markets

"Being connected" is key to success in every domain of our global environment—but especially in agricultural marketing, says Dr. Kofi Debrah, IFDC Chief of Party of the project Market Information Systems and Traders' Organizations in West Africa (MISTOWA).

MISTOWA is sponsored by the U.S. Agency for International Development (USAID).

"Producers and traders now have in their hands a tool—their mobile phones—and a service, TradeNet, that facilitates trade in farm produce," Debrah says.

The TradeNet platform capitalizes on the explosion in the number of mobile telephones in Africa. Studies show that Africa has the world's highest growth in mobile communications. TradeNet users sign up for short message services (SMS) and receive instant "text messages" alerting them to offers to buy or sell.

Registered TradeNet users also get their own free Web sites that they can customize to post offers and showcase services.

"TradeNet operates through Agribusiness Information Points (ABIPs) that connect farmers, traders, and markets," Debrah says. TradeNet is an electronic trading platform developed by Busylab, a private company based in Ghana, in partnership with MISTOWA.

"Being connected" is key to success in every domain of our global environment—but especially in agricultural marketing, says Dr. Kofi Debrah, IFDC Chief of Party of the project Market Information Systems and Traders' Organizations in West Africa (MISTOWA).

A new ABIP was launched in the heart of the busy Agbobloshie Market in Accra on January 31, 2007, by the Ghana Agricultural Producers and Traders Organization (GAPTO).

"GAPTO set up its ABIP in Agbobloshie because it's Accra's only wholesale market for agricultural products," Debrah says. At the launching, colorful stands displayed tomatoes, onions, plantain, cassava, yams, cowpeas, maize, and meat. In the African way, music and dance were part of the agenda.

TradeNet and ABIPs are lessening or redistributing the decision-making power of intermediaries in agricultural markets.

"TradeNet liberates us from dictates of the 'queen mothers'—spokespersons for women in West African markets," says Comfort Quarshie, a young yam wholesaler and GAPTO member. Quarshie explains, "Queen mothers regulate the availability of commodities, and decide which trader groups go to the hinterlands each week to buy what, to sell where, and at what price. The queen mothers often hold the information and power.

"But now we use our mobile phones to get the information we need on prices and products—and make our own decisions."

GAPTO member Akuffo Kofi says, "Before, I would spend time and money to take goods to a market—only to realize that I had to sell at a loss because prices had gone bad. Now I use my mobile phone to find buyers as my crops ripen. And there are lots of interesting partners out there. Some will even send their own trucks to pick up the goods."

Holding his mobile phone, Haruna Agesheka, GAPTO's Secretary General, demonstrated how the system works. "Just text 'buy' or 'sell'…then the commodity code…then the quantity and price—and your offer goes to thousands of other mobile phones."

MISTOWA has helped establish 20 ABIPs in Ghana and 150 across West Africa. MISTOWA provides training to strengthen managerial strengths of staff of umbrella organizations like GAPTO. MISTOWA grants also help buy computers to facilitate marketing.

"We also provide French courses to facilitate exchange with Francophone partners," Agesheka says.

Clement Eledi, Ghana's Deputy Minister for Food and Agriculture, commended the U.S. Government for funding the MISTOWA project. "As Ghana celebrates its 50th anniversary of independence this year, we are proud to lead the sub-region in technological advances," he says. "TradeNet provides a means for traders and farmers to contact each other quickly, at the touch of a button."

Nigerian producer and trader associations attended the ceremony. "I can sit with my mobile phone and nobody knows that I'm doing business in faraway places. It's silent business!" says Usu Phoebe Mbasounn, a member of the Dawanu Market Development Association in Kano, Nigeria.

Mbasounn, who introduced herself as "Mrs. Cassava" says, "I check prices on several markets and then text message a discounted offer. My trade has increased 10 times. I can now support three of my children in university."

TradeNet is run by a core of young Ghanaian program developers, 24 to 27 years old. "We're using local skills to build world-class software products," says Mark Davies, TradeNet architect. "Content managers collect and post prices in more than 380 markets across Africa."

Debrah says, "MISTOWA is a 4-year project that targets a 20% increase in intraregional trade in West Africa by building the capacity of producers and traders. It's a public-private partnership."

Patrice Annequin, MISTOWA Market Information System Unit Manager, adds, "IFDC is the connection between TradeNet developers and users. We help Busylab adjust the platform to users' needs while our partners help develop local content by uploading market information onto the platform."

Dr. Jeff Cochrane, representing the USAID/West Africa Director, said at the Agbobloshie ABIP opening, "My government is pleased to contribute to this effort…*Our* success is measured by *your* success."

Africa has the world's highest growth in mobile communication. TradeNet capitalizes on this growth to link farm and traders to markets.

MISTOWA Helps Advocate Benin Government to Repeal Onion Tax

"Advocacy training showed me the way to successfully petition the Benin Government to remove an 18% tax on imported onions," says Lucien Guendehou, President of the Association of Onion Importers of Cotonou (ASSIAHOC). Guendehou received the training through the IFDC project Market Information Systems and Traders' Organizations in West Africa (MISTOWA), supported by the U.S. Agency for International Development (USAID).

MISTOWA also trains ASSIAHOC members in organizational management and technical and business skills.

An 18% value-added tax was previously imposed on onions imported into Benin from Niger. But other unprocessed agricultural products such as maize, potatoes, fruits and vegetables, and seed and root crops, were not taxed.

After reviewing the tax law, Guendehou wrote why onions should be tax-exempt. Eventually, the Benin Customs Department eliminated the tax.

ASSIAHOC imported more than $7 million of onions and paid more than $1 million in onion taxes from 2006 to 2007. The tax repeal will save ASSIAHOC millions of dollars in future imports. The savings will be passed on to consumers.

Lucien Guendehou used MISTOWA advocacy training to remove an 18% tax on onions.

Photo by Alain Soglo, MISTOWA Benin

"Advocacy training showed me the way..."

WACIP Will Improve Lives of Cotton Farmers in West Africa

Cotton is the main cash crop of the "C-4" or "cotton four" countries of West and Central Africa: Benin, Burkina Faso, Chad, and Mali. IFDC is implementing a 3-year project to reduce poverty for cotton farmers and increase farm production, ginning, and textile operations in the C-4 region, among the world's poorest areas.

"WACIP's goal is to increase farmers' incomes in these cotton-growing zones, both from their cotton and non-cotton crops," says Dr. Sarah Gavian, IFDC Chief of Party for the new West Africa Cotton Improvement Program (WACIP).

WACIP is funded by the U.S. Agency for International Development (USAID) as the largest part of its $27 million initiative to improve West Africa's cotton sector. The IFDC-led implementing team includes Abt Associates, Aid to Artisans, and three U.S. universities: Auburn, Michigan State, and Tuskegee.

"We're improving the technologies involved in the whole cotton system, including rotational and alternative crops, and adding value to cotton products by developing niche processing and marketing opportunities," Gavian says.

"We'll try to find more markets for cotton byproducts such as cotton seed, meal, and cake. We're also working with policymakers and development agencies to encourage a more favorable climate for agribusiness."

WACIP will address crosscutting issues such as ensuring participation of women, helping disadvantaged groups, and evaluating the environmental impact of increased fertilizer use.

"The challenge is to produce cotton sustainably without robbing the soil of nutrients or poisoning it with pesticides," Gavian says.

Most C-4 cotton is grown using conventional techniques. To reduce farmers' costs, WACIP will link producer organizations to extension agencies. The linkages will help farmers use better seed and integrated soil and pest management techniques, along with better fertilizer and pesticide mixes.

"In many cases, we know what combinations of inputs will boost yields—but the question is how to reinforce national research and extension systems so they can roll out those technologies to farmers in remote areas," says Blaise

WACIP will help improve the efficiency of cotton gins.

A cotton field in West Africa.

"The challenge is to produce cotton sustainably without robbing the soil of nutrients or poisoning it with pesticides."

Fadoegnon, a former cotton researcher and coordinator of the WACIP program in Mali. "The WACIP team is strengthening linkages between U.S. and African research institutes." WACIP will link farmers to international fair trade markets and markets for organic and sustainably produced cottons.

Robert Groot, IFDC Africa Division Director, says, "To reinforce the cotton production system, WACIP will use the IFDC-developed Competitive Agricultural Systems and Enterprises (CASE) approach. CASE will help farmers gain technical skills, improve business management, and develop vital agribusiness linkages."

WACIP will also help improve the efficiency of cotton gins, decrease contamination of cotton lint, and transform the lint into locally produced fabric and garments, Gavian says.

Gavian has lived and worked in West Africa for more than two decades. She previously worked in Ghana and Nigeria for the International Food Policy Research Institute. Gavian has also led initiatives to address the HIV/AIDS problem in agricultural and food security planning.

Natural Resource Management Program Designs Strategies for Success

IFDC's Natural Resource Management (NRM) program seeks to increase agricultural productivity sustainably and profitably while conserving the natural resource base.

"Our ultimate goal is to ensure the well-being of current and future generations of rural farmers and urban consumers," says Dr. Abdoulaye Mando, NRM Program Leader. "Low soil fertility is a great concern, particularly in Sub-Saharan Africa. Thus, finding ways to improve access to agricultural inputs, especially fertilizer, is important.

"We urgently need to develop soil management technologies and approaches that will address the complex problems that African farmers face: declining soil fertility, degradation of natural resources, and unfavorable policy environments."

The NRM program has designed a strategy to combat Africa's agriculture crisis based on systems and participatory approaches that generate and capitalize on farmer knowledge, and research that improves methodologies and technologies.

The soil fertility technology development component uses participatory methods, systems thinking (modeling of socioeconomic and bio-physical processes), and geographic information systems for site-specific recommendations for key factors that affect soil fertility and crop production.

Update on NRM Projects

Combating Soil Fertility Decline To Implement Smallholder Agricultural Intensification In Sub-Saharan Africa (CSD-ISFM)

CSD-ISFM implements farmer-led research to intensify agricultural production and uses soil, water, and crop management technologies that save labor and enhance productivity. CSD-ISFM uses integrated soil fertility management and the Competitive and Sustainable Agricultural Systems and Enterprises (CASE) approach with decision-support tools to improve production and natural resource management. The International Fund for Agricultural Development (IFAD) funds the 3-year project.

IFDC staff helping farmers plan research in northern Nigeria.

Multi-Stakeholder Approach to Linking Technical Options, Policy, and Market Access for Improved Land Productivity in the Northern Guinea Savanna Zone

The project will help increase agricultural productivity, reduce poverty, and contribute to the sustainable use and conservation of natural resources. The Forum for Agricultural Research in Africa (FARA) will provide funding and personnel to help IFDC implement the Integrated Agricultural Research for Development (IAR4D), a participatory approach to rural innovation that is based on collective action, interactive learning, and institutional change. The project will address policy and institutional measures needed to enable resource-poor farmers and marginalized groups such as women to access technologies, information, and markets.

Other NRM Projects: Communal Forests Management Support Project (PAGEFCOM); Desert Margins Project (DMP); Local Development Support Project for the Provinces of Comoé, Léraba, and Kénédougou (PADL/CLK); Decentralized Participatory Rural Development Project in the Provinces of Basega and Kadiogo (PDRDP/BK); and Technical Backstopping of African Development Bank (AfDB) Investment Projects in Burkina Faso and Benin.

The Abuja Declaration

Heads of state and governments of more than 40 African nations declared both mineral and organic fertilizers a "strategic commodity without borders"—meaning that all cross-border taxes and tariffs should be lifted—in the historic *Abuja Declaration on Fertilizer for an African Green Revolution.*

The historic document was written at the conclusion of the largest and most comprehensive effort to address Africa's soil fertility crisis—the Africa Fertilizer Summit—held June 9-13, 2006, in Abuja, Nigeria. More than 1,100 leading African and international policymakers and agricultural experts highlighted the significant challenges that African farmers face as a result of declining soil fertility, and the potential productivity gains from even modest fertilizer use.

Hanging a copy of the *Abuja Declaration* in the lobby at IFDC headquarters are Dr. Amit Roy, IFDC CEO (left) and Wendell Rhodes, IFDC Senior Technician—Maintenance.

The Abuja Declaration also calls for the African Development Bank to establish an African Fertilizer Development Financing Mechanism to support regional fertilizer procurement and distribution facilities, provide credit for fertilizer importers and distributors, and develop local fertilizer manufacture in Africa.

Copies of the Declaration, in a format suitable for framing or display (17 x 42 cm or 11 x 17 in.), are available from the IFDC Information and Communications Unit.

IFDC Assigns Economist to Help NEPAD Implement Abuja Declaration

IFDC has assigned Dr. Maria Wanzala, agricultural economist, to the Secretariat of the New Partnership for Africa's Development (NEPAD) in Johannesburg, South Africa. The 2-year secondment is to facilitate implementation of the *Abuja Declaration on Fertilizer for an African Green Revolution*. This historic document was the key outcome of the Africa Fertilizer Summit held in Abuja, Nigeria, June 9-13, 2006. The Summit was the first collective step taken by African Heads of State to address Africa's fertilizer crisis.

The Abuja Declaration declared fertilizer, both mineral and organic, a "strategic commodity without borders"—meaning that all cross-border taxes and tariffs should be lifted. The Declaration also set a target for average fertilizer use in Africa of 50 kg/ha by 2015. The Declaration gives concrete actions that countries and Regional Economic Communities (RECs) can take to reach this goal.

IFDC has assigned Dr. Maria Wanzala (left), agricultural economist, to the New Partnership for Africa's Development (NEPAD) to help implement the 12 resolutions of the *Abuja Declaration on Fertilizer for an African Green Revolution* (on wall). To the right is Prof. Richard Mkandawire, NEPAD Agriculture Adviser.

"Africa faces a soil health crisis due to decades of nutrient mining without replenishment," Wanzala says. "The Declaration's 12 resolutions to increase fertilizer use are ambitious but necessary to reverse Africa's low agricultural productivity and reach the first U.N. Millennium Development Goal of eradicating extreme poverty and hunger in Africa by 2015."

Wanzala, a Ugandan citizen, also works closely with the Alliance for a Green Revolution in Africa (AGRA), based in Nairobi, with funding by The Rockefeller Foundation. She works 50% of the time for NEPAD and 50% for AGRA.

The Summit, implemented by IFDC, was one of the largest and most comprehensive agricultural gatherings ever held in Africa. Its 1,100 participants from 40 countries included Heads of State, ministers of agriculture, and hundreds of leaders of international organizations, agricultural research centers, NGOs, and private sector companies.

"Dr. Wanzala is well-qualified to help implement the Abuja Declaration—she already knows many of Africa's agricultural leaders," says Dr. Amit Roy, IFDC President and CEO. Wanzala represented IFDC as the Africa Fertilizer Summit Adviser to NEPAD from October 2005 to June 2006. She was then Fertilizer Sector Development Adviser to NEPAD until January 2007. She is now Coordinator—Agricultural Input Markets Development Program in NEPAD's Agriculture Unit.

"Improved plant varieties are available to make an African Green Revolution possible," Wanzala says. "But the full yield potential of these improved varieties cannot be realized without significantly increased use of mineral fertilizer." Fertilizer rates range from 100 to 200 kg/ha in the "Green Revolution" countries of Asia.

The resolutions stress the need for capacity-building for farmer organizations, civil society, and the private sector; improved infrastructure; and development of output markets.

The Declaration calls for the African Development Bank (AfDB) to establish an *African Fertilizer Development Financing Mechanism* to develop dealer networks, support regional fertilizer procurement and distribution,

provide credit guarantees for fertilizer importers and distributors, and develop local fertilizer manufacture in Africa.

The Declaration calls for the African Union Commission (AUC) and NEPAD to develop a mechanism to monitor and evaluate its implementation and for the AUC to provide a progress report every 6 months to the Heads of State at the African Union General Assembly.

"The African Union Member States face challenges in responding to the Declaration resolutions because of the diversity of economic, cultural, linguistic, and political conditions, and the technical and financial capacity constraints," Amit Roy says.

"Maria has a big job—to follow up with the countries and Regional Economic Communities to see that the measures and actions delineated in the Declaration are implemented."

"NEPAD has declared that the vision of economic development in Africa must be based on raising and sustaining higher rates of economic growth," Wanzala says. To realize this vision, the African Heads of State have adopted the Comprehensive Africa Agriculture Development Program (CAADP) as a framework for the restoration of agriculture growth, food security, and rural development. Wanzala is to attend all of the CAADP Country Roundtables and facilitate the preparation and implementation of the CAADP country plans.

Africa's continuing decline in per capita food production, combined with increasing poverty and hunger, led former U.N. Secretary General Kofi Annan to call for "a uniquely African Green Revolution." He pointed out that food productivity in Asia had tripled, but "Africa has not yet had a Green Revolution of its own."

"I'm honored to be a part of the revitalization of African agriculture by working with NEPAD and AGRA toward a common objective—Africa's *own* Green Revolution," Wanzala says.

IFDC Releases *Africa Fertilizer Summit Proceedings*

The *Africa Fertilizer Summit Proceedings* are now available in paperback or on CD from IFDC. The Summit, held in June 2006 in Abuja, Nigeria, sought to generate the *uniquely African Green Revolution—a revolution that will help the continent in its quest for dignity and peace,* called for by Kofi Annan, former UN Secretary General.

The 182-page Proceedings includes summaries of presentations and background papers on how to address the soil nutrient crises that Africa faces and how increased use of mineral and organic fertilizers can catalyze farm production discussions. The 1,100 participants included five current or former African Heads of State, ministers of agriculture, and international agricultural leaders.

Nigeria's former President Olusegun Obasanjo chaired the Summit. Obasanjo wrote in the preface, "In 6 years we

"In 6 years we expect to...see the true roles of the Summit as an instigator of the African Green Revolution, one that will have enabled our continent not only to feed itself but also to achieve all basic necessities for its people: education, safe drinking water, health care, and peace and stability."

expect to…see the true roles of the Summit as an instigator of the African Green Revolution, one that will have enabled our continent not only to feed itself but also to achieve all basic necessities for its people: education, safe drinking water, health care, and peace and stability." Obasanjo called the Summit "a crucial milestone in our quest to rapidly reverse our low agricultural productivity and accelerate food security for our needy population."

Dr. Norman Borlaug, the 1970 Nobel Peace Prize Laureate, said that leadership is the "all-important" ingredient in increasing Africa's food supply. "I want to see that African Green Revolution on the way to changing food production!" said Borlaug, who is often called the "Father of the Green Revolution" in Asia and Latin America.

Former U.S. President Jimmy Carter said, in a video address, "You at the Africa Fertilizer Summit have an awesome responsibility: to leave a healthier soil for our children and grandchildren, and more important, hope for the future."

"You at the Africa Fertilizer Summit have an awesome responsibility: to leave a healthier soil for our children and grandchildren, and more important, hope for the future."

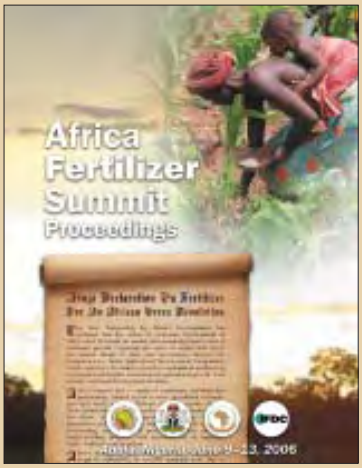
Dr. Amit Roy, IFDC President and CEO, wrote, "Sub-Saharan Africa is experiencing an agricultural crisis. Cereal yields in Africa have stagnated at about 1 ton per hectare for the past three decades, and per capita food production has decreased."

Participants wrote the historic *Abuja Declaration on Fertilizer for an African Green Revolution* at the Summit's conclusion. The document called mineral and organic fertilizers a "strategic commodity without borders" and declared that all cross-border taxes and tariffs should be lifted.

"Due to decades of soil nutrient mining, Africa's soils have become the poorest in the world," the *Abuja Declaration* states. The document calls for fertilizer use in Sub-Saharan Africa to increase from today's average of 8 kg/ha—the world's lowest—to at least 50 kg/ha by 2015.

The Proceedings includes the *Abuja Declaration* in English, French, Portuguese, and Arabic.

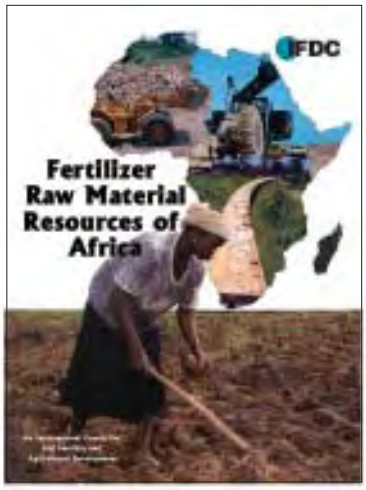
The Proceedings can be ordered, in paper or on CD, on the IFDC Web site http://www.ifdc.org. Each paper copy includes a CD of Summit background papers.



Africa Fertilizer Summit Proceedings in Print

The Proceedings of the Africa Fertilizer Summit, held in June 2006 in Abuja, Nigeria, is now available in paperback. The 182-page document includes summaries of presentations, background papers, and discussions on topics that relate to initiation of an African Green Revolution. Presenters include African Heads of State, ministers of agriculture, and international agricultural leaders such as Nobel Laureate Dr. Norman Borlaug and former U.S. President Jimmy Carter. The Proceedings can be ordered on the IFDC Web site http://www.ifdc.org. Each copy includes a CD of background papers.

IFDC Publishes Major Reference on Africa's Raw Material Resources for Fertilizer



IFDC published *Fertilizer Raw Material Resources of Africa*, a 435-page reference by Steven J. Van Kauwenbergh, IFDC Senior Geologist, in January 2007. The book is a compilation of information that IFDC has gathered on Africa's mineral resources that could be used to manufacture fertilizer.

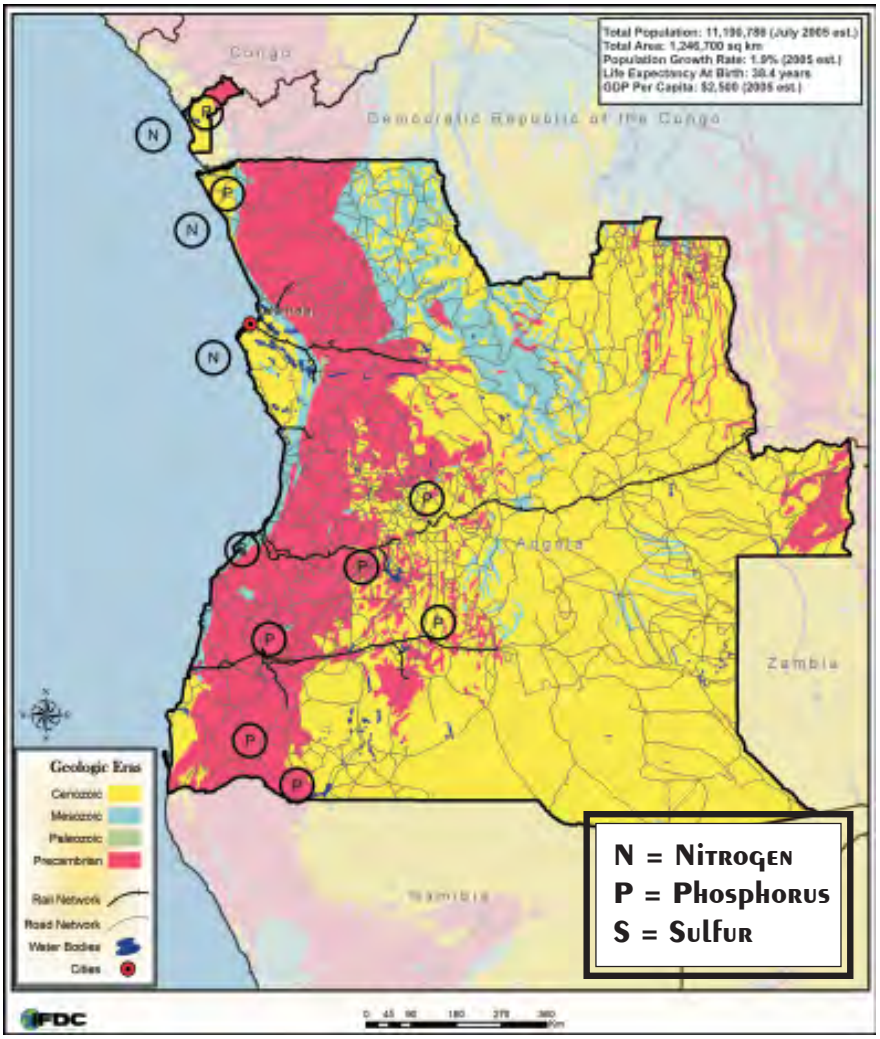
Much of the data is from Van Kauwenbergh's research during his 22-year IFDC career. "The book is the first to cover all fertilizer raw material resources in Africa," he says. "Writing the book was a wonderful opportunity to bring this information together under one cover."

Fertilizer Raw Materials starts with basic information on fertilizers, highlighting the fertilizer industry, production alternatives, raw material characteristics and production, and fertilizer projects.

The second section is country descriptions—a general overview of population growth, transportation systems, and geology for each African country that has fertilizer raw materials. Geologic maps detail each country's deposits of nitrogen, phosphate, potash, and sulfur. Also included are results of technical or economic studies in each country.

"This publication is an IFDC contribution to meeting the objectives of the Comprehensive Africa Agriculture Development Program, or CAADP, and those of the Africa Fertilizer Summit," says Dr. Amit Roy, IFDC President and Chief Executive Officer.

"The book is the first to cover all fertilizer raw material resources in Africa."



This map of Angola shows the country's deposits of nitrogen, phosphorus, and sulfur, which could be used to make fertilizer.

CAADP works to restore Africa's agricultural growth and reduce food insecurity and poverty. In 2004, African ministers of agriculture passed a resolution calling for the development of Africa's fertilizer industry to support CAADP. The resolution stated that fertilizer use in Sub-Saharan Africa is only about 9 kg/ha, while fertilizer use in Asia was 150 kg/ha during its Green Revolution.

The Africa Fertilizer Summit, held in Abuja, Nigeria in June 2006, laid the groundwork for the African Green Revolution called for by former UN Secretary General Kofi Annan. Steps are now being taken to make fertilizer more readily available to fuel that Green Revolution. The African Development Bank is establishing an African Fertilizer Development Financing Mechanism, recommended at the Summit, to support regional fertilizer procurement, credit for imports, and development of local fertilizer production.

Six African countries control an estimated 41.5% of the world's currently exploitable phosphate rock reserves, Van Kauwenbergh points out, and 50.2% of the total global phosphate rock reserve base that may be exploitable in the future.

"Ironically, Africa exports large quantities of phosphate rock, while importing manufactured fertilizers at costs that small-scale farmers can't afford," Van Kauwenbergh says. "Development of indigenous fertilizer raw material resources and local or regional fertilizer production facilities are alternatives to supply the nutrients that African farmers must have to feed growing populations.

"We hope this document will stimulate the growth of Africa's fertilizer industry."

Copies of the reference book have been distributed to Summit participants. It can be ordered on the IFDC Web site www.ifdc.org.

Van Kauwenbergh inspects phosphate nodules in clay, Tahoua area, Niger.

Africa Committee of IFDC Board Meets, Takes Field Tour in Mali

The Africa Committee of the IFDC Board went on a field trip to Koulikoro, Mali. Left to right are Prof. Ruth Oniang'o, Dr. Amit Roy, and Dr. John Hardman.

Monique Calon and John Hardman during discussions at the meeting of the Africa Committee of the IFDC Board.

The Mali office of the IFDC Africa Division hosted the annual meeting of the Africa Committee of IFDC's Board of Directors in Bamako May 31-June 1. Chairing the meeting was Prof. Ruth Oniang'o, Chairperson of the Africa Committee and Member of Kenya's Parliament. Other Board members who attended were Soumaïla Cissé, President, West Africa Economic and Monetary Union (UEMOA); Dr. John Hardman, President and CEO of The Carter Center in Atlanta, Georgia, U.S.A.; and Dr. Amit Roy, IFDC President and CEO.

Attending as an observer and special guest was Monique Calon, Senior Economics Adviser, Netherlands Ministry for Development Cooperation (DGIS).

The Africa Committee was briefed on IFDC programs in Sub-Saharan Africa including From Thousands to Million (1000s+), Competitive Agricultural Systems and Enterprises (CASE), Market Information Systems and Traders' Organizations in West Africa (MISTOWA), and Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability (CATALIST). Also discussed were activities of the Marketing Inputs Regionally (MIR) project, including development of agri-input markets and harmonization of regulatory frameworks for seed and pesticide sales. Initiation of the West Africa Cotton Improvement Program (WACIP) was announced.

On a field trip to Koulikoro, Mali, members of the Regional Chamber of Agriculture briefed the Committee on how local farmers and traders access market information through MISTOWA, how the local farmers' cooperative helps procure fertilizer, an action plan for sesame marketing through 1000s+, and soil fertility management for vegetable crops through the Sustainable Integrated Production System.

Prof. Ruth Oniang'o, who has served on the IFDC Board since 2001, pointed out how IFDC programs bring together stakeholders in African agriculture: farmers, policymakers, opinion leaders, and the private sector.

"Individual farmers can't influence the markets much," Oniang'o said. "But they *do* have influence when organized into farmers' associations or cooperatives.

"I saw, on the field trip, how MISTOWA works through farmers' organizations with West African sesame and mango growers, and processors of shea butter,[1] to open international markets."

MISTOWA also enables farmers and traders to post free offers to buy or sell produce or inputs on the Internet—and by text messaging on cell phones—to access regional and international markets through TradeNet, Oniang'o pointed out. TradeNet (www.tradenet.biz) was initiated through a partnership of MISTOWA and BusyLab, a Ghana-based software company.

John Hardman said, "The philosophies and approaches of the Carter Center and IFDC for agricultural development are similar. We both listen to, and work with, farmers and agri-input dealers at the grassroots level. IFDC work often overlaps with our programs. For example, the Carter Center's Sasakawa-Global 2000 program works mainly with extension programs helping small-scale farmers increase crop yields in Africa in cooperation with associations of farmers, traders, and input dealers that IFDC has helped organize."

Nobel Laureate Dr. Norman E. Borlaug, who served on the IFDC Board from 1994 to 2003, is President of the Sasakawa Africa Association, which serves as the SG-2000 governing body.

"I succeeded Borlaug on the IFDC Board—keeping the Carter Center-IFDC link intact," Hardman said.

"During the 2 years I've served on the Board, IFDC activities in Africa have expanded greatly, along with the potential to help farmers."

Monique Calon said, "DGIS sponsors 1000s+ so one of my main interests, obviously, was to see if the project is achieving its objective—reducing poverty in a cost-effective way.

"IFDC has assured us that through 1000s+, family incomes will increase by 30% to 50% and production of targeted crops will double—at a cost of only $25 per farm family. These benefits are expected to reach 1 million farm families—involving 10 million people—by 2010," Calon added. She commented on how 1000s+ is exploring how to take the "agribusiness cluster" approach, developed through CASE, to other countries of Sub-Saharan Africa.

"1000s+ isn't creating new institutions or technologies—it's coordinating and improving communication among various stakeholders to improve the value chain in commodities."

Calon described the marketing of shea butter "…a classic case of developing the commodity value chain. Malian women have used shea butter as a cosmetic for centuries, but it was never marketed in volume outside of Mali." CASE introduced improved processing methods and linked shea producers to outside markets.

"Using traditional processing, shea farmers never earned more than CFA 200 [$0.42] per kilogram. But Mali farmers now sell shea butter to cosmetic manufacturers in Senegal for CFA 550 [$1.14] a kilo," Calon said.

Calon believes that an African Green Revolution is feasible. "But we all know it must be different from the Green Revolution of Asia and Latin America," she said. "Having this meeting in Africa helps us see better how to catalyze it."

Staff from the IFDC Africa Division who participated in the meeting were Robert Groot, Director; Dr. Arnoldus Maatman, Project Coordinator, 1000s+; Dr. Marjatta Eilittä, Program Leader, Agribusiness Program; Dr. Sarah Gavian, Chief of Party, WACIP; and Dr. Abdoulaye Mando, Leader, Natural Resource Management Program; Ms. Ketline Adodo, Communication Specialist; and Ms. Isabelle Adzoh, Senior Administrative and Finance Officer. Dr. Thomas Hargrove, Coordinator, Information and Communications Unit at IFDC headquarters, also participated.

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[1]Shea butter is made from nuts of the shea tree, which is grown across West Africa, and is used in the manufacture of cosmetics.

IFDC Spotlighted in Togo and Mali Trade Fairs

The importance of emerging private-public initiatives that support market-oriented agriculture in Africa was emphasized in two 2006 international events for technical, information, and commercial exchange. The International Agricultural Exhibition (SIAGRI) was held Nov. 17–23 in Mali, and the International Agri-Culture Trade Fair (FACI) was held Aug. 24–Sept. 2 in Togo. IFDC was a sponsor of both events.

During his visit to the IFDC stand, President Amadou Toumani Touré of Mali is presented with an information folder by Ketline Adodo, Coordinator, IFDC Information and Communication for West Africa.

"The trade fairs are in line with IFDC's development strategy to provide incentives for farmers and traders by creating market environments that catalyze the entrepreneurial spirit and encourage private ventures," says Dr. Kofi Debrah, Chief of Party (COP) of Market Information Systems and Traders' Organizations in West Africa (MISTOWA), an IFDC project funded by the U.S. Agency for International Development.

The SIAGRI Experience

SIAGRI was a new initiative launched by the Permanent Assembly of Chambers of Agriculture of Mali and held in Bamako, Mali's capital city. IFDC sponsored a stand to demonstrate its capabilities and achievements through video projections, online demonstrations, posters, books, and brochures. The main focus was on the Competitive Agricultural Systems and Enterprises (CASE) approach, which is being implemented in West Africa through the Strategic Alliance for Agricultural Development in Africa (SAADA), an IFDC project based in Mali and funded by the Directorate-General for Development Cooperation of the Netherlands.

The center of attraction was the Agribusiness Information Points (ABIPs), a concept developed through MISTOWA. The ABIPs facilitate timely access to quality information that is strategic to develop agricultural markets and empower market operators, including farmers who need profitable markets for their produce.

"ABIPs can be set up within structures such as producer and trader organizations, agricultural agencies, and commerce and information centers," Debrah says. "The basic principle is that suppliers, vendors, and users of information are also the beneficiaries."

ABIPs use the Africa-wide Agricultural Trade platform (www.tradenet.biz), which makes prices and other information on agricultural inputs and produce available in real time and different languages via the Internet, e-mail, fax, short message services, and satellite radio. The IFDC stand included facilities for visitors to experiment in the use of such information and communication technology.

Daily prices of selected products were displayed on a bulletin board. Offers were posted for 800 tons of sesame, 600 tons of maize, 200 tons of white cowpea, 500 tons of red cowpea, and 70 tons of shea butter. Biogen S.A. and a member of the Network of Economic Operators in the Food Industry (ROESAO) are negotiating the sale of 10,000 tons of fertilizers.

IFDC also presented three lectures at SIAGRI. *Soil Fertilization in Cotton* was presented by Blaise Fadoegnon, Cotton Agronomist with IFDC's Marketing Inputs Regionally (MIR) project. *The Analysis of Agricultural Inputs Market* was by Yves Duplessis, SAADA Agribusiness Team Leader in Mali, and *The New ICTs at the Service of Agricultural Trade* was by Patrice Annequin, MISTOWA Deputy COP.

Mali's Prime Minister, M. Ousmane Issoufi Maiga, presided over the opening ceremony. Malian President M. Amadou Toumani Touré also visited.

The FACI Experience

The first International Agri-Culture Trade Fair, or FACI, was launched by World Business Enterprise, a private firm, and held in Kpalimé, Togo.

MISTOWA supported the participation of the Togolese Coordination of ROESAO (CT-ROESAO), which was represented by 26 exhibitors including farmer organizations, food processors, and traders. Fourteen were women.

J. A. Diffily (left) representing USAID at the ROESAO stand.

During the 10-day trade fair, direct sales totaling CFA 1.3 million (US $2,560) were made of 15 raw or processed agricultural products including maize, sorghum, rice, fruits, roots and tubers, fruit juices, and vegetable oils.

Other economic spinoffs are anticipated. For example, a Togolese cattle breeder group has ordered 420 cows from the Sahelian region for CFA 84 million (US $165,000). A group selling aromatic rice and a CT-ROESAO member are negotiating a $185,000 transaction. A Norwegian company has requested offers for 1,000 to 2,000 tons of shea butter monthly and may buy 1,200 tons of palm oil.

IFDC's opening day was heightened by presentations by the U.S. Embassy's Chief of Mission, J. A. Diffily, representing USAID; Dr. Kofi Debrah; and Robert Groot, Director of the IFDC Africa Division.

IFDC Training Programs Grow in 2006

"Training is integral to all IFDC work," says Dan Waterman, Director of IFDC's Training and Workshop Coordination Department. "Training develops the technical and organizational capacity of our partners in the field."

IFDC conducts training in three ways: through *overseas projects*, *advertised international programs and workshops*, and *specialized programs* upon request of other organizations.

Most IFDC training is conducted through *overseas projects*. IFDC trained 13,077 people through overseas projects in 2006—about 6% more than in 2005.

Special efforts are made to include women; about 25% of the trainees are female.

The training numbers reflect the geographic concentration of IFDC projects: 50% of overseas trainees are from West Africa; followed by Central Asia with 27%; South and Southeast Asia, 16%; Central Europe, 4%; and other areas, 3%.

Another 208 participants were trained in 2006 through seven *advertised international programs and workshops* coordinated at IFDC headquarters.

Five advertised programs were in Africa and designed to help maintain the momentum generated at the Africa Fertilizer Summit in June 2006.

"The growth of programs and participants in Africa reflects the dramatic change in the focus of IFDC training," Waterman says. The portion of African trainees increased from 27% in 1993-1998 to 42% in 1999-2003 to more than 50% today.

"Training is integral to all IFDC work," says Dan Waterman, Director of IFDC's Training and Workshop Coordination Department. "Training develops the technical and organizational capacity of our partners in the field."

The focus in recent years includes agri-input market development, dealer training, advances in fertilizer production, market information systems, integrated soil fertility management, strengthening of trade associations, and development of commodity value chains.

In 2006, IFDC also conducted three *specialized programs* for 84 trainees at the request of the Kenyan Ministry of Agriculture, the East Africa Farmers Federation, and others.

IFDC has conducted international training programs, workshops, and study tours that, over the past 30 years, have involved 9,000 participants from 150 countries.

Leaders of trade associations in West Africa went to Kyrgyzstan on a study tour to observe the leadership of the Association of Agribusinessmen of Kyrgyzstan (AAK).

Sample IFDC training programs include:

Challenges in Developing Agricultural Input Markets in Africa, August 21-25, 2006, Arusha, Tanzania. Fifty participants from key public and private sector organizations throughout Sub-Saharan Africa attended the policy workshop. The East African Community, the Tanzanian Ministry of Agriculture, and the Hewlett Foundation co-sponsored the event, which served as a timely follow-up to the Africa Fertilizer Summit.

Strengthening Market Information Systems, September 4-8, 2006, Cotonou, Benin. The training program focused on adopting agribusiness information points among partner organizations. The Market Information Systems and Traders' Organizations in West Africa (MISTOWA) sponsored 26 participants and 5 project staff.

Decision Support Systems and Crop Modeling, September 4-8, 2006, Marrakech, Morocco. The training program, with 25 trainees from 12 countries, was organized by IFDC's Cereal Production Information and Decision Support Systems Project.

NPK Production Alternatives, November 6-10, 2006, Bangkok, Thailand. This was the first training event on this topic in years. The 37 participants were from 13 countries.
"The trainees' diverse backgrounds made the program an excellent venue for networking and exchanging ideas," Waterman says. Participants evaluated the program as "very good."

Phosphate Fertilizer Production Technology, Brussels, Belgium, June 6-10, 2007. The 35 participating engineers were from 23 companies. The workshop was held on behalf of the International Fertilizer Industry Association. Activities included presentations from 15 organizations and field trips to the Prayon phosphoric acid plant and Rosier granulation plant. Participants rated the program "very good."

IFDC Sponsors Policy Workshop on Challenges in Developing Agricultural Input Markets in Africa

Fifty representatives of agri-input companies and government agencies from across Sub-Saharan Africa participated in an international policy workshop on Challenges in Developing Agricultural Input Markets in Africa, held Aug. 21-25, 2006, in Arusha, Tanzania. IFDC organized the workshop in collaboration with the Tanzanian Ministry of Agriculture, the East African Community, and the William and Flora Hewlett Foundation.

Participants at the workshop on Challenges in Developing Agricultural Input Markets in Africa.

"Many factors constrain the use of modern inputs in Sub-Saharan Africa, but underdeveloped input markets that limit accessibility remain the most critical bottleneck," explains Dr. Balu Bumb, IFDC Program Leader and Principal Scientist—Policy, Trade, and Markets Program.

Fertilizer use in Africa is only 8 kilograms per hectare—less than 10% of the world average, and the proportion of farmland planted with improved seed is low. Crop protection products are generally applied only on cash crops for export.

The workshop objectives were to discuss issues concerning agricultural input markets, or AIMs, share lessons learned, identify ways to overcome constraints identified in AIMs assessments across Africa, and identify specific ways to implement recommendations made at the Africa Fertilizer Summit.

"Participants denounced the politicization of fertilizer and concluded that the private sector must lead in the development of agri-input markets, with governments providing a supporting market environment," Bumb said. "They called for removal of tariffs and taxes on inputs, capacity building for producer organizations, development of input dealer networks, improved access to credit, policy incentives, and regional integration and harmonization."

Constraints and Successes

Country representatives gave specific examples of constraints on both the demand and supply sides, and of successes in developing agri-input markets, particularly for fertilizer.

- In Tanzania, for example, most farmers do not use fertilizer or improved seeds. The government is trying to create a favorable climate for investment and to promote public-private partnerships.
- In Malawi, farmers are producing only a third of their potential yields. A new national fertilizer strategy aims to increase fertilizer availability and improve policies and infrastructure.

- Fertilizer use in Angola has dropped significantly in recent years. The problem is even worse than in other African countries because of an uncertain policy environment. This includes direct government imports of fertilizer, and the lack of dealer networks, credit, and adequate extension services.
- The Nigerian Government recognizes the need to develop the fertilizer industry through the private sector. It encourages domestic production and seeks to enforce truth-in-labeling.
- In Zambia agri-input dealers face problems in stock management. For example, the distance from urban centers to the rural interior means slow turnaround of stock. A possible solution being explored is for dealers to take orders from, and deliver inputs to, groups of farmers.

Issues in Marketing and Market Development

The modern definition of marketing is "the process by which individuals and groups obtain what they need and want through creating and exchanging products and values with others," says Ian Gregory, IFDC Marketing Specialist. The "4 Ps" of marketing are: *product* (market needs, packaging), *place* (market segmentation, distribution channels, territorial management), *price* (cost plus standard markup, competitive, market supply and demand, introductory, skimming, niche, low cost supplier), and *promotion* (media, brand image, product positioning).

Participants discussed why fertilizer prices are high in Sub-Saharan Africa. For example, markets are small, transport and handling costs are high, and policies are often uncertain.

Strategies to significantly improve fertilizer supply to smallholder farmers were discussed, including ways to reduce transaction costs and shift the supply curve to the right by focusing on the five key pillars of market development: *policy, human capital, finance, market information,* and *regulations*.

Key Recommendations

Key recommendations in policy and financing for AIMs development, capacity building, and regional integration of input markets included:

- Policy environments in most Sub-Saharan African countries remain ad hoc and nonconducive for market development. Policymakers and donors should work together to remove distortions in the marketplace and encourage investment.
- Private sector actors have limited capacity for market development. Investment should be made in dealer development, market information, and regulatory systems to strengthen private sector capacity and to create entrepreneurs in rural areas.
- Regional trade in inputs is limited and is constrained by restrictive regulations, non-uniform standards, and quantitative restrictions. Business linkages among importers in different countries are limited, and private sector participants have incomplete knowledge of the benefits that can result from regional procurement and production. Efforts are needed in human capital development, business linkages, market information, and harmonization of regulations among countries to promote regional trade.
- The momentum of the Africa Fertilizer Summit should be maintained, and progress in meeting the targets set in the Abuja Declaration should be monitored. IFDC, in collaboration with regional economic communities, should organize an Africa-wide policy workshop every year.

NPK Training Program Held in Bangkok

IFDC conducted an international training program on NPK Production Alternatives November 6-10 in Bangkok. The Thailand Department of Agricultural Extension (DOAE) served as co-organizer. The Thai Fertilizer Producer Trade Association and Thai Fertilizer and Agricultural Marketing Association cosponsored the program.

The 37 participants were from China, Egypt, India, Indonesia, Kenya, Malaysia, Pakistan, Saudi Arabia, South Africa, Thailand, Ukraine, Vietnam, and Zimbabwe.

The 5-day program included classroom presentations and field visits to NPK fertilizer production facilities. Presentations emphasized alternatives of producing granulated, compacted, blended, and fluid NPK fertilizers, and basics of NPK fertilizer production, handling, and storage. The participants gave the program high marks in their evaluations.

IFDC workshop coordinators were Jorge Polo, Senior Technical Specialist; Ramón Lazo de la Vega, Senior Specialist—Engineering; and Dan Waterman, Director, Training and Workshop Coordination Department. Outside presenters were Pairoj Punyavut, Thai Central Chemical Public Company; Sanjeev Doshi, Fertiplant Engineering; Victor Granquist, ArrMaz Custom Chemicals; and Kukiat Soitong, DOAE.

IFDC has organized more than 670 workshops, study tours, and training programs for about 9,000 participants from 150 countries since 1974. The programs have included fertilizer marketing, production, distribution, and handling. Recent courses have covered sustainable agriculture, computer modeling and simulation, competitive agricultural systems and enterprises, market information systems, fertilizer recommendations, and environmental aspects of fertilizer production and use.

Participants wore hard hats during a visit to the Thai Central Chemical Public Company near Bangkok.

IFDC Presents New Awards to Outstanding Staff Members

Three newly established IFDC awards have been presented to recognize outstanding performance among internationally recruited staff, outposted general services staff, and general services staff at IFDC headquarters.

"IFDC does almost everything through team effort," says Dr. Amit Roy, IFDC President and CEO. "But some individuals work extraordinarily well with others to accomplish great things. We established these annual awards to recognize them."

The three criteria for each award include outstanding service that advances IFDC's purposes, innovative contributions to IFDC programs, and length of international work and at IFDC. Roy presented the awards at the 2006 IFDC Board of Directors meeting in September.

The Chairman of the Board's Award for Outstanding Internationally Recruited Staff Member went to Dr. Kofi Debrah, Chief of Party of the project Market Information Systems and Traders' Organizations in West Africa (MISTOWA), based in Ghana. "Kofi Debrah provides excellent leadership for the 4-year $15 million West African regional project, which is funded by the U.S. Agency for International Development (USAID)," Roy said. Debrah provides administrative and technical leadership for 50 staff at project headquarters in Accra and offices in Benin, Burkina Faso, Mali, Nigeria, Senegal, and Togo. The agricultural economist has almost 20 years experience in 26 African countries. Debrah, a Ghanaian citizen, speaks two African languages and is fluent in English and French.

The IFDC President's Award for Outstanding Outposted Staff Member went to Gregoire Houngnibo, an agricultural engineer with the Marketing Inputs Regionally (MIR) project, based in Benin. "Gregoire Houngnibo has demonstrated excellent skills in liaising with the Benin Government to establish the regulation of inputs such as seedlings, fertilizers, and pesticides," Roy said. The Benin citizen has almost 25 years of professional experience and is fluent in four African languages plus French and English.

Ms. Lynda Young, Coordinator of the Word Processing/Graphics Unit, won the President's Award for Outstanding Headquarters Staff Member. "Lynda Young has high standards of excellence, is highly organized, and often works under stringent deadlines," Roy said. "She makes sure that all documents submitted for word processing or graphics are of the highest professional quality—and delivered on time." Young, a U.S. citizen, joined IFDC in 1977.

Each year a committee of IFDC staff and external members will evaluate award nominations in a confidential and objective manner. To maximize opportunities for each employee to be recognized, an employee may receive an award only once.

In the Dawanau Market in Kano, Nigeria, are Dr. Kofi Debrah, MISTOWA Chief of Party (center, holding camera) and Alhaji Yau Nuhu Tumfafi, Assistant Secretary General of the Dawanau Market Development Association (to Debrah's left).

Gregoire Houngnibo, IFDC's Outstanding Outposted Staff Member, in a cotton field in Benin.

Lynda Young received the President's Award for Outstanding Headquarters Staff Member.

FREQUENTLY ASKED QUESTIONS

Questions about fertilizers

What are fertilizers?

Think of fertilizers as plant food. Fertilizers are combinations of the nutrients that plants must have to grow, in a form they can use. The main nutrients in fertilizers are three essential elements: nitrogen, phosphorus, and potassium, often called N–P–K. About 20 secondary or "trace" minerals such as copper, iron, manganese, zinc, and boron are also necessary for normal plant growth. People require the same nutrients. These plant nutrients can be supplied by organic fertilizers, such as plant residues or livestock manure, or mineral fertilizers, which are chemically processed to meet crop needs.

Plants generally need more nitrogen than phosphorus or potassium. Thus, nitrogen is the major component of most fertilizers. Phosphorus is the plant world's equivalent of carbohydrates—it provides energy for plants to thrive. Potassium helps plants fight stresses and disease, and grow strong stalks.

Most nitrogen in mineral fertilizers is drawn from the air—which is 80% nitrogen—by an industrial process and converted to ammonia. The ammonia is converted to various nitrogen-based fertilizers such as granular urea and liquid ammonia. Phosphorus, potassium, and most secondary or trace nutrients are mined from the ground.

All plant nutrients, whether in organic or mineral fertilizers, are the same, but mineral fertilizers have the advantage of concentration, and nutrients can be blended to meet specifications. Thus, mineral fertilizers can be better "targeted" to meet the nutritional needs of specific plants and soils.

Why do we need fertilizers?

As plants grow, they absorb and deplete or "mine" nutrients from the soil. Farmers harvest those same nutrients when they harvest crops. Fertilizers, whether mineral or organic, nourish the soil by returning essential mineral nutrients.

It is a biological fact that plants require 1 kilogram of nitrogen to produce 10 to 15 kg of grain. Our atmosphere is about 80% nitrogen. Most tropical soils "fix," or draw from the atmosphere, enough nitrogen to produce about 1 ton of grain per hectare. To produce more grain, the plants must have more nitrogen, whether as organic or mineral fertilizer. Plants must also have phosphorus, potassium, and "trace" minerals. If a soil lacks or has insufficient amounts of these minerals, they must be added as fertilizers, or production will stagnate or cease.

Couldn't the world be fed using organic fertilizers?

Organic farming is less efficient and lower yielding than farming with mineral fertilizers, especially in Africa. This is partly because mineral fertilizers deliver far more essential nutrients per unit weight than does organic matter. Also, Africa's depleted soils can no longer deliver enough organic matter to maintain soil health.

If the world's 1.5 billion hectares of farmland were farmed organically, we would have enough food for only about 2.4 billion people—leaving more than half the world's 6.5 billion people without food. Organic sources of

mineral nutrients are certainly not available in sufficient quantities to feed Sub-Saharan Africa's current population of about 750 million—and that population will be 1.1 billion by 2020.

Mineral fertilizers are the only practical way to provide enough plant nutrients to feed Africa and provide organic matter to restore Africa's nutrient-depleted soils. Also, it is difficult to guarantee the optimal balance among, or quantity of, vital crop nutrients using only organic sources. For example, providing enough nitrogen for a crop by applying manure would mean adding four to five times more potassium and phosphorus than is needed. Runoff can pollute waterways and the life they support.

Mineral fertilizers are generally highly cost effective, but require an up-front investment that may be difficult for small farmers without credit. Ideally, mineral fertilizers should be used together with organic fertilizers, which improve soil structure and the soil's water-holding capacity. Combined use may reduce the total cost of improving soil fertility. The precision that manufactured mineral fertilizers offer helps overcome the limitations of organic fertilizer.

How have fertilizers benefited the world?

About half of the world's population is alive today because of increased food production fueled by mineral fertilizers. Fertilizers and other inputs give the industrialized countries inexpensive food. For example, the average U.S. farm feeds about 150 Americans for a year, with a balance to export worldwide. US citizens spend only about 10 cents of each dollar on food, so they have 90 cents for other things. Most rural families in Africa spend as much as three-fourths of their income on food. Little is left for necessities like education of children and health care.

The Green Revolution—the dramatic increases in food production in Asia and Latin America—was through higher yields, made possible through improved seeds and inputs, especially mineral fertilizers. The Green Revolution is credited with feeding more than 1 billion people in Asia alone. The far lower increases in food production in Africa have been mostly through bringing marginal land into production. That further threatens Africa's endangered wildlife.

Nobel Laureate Dr. Norman Borlaug, often called the "father of the Green Revolution," has called improved seeds the "catalysts that ignited the Green Revolution" and mineral fertilizer the "fuel" that powers it.

Isn't it true that fertilizers can be environmentally detrimental?

Poor management of plant nutrients—whether as organic amendments or mineral fertilizers—can mean loss of some nutrients to the environment where they can upset the balance of natural ecosystems. Nitrogen may also be lost as gases that affect the atmosphere. But if a farmer uses appropriate agricultural practices, the crop will absorb most applied fertilizer.

Using too few crop nutrients can also have devastating environmental effects. In the 1930s—before mineral fertilizers were widely used—nutrient depletion was widespread on many agricultural lands in North America. The result was the "Dust Bowl" era, with its extensive wind erosion and massive dust storms.

Africa today faces a soil fertility crisis. African soils are losing an estimated $4 billion worth of soil nutrients yearly. Three-fourths of the farmland in Sub-Saharan Africa is plagued by severe nutrient depletion, and 46% of the African continent suffers from desertification. African farmers desperately need mineral fertilizers to bring life back to the depleted soils, and to feed the continent.

And if production on existing farmland is not intensified, African farmers will continue to bring marginal land into production—a further threat to what remains of Africa's precious wildlife and forests.

Questions about African agriculture

Can Africa feed itself?

Agricultural production in Sub-Saharan Africa is hampered by low use of inputs such as improved seeds and mineral fertilizers, low inherent soil fertility in much of the continent, and nutrient-depleted soils. Farmers have traditionally cleared land, grown a few crops, and then moved on to clear more land, leaving the land fallow to regain its fertility. But a 3% annual growth in population—among the world's highest—now forces farmers to grow crop after crop on the same land, "mining" or depleting mineral nutrients from the soil while giving nothing back, and to bring marginal land into production. Mineral fertilizers are the only practical way to restore plant nutrients and bring life to the severely depleted soils. But small-scale farmers, who comprise the vast majority of the farming population, have little access to fertilizers, and can't always afford them. The African farmer must pay two to four times the average world market price for fertilizers. Worsening the problem are weak input and output markets, unfavorable policies, corruption, poor transportation systems, limited irrigation, and inadequate access to credit.

How does agriculture affect African economies?

Africa is a rural continent and agriculture is, by far, its most important economic sector. More than 70% of Africa's population is directly engaged in agriculture. Sub-Saharan Africa (excluding South Africa) imported almost 20 million tons of cereal, at a cost of $4.4 billion, in 2004, according to the UN Food and Agriculture Organization. By 2020 Sub-Saharan Africa is projected to import more than 34 million tons yearly, at a cost of $8.5 billion.

What are potential solutions to Africa's agricultural crisis?

Former UN Secretary General Kofi Annan called for a "uniquely African" Green Revolution similar to the one that revolutionized agricultural production in Asia and Latin America. The increased food production was made possible by improved seeds and other inputs, especially fertilizer. High-yielding varieties of key African crops are available, but can produce well only if nutrients are available in the soil to feed them. Farmers in Sub-Saharan Africa today apply about 8 kg per hectare yearly (excluding South Africa). Fertilizer is essential to catalyze the new African Green Revolution by adding nutrients and organic matter to improve crop production and restore soil health. African farmers will use fertilizer, if they have access at an affordable price—and if it is profitable. This means ensuring fair prices for farm products.

Why are fertilizers so expensive in Africa?

It is a cruel irony that a farmer in Sub-Saharan Africa—where half the population survives, somehow, on about 65 cents a day—must pay two to four times the average world price for fertilizer. This is mainly due to geography and poor infrastructure. Africa has few navigable waterways, so bulky goods such as fertilizers must be transported long distances overland—on bad road and rail systems. Africa has the world's fewest kilometers of paved roads per capita. For example, Uganda has 94 km of paved road per 1 million people and Mozambique, 141 km. In contrast, France has 12,987 km of paved road per million people and the United States, 20,987 km. Transporting fertilizers from an African seaport to a farm 100 km inland costs more than to ship those same fertilizers from North America to Africa. Also, the current low demand for fertilizer in Africa reduces potential economies of scale in procurement. Government policies, including those affecting tariffs and trade, often contribute to high prices. Corruption is another factor.

Why not give away fertilizer free in Africa?

Sustainable growth in agricultural production requires the development of markets, for both agricultural inputs and for farm products. In most African countries, less than a third of the food produced enters into commercial

marketing channels beyond the local area. Also, it is often impossible for smallholder farmers to obtain reasonably priced farm inputs such as fertilizer and improved seeds. Simply giving fertilizer away would do nothing to develop the market.

The alternative is for African governments to adopt policies and develop institutions that increase farmers' purchasing power while also increasing access to farm inputs. For example, new financing arrangements could allow farmers to pool their resources, or make credit available at low risk, or that provide "smart" subsidies (rather than blank checks) to help farmers purchase fertilizer.

In the case of the poorest farmers who truly have no other options, it may make sense to begin by using market-friendly, targeted subsidies for fertilizer, together with advice on its efficient use, to jump-start a process of increased production and profits.

Fertilizers restore plant nutrients and bring life to severely depleted soils such as here in Togo.

Project Portfolio

Project	Objective	Collaborators	Location
Agricultural Input Markets Strengthening (AIMS)	To provide training and technical assistance to improve the efficiency and profitability of private enterprises engaged in agri-input supply	IITA, ICRISAT, CNFA	Mozambique
Agricultural Marketing and Production Support Activity (AMPS)	To provide fertilizer and seed packages to resource-poor farmers to support Afghanistan's government program to combat the cultivation of illicit crops	MAAHF, MRRD, MoCN, agri-input dealers	Afghanistan
Adapting Nutrient Management Technologies (ANMAT)	To promote the adoption of balanced and efficient fertilizer use	NGOs, extension services	Bangladesh, Cambodia, Vietnam
Uganda Agricultural Productivity Enhancement Program (APEP)	To expand economic opportunities in the agricultural sector by improving productivity and marketing of key food and cash crop systems	Agri-input suppliers, distributors, and users (Chemonics)	Uganda
Accelerated Sustainable Agriculture Program (ASAP)	To develop Afghanistan's agri-input marketing system and build on RAMP's success	Agri-input dealers, Afghanistan's Ministry of Agriculture, Irrigation, and Livestock (Chemonics)	Afghanistan
Business Development Services (BDS) Fund—Micro, Small, and Medium Enterprises (MSME) Project	To deliver business development and advisory services	Business development service providers; micro, small, and medium enterprises	Nigeria
Batken and Sughd Agri-Input Dairy Development (BSAIDD)	To improve productivity and profitability of cheese and dairy farmers, reduce rural poverty, and increase stability	Agri-input dealers, trade associations, cheese and dairy farmers (DAI/Winrock)	Kyrgyz Republic, Tajikistan
Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability (CATALIST)	To promote peace and environmental stability by improving soil fertility, enhancing farm production, and increasing trade	Farmer organizations, national and international NGOs, such as Helpage	Great Lakes Region of Central Africa
Cluster and Business Support (CBS)	To stimulate economic growth and improve employment opportunities by strengthening the agribusiness environment	Agri-input dealers, trade associations (Chemonics)	Kosovo
Common Fund for Commodities (CFC) Rice	To improve understanding of the rice value chains in the Niger River Basin and identify areas of future action.	UEMOA, ECOWAS	Mali, Niger, Nigeria
Cereal Production Information and Decision Support Systems (CPIDS)	To reduce farmer poverty through increased income, greater food availability, and reduced risks by improving agricultural planning and decision making	Farmers, policymakers, NARS	Morocco, Syria

Project Portfolio
(continued)

Project	Objective	Collaborators	Location
Combating Soil Fertility Decline to Implement Smallholder Agricultural Intensification (CSD-ISFM)	To improve the livelihoods of smallholder farmers by promoting a holistic natural resource management approach to agricultural intensification	TSBF-CIAT, NARES, NGOs, credit sources, farmer organizations	Sub-Saharan Africa, West Africa
Desert Margins Project (DMP)	To mitigate the effect of drought and combat desertification in Sub-Saharan Africa	NARES, NGOs decision makers, ICRISAT	Sahelian countries
East and Central Africa Maize and Wheat Network Project	To evaluate maize varieties, enhance soil fertility, conserve soil moisture, and control Striga	NARS scientists (CIMMYT)	Ethiopia
Food for Agricultural Revitalization and Market Systems (FARMS)	To introduce technologies and nutrient management practices to improve crop production for staple crops such as wheat and maize	Afghanistan's Ministry of Agriculture, Irrigation, and Livestock	Afghanistan
Food for Progress Program (FFP)	To provide technical assistance and market development support to agribusiness enterprises engaged in feed milling, meat, dairy, and egg production and to establish an agribusiness credit guarantee fund	Agri-input dealers ABMC and banks	Albania
Improvement of Competitiveness of the Cotton Sector in Benin	To strengthen the capacities of village-level producer groups, reduce rural poverty, and increase sustainability of cotton production and natural resource management	Farmer groups	Benin
Multi-stakeholder Approach to Linking Technical Options, Policy, and Market Access for Improved Land Productivity	To increase agricultural productivity, reduce poverty, and contribute to sustainable use and conservation of natural resources	FARA	Guinea
Kyrgyz Agro-Input Enterprise Development Project (KAED)	To support the development of agri-input dealers and increase agricultural production through the use of improved technologies	Agri-input dealers, decision makers	Kyrgyz Republic
Mali Agricultural Production Initiative (MAPI/PRODEPAM)	To strengthen animal production and irrigated crop subsectors	Farmers, agri-input dealers (CLUSA)	Mali
Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites (MARKETS)	To increase agricultural productivity, enhance value-added processing, and increase commercialization through private sector-led and market-driven growth and development	Producers, importers and wholesale/retail agri-input dealers, farmers (Chemonics)	Nigeria
Marketing Inputs Regionally (MIR)	To strengthen the private sector and create a regional market in West Africa	UEMOA, ECOWAS, private input importers and dealers, Sector Ministries	Burkina Faso, Benin, Ghana, Mali, Nigeria, Togo

Project Portfolio
(continued)

Project	Objective	Collaborators	Location
Strengthening Networks of Regional Market Information Systems and Traders' Organizations in West Africa (MISTOWA)	To improve the collection and dissemination of market information and strengthen trader organization networks	Several West African regional organizations, Agriterra, Geekcorps	West Africa
Local Development Support Project for the Provinces of Comoé Léraba, and Kénédougou (PADL/CLK)	To reduce rural poverty by improving soil fertility and facilitating agribusiness clusters and commodity chain development	African Development Bank	Burkina Faso
Decentralized and Participatory Rural Development Project in the Provinces of Bazega and Kadiogo (PDRDP/BK)	To reduce rural poverty by improving soil fertility and increasing farmers' incomes	Farmer organizations, Ministry of Agriculture	Burkina Faso
ISFM Technical Assistance—Projet de Developpement Rural du Sud-Ouest (PDRSO)	To introduce integrated soil fertility management options in large investment projects	NARS, national NGOs	Burkina Faso
Romania Agribusiness Development Program (RADP)	To develop competitive agribusiness clusters and promote policy reform to increase agribusiness prosperity	Agri-input dealers (Chemonics)	Romania
Strategic Alliance for Agricultural Development in Africa (SAADA)	To develop, with the Dutch Goverment, competitive agricultural systems and viable agri-enterprises based on sustainable intensification of agricultural production, with a special focus on women and trade capacity building	AISSA Network, producer organizations	Sub-Saharan Africa
Southeast Climate Consortium Project	To develop a climate information and decision support system for the Southeastern U.S.A. that will contribute to an improved quality of life, increased profitability, decreased economic risks, and more ecologically sustainable management of agriculture, forestry, and water resources.	Florida State University, University of Florida, University of Miami, University of Georgia, Auburn University, University of Alabama-Huntsville	U.S.A.
Strengthening Trade at the Regional Level (STAR)	To promote agricultural growth through improved regional trade in inputs	COMESA	Eastern and southern Africa
Technical Backstopping of African Development Bank Investment Projects	To facilitate sustainable agricultural intensification, with a special focus on integrated soil fertility management	Ministries, farmers	Benin, Burkina Faso

Project Portfolio
(continued)

Project	Objective	Collaborators	Location
West Africa Cotton Improvement Program (WACIP)	To improve food security and lessen poverty for cotton farmers and their families in West Africa	Abt Associates, Aid to Artisans, Auburn University, Michigan State University, Tuskegee University	Benin, Burkina Faso, Chad, and Mali
Farmers for the Future in West Africa (WAFF)	To develop and introduce integrated soil fertility management packages aimed at intensifying small farm production	Farmers, NGOs	West Africa
From Thousands to Millions (1000s+)	To increase agricultural productivity and economic growth for 1 million farm families (10 million people) in West Africa as the main component of the Strategic Alliance for Agricultural Development in Africa (SAADA)	Agribusiness clusters, producer organizations, business support services, farmers, AgriCord	Burkina Faso, Ghana, Mali, Niger, Nigeria, Togo

Publications, 2006/07

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FSR-5 *North America Fertilizer Capacity*.

FSR-7 *Worldwide Urea Capacity Listing by Plant*.

FSR-8 *Worldwide DAP and MAP Capacity Listing by Plant.*

FSR-9 *Worldwide Potash Capacity Listing by Plant.*

FSR-10 *Worldwide Ammonia Capacity Listing by Plant.*

FSR-14 *Worldwide Ammonium Nitrate and Calcium Ammonium Nitrate Capacity Listing by Plant*.

FSR-16 *Global and Regional Data on Fertilizer Production and Consumption, 1961/62–2004/05*.

FSR-18 *Western Europe Fertilizer Situation.*

FSR-22 *Worldwide NPK Capacity Listing by Plant.*

FSR-23 *Worldwide Phosphoric Acid Capacity Listing by Plant.*

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(continued)

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Financial Highlights

The following is a summary of financial information for the year ended December 31, 2006. The full financial statements and the independent auditors' reports are available from IFDC upon request.

Balance Sheet

For the year ended December 31, 2006

	US $'000
Assets:	
Cash and cash equivalents	5,052
Restricted cash	7,262
Contributions receivable	909
Contracts receivable, net of allowance for doubtful accounts	1,223
Other receivables	452
Supplies inventory	151
Prepaid expenses	121
Total current assets	15,170
Buildings and equipment, net	350
Contributions receivable, noncurrent	
Total assets	15,520
Liability and Net Assets:	
Accounts payable	285
Accrued annual and sick leave	707
Deferred revenue	4,936
Other liabilities	7,289
Total current liabilities	13,217
Unrestricted net assets	2,295
Permanently restricted net assets	8
Total liabilities and net assets	15,520

Statement of Revenue and Expenses

For the year ended December 31, 2006

	US $'000
Revenue and Support:	
Agriterra	405
Chemonics International Inc.	844
Department for International Development	2,626
Dutch Embassy of Rwanda	272
Int. Crop Research Institute for the Semi-Arid Tropics (ICRISAT)	342
International Fertilizer Industry Association	286
International Fund for Agricultural Development	977
National Cooperative Business Association	232
Netherlands Minister for Development Cooperation (DGIS)	4,542
The Fertilizer Institute	137
The Rockefeller Foundation	403
Shell Canada Energy	697
U.S. Agency for International Development	18,669
U.S. Department of Agriculture	1,105
Winrock International	294
Training Programs	81
Others	1,609
Total revenues and support	33,521
Expenses:	
Field programs	9,816
Research and market development	20,576
Support activities	3,358
Total expenses	33,750
Decrease in unrestricted net assets	**(229)**

Revenue Sources

African Development Bank (AfDB)
AGROGEN, S.A. de C.V.
Agriterra
Applied Research Associates, Inc. (ARA)
Arab Fertilizer Association (AFA)
Bill & Melinda Gates Foundation
Bureau of Alcohol, Tobacco and Firearms
International Maize and Wheat Improvement Center (CIMMYT)
Chemonics International Inc.
Common Fund for Commodities
Department for International Development (DFID)
Dutch Foundation for Scientific Research in the Tropics (WOTRO)
El Dorado Chemical Company
Fidelity Bank (Nigeria)
Forum for Agricultural Research in Africa (FARA) – Sub-Sahara Africa Challenge Program
Georgia Pacific Resins Inc.
Global Environment Facility
Government of Burkina Faso
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
International Fertilizer Industry Association (IFA)
International Food Policy Research Institute
International Fund for Agricultural Development (IFAD)
National Cooperative Business Association (NCBA)
Nagarjuna Fertilizers and Chemicals Limited
Netherlands Ministry for Development Cooperation (DGIS)
Notore Chemical Industries
Oceanic Bank International PLC
PAGEFCOM – Government of Benin
Petroquimica de Venezuela S.A. (PEQUIVEN)
Rockefeller Foundation
Royal Netherlands Embassies in Rwanda and Benin
Sasakawa Global 2000
Saudi Arabian Mining Company
Shell Canada Energy
Swiss Cooperation Bureau (Burkina Faso)
The Fertilizer Institute (TFI)
United Bank for Africa PLC
United States Agency for International Development (USAID)
United States Department of Agriculture (USDA)
Unity Envirotech
University of Georgia
U.S. Borax, Inc.
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Winrock International

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(as of June 30, 2007)

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1. Left during 2006/07.
2. Retired during 2006/07.
3. Short-term staff, 2006/07.
4. On extended leave.
5. Deceased, 2006/07.
6. Student Attachment.

Global Offices and Staff (continued)
(as of June 30, 2007)

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5. Deceased, 2006/07.
6. Student Attachment.

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(as of June 30, 2007)

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IFDC Profile

What Is IFDC?

- An international center for soil fertility and agricultural development.
- A nonprofit, public international organization—combining state-of-the-art research and development to address global issues such as:
  - → Alleviation of global poverty
  - → Promotion of economic development
  - → Reduction of hunger
  - → Protection of the environment
- Collaborative programs and partnerships that enrich and sustain lives and livelihoods of poor people globally.
- Unique research capabilities and market development and training skills, which enable IFDC to develop incentive-based programs customized for local needs and problems.

Mission

To increase agricultural productivity in a sustainable manner through the development and transfer of effective and environmentally sound plant nutrient technology and agricultural marketing expertise.

Staff and Facilities

- International, multidisciplinary staff and physical facilities uniquely suited for conducting a broad range of research and development activities in sustainable food systems.
- Scientists and professionals that provide a unique mix of applied research, technology transfer, and market development capabilities.
- Activities conducted in collaboration with national and international organizations.
- Access to a wide variety of facilities worldwide.
- Specialized research laboratories, greenhouses, growth chambers, specialized instruments essential for laboratory research, bench-scale and pilot-plant units, training facilities, technical library, scientific information services, and a word processing center.

Capabilities

- A problem-solving, results-oriented organization with a 30+-year track record of providing a broad range of services in technical assistance, research, and training to more than 130 countries.
- Broad range of projects:
  - → Engineering and technology
  - → Management information systems
  - → Nutrient management
  - → Policy reform
  - → Market development
- Practical, unbiased solutions to challenges confronting decision makers of the world's public and private agricultural sectors in the most cost-effective and efficient manner.

Partners, Funding, and Locations

Partners

- Collaborative work with IARCs, numerous national organizations, private sector, and NGOs.

- Partners and clients:
  → Bilateral and multilateral development agencies
  → Host-government institutions
  → Private enterprises

Funding

- Funding sources include bilateral and multilateral development agencies, private enterprises, foundations, and other organizations. Additional revenue is generated from long-term, donor-funded, market development projects involving transfer of policy and technology improvements in emerging economies.

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A listing of our global offices begins on page 81.

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