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Food, Forestry, Fiber, or *Fuel*: Possible Dystopia or Potential Utopia

Using arable land to produce fuel instead of food could be a dystopia, said Dr. Rudy Rabbinge in a lecture concluding IFDC's Staff Retreat and Board of Directors Meeting. Rabbinge is Professor of Sustainable Development and Food Security at Wageningen University in the Netherlands and Chair of the Science Council of the Consultative Group on International Agricultural Research (CGIAR). He formerly served as Deputy Chairman of the IFDC Board.

"With the convergence of energy and agriculture, the highest value use of [starch, sugar, and oilseed] crops is

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The IFDC Staff Retreat and annual Board of Directors Meeting were held at IFDC Headquarters September 24-28, 2007. The main purpose of the retreat was to develop a new 5-year strategic plan. IFDC participants and outside observers emphasized the importance of IFDC's core competency: fertilizer research. The retreat followed an online discussion of external factors and analyses of strengths, weaknesses, opportunities, and threats. The new strategic plan is to be finalized by January 2008.

Bangladesh Will Dramatically Expand Technology That Doubles Efficiency of Urea Fertilizer Use

The Government of Bangladesh has announced that it will expand urea deep placement (UDP)—a technology that doubles the efficiency of urea fertilizer use—to almost 1 million hectares (ha) of rice land, reaching about 1.6 million farm families, in the coming boro or dry season.

UDP is the insertion of large urea briquettes into the rice root zone after transplanting. UDP cuts nitrogen losses significantly. Farmers who use UDP can increase yields by 25% while using less than 50% as much urea as before.

The effectiveness of UDP technology in Bangladesh was proven through research funded by the International Fund for

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Food, Fuel, Forestry or Feed

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now as biofuel feedstock, not as food or livestock feed," Rabbinge said. "The market has been created."

The public and private sectors have responded to rising petroleum prices by expanding the production of corn for biofuels, which has already caused an increase in food prices. The poor rely on low food prices because they import most of their food. High food costs will also increase the price of inputs.

"In the next 10 to 20 years, at least a fourth of the corn production in the United States will probably be going into the tank, not into mouths," Rabbinge said. "We can potentially feed the world, but can we also feed our cars?"

The biofuel required to power 7 million cars is equivalent to how much is needed to feed about 100 million mouths, Rabbinge said.

Conversely, Rabbinge said that a solar-based economy could be a utopia. "Solar energy is the ultimate solution," Rabbinge said. "Biomass may play a minor role in the transition period to solar energy."

Most light from the sun is not being used. The annual efficiency of energy fixation is 0.5%–1.5%. If light could be better intercepted and absorbed, annual energy efficiency would be 15%–25%.

"We can produce energy using solar cells," Rabbinge said. "World food security can be attained ultimately."

Rabbinge is regarded as an important opinion leader in matters of agriculture, environment, and international development.

Bangladesh Will Dramatically Expand Technology That Doubles Efficiency of Urea Fertilizer Use

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Agricultural Development (IFAD) and implemented with IFDC assistance. The Ministry of Agriculture of Bangladesh has requested that IFDC help implement the expanded project.

"Millions of rice farmers in Asia depend on urea fertilizer to meet the nitrogen needs of high-yielding rice varieties," says Dr. Amit Roy, IFDC CEO. Most farmers, including those in Bangladesh, Vietnam, and Cambodia, broadcast urea into the floodwater.

But broadcasting is a highly inefficient application method because most of the nitrogen is lost to the air and water. Only one bag of urea in three is used by the plants.

Using UDP, Bangladesh's dry season rice production is expected to increase by 548,000 tons, according to the Department of Agricultural Extension (DAE).

"Yields were comparatively good where urea was deep placed," says Dr. C.S. Karim, Advisor, Bangladesh Ministry of Agriculture. "If we can save at least 20% of the urea by adopting UDP technology, we can supply a large part of the country's demand from our own factories."

UDP technology improves nitrogen use efficiency by keeping most of the urea nitrogen in the soil close to the rice roots and out of the floodwater, where it is more susceptible to loss as gaseous compounds or runoff.

The technology not only improves farmer income, but creates employment because of the need for the briquettes. Ten Bangladeshi manufacturers have produced and sold more than

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International Workshop on Crop Simulation Models Helps Farmers Improve Decision Making

"Farmers need to know how to best manage what little fertilizer they can afford to optimize crop yields," says Dr. Jean Sogbedji, System Modeler and Soil Scientist for the IFDC Africa Division. "Decision support tools [DSTs] can help bridge the gap between yields on farms and on research stations."

IFDC held an international training workshop on Applications of Decision Support Tools for Fertilizer Recommendations from July 24 to August 3, 2007, in Sogakope, Ghana. The 14 participants included senior researchers and technicians from Benin, Burkina Faso, Ghana, Nigeria, and Togo.

"Rainfed agriculture has high production risks that often result in low agricultural productivity," says Dr. Upendra Singh, IFDC Senior Systems Modeler. "Effective nutrient management requires dynamic and site-specific DSTs that capture the various factors involved, including input supplying capacities, management practices, and production objectives. A DST gives users quick and reliable answers regarding the types of varieties to grow, planting dates, timing and rate of fertilizer applications, and crop rotation alternatives."

The workshop focused on the combined use of geographic information systems (GIS) and crop modeling tools such as the Decision-Support System for Agrotechnology Transfer (DSSAT).

"DSSAT is a software package that integrates the dynamics and interactions among soils, crops, weather, and management options," Sogbedji says. "Computer-based simulations are more cost and time effective than experiments, which can take years of effort and investment. The simulations help farmers determine yield targets for specific sites."

Louis Darko, Senior Manager of SAMBUS Company Limited and Authorized GIS Instructor for West Africa, says, "GIS software integrates data relating to the geographic location of a place and its attributes. It helps promote efficient fertilizer use to boost food security and improve economies." SAMBUS is an official distributor of a range of software products developed by the Environmental System Research Institute (ESRI) in California. ESRI donated a software pack worth $1,500 to each workshop participant.

"ESRI is particularly interested in gaining user feedback on applications of the software under different conditions," Darko says. "We'll use this information to improve our products and services."

Yazidhi Bamutaze of Makarere University in Uganda says, "Linking DSSAT and GIS is particularly interesting. I use GIS a lot for the research component of the university's agriculture department.

"With GIS, one can visualize data and obtain maps. This is a good value addition. The principle is the same for all DSTs. The difference is in the outputs that you get. For instance, if you input data in the GIS component, the results will come out in the form of combined layouts or maps."

Pare Tahibou of the computer cartography section of the National Office for Soil Research (BUNASOLS) in Burkina Faso says, "We're developing a database on soils and agricultural potentials for each climatic zone at the national level. DSTs will help us create agricultural potential maps that will serve as reference documents for decision makers."

Dr. Zacharie Sedga, of the Institute for Environment and Agricultural Research (INERA) in Burkina Faso, works in Bagre near the Togo border. "This region has the greatest potential for irrigated rice in Burkina Faso," Sedga says. "If properly developed with irrigation, its 30,000 hectares could meet half of our rice needs."

Youl Sansan, who works with IFDC on a natural resource management project in Ougadougou, says, "When I go back to Burkina Faso, I can use DSSAT to compare simulated yield targets with farmers' actual yields and make recommendations to get closer to the production potential of different regions."

Dr. Attanda Mouinou Igue of the National Institute of Agricultural Research of Benin (INRAB) says, "DSTs are extremely important not only for farmers and researchers but also for national policymakers. Governments need to have soil fertility maps to make sound decisions, based on data that reflect the realities of our soils.

"This new initiative is a decisive step toward precision agriculture," Igue says. "An African proverb is, 'You must lift your jar to your knees before someone can help you lift it up to your head.' Today, we have decided to start something on our own before asking donors to support our effort."

1000s+ and Partners Build Potato Cluster in Sikasso, Mali

Potato producers in the Sikasso region of southwestern Mali are proud of their bountiful harvest. "This was a good year!" says Yaya Traore, President of the Regional Union of Potato Traders and Exporters of Sikasso (URCEP).

"Producing more is one part of the challenge. But selling at the right time and best price lets producers really take advantage of their increased production," says Brehima Dagnoko, Program Manager of the Group for Research and Training in Arboriculture and Agriculture (GREFA).

GREFA is a partner in the IFDC project From Thousands to Millions, or 1000s+, which helps Sikasso producers grow more potatoes and sell them for better prices. 1000s+ uses the Competitive Agricultural Systems and Enterprises (CASE) approach, which helps farmers access input and output markets.

"Potato production accounts for 80% of the region's economy," Dagnoko says. "We're developing a competitive value chain from production to marketing."

The production side. "The lack of potato-specific fertilizers is a crucial issue," Dagnoko says. "Farmers often fertilize their crops with whatever falls into their hands. They even use fertilizers that are blended specifically for cotton, which may contain micronutrients that harm potatoes.

"Three years ago, Yara, a global fertilizer company, introduced potato-specific formulas, but farmers were reluctant to use them," Dagnoko says. "We set up demonstration plots and used participatory extension programs to promote adoption of these fertilizers through PRODEPAM.[1] As a result, local farmers used 2,000 tons of potato fertilizers during the last cropping season.

"We promote the use of appropriate fertilizers and quality seeds by facilitating linkages between producers and input suppliers," Dagnoko says. "But access to credit is the most limiting factor."

Banks require guarantees before granting loans for agricultural activities that are considered high risk. "GREFA's assistance guarantees that farmers will use optimal technologies. That helps ensure that they will pay back bank loans," Dagnoko says. "Another guarantee is the joint surety the group provides."

Siaka Koulibaly, URCEP Executive Secretary, says, "URCEP members now grow Claustar, a 4-month potato variety that has many advantages. Claustar yields well and doesn't lose weight during storage. That's exactly what we need: a variety that can wait for better times. At harvest in March, potatoes may sell for about CFA 250 [$0.53] per kilo; in August, prices can reach CFA 400 [$0.84]."

The marketing side. "Each cooperative targets a particular market using its own network. We're helping expand and consolidate these markets," Dagnoko says.

"Consolidating the markets means organizing the collection and destination markets. We have helped set up a formal structure with a person in charge of each aspect of the potato value chain. This helps us structure demand, then adjust supply to meet demand."

Djibril Sanogo, secretary to one of the six grassroots cooperatives affiliated with URCEP, is a specialist in the markets of Ouagadougou, the capital of Burkina Faso. "I collect information on regional markets that serve as a basis for setting prices," he says.

Sanogo shows how the potato market is expanding: "Togo used to import all its potatoes from the Netherlands. Last year, we organized a visit for Mrs. Sampè, a Togolese wholesaler who controls the importation of potatoes in Togo, to go to Mali and judge the quality of our potatoes. She took 80 tons for a test. If it's conclusive, she plans to buy half of her potato supply from Mali. We also sold 62 tons in Ghana, through the help of the Ghana Agricultural Producers and Traders Organization, supported by the MISTOWA[2] project."

Dagnoko adds, "GREFA also helps spread post-harvest technologies that focus on market specifications to meet required standards, and on effective packaging to limit losses.

"Road harassment, or having to pay bribes, is a more complicated problem," he says. "A load from Sikasso to Ougadougou in Burkina Faso would be 42 km and take 2 days. Our interventions have brought the delay down to 4 hours.

"Road harassment is also costly. From Sikasso to Zegoua in the Ivory Coast, a trader may have to pay about CFA 35 [$0.74]/kg in bribes. We work to make traders professionals who are well informed on market regulations set forth by the UEMOA[3] and ECOWAS.[4]"

GREFA sometimes mediates among market players. "Some traders were recently negotiating with clients in Ouagadougou for a price of CFA 300 [$0.63]/kg," Dagnoko recalls. "When they brought their products to the market they realized that the clients were selling at CFA 450 [$0.95]/kg before their very eyes. The clients were making a profit of CFA 150 [$0.32]/kg while they themselves earned only CFA

[1]Project for Developing Agricultural Production in Mali, a USAID/IFDC endeavor.

[2]Market Information Systems and Traders' Organizations in West Africa.

[3]West African Economic and Monetary Union.

[4]Economic Community of West African States.

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1000s+ and Partners Build Potato Cluster

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25 [$0.05]. Our traders were upset and asked us to intervene. We made both parties aware of the requirements and advantages of fair economic partnerships. The sale was eventually concluded at CFA 325 [$0.68]/kg and our traders earned CFA 50 [$0.10]/kg instead of CFA 25."

Sanogo says, "The missing link in the value chain is an agribusiness information point for potato, like the cereal point that MISTOWA helped install in Sikasso. That would let us use the Internet to search for markets."

Dr. Vo-Tong Xuan, President and Agronomy Professor of Angiang University, Vietnam, was named to the IFDC Board of Directors in October. He is widely recognized for his expertise in rice production in Vietnam's southern Mekong Delta. Dr. Xuan was Vice Rector of the University of Cantho from 1982 to 1999. He serves on the Policy Advisory Council of the Australian Centre for International Agricultural Research and on the Boards of the Rockefeller Foundation and the Asian Institute of Management. He is a Fellow of the Australian Academy of Science and Technology. He has served on the IRRI and CIP Boards. Dr. Xuan has been a consultant for IRRI, IFAD, FAO, and SIDA. For his contributions to agricultural science and production, Dr. Xuan has received Canada's Certificate of Recognition, France's "Chevalier de l'Ordre du Merite Agricole Medal," Japan's Nikkei Asia Prize for Regional Growth, Philippines' Ramon Magsaysay Award, and Australia's 2005 ASTD Derek Tribe Award. He holds a Ph.D. in crop science from Kyushu University, Japan, and M.S. and B.S. degrees from the University of the Philippines.

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2,000 briquette-making machines. The new UDP program will include the manufacture and establishment of some 300 briquetting machines to manufacture 2.7-gram briquettes.

UDP technology was introduced in Bangladesh in the late 1990s; by 2006 more than half a million farmers had adopted UDP. Average paddy yields had increased 20% to 25%, and income from paddy sales increased by 10%, while urea expenditures decreased 32%. Farmers who use UDP can reduce urea use by 78 to 150 kg/ha and increase paddy yields by 900 to 1,100 kg/ha. The net return to farmers of using UDP versus broadcasting urea averages $188/ha.

"I'm delighted that the Government of Bangladesh endorses the merit of this technology and has asked IFDC to be a part of the project," Roy says.

Bangladesh's success with UDP has become a model for other rice-growing countries, Roy says. IFDC has also introduced UDP in Cambodia, Vietnam, Nepal, Nigeria, Mali, Togo, and Malawi.

The initial development of the UDP technology was funded by the U.S. Agency for International Development (USAID). IFAD funded expansion of the technology.

Dr. C. S. Karim, Advisor of Agriculture, during a field visit to Tangail District on May 13, 2007. Dr. Karim observed higher paddy yields in UDP plots compared with broadcast urea plots. An interview with Dr. Karim was telecast on the national news of a popular Bangladeshi TV channel.

KAED Brings Private Enterprises To Kyrgyzstan

Hundreds of farmers attended the opening of the first retail farm store in Kyrgyzstan's Talas Oblast (province) on December 20, 2007. IFDC's Kyrgyz Agro-Input Market Development (KAED) project has helped open 30 such retail farm stores in the country. Ten stores opened in 2007 serving an additional 22,000 farmers.

KAED's purpose is to develop previously nonexistent markets for legal fertilizer imports and build networks of dealers to improve farmer access to agro-inputs and improved crop production technologies. KAED has helped farmers increase productivity by about 50% in a difficult environment characterized by small farms and outdated Soviet systems and policies.

"Our mindset is changing," said Bayir Hakjim Mamil, a farmer and speaker at the opening ceremony. "Thanks to KAED, we realize that we can't produce just what *we* want—but what the *market* wants."

KAED has helped increase agricultural output by about $80 million in Kyrgyzstan. Since 2001 KAED has worked to expand agro-input supply networks and markets, foster a private sector extension service, and establish a network of agro-input associations. KAED also helped make the Association of Agribusinessmen of Kyrgyzstan (AAK) financially sustainable, with 196 dues-paying members.

In 2007 mineral fertilizer sales increased by 58% in Kyrgyzstan. Despite higher world prices, 87,000 tons of fertilizer were sold versus 55,000 tons in 2006.

"Understanding free market rules after 80 years of Soviet rule was a big challenge for my generation," Mamil said. "The main goal for collective farms was only to produce. We understand how difficult it is for KAED to teach old dogs new tricks—we're learning every day."

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

Cutting the ribbon to open the first retail farm store in Kyrgyzstan's Talas Oblast are (left to right) Osmanliev Anarbek Dildebekovitch, Governor of the Manas Region of Talas Oblast; Kodjaliev Saparbek Allatevitch, Head of the Manas Region Council; and Hiqmet Demiri, KAED Chief of Party.

The first day of work for store owner Marat Sadirov and his wife. Note the AAK caps and aprons.

IFDC 2008 Training Programs

Strengthening Regional Trade in Agricultural Inputs in Africa: Issues and Options
Date – April 7-11, 2008
Location – Lusaka, Zambia

Overview of Fertilizer Production
Date – July 14-23, 2008
Location – Muscle Shoals, AL and Tampa/Orlando, FL, U.S.A.

Agro-Input Dealer Development in Africa
Date – August 11-15, 2008
Location - Arusha, Tanzania

Application of Decision Support Tools for Fertilizer Recommendations and ISFM
Date – Oct. 6-17, 2008
Location – Accra, Ghana

Fertilizer Granulation and Micronutrients
Date – November 3-7, 2008
Location – Bangkok, Thailand

IFDC Staff Members Receive Awards

Chairman's Outstanding Internationally Recruited Staff Award

The 2007 winner of this award is **Dr. Arno Maatman**, **Chief of Party for SAADA and IFDC's Representative in Mali**. Arno, nominated by his colleagues on the SAADA and WACIP projects, has demonstrated outstanding service and dedication to IFDC's purposes, said Dr. Amit Roy, IFDC CEO. An economist and mathematician, Arno is an expert in rural development, using participatory approaches based on solid economic and market theories. He and his team developed the CASE approach, which is a cornerstone of IFDC work in Africa. The CASE approach has allowed IFDC to work with thousands of producers, doubled production, and increased family income by 30% to 50%. Known as a team player, Arno has the ability to inspire his colleagues to work hard to achieve IFDC's goals. He is the first staff to introduce the gender approach in IFDC activities in Africa and works to achieve gender balance in his own team. He is also an expert on HIV/AIDS and its relationship to agricultural development. It is often said that "linking farmers to markets" is the key to agricultural development and through Arno's approach and leadership, IFDC has made that happen. His work has had a measurable impact on the lives of African farmers.

President's Outstanding Outposted Staff Award

Mofizul Islam, Senior Agriculture Specialist in Bangladesh, is the 2007 winner. Unfortunately, Mofiz was not able to come to IFDC to accept the award because of visa difficulties. Ishrat Jahan, Deputy Chief of Party and Resident Representative for the IFDC Asia Division in Bangladesh, nominated Mofiz and accepted the award on his behalf. Mofiz has been with IFDC for the past 20 years and has been an integral part of IFDC work in Bangladesh. He has managed hundreds of training programs under the Fertilizer Distribution Improvement II project. He pioneered the introduction of hybrid maize cultivation practices in Bangladesh. Under ANMAT I and II, Mofiz took the lead in widescale introduction of UDP technology where it is popularly known as "IFDC technology." He worked hard to get the word out about UDP, using television and other media, and convinced the Minister of Agriculture that this technology was right for Bangladesh. He has excellent "people skills" and works in the field with farmers, teaching them through practical demonstration. He strongly believes in IFDC's mission, which is to improve agricultural practices and help farmers.

President's Outstanding Headquarters Staff Member Award

The 2007 winner of the President's Outstanding Headquarters Staff Member Award is **Donna Venable, IFDC's Graphics Illustrator**. Donna has been at headquarters for 30 years and is known for her strong work ethic, her creative graphic work for IFDC publications, and her dedication to excellence. She has high standards and her work is excellent. She was nominated by her co-workers who know that Donna is always willing to lend a hand and help meet a pressing deadline. She has made many contributions to IFDC programs through published documents. She turns out beautiful work in the Corporate Report, the President's Report, quarterly newsletters, brochures, calendars, training materials, and other publications. She is one of the people "behind the scenes" at headquarters who does much to focus attention on IFDC's work and mission worldwide.

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