

Report

an update on
the work & progress at the
International Fertilizer Development Center

Internationally Known Agriculturalist Selected to Chair IFDC's Board of Directors

During its November meeting, the IFDC Board of Directors selected an internationally known agriculturalist as its chairman. The new chairman is Dr. E. T. (Travis) York, chancellor emeritus of Florida's state university system, a distinguished service professor emeritus at the University of Florida's Institute of Food and Agricultural Sciences (which he established), and a world renown advisor on international agricultural development. Dr. York succeeds Dr. W. David Hopper, who has served on IFDC's Board of Directors since 1980 and as its Chairman since 1989.

York's illustrious career in agriculture has featured more than 100 appointments, assignments, and other professional activities, conducted both domestically and abroad in more than 80 countries. Some of these appointments have been made by Presidents Kennedy, Johnson, Nixon, Ford, Carter and Reagan. He

has served as a consultant for the U.S. State Department, U.S. Agency for International Development, White House, United Nations, foreign governments, and many universities in the fields of education, agriculture, and economic development.

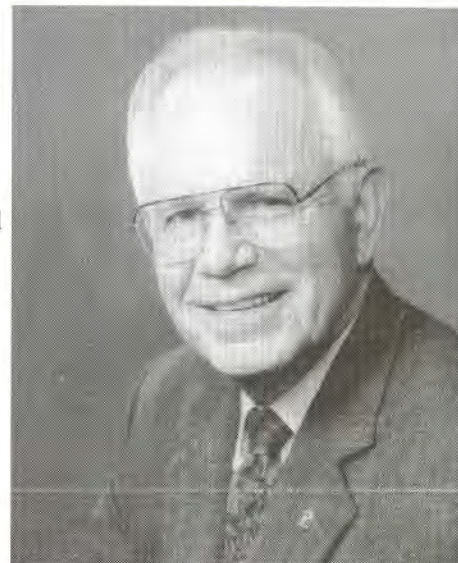
Approximately 75 awards, special recognitions, and honors have been bestowed on York. One of his latest honors was being named "Great Floridian," an honor bestowed on only 11 other Floridians credited with making notable contributions to shape the state of Florida as it is known today. Six awards or programs have been established in his name by the University of Florida and Auburn University. York has received Honorary Doctor of Science degrees from Auburn University, Ohio State University, and the University of Florida.

The author of more than 100 technical papers and books, York has lectured at more than 40 universities throughout the United

States and around the world. He is listed in *Who's Who in America*, *Who's Who in American Education*, *American Men of Science*, *Leaders in American Science*, the *Blue Book*, *Who's Who in the World*, *Who's Who in Society*, and *Notable Americans*.

IFDC's new Board Chairman is a fellow in the American Association for the Advancement of Science, American Society of Agronomy, Soil Science Society of America, and Crop Science Society of America.

The recipient of both a B.S. degree in agricultural sciences and an M.S. degree in soil science from Auburn University and a Ph.D. degree in soil science from Cornell University, York joined the University of Florida in 1963, where he served as vice president for agricultural affairs, executive vice president and interim president. In 1975 he became chancellor of



**Dr. E. Travis York
Chairman
IFDC Board of Directors**

Florida's state university system for 5 years, retiring early to pursue his long-term interest in global hunger and international agricultural development.

While serving as chancellor of Florida's state university system, York organized and led efforts to improve the quality of university programs; these achievements included acquiring special funding for university "Centers of

(Continued on page 2)

IFDC Report

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IFDC is a public, international, non-profit organization, governed by an international board of directors with representation from developed and developing countries. The Center is supported by various bilateral and multilateral aid agencies, private foundations, and national governments. IFDC focuses on increasing and sustaining food and agricultural productivity in developing countries through the development and transfer of effective and environmentally sound plant nutrient technology and agribusiness expertise.

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(Continued from page 1)

Excellence" and "Eminent Scholars" programs and greatly enhancing library resources and other programs to improve quality. These initiatives were made possible by the largest increases in state appropriations for the university system in history at that time and have since added hundreds of millions of dollars to state university systems appropriations.

As the developer of the program SHARE (Special Help for Agricultural Research and Education), York has helped raise more than US \$75 million in private funds to support the programs of Florida's Institute of Food and Agricultural Sciences. He initiated

the DARE program (Developing Agricultural Resources Effectively), a comprehensive strategic planning and action program, which is widely credited with greatly accelerating the development of Florida agriculture's cash farm income by more than eightfold in 30 years.

Upon being selected to chair IFDC's Board of Directors, York says that he envisions IFDC's future as being characterized by "tremendous opportunities to contribute significantly to agricultural development in the developing world, in particular, and global food production, in general, through the use of improved technology, including chemical fertilizers, in an environmentally responsible manner." 🌐

as President of the Soil Science Society of America and the American Society of Agronomy. Since 1980 he has served as Director of the Texas State Seed and Plant Board.

In 1995 he received the Agronomic Service Award from the American Society of Agronomy and in 1996, an Honorary Doctorate from the University of Agriculture in Nitra, Slovakia. Runge has been listed in *American Men of Science*, *Who's Who in the Midwest*, *First International Scholars Directory*, *Dictionary of International Biography*, *Who's Who in the South*, *Who's Who in Technology Today*, *Personalities of the South*, and *Who's Who in Science and Engineering*.

During his career, Runge has served on some 49 agricultural committees and has made numerous presentations at seminars and professional meetings. He has been involved in approximately 50 different research-related experiences, including work in some 12 foreign countries. He has received six research grants and has more than 100 publications to his credit.

From the University of Illinois Runge received B.S. and M.S. degrees in agricultural education and agronomy – soils, respectively. He received a Ph.D. degree in agronomy – soils from Iowa State University. 🌐

Noted Agronomist Named to IFDC Board of Directors

The newest member of the IFDC Board of Directors is Dr. Edward C. A. Runge, Professor and Head of the Department of Soil and Crop Sciences at Texas A & M University. His areas of specialty throughout his illustrious career have included administration, research on chemical systems important in soil development and soil-plant-climate interactions, teaching, and extension.

Prior to his appointment at Texas A & M, Runge served as professor and chairman of the

Department of Agronomy at the University of Missouri-Columbia. Earlier in his career he taught at Iowa State University, University of Illinois, and University College of Agriculture in New Zealand. For several years he served on the Board of Directors of the Mississippi Chemical Corporation.

IFDC's newest Board member has received some 28 honors and awards, including Fellow of the American Society of Agronomy and Soil Science Society of America. He has served

Albanian Policymakers Study U.S. Government System

"No previous experience with a foreign organization in Albania has enjoyed such a high level of cooperation as that between the Parliamentary Committee and IFDC," says Dr. Haxhi Aliko, Head of the Parliamentary Group of Albania's Social Democratic Party and Chief of the Permanent Parliamentary Commission for Agriculture and Food.

"We are conducting a tour of U.S. facilities to acquire experience and knowledge from other governmental agencies so that we will be better able to diversify our activities favoring Albanian agriculture. When we return to Albania we will use all of the information that we have garnered during this trip to draft a plan to further refine our policy reform efforts to enhance the development of our country's agriculture sector."

Aliko and five of his Albanian counterparts visited IFDC Headquarters and various other U.S. locations during November 16-23, 1997, to gain a firsthand understanding of U.S. agricultural and governmental systems.

Since the beginning of IFDC's Albanian project in 1991, reform of government policies and procedures has been crucial to the success of the effort. The most notable achievements in this area, involving collaboration with the Albanian Government, were liberalizing fertilizer policy, decreasing the customs tax on fertilizer

imports from 30% to 5%, and removing the 15% turnover tax on fertilizer. IFDC and the Albanian Fertilizer and Agribusiness Dealers Association (AFADA) have worked with many government agencies to implement these changes in policy that have benefited the agriculture sector.

The Albanian policymaker and his counterparts have a keen appreciation of the crucial role of policy reform in the further development of their country's agriculture sector. "IFDC has made an outstanding contribution to our country's future development by stimulating the development of policies that are favorable to the promotion of agricultural production. Because IFDC provided the necessary facts and arguments to support policy reform in Parliament, these changes have been realized through the Center's cooperation with the Parliamentary Committee and the Ministry of Agriculture and Food."

"The process (of privatizing the agriculture sector) is just beginning," says Aliko. "The architect (IFDC) of this process should stay to see the completion of the process. Albania will be detrimentally affected if this very promising work is interrupted." 🌐

With IFDC staff, members of Albania's Permanent Parliamentary Commission are pictured below (seated from left to right): Mr. Zyhdi Pepa, Deputy of Socialist Party of Tirana District; Dr. Amit H. Roy, IFDC President and Chief Executive Officer; Prof. Dr. Haxhi Aliko, Deputy of Social Democratic Party (SDP) of Lushnja District, Head of the Parliamentary Group of SDP and Chief of the Permanent Parliamentary Commission for Agriculture and Food; Mr. Curtis Brummitt, IFDC Agribusiness Specialist; Mr. Valentin Palaj, Deputy of Democratic Party of Shkodra District. Standing from left to right: Mr. Ibrahim Baçi, Deputy of Socialist Party, Vice Chairman of the Permanent Parliamentary Commission for Agriculture and Food; Mr. Ram S. Giroti, Director, IFDC Human Resource Development Unit; Mr. David Rutland, IFDC Senior Specialist - Fertilizer Technology; Ms. Marjeta Biba, Translator; Mr. Jorge R. Polo, Director, IFDC Outreach Division; Dr. Niko Faberi, Deputy of Socialist Party of Korça District; Mr. Ylli Bicoku, Agricultural Advisor to IFDC-Albania.



(Photo by Mike Thompson)

Nutrient Management Project Seeks to Enhance Welfare of Andean Farming Communities

In collaboration with the International Potato Center (CIP), Dr. Walter T. Bowen, IFDC Systems Modeling Scientist who is posted at CIP, is conducting a project oriented toward the development and dissemination of the kind of information needed to improve soil and nutrient management in the Andean ecoregion. The goal of this project is to improve the welfare of Andean farming communities by developing sustainable and economically viable

strategies for integrated nutrient management. Specific objectives include the following:

- Characterization of crop nutrient requirements for the primary Andean crops and cropping systems.
- Characterization of the principal organic and mineral fertilizer sources potentially available to Andean farmers, including the identification of bio-physical, economic,

(Continued on page 4)

(Continued from page 3)

- policy, marketing, credit, and social constraints to their effective use.
- Quantitative analysis of primary nutrient cycling processes in Andean farming systems, including the effect of soil erosion on nutrient depletion.
- Development of a dynamic, quantitative, computer-based decision support system to facilitate the identification and evaluation of alternative nutrient management strategies in diverse Andean environments.
- Development of human resource capability to make appropriate nutrient and soil management recommendations based on simple, practical, and reliable methods and effectively analyze production and natural resource management

strategies using a systems approach and computer simulation tools.

Thus far, the project has focused on assembling data that describe farming practices and the soil and climate resources of sites in Peru and Ecuador. Important links have been established with other ongoing projects at these sites, including the Development of Ecoregional Methodologies (DME) and soil management Collaborative Research Support Program (CRSP) projects, which were started in late 1996. Another important link was established with the Natural Resources Graduate School at the National University of Cajamarca (Peru). A strong emphasis has also been placed on the identification of simulation tools and ap-

proaches that might be useful for estimating changes in soil productivity.

"We have initiated a data base of field experiments describing potato yield response to nutrient management in Peru," says Bowen. "With over 350 studies cited thus far, the data base is constructed to identify who conducted the study, the location, the soil type, the potato cultivars used, and the yield results. This data base will also be useful for identifying suitable studies for model calibration and testing."

A farm-level survey of detailed crop management practices (including nutrient management) for potato-based systems was obtained from an earlier study conducted in Ecuador. These data were originally taken to quantify pesticide management but will now be analyzed to better define

nutrient management practices.

"A farm-level survey was initiated in Peru to document nutrient management practices," Bowen says. "A field study was begun in Peru to quantify the nitrogen benefits obtained from a traditional animal confinement system where the farmer rotates a portable animal corral across fields between cropping seasons so that the urine and feces of the animals are deposited directly on the field. Extensive frosts late in the year destroyed much of the crop; hence, a new sowing was rescheduled."

Construction of a data base that consists of soil profile characteristics, climate, and well-documented field experiments from various sites in the Andes was initiated. The primary purpose of this data base will be to calibrate and test various crop and soil models. 🌐



Modeling Resource Dynamics to Address Sustainability of a Rice-Wheat System

Rice followed by wheat is a dominant cropping sequence under a range of management regimes in South Asia with variable productivity. More than 1 billion people rely on this cropping system for a large share of their daily caloric intake, income, and employment. The importance of ex-ante analyses for quantifying sustainability of rice-wheat systems in terms of nutrient balance and productivity is immense. System simulation and modeling allow research-

ers and decision makers to predict and prescribe management strategies to improve outcomes. The effect of such management strategies is evaluated without conducting a new set of long-term experiments or waiting for productivity/yield decline to occur.

During the past 3-1/2 years an IFDC Senior Systems Modeling Scientist, Dr. Upendra Singh, conducted joint research with the International Rice Research Institute (IRRI) on this most important cropping

system in Bangladesh, India, and Nepal. The following national agricultural research systems were partners in the collaborative effort: Wheat Research Center in Bangladesh; Environment, Culture, Agriculture, Research, and Development Society (ECARDS), a nongovernmental organization in Nepal; and in India – G.B. Pant University of Agriculture and Technology, Narendra Deva University of Agriculture and Technology, and Indira Gandhi Agricultural University. The main focus of the research has been quantifying environmental and nutrient constraints through ongoing long-term rice-wheat experiments, new intensive

information-generating experiments, and simulation modeling. Training scientists from the region on rice-wheat modeling has been an important component of the collaboration.

"Both rice and wheat are exhaustive feeders, and the double cropping system is heavily depleting the soil of its nutrient content," Singh says. "A rice-wheat sequence that yields 7 tonnes/ha of rice and 3.9 tonnes/ha of wheat removes as much as 320 kg nitrogen, 30 kg phosphorus, and 335 kg/ha of potassium from the soil. Even with the recommended rate of fertilization in this system, a negative balance of the primary nutrients still exists, particularly for nitrogen

and potassium. The rice-wheat cropping effect on nutrient depletion has been observed in long-term experiments; hence, it is not surprising that most rice-wheat soils are low in nitrogen and organic matter."

The requirements of nitrogen, phosphorus, and potassium for high rice and wheat yields vary depending on soil and climatic conditions. Increasing the number of irrigation events significantly increased the grain yield of wheat in many experiments. In the rice-wheat rotation, increasing the nitrogen level up to 120 kg/ha increased the yield of rice; however, there was year-to-year variation in response of rice and wheat cultivars to nitrogen and moisture regimes.

"Water availability in the rainfed environment is entirely dependent upon monsoonal rainfall," Singh says. "Since monsoonal rainfall is erratic, rice-wheat farmers in a rainfed environment must accomplish the following: optimize rice transplanting to maximize rainwater availability during the rice season; capture and use residual soil moisture for wheat; and complete wheat grain filling before the onset of high temperatures. Farmers with irrigation sources may not have to wait for the late rain and thus can transplant rice earlier to make full use of high solar radiation early in the season. Subsequently, wheat planting must also be timely to take advantage of early-season low temperatures and avoid high temperatures late in the season. In low- and high-resource input conditions, both crops

must use the soil and added fertilizer efficiently to reach their yield potential under this system."

There is limited information on the use of nitrogen in rice-wheat cropping sequences; however, observation suggests that there is an interaction between

cultivars, nitrogen rates, and soil moisture regimes experienced during the growing seasons. Experiments were conducted at the Wheat Research Center in Bangladesh to understand the responses of rice and wheat cultivars to nitrogen and soil moisture regimes grown

on soils with relatively low-to-moderate fertility levels. The resulting data and results from a long-term experiment at G.B. Pant University of Agriculture and Technology were used to validate and apply existing crop simulation models to a rice-wheat sequence. 🌐

Developing a Competitive Fertilizer Marketing and Distribution Network in the Ukraine

Crucial to the building of stable economies in the countries of the former Soviet Union is the development of food security. Before these countries can be food secure, they must have access to adequate supplies of agricultural inputs, particularly fertilizer, at affordable prices. In addition, stable and sound policies must be implemented to

provide incentives to producers and consumers. A case in point is Ukraine, and a recent IFDC-conducted study is providing answers to Ukraine's dilemma.

During the past 5 years crop yields in Ukraine have declined as much as 50% or more. A significant amount of this production has been lost because of declining use of agricultural inputs,

for Foreign Affairs, Inc., an IFDC team, composed of a marketing specialist, policy economist, fertilizer production specialist, and a transportation/distribution specialist – recently visited the Ukraine to conduct a study of that country's fertilizer sector with reference to ownership, management, production, marketing, and distribution of different kinds of fertilizers and to outline activities that should be undertaken to develop a private, market-driven fertilizer industry. The purpose of this study is in keeping with the Government of the Ukraine's principal goal "to halt the decline in agricultural production, to provide the country with food security, and to attain an acceptable level of food consumption."

To help rationalize the fertilizer sector created under a paradigm that is no longer valid, the study identified policy reform areas and articulated donor assistance needs for acceleration of domestic fertilizer consumption and supply through use of competitive market forces. 🌐



Thomas A Bayley, Distribution Specialist on the IFDC study team, and a private farmer from the Sumy Oblast of Ukraine display packaging commonly used in the distribution of ammonium nitrate in Ukraine.

(Photo by Dr. Thomas H. Foster)

particularly fertilizers. Fertilizer production in Ukraine has decreased by 50% during the past 10 years. Increased fertilizer prices, inadequate farm-output pricing policies, and the lack of financial resources have led to a collapse in fertilizer use in the region.

At the request of the Citizens Network

Training Opportunities Cross Continents and Disciplines

During the past few months IFDC's training component has offered a number of training programs covering a range of disciplines across three continents. Some 151 participants from Africa, Asia, Latin America, and Eastern Europe benefited from these training opportunities.

International Environmental Workshop

During the past decade, the global fertilizer industry has made substantial progress in the identification and mitigation of potential environmental impacts that may occur at the point of production or throughout the physical distribution system. In view of the technological progress that the fertilizer industry has achieved in increasing environmental stewardship and the dynamics of the industry, IFDC considered timely an appraisal of the progress and pitfalls encountered in responding to existing and emerging environmental challenges.

To address these issues IFDC conducted an International Environmental Workshop in Atlanta, Georgia (U.S.A.), during September 17-19, 1997.

The 3-day workshop, which attracted 100 delegates including 31 invited speakers and discussion panel members from 30

countries, was cosponsored by the European Fertilizer Manufacturers' Association, International Fertilizer Industry Association, The Fertilizer Institute, United Nations Environment Programme, and the United Nations Industrial Development Organization.

Some of the topics on the agenda included

environmental responsibility, pollution prevention, environmental risk assessment, and global greenhouse gases. A proceedings of the workshop is being prepared and its availability will be announced in this newsletter at a later date.

IFDC/FSSA International Training Program on Fertilizer Marketing Challenges and Opportunities

More efficient and effective marketing systems are essential to the development of food security. To enhance the ability of African fertilizer sector personnel in their efforts to popularize fertilizer use among small farmers, IFDC organized and conducted an International Training Program on Fertilizer Marketing Challenges and Opportunities in Pretoria, South Africa during July 7-18, 1997.

Twenty-two participants from 12 countries attended the 2-week program, which was cosponsored by the Fertilizer Society of South Africa (FSSA). Specialists from FSSA, IFDC, the fertilizer industry, and international organizations made presentations on the marketing functions in a market economy, dealer development and education, developing a customer-oriented dealership, policy, marketing planning, nutrient management, soil testing, fertilizer recommendations, and the environment.

International Training Program and Study Tour on Fertilizer Marketing Challenges

In the developing countries and the transition economies, the challenges of change for the marketing of fertilizer and other agricultural inputs need to be effectively addressed to ensure continued agricultural productivity and improved food security. It is crucial that marketing organiza-

tion personnel understand the implications of policy changes, changing trade patterns, economics, and environmental issues so that they can meet the challenges and benefit from new opportunities.

To assist in ensuring that a cadre of marketing personnel are prepared for these new challenges, IFDC conducted an International Training Program and Study Tour on Fertilizer Marketing Challenges during August 4-19, 1997, at Headquarters and various other U.S. locations. This 4-week program and study tour focused on the challenges in the developing countries and transition economies for marketing fertilizers in open, competitive markets and the development of practical techniques and skills necessary for customer-oriented marketing. Twenty-two participants from 7 countries – including Bangladesh, Brazil, India, Indonesia, Nigeria, Pakistan, and Togo – took advantage of this training opportunity.

IFDC/IFA Study Tour on Fertilizer Regulatory Systems for Chinese Officials

The achievement and maintenance of a standard level of fertilizer quality are essential to protect the interests of farmers (consumers) and businessmen. The principal objective of a fertilizer regulatory system is to protect the consumer; however, the system will also provide other benefits such as protection for the manufacturers, importers, and dealers. It will create equity for all fertilizer businessmen.

Because particular segments of the Chinese fertilizer industry are interested in revising their fertilizer regulations, IFDC was requested to organize a Study Tour on Fertilizer Regulatory Systems to acquaint officials from the Chinese Government with fertilizer consumer protection laws and regulations in the United States, India and other countries and to allow them an opportunity to discuss



the system with individuals responsible for its formulation and implementation.

During October 14-25, 1997, seven decision-makers from the Chinese Government (Ministries of Chemical Industry and Agriculture, Chemical and Petrochemical Bureau – ShanDong Province, Legislation Bureau of the State Council, and China Supply and Marketing Corporation) participated in the training activity, which was cosponsored by the International Fertilizer Industry Association. They visited with state regulatory authorities, fertilizer retail outlets, and The Fertilizer Institute in Washington, D.C. 🌐

Agribusiness Bulletin Now Available Online

The *Agribusiness Bulletin*, a monthly publication of the Agrobased Industries and Technology Development Project (ATDP) in Dhaka, Bangladesh, is now online at www.ifdc.org. Interested parties can locate the bulletin by clicking on "Products and Services" and then on "Publications." The printed version of the *Bulletin*, published in both English and Bengali, is distributed free of charge to more than 3,000 subscribers.

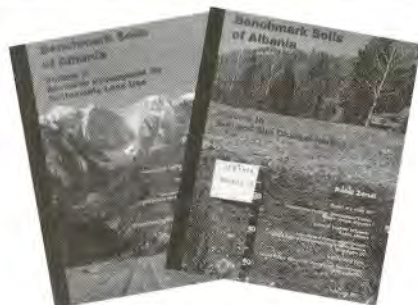
ATDP is a project of the Government of the People's Republic of Bangladesh. The Ministry of Agriculture is the lead agency for this

project; other partners include the Ministries of Commerce, Fisheries and Livestock, and Industries, and the Bangladesh Bank. IFDC is the implementation contractor; subcontractors include Ronco Consulting Corporation and Winrock International. With support from the United States Agency for International Development, the project aims to

increase productive employment in the agriculture and related sectors in Bangladesh.

Regular columns in the *Bulletin* focus on the following subject-matter areas: (1) seed; (2) agrimachinery; (3) fertilizer; (4) poultry, livestock, and fisheries; (5) agroprocessing; (6) horticulture; (7) business opportunities; and (8) events,

courses, and conferences. Recent topics covered in the *Bulletin* have included "India's Research on Hybrids," "Manure Nutrients Need Time for Conversion," "Post Harvest Preparation of Fruits and Vegetables for Rural Processing," and "Preparing Produce from Bangladesh for Export." 🌐



Benchmark Soils of Albania

Volume I: Resource Assessment for Sustainable Land Use

Volume II: Soil and Site Characteristics

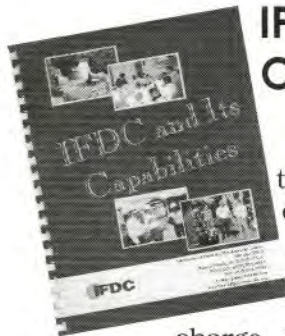
A recently published report, authored by Pandi Zdruli, IFDC Visiting Scientist from Albania, has been prepared with assistance from collaborators at IFDC; the Instituti i Studimit te Tokave, Tirana, Albania; and the International Conservation Division, U.S. Department of Agriculture Natural Resources Conservation Service, Washington, D.C. With funding from the USAID, the study evaluated some of the determinants of sustainable agriculture in a region in the southwestern part of Albania. The region was chosen because it has the largest land area for food crops and because it differs from the rest of the country in having a Mediterranean type of climate. If agriculture fails or productivity is hampered in this region, it will jeopardize the general economy of the entire country with grave consequences to sustainable development as a whole.

The premise of this study is that sustainable agriculture depends on the land quality and land use factors commensurate with socioeconomic and environmental factors of the region. Degradation and unsustainability results when there is a mismatch among those factors. This primary land resource area is examined in the context of this paradigm and some of the most important determinants of sustainable agriculture are examined. The socioeconomic and biophysical pressures are the primary determinants that affect the state of the agricultural system. The basic conclusion of the study is that from a biophysical point of view, productivity can be doubled in the region. However, current socioeconomic forces play a negative role by retarding the change. In conclusion, the overriding determinant of unsustainability of the agricultural sector in the country is agricultural development and economic stability.

Albania is divided into ten major land resource areas – agroecological units that are useful for national planning purposes. Two of these areas – the Southern Coastal Plains and associated hills and the South Western Mountains and associated valleys – were selected as a case study for an assessment of the primary controls of sustainable agriculture. Similar assessments can be made for the remaining areas using the databases that have been assembled as part of the IFDC activity in Albania.

Interested parties may purchase copies of this document by contacting Dr. Hari Eswaran, World Soil Resources, P.O. Box 2890, Washington, D.C. 20013; telephone: 1+ 202-690-0333; telefax: 1+202-720-4593; e-mail: heswaran@usda.gov or Claude Freeman, IFDC, Tirana, Albania; e-mail: claudio@ifdc.tirana.al; fax: 355+42-23638 or 30022.

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IFDC and Its Capabilities

A new promotional booklet entitled *IFDC and Its Capabilities* is now available free of charge. The 31-page booklet outlines some of the Center's capabilities.

An overview of the Center briefly discusses its offerings, focus, level of expertise, modus operandi, facilities, and uniqueness. The Center's capabilities in the following areas are outlined: (1) agribusiness, including policy analysis and reform, development and implementation of marketing plans, financial services and agribusiness credit, and fertilizer transportation and handling; (2) engineering and technology, including pre-investment analyses, production cost analyses,

process design, enhancement of production efficiency, bench-scale laboratory processing, pilot-plant processing, project management, environmental and safety assessments, and indigenous mineral resource evaluation; (3) management information systems, including yield forecasting, development of agricultural information services, fertilizer recommendation services, decision support systems, and application of geographic information systems; (4) agronomic evaluation of fertilizers, including fertilizer evaluation studies and agronomic evaluation of phosphate rocks and their modified fertilizer products; (5) training, and (6) library services.

Eighteen selected projects are profiled in another section of the booklet. Other items in the booklet include a partial client list and a partial listing of countries that have received technical assistance via IFDC.

A free copy of this booklet can be obtained by writing to the IFDC Purchasing Department and requesting IFDC General Publication, IFDC-G-6. 🌐

ANNOUNCEMENTS



IFDC Featured on AgriSurf

IFDC's web site is now featured on AgriSurf, the world's largest searchable agricultural World Wide Web index. All of the sites in AgriSurf are hand picked by agricultural experts. The mission of AgriSurf is to improve the usability of the web for agriculturalists. The sites are indexed according to a wide variety of categories. AgriSurf can be found at <http://www.agrisurf.com>. 🌐