IFDC

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Report

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

Eastern Europe—

Project Rebuilds Albanian Fertilizer Sector

A major IFDC technology transfer project designed to ultimately rebuild the Albanian fertilizer sector is producing concrete results. This project, being funded by USAID, began in 1991.

"One of the most important results is the project's creation of a national network of 120 private fertilizer dealers who now have commercial experience where almost none existed before," says Dr. Ray B. Diamond, Chief of Party in Albania. "The dealers' agricultural experience and the recently gained commercial experience have provided many of them with the knowledge and skills to become marketers of agricultural inputs. The development of a well-trained and responsible network of dealers is a first essential step that can be taken for reducing the impact of the technical and financial constraints faced by most of the small-scale farmers in the developing world."

Initially, the emergency fertilizer supply phase of the project supplied farmers with much-needed fertilizer at a time when there was no domestic production. Twenty thousand tons of urea was donated by USAID; IFDC then auctioned the fertilizer to the dealers, with the proceeds going to a blocked USAID/Government of Albania bank account for use towards future agricultural programs in Albania.

"Another impact of the project can be seen in the banking/financial community of Albania," Diamond says. "In particular, the project has helped to develop knowledge, skills, and experience among bankers in managing a commercial credit program for fertilizer dealers. Our efforts were successful not only because of IFDC's continual consultations and training of dealers but also work with the banks in establishing a means for providing credit to dealers."

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A discussion with the shipowner's representative at Durres Port, Albania. From left are Dr. John Becker, USAID Project Officer; Jim Kelly, IFDC Logistics Consultant; Dr. Amit H. Roy, IFDC President and Chief Executive Officer; and Neil Hilton, the shipowner's representative.

(Photo by Dr. W. E. Clayton)

Dr. Ray B. Diamond (left), IFDC Chief of Party in Albania, discusses agricultural practices with a group of Albanian farmers. On the right is the Albanian interpreter.

(Photo by Wan Xia)

IFDC Report

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IFDC is a public, international, nonprofit 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 creating sustainable agricultural productivity and food production in the tropics and subtropics through the development and use of improved and environmentally sound fertilizers and fertilization practices.

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President's Report

(Photo by Charles E. Butler)

Dr. Amit H. Roy
IFDC President and Chief Executive Officer

Editor's Note: During its annual meeting held October 13-16, 1992, the IFDC Board of Directors named Dr. Amit H. Roy the Center's new President. Dr. Roy, a native of India, has been with IFDC since 1978. Most recently, he served as Executive Vice President and Chief Operating Officer since 1990.

A Look Toward the Future

In the decade of the 1990s, IFDC is increasingly becoming known as an innovative agent of technology transfer. The Center is being called upon repeatedly to provide practical solutions to the challenges confronted by the decisionmakers of the world's fertilizer and agricultural sectors in the most cost-effective and efficient manner. At the same time, IFDC remains committed to maintaining sound research and development, technology transfer assistance, and human resource development activities relevant to the needs of developing countries.

During this decade IFDC's priorities will include plant nutrient research, policy reform and agribusiness, information management systems development, environmental sustainability, and human resource development/institutional capacity.

Five strategic goals will guide IFDC's activities during the 1990s. They are:

- To conduct applied research that seeks to enhance nutrient efficiency, productivity, and conservation of natural resources.
- To transfer and implement improved plant nutrient technology.
- To assist in the development and establishment of economic policies and agribusiness activities that promote open, competitive markets.
- To ensure the complementarity of international and national research efforts through close collaboration with the national agricultural research systems and other international agricultural research centers.
- To conserve the natural resource base and the environment.

Looking ahead to tomorrow, IFDC's vision for the future focuses on translating environmentally sound technology into economic security, opportunity, and competitiveness in the developing countries as well as the emerging market economies of eastern Europe and the former Soviet Union. To be successful in these efforts, our blueprint for the 1990s must contain these primary components: environmentally sound plant nutrient research, the translation of research findings into applied results on farms of developing nations, and technology transfer effected through the vehicles of policy reform, training, and agribusiness development.

Board of Directors' Meeting

During October 13-16, the IFDC Board of Directors held its annual meeting at Headquarters. All members were present except Dr. Pratap Narayan of India, who was not well. During the meeting, the Board members reviewed programs presently in progress in addition to discussing new initiatives planned for the future. The Center's strategic plan for the 1990s was reviewed; the Board suggested that Management prepare a condensed version of the Strategic Plan that can be disseminated to policymakers, donors, scientists, and other interested parties.

Donors' Meeting

IFDC's second donors' meeting was held in Washington, D.C., on October 24, 1992, in conjunction with International Centers' week.

Fifteen representatives of donor organizations attended this meeting, which was chaired by Dr. W. David Hopper, Chairman of IFDC's Board of Directors. Dr. Hopper assured the audience that IFDC will continue to fulfill its original mandate of working for the agricultural development of the poor nations of the developing world. He stated that "new research dimensions and findings made by IFDC staff in sustainable agriculture and environmental and resource management will benefit farmers and peoples of developing countries and particularly the poorest nations of the developing world. This has been and will remain the central core of the Center's work in accordance with its founding mandate."

After a presentation by the President on the primary accomplishments of the Center during the past year and a discussion of its new initiatives for the 1990s, questions were fielded from the audience.

Amit H. Roy

Asia—

IFDC To Lead New Bangladesh Agribusiness and Technology Development Project

A new Agribusiness and Technology Development (ATD) Project aims to improve the environment for further private-sector investment in agricultural input/output production, marketing, and technology development and application for enhanced agricultural trade and agri-industrial development through Bangladesh Government policy reforms and policy implementation assistance.

The purpose of this project is to introduce open and competitive markets as the primary mechanisms for the supply and distribution of commercial agricultural inputs and technologies.

The project has three principal objectives. First, the project aims to greatly expand the competitive, market-based seed and related inputs industry, primarily through identifying and eliminating unnecessary controls so that the seeds market is able to function freely and competitively. A second objective is to establish fully open market systems in those areas that have already enjoyed some measure of regulatory relaxation, primarily through continuation of reforms begun by the Bangladesh Government in the fertilizer and minor irrigation subsectors. Third, the project will create patterns of policies, legislation, procedures, and mechanisms that will accelerate the processes for developing and making available to Bangladeshi farmers the most cost-effective local and offshore technologies that they need and demand.

The 8-year, $80 million project, funded by USAID, is a cooperative venture involving the Winrock International Institute for Agricultural Development, Mississippi State University, Ronco International, and IFDC.

Washington, D.C.-U.S.A.—

Working Group Meets to Discuss Framework for Evaluating Sustainable Land Management

What is sustainable land management? According to one definition, it is "a system of technologies that aims to integrate ecological and socioeconomic principles in the management of land for agricultural and other uses to achieve intergenerational equity."

During October 19-20, 1992, a coalition of international agricultural research organizations met in Washington, D.C., to plan a framework or a set of procedures for evaluating sustainable land management (SLM). These organizations were the International Board for Soil Research and Management (IBSRAM), the International Center for Research in Agroforestry (ICRAF), the Collaborative Research Support Program (TropSoils), and the Soil Management Support Services (SMSS) (the latter two being projects of USAID), and IFDC.

Dr. Philip K. Thornton, Systems Modeler/Economist, represented IFDC at this coalition meeting. Others participating in the meeting were Dr. Hari Eswaran, Soil Management Support Services (SMSS); Dr. Marc Latham and Dr. J. K. Syers, IBSRAM; Dr. Richard Sawyer, Chairman of IBSRAM's Board and Chairman of the International Fund for Agricultural Research; Dr. A. C. Smyth, member of IBSRAM's Board (retired from FAO); Dr. J. Dumanski, Agriculture Canada, and a member of IBSRAM's Board; and Dr. M. J. Mausbach, Soil Conservation Service (SCS), U.S. Department of Agriculture.

The framework or computerized decision support system will have potential applications in all aspects of agricultural research and development and also in environmental assessment. It will provide the scientific basis for evaluating the environmental impact of proposed land use changes. It has the potential of being used for evaluating the consequences of the projected global climate change. When coupled with

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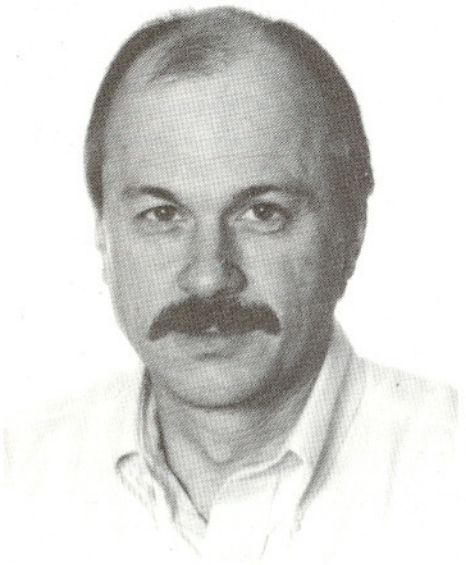
Latin America—

IFDC Soil Scientist Posted at CIAT



(Photo by Charles Butler)

Dr. Dennis K. Friesen, IFDC Soil Scientist, was recently posted at the Centro Internacional de Agricultura Tropical (CIAT) in Cali, Colombia. At CIAT Friesen's work focuses on a project entitled "Development of Sustainable Land Use Systems for the Neotropical Savannas."

The goal of the overall program is to increase sustainable agricultural production on acid soil savannas as a way to improve the economic well-being of the urban poor in the Amazon basin countries of tropical South America, thus helping to relieve market pressure on the Amazon rainforests.

The purpose of this particular project is to develop an institutional model for participatory and decentralized research that responds to changing economic, institutional, and technological environments that condition the sustainable agricultural development of the savannas.

The projected outputs of this work include: agropastoral and sequential crop production systems; institutional models for participatory research and development; identification of policy, economic, and infrastructural requirements necessary to implement and sustain these farming systems; and a network of research and development institutions and the corresponding database of experimental and on-farm results.

The achievement of these goals will require activities in agronomic research, socioeconomic and policy research, modeling and database development, and institutional development.

The targeted beneficiaries of this project are the urban poor of Latin America. With 70% of Latin America's population living in the cities, where poverty is more prevalent, the proposed agropastoral systems would lead to increased productivity and reduced costs of staple urban foods such as rice, maize, beef, and milk.

Latin America—

IFDC Scientist Posted in Uruguay Participates in Climate Change Research Project

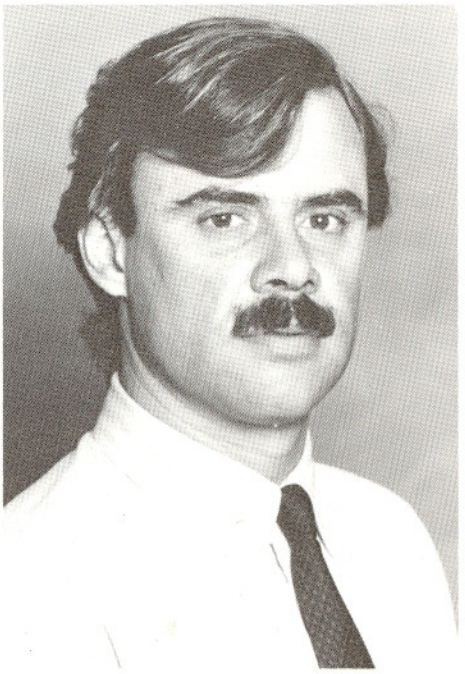
Conducted as part of a global climate change research project, a Uruguayan case study has shown that under simulated climate change conditions, the maximum attained crop yields were 30% lower than normal.

With funding from the U.S. Environmental Protection Agency and USAID, the 3-year global research project was jointly managed by the Goddard Institute for Space Studies at the National Aeronautics and Space Administration and the Environmental Change Unit at the University of Oxford. Agricultural scientists from 18 countries participated in the project, which began in 1989.

Dr. Walter E. Baethgen, IFDC Soil Scientist/Biometrician, who is currently posted in Uruguay, was invited to participate in the climate change project to study the effects of climate change on cereal production and fertilizer requirements in Uruguay.

"The results of our research indicated that under simulated climate change conditions, the maximum crop yields that were achieved were 30% lower than average yield levels," Baethgen says. "In addition, the nitrogen fertilizer required to attain a given yield was higher under the estimated climate change conditions. However, the results also showed that improved cultivars could minimize the effects of climate change, indicating the need to invest in strong crop breeding programs for the future."

One of the central aims of the larger study was to provide global quantitative estimates of the effects of climate change on the amount of food produced, world food prices, and the number of people at risk from hunger in the developing countries. Another primary purpose was to provide specific information on the effects of climate change on those countries that are most vulnerable to hunger. Those countries that were studied in detail included Chile, Kenya, Senegal, and Zimbabwe.



(Photo by Charles Butler)

The umbrella project employed a two-pronged approach. First, the scientists from the participating countries estimated the potential changes in national grain crop yields using the IBSNAT crop simulation models and DSSAT decision support system. The crops included in this study were wheat, rice, maize, barley, and soybeans, which account for more than 85% of the world-traded grains and legumes.

Second, the scientists used national yield changes as inputs into a world food trade model, the Basic Linked System (BLS). Outputs from simulations by the BLS provided information on food production, food prices, and the number of people at risk from hunger.

According to the overall study's results, cereal price increases resulting from climate-induced decreases in cereal production are expected to range from 25% to 150%. These price increases are likely to affect the number of people with insufficient resources to purchase adequate amounts of food.

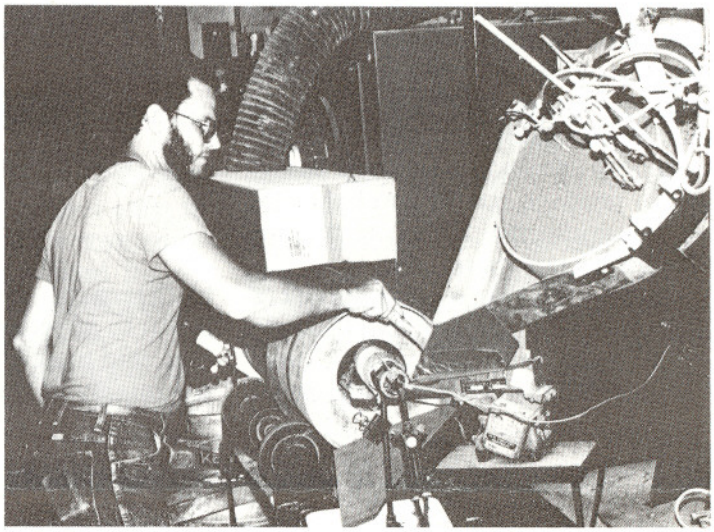
Headquarters—

Nigerian Phosphate Rock Studied

At the request of the National Fertilizer Company of Nigeria Limited (NAFCON), IFDC recently studied the technical and economic viability of producing fertilizers using phosphate rock from the Sokoto deposit of Nigeria.

IFDC fertilizer specialists performed characterization, beneficiation, and small-scale fertilizer production tests to determine the technical viability of further upgrading the ore and the suitability of Sokoto rock for various fertilizer processes and to develop data for the economic study.

"We produced four Sokoto rock-based products that were shipped to Nigeria for agronomic testing," says Steven Van Kauwenbergh, the project's leader. "These products were single superphosphate, sulfuric acid-based 50% partially acidulated phosphate rock, and two compacted NPK formulations."



Tommy Evers, IFDC Research Technician, granulates single superphosphate using Sokoto (Nigeria) phosphate rock.

(Photo by Charles Butler)

According to Van Kauwenbergh, the Sokoto rock was classified as a medium-reactive phosphate rock. Agronomic field tests in Nigeria using Sokoto phosphate rock-based products should provide valuable data on the comparison of products containing unmodified Sokoto phosphate rock with water-soluble phosphate fertilizers. The study indicated that the best use of Sokoto rock was probably for relatively simple acid attack fertilizer manufacturing processes such as single superphosphate and partially acidulated phosphate rock.

Asia—

IFDC Provides Consultant for FADINAP Regional Training Course on NPK Production in Thailand

IFDC's Director of the Outreach Division, James J. Schultz, served as a consultant to a recent training course on NPK production, presented by the Fertilizer Advisory, Development and Information Network for Asia and the Pacific (FADINAP) in Cha-am, Thailand. The course, which was conducted November 2-6, 1992, was attended by 38 participants. FADINAP contracted Schultz's services because of his expertise in NPK fertilizer granulation and blending.

The FADINAP training course was designed to meet the specific and rather unique needs of the small-scale NPK fertilizer producers in Thailand. Approximately 35 producers account for an annual production of about 150,000 to 200,000 tons of fertilizer.

Schultz found the joint participation of the small-scale producers and the government fertilizer regulatory and research personnel as a very positive approach. "This proved to be a very proactive and favorable step in improving the image of the small-scale production sector and facilitating a positive, technically sound, and objective dialogue between the two sectors," he says.

The technical presentations given by the IFDC Consultant during the course were designed to provide the participants with a practical understanding of the fundamentals of agglomeration-type granulation. Agglomeration is the primary granule

formation mechanism used by the small-scale producers in Thailand.

"By affording the participants the opportunity to gain a clear understanding of the fundamentals of granule formation, we provided them with a basis for examining and understanding most of the key production and product quality issues," Schultz says. "Discussions were very informal and intensive."

A number of issues were discussed. These issues included, for example, the best materials for granulation, ways that locally available raw materials can be most effectively used, methods of improving the chemical and physical quality of the granular and blended NPK products, how conditioning agents can be used to improve product quality, and reliable and cost-effective means of obtaining proper raw materials.

Participants and Leaders in the FADINAP Regional Training Course. *(IFDC Photo)*

"During the case study segment of the course, a typical small-scale granulation unit was analyzed," says Schultz. "The analysis was performed to determine what steps could be taken to improve the overall operation, and most importantly, improve the quality of the finished granular product regardless if it is sold directly or used as an ingredient for blending. Several recommendations were made to achieve the desired improvements."

RECENT IFDC PUBLICATIONS

IFDC Annual Report, 1991

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***Phosphate Fertilizers and the Environment*, Workshop Proceedings**

These proceedings, edited by James J. Schultz, contain 36 workshop presentations by a group of speakers from around the world. This workshop, conducted in March 1992 and partially funded by the United Nations Development Programme (UNDP), addressed the environmental concerns being confronted by the phosphate fertilizer industry. A few of the topics covered in these presentations are as follows: Global Phosphate Resource Base—Technical and Economic Considerations; Environmental Management: The Viewpoint of the Regulator at the National Level; The Development of Environmental Legislation in Europe and Its Impact on the Market for Phosphate Fertilizers; and An Examination of the Environmental Issues Facing the Phosphate Fertilizer Production Sector—Indicated Cost of Environmental Compliance. To order this publication (IFDC SP-18), please address your order to the IFDC Purchasing Department. The price for the publication is US $40, including shipping and handling.

Phosphate Fertilizers and the Environment—A Discussion Paper

This paper, prepared by James J. Schultz, Ian Gregory, and Dr. Orvis P. Engelstad, was designed to provide a basis for an objective analysis and discussion of the environmental issues facing the global phosphate fertilizer sector. The publication focuses on the impact that certain environmentally driven regulatory scenarios may have upon the cost and availability of phosphate fertilizers and therefore the production of the world's major food- and feed-grain crops. Government policy initiatives and other actions that may be required to alleviate the constraints attributed to environmental protection are indicated. To order this publication (IFDC Paper Series P-16), please send your request to the IFDC Purchasing Department. The price for developed-country addresses is US $4.00 and US $7.50 for developing-country addresses.

Water Solubility of Phosphate Fertilizers: Agronomic Aspects—A Literature Review

This paper, prepared by Dr. Orvis P. Engelstad and Dr. Deborah T. Hellums, assesses the agronomic aspects of the water solubility of solid phosphate fertilizers. Included is a discussion of the more important soil, crop, fertilizer management, and climatic factors that affect plant response to the level of water solubility of applied phosphate fertilizers. This paper was produced in preparation for the Workshop on Phosphate Fertilizers and the Environment for the benefit of the delegates and speakers and to establish a common basis for discussion. This review, with commentary, was prepared to examine the agronomic merits of phosphate water solubility and to attempt to answer the question—How much is enough? To order this publication, IFDC Paper Series, P-17, please address your request to the IFDC Purchasing Department. The price of the paper is US $4.00 for addresses in the developed countries and US $7.50 for the developing countries.

Environmental Impact of Ammonia and Urea Production Units, Workshop Proceedings

These proceedings cover a workshop conducted during March 1991 in India by IFDC and the Fertiliser Association of India. Edited by Donald R. Waggoner and George Hoffmeister, the publication contains 22 presentations along with questions and answers from the discussion periods. Focusing on the environmental impact of ammonia and urea production units, the workshop was managed by M. T. Frederick, IFDC Special Project Engineer, and R. S. Giroti, Training Administrator. The problems and solutions that are encountered in the production of ammonia and urea were covered. Papers presented during the workshop and the discussion periods covered the following: (1) identification of the impact that the basic nitrogen production units may have on the environment; (2) identification of the effluents routinely discharged or purged from these units; (3) discussion of methods for coping with the discharges; (4) examination of process modifications, new designs, retrofits, and other advanced process engineering criteria for decreasing the level of discharges; (5) review of current environmental standards for ammonia and urea production units; and (6) discussion of possible future developments affecting the control of ammonia and urea plant effluent discharge. To order this publication (SP-17), please send your request to the IFDC Purchasing Department. The price is US $30, including shipping and handling.

Developing the Fertilizer Dealer: Emphasizing the Small Farm Sector, Workshop Proceedings

This publication, edited by Dr. Loren E. Ahlrichs and Dr. Orvis P. Engelstad, contains the 23 presentations that were made during the workshop held in Jamaica in January 1991. The delegates, speakers, and technical resource persons assembled during this workshop discussed their experiences and proposed methods for the effective development of dealers and dealer networks. Some of the subjects included in this proceedings are: Global Fertilizer Perspective—Emphasizing Latin America and the Caribbean; Importance of Marketing in the Fertilizer Sector Development; Linking Research and Extension for Better Fertilizer Recommendations in Jamaica; Financial Management of the Dealer Business; and Soil Testing—A Marketing Tool. To order this publication (IFDC SP-16), please send your request to the IFDC Purchasing Department. The price of this publication is US $40, including shipping and handling.

Albania Project *(Continued from page 1)*

The project's influence is also evident in the transportation sector. The activities of the project have reactivated dormant transport and port facilities. The use of rail transport to Vlora brought new confidence in possibilities again to use the railway for transport. Private transport was used to a large extent to distribute the fertilizer. A port wharf, which was closed for 3 years, was brought back into use.

The project pioneered a new aid technique for effectively catalyzing entrepreneurial capacities and developing fertilizer marketing. In addition, by using advanced scientific technology, the project developed an area sampling frame for Albania, which was used to provide estimates of the area cropped to specific crops, prospective crop yields, and the use of fertilizer.

In the future, the project will address four primary issues. The first issue concerns the privatization of the wholesale and retail trade for fertilizer and that of other agricultural inputs that may be marketed through these businesses. Second is the establishment of an import capability in Albania that is sufficient to supply nutrients not met by domestic fertilizer production. The commercialization of Albania's domestic fertilizer production and the development of an appropriate policy structure for fertilizer production and marketing are other issues that will be addressed.

Working Group *(Continued from page 3)*

computer technology such as simulation modeling, geographic information systems, and expert systems, the SLM framework or evaluation system has the potential to emerge as one of the most powerful tools for sustainable land management.

The coalition identified four preliminary case studies to test the framework in its current state. Thornton stated that IFDC's socioeconomic characterization work under the UNDP Global project could be used for this purpose, utilizing the existing data.

The next meeting of the coalition will be during the International Workshop for Sustainable Land Management for the 21st Century at Lethbridge, Canada, in June 1993.

IFDC Report

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1993 Training Calendar

Program	Dates	Location	Fees (US $)
Data Collection, Analysis, and Projections for Agribusiness	March 29-April 16	Muscle Shoals, Alabama; Orlando, Florida; Chicago, Illinois; Washington, D.C., U.S.A.	1,800
Deregulation and Privatization Policies to Reform Agribusiness Markets[a,b]	April 19-30	Muscle Shoals, Alabama; Washington, D.C., U.S.A.	1,200
Computer Simulation for Crop Growth and Nutrient Management	May 10-21	Muscle Shoals, Alabama, U.S.A.	1,400
Nitric Acid-Based Fertilizers and the Environment[a,b]	June 14-18	Brussels, Belgium	700
Modern Techniques in Fertilizer Distribution and Handling (Traveling Program)	June 21-July 9	England, Ireland, The Netherlands, Belgium, Germany	1,800
Agroeconomic Evaluation for Development of Fertilizer Recommendations	July 12-23	Wageningen, The Netherlands	1,400
Marketing of Fertilizers and Other Agri-Inputs	August 2-September 3	Muscle Shoals, Alabama; Tampa and Lakeland, Florida; St. Louis, Missouri; Columbus, Mississippi, U.S.A.	2,450
Plant Nutrient Management for Sustainable Agriculture	September 20-October 1	Muscle Shoals, Alabama; Columbia, Missouri, U.S.A.	1,200
Indigenous Resources Development for Fertilizer Sector: An Examination of the Options and Constraints[a,b]	October 18-29	Muscle Shoals, Alabama; Lakeland, Florida, U.S.A.	1,200
Fertilizer Marketing Training Program	December 6-17	Bangkok, Thailand	1,200

a. New program.
b. Workshop.

Program dates and locations are subject to change.
Fees do not include travel expenses or living expenses.

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