

Report

Bangladesh—

IFDC Specialist Participates in World Bank Mission

As is the case with other developing countries, Bangladesh is meeting and conquering the challenges of a changing agricultural situation. Because of its accomplishments in restructuring its fertilizer distribution system, Bangladesh may soon serve as a model for privatization of fertilizer sectors in other developing countries.

During June 6-21 IFDC's Deputy Managing Director Dr. Paul J. Stangel participated in a World Bank Mission designed to review the Bangladesh fertilizer sector. The objectives of the Mission were to update the Bank's knowledge of the sector, evaluate the developments in the sector, and identify the major sector issues and policies. The Mission members discussed with the Government its plans for further improvements in the performance of the sector and the role that the Bank can play in assisting the Government. The competitiveness of the existing products and possible measures that can be taken to improve their economic viability were evaluated. The Mission reviewed plans for capacity expansions in the sector and discussed with the Government possible changes in the ex-factory pricing system.

In carrying out its stated objectives, the Mission consulted with officials of the Ministry of Industry, the Planning Commission, the Bangladesh Chemical Industries Corporation (BCIC), the Bangladesh Agricultural Development Corporation (BADC), the World Bank, and the U.S. Agency for International De-

velopment (USAID)/Dhaka resident missions.

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"The Mission made several recommendations to the Government to further develop a cost-effective and socially sensitive fertilizer sector," Stangel says. "The establishment of a monitoring and evaluation system was recommended to ensure the efficient operation of the fertilizer sector. It was also recommended that a uniform pricing policy be established from BCIC to BADC or to private distributors. In order to alleviate the unfavorable debt to equity ratio, the Mission proposed that the Government consider absorbing all or a portion of some foreign loans to fertilizer plants and converting that amount into equity in the fertilizer plants."

There is growing evidence that the present mix of fertilizer (urea, triple superphosphate, and muriate of potash) will not sustain the nutritional requirements of an agriculture that

is becoming progressively more intensive and diversified. In fact, the recent slowing in growth of crop productivity may, at least in part, be directly linked to the growing evidence of crop nutritional disorders of sulfur and zinc. The Mission therefore recommended that the Government reexamine the required fertilizer product mix and determine the most effective way of obtaining supplies to sustain an increasingly intensive and diversified agriculture. Special attention should be given to the merits of domestic production versus importation of urea/sulfur, NP, elemental sulfur, and NPK sulfur combinations.

The Mission further recommended that future fertilizer plant expansions should consider locating urea plants within the area of market demand rather than in the area of raw material supply. Extending the nation's natural gas pipeline into the market area may reduce transportation costs and significantly relieve the already stressed infrastructure (railroads, roads, barges).

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A Bangladesh farmer buys fertilizer in a dealer's shop.

"It is projected that Bangladesh will be self-sufficient in the production of urea by February 1988," Stangel says. "In fact, the country will have a net surplus of urea. The Mission, taking note of currently depressed international prices of urea, recommended that a program be developed to use this production to stimulate domestic consumption of nitrogen and thus move toward self-sufficiency in rice and wheat rather than exporting the surplus fertilizer."

France—

Geologist Completes Professorship at Louis Pasteur University

An IFDC Geologist, who is also the Research Coordinator of the Fertilizer Technology Division, completed a 4-month professorship at the Louis Pasteur University in Strasbourg, France, on June 1. Dr. Guerry H. McClellan served in this capacity at the invitation of the University's Institute of Geology.

McClellan was invited to present his industrial perspective of the science and to allow the students the opportunity of gaining an insight to a more applied approach to geology. The Director of the Institute felt that it would be beneficial to contrast the IFDC practical approach with the traditional academic program of the University.

"The students were from France and various countries in Africa and the Middle East," McClellan said. "Sixty to seventy percent of the students were from developing coun-

tries. A Togolese student came to Strasbourg from the University of Bourgogne at Dijon, France, in order to attend the course and to discuss his thesis work on phosphate deposits of West Africa. He also was consulted by colleagues from universities at Nice, Rouen, and Nancy on specific problems of

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The students gained a new insight on this aspect of geology. The subject matter dealt with the practical side of geology, such as the costs of exploration, mining, beneficiation, and processing. A significant amount of information on the interpretation and use of data was also included.

The sixteen hours of lectures and discussions were presented in French. In addition to presenting the course, McClellan supervised portions of the graduate study of several students and was invited to return in September to serve on the juries for their dissertations.

"I also worked with the Director of the Institute on a project in clay mineralogy," McClellan said. "These clays are associated with phosphate ores and often present environmental problems during their disposal.



Dr. Guerry H. McClellan, Research Coordinator for the Fertilizer Technology Division.

Studies of the mineralogical compositions may facilitate their treatment as wastes and could identify economically interesting byproducts. Some of these clays have industrial uses as adsorbents and are sold as pet litter. We were studying the variations in clay mineral properties from deposits in Morocco, Senegal, Togo, and the United States (Florida and North Carolina)."

This marked the first time for an IFDC staff member to serve as a professor on an international university staff. The experience proved to be beneficial to the University, IFDC, and the geologist.

Headquarters—

Chinese Engineer Conducts Phosphate Studies

A Chinese mineralogical engineer is conducting research at Headquarters that will aid in the development of a phosphate rock deposit in the Hebei province so that it can be used to produce phosphate fertilizer.

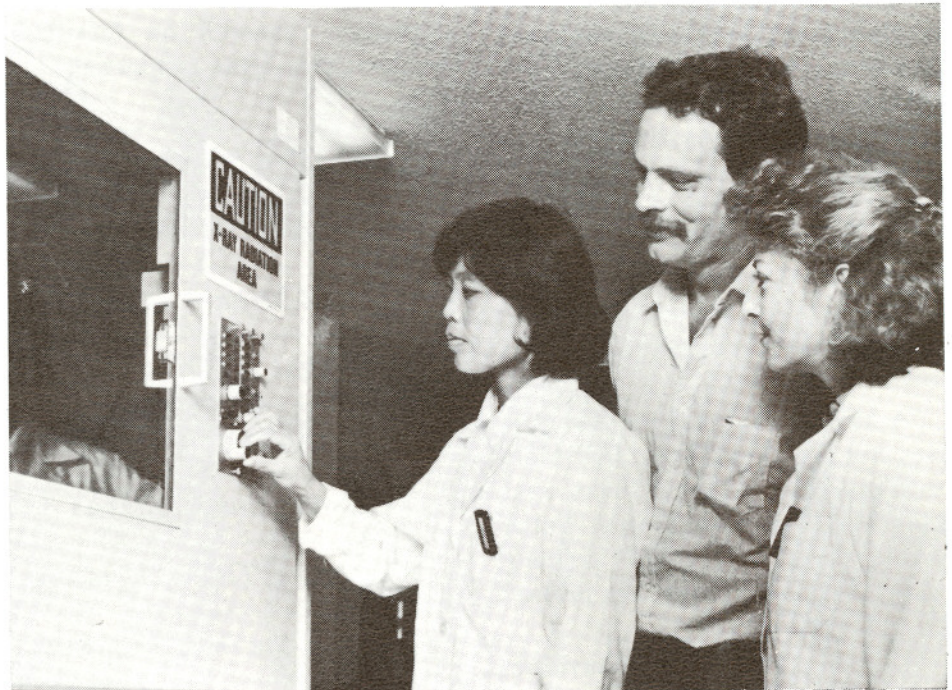
The engineer, Jin Wenrong, is with the Lian-Yun Gang Chemical Mines Design and Research Institute of Jiangsu, People's Republic of China. She arrived at Headquarters in April to begin a 1-year study on the effective use of phosphate rock.

Although China has large phosphate resources, its present ore-processing capabilities fall far short of demand due to low mine output and limited reserves of easily beneficiated rock. The Lian-Yun Gang Institute is China's national research center for phosphate beneficiation. Their mandate is to develop the technology for China's siliceous and dolomitic ores to produce concentrates suitable for processing into a variety of chemical fertilizer intermediates and products. In 1982, China was the world's fourth largest producer at 12.5 million tons per year. Their goal

is to reach nearly 21 million tons per year by 1992. Thus Jin and her colleagues must find applicable solu-

tions in the near future.

Jin received a fellowship from the United Nations Industrial Develop-



Jin Wenrong, Mineralogical Engineer with the Lian-Yun Gang Chemical Mines Design and Research Institute, Jiangsu, China, prepares to analyze a sample of phosphate rock using an X-Ray diffractometer, as Steven J. Van Kauwenbergh, IFDC Mineralogist/Petrographer, and Brenda A. Hamilton, IFDC Chemist, look on.

This on-the-job training is a critical step that is needed in helping her (Jin Wenrong's) country in attaining self-sufficiency in phosphate fertilizer.

ment Organization (UNIDO) to carry out her training. Initially she will become familiar with the general characteristics of commercial phosphate ores from around the world and the procedures used in their treatment. Then she will apply some of these methods to ores that she brought from China. In her evaluation of the successes and failures of her efforts, Jin will develop the practical skills and critical analysis

methods that will be used in developing solutions to the use of her country's problem ores.

As part of her training, Jin will attend the 30th Annual Denver X-Ray Conference on Applications of X-Ray Analysis to be held in Denver, Colorado (U.S.A.) in August.

This on-the-job training is a critical step that is needed in helping her country in attaining self-sufficiency in phosphate fertilizer.

Egypt—

Egyptian Fertilizer Development Centre Planned

The Arab Republic of Egypt is planning to establish an Egyptian Fertilizer Development Centre (EFDC), according to Owen W. Livingston, Director of IFDC's Fertilizer Technology Division.

During March 5-April 5 Livingston participated in a preparatory assistance mission to advise Egyptian officials, the United Nations Development Programme/Cairo, and the United Nations Industrial Development Organization on financial and technical aspects regarding the proposed facility so that funds that are now available can be used to initiate development of the Center. The budget for the total project is slightly more than US \$1 million in foreign exchange and 3 million Egyptian pounds in local currency for equipment and staffing.

"A building having nine laboratories and a pilot plant for EFDC activities already exists at Talca, near Mansura," Livingston says. "Adjacent to this facility is a training center and library, which can be used by EFDC."

Compared with other countries in the region, Egypt has a large industry to produce nitrogen and phosphate fertilizers, and consumption per unit of land is relatively high.

Nitrogen is produced as urea (46% N) and calcium ammonium nitrate (31% N). Phosphate fertilizers are mainly produced as single superphosphate (about 15% P₂O₅) with some triple superphosphate (40% P₂O₅), using local rocks and imported sulfur. Potash is imported in the form of potassium sulfate. The technology to produce the above straight fertilizers was acquired from abroad, and no indigenous research on fertilizer production is being conducted.

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—Owen W. Livingston

"A four-man Egyptian team visited fertilizer installations in Austria, Finland, the Netherlands, Hungary, and the United States (IFDC and TVA) in late 1986," he says. "At the conclusion of their fact-finding tour, the team members recommended that the Government of Egypt establish EFDC."

Once EFDC is operational, research will be conducted to make NP and NPK granular fertilizers, improve nitrogen and phosphate fertilizers, conduct physical quality tests, and provide training and information on these topics. Initially the EFDC will introduce granular products. Phosphate products are now only made in powdered run-of-pile form; nitrogen products are made by prilling. The industry is anxious to improve the quality of all products to reduce caking and dustiness and to improve agronomic use efficiency. EFDC will establish an onsite greenhouse so that the experimental products can be tested. Those showing promise would be tested further by the Ministry of Agriculture.

"The next step is to implement the equipment procurement phase and begin a search for staff so that EFDC can become operational to serve its intended purpose," Livingston says. "It is likely that IFDC will play a key role in the implementation phase."

Network Workshop Conducted for East and Southeast Africa

"A workshop of this nature provides an excellent forum for creating a common understanding of objectives of the East African Fertilizer Research Program," says Lewis B. Williams, Liaison Scientist with the IFDC-Africa Division.

Williams was summarizing the results of a fertilizer management and evaluation network workshop held in Nairobi, Kenya, during May 27-29. Seventeen representatives from eight East and Southeast African countries participated in the workshop, sponsored by the World Bank and the United Nations Development Programme and directed by Williams. Other IFDC staff members assisting him were Dr. Paul L. G. Vlek, Director of the Africa Division; Dr. A. U. Mokwunye, Coordinator—Agronomic Research, Africa Division; Dr. Amit H. Roy, Special Project Engineer; and S. Van Kauwenbergh, Mineralogist/Petrographer.

"The group was apprised of

IFDC's role in tropical Africa and how the East and Southeast African program complements the Center's overall objectives," Williams says.

Workshop attendees agreed that research programs must be created in individual countries and solutions to stated problems identified within the countries themselves. The order of priorities to be assigned to individual projects included: (1) development of indigenous fertilizer materials, (2) agronomic evaluation of possible fertilizer materials, (3) fertilizer marketing, and (4) training.

"Another highlight of the Workshop was the presentation of the country reports by the delegates," Williams says. "These reports included statements of ongoing fertilizer research programs and the constraints for implementation. Some interesting facts were cited regarding population pressures, inadequate funding and facilities, staff requirements, and priorities. The reports

generally identified areas where additional agricultural research is needed."

During the Workshop the phosphate deposits of East and Southeast Africa were discussed. Plans were made for field work, sample collection, and documentation of known deposits of all fertilizer raw materials in the region.

"Potential research programs involving phosphate rock and partially acidulated phosphate rock for selected crops were discussed in depth," Williams says. "The size of plots, fertilizer rates, time of application, site location, crop selection, and all trial details were discussed."

Network collaborators were identified in those countries represented at the Workshop. The Network representatives learned that it was their responsibility to develop programs for their individual countries. IFDC's role is to assist with the country programs.



Participants and leaders of the East and Southeast African Fertilizer Management and Evaluation Network Workshop, Nairobi, Kenya.

Training Program Activities

United Kingdom, Republic of Ireland, Netherlands, Belgium, and Federal Republic of Germany—

MODERN TECHNIQUES OF FERTILIZER DISTRIBUTION AND HANDLING EXPLORED

A different venue was chosen for a recent fertilizer distribution training program. For the first time in IFDC's history, a distribution program was held in Europe.

Fifteen fertilizer distribution managers, representing 12 organizations in 8 countries of Africa, Asia, and the Middle East participated in the program held June 8-26 in Europe. Under the direction of Dr. W. E. Clayton, Transportation/Distribution Specialist, the program dealt with the theoretical and practical aspects of fertilizer distribution, packaging, transportation, handling, and warehousing. Other IFDC staff who assisted with the program included M. T. Frederick, Chemical Engineer, and R. S. Giroti, Training Administrator.

The theoretical aspects were covered in formal presentations and

discussion sessions. Field trips to a number of commercial installations gave the participants a practical insight into the industry and allowed them the opportunity of observing modern distribution systems in action.

A highlight of the program was a presentation on fertilizer marketing in Europe by K. Isherwood of the International Fertilizer Industry Association.

In the United Kingdom field visits were made to ICI Fertilizers, ICI Visqueen and Polymers, Richard Simon and Sons, Miller-Weblift, Ltd.,

and Mulox IBC, Ltd. In Ireland the participants visited Grassland Fertilisers, Ltd.; in the Netherlands, the DSM fertilizer plant, Spaan Verpakkingen bv., and the Transport Bureau at Rotterdam Port; in Belgium, Manufert Terminal and Noord Natie Terminals at Antwerp Port; and in F.R. Germany, Haver and Boecker and Beumer Maschinenfabrik.

The relevance of these systems to the operations in the participants' own countries was addressed. The experience and knowledge made freely available by representatives of the commercial installations will contribute to improvements in the fertilizer supply and distributions systems in the participants' countries and help to ensure that fertilizer reaches the farmer in as good condition and at as low a price as possible.

The experience and knowledge made freely available by representatives of the commercial installations (during this training program) will contribute to improvements in the fertilizer supply and distribution systems in the participants' countries and help to ensure that fertilizer reaches the farmer in as good condition and at as low a price as possible.

The Manager of Spaan Verpakkingen bv, Rotterdam, the Netherlands—
M.F.C. Verhulst—
demonstrates the latest fertilizer packaging materials to the training participants.



Recent IFDC Publications

FERTILIZER MARKETING SYSTEMS AND POLICIES IN THE DEVELOPING WORLD

by Dr. Mohinder S. Mudahar and Dr. Edwin C. Kapusta

The purpose of this study is to analyze fertilizer marketing systems and policies in the developing world. The analysis entails a discussion of the individual components of the fertilizer marketing system and their integration into a cohesive national marketing effort; a comparison of the fertilizer marketing systems and policies of seven developing countries; and an in-depth case study of the evolution of the fertilizer marketing system and policy in Bangladesh. This information provides the basis for delineating common attributes of

and barriers to the more effective organization and operation of fertilizer marketing systems in the developing world. Selected marketing-related issues and constraints are then highlighted, and possible strategies for overcoming these constraints are identified.

This publication can be obtained by requesting IFDC Technical Bulletin T-33. Please address your orders to the IFDC Purchasing Department. The only charge is for a mailing and handling fee of US \$4.00 for U.S. addresses and US \$7.50 for overseas addresses.

Fertilizer Marketing Systems and Policies *in the Developing World*



IFDC International Fertilizer Development Center

Upcoming Training Programs

Program	Location	Dates
Headquarters		
<i>Fertilizer Marketing</i>		
Fertilizer Marketing Management	IFDC/ Other Locations	August 10-September 18, 1987
Statistical and Economic Analysis of Fertilizer Experimental Data	IFDC	September 21-October 9, 1987
<i>Fertilizer Production and Technology</i>		
Maintenance and Production Management With Ammonia/Urea Plant Operations Workshop	IFDC Other Locations	October 12-30, 1987
Regional Programs		
Regional Fertilizer Marketing	Nairobi, Kenya	July 13-24, 1987
Fertilizer Use Efficiency in the Tropics and Subtropics (in Spanish)	Cali, Colombia	November 9-27, 1987
Fertilizer Marketing Management	Manila, Philippines	December 7-18, 1987

NOTE: Dates are subject to change.

For further information on these training programs, please contact the Director, IFDC Outreach Division.



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