

Report

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

Headquarters—

Forty Delegates From 20 Countries Participated in Urea-Based NPK Workshop

"Compaction represents a leading edge technology that the fertilizer sector is moving toward," said Dr. Paul J. Stangel, then Deputy Managing Director and now President and Chief Executive Officer of IFDC, during the opening ceremonies of a special session on compaction—part of the Workshop on Urea-Based NPK Plant Design and Operating Alternatives.

Stangel pointed out that as developing countries shift their agricultural sectors toward diversification (fruits, vegetables, oil-seeds) to improve their citizens' diets and help improve the foreign exchange balance, they are demanding a wider range of fertilizer nutrients and more balanced plant nutrition. Compaction represents one of the innovations that will help to meet the expected needs of the developing-country fertilizer sectors in the future.

Forty delegates from 20 countries convened at IFDC on September 17 to participate in the newly organized 2-week workshop.

"The international delegates discussed a new generation of refined NPK (granular) fertilizer production technologies that are expected to be needed during the 1990s and beyond," says James J. Schultz, Workshop Manager. "The delegates enhanced their knowledge of fertilizer production choices by exploring more cost-effective methods of producing granular NPK fertilizers, using urea as the primary source of nitrogen."

Granular NPK fertilizers have the potential of providing more balanced plant nutrition than is currently achieved. Moreover, well-balanced fertilizers will help the farmer and lessen any adverse impact on the environment caused by inefficient use. As environmental concerns become increasingly important in the world, fertilizer producers must look for improved ways to manufacture their products. Urea is used as the primary source of nitrogen in this new generation of fertilizers because it is the most widely available and most cost-effective nitrogen source in most parts of the world. In addition, urea is easier, safer, and less costly to transport than most other sources of nitrogen.

The Workshop delegates were from Austria, Canada, Chile, Colombia, Costa Rica, Egypt, Finland, France, Guatemala, India, Indonesia, Italy, Jordan, Malaysia, Mexico, Nigeria, Turkey, and the United States. The delegates included (1) process and equipment design engineers whose companies serve developing-country clients, (2) technical managers and engineers from operating plants in developing countries, and (3) developing-country planners and policymakers.

In addition to the IFDC staff, the workshop faculty included representatives of major international industrial and engineering companies who shared their technical and commercial experiences with the delegates.

The workshop delegates observed several demonstrations performed in the IFDC and Tennessee Valley Authority (TVA) pilot plants. The demonstrations illustrated the importance of key plant design and operating criteria. The delegates viewed the actual production of urea-based granular NPK fertilizers under ideal as well as less than favorable conditions.

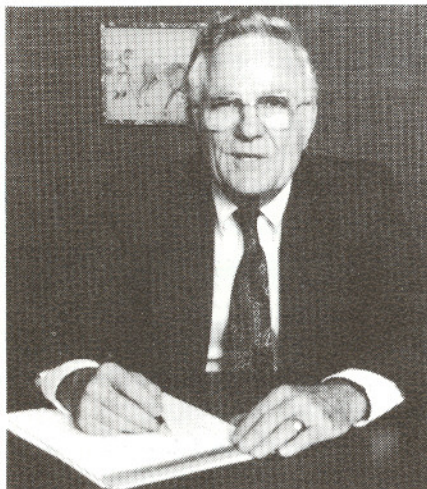
The special session on compaction—a dry granulation process that, in some cases, is an alternative to more complex chemical methods—featured presentations by representatives of Koppert (U.S.A. and Germany), Sahut-Conreur and Co. (France), Technifert S.A. (France), A. J. Sackett and Sons Co. (U.S.A.), and FERQUIGUA (Guatemala).

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President's Report



(Photo by Charles E. Butler)

Dr. Paul J. Stangel
IFDC President and
Chief Executive Officer

The new IFDC President has been with the Center since 1975. His initial position was a dual role: Director of the Outreach Division and Deputy Managing Director. In 1976 Stangel became the full-time Deputy Managing Director. Stangel's professional career thus far has spanned a period of 25+ years. His influence on agricultural development has been especially realized in Asian and Middle Eastern countries, particularly Indonesia, Philippines, Pakistan, Burma, Bangladesh, and more recently Nepal and Egypt.

On October 5, 1990, the IFDC Board of Directors relieved Dr. David B. Parbery of his duties as Managing Director for health reasons. The Board placed him on a 6-month medical leave after which time it will again review his health situation and potential to return to work at IFDC in some other capacity.

Through IFDC Board action the positions of Managing Director and Deputy Managing Director were retired; in their places two new positions were established, namely, the positions of President and Chief Executive Officer and Executive Vice President and Chief Operating Officer.

I was appointed President and Chief Executive Officer, and Dr. Amit H. Roy was appointed Executive Vice President and Chief Operating Officer.

IFDC Membership in CGIAR

The Consultative Group on International Agricultural Research (CGIAR) at its annual meeting held October 29-November 2, 1990, in Washington, D.C., agreed that natural resource management and productivity were the twin pillars of CGIAR-supported research. Within this context the Group endorsed the themes of soil/water relationships and soil fertility as important aspects of natural resource management and recommended that these be closely linked with eco-regional considerations.

The Group did not reach a consensus on the mechanism of how these linkages should be developed nor was there a clear agreement on the role that the associated and nonassociated centers could play in developing these themes. As a result the Group deferred until later any decision to invite IFDC or the International Board for Soil Research and Management (IBSRAM) to join the System. CGIAR will reconsider the role that IFDC and IBSRAM will play in implementing the natural resource management component of the System, following elaboration and discussion of a Technical Advisory Committee (TAC) paper on ecoregional activities. A preliminary discussion is expected at the May meeting of CGIAR with a full deliberation anticipated at the next annual meeting scheduled for October 1991.

Prior to the Washington meetings of CGIAR, the IFDC Board strongly recommended that IFDC Management explore ways to more closely link IFDC activities with those of IBSRAM. Since then IFDC Board Chairman Dr. W. David Hopper and IBSRAM Board Chairman

Dr. Werner Treitz have met and agreed that senior management will prepare a joint paper that outlines the strategy that the two institutions will follow in developing closer linkages with each other's programs and address the issues raised recently by CGIAR.

IFDC Programs in Africa

IFDC's presence in Africa has grown rapidly over the past 3 years. In addition to our major facility, IFDC-Africa, in Lomé, Togo, IFDC has entered into an agreement with the Organization of African Unity to manage the African Centre for Fertilizer Development (ACFD). At its October meeting, the Board nominated Dr. Samuel C. Muchena, an IFDC Board member, to serve as ACFD's first Managing Director. In addition, IFDC is providing assistance to the Egyptian Government through the United Nations Industrial Development Organization (UNIDO) to establish an Egyptian Fertilizer Development Centre (EFDC). EFDC has asked IFDC to consider establishing a physical presence in Egypt where we would service from that Centre our programs in the Middle East and North Africa.

The IFDC Board has approved this increased involvement; however, it instructed Management to develop a paper that outlines in detail IFDC's overall strategy for Africa. In that paper Management is to provide an accounting of the role of fertilizer in sustaining agricultural development in Africa; the respective roles of IFDC Headquarters, IFDC-Africa, ACFD, and EFDC in carrying out this function; and finally the linkages these institutions should have with the other international agricultural research centers and the national agricultural research systems.

Paul J. Stangel

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The delegates in the NPK Workshop gave the program high marks in both form and content. T. Ramaswami, NPK Plant Superintendent for NAFCON, Nigeria, and B. Ajala, NAFCON Technical Services Manager, pointed out the beneficial exchange of practical information that occurred during the program.



(Photos by Charles E. Butler)

Top: Urea NPK Workshop delegates examine urea-based NPK product in IFDC's Pilot Plant.

Right: Delegates to the Urea-Based NPK Workshop observe the performance of a dryer while producing urea-based NPK fertilizer.

According to Ramaswami, "A person starting an NPK plant is better equipped now to do so."

Ajala appreciates the fact that the workshop incorporated the practical aspect of the work. "In our part of the world NPKs will increasingly be used in the future. In the years to come when we receive requests from agronomists for a specific kind of product they need, we will have the information to help us meet the farmers' needs," Ajala says.

Another delegate, Koh Ting Tiew, Works

Manager for the Chemical Company of Malaysia Berhad, realizes that the fertilizer market in the developing world is rapidly changing. "Although our company's fertilizer market is based on ammonium nitrate, we must prepare to face the challenge of meeting the demand for urea. This particular workshop has been very useful to me since I benefited from the research and development of IFDC and the delegates who represent 75% of all the world's manufacturers of urea-based NPK fertilizer," Tiew says.

This Malaysian delegate points out three specific benefits that he gained from the workshop. "First, I came here with questions, and most have been answered. Second, the delegates are very open and helpful in sharing experiences. Third, I have made valuable contacts with particular companies that operate such plants as well as those that supply equipment."



Vietnam—

Technical Assistance and Research Activities Conducted by IFDC



IFDC is influencing the agricultural sector of Vietnam, both from the research standpoint as well as technical assistance. As a member of a World Bank study team, IFDC recently provided technical assistance to Vietnam, and the Center is participating in collaborative nitrogen and phosphorus research in that country.

Technical Assistance

An IFDC fertilizer marketing specialist, John H. Allgood, represented IFDC on a World Bank team that examined the total agricultural sector of Vietnam, including agricultural machinery, insecticides, pesticides, fertilizers, agricultural processing industries, and

credit. The mission was conducted during October 9-28, 1990.

Allgood specifically evaluated the flow of fertilizer through the distribution system, the efficiency of that system, warehousing needs, and bulk handling operations.

The fertilizer market in Vietnam has grown rapidly during the past decade. Currently, Vietnamese farmers use about 1.4 million tons of fertilizer per year. "Because of the 15+% per annum growth in fertilizer use, additional pressure has been placed on the fertilizer distribution system," Allgood says.

The IFDC portion of the World Bank study recommended that the fertilizer sector convert from a manual bagging operation to a mechanical bagging operation at dockside. "This change would help to elimi-

nate the 2%-4% losses presently being realized in the bulk import and local bagging operation," Allgood says.

It was also recommended that three of the existing fertilizer warehouses in Ho Chi Minh City be rebuilt and training in fertilizer marketing be provided.

Nitrogen and Phosphorus Research

Preliminary results from collaborative field research conducted by IFDC, the International Rice Research Institute (IRRI), and Vietnamese institutions suggest that nitrogen fertilizer efficiency in the Red River Delta (North) is limited

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mostly by adverse climate and high nitrogen losses, whereas nitrogen efficiency in the Mekong Delta (South) is limited by crop management (lodging, plant population, and diseases).

This project, funded by the Australian Centre for International Agricultural Research (ACIAR), was established at the Institute for Soils and Fertilizer in Hanoi in 1988. Dr. Roland Buresh, IFDC Soil Scientist posted at IRRI, gives technical support to the project. "Because of limited foreign exchange, nitrogen fertilizer is expensive in Vietnam," Buresh says.

To reduce nitrogen losses and increase yields, this collaborative research is investigating the magnitude of losses from urea fertilizer applied to rice and examining alternative methods for incorporating urea more effectively into soil.

Dr. Tran Thuc Son, Soil Scientist with the Institute for Soils and Fertilizer, participated in a 2-month training program with Buresh at IRRI and is now conducting the

experiments on nitrogen fertilizer efficiency in his country.

As for the phosphorus component, IFDC and IRRI are conducting collaborative trials using phosphorus fertilizers produced from Vietnamese deposits. These trials are being conducted at the Institute for Soils and Fertilizer and

the Institute for Agricultural Sciences at Ho Chi Minh City.

"The objective of the collaboration on phosphorus is to examine the options for effective and economic utilization of existing phosphorus resources in Vietnam," says Buresh.

(Photos by Dr. Roland Buresh)

Right: Research workers collect soil samples for ^{15}N balances determination in a collaborative Cantho University/IRRI/IFDC experiment on efficient use of nitrogen fertilizer for rice in the Mekong Delta.



Left: Dr. Tran Thuc Son (left) from the Institute of Soils and Fertilizers (Hanoi) and Dr. Cong Doan Sat from the Institute for Agricultural Sciences (Ho Chi Minh City) discuss a collaborative Vietnam/IRRI/IFDC experiment (background) on phosphorus fertilization of broadcast seeded rice on acid sulfate soils in southern Vietnam.

Board Profile—

Brazilian Development Official Joins Board

"Institution building is an important part of my life," says Dr. Eliseu Roberto de Andrade Alves, in summarizing the most satisfying aspect of his 34-year career in Brazilian agricultural development.

The former President of CODEVASF, or the Sao Francisco Valley Development Company, joined the IFDC Board of Directors in 1989 and has attended two meetings of that group.

Alves looks forward to his association with the Board. He believes he will "profit more by learning as a member of the Board but will also give (his) best to help."

With his broad background in extension, teaching, research, and development, Alves is sure to make many substantive contributions to the Board and IFDC. For 5 years the Brazilian official headed CODEVASF, the Brazilian organization assigned the task of developing the Sao Francisco Valley. A large part of CODEVASF's work involves irrigation and fertilization. The effectiveness of Alves'

organization is evidenced by the fact that Brazil's irrigated area has increased by 1 million ha since 1985. Of this amount 300,000 ha is located in the poverty-stricken region of northeastern Brazil. At present, the irrigated area comprises 4% of the total cultivated area and is responsible for 16% of the grain produced in Brazil or 4 times more than the nonirrigated area.

Prior to Alves' joining CODEVASF, he served as executive director and president of the Brazilian Agricultural Research Organization or EMBRAPA. Agricultural production has increased greatly in Brazil, mainly because of EMBRAPA. Sixty percent of this growth in agricultural production has been due to increases in yields. Forty percent has been brought about by increases in the area cultivated. As a comparison, 20 years ago increased yields were responsible for 0% of growth in agricultural production.

To prepare for his life's work, the Brazilian native was first educated at

the University of Vicosa (Brazil), where he received a B.S. degree in agriculture. At Purdue University (U.S.A.) Alves received both M.S. and Ph.D. degrees in agricultural economics.

During his illustrious career, Alves has received many honors and awards for his work. Among the most distinguished are a medal of the Honorary National Order, Government of France; Doctor "Honoris Causa," Purdue University (as a consequence of his work with EMBRAPA); and Distinguished International Alumnus of Purdue University during the Centennial Celebration of the National Association of State Universities and Land Grant Colleges.

Alves is a former member of the Boards of Directors of the International Food Policy Research Institute and the International Crops Research Institute for the Semiarid Tropics.

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**Right:
Dr. Eliseu Roberto de Andrade Alves
Brazil
IFDC Board Member**

FAI Executive Director Adds Asian Perspective to Board



(Photo by Charles E. Butler)

Pratap Narayan
India
IFDC Board of Directors

Although Pratap Narayan, Executive Director of the Fertiliser Association of India, has only been involved in the fertilizer sector for the past 12 years, he has had a tremendous impact on the development and growth of the fertilizer industry in his country.

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As for his impressions of IFDC, Alves has this to say: "I am favorably impressed with IFDC's work, especially in developing fertilizer for the acid soils of Latin America. The Brazilian fertilizer industry has great respect for IFDC."

(Photo by Charles E. Butler)



In fact, his efforts in the fertilizer world were recognized by the Food and Agriculture Organization (FAO) of the United Nations in 1987 when he was presented the Fertilizer Programme Silver Jubilee Commemorative Medallion.

Narayan, a relatively new member of the IFDC Board of Directors, has found his work in the fertilizer sector to be very satisfying. "It has been a great challenge and a source of satisfaction for me to be involved in the development of the fertilizer sector in my country," he says. "My work in the evolution and implementation of fertilizer pricing policies to boost the growth of the fertilizer industry during the 1980s has proved quite gratifying."

Surprisingly the Asian Board member did not begin his career in agriculture. After receiving a Master of Science degree from the University of Allahabad, India, he joined Indian Railways in 1958 and held a number of positions in the commercial and operations departments. In 1969 Narayan joined the Indian Railway Board as Deputy Director of Planning and in 1972 was promoted to Joint Director of Planning. In these capacities he was responsible for the preparation of the annual plans and 5-year plans of the Indian Railways.

After 9 years with the Railway Board, Narayan was named Executive Director and Member-Secretary of the Fertiliser Industry Coordination Committee in 1978. For the next 5+ years he dealt with the fixation of remunerative ex-factory prices for various fertilizer plants and consequent payment of subsidy to the industry. The administered price system for fertilizers has enabled growth of consumption as well as production of fertilizers in India. In this capacity, he was also actively associated with the various working groups dealing with the establishment of new fertilizer projects and transportation requirements for fertilizers.

After a brief stint as Chairman

and Managing Director of Hindustan Fertiliser Corporation, a public-sector undertaking, in August 1984, Narayan joined the Fertiliser Association of India as Executive Director. Since then he has represented India in various conferences and meetings organized by international organizations such as FAO, the World Bank, the International Fertilizer Industry Association, and others.

A recognized authority on fertilizer pricing policies, Narayan has published extensively on these subjects.

Regarding his association with IFDC, Narayan summed up his impressions in this way: "I have found the work being done by IFDC, particularly in agricultural research and training in the various disciplines of fertilizer production, marketing, and use, to be extremely beneficial for personnel in developing countries. Coming from a developing country, my goal as a Board member is to project the problems that developing countries face and seek ways that IFDC can further help in these respects."

Narayan is pleased with the representation on the Board of Directors. "My idea is that such an amalgam is necessary because otherwise the policies of IFDC, particularly with reference to subsidy, marketing, and distribution of fertilizer, may tend to be influenced by the open market economy concept of developed countries, having no relevance to the conditions of the poor developing countries."

For several years Narayan's organization has collaborated with IFDC on various training programs. He feels that the two organizations need to work more closely, especially in view of the fact that, among the developing countries, India is one of the largest producers and consumers of fertilizers.

Speaking of his hopes for the future work of IFDC, Narayan says, "India has a strong base of agricultural research, and IFDC's nitrogen research work, especially urea deep placement, can lead to beneficial results for my country. Here again, there is hope for increased collaborative work in India."

Training Activities



Headquarters—

Fertilizer Marketing Program Provides Practical Applications

"This gives me a chance to gain a deeper insight into the marketing component in preparation for the implementation of Kenya's ten-year market development program."

This statement summarizes the reaction of Isaac Kirimi, Assistant Director of Agriculture, Ministry of Agriculture, Nairobi, Kenya, to the 1990 Fertilizer Marketing Management Training Program.

The program, conducted at IFDC Headquarters during August 6-September 14, was under the direction of Ian Gregory, IFDC Marketing Specialist. This training activity attracted 16 participants from Bangladesh, Cameroon, Costa Rica, Haiti, India, Indonesia, Israel, Kenya, Nigeria, and Taiwan. During the program attention was focused on integrated marketing concepts, marketing planning, and marketing systems development.

In his work with Kenya's Ministry of Agriculture, Kirimi is responsible for the Farm Management Division, which encompasses the marketing of all agricultural inputs, including fertilizers.

Kirimi explained some of the marketing decisions that he confronts in his day-to-day activities. "If an input is in short supply in a particular area, I must coordinate with private companies and the users of the product to determine the cause of the shortage and how to rectify the situation," he says.

This training program provided the participants with many practical applications that can be beneficial in their own fertilizer sectors. For example, Kirimi says, "The discussions on soil testing will be very helpful in my work back home, especially since we are in the pro-

cess of establishing soil testing units in Kenya."

One particular topic was especially interesting to Kirimi, that is, transportation and distribution. "The shipping/procurement information that we acquired will be beneficial to me in handling the donor fertilizer that we receive," Kirimi says.

Another participant in this program, M. A. Wadud, Controller of Accounts, Bangladesh Agricultural Development Corporation, found the training experience to be quite beneficial. In fact, he mentioned that "after observing meth-

ods of fertilizer marketing in a developed country, we can apply these to our own situations in our countries."

During the program participants made extensive field tours in the Midwest and Florida to examine firsthand U.S. fertilizer marketing and distribution systems.

Wadud emphasized the value of exposure to the experiences and ideas of participants from other countries. "The interaction with other participants can be very beneficial since I plan to apply their experiences to my situation," he says.



(Photo by Charles E. Butler)

M. A. Wadud, Controller of Accounts, Bangladesh Agricultural Development Corporation, and Isaac Kirimi, Assistant Director of Agriculture, Kenyan Ministry of Agriculture, discuss a scheduled topic in the Fertilizer Marketing Management Training Program.



Headquarters—

Plant Production Managers and Engineers Gather Information on Latest Fertilizer Technology

Taher Mahmood Salama Mehana of the El Nasr Company for Chemical Industries (SEMADCO) in Egypt has a keen appreciation for the training that he and his colleagues gained at IFDC during the program on "Technical Management of Fertilizer Production Units," during October 9-26, 1990, at IFDC Headquarters.

Specifically, Salama emphasized that "equipped with the new technology and methods of fertilizer production, all of the young managers from developing countries are better able to take on their responsibilities for the development and progress of both their companies and their people."

In addition to training some of SEMADCO's employees, IFDC is also involved in the establishment of an Egyptian Fertilizer Development Centre (EFDC) in Egypt. The establishment of EFDC is being coordinated by the United Nations Industrial Development Organiza-

tion (UNIDO) with funding from the United Nations Development Programme (UNDP). Regarding the new centre in his country, Salama says "We hope that this will be fully operational in the near future to help not only Egypt but also other developing countries in Africa to establish new chemical fertilizer industries."

This 3-week training program attracted 15 key plant production and engineering staff members from companies in Austria, Costa Rica, Egypt, India, Indonesia, and Taiwan. Jorge R. Polo, IFDC Senior Project Analyst, served as the program's manager.

"In offering this program, IFDC is answering a need for fertilizer plant management personnel in developing countries to be exposed to the latest concepts of management and technology used in various production activities," Polo says.

Fertilizer plants with expensive equipment and increasingly com-

plex technology require highly coordinated and effective management to keep these plants operating efficiently and economically. Included on the program agenda were presentations on a wide range of modern management techniques, plant maintenance and operation, plant optimization and modifications, product quality control, safety, pollution control, and waste management.

Besides those given by the IFDC core faculty and World Bank officials, presentations were made by 19 executives from England, Japan, the Netherlands, and the United States.

During the last week of the program, the participants traveled to New Orleans, Louisiana (U.S.A.), and Lakeland, Florida (U.S.A.), to observe firsthand the demonstration of applied technical management theories and practices in commercial-scale nitrogen and phosphate production units.



(Photo by Charles E. Butler)

Participants in a panel discussion on "Constraints to Improve Plant Operations and Cost Effectiveness" answer questions posed by engineers attending training program on Technical Management of Fertilizer Production Units. Panelists are (from left): Dr. Dennis H. Parish, Director, Agro-Economic Division, IFDC; Melvin Norton, Senior Scientist, National Fertilizer and Environmental Research Center/Tennessee Valley Authority; Mabry Handley, Director of Technical Services, IMC Fertilizers, Inc.; Hidetoshi Uchino, Manager of Licensing, Toyo Engineering Corporation, Japan; Erick Kelder, Process Development Supervisor, Texasgulf, Inc.; and Jose R. Lazo de la Vega, IFDC Special Project Engineer.

1991 Calendar of Training Programs

Program	Dates	Location
Environmental Impact of Ammonia and Urea Production Units*	March 25-29	Bombay, India
Computer Simulation for Plant Growth and Nutrient Management	May 6-17	Muscle Shoals, Alabama, U.S.A.
Modern Techniques in Fertilizer Distribution and Handling	June 10-28	Europe
Agroeconomic Evaluation for Development of Fertilizer Recommendations	July 8-26	Muscle Shoals, Alabama, U.S.A.
Fertilizer Marketing Management Training Program	August 5-Sept. 6	Muscle Shoals, Alabama, U.S.A.
Policy Issues Affecting Fertilizer Sector Development and Sustainable Agriculture	September 9-20	Muscle Shoals, Alabama, U.S.A.
Fertilizer Strategies for Growth in Sustainable Crop Production*	October 14-18	Muscle Shoals, Alabama, U.S.A.
Financial, Economic, and Environmental Impact Analysis for Fertilizer Sector Projects	November 4-22	Muscle Shoals, Alabama, U.S.A.
Efficient Fertilizer Market Development	December 2-13	Bangkok, Thailand

Program dates and locations are subject to change.

Fees do not include travel or living expenses.

*Training Workshops.

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Published Quarterly by the
 International Fertilizer Development Center

IFDC is a public, nonprofit organization dedicated to increasing food production through the development of new and improved fertilizers and fertilizer know-how for developing countries.

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