IFDC

report

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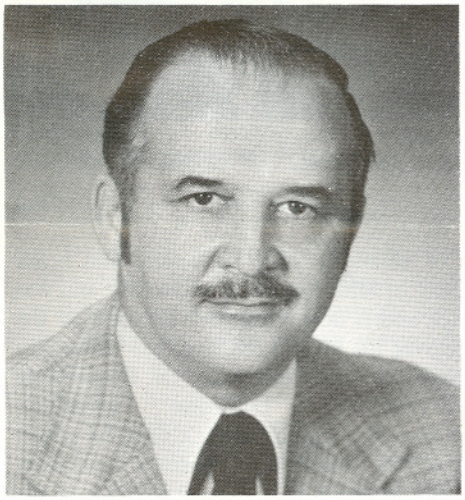
an update on
the work & progress at the
International Fertilizer Development Center



Dr. Donald L. McCune
IFDC Managing Director

Managing Director's Report

IFDC starts 1976 with a staff of thirty people representing five different nationalities organized into four units—the Administrative Unit, two Research and Development Divisions, and an Outreach Division. Mr. Travis Hignett, retired from TVA, is Acting Director of the Fertilizer Technology Division. Dr. Per Pinstrup-Andersen moved from CIAT February 1 as Director of the Agro-Economic Division. Dr. Paul J. Stangel, formerly with TVA, is Director of the Outreach Division as well as Acting Assistant Managing Director in charge of program development and coordination.

Temporary offices and laboratories for the technical staff have been made available through the renovation of a building on Tennessee Valley Authority (TVA) property. Management functions are carried on in rented facilities located in Florence, Alabama.

An architectural and engineering firm, Walk Jones and Francis Mah, of Memphis, Tennessee, has been retained for design and engineering of new buildings to be constructed on TVA land. These buildings include office-laboratory-training and greenhouse-headhouse complexes and a nearby building for pilot plant activities. Groundbreaking is scheduled for late March with the headhouse-greenhouse to be ready for occupancy by October 1976 and the pilot plant building by early 1977. Completion of the total complex is scheduled for early 1978.

The United States Agency for International Development (AID) has provided minimal core funds for three years of operation and has also provided a grant for construction of the new facilities. Discussions with other potential donors are scheduled for early 1977. Reimbursable work totaling over $400,000 has been contracted with major projects arranged for Colombia, Brazil, and Venezuela in South America; for 12 west African countries; and for Pakistan and the Philippines in Asia.

IFDC is contracting portions of its program work. TVA is the major contractor with seven to eight man-years of work already under way. Contracts are also being arranged with various universities as well as individuals and organizations in the United States and abroad to furnish additional and specific expertise not available from IFDC staff.

Chairman's Report

"IFDC became a reality as a nonprofit, educational corporation in October 1974 when the founding board met and drew up the by-laws and Articles of Incorporation. Founding Board members are Dr. Webster Pendergrass, Vice President for Agriculture, University of Tennessee, as Vice Chairman; Mr. Lynn Seeber, General Manager of TVA, as Secretary-Treasurer; and the writer as Chairman. Dr. Donald McCune was hired as IFDC's Managing Director, beginning in November 1974. Recent IFDC Board additions are Mr. Fernando Penteado Cardoso of Brazil, Mr. Moise Mensah of Benin (formerly Dahomey), and Dr. S. K. Mukherjee of India.

The primary objective of the IFDC is to improve fertilizers and fertilizer know-how for the developing countries, especially for tropical and subtropical agriculture. Increased food production in the tropics is imperative and fertilizers must play a major role. We see the IFDC as an essential link in a program to feed a hungry world.

Dr. John A. Hannah
IFDC Board Chairman

We readily accepted the offer to locate the IFDC on TVA property adjacent to the National Fertilizer Development Center at Muscle Shoals, Alabama. This location provides the capability to quickly mount effective programs at minimum cost. The sharing of some facilities and the interaction of the two staffs, that have many complementary objectives, provide an opportunity to ensure minimum duplication and maximum output from the limited funds available to IFDC.

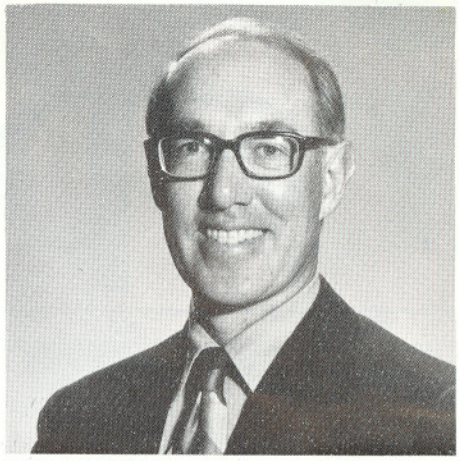
Initial funds for development of a proposal, setting up the organization, and for initial staffing of IFDC came from the U.S. Agency for International Development (AID) and the International Development Research Centre (IDRC) of Canada. The proposal was reviewed and approved by AID and IDRC as well as the Technical Advisory Committee (TAC) to the Consultative Group for International Agricultural Research (CGIAR).

The IFDC has been invited to undergo TAC reviews like the other international centers and attend CGIAR annual reviews. No funding commitment has been made by the CGIAR, but coordination of the work as well as cooperative programs with other centers are being encouraged. It's our goal to obtain full acceptance and participation in the CGIAR."

The Founding Board

Vice Chairman Pendergrass

Chairman Hannah



Secretary-Treasurer Seeber

The Founding Board of IFDC convened in October 1974 to launch IFDC on its mission to help increase world food production through fertilizer research and development, technical assistance, and technology transfer to developing countries. Board members were well qualified for their responsibility. Chairman JOHN HANNAH is a graduate of Michigan State University and holds honorary degrees from more than 30 colleges and universities. From 1941-69 he was president of Michigan State University and was Administrator of AID from 1969-73. He was heavily involved in the World Food Conference and is now Executive Director of the World Food Council of the United Nations. Vice-Chairman WEBSTER PENDERGRASS received his BS and MS from the University of Tennessee and his Ph.D. in Public Administration from Harvard. In the interest of international food production Dr. Pendergrass has visited 43 countries of the world. He is currently Vice-President of Agriculture at the University of Tennessee. Secretary-Treasurer LYNN SEEBER has his JD in Law from the University of Tennessee. He has filled several positions at TVA since he joined them in 1952. He now is TVA General Manager. He is a member of the Board of Directors of the Project Management Corporation that will build the nation's first fast breeder nuclear power plant at Oak Ridge, Tennessee. Mr. Seeber is also a board member of the Atomic Industrial Forum.

New Board Members

Cardoso of Brazil

Mensah of Benin

Mukherjee of India

The IFDC Board of Directors has been expanded by the addition of three new members. FERNANDO PENTEADO CARDOSO is Director of the State Industry Federation of Sao Paulo and President of MANAH S/A Comercio e Industria, Sao Paulo, Brazil. Mr. Cardoso was born in Sao Paulo and received his BS in agronomy from the University of Sao Paulo. He is a founder/member of the Latin American Food Conferences sponsored by IMC of the United States. He is also Founder and President of the Farm Association and of the Farmers Cooperative in Descalvado. MOISE CHRISTOPHE MENSAH is Vice Chairman and Executive Secretary of the Consultative Group on Food Production and Investment in developing countries. Mr. Mensah is of Benin (formerly Dahomey) nationality and was educated in Benin, Senegal, and France. He received a degree as Ingenieur Agricole from the Ecole Nationale de l'Agriculture, Grignon, France, and a diploma in Planification et Compatabilite Nationale from the Centre d'Etudes Financieres, Economiques et Bancaires in Paris. From graduation until 1967 Mr. Mensah was engaged in positions for his home government. From 1967 to present he has been employed by the Food and Agriculture Organization of the United Nations (FAO) as a regional director stationed in Accra, Ghana. S. K. MUKHERJEE is Chairman of the Fertiliser Association of India and a Director of the Fertilizer Corporation of India. Dr. Mukherjee was born in Rupuspur, District Birbhum, India. He received his BS and MS in chemistry from Calcutta University and SM and Sc.D. from Massachusetts Institute of Technology. He is a member of the American Society of Advancement of Science, Indian Institute of Chemical Engineers, Institution of Chemists, Indian Chemical Society, and many other scientific societies.

IFDC's PHOSPHATE PROGRAM

Dwindling supplies of high grade phosphate ore, increasing world demand, and a price increase of 400-500 percent since 1972 have prompted developing countries to seek the utilization of previouslv uneconomical phosphate ore deposits.

Travis Hignett, IFDC's Acting Director of Fertilizer Technology, says that in response to this heightened interest in utilizing "low-grade" phosphate ores, IFDC has placed major program emphasis on identifying, researching, and recommending the best uses for indigenous phosphate resources. The utilization of these more difficult phosphate ores poses technical engineering problems in mining, beneficiation, and use in conventional processes. Currently, three types of ores are under study: (1) ores of high iron and aluminum content; (2) ores of high carbonate content; and (3) ores of high chloride content.

Another component of IFDC's phosphate program is the identification or development of effective and economical phosphate fertilizers for use in tropical and subtropical soils. IFDC intends to identify the most economical combinations of processes and products to satisfy local needs of developing nations utilizing indigenous materials whenever possible.

The need for better balanced fertilization programs in developing countries is increasingly important. In the past, many developing nations have placed the highest priority on nitrogen fertilization, often because of the spectacular crop responses in initial cropping years, compared with only modest initial responses to phosphorus and potassium. After several years of cropping with only nitrogen fertilization, however, the soil supply of phosphorus may become exhausted to the point that yields begin to drop appreciably, even with continued applications of nitrogen fertilizer. In contrast, a balanced NPK program of fertilization achieves and sustains high crop yields.

The fertilization potential for direct applications of pulverized phosphate rock is being explored. Evaluation methods to accurately test the reactivity of phosphate rocks are being refined and simplified. Study of granulation methods or slurry preparation of finely ground phosphate rock to facilitate mechanical spreading is also under way.

Phosphate programs at IFDC will be tailored to meet the needs of specific countries or organizations requesting assistance. To respond to requests for assistance, IFDC is assembling the necessary resources and facilities to carry out an international program in fertilizer research and development.

Travis Hignett, Acting Director of Fertilizer Technology, tests a new UV-VIF Spectrophotometer in IFDC's newly equipped instrumentation laboratory.

A National Academy of Science of USA delegation boards a concrete diesel powered boat for a short ride to a typical cement factory during their PRC visit to learn about the role of rural small-scale industry in agricultural development.

PRC's Approach To Fertilizer Development

In the People's Republic of China (PRC), agricultural and industrial development strategies follow the theme of self-reliance. Indigenous materials and easily adopted technologies are being used to build small rural-based industries capable of being constructed and operated with local resources and serving local markets.

In the summer of 1975, an IFDC chemical engineer, Owen Livingston, traveled to PRC as part of a National Academy of Science technical delegation to study the Chinese rural small-scale fertilizer industry.

During his 28-day trip, several small-scale nitrogen production units were visited. In these plants, coal is being used as the feedstock-fuel to produce ammonia, the building block of all nitrogen fertilizers. Available coal in China ranges in grade from lignite to anthracite, however, only the use of anthracite coal was observed. Process technology in coal-based plants is very similar to that used in prior years by other countries before natural gas became available. Over 1,000 small-scale plants were producing ammonia for nitrogen fertilizer.

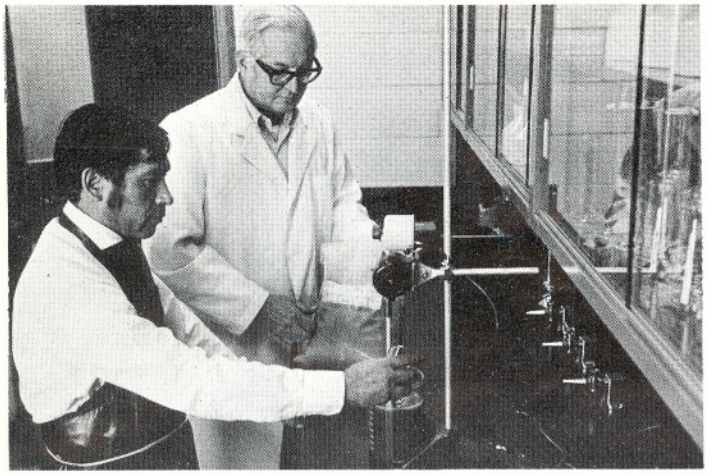
The Chinese have opted for a fertilizer development strategy that stresses product quantity over quality. Rural plants are built with local resources and levels of technology easily adopted and maintained by local people. Output per plant is small and is restricted for use in the immediate market area.

Fertilizer processes observed in China using lower-level technology may be utilizable in varying degrees in other developing countries. Transferring technologies is complex and should be investigated on an individual case basis.

IFDC is developing tools and methods to evaluate such transfer. Potential projects will be evaluated from a comprehensive perspective—technical, agronomic, and economic. Perhaps in studying the transferability of low-level fertilizer technologies, IFDC can borrow an often heard Chinese phrase, "much work remains to be done."

Publications Available From IFDC—

* "Granular Urea—Advantages and Processes" published by IFDC.
* "The Potential for Regional Cooperation in Fertilizer—A Methodology Study of the ASEAN Group" published by IFDC.
* "Supplying Fertilizers for Zaire's Agricultural Development" published by TVA.



Ing. Angel CALVO Herrera, Ministry of Industry, Peru (left), is observed by Bob Horn, IFDC Research Chemist, as Sechura phosphate rock is washed in the first step of a beneficiation study. Ing. Calvo's work/study program at IFDC will concentrate on technology to improve the utilization of indigenous Peruvian phosphate rock.

Ing. Ivan Dario Parra (right) from Venezolana del Nitrogeno (NITROVEN), El Tablazo, Venezuela, gets an explanation of sulfur-coated urea (SCU) production from R. S. Meline of TVA's Process Engineering Branch during a pilot-plant study visitation. Ing. Parra is studying fertilizer production and marketing in an IFDC individual study program.

IFDC

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Ing. Rafael PEREZ Silva, Centro Nacional de Investigaciones Agropecuarias in Venezuela (right), studies greenhouse techniques with Charlie Hunt of TVA. Ing. Perez is spending several months in an IFDC fertilizer study program which includes soil testing and mapping, greenhouse techniques, SCU technology and use, and new product development.

TRAINING PROGRAMS ON THE GROW—

Two primary objectives for IFDC training programs in 1976 are to develop (1) an intensive fertilizer plant maintenance training program; and (2) a fertilizer marketing program. The maintenance training program will include the study of typical production systems, development of maintenance literature systems, maintenance scheduling, parts inventory systems, parts fabrication, and development of in-plant training programs.

The marketing program will offer training concerned with moving fertilizers from the manufacturing plant to the farmer, including storage and inventory systems, promotion, and special emphasis on distribution and finance.

Custom designed single person or small group training programs will be increased. Typical programs are those depicted on this page for Calvo, Parra, and Perez.