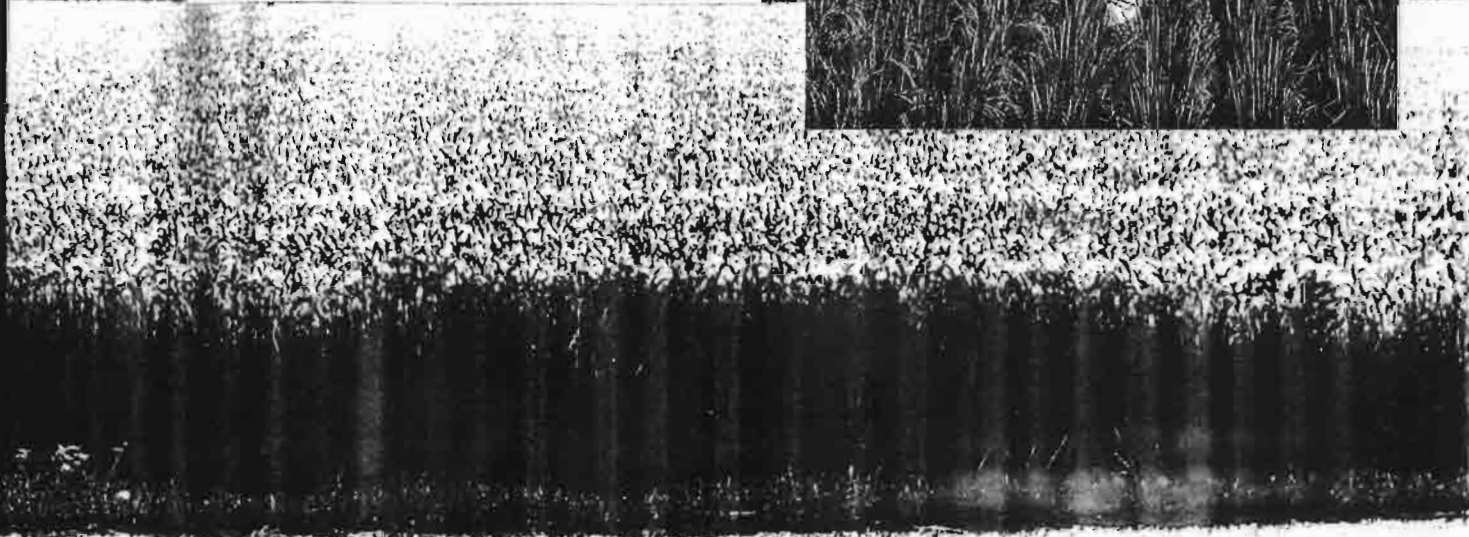


“Networking to Meet Nutrient Challenges”

International Fertilizer Development Center Annual Report, 1993



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The Relevance of IFDC's Work to Dr. Borlaug's Concerns

by

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Several concerns that Dr. Borlaug mentions in his essay are issues that IFDC has been applying its resources toward resolving during the past two decades. Some of these issues include the expansion of agriculture to unexploited, potentially arable lands such as the Brazilian Cerrado and the vast plains of Colombia; the challenges confronted by African agriculture; and the need for technical guidance as countries convert from centrally planned economies to open market economies. The following is a brief discussion of how IFDC is addressing these three concerns of Dr. Borlaug.

IFDC's Work in the Colombian Llanos and Brazilian Cerrado

The tropical savannas of Brazil, Colombia, Venezuela, and Bolivia represent one of the last agricultural frontiers on Earth. Together they occupy more than 250 million ha of which an estimated 45 million is suitable for agriculture. Population growth in South America has resulted in the expansion of agriculture to large previously uncultivated areas of the savannas and forest margins. It has been hy-

pothesized that development of the savannas could reduce pressure on the Amazon rain forest and provide a cheaper source of food for the continent's poor, 60% of whom reside in the large overcrowded sections of South America's major cities.

Development of the acid soil savannas requires a systems approach if the goal of sustainable agriculture is to be achieved. In general, savanna soils have very good physical characteristics under native vegetation. However, experience on the Brazilian Cerrado has shown that these soils are extremely fragile when cultivated. Low nutrient reserves, high acidity, and high phosphorus fixation capacity are the main chemical constraints of savanna soils. Thus, nutrient inputs and systems that preserve the soil's physical properties are essential if these soils are to be brought under more intensive agricultural production on a sustainable basis.

To apply its expertise in nutrient dynamics and nutrient use efficiency in the savannas of South America, IFDC is collaborating with national and international partners in Colom-

bia, Brazil, and Uruguay in the development and evaluation of sustainable agricultural production systems. These systems should preserve the soil resource base and use nutrient inputs more efficiently while minimizing their effect on the environment. In Colombia, IFDC is working with Centro Internacional de Agricultura Tropical (CIAT) and the national agricultural research center, Corporación Centro de Investigaciones Agropecuarias (CORPOICA), in implementing a long-term, large-scale experiment and associated satellite experiments on the Llanos. These experiments are comparing the effects of monocultures and rotations involving cereals with grain legumes, green manures, and improved pastures on the soil physical properties, soil biological activity, and nutrient cycling and use efficiency. IFDC is applying its expertise in modeling to crops in these systems and eventually aims to model the systems themselves by coupling component crop models. The use of these models to extrapolate the results of these experiments to more diverse environments is the desired result of this work.

Models are also being used in the Cerrado to study the fate of nutrients added to the soil in the form of pasture and crop residues and animal wastes. One particularly useful model in this work is CENTURY, a model designed specifically to study the decomposition of these materials in the soil and the availability to crops of the nutrients that are released by this process.

Chemical fertilizers are an essential component of the sustainability of any agricultural system. Nutrients can be removed in agricultural produce or lost through the leaks that are present in even the most efficiently cycling production systems. When these lost nutrients are not replaced through external sources, crop production declines, organic matter inputs to agricultural soils fall, soil cover is reduced, and the resource inevitably begins to degrade. The implications of this degradation go beyond its effects on the farmer and the environment; it affects the future potential of the soil resource to produce the food that will feed future generations. IFDC's role in preventing this catastrophe lies in promoting the efficient use of nutrients in a systems context with its partners in national and international agricultural research.

IFDC's Involvement in African Agricultural Development

The establishment of IFDC-Africa in Lomé, Togo, in 1987

manifests the commitment of IFDC to ensure that fertilizer-use technology is made available to West African farmers — the resource-poor farmers who are both the agents and victims of declining soil fertility and environmental degradation. IFDC-Africa's mission is to build national capacities to increase sustainable agricultural production and farmers' incomes while conserving natural resources and protecting the environment through:

- Empowering farmers and national research and extension personnel to develop and adopt environmentally sound fertilizer-use practices.
- Helping West African governments as they change from being managers and controllers of fertilizer procurement, distribution, and sales to being facilitators of competitive, private fertilizer procurement and marketing. IFDC-Africa encourages the creation of national integrated soil fertility management units whose task is to evolve and implement a set of integrated soil fertility restoration and maintenance strategies and harmonize and give direction to national efforts in fertilizer research, policy reform, and market development.

During the past 6 years—

- IFDC-Africa has become a major instrument of re-

gional integration by taking the lead to develop and implement projects in both Francophone and Anglophone West Africa. One such project is the Market Research and Development Project, part of IFDC-Africa's Policy Reform, Market Research and Development Program, involving collaborators from both the public and private sectors in over 20 countries in sub-Saharan Africa. Through this project, vital fertilizer market information is made available to both the public and private fertilizer sectors through the publication of a monthly "African Fertilizer Market."

- Agricultural development founded on sound natural resource management is sustainable. IFDC-Africa's Watershed Management Program adopts an integrated and broad-based approach to resolving rural development challenges. The Soil Fertility Restoration Project, carried out in six villages in Ghana, Togo, and Niger, involved work with 800 male and female farmers and 138 national research and extension staff in the three countries on the buildup of soil fertility through the use of fertilizers, local phosphate rocks, and manure. A participatory approach was adopted for the development and adaptation of

appropriate technologies to meet farmers' needs and circumstances.

Yes, agriculture in sub-Saharan Africa is in crisis. The challenges are formidable. IFDC-Africa has, however, made a solid regional impact in West Africa that has earned the respect and confidence of the under-resourced national research and extension systems. Our goal is to co-opt the farmers, research and extension workers, policymakers, and development agencies as partners. Through improved communications between the various groups, we can create a spirit of mutual respect and cooperation that will foster the exchange of skills needed to improve the performance of all partners.

IFDC's Accomplishments in Privatization of Farm Markets

The ultimate goal of the transformation/reform process to open market economies is to improve the efficiency of domestic resource use. Market force economics correspond to private sector-driven efficiency, which, by its very nature, ensures innovative, creative, and competitive resource allocation. During the past few years IFDC has been especially successful in developing policy frameworks and providing technical expertise to guide private sector interventions in the input side of the agricultural production equation.

While the process of policy reform is often slow and must be nurtured with a great deal of patience, IFDC's work has resulted in a number of measurable results in projects in Albania, Bangladesh, Egypt, and Romania.

Albania — IFDC transformed a United States Agency for International Development (USAID)-funded emergency fertilizer assistance program involving 30,000 tonnes of fertilizer into a free market experience by auctioning the fertilizer to Albanian entrepreneurs who, in turn, marketed it to the farmers through a newly emerging corps of private agri-inputs retailers. The majority of the fertilizer was sold at or near market prices. Additionally, IFDC assisted in developing the banking sector and the opening of credit channels between the banks and private sector entrepreneurs. The success of this initiative was confirmed during the first quarter of 1994 when the Albanian private dealers, using their own resources, imported and marketed about 20,000 tonnes of fertilizer, having a value of about US \$4 million. IFDC was also instrumental in bringing about the Government's decision to decrease the import tax on fertilizers, thus improving competitiveness in the domestic marketplace.

Bangladesh — IFDC entered Bangladesh almost 15 years ago with a relatively modest USAID-funded project designed to improve the effi-

ciency of the state-owned fertilizer distribution system. This early initiative led to an expanded project that is often cited as a reference to illustrate the importance of policy reform in bringing about private sector entry into the marketing and distribution of fertilizer and other agricultural inputs. Today essentially all fertilizer, domestic production and imports, is marketed by the private sector without subsidy. Concurrent with this change, during the last 4 years of market-driven reform, fertilizer use remained relatively steady despite increased prices, and the country became self-sufficient in cereal production during the same period. The success in Bangladesh is attributed in part to the long-term commitment and persistence of IFDC, the Government of Bangladesh, and USAID in developing the concepts of liberalization and market reform.

Egypt — Liberalization in the Egyptian fertilizer sector began in 1986. As a result, an urgent need to develop the technical, marketing, and business skills of those in the emerging private sector became apparent. In 1993 in response to this need, IFDC provided a comprehensive program designed to "train the trainer" in marketing, business, and technical skills, including such specific technical topics as the safe handling of agricultural chemicals and other inputs. Approximately 60 "trainers" were recruited from the Egyptian public and private

sector and developed by IFDC. These trainers then carried the program forward to their dealers and retailers, thus quickly enlarging the knowledge base at the retail level, which was so urgently needed to serve the needs of farmers.

Romania — In 1993 using 17,000 tonnes of USAID grant-funded high protein animal feed supplement as the com-

modity, IFDC began to mirror the Albanian experience and used the feed supplement to begin the development of a private animal feed and agri-inputs sector. In concert with this, IFDC also began to work with the private swine and poultry producers to develop skills in processing and marketing of their output, thus decreasing their dependence

on the sale of their output exclusively to the state at regulated prices. This transition, while still in its infant stage, is developing rapidly and the scope is large since about 50% of Romania's swine production is in the hands of the private farm sector, which continues to aggressively look for ways to improve its situation.