



DEVELOPING AGRICULTURE
FROM THE GROUND UP



VISION

A world of healthy, prosperous people who are well-served by productive agricultural systems functioning in harmony with the environment.

MISSION STATEMENT

IFDC enables smallholder farmers in developing countries to increase agricultural productivity, generate economic growth, and practice environmental stewardship by enhancing their ability to manage mineral and organic fertilizers responsibly and participate profitably in input and output markets.

GLOBAL REACH



SNAPSHOT

The International Fertilizer Development Center (IFDC) is a public international organization based in Muscle Shoals, Alabama, U.S.A., with more than 40 years of experience in agricultural research and implementing development projects. IFDC has implemented a range of long-term projects, short-term assessments and evaluations, and agricultural research activities in more than 100 nations in sub-Saharan Africa, Asia, Europe, and Latin America. Our work covers a wide spectrum: from investigating and promoting productivity-enhancing technologies and practices to fostering agricultural market development. Our goal is to empower farmers with tools and knowledge while strengthening input and output markets. This includes engaging policymakers in reforming and formulating a policy environment that enables the growth of private sector-driven agricultural systems that are sensitive to protecting the environment.

PIO STATUS

First proposed to the United Nations General Assembly in 1974, IFDC was designated as a public international organization (PIO) in 1977 and receives widespread support, cooperation, and backing from the global community for which it was created. As such, IFDC as a non-profit organization is typically accorded favored procurement or contracting status by donors as compared to non-governmental organizations (NGOs). This status enhances IFDC's contribution to development impact through accelerated project inception and access to international research, development, and best practices.

IFDC is a member of the Association of International Agricultural Research Centers (AIARC) and often collaborates with agricultural research centers that are affiliates of the Consultative Group on International Agricultural Research (CGIAR) as well as other research and development centers. Headquartered in the United States, IFDC has institutional-level presence in the Netherlands, Kenya, Ghana, and Bangladesh, with over 20 additional country project offices worldwide.

EXPERTISE

Agricultural Policy

IFDC advises and supports agricultural policy reform processes, including building the capacity of key stakeholders in Ministries of Agriculture, other government agencies, the private sector, and civil society organizations (inclusive of organizations that represent farmers, cooperatives, agro-dealers, and related industries). IFDC remains engaged as a contributor to the policy reform processes undertaken by the African Union's Comprehensive Africa Agriculture Development Programme (CAADP), and it led the effort to organize the Africa Fertilizer Summit in 2006, which resulted in the *Abuja Declaration on Fertilizer for an African Green Revolution*. IFDC collaborates and partners with a number of regional economic communities (such as ECOWAS and SADC) to stimulate regional cooperation. IFDC's policy advice is aimed at improving food and nutrition security by supporting entrepreneurship along the entire food value chain from input markets to consumers in the country of origin or in export markets.¹

Capacity Building

Each year, IFDC trains nearly 1 million farmers, agribusiness owners, and other stakeholders in the agribusiness value chain to help them become more efficient, environmentally responsible, and profitable. Women make up more than 30 percent of training participants.

IFDC also offers specialized training programs to agriculture professionals, including policymakers, researchers, entrepreneurs, and business people. Since 1974, IFDC has trained more than 11,000 participants from more than 100 countries.²

Fertilizer Research and Development

IFDC works with governments, research organizations and institutions, and private sector companies and entrepreneurs to develop new fertilizers, technologies, and farm practices. Our innovative ideas offer a paradigm shift in fertilizer packaging and in the delivery of nutrients to targeted crops.³ IFDC emphasizes balanced fertilization and crop nutrition, specifically the use of secondary and

micronutrients.⁴ We are the only non-profit organization capable of bringing fertilizer ideas from the lab to production to the field.⁵

BALANCED FERTILIZERS

Just as humans need a balanced diet including minerals and vitamins in addition to carbohydrates, fats, and proteins, plants need secondary and micronutrients, in addition to nitrogen, phosphorus, and potassium (NPK). Micronutrients - such as zinc, iron, boron, and copper - are essential to improve crop yield and nutritional value of produce, enhance resilience of crops to drought, disease, and climate change, and increase biomass production to support soil health.

Integrated Soil Fertility Management (ISFM)

ISFM combines mineral fertilizers, locally available soil amendments (such as lime and phosphate rock), and organic matter (such as cover crops and manure) to replenish soil nutrients and maximize nutrient and water efficiency. In Rwanda, Burundi, and the Democratic Republic of the Congo (DRC), introduction of IFDC-supported ISFM practices has helped double farmers' agricultural productivity and raise their incomes by 20 to 50 percent.⁶

For lowland rice, IFDC has been instrumental in developing and scaling fertilizer deep placement (FDP). FDP is a fertilizer application technology that involves placing solid briquettes directly into the soil, resulting in average increased crop yields of 15-20 percent while using one-third less fertilizer than is recommended using typical broadcast application methods. Data also shows that FDP technology significantly reduces greenhouse gas emissions.⁷ In Bangladesh, an estimated 2 million rice farmers have adopted FDP technology. In 2015, smallholder farmers in Mali who were trained to use FDP technology increased their gross profits for rice by \$573 per hectare.

Market Development

IFDC helps producers not only improve yields, it also links farmers to input and output markets. For example, our Toward Sustainable Clusters in Agribusiness through Learning in Entrepreneurship (2SCALE) project engages more than 50 value chain partnerships. Local agribusiness capacity is bolstered by providing technical assistance and brokering partnerships with financial institutions and business support services. 2SCALE helps private firms find business opportunities for sourcing products from, or selling agro-inputs to, smallholder farmers in Africa. More than 450,000 farmers are involved in agribusiness clusters, collectively selling millions of dollars of crops to buyers.

ADDITIONAL AREAS OF EXPERTISE

- Agro-Dealer Development
- Agro-Economic Market Research and Assessments
- Bench-, Laboratory-, and Pilot Plant-Scale Processing Studies
- Crop Simulation Modeling
- Market Information Systems
- Pilot Plant Production and Agronomic Evaluation of New Products
- Production Cost Analyses
- Public-Private Partnerships



LOOKING FORWARD

It is commonly known that the global population is expected to exceed 9 billion by 2050. Coupled with increased incomes and changing diets, demand for food is projected to increase by 60 to 70 percent or more. As such, IFDC is committed to the United Nations Sustainable Development Goals (SDGs), specifically SDG 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture. Food, in the end, is a human right.

The use of mineral fertilizers to achieve SDG 2 cannot be understated: 50 percent of the food the world currently produces is a direct result of fertilizer application.⁸ But smallholder farmers, who are responsible for growing 80 percent of food consumed in developing nations, often lack access to appropriate fertilizers.⁹ Our work focuses on tying the research for new products and processes with the practical means of affordably delivering those products to farmers

who are trained to use them effectively and economically. The result is intended to allow smallholders to increase production, reduce food and nutrition insecurity, and protect the environment.

IFDC is well aware that the opportunities and challenges associated with fertilizers are varied, complex, and based upon local conditions. But fertilizer science, knowledge of market systems, and human capacity can be developed and disseminated to address the various needs that exist locally and regionally. For example, across sub-Saharan Africa, where soils are largely deficient in key nutrients for plant growth, fertilizer use is only 10 percent of recommended rates. Given the low levels of soil fertility, frequent cropping only further depletes the soil of nutrients necessary for optimum crop growth. Efforts in the region focus on responsibly increasing the use of mineral fertilizers in combination with other conservation agriculture

techniques that will raise soil fertility and improve yields.

Conversely, in Asia, overuse of fertilizers has led to both air and water pollution and contributed to increased greenhouse gas emissions, exacerbating climate change conditions. Judicious use of appropriate fertilizers, such as micronutrient blends, and application of technologies, such as FDP, can boost food production and farm incomes while reducing atmospheric emissions and water contamination.

Through IFDC's continued efforts in research for innovative fertilizers and by working with smallholder farmers and others in agribusiness, we can promote appropriate use of the right fertilizers that will both improve productivity and decrease negative environmental impacts. Ultimately, our work is intended to establish global food and nutrition security and improve the lives of millions throughout the world.

CALL FOR DONORS

An expert in agricultural development and in the science of improving farm productivity, IFDC provides research and project implementation for many types of partners in both the public and private sectors, often linking the two. The organization seeks creative partnerships with public sector donors, foundations, corporate sponsors, and allied implementing and research organizations to actively expand our activities in Asia, sub-Saharan Africa, and Latin America. With support from our donors and other partners, IFDC will continue to contribute to a food- and nutrition-secure world while protecting our ecosystems.

REFERENCES

¹See reports on <https://ifdc.org/research-papers-and-studies/> and <https://ifdc.org/country-fertilizer-market-assessments/>.

²IFDC Annual Report 2015, <http://bit.ly/2bQbvo8>.

³Bindraban, P.S., C. Dimkpa, L. Nagarajan, A. Roy, and R. Rabbinge. 2015. "Revisiting Fertilisers and Fertilisation Strategies for Improved Nutrient Uptake by Plants," *Biol. Fertil. Soils* 51(8):897-911, <http://link.springer.com/article/10.1007/s00374-015-1039-7>.

⁴Dimkpa, C., and P.S. Bindraban. 2016. "Micronutrients Fortification for Efficient Agronomic Production." *Agronomy for Sustainable Development* (2016) 36:1-26.

⁵See reports and papers on http://www.vfrc.org/research/vfrc_reports.

⁶IFDC. 2011. Strategic Alliance for Agricultural Development in Africa (SAADA) End of Project Report.

⁷Gaihre, Y.K., U. Singh, S.M. Mofijul Islam, A. Huda, M.R. Islam, M. A. Satter, J. Sanabria, Md. R. Islam, and A.L. Shah. 2015. "Impacts of Urea Deep Placement on Nitrous Oxide and Nitric Oxide Emissions from Rice Fields in Bangladesh." *Geoderma*. Vol. 259-260:370-379.

⁸Stewart, W.M., D.W. Dibb, A.E. Johnston, and T.J. Smyth. 2005. "The Contribution of Commercial Fertilizer Nutrients to Food Production." *Agron. J.* 97:1-6.

⁹International Fund for Agricultural Development. 2013. "Smallholders, Food Security, and the Environment."

CONTACT

IFDC Headquarters
P.O. Box 2040
Muscle Shoals, Alabama 35662
U.S.A.
Telephone: +1 (256) 381-6600
pdu@ifdc.org