

IFDC

Developing Agriculture from the Ground Up

ANNUAL REPORT

2020

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ON THE COVER

The ACMA3 program is creating jobs in production and processing for more than 5,000 women and youth in Benin, including Gwladys Houndote, a pepper farmer and member of the Itchèléré cooperative.



2022 IFDC BOARD OF DIRECTORS

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LEADERSHIP LETTER:

CATALYZING IFDC'S FERTILIZER & SOIL HEALTH EXPERTISE

Last October at the World Food Prize Foundation's annual International Borlaug Dialogue, the "three C's" were raised repeatedly as factors affecting global food security: COVID-19, climate change, and conflict. None of these are surprising words for us anymore. Indeed, we may be tempted to wonder why we are still talking about them. But most of these factors are not solved, and even more so for the most vulnerable, including the small-scale farmers IFDC works with. The pandemic, persisting climate change, and ongoing – and increasing – conflict continue to threaten small-scale crop production, base-of-the-pyramid purchasing power, and access to basic needs for survival.

At the time of writing (June 2023), the World Bank's global food price information shows "high inflation in most low- and middle-income countries, with inflation higher than 5% in 70.6% of low-income countries, 81.4% of lower-middle-income countries, and 84% of upper-middle-income countries, with many experiencing double-digit inflation. In addition, 80.4% of high-income countries are experiencing high food price inflation."¹ While upper-middle-income and high-income countries are experiencing higher inflation, they also have larger food reserves in contrast to the low-income countries, creating an exacerbating rise in inflation.

If the past few years have taught us anything, it is that we cannot take for granted the vulnerability and resilience of our food systems. Global food systems' recovery from the one-two punch of the pandemic and Russia's ongoing aggression will be a long bout, and we must prepare now, if humanity expects to continue our battle against food insecurity and survive, much less thrive, through any coming and continuing crises. The world cannot afford to wait any longer. We must make our food systems less vulnerable and much more robust, and we must focus on soil health as a critical component of food systems transformation if we are to continue to feed the world's growing population, preserve biodiversity, and mitigate the effects of climate change.

Several of IFDC's decision-support dashboards, launched last year during the fertilizer crisis, have solidified their reputation as necessary tools in our post-pandemic world. AfricaFertilizer (africafertilizer.org), an IFDC initiative, rebranded and launched a streamlined website, putting data in the hands of users. The Feed the Future Enhancing Growth through Regional Agricultural Input Systems (EnGRAIS) Project for West Africa and partners launched an updated Fertilizer and Seed Recommendations Map for West Africa (FeSeRWAM) and an agro-input packages (AIPs) web application. The West Africa Fertilizer Cost Simulator app was launched to assist in evaluating the cost of fertilizers from port to farm. And finally, the Africa Fertilizer Watch continues to provide the latest in updates on the flow of fertilizer across the continent. We see fertilizers as one instrument to increase soil health and contribute to food security – they are not an end in themselves.



Henk van Duijn
President and CEO



Rudy Rabbinge
IFDC Board Chair



¹ World Bank Food Security Update – June 5, 2023.

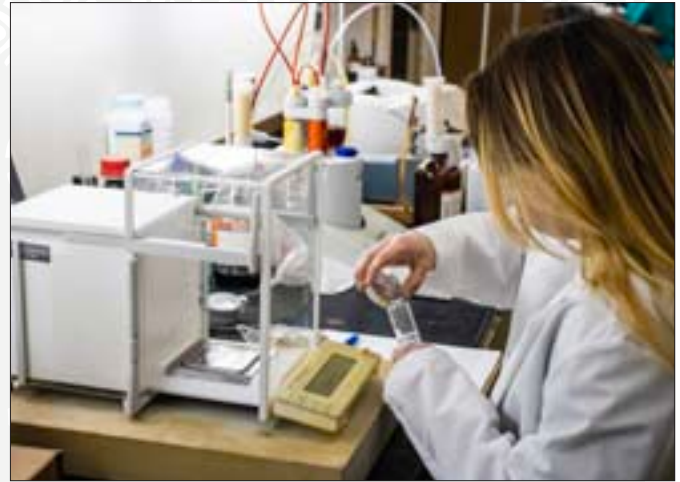
2022 was a catalyzing year for IFDC, as the organization began to expand and solidify its fundamental expertise in soil health as the foundation for human, animal, and planetary health. Building on the 2020-2030 Strategy, IFDC worked to establish new solutions and innovations in the soil health domain that address the global fertilizer and food security crises. With the increased attention of donors, industries, and governments around the world, IFDC sought to expand and renew the organization's positioning as the international knowledge center and advisor for soil health solutions from fertilizer.

During the year, IFDC continued planning for an Innovation Center focused on advancing fertilizer and soil science to be housed at its campus, where labs, a pilot plant complex, and researchers will fast-track new solutions for ongoing and emerging issues. The Innovation Center will provide a collaborative, purpose-built space to design and scale next-generation soil health and plant nutrition innovations. Several universities, private sector partners, and government entities have pledged their support for the project.

Preparations with our partners for the African Union Fertilizer and Soil Health Summit are well underway. Several publications and working groups are already producing work to shape a 10-year action plan for sustainable food security growth in Africa.

As the year concluded, we thanked President and CEO Albin Hubscher for his service to IFDC. On December 31, Hubscher officially retired after four years of deftly leading the organization to a renewed commitment to soil health. A steadfast supporter of next-generation soil health and plant nutrition innovations, Hubscher was instrumental in formulating IFDC's plan to develop an Innovation Center. Throughout his time at IFDC, Hubscher created a legacy dedicated to upgrading and modernizing IFDC's facilities. During his retirement ceremony, we announced plans to honor his impact by establishing the Albin Hubscher Laboratory at headquarters in 2023.

As we bid farewell to our leader, we are reminded of IFDC's unwavering dedication to its mission. IFDC is committed to innovating, teaching, and advocating for healthier soils and plants for a food-secure and environmentally sustainable world. While the challenges multiply and change, we believe the solutions continue to remain beneath our feet. Restoring our planet's soils, until very recently our most overlooked asset, will be the key to solving so many of the challenges facing poverty and food insecurity today. It is our singular goal to care for, maintain, and build the health of the precious ground on which we stand.



IFDC chemist Audri Jerrolds conducts chemical properties testing on a fertilizer sample.



Participants smile during the 2SCALE 10-year anniversary kickoff event, which was held June 7-8, 2022, in Kenya.



Burundian potato producers prepare their field for harvest.

RESULTS ACHIEVED

MEASURING IMPACT 2018–2022

INDICATORS	2018		2019		2020		2021		2022	
	TOTAL	PROJECTS	TOTAL	PROJECTS	TOTAL	PROJECTS	TOTAL	PROJECTS	TOTAL	PROJECTS
<i>Hectares under improved technologies</i>	406,984	11	102,661	17	193,768	17	419,652	13	641,595	11
<i>Farmer participants who applied technologies</i>	549,184	14	213,654	17	416,522	18	527,003	11	945,930	11
<i>Farmers trained (% women)</i>	508,961 (45%)	16	256,685 (31%)	20	267,023 (46%)	18	408,557 (53.4%)	14	258,566 (47%)	14 (13)
<i>Demonstration plots established</i>	1,207	11	13,439	20	14,501	20	9,383	14	5,661	11
<i>Public-private partnerships formed</i>	331	15	523	21	838	24	245	14	331	12
<i>Outreach activities</i>	818	16	4,207	26	5,133	25	4,054	15	12,349	16
<i>Climate-adaptive technologies (hectares)*</i>							302,482	3	428,122	8
<i>Private agri-enterprises that have benefited or improved as a result of interventions*</i>							8,376	6	7,152	7
<i>New jobs created as a result of agribusiness interventions*</i>							14,242	3	22,316	2

* New indicators as of 2021

The number of projects represents how many projects contributed to each indicator.

OUR VISION

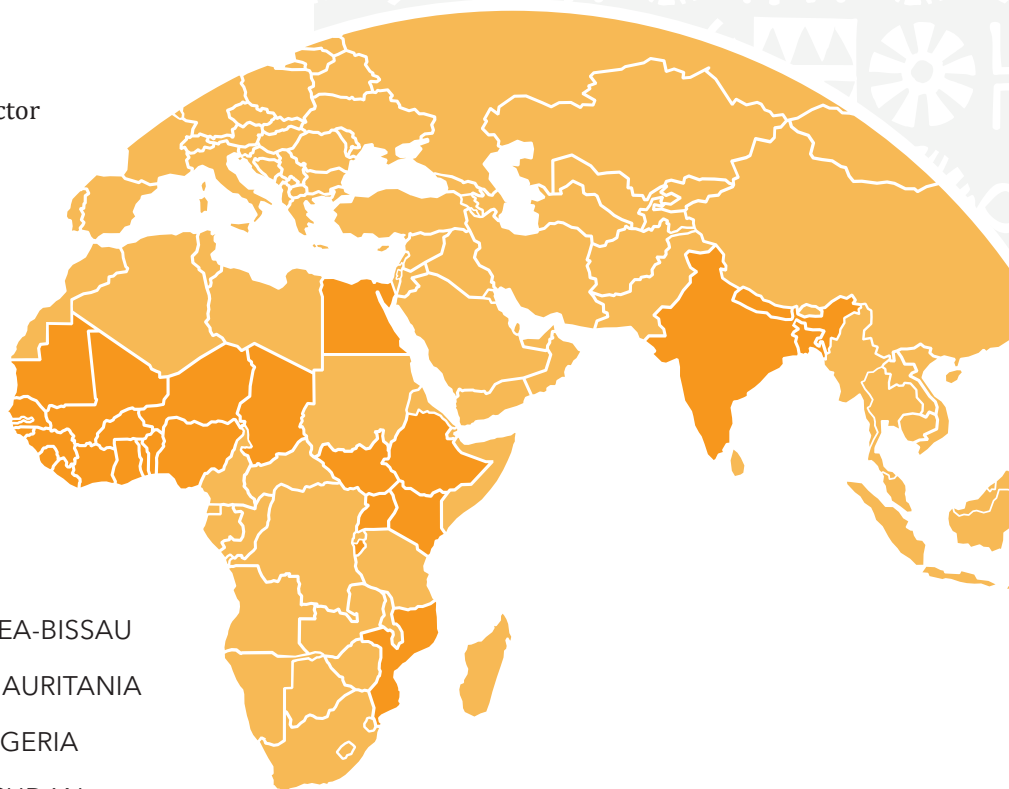
Healthier soils and plants for a food-secure and environmentally sustainable world.

OUR MISSION

Bring together innovative research, market expertise, and strategic public and private sector partners to identify and scale sustainable solutions for soil and plant nutrition that benefit farmers, entrepreneurs, and the environment.

OUR REACH

- 📍 BANGLADESH 📍 BENIN
- 📍 BURKINA FASO 📍 BURUNDI
- 📍 CABO VERDE 📍 CHAD
- 📍 CÔTE D'IVOIRE 📍 EGYPT 📍 ETHIOPIA
- 📍 GAMBIA 📍 GHANA 📍 GUINEA 📍 GUINEA-BISSAU
- 📍 INDIA 📍 KENYA 📍 LIBERIA 📍 MALI 📍 MAURITANIA
- 📍 MOZAMBIQUE 📍 NEPAL 📍 NIGER 📍 NIGERIA
- 📍 SENEGAL 📍 SIERRA LEONE 📍 SOUTH SUDAN
- 📍 TOGO 📍 UGANDA



INSTITUTIONAL RESULTS IN 2022

258,566

FARMERS TRAINED (47% WOMEN)
Direct farmer participants in short-term capacity building on management practices and/or technologies

945,930

FARMERS APPLYING GOOD AGRICULTURAL PRACTICES
Farmers who have applied improved farm management practices and/or technologies

641,595

HECTARES UNDER GOOD AGRICULTURAL PRACTICES
Hectares under improved management practices and/or technologies (managed or cultivated by farmer partners)

428,122

CLIMATE-ADAPTIVE TECHNOLOGIES (HECTARES)
Management practices and/or technologies that promote improved climate risk reduction (mitigation/adaptation) and/or natural resource management practices tested in farmer fields for dissemination

22,316

NEW JOBS CREATED
Number of new jobs created as a result of agribusiness interventions in 2022

5,661

DEMONSTRATION PLOTS ESTABLISHED
Management practices and/or technologies tested in farmer fields for dissemination

12,349

OUTREACH ACTIVITIES
Dissemination activities – workshops, forums, stakeholder consultations, publications, and print, radio, and television media

7,152

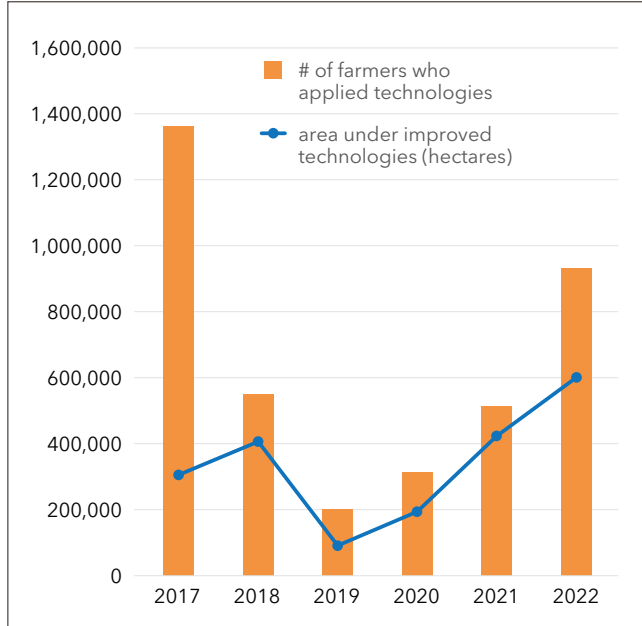
PRIVATE AGRI-ENTERPRISES
Number of private sector firms (SMEs, MSMEs) that have benefited and improved as a result of interventions

331

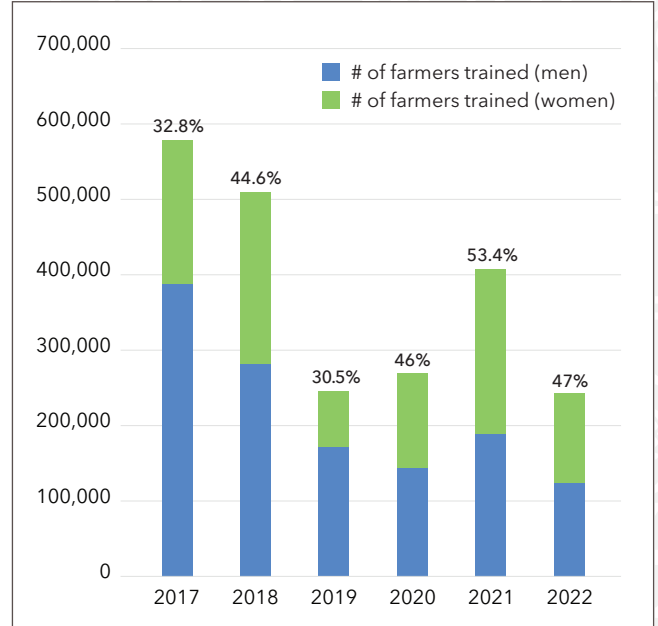
PUBLIC-PRIVATE PARTNERSHIPS
Agreements between public and private firms/actors and research, academic, civil society, and stakeholder associations

RESULTS INDICATORS FOR 2022

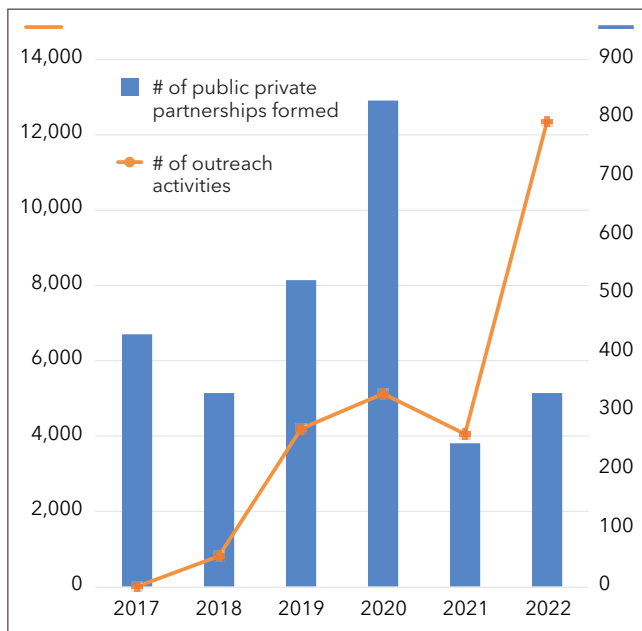
USE OF TECHNOLOGIES



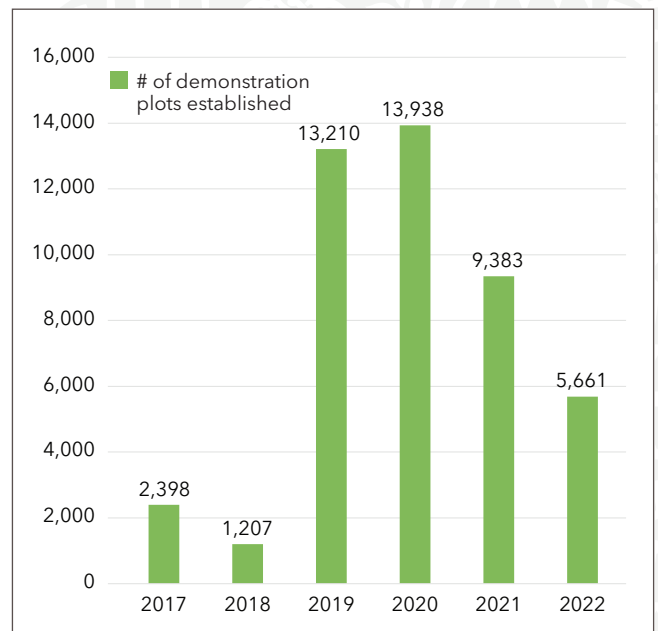
FARMERS TRAINED



PARTNERSHIPS & ACTIVITIES



DEMONSTRATION PLOTS



RESEARCH ACTIVITIES

The overall goal of IFDC research is to significantly boost the production of higher quality food using less land and water; improve the climate resilience of farming systems, and reduce the adverse environmental impacts associated with agriculture. Our research activities focus on improving nutrient use efficiency, reducing nutrient losses, and improving soil health through organic and inorganic sources and products to achieve sustained, balanced fertilization that ensures optimal economic returns for resource-constrained smallholder farmers globally.

During 2022, our research team explored soil-recovering integrated soil fertility management (ISFM) the development of innovative products to improve micronutrient delivery, implementation of integrated approaches involving decision support tools and soil maps and analyses to guide and validate research findings, and fertilizer production and process trials.

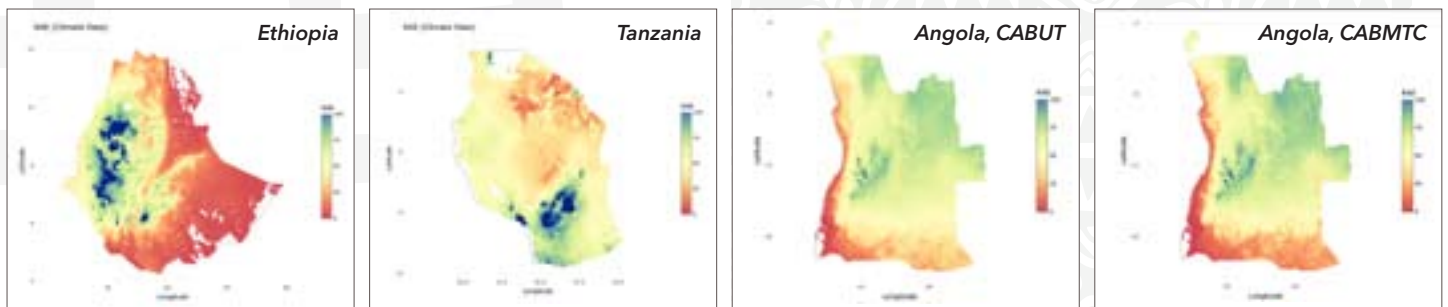
PHOSPHATE ROCK DECISION SUPPORT SYSTEM

The **Phosphate Rock Decision Support System** (PRDSS) is an innovative web-based tool designed to predict the relative agronomic effectiveness and economic effectiveness of phosphate rock in comparison to water-soluble phosphorus fertilizers. Developed through a collaboration between the Food and Agriculture Organization of the United Nations, the International Atomic Energy Agency and IFDC, the PRDSS empowers farmers to assess the agroeconomic viability of using phosphate rock under their specific farming conditions.

Under the United States Agency for International Development (USAID) Bureau for Resilience and Food Security (RFS)-funded Sustainable Opportunities for Improving Livelihoods with Soils (SOILS) Consortium, IFDC has expanded PRDSS and seamlessly integrated it into a comprehensive platform to identify target areas for phosphorus response and facilitate direct application of phosphate rock. IFDC has implemented a versatile interface

for PRDSS, enabling on-demand execution by third parties, such as SOFIIA (Niger) and Minbos (Angola). This features automatic data acquisition from external sources, such as iSDAsoil, NASA Prediction of Worldwide Energy Sources (POWER), and MarkSim. The system has an internal database that enables users to run simulations using existing data on phosphate rock, soils, crops, and sites. Additionally, users can input their own data for site-specific simulations or for regions of interest.

One of the key outputs generated by the PRDSS is relative agronomic effectiveness; a value of 100% indicates that the performance of the phosphate rock is identical to water-soluble phosphorus fertilizer. The soil, crop, and climate data for Ethiopia, Tanzania, and Angola were used to generate the relative agronomic effectiveness of Minjingu phosphate rock on maize for Ethiopia and Tanzania and two types of Cabinda phosphate rock (CABUT and CABMTC) for Angola on maize.



Relative agronomic effectiveness of Minjingu phosphate rock for Ethiopia and Tanzania and two types of Cabinda phosphate rock for Angola (CABUT and CABMTC) on maize.

ISFM TRIALS IN ETHIOPIA

During the 2022 cropping season, trials were conducted in Ethiopia through the USAID RFS-funded SOILS Consortium to evaluate the effects of ISFM, with treatments designed to reclaim acid soils in high-potential areas and utilize water harvesting and improved tillage in the lowlands. A total of 12 sites were selected to grow maize, wheat, and teff.



Conventional Maresha plow (left) and Berken plow (right) utilized for tillage.

The results of the trials showed that reducing the recommended rate of nitrogen and potassium from commercial fertilizers and substituting organic fertilizer (compost/vermicompost) gave comparable grain yield of wheat and teff in the first season. Biomass yield, however, was higher with commercial fertilizer, though the difference was not statistically significant (Figures 1 and 2).

In the lowland areas, the introduction of an improved Berken plow and application of organic fertilizer, with a reduction in commercial fertilizer, gave a better teff grain yield (Figure 3).

A repeat of these trials would be expected to give rise to much improved yields, as organic matter buildup and moisture conservation would improve with these practices over time.

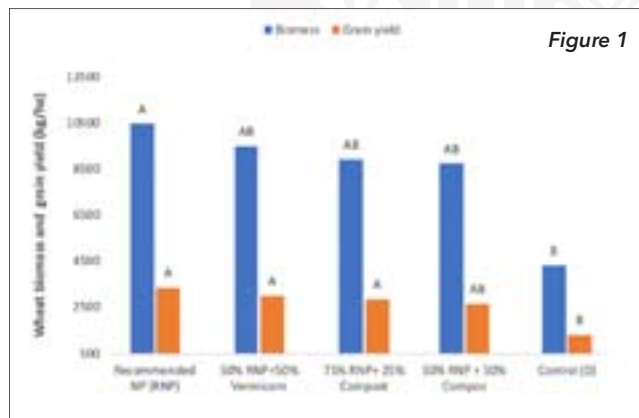


Figure 1

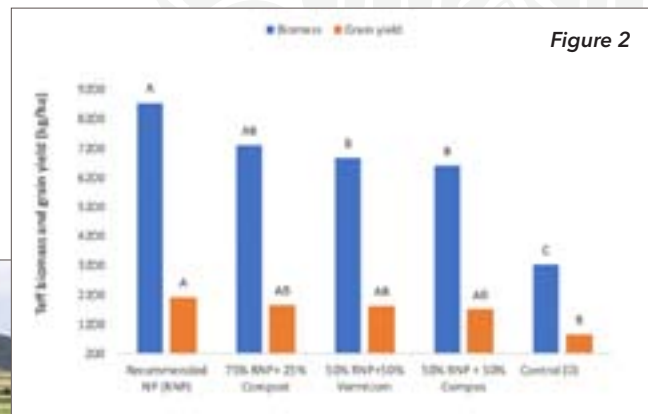


Figure 2



An Ethiopian farmer in his field of teff.

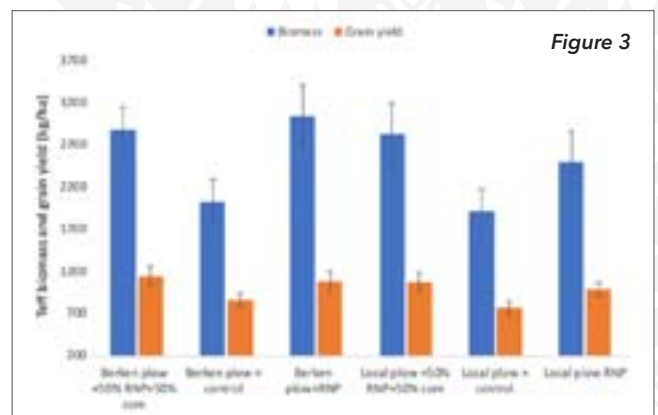
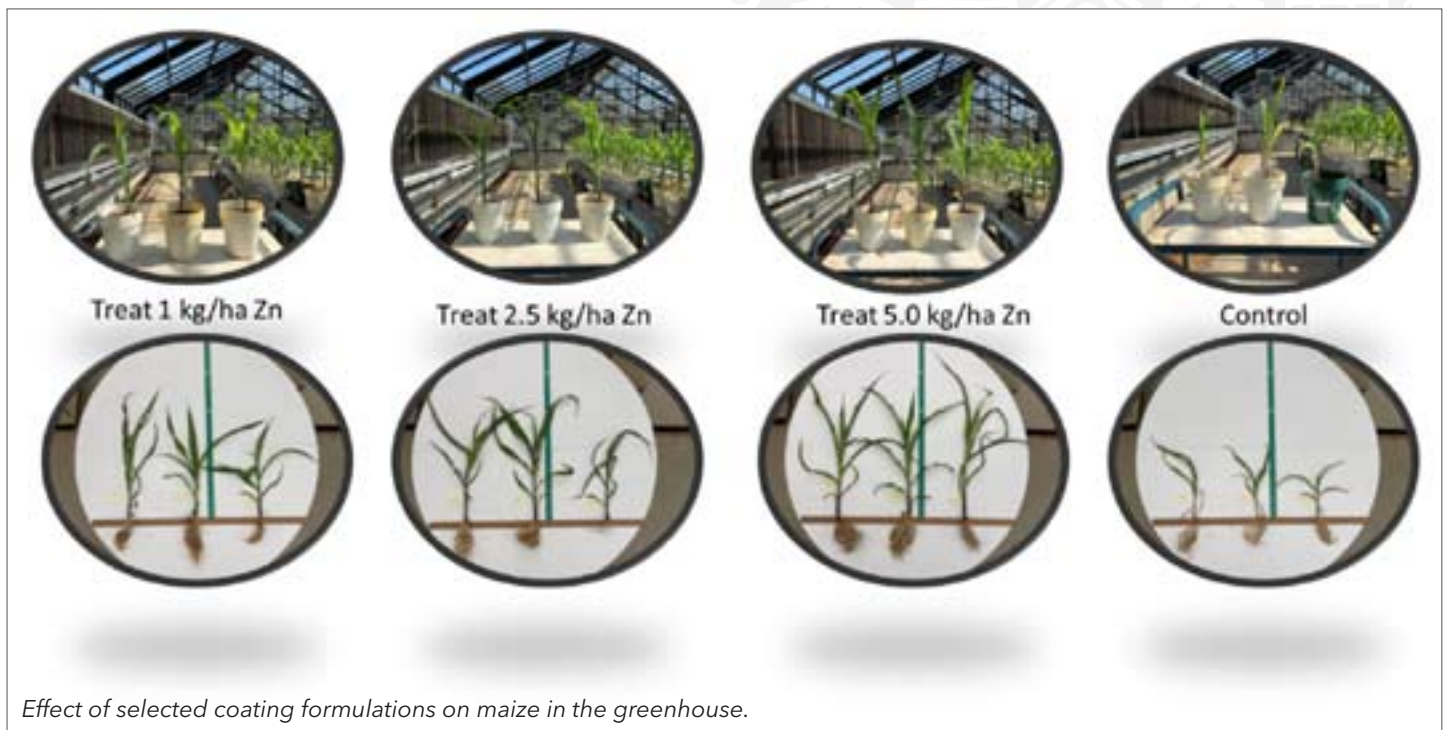


Figure 3

INNOVATIVE PRODUCT DEVELOPMENT: ZINC

Improving micronutrient delivery through fertilizers is important because micronutrients, such as zinc, iron, and manganese, are essential for plant growth and development. However, these micronutrients are often deficient in soils, leading to reduced crop yields and poor plant health. Micronutrient deficiencies can also have negative effects on human health, as many of these are important for human nutrition.

A project was established with the objective of developing innovative products to improve micronutrient delivery using monoammonium phosphate (MAP), diammonium phosphate (DAP), triple superphosphate (TSP), NPK, and urea fertilizers as carriers. A relevant literature review was carried out and subsequent discussions narrowed the scope of the project to MAP as the carrier and zinc as the micronutrient.



Effect of selected coating formulations on maize in the greenhouse.

Initial formulation work examined different coating methods, leading to the identification of three primary ways of coating zinc sources, such as zinc oxysulfate, zinc oxide, zinc EDTA, and zinc sulfate, at different concentrations. In phase one, three formulations were chosen out of more than 100 for greenhouse evaluation. Two of the formulations showed promising positive results. In phase 2, four different formulations were chosen for evaluation in 2023 for their efficacy under greenhouse conditions.

Subsequent work will focus on downstream processes, such as micronutrient addition during fertilizer manufacturing processes. Encouraging results from these studies will lead to the development of new formulations based on the standard MAP production processes.

AFRICA FERTILIZER WATCH

In response to the crisis caused by the Russia-Ukraine war and fertilizer supply chain issues, the USAID RFS-funded activities to increase the availability of, access to, and efficient use of fertilizers. Thus, the **Africa Fertilizer Watch (www.africafertilizerwatch.org)** was launched in June 2022 to provide timely and crucial information on fertilizer markets to facilitate decision-making in terms of supply gaps for the cropping season at the continental level and risks (markets, prices, logistics) associated with the fertilizer value chain.



The Africa Fertilizer Watch is a monitoring system to inform decisions on making fertilizer available at the right time for application in the countries of sub-Saharan Africa. This is an effort to minimize the effects of an imminent food crisis in Africa. The goal of this dashboard is to support development partners and the private sector to respond efficiently and effectively as the global fertilizer crisis evolves, ensuring that sufficient quantities and appropriate fertilizers reach farmers in time for planting. The Africa Fertilizer Watch contains information on a series of indicators to provide an understanding of the availability and affordability of fertilizers. It serves as an early warning system with regard to farmers' access to and use of fertilizers across Africa and, ultimately, food security.

ENGINEERING & PILOT PLANT SERVICES

In 2022, the pilot plant and engineering teams conducted 15 projects for 10 industry partners. The projects included:

1. Granulation projects
 - Granulation of low-pH NPKs
 - Granulation of a slow-release additive in urea
 - Granulation of ammonium phosphates to improve phosphate efficiency
 - Biochar granulation
 - Nitrophosphate granulation
2. Incorporation projects
 - Incorporation of a mineral into nitrogen-based fertilizers
 - Incorporation of secondary nutrients into ammonium phosphate and superphosphates
3. Product characterizations and evaluations
 - Product characterizations and physical properties testing at the request of various clients
4. Engineering
 - Engineering design for plant equipment

In addition to these projects, improvements were made to the pilot plant facilities, including major electrical repairs for the medium-scale pilot plant and the ordering of new elevators for the large-scale pilot plant.



View of the small-scale pilot plant.

INSIGHT ON RESEARCH

SPACE TO PLACE: AN INITIATIVE FOR INCREASING FERTILIZER USE EFFICIENCY



Walter Kibunyi, a PCB project trainee, shows a soil sample from his farm.

IFDC's flagship program, the **SOILS Consortium**, funded by USAID RFS, responding to the fertilizer supply crisis, initiated a novel program, **Space to Place**, an initiative that seeks to provide localized and improved fertilizer and agronomic recommendations for key mixed production systems in sub-Saharan Africa (SSA), including maize, cereal-root crops, and highland systems, and agropastoral systems. The primary goal of the Space to Place initiative is to increase fertilizer use efficiency for resource-constrained smallholder farmers in SSA to reduce fertilizer wastage at the farm level by 60% over the next two to three cropping seasons for optimal economic returns. This will be done through the promotion of targeted site-specific fertilizer and soil management recommendations for selected crops with the help of geo-referenced spatial tools – soil mapping and remote sensing-based information. To do this, the Space to Place initiative will collaborate with ISRIC – World Soil Information, national and international research organizations, the U.S. Department of Agriculture's Agricultural Research Service, the private sector, and civil society organizations to update and fine-tune fertilizer recommendations across various agroecologies using spatially derived tools, such as soil maps.

In general, the Space to Place initiative enables the delivery of spatially appropriate soil fertility management recommendations, guided by digitized soil maps (Space) combined with farm(er)-level characteristics (Place), for effective agronomic and fertilizer recommendations that increase nutrient use efficiency and maintain or surpass current productivity levels. The major outcome of this initiative will be a **space-to-place decision support tool** that can sustainably improve soil fertility, with a medium- and long-term focus on improving nutrient uptake and use efficiency through localized soil fertility recommendations. ■

*IFDC's **Space to Place** initiative will collaborate with ISRIC - World Soil Information, national and international research organizations, the U.S. Department of Agriculture's Agricultural Research Service, the private sector, and civil society organizations.*



*Soil sample collection on a farm in South Sudan.
Background image: Soil properties field demonstration.*



NORTH & WEST AFRICA

2022 highlights of IFDC's work in West Africa include developing fertilizer data management, visualization and dissemination methods, increasing the adoption of efficient and targeted fertilizer techniques, supporting seed sector development and professionalization, building more inclusive farm-to-market agribusiness clusters, and enhancing interactions between scientific, financial, and government bodies.

AGRICULTURAL PRODUCTION IN SOUTHERN MALI ACTIVITY (APSA)

MALI (2016-2022) ■ **BUDGET** U.S. \$1.5 million ■ **IMPLEMENTING PARTNERS** RTI

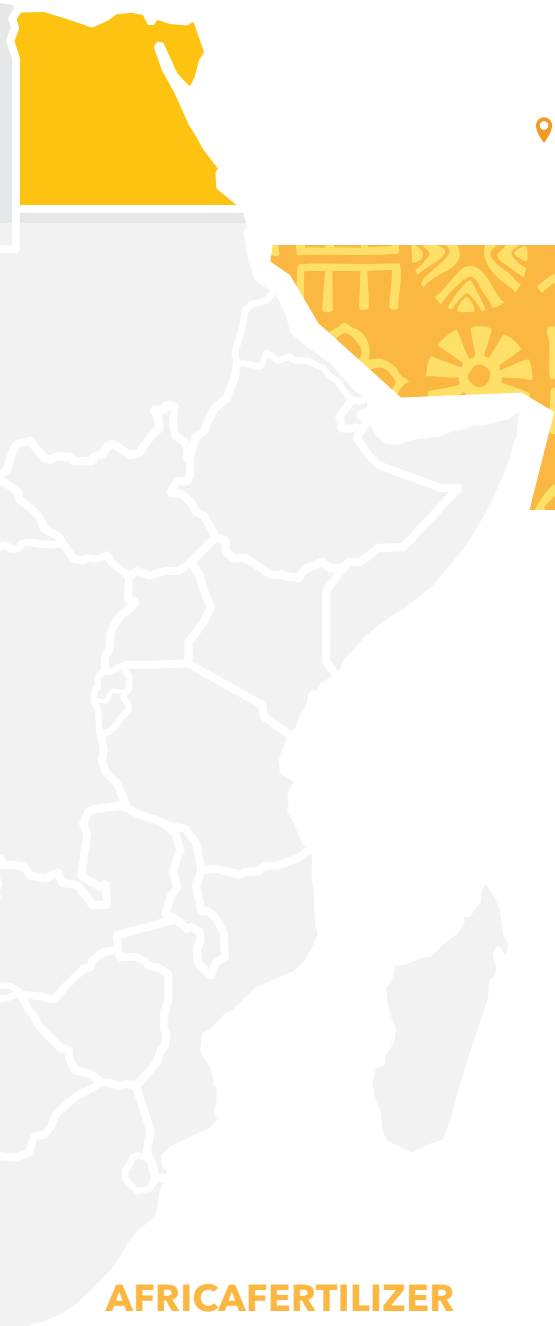
International (lead), Interchurch Organization for Development Cooperation (ICCO), Association of Professional Peasant Organizations (AOPP), Veterinarians Without Borders (VSF), Rural Polytechnic Institute of Training and Applied Research (IPR-IFRA), North Carolina Agricultural and Technical State University ■ **DONOR** United States Agency for International Development (USAID)

APSA's objective is to sustainably scale up the productivity of key value chains, leading to better consumption of nutritious food and resilience of farm households. This is achieved through a farmer-centered approach, which capitalizes on existing producer organizations to transform the production ecosystem in the Sikasso region. In 2022 the project was able to achieve significant results, including the identification and selection of 64 new village extension agents (VEAs) in the areas of Sikasso, Bougouni, and Koutiala. Added to this is the identification of seven technology packages and 12 training themes for the benefit of cooperatives. A total of 80 VEAs were trained in market gardening, rapid heap and pit composting, improved poultry farming, small ruminant breeding and fodder production and conservation, production and certification of improved plant seeds, and good harvesting and post-harvest practices for cereals and legumes. A total of 220 demonstration plots of 0.25 hectares (ha) on maize, millet, sorghum, rice, cowpea, and groundnut crops have been set up, with guided tours.



A member of the Sanogo family picks chili peppers in Mali.

📍 **BENIN** 📍 **BURKINA FASO** 📍 CABO VERDE 📍 CHAD 📍 **CÔTE D'IVOIRE**
📍 **EGYPT** 📍 GAMBIA 📍 **GHANA** 📍 GUINEA 📍 GUINEA-BISSAU 📍 LIBERIA 📍 **MALI**
📍 MAURITANIA 📍 **NIGER** 📍 **NIGERIA** 📍 **SENEGAL** 📍 SIERRA LEONE 📍 **TOGO**



A panel, moderated by the AfricaFertilizer Program Manager Sebastian Nduva, discusses fertilizer data and food security during the launch of the new AfricaFertilizer.org website on November 29.

AFRICA FERTILIZER

AFRICA-WIDE (ongoing) ■ **BUDGET** U.S. \$1.5 million ■ **IMPLEMENTING PARTNERS** African Fertilizer and Agribusiness Partnership (AFAP), African Union, Argus, Development Gateway, Food and Agriculture Organization of the United Nations, International Fertilizer Association (IFA), International Food Policy Research Institute, USAID, and West African Fertilizer Association (WAFA)

As the premier source for fertilizer statistics and information in Africa, the AfricaFertilizer initiative has been collecting, processing, and publishing fertilizer production, trade, and consumption statistics for the main fertilizer markets in sub-Saharan Africa (SSA). Working with various partners, AfricaFertilizer (www.AfricaFertilizer.org) has expanded its product offerings to more than 20 countries in SSA. The project published the [2022 Register of Fertilizer Manufacturing and Processing Facilities](#), which monitors and maps operational fertilizer plants throughout SSA. Fertilizer data and statistics were updated at [14 country validation workshops](#) held in West and East Africa. Twelve monthly editions of the [Africa Fertilizer Watch](#) were published to examine the fertilizer sector's response to availability and affordability issues as well as geopolitical shocks from the Russia-Ukraine conflict. Twelve editions of the [FertiNews](#) e-newsletter were disseminated on fertilizer statistics, market conditions, and general fertilizer news, and 13 country [fact sheets](#) were distributed to partners and donors.

COMMUNAL APPROACH TO THE AGRICULTURAL MARKET IN BENIN - PHASE 2 (ACMA2)

BENIN (2017-2022) ■ **BUDGET** €21.1 million

■ **KEY PARTNERS** CARE International Benin-Togo and KIT Royal Tropical Institute ■ **DONOR** Embassy of the Kingdom of the Netherlands in Benin

ACMA2 was implemented in four departments of Benin: Ouémé, Plateau, Zou, and Collines. The program contributed to the improvement of food and nutrition security of rural populations in Benin by increasing the income of direct economic actors (men, women, and youth). To achieve this, ACMA2 improved the agricultural productivity of producers and processors, increased the trade of agricultural products by the actors organized in agribusiness clusters, and reduced barriers to the trade of agricultural products within Benin and with neighboring countries, including Nigeria. In five years, ACMA2 recorded significant results. Within this framework, 28 pieces of infrastructure were built to facilitate an improvement in production and an increase in commercial exchange by the actors of the targeted value chains. More than 100,000 farmers, processors, and traders, 57% of whom are women and 33% of whom are young people, were reached. In addition, ACMA2 facilitated the marketing of more than 106,000 metric tons (mt) of production by actors at a value of 25 billion CFA francs. The beneficiaries of the program received more than 3 billion CFA francs in credit, including more than 168 million CFA francs through digital finance. More than 90,000 actors benefited from various training programs.



IFDC staff members celebrate the launch of ACMA3.



Palm oil that was processed by ACMA project participant, Pauline Banboche.



Accompanied by IFDC staff, the Minister of Agriculture, Livestock, and Fisheries from Benin tours a booth exhibiting products developed with support from the ACMA2 program.

ACMA - PHASE 3 (ACMA3)

BENIN (2022-2027) ■ **BUDGET** €20 million

■ **KEY PARTNERS** CARE International Benin-Togo, KIT Royal Tropical Institute

■ **DONOR** Embassy of the Kingdom of the Netherlands in Benin

Launched in November, ACMA3 intervenes in the Collines, Donga, and Borgou departments of Benin, working in the priority sectors of maize, cassava, soy, groundnut, small ruminants, poultry, and market gardening.

ACMA3 capitalizes on the experiences, lessons learned, and achievements of the project's first and second phases.

FEED THE FUTURE ENHANCING GROWTH THROUGH REGIONAL AGRICULTURAL INPUT SYSTEMS (ENGRAIS) PROJECT FOR WEST AFRICA

ECOWAS MEMBER STATES & CHAD &

MAURITANIA (2018-2023) ■ **BUDGET** U.S. \$14 million

■ **KEY PARTNERS** Economic Community of West African States (ECOWAS), West African Economic and Monetary Union (UEMOA), West and Central African Council for Agricultural Research and Development (CORAF), and West African Fertilizer Association (WAFA) ■ **DONOR** USAID/West Africa Regional Mission

As regional fertilizer stakeholders, particularly smallholder farmers, continue to seek solutions to the poor fertilizer quality that leads to very low yields across the region, the EnGRAIS project released a new Fertilizer Bulk Blending Guide for West Africa. This guide will aid in harmonizing blending practices with international standards to help improve the quality of fertilizers and increase productivity across the West Africa region. To improve access to knowledge about fertilizer costs along selected strategic corridors in West Africa, the project produced a [West Africa Fertilizer Cost Simulator](#) to guide decisions in choosing routes that will help reduce farmers' fertilizer costs. EnGRAIS released a revised version of the Fertilizer and Seed Recommendations Map for West Africa and 600 complementary agro-input packages (www.feserwam.com) to address farmers' specific agroecological needs and equip extension agents, agro-dealers, and local non-governmental organizations to support over 600,000 targeted farmers in using the tool and adopting the technology.



FEED THE FUTURE NIGERIA RURAL RESILIENCE ACTIVITY (RRA)

NIGERIA (2019-2024) ■ **BUDGET** U.S. \$1.5 million ■ **IMPLEMENTING PARTNERS** Mercy Corps leads the consortium that includes IFDC and Save the Children International ■ **DONOR** USAID

RRA is facilitating economic recovery and growth in vulnerable, conflict-affected areas by promoting systemic change in market systems. IFDC is championing interventions aimed at improving farm practices for increased productivity and incomes for farmers through engagement with value chain actors, public and private extension service providers, and others by ensuring appropriate technologies and practices are mainstreamed into the primary activities of the respective partners. In 2022, RRA mobilized and assessed 1,000 producer organizations across Gombe, Adamawa, Borno, and Yobe states. A total of 9,553 smallholder farmers (52% female) were trained on business plan development, good agricultural practices, post-harvest handling, and mechanization services. Extension agents established 208 community-based Agricultural Training Centers with demonstration plots for the effective adoption and diffusion of improved agronomic practices, reaching 11,128 smallholder farmers (6,343 female and 4,785 male) through this engagement. RRA facilitated the deployment of 13 tractors to promote mechanization, and 263 farmers used the tractors to prepare 271.44 ha of land for planting. A total of 182 jobs were created for participants serving as extension agents or private service providers.

FEED THE FUTURE SENEGAL DUNDËL SUUF PROJECT



Binta Ba, a 52-year-old woman from Senegal, proudly displays an eggplant she grew using the microdosing fertilizer application method.



Farmers in Senegal prepare their land for fertilizer application.

SENEGAL (2019-2023) ■ **BUDGET** U.S. \$8.5 million
 ■ **IMPLEMENTING PARTNERS** Institut Sénégalais de Recherche Agricoles (ISRA), Agence Nationale pour le Conseil Agricole et Rural (ANCAR), producer organizations, and the private sector ■ **DONOR** USAID

Dundël Suuf is being implemented in five agroecological zones of Senegal to address the use of inappropriate fertilizer formulas, lack of adoption of improved fertilizer technologies, poor enforcement of fertilizer quality control, and an ineffective subsidy program. The program supports soil fertility improvement to increase the country's agricultural productivity. Partners have continued with large-scale dissemination of urea deep placement (UDP) and microdosing (MD) technologies as well as the development and testing of new fertilizer formulations. UDP and MD technologies were applied on 8,990 ha. Overall, 88,091 people have been reached by the project, 32,975 of whom have received agricultural input packages (AIPs) to help boost yields. Another 32,996 participants (57% women and 19% youth) were trained on the application of UDP and MD. A total of 16 new NPK fertilizer formulas were developed by ISRA and tested on 194 plots in research station and farm settings. To contribute to subsidy reform, dialogue between stakeholders has been supported and 19 meetings have been facilitated between regional platforms and the private sector to discuss the conditions regarding access to fertilizer. In addition, 11 regional workshops were organized to share the results of project activities. Moreover, 16 undergraduate students were welcomed for internships, as part of the partnership with the Université du Sine-Saloum El-Hâdj Ibrahima Niassé (USSEIN) initiated in 2021.



FERARI students pose for a group photo at a workshop for the Fertilizer Platform Ghana.

FERTILIZER RESEARCH AND RESPONSIBLE IMPLEMENTATION (FERARI)

GHANA (2019-2024) ■ **BUDGET** U.S. \$7.1 million

■ **IMPLEMENTING PARTNERS** Mohammed VI Polytechnic University (UM6P), OCP, Wageningen University & Research, University of Liège, University of Ghana, Kwame Nkrumah University of Science and Technology, University for Development Studies, University of Energy and Natural Resources, Akenten Appiah-Menka University of Skills Training and Entrepreneurial Development, the Ministry of Food and Agriculture (Ghana), and research institutes of the Council for Scientific and Industrial Research

■ **DONOR** UM6P, OCP, and institutional contributions



FERARI participants are trained on the use of drones in agriculture.

FERARI is an international public-private partnership that builds science-based approaches to site-specific fertilization for widespread adoption by Ghanaian farmers for improved food and nutrition security. In its first three years, 450 on-station, on-farm, and farmer-managed fertilizer response trials of maize, rice, and soybean were conducted and demonstrated to about 2,000 farmers. Through stakeholder surveys, FERARI established the Fertilizer Platform Ghana, which is currently registered as a private entity and operates according to its own constitution. FERARI’s soil mapping expertise is being developed as a step toward an IT platform. Project activities support the Ghanaian government’s Planting for Food and Jobs program so that development efforts are embedded into national policy priorities to reach impact at scale. Activities are being conducted using a transdisciplinary approach, with 30 master’s-level students supervised by staff from FERARI



One of the drones used for field observations in Ghana.

and nine universities in Ghana, Morocco, the Netherlands, and Belgium. Thirteen master’s-level graduates from UM6P who were trained by the project are now employed in various international companies in North and West Africa and others pursuing doctoral courses in the United States of America and Morocco. Five doctoral students from Wageningen University and UM6P have conducted initial surveys as well as fertilizer response trials and are in their second stages of research work. These have previously completed course work at Wageningen University. Two postdocs at the University of Liège will be identifying and testing innovative nano-based fertilizers.

HORTINIGERIA



Saudatu Yakubu, a 29-year-old smallholder farmer in Kaduna State, holds a large cabbage that she produced on her farm.

NIGERIA (2021-2025) ■ BUDGET U.S. \$10 million

■ IMPLEMENTING PARTNERS East-West Seed Knowledge Transfer, Wageningen University & Research, and KIT Royal Tropical Institute **■ DONOR** Embassy of the Kingdom of the Netherlands in Nigeria

HortiNigeria aims to facilitate the development of a sustainable and inclusive horticulture sector that contributes to food and nutrition security in Kaduna, Kano, Ogun, and Oyo states in Nigeria. HortiNigeria’s targeted interventions have led to sustainable results in crop production and productivity, increased income, value addition, and market access. The combination of training more than 12,000 smallholder farmers and 30 agro-dealers on eco-efficient good agronomic practices and business management in Kaduna and Kano, identifying 20 innovations to scale up among over 500 entrepreneurial farmers in Ogun and Oyo states, and facilitating business linkages and partnerships has ignited change within the sector. Farmers have been exposed to better production practices and technologies, which has boosted productivity, income, and land under sustainable agriculture for men, women, and youths. Training of agro-input dealers on such practices has led to expansion of their businesses to provide private extension services to farmers. Dialogues on better practices and market opportunities have brought a better coordinated structure among young tech-savvy entrepreneurial farmers. Discussions and meetings with financial institutions have improved access to financial services for actors in the horticultural space. To address concerns in the policy environment, HortiNigeria held consultations with several stakeholders, fostering connections and encouraging public-private action. Additionally, the focus on stimulating business-to-business linkages and partnerships gained momentum, as over 2,000 smallholder farmers were connected to input and output markets.

RICE VALUE CHAIN DEVELOPMENT PROJECT (PDCVR-G)

GUINEA (2018-2022) ■ BUDGET U.S. \$943,100 **■ DONOR** Islamic Development Bank (IDB)

The main objective of PDCVR-G is to contribute to reducing the high importation rate of rice and enhancing economic growth through improved production, processing, and marketing and promotion of private sector participation. Specifically, the project supports the Guinean government’s efforts to substantially increase the production and productivity of rice using the private sector value chain-led approach. It seeks to increase smallholder farmers’ income and reduce poverty and food insecurity, thus improving the livelihoods of the rural population. PDCVR-G also focuses on creating commercial opportunities for targeted rice farmers, with the objective of generating access to markets.



A healthy rice field.



ISSD/Sahel program staff and participants stand in a seed shop.

INTEGRATED SEED SECTOR DEVELOPMENT IN THE SAHEL (ISSD/SAHEL)

MALI & NIGER (2020-2024) ■ BUDGET €11 million

■ **IMPLEMENTING PARTNERS** IFDC (consortium leader), Sasakawa Africa Association (SAA), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and KIT Royal Tropical Institute ■ **DONOR** Embassy of the Kingdom of the Netherlands

In 2022, ISSD/Sahel facilitated exchange visits to Uganda and Burundi. Participants became acquainted with innovative seed business models, such as quality declared seed (QDS), a seed pre-ordering system, co-financing of seed sales and storage points, and community seed banks for preserving biodiversity. To strengthen national capacities to effectively implement the seed road maps, classroom and field training sessions were organized for 66 national partners, including 20 inspectors and controllers and 22 laboratory agents in Mali and 24 laboratory technicians in Niger. Additional training was organized on maintaining the register of data on seed production and use for 28 scientists and 58 private seed entrepreneurs in Mali and Niger. As a result, 69,350 households were reached through the promotion of quality seed production and use, and 85 mt of early generation seed was produced to satisfy the demand. A total of 134 private seed enterprises benefited from technical assistance provided by the project, focused on strengthening seed marketing and distribution network through small seed packaging and the establishment of 55 fixed and 33 mobile sales points. Of these seed enterprises, 32 received additional training in seed business through 498 training plots. A total of 377 young people and women in rural areas were employed as a result of the strong seed distribution network and associated increases in sales. ISSD/Sahel also initiated strategic partnerships between four Dutch and five Sahelian seed companies.



A farmer from Mali stands in her maize field.



A farmer participant from the ISSD/Sahel program in Mali stands among his tall stalks of maize



Fresh onions are sold at a local market.

INTEGRATED RURAL DEVELOPMENT IN THE GAOUAL, KOUNDARA, AND MALI REGIONS OF GUINEA (PDRI/GKM)

GUINEA (2018-2022) ■ **BUDGET** €830,000

■ **DONOR** Islamic Development Bank (IDB)

PDRI/GKM supports the Government of Guinea’s effort to reduce poverty and sustainably improve the living conditions of the population in the Gaoual, Koundara, and Mali regions of Guinea. More specifically, the project supports these target areas to increase food and nutrition security and household incomes, particularly for vulnerable households. Moreover, it seeks to improve agroforestry and pastoral output, promote the efficient use of natural resources, and develop social services and infrastructure, such as rural roads.



Chilies, eggplants, and peppers are available for purchase at a market in Guinea.

AGRICULTURAL VALUE CHAIN DEVELOPMENT PROJECT (PDCVA-G)

GUINEA (2018-2022) ■ **BUDGET** U.S. \$350,000

■ **DONOR** Islamic Development Bank (IDB)

PDCVA-G seeks to alleviate constraints impeding the development of farming agriculture in Guinea. The overall objective is to support the Government of Guinea in ensuring efficient and sustainable agriculture, contributing to better conditions in rural areas. The primary outcomes of this project will be strengthened value chains in order to raise rural incomes, improve food security, and transition the subsistence crop farming system toward a sustainable market-driven system.



Healthy maize grows in a field in Burkina Faso.

AGROECOLOGICAL PRODUCTION AND PROCESSING OF MAIZE PROJECT (2PATM)

BURKINA FASO (2021-2023) ■ **BUDGET** 686,424,406 CFA francs

■ **DONOR** Agence Française de Développement (AFD) and Kreditanstalt für Wiederaufbau (KfW)

2PATM is a sub-project of the Contractual Agriculture and Ecological Transition Project (PACTE). Its general objective is to contribute to meeting the SITRAC plant’s needs in quality maize through the professionalization of actors, agroecological intensification, and contract farming. After a full year of implementation in 2022, encouraging results have been achieved. New maize production techniques integrating agroecological practices have been mastered by 24 facilitators and more than 600 producers. Despite the steep price of

fertilizer, the network of producers was able to mobilize sufficient quantities of inputs for production. Funds were raised from financial institutions Caisses Populaires and Coris Bank to support the purchase of inputs. A total of 623.58 mt of NPK and urea fertilizer was purchased, compared to a forecast of 797.40 mt. SEMAX 5, a new variety of maize seed, was introduced on the farms in partnership with the firm SEMAFORT. In addition, equipment was acquired for SITRAC: three large tarpaulins, 200 pallets, and four scales. The producer organizations received electronic scales to measure the weight of their crops before delivery to SITRAC. In terms of agroecological practices, more than 1,822 mt of compost were produced and used in the maize production plots. This has increased the average yield of corn production from 1.9 to 3.75 mt/ha. In addition, 5,740 kilograms (kg) of Aflasafe was used for the biological control of aflatoxin.

NIGER FERTILIZER SECTOR REFORM AND TECHNICAL ASSISTANCE FOR IMPLEMENTATION OF THE REFORM PLAN (PARSEN)

NIGER (2018-2022) ■ **BUDGET** U.S. \$3,899,854

■ **DONOR** Millennium Challenge Corporation (MCC)/Millennium Challenge Account (MCA)-Niger

PARSEN provided technical assistance for the successful implementation of Niger's Fertilizer Sector Reform Plan, which is expected to significantly improve the use of fertilizers in agriculture through better involvement of the private sector. The project supported the reform agencies in monitoring the fertilizer market, the Common Fertilizer Fund, the private sector, and the quality control system through the implementation of various activities. Of the 22,480 beneficiaries who registered, 11,801, or 52.5%, received their fertilizer. The second targeted subsidy operation through the Common Fertilizer Fund reached 11,801 producers in eight regions of Niger, spread over 35 communes. This significantly improved the availability of fertilizer and its accessibility in the regions. A 50-kg bag of fertilizer is sold to beneficiaries for 10,000 CFA francs, compared to 27,000 CFA francs on the market. Overall, the targeted subsidy has had a leverage effect that has positively and significantly contributed to food and nutrition security and poverty reduction. Yields were improved and surplus production was achieved. Overall, for every 1 kg of subsidized fertilizer, a surplus of about 10 kg of additional cereal equivalent was generated. A total of 51 fertilizer inspectors were appointed, trained, equipped, and placed at the borders and in fertilizer consumption areas for operationalization of fertilizer quality control.



A farmer from Niger pays to receive fertilizer from the government's subsidy system.



Bags of fertilizer are loaded onto a cart in Niger.

INTENSIFICATION OF AGROECOLOGICAL PRODUCTION AND PROCESSING OF GROUNDNUT (PIPATA)

BURKINA FASO (2021-2023) ■ **BUDGET** 671,221,705 CFA francs
 ■ **DONOR** Agence Française de Développement (AFD)

PIPATA is a sub-project of the Contractual Agriculture and Ecological Transition Project (PACTE). Its objective is to contribute to a sustainable increase in the productivity of quality groundnuts free of aflatoxin and to the production of quality nutritious foods to fight against malnutrition in Burkina Faso. This project covers five regions, nine provinces, and 30 communes. Its interventions are mainly focused on building the capacity of groundnut producers on intensive agroecological techniques, supporting the supply of quality groundnut to InnoFaso, and facilitating the production and marketing by InnoFaso of nutritious fortified groundnut-based food products. The project has strengthened the capacity of 6,471 producers, 53.32% of whom are women, in good agroecological production practices, such as the use of improved seeds, compost, and crop protection products. To improve harvesting and post-harvest activities, the project obtained equipment, including seven huskers, five scales, and five thermo-hygrometers, for five producer organizations. These capacity building activities have enabled nearly 773 ha to be planted under agroecological practices, thus boosting productivity from 0.75 to 1.38 mt/ha, an increase of 55.35%, and improving the quality of the groundnut through a drastic reduction of the aflatoxin rate. The project also facilitated the strengthening of contractual linkages between the buyers (Enterprise and InnoFaso) and the sellers (producer organizations) through purchase and delivery contracts for 174 mt of groundnut seed, for a total value of more than 113 million CFA francs.



Groundnuts during harvest



The 2SCALE 10-year anniversary logo is displayed on a podium during the kickoff event.

TOWARD SUSTAINABLE CLUSTERS IN AGRIBUSINESS THROUGH LEARNING IN ENTREPRENEURSHIP (2SCALE) PHASE II

BURKINA FASO, CÔTE D'IVOIRE, EGYPT, ETHIOPIA, GHANA, KENYA, MALI, NIGER, NIGERIA, SOUTH SUDAN (2019-2024) ■ **BUDGET** €190 million (€62.5 million through public funding) ■ **IMPLEMENTING PARTNERS** SNV, BoP Innovation Center ■ **DONOR** Netherlands Directorate-General for International Cooperation and private sector and financial institution co-investment

2SCALE is an incubator and accelerator program that manages a portfolio of public-private partnerships for inclusive business in agri-food sectors and industries across Africa. The program offers a range of support services to its business champions (farmer groups or small and medium enterprises) and partners, enabling them to

produce, transform, and supply quality food products. These products go to local and regional markets, including base-of-the-pyramid consumers. In 2022, 2SCALE was awarded a €12.5 million cost extension to allow an extra year of project implementation. As part of the extension, the targets for the universal impact indicators were all increased. The program has already surpassed several of the new targets and is on track to meet all of them by 2024. In 2022, 2SCALE celebrated its 10-year anniversary with an event in Nairobi in June. This provided an excellent opportunity to examine the program's impact in Anglophone countries. Subsequently, six 2SCALE countries organized national events to commemorate the occasion. Through these events, the 2SCALE model was demonstrated to both public, private, and development institutions. A second anniversary event will be held in Mali in December 2023 for the program's francophone countries. The first cohort took part in the 2SCALE global youth mentorship program during 2022 and a second cohort will follow in 2023.



Rice immediately after harvest.



A drip irrigation system is used on a farm plot in Nigeria.



A producer holds urea briquettes to place in his rice field.

TRANSFORMING IRRIGATION MANAGEMENT IN NIGERIA (TRIMING) EXTENSION SERVICE SUPERVISION

NIGERIA (2017-2022) ■ **BUDGET** U.S. \$840,000 ■ **IMPLEMENTING PARTNERS** National Agriculture Extension and Research Liaison Services (NAERLS) and Agricultural Development Programs in Gombe, Jigawa, Kano, Sokoto, and Zamfara States ■ **DONOR** World Bank, through the TRIMING project under the Federal Ministry of Water Resources in Nigeria

TRIMING assists farmers in Nigeria’s northern irrigation schemes to increase their agricultural productivity and has now reached 45,771 farmers in the five project intervention states. These farmers have been trained through Farmer Field Business Schools (FFBSs) to boost their productivity, especially for rice, tomato, onion, and maize. IFDC employs a collaborative approach to link these farmers to input and output markets, as well as financial institutions, strengthening their capacities across the various value chains. Nine productivity-enhancing technologies have been promoted to farmers, with a particular focus on fertilizer deep placement (FDP). Farmers using this technology have increased their yields by more than 50% to 5-8 mt/ha in various project intervention sites. Understanding the critical role that the Agricultural Development Programs (ADPs) play in ensuring sustainability of project efforts, IFDC has worked continuously to supervise and strengthen the institution’s capacities in various areas, including delivery of farmer extension and use of information and communication technology.



Women sell tomatoes and onions at a local market in Nigeria.

INSIGHT WEST

ENGAGING YOUTH IN PARTNERSHIP TO IMPROVE PRODUCTIVITY & INCOME



Muhammad Bubayaro shows the healthy seedlings in his nursery.

Nigeria's agriculture sector employs approximately two-thirds of the country's total labor force and contributes 40% of Nigeria's GDP. Horticultural production, mainly centralized in the northern region, is characterized by low-input, low-yield, high-risk perishable production systems, volatile prices, with significant pest and disease issues, and a logistically intensive value chain.

To help remedy these issues, the **HortiNigeria** program, funded by the Embassy of the Kingdom of the Netherlands in Nigeria, aims to facilitate the development of a sustainable and inclusive horticulture sector that contributes to food and nutrition security in Nigeria by enhancing smallholder farmers' social capital and contributing to their empowerment within the market. The program particularly focuses its interventions on women and youth.

TRADITIONAL PRACTICES, NEW PERSPECTIVES

Twenty-nine-year-old Muhammad Yakubu Bubayaro was born near and grew up around the Mile 12 International Market in Lagos State, one of the largest markets in Africa. His father, Alhaji Muhammad, was the chairman of the market from 1998 to 2002. Thus, Bubayaro was privileged to be exposed to the dynamics of market activities in the horticulture value chain from a young age.

"Several challenges hinder efficient supply and demand of produce, particularly vegetables from the northern part of the country, to the market, which is located in the south, limiting the potential of actors across the value chain," explained Bubayaro during a visit organized by the HortiNigeria program to the market.

According to him, challenges include inadequate logistics, dysfunctional regulation of payments of farmers, lack of reliable market agents, use of raffia baskets by farmers in supplying tomatoes, and revenue and produce loss, among others. With the various components of HortiNigeria aiming to provide

*By 2025, **60,000 smallholder farmers**, of whom **50% are youth** and **40% are women**, will have increased productivity and/or income, resulting in an annual incremental production value of **€9.7 million**.*

solutions to the existing challenges, Bubayaro foresees a partnership that will nurture transformational change, boosting income and improving markets within the horticulture sector.

DIGITAL INNOVATION FOR DISTANT MARKETS

Bubayaro is one of many young people who employ digital media and information technology solutions to access information on market prices, improving the availability of market information to smallholder farmers. However, to harness the potential within the value chain, Bubayaro seeks to build his capacity, particularly in developing the appropriate network necessary for alleviating supply shortfalls. Therefore, he was delighted to receive an invitation to participate in a vegetable sourcing mission, a collaborative event organized by HortiNigeria and Seeds for Change in Kano State.

The event created networking opportunities for various stakeholders and institutions within the downstream sector of the value chain, including the Centre for Dryland Agriculture (CDA), exposing Bubayaro to commercial nurseries that boost the chances of quality hybrid seed adoption by smallholder farmers. Similarly, business-to-business linkages between farmers and the International Market were established through the event.

Since its inception, the HortiNigeria program has offered training on fertilizer application, using crop-specific fertilizer blends, and achieving optimum crop yields with simple but pragmatic climate-smart actions. The program has trained over 12,174 smallholder farmers in Kaduna and Kano states on mulching and other eco-efficient practices; 40.7% of these farmers are women and 77.2% youth (under 35 years old). ■



Smallholder horticulture producers celebrate a bountiful harvest of okra.

EAST & SOUTHERN AFRICA

2022 highlights of IFDC's work in East Africa include a focus on strengthening access to improved, quality seed for smallholder farmers, teaching climate-smart practices, and enhancing participation of women and youth in agricultural market systems.

ACCELERATING AGRICULTURE AND AGRIBUSINESS IN SOUTH SUDAN FOR ENHANCED ECONOMIC DEVELOPMENT (A3-SEED)

SOUTH SUDAN (2020-2025) ■ **BUDGET** U.S. \$10 million
■ **IMPLEMENTING PARTNER** KIT Royal Tropical Institute
■ **DONOR** Embassy of the Kingdom of the Netherlands in Juba

A3-SEED supports the commercialization of the seed sector in South Sudan to transition from humanitarian relief to a commercial, sustainable, and adaptive agriculture sector. In 2022, A3-SEED focused on active field project delivery. Ten seed companies were mobilized and fully engaged through a co-investment grant to facilitate seed production, processing, and marketing. To get seeds to farmers through a network of village agents, 32 agro-dealers were mobilized, and after training 10 seed company marketing officers, 109 mt of seed was sold through the agro-dealer network. More than 11,000 farmers have been reached through extension services and agricultural trade shows. A training of trainers was held for 27 extension workers and agronomists on quality seed production, and 21 seed inspectors and seven lab technicians were trained on quality control in seed production to ensure quality seeds are produced by the seed companies. Seed tests are now done at the state and county levels.



A South Sudanese producer carries seeds on his motorcycle after visiting a local agricultural input shop.

- 📍 BURUNDI 📍 ETHIOPIA
- 📍 KENYA 📍 MOZAMBIQUE
- 📍 SOUTH SUDAN 📍 UGANDA



The AfricaFertilizer team is joined by other key stakeholders in the agriculture sector for the launch of the new AfricaFertilizer.org website.

AFRICA FERTILIZER

AFRICA-WIDE (ongoing) ■ **BUDGET** U.S. \$1.5 million

■ **IMPLEMENTING PARTNERS** African Fertilizer and Agribusiness Partnership (AFAP), African Union, Argus, Development Gateway, Food and Agriculture Organization of the United Nations, International Fertilizer Association (IFA), International Food Policy Research Institute, USAID, West African Fertilizer Association (WAFA)

As the premier source for fertilizer statistics and information in Africa, the AfricaFertilizer (www.AfricaFertilizer.org) initiative has been collecting, processing, and publishing fertilizer production, trade, and consumption statistics for the main fertilizer markets in sub-Saharan Africa (SSA). Working with various partners, AfricaFertilizer has expanded its product offerings to more than 20 countries in SSA. The project published the [2022 Register of Fertilizer Manufacturing and Processing Facilities](#), which monitors and maps operational fertilizer plants throughout SSA. Fertilizer data and statistics were updated at [14 country validation workshops](#) held in West and East Africa. Twelve monthly editions of the [Africa Fertilizer Watch](#) were published to examine the fertilizer sector’s response to availability and affordability issues as well as geopolitical shocks from the Russia-Ukraine conflict. Twelve editions of the [FertiNews](#) e-newsletter were disseminated on fertilizer statistics, market conditions, and general fertilizer news, and 13 country [fact sheets](#) were distributed to partners and donors.



IFDC team member, Fred Gyasi, demonstrates the new AfricaFertilizer website, while others look on.



An aerial view of the hilltops and rural roads in Uganda.

BUILDING RESILIENCE AND INCLUSIVE GROWTH OF HIGHLAND FARMING SYSTEMS FOR RURAL TRANSFORMATION (BRIGHT)

UGANDA (2022-2026) ■ **BUDGET** € 13 million ■ **IMPLEMENTING PARTNERS** Agriterra, Ministry of Agriculture, Animal Industries and Fisheries, National Agricultural Research Organization (NARO), local government offices, and community-based organizations within the Mount Elgon, Kigezi, and Rwenzori areas ■ **DONOR** Embassy of the Kingdom of the Netherlands in Uganda

BRIGHT aims to build the resilience of 106,560 farm households in the Mount Elgon, Kigezi, and Rwenzori highlands to be able to absorb, adapt, and transform amid socio-economic and climatic shocks and stresses. Using the farming systems approach, farming households are at the center of the planned interventions involving integrated farm planning, which focuses on sustainable land use at plot and community levels. BRIGHT focuses on five mutually reinforcing pillars: (i) adaptive capacity, including intra-household governance capacity, to increase coping strategy options; (ii) on- and off-farm income-earning and livelihood-building opportunities; (iii) access to assets and common goods; (iv) access to communal and other social safety nets; and (v) access to markets for inputs, farm produce, and services. During the inception phase, the project has embarked on a baseline study and is conducting assessments on community selection, farming households, gender and youth, farming systems, high-potential value chains, value chain actors, and nutrition. These will inform further refinement of the results framework to measure the impact of the project interventions and will guide the project’s adaptive management strategy during implementation.



Members of the Idudi Rice Cooperative stand in front of their new building in Uganda.

POTATO VALUE CHAIN CAPACITY BUILDING (PCB) PROJECT

KENYA (2018-2022) ■ **BUDGET** €2.3 million
(€1 million cost share from partners)

■ **IMPLEMENTING PARTNERS** International Center for Insect Physiology and Ecology (icipe), International Institute of Tropical Agriculture (IITA), Kenya Agricultural and Livestock Research Organization (KALRO), Kenya Plant Health Inspectorate Service (KEPHIS), Kirinyaga Seed Limited, National Potato Council of Kenya (NPCK), Nyandarua County Government, Sustainable Food Systems Ireland (SFSI), Teagasc, Toyota Tsusho Fertilizer Africa (TTFA), and Yara East Africa

■ **DONOR** Embassy of Ireland in Kenya



PCB used a public-private partnership approach to attain a sustainable increase in potato productivity and raise the incomes of potato smallholder farmers in Nyandarua County, Kenya. The project focused on four key thematic areas: enhancing farmer education, strengthening the potato seed production and supply chain, increasing market knowledge and access, and boosting institutional capacity to support the seed potato sector. Project interventions improved the livelihoods of 6,541 smallholder farmers (62.7% female, 37% men, and 33% youth) directly and 12,379 (51.9% female) indirectly.

Through adoption of climate-smart agricultural practices and improved technologies in potato production, productivity per acre rose significantly to an average of 90 50-kg bags from a baseline average of 34 bags, an increase of 165%. Net income from potato farming rose to 185,430 Kenyan shillings per household each season from a baseline value of 69,785 Kenyan shillings, an increase of 166%. Working with Kirinyaga Seed Limited, the project was able to introduce three new potato varieties into Kenyan markets. The use of poor-quality seeds decreased from 60% at baseline to 21% at the end of the project.



PRIVATE SEED SECTOR DEVELOPMENT (PSSD)

BURUNDI (2018-2022) ■ **BUDGET** €7.7 million
 ■ **IMPLEMENTING PARTNER** KIT Royal Tropical Institute
 ■ **DONOR** Embassy of the Kingdom of the Netherlands in Burundi

PSSD works with private and public sector partners to promote the development of a private sector-led seed industry that is able to provide farmers in Burundi with sustainable access to high-quality seed and agricultural advisory services. In 2022, 49,450 smallholder farmers purchased seed from PSSD partners. Thus, 255,457 producers, or about 15% of the farm households in Burundi, have purchased seed from PSSD partners since project inception. About 1,316.2 mt of

seed was sold in 2022, for a total of 5,013.17 mt thus far. Women constituted 98,104 of all seed buyers, representing 37.6% of open-pollinated maize seed clients, 37.1% of hybrid maize seed clients, 41.6% of bean seed clients, 36.8% of potato seed clients, and 25% of vegetables seed clients. PSSD provided training on good agricultural practices to 8,245 smallholder farmers, 46.5% of whom were women, for a total of 130,822 smallholder farmers since the beginning of the project. In 2022, 283 demonstration fields were installed, for a total of 17,622 during the life of the project.



PSSD's efforts to build Burundi's seed sector resulted in more than 1,300 mt of seed being sold in 2022.



Members of the Wanale Seed and Ware Potato Farmers Association (WASWAPA) stand in front of their new office.



Hands-on training on nutritional topics is a hallmark of the PNSP project.

PROMOTION OF NUTRITION-SENSITIVE POTATO VALUE CHAINS IN EAST AFRICA (PNSP)

UGANDA (2017-2022) ■ **BUDGET** €1,810,500
 ■ **IMPLEMENTING PARTNERS** Uganda National Potato Platform and National Agricultural Research Organization (NARO) ■ **DONOR** Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

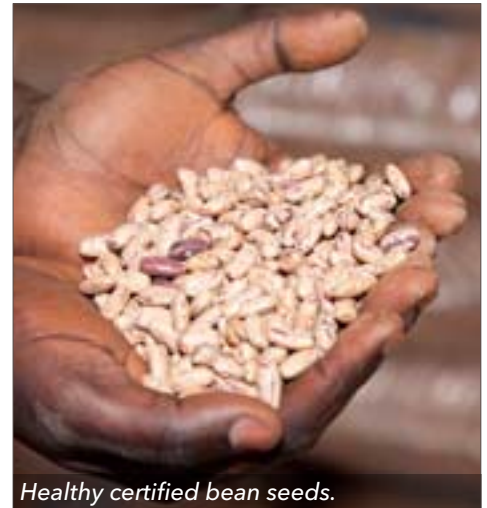
PNSP has increased the productivity and associated incomes of 8,220 smallholder potato farmers (68% female) and improved nutrition through dietary diversification for 16,135 (71% female) farmers in Eastern Uganda. By promoting good agricultural practices, potato yields have improved from a baseline of 12.5 mt/ha to 18.5 mt/ha. Due to the shortage of quality seed in the Mount Elgon highlands, the project supported four private seed producer associations to acquire 4,700 potato plantlets to yield a total of 74,174 mini-tubers. By June 2022, 20 mt of pre-basic seed potato had been produced. Through hands-on training in establishing home kitchen gardens, cooking demonstrations, community dialogues, and radio messaging, knowledge of and practices around nutrition have improved, with the Individual Dietary Diversity Score increasing from 3.1 (out of 9) food groups at baseline to 6.0.

RESILIENCE THROUGH AGRICULTURE IN SOUTH SUDAN (RASS)

SOUTH SUDAN (2021-2025)

■ **BUDGET** U.S. \$24 million ■ **IMPLEMENTING PARTNERS** DAI (lead partner), Care International, and the Waterfield Design Group ■ **DONOR** USAID

RASS serves as a vital companion to the many humanitarian relief and recovery efforts in South Sudan. By layering, sequencing, and integrating development activities with humanitarian efforts, RASS aims to improve food security, as well as community and household recovery, and resilience in South Sudan. To date, RASS has provided 2,585 farmers with quality certified seeds, built the multiplication capacity of 80 seed multipliers, and reached 2,712 people with gender-sensitization messaging, not including those reached through radio, town halls, and open forums.



Healthy certified bean seeds.



About 75,000 households in Burundi have been taught to develop plans to improve climate-smart stewardship of their land.

SOIL FERTILITY STEWARDSHIP (PAGRIS)

BURUNDI (2020-2024) ■ **BUDGET** €13.8 million ■ **IMPLEMENTING PARTNERS** Wageningen Environmental Research and Twitezimbere ■ **DONOR** Embassy of the Kingdom of the Netherlands in Burundi

PAGRIS is an innovative project in Burundi that seeks to achieve ecologically sustainable land management. The project has facilitated research farmers to establish plots to demonstrate good agricultural practices and technologies based on integrated soil fertility management (ISFM). The research farmers have been trained to co-create an integrated farm plan and test and implement land stewardship strategies and practices using the Participatory Learning and Action (PLA) approach. The demonstration plots aim to stimulate communities within 215 watersheds to replicate practices to tackle erosion and restore soil fertility. About 75,000 households have been taught to develop a plan to improve landscape management, tackle soil erosion, reach stewardship agreements, and implement ISFM practices through collective community action, covering a total of 50,000 ha. At the institutional level, PAGRIS has supported the adoption of a national policy on watershed management, which was enacted in June. The project has also facilitated the distribution of approximately 10,000 mt of lime to about 10,000 households to tackle soil acidity.



A delegation from Tegemeo Cereals Enterprise Limited visits 2SCALE in Nigeria to learn more about ABCs.

TOWARD SUSTAINABLE CLUSTERS IN AGRIBUSINESS THROUGH LEARNING IN ENTREPRENEURSHIP (2SCALE) PHASE II

BURKINA FASO, CÔTE D’IVOIRE, EGYPT, ETHIOPIA, GHANA, KENYA, MALI, NIGER, NIGERIA, SOUTH SUDAN

(2019-2024) ■ **BUDGET** €190 million (€62.5 million through public funding) ■ **IMPLEMENTING PARTNERS** SNV, BoP Innovation Center

■ **DONOR** Netherlands Directorate-General for International Cooperation and private sector and financial institution co-investment

2SCALE is an incubator and accelerator program that manages a portfolio of public-private partnerships for inclusive business in agri-food sectors and industries across Africa. The program offers a range of support services to its business champions (farmer groups or small and medium enterprises) and partners, enabling them to produce, transform, and supply quality food products. These products go to local and regional markets, including base-of-the-pyramid consumers. In 2022, 2SCALE was awarded a €12.5 million cost extension to allow an extra year of project implementation. As part of the extension, the targets for the universal impact indicators were all increased. The program has already surpassed several of the new targets and is on track to meet all of them by 2024. In 2022, 2SCALE celebrated its 10-year anniversary with an event in Nairobi in June. This provided an excellent opportunity to examine the program’s impact in Anglophone countries. Subsequently, six 2SCALE countries organized national events to commemorate the occasion. Through these events, the 2SCALE model was demonstrated to both public, private, and development institutions. A second anniversary event will be held in Mali in December 2023 for the program’s francophone countries. The first cohort took part in the 2SCALE global youth mentorship program during 2022 and a second cohort will follow in 2023.



In 2022, 2SCALE celebrated its 10-Year anniversary across the African continent.

TRANSFER EFFICIENT AGRICULTURAL TECHNOLOGIES THROUGH MARKET SYSTEMS (TEAMS)

MOZAMBIQUE (2021-2023)

■ **BUDGET** U.S. \$8 million ■ **IMPLEMENTING PARTNERS** United Purpose, Associação Kwaedza Simukai Manica (AKSM), and the African Fertilizer and Agribusiness Partnership (AFAP) ■ **DONOR** Embassy of Sweden

TEAMS, the follow-on to the FAR-Sofala project, aims to increase food availability and access for 15,500 farmers in Mozambique, with a focus on women's economic empowerment in agriculture. The program seeks to aid the development of market systems by supporting farmers, agro-dealers, input suppliers, and service providers to develop a continuous supply network of inputs and outputs and to help farmers increase resilience, productivity, and production using climate-smart agriculture.



Vegetable seedlings grown in the protection of a net house are supplied to more than 500 Mozambican farmers per month.

A total of 17,321 farmers (61% women) benefited from interventions to improve productivity by creating access to climate-smart agricultural (CSA) inputs and increasing resilience to climate shocks by intensifying vegetable production through the promotion of cost-effective and environmentally friendly irrigation systems. As a result, 10,112 of the assisted smallholder farmers (57% women) doubled their vegetable yields by applying improved inputs and practices, including climate-tolerant seeds, conservation agriculture, irrigation, and post-harvest CSA solutions, with surplus to sell at the market. The annual income of each farmer increased from an average of U.S. \$126 to U.S. \$396. Furthermore, in partnership with the private sector, the program has facilitated sustainable market linkages between large and local input suppliers, supported the construction of improved stores that are resilient to climate change, and helped local agro-dealers develop the capacity to manage input supply businesses and act as output aggregators, increasing the local market for grains.



The TEAMS program focuses on women's economic empowerment through agriculture.

INSIGHT EAST

RECLAIMING KENYA'S FOOD BASKET: VALUE CHAIN CAPACITY BUILDING



A Kenyan farmer prepares his land for planting.

For many years, Nyandarua County was known as Kenya's food basket. However, many different elements, from deforestation and monocropping to drought, pests, and poor seed quality, have caused Kenya's agricultural production levels to deteriorate and contributed to the yield decline that many Kenyan farmers are facing. Ann Gitari, a farmer in Nyandarua, explained: "The Nyandarua we have today is not the same as it was when I was growing up. Things have really changed. Rains are no longer predictable, and our farms are not as productive as they used to be."

The **Potato Value Chain Capacity Building (PCB)** project has been working to address these factors through the Farmer Field Business School (FFBS) model. The model's strength stems from the integration of various components that improve farming knowledge, skills, and practices, especially for women. The FFBS model promotes sustainable agricultural practices, market engagement, gender and youth equity, food and nutrition security, group empowerment, and monitoring and evaluation. These components also improve results across the food and nutrition security spectrum.

Through the FFBS model, farmers involved in the PCB project have been trained to maximize productivity on their farms by adopting new technologies that are more efficient and sustainable. The model uses a hands-on approach to instill practical knowledge and skills in farmers on improved farming practices, from land preparation through harvesting and post-harvest handling, and crop rotation to help ensure nutrients are replenished in the soils. By adopting good agricultural practices, farmers have produced more food to feed their households and to sell at the market.

"The training is structured to create a lasting impact on many farmers in our area. For example, demonstration plots are used to reveal how the technology can be utilized to conserve water during potato planting and provide a great environment for the development of tubers," says Rosemary Wanjiru.

*“Since 2018, I have observed a significant transformation from what I used to do. I now understand the need to conduct **soil testing**, and I apply the **right fertilizers** today. I have seen **improved productivity** and gradual **growth in profits.**”*

- Margaret Wangui, Nyandarua County farmer

IFDC, through PCB, has been helping farmers learn the importance of soil testing, which helps to address the nutritional content of their soil and the level of its acidity. During field days, agricultural stakeholders, including agrochemical and fertilizer companies, the International Centre of Insect Physiology and Ecology (icipe), and the International Institute of Tropical Agriculture (IITA), have been instrumental in emphasizing the need for soil testing. The Nyandarua County Department of Agriculture has also expressed interest in the aspects of soil testing taught during PCB field trainings.

BEYOND FERTILIZER: USING CERTIFIED SEED

Another important factor being addressed by the PCB project is the availability and use of quality seed. Over the years, farmers in Africa have lost out on much crop productivity and income because they use low-quality seeds with poor germination capacity. For example, farmers' seeds in Nyandarua County had been reused and replanted for so long that their genetic potential deteriorated, making them increasingly prone to pests and diseases. However, through PCB, farmers have recognized the need for certified seeds with higher genetic potential and increased resistance to pests and diseases.

Many farmers have embraced the planting of certified seeds, which has resulted in increased production. IFDC is playing a pivotal role in linking them to certified seed suppliers to obtain high-quality seeds at reliable prices. As a result, some farmers are forming groups to produce clean seeds and distribute them to the rest of the farmers in their community.

IFDC's emphasis on managing soil fertility and using quality seed leads to improved production in quality and quantity of produce – allowing farmers to get maximum production from their farms. ■



*Agribusiness Development Officer
Noreen Hunja during a PCB field day.*

ASIA

2022 saw IFDC projects active in India's Assam and Telangana States and in Nepal. These projects worked to introduce efficient fertilizer technologies, improve fertilizer availability, share techniques to improve fertilizer efficiency, conduct soil mapping to identify nutrient requirements, and engage women and youth in the agriculture sector.

ACCELERATING FARM INCOMES: BUILDING SUSTAINABLE SOIL HEALTH, MARKETS, AND PRODUCTIVITY (AFI)

INDIA (2019-2023) ■ **BUDGET** U.S. \$2.5 million ■ **DONOR** Walmart Foundation ■ **HOST ORGANIZATION** International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

AFI is helping peri-urban farmers of Telangana State take advantage of growing consumer demand for fresh produce in the Hyderabad metropolitan area. In 2022, emphasis was placed on disseminating good agricultural practices (GAPs) and creating links between farmers and other value chain actors. Diffusion of improved technologies requires attention to creating awareness and enhancing knowledge on GAPs and innovative technologies while concurrently stimulating entrepreneurial investment in quality agro-input supply. The project strengthened farmer-market linkages for timely sales and better prices, with a particular focus on gender and youth, by providing training and advisory services and disseminating innovations for enhancing the efficiency of natural resources, mechanization, quality seed use, and post-harvest loss reduction in rice, maize, pulse, and vegetable cropping systems. In 2022, AFI trained 605 rural agri-entrepreneurs, 25% of whom were women. They will be mentored to set up locally relevant agribusinesses and support their fellow farmers. In addition, the project organized 804 farmer training demonstrations on GAPs, held short-term capacity building programs for 6,913 farmers (25% women), developed 28 public-private partnerships to support farmers and farmer organizations, organized six seminars to promote knowledge-sharing among value chain actors, and linked 122 village-level aggregators to 20 agro-input dealers for information exchange and to facilitate the timely availability of inputs.



The AFI project provides training to strengthen the agricultural value chain in India.

📍 BANGLADESH 📍 INDIA 📍 NEPAL



By using FDP briquettes, these farmers will increase rice production and decrease the amount of fertilizer used.

ASSESSMENT OF STATE FERTILIZER SCENARIO AND PROMOTING EFFICIENT NUTRIENT MANAGEMENT (ASPEN)

INDIA (2022-2023) ■ **BUDGET** U.S. \$674,587 ■ **DONOR** World Bank, through the Assam Rural Infrastructure and Agricultural Services (ARIAS) Society

ASPEN is an initiative of the ARIAS Society, implemented under the auspices of the Assam Agribusiness and Rural Transformation Project (APART) in India. The project has twin objectives of assessing the fertilizer sector in Assam state and introducing mechanized fertilizer deep placement (FDP) and nanofertilizer for achieving efficient nutrient management. The mechanization of FDP will provide an innovative agribusiness model, promoted by the Government of India, to rural youth through fertilizer production companies. The project team and private sector partners have developed innovative FDP seed-and-fertilizer drills and transplanters for upland and lowland crops to reduce fertilizer losses, avoid manual broadcasting of fertilizers, and enhance nutrient use efficiency by 25%. These innovative FDP seed-and-fertilizer drills and transplanters are being introduced at farmers' fields through the farmer producer company business model.

FEED THE FUTURE NEPAL SEED AND FERTILIZER (NSAF)

NEPAL (2016-2022) ■ **BUDGET** U.S. \$1,143,000 ■ **LEAD IMPLEMENTING PARTNER** International Maize and Wheat Improvement Center (CIMMYT) ■ **DONOR** USAID

IFDC is implementing fertilizer sector-related activities on the NSAF project in collaboration with public and private sector actors, including the Nepal Agricultural Research Council (NARC), Ministry of Agriculture and Livestock Development (MoALD), Department of Agriculture, Fertilizer Association of Nepal (FAN), and agro-input companies. The project is working on rice, maize, lentil, onion, cauliflower, and tomato in 26 districts, consisting of 21 Feed the Future Zone of Influence districts and five earthquake-affected districts in Bagmati Province. NSAF partnered with the NARC National Soil Science Research Center (NSSRC) to prepare and launch digital soil maps of Nepal, a first for South Asia, and develop site-specific fertilizer recommendation for three major cereals – rice, wheat, and maize. The project also prepared the Road Map on Balanced Fertilization in Nepal, which includes detailed guidelines on implementing a balanced fertilization program and conducting technical and financial analysis of the fertilizer blending plant in Nepal. NSAF developed scaling-out plans, including designing training materials on integrated soil fertility management (ISFM), with a particular focus on balanced fertilization, the 4Rs of Nutrient Stewardship (right source, right rate, right time, and right place), and improvement of organic matter in Nepalese soils. In addition, the capacity of FAN was strengthened to improve the fertilizer distribution system in Nepal. With completion of IFDC's assignment on NSAF, IFDC prepared a comprehensive fertilizer sector report, which provides policy guidelines to enhance the fertilizer sector – research, extension, and marketing to strengthen the fertilizer supply system and improve use efficiency at farm level.



NSAF is developing site-specific fertilizer recommendations.

INSIGHT ASIA

CHAMPIONS OF SUSTAINABLE SOIL HEALTH, MARKETS & PRODUCTIVITY



An Indian farmer works in her field harvesting leafy green vegetables.

In India, women's responsibilities as wives, mothers, and daughters are often coupled with work in agriculture. Female farmers perform most farming jobs, from sowing to harvesting, starting their day before sunrise and continuing until late in the evening. However, their access to resources is minimal compared to their male counterparts, and to achieve socio-economic empowerment, they must be supported to participate in promising advances in production systems.

Over the past several decades, the efforts of the Indian Government and civil society organizations have seen some successes. Despite improvements, however, a gender gap still exists in access to education, productive resources, and finance. Closing this gender gap is essential to accelerating the pace of growth in the agriculture sector.

The **Accelerating Farm Incomes (AFI)** project is a partnership between IFDC and the Walmart Foundation that aims to build sustainable soil health, markets, and productivity in Telangana State, India. The project seeks to strengthen and reorient agricultural production systems in peri-urban agriculture and rural locations through technology dissemination, knowledge sharing and capacity building, and micro-enterprise development. These diversified components are crucial for a sustainable market-driven agricultural production system.

EMPOWERMENT THROUGH PROACTIVE ENGAGEMENT

Gender disparities are profound in Telangana State. The AFI project is addressing these inequalities by proactively recruiting unemployed women as rural resource persons, known as AFI Champions, providing training on entrepreneurial skills, helping them access loans, connecting them to the markets, and guiding them in setting up and operating successful agribusinesses. As a result, these women AFI Champions serve in leadership roles in their areas. Additionally, the project is specifically promoting gender-neutral agricultural technologies and production

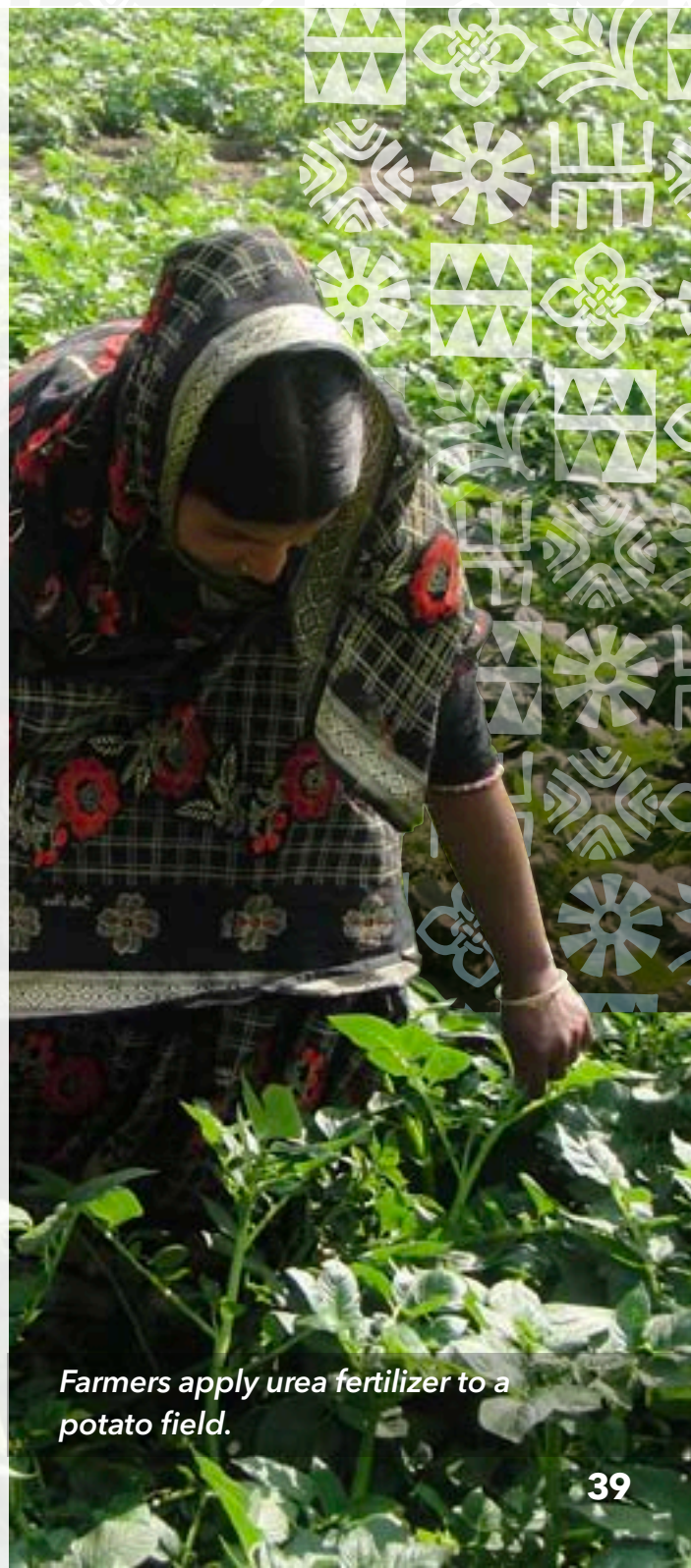
Direct project beneficiaries:

- 👤 **30,000 farmers (40% women)**
- 👤 **600 unemployed rural youth**
- 👤 **300 agro-dealers**

practices. Information and communication technologies are being used extensively to benefit individuals who might have challenges traveling outside their villages.

The AFI project focuses on critical issues that limit crop productivity and farmers' income by increasing awareness and enhancing farmers' knowledge of good agriculture practices (GAPs) and precision agricultural technologies (PATs). Farmers are being introduced to site-specific technologies (seed, fertilizers, crop protection practices, and other inputs) that suit Telangana's marginal soils, which have severe nutrient deficiencies (low nitrogen and phosphorus levels) in semi-arid/rainfed conditions. The project interventions are creating viable marketing pathways and sustainable opportunities for farmers' to sell produce and optimize their income.

The AFI project interventions will directly benefit at least 30,000 farmers, including 40% women, and socio-economically disadvantaged communities. Over the course of the project, AFI will systematically select, train, and coach 600 rural unemployed youth on becoming agri-entrepreneurs who promote GAPs and PATs in their respective areas, continuing beyond the project duration. In addition, 300 agro-input dealers will be mentored in providing efficient services to their customers. The project is working with stakeholders across the value chain to ensure efficient service delivery for the beneficiary farmers. ■



Farmers apply urea fertilizer to a potato field.

2022 PUBLICATIONS & PRESENTATIONS

The following technical publications and presentations are a representation of the work our highly skilled researchers and field experts accomplished in 2022. These, and much of our other research, can be accessed at hub.ifdc.org.

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PRESENTATIONS

- Bindraban, P. 2022. "Keynote: Fertilization for Soil Health and Food Security. Global Symposium for Soils for Nutrition," FAO Global Soil Partnership, July 26-29.
- Bindraban, P. 2022. "Schokken en structurele problemen voor de Afrikaanse voedselproductie; hoe nu verder?" foodFIRST Vijverbergessie, Den Haag, Netherlands, August 29. <https://www.foodfirst.eu/2022/09/05/shocks-and-structural-issues-for-african-food-production-how-to-continue/>
- Bindraban, P. 2022. "Soil Health and Fertility: Identify Actionable Fertilizer and Auxiliary Interventions to Enhance Fertilizer Use Efficiency for Improvement of Soil Health and Agricultural Productivity in Africa," Supporting the Development of a Fertilizer and Soil Health Action Plan for Africa. IFDC, ReNAPRI, AAP, FARA, African Union Commission, Bill & Melinda Gates Foundation. Nairobi, Kenya, June 20-22.
- Bulo, F., M. Demiss, and J.W. Wendt. 2022. "Yield Response of Maize to Application of Nutrient Sources and Rate in Ethiopia," IFDC/ICRISAT Joint Workshop on Targeting Fertilizer Source and Rate in Ethiopia: Sharing and Learning Together, Addis Ababa, Ethiopia, March 23-24.
- Demiss, M., and U. Singh. 2022. "DSSAT as a Decision Support Tool and CERES-Teff Model Development Update," IFDC/ICRISAT Joint Workshop on Targeting Fertilizer Source and Rate in Ethiopia: Sharing and Learning Together, Addis Ababa, Ethiopia, March 23-24.
- Genga, Q., and M. Ngunjiri. 2022. "International Women's Day 2022: Breaking Biases in Science and Agriculture," <https://www.youtube.com/watch?v=6laGY2ai3WA>
- Nagarajan, L., and U. Singh. 2022. "SOILS Consortium: Introduction and Purpose," IFDC/ICRISAT Joint Workshop on Targeting Fertilizer Source and Rate in Ethiopia: Sharing and Learning Together, Addis Ababa, Ethiopia, March 23-24.
- Nagarajan, L., S. Agyin-Birikorang, E. Dossa, J.W. Wendt, W. Pavan, J. Fugice Jr., and U. Singh. 2022. "Using Phosphate Resources for Better Crop Productivity and Efficiency," IFDC Research and Programs Committee Meeting, Muscle Shoals, Alabama USA, May 11.
- Ngunjiri, M.W., and J.W. Wendt. 2022. "From Unknowns to Data-Informed Decisions: Machine Learning to Address Climate Change, Food Security & Support Farmers," ICTforAg 2022 – The Digital Agriculture Conference, March 9-10.
- Singh, U. 2022. "Impact of Decarbonization of Nitrogenous Fertilizers," 37th World Petrochemical Conference, Chemical Fertilizers Seminar and Panel Discussion on Nitrogen, Houston, Texas USA, March 22-25.
- Singh, U. 2022. "Decision Support Modeling Tools for Ethiopia (DSMT-E) Training Program," International Livestock Research Institute (ILRI), Ethiopia, March 14-18.
- Singh, U., S. Agyin-Birikorang, L. Nagarajan, A. Bationo, H. Breman, and J.W. Wendt. 2022. "IFDC's On the Ground Experience on ISFM and Contribution to Soil Carbon," panel discussion on Soil Carbon Sequestration and Food Security in Sub-Saharan Africa: Synergies and Tradeoffs, GIZ, March 25.

2022 FINANCIAL STATEMENT

The following is a summary of financial information for the year ended December 31, 2022. The full financial statements and the independent auditors' reports are available on IFDC's website at <https://ifdc.org/annual-reports/>.

STATEMENT OF REVENUE & EXPENSES

For the year ended December 31, 2022

REVENUES & GAINS (US \$'000)	2022	2021
AGRA	914	1,102
Bill & Melinda Gates Foundation	1,238	258
Board of Directors Donations	8	41
Dutch Embassies	22,063	14,393
International Fertilizer Association (IFA)	104	100
International Food Policy Research Institute (IFPRI)	757	456
Islamic Development Bank	873	839
Embassy of Ireland (Irish Aid)	290	348
GIZ Uganda	284	497
Mercy Corps	468	386
Millennium Challenge Corporation (MCC)	773	426
Netherlands Directorate-General for International Cooperation (DGIS)	11,799	15,930
OCP Foundation	2,221	1,566
RTI International	178	108
Swiss Agency for Development and Cooperation (SDC)	2,029	2,311
U.S. Agency for International Development (USAID)	10,909	237
Walmart Foundation	583	9,288
Others	4,767	3,700
Total revenues and support	60,258	52,175

EXPENSES & LOSSES (US \$'000)	2022	2021
Research and development	7,026	3,901
Field projects	37,035	34,909
Capacity building	8,262	6,733
Support activities	7,819	6,612
Total Expenses	60,142	52,155
Surplus/(loss)	116	20

BALANCE SHEET

For the year ended December 31, 2022

(US \$'000)	2022	2021
Total assets	29,536	26,667
Total liabilities	29,772	27,020
Unrestricted net assets	(236)	(353)
Total Liabilities and Net Assets	29,536	26,667

EXPENSES BY FUNCTION

For the year ended December 31, 2022

(US \$'000)	2022	2021
Personnel	26,351	23,274
Travel	3,944	2,662
Operations	4,596	5,370
Workshops & training	8,328	6,725
Equipment & supplies	3,043	2,558
Subcontracts & grants	13,880	11,566
Total Expenses	60,142	52,155



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