

# ANNUAL REPORT 2020



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## COVID-19 INTERVENTIONS

As the pandemic hit in early 2020 and began affecting all peoples across the globe, IFDC's staff and partners responded with strength, despite the adverse situation:

- Immediately, AfricaFertilizer.org launched the COVID-19 Fertilizer Watch for West and East sub-Saharan Africa, which shared regular updates on restrictions and fertilizer access on the continent, reaching more than 2,000 users, including commissioners and other input officials from the Economic Community of West African States (ECOWAS), the East African Community (EAC), the African Union (AU), the West African Fertilizer Association (WAFA), and others.
- Our projects from Mozambique to Myanmar provided [difficult-to-access PPE to governments and farming partners](#).
- Because of IFDC's robust training networks, field days and demonstrations continued. "[Learning together but apart](#)" was the new way of thinking, as hygienic practices and social distancing became the norm at these times.
- To continue the flow of products as much as possible, projects met with business leaders to [assess their challenges](#) and [survey impacts](#), [completed infrastructure projects](#), and [provided training on COVID-19 restriction compliance](#).

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### ON THE COVER

*Front, left: Namakwaland Potato Farm's Production Manager monitors the progress of potato production in Uganda.*

*Front, right: Zouariatou Kampo stands in her field in Mali, where she practices FDP and MD technologies.*

*Back, left: Member of the Meki Batu Farmers Group in Ethiopia.*

*Back, right: Men weigh rice after harvest in Uganda.*

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## LETTER FROM IFDC'S LEADERSHIP:

## STRENGTH IN THE FACE OF ADVERSITY

The shocks of 2020 are already being written into the history books. Events such as the COVID-19 pandemic are once-in-a-lifetime, and as such, we only have one chance to respond to a circumstance for which none of us was prepared.



**Albin Hubscher**  
President and CEO

A handwritten signature in black ink that reads "Albin Hubscher".

IFDC's resilient staff overcame the many obstacles presented by the pandemic. More than **400,000 smallholder farmers** in nearly 30 countries adopted yield- and income-improving agricultural technologies, transforming more than **190,000 hectares of farmland**. More than **14,000 demonstration plots** exemplified proven technologies to these farmers, letting them see with their own eyes the benefits of adoption, and over **5,000 outreach activities** sought out agricultural entrepreneurs who want to make a difference. Training and capacity-building efforts reached **260,000 farmers, 46% of whom were women**, which is key to achieving Sustainable Development Goal (SDG) 2, Zero Hunger. Finally, a remarkable **838 public-private partnerships** were formed – allowing IFDC to amplify both the quality and quantity of its efforts. Our research team continues to make strides in the area of soil health, and as a result, **more than 50 scientific papers and presentations** were produced by IFDC researchers in 2020.

Adoption of the agricultural products and practices pioneered and promoted by IFDC has changed the lives of millions of smallholders around the world. In 2020 the Africa Food Prize foundation evidenced this fact in the [selection of Dr. André Bationo](#), chief of party for the Smallholder Agricultural Productivity Enhancement Program (SAPEP) in West Africa, who has been working to improve the lives of farmers for four decades. Bationo was recognized for his trailblazing work in microdosing, a climate-smart, yield-enhancing, and income-improving fertilizer application method, and warrantage, a credit system that helps farmers store and sell crops at higher prices.

We are also honored that the 2020 World Food Prize laureate, Dr. Rattan Lal, agreed to join our board of directors. Lal's work on developing and mainstreaming a soil-centric approach to increasing food production has already been recognized by many other international accolades, and we are excited to have his expertise assist in guiding the organization.

[Last year](#), we wrote that we were “navigating uncharted waters,” and while there still seems to be some way to go, we have learned a lot and are confidently moving toward our vision of healthier soils and plants for a food-secure and environmentally sustainable world.



**Jimmy Cheek**  
Chair, Board of Directors

A handwritten signature in blue ink that reads "Jimmy S. Cheek".

*Let the history books remember not only the obstacles we faced, but the courage with which we faced them and the successes we achieved despite them.*



# RESILIENT IMPACT

## OUR VISION

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

## OUR MISSION

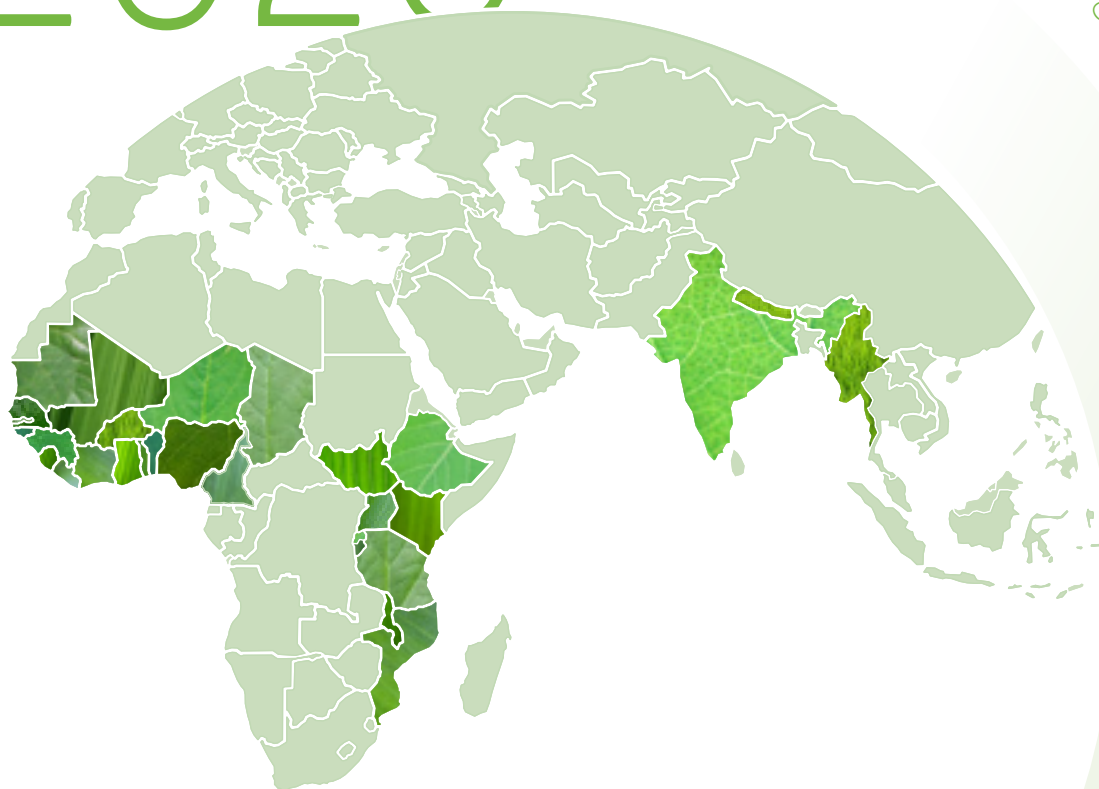
Bring together innovative research, market expertise, and strategic public and private sector partners to identify and scale sustainable solutions for soil and plant nutrition that benefit farmers, entrepreneurs, and the environment.

## MEASURING IMPACT 2017-2020

INDICATORS	2017		2018		2019		2020	
	TOTAL	PROJECTS	TOTAL	PROJECTS	TOTAL	PROJECTS	TOTAL	PROJECTS
<i>Hectares under improved technologies</i>	305,686	9	406,984	11	102,661	17	193,768	17
<i>Farmer participants who applied technologies</i>	1,362,910	17	549,184	14	213,654	17	416,522	18
<i>Farmers trained (% women)</i>	578,268 (33%)	19	508,961 (45%)	16	256,685 (31 %)	20	267,023 (46%)	18
<i>Demonstration plots established</i>	2,398	16	1,207	11	13,439	20	14,501	20
<i>Public-private partnerships formed</i>	381	13	331	15	523	21	838	24
<i>Outreach activities</i>	638	19	818	16	4,207	26	5,133	25

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

## OUR REACH 2020



BENIN  
BURKINA FASO  
BURUNDI  
CABO VERDE  
CAMEROON  
CHAD  
CÔTE D'IVOIRE  
ETHIOPIA  
GUINEA  
GHANA  
GUINEA-BISSAU  
INDIA  
KENYA  
LIBERIA  
MALAWI  
MALI  
MAURITANIA  
MOZAMBIQUE  
MYANMAR  
NEPAL  
NIGER  
NIGERIA  
RWANDA  
SENEGAL  
SIERRA LEONE  
SOUTH SUDAN  
TANZANIA  
TOGO  
UGANDA

■ Indicates presence of a country office/representative

# INSTITUTIONAL RESULTS IN 2020



## 14,501

DEMONSTRATION PLOTS  
ESTABLISHED

*Management practices and/or  
technologies tested in farmer fields for  
knowledge dissemination*



## 267,023

FARMERS TRAINED  
(46% WOMEN)

*Direct farmer participants in short-term  
capacity building on management  
practices and/or technologies*



## 416,522

FARMERS APPLYING  
GOOD AGRICULTURAL  
PRACTICES

*Improved farm management practices  
and/or technologies*



## 193,768

HECTARES UNDER  
GOOD AGRICULTURAL  
PRACTICES

*Improved management practices  
and/or technologies (managed  
or cultivated by farmer partners)*



## 838

PUBLIC-PRIVATE  
PARTNERSHIPS

*Agreements between public and  
private firms/actors and research,  
academic, civil society, and  
stakeholder associations*



## 5,135

OUTREACH ACTIVITIES

*Dissemination activities: workshops,  
forums, stakeholder consultations,  
publications, and print, radio, and  
television media*



## 41,389

HECTARES UNDER CLIMATE-  
ADAPTIVE TECHNOLOGIES

*Improved technologies that promote  
improved climate risk reduction (mitigation/  
adaptation) and/or natural resource  
management (NRM) practices*



## 5,738

NEW JOBS CREATED

*Jobs created resulting from  
agribusiness interventions  
during 2020*



## 4,177

PRIVATE AGRI-ENTERPRISES

*Number of private sector firms (SMEs,  
MSMEs) that have benefited and  
improved as a result of interventions*

# RESEARCH HIGHLIGHTS

*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 adverse environmental impacts associated with agriculture.*

IFDC Research plays a unique intermediary role by transforming innovative fertilizer products and soil fertility management technologies into adaptable and scalable production technologies. We undertake applied research and implementation, involving scientific discovery, development, and testing of advanced fertilizers and related soil fertility management technologies; design of fertilizer manufacturing and quality control processes; market system development; and applied policy and regulatory analysis.

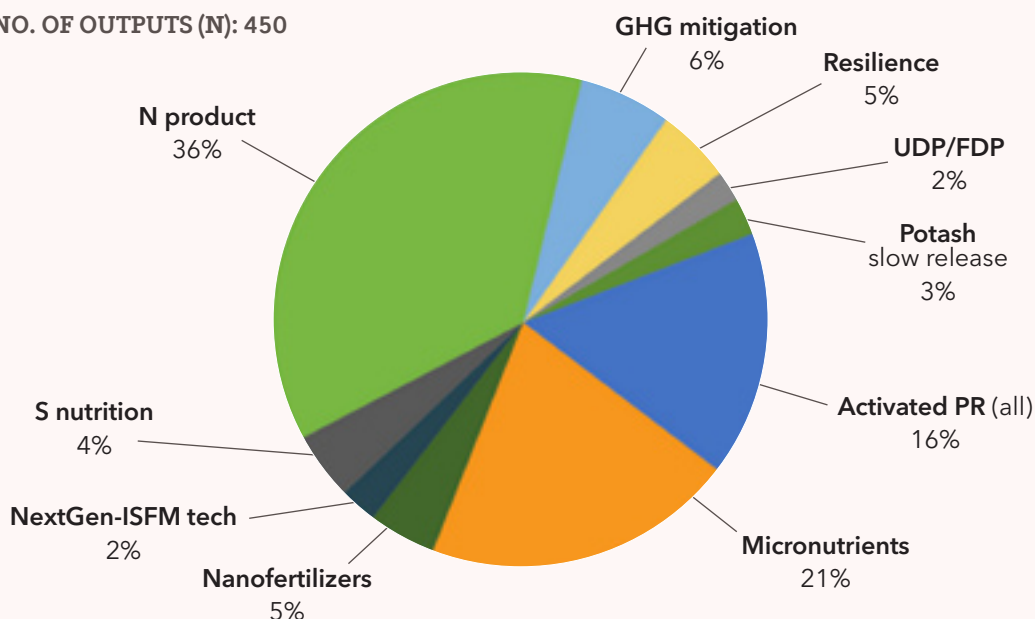
## Research outputs generated across focus areas (2018-2020)

Phases 3 and 4 are advanced stages of research:

**Phase 3:** Made available for uptake (formal recommendations ready for dissemination to farmers; can use legally).

**Phase 4:** Demonstrated uptake by public and/or by private sector organization (not by individual farmers or by donor uptake).

NO. OF OUTPUTS (N): 450



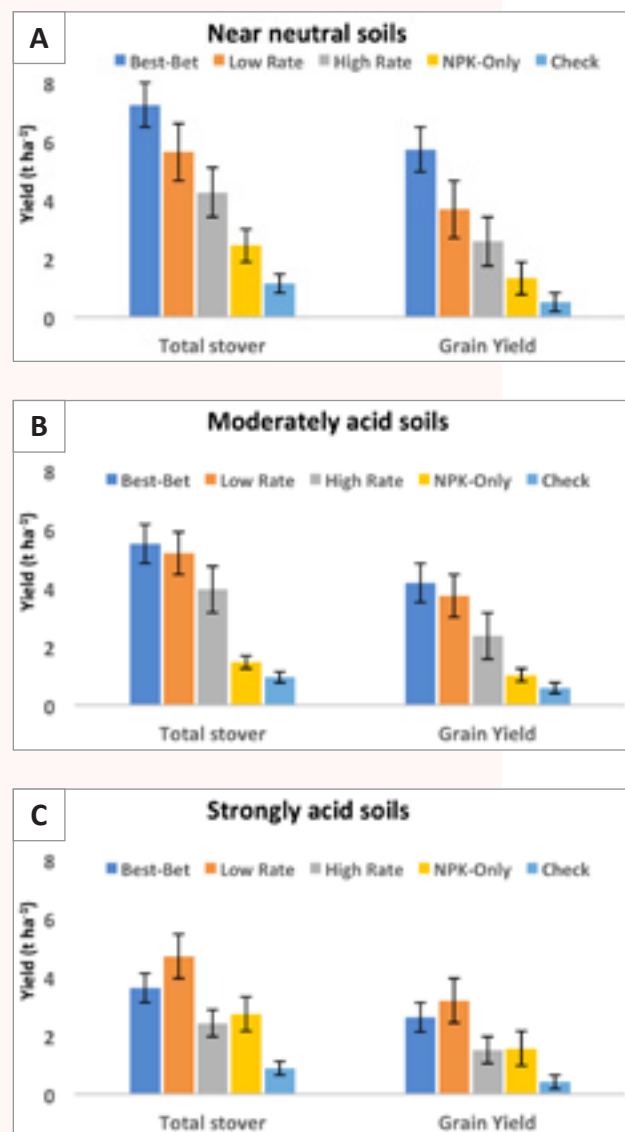
TECHNOLOGIES/PRACTICES	# of Outputs*	Phase 3	Phase 4
Potash – slow release	11	2	–
Activated phosphate rock (PR) (all)	73	20	1
Micronutrients	93	20	–
Nanofertilizers	20	14	–
NextGen-ISFM tech	11	–	–
S nutrition	20	–	–
N product	164	2	–
Greenhouse gas mitigation	27	2	–
Resilience	22	2	2
UDP/FDP	9	2	2

\* Outputs include individual protocols, product formulations, and fertilizer recommendations across different crops, ecologies, and countries under research.

# BALANCED FERTILIZERS

## Effect of soil acidity on maize yields

Maize stover and grain yields from (A) near-neutral, (B) moderately acid, and (C) strongly acid soils:



For near-neutral soils (A), the “best bet” application rate of S, Zn, and B outperformed other rates, while in moderately acid (B) and strongly acid (C) soils, the trials indicated that the low rate of application would be recommended.

Balanced fertilization is the key to sustained high productivity, increased nutrient use efficiency, reduced losses, and improved soil health. Balanced nutrition can be achieved through fertilizers, organic amendments, biofertilizers, and integrated use of these. To facilitate balanced fertilization, IFDC has developed a SMaRT framework that incorporates Soil testing, Mapping, Recommendations development, and Transfer to farmers.

Since 2017, comprehensive soil testing and a series of nutrient omission trials have been conducted **in Ghana** with support through the [USAID-funded Feed the Future Soil Fertility Technology Adoption, Policy Reform, and Knowledge Management project](#). These trials demonstrated that sulfur (S), zinc (Zn), and boron (B) are often required to enhance crop productivity. For maize, grain yield increased at least 60% compared to the recommended NPK fertilization with addition of these secondary and micronutrients. Based on these results, balanced fertilizer recommendations were developed for maize and soybean on soils ranging from near neutral to acidic. As evident from the figure, the optimal rate for S, Zn, and B on strongly acidic soil is the “low rate,” which is only 50% of the “best bet” recommendation.

To ensure increased productivity in the soils of most parts of northern Ghana and realize the full benefits of the investments in fertilizers, the Government of Ghana, through the Ministry of Food and Agriculture, is now introducing NPK fertilizers that contain the nutrients we have identified as limiting (B, S, and Zn) to farmers across the country, particularly in the five northern regions.

**In Rwanda** two seasons of balanced fertilization trials with focus on fertilizer formulations were completed for six crops: Irish potato, rice, maize, wheat, beans (both climbing and bush), and soybean. The evaluations compared several “best bet” options containing various ratios of NPK combined with S, Zn, B, and/or copper (Cu) with blanket NPK fertilizer recommendations used in Rwanda, either diammonium phosphate (DAP) or 17-17-17.

The formulations were evaluated in various provinces with distinct soil characteristics to target optimal formulations. Average yield increases, which varied per province, were as follows: potato, 4-7 metric tons per hectare (mt/ha); rice, 1.2-2.4 mt/ha; maize, 0.7-3.2 mt/ha; wheat, 1.1-2.0 mt/ha; bush beans, 0.3-1.0 mt/ha; climbing beans, 0.7-1.6 mt/ha; and soybean, 0.8-1.0 mt/ha.

Trial work focused on reducing micronutrient concentrations in formulations to lower costs without compromising yield. Based on these trials, eight formulations have the requisite two seasons of data for release in Rwanda. This research was funded by OCP in anticipation of these blends being produced in the Rwanda Fertilizer Company’s blending facility in Rwanda.



# SOILS CONSORTIUM



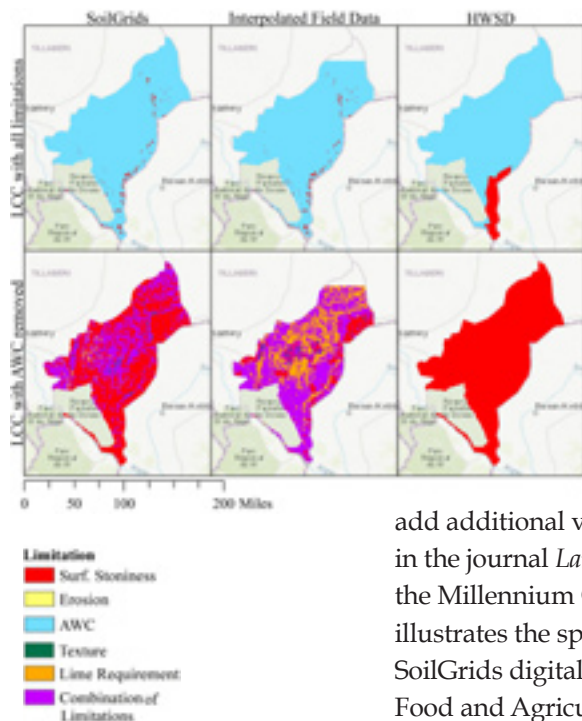
Farmer Girmay Fikadu observes the results of teff trials.

**Sustainable Opportunities for Improving Livelihoods with Soils (SOILS) Consortium** research in Ethiopia and Niger progressed substantially in 2020 despite COVID-19. A unified fertilizer trial protocol for targeting fertilizer sources and rates in Ethiopia was jointly developed by IFDC, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and the Ethiopian Institute of Agricultural Research (EIAR), and 362 field trials were implemented for teff (183), wheat (119), and sorghum (60) across Amhara, Oromia, Southern Nations, Nationalities, and Peoples' Region (SNNPR), and Tigray. The goal of this activity is to produce a model for predicting responses to different nutrient combinations and rates, with emphasis on potassium (K), S, Zn, and B, that improves upon the current fertilizer targeting that uses soil critical values only. The model considers multiple variables, including soil analysis values, soil properties such as soil pH, soil texture, and soil organic carbon, soil classification, landscape position, crop, weather (rainfall), and agroecology. The intended use of the model is within a dedicated decision support tool and within the Ethiopian Soil Information System (EthioSIS). Crops have been harvested from 290 sites, excluding Tigray.

Initial results indicate:

- Yields of wheat and teff increased significantly, more than 300% vs. control, up to 8% relative to the NP treatment only, and over 25% compared to treatment with half of all the nutrients (50% of all nutrients + K) with application of 150% of K.
- Sorghum yield increments of about 37% and 21% were achieved at foot slope position compared to hill and mid-slope positions, respectively.

Comparison of LCC products from SoilGrids, field data from this study, and the FAO HWSD



SOILS Consortium-led efforts in Niger to “Enhance Resilience to Food Insecurity and Conflict through Land-Use Planning, Soil Rehabilitation, and Capacity Building” resulted in maps for Dossa Region, Niger, to provide land capability classifications (LCC) to guide commune- and/or individual-level decision making on appropriate land management, including appropriate livestock, crop, fodder, rangeland, conservation, or other land management practices suitable for intensification. LCC is a land potential evaluation system that classifies land based on its limitations for agriculture, including factors affecting both potential productivity and degradation risk.

The LCC work in Niger is led by the University of Colorado Boulder (UCB) using smartphone-enabled LandPKS to gather site-specific information on soils and physical land properties, such as slope and texture. In fall 2019, the UCB team created an initial map product for the region and, in 2020, using field data collected by IFDC, refined the map, added an assessment of soil nutrient status, and tested whether remote sensing data could

add additional value to the map products. The results of this analysis have been published in the journal *Land*, and the map products have been shared with stakeholders, including the Millennium Challenge Corporation, for feedback or potential use. The figure to the left illustrates the spatial details of LCC using the field data from this study as compared to the SoilGrids digital soil product and the Harmonized World Soil Database (HWSD) map from the Food and Agriculture Organization of the United Nations (FAO). This comparison is a key step toward a more nuanced understanding of how best to scale the activities in Dossa to a broader regional level using a mix of field data and global soil data products.



# A HIGH-CAPACITY BRIQUETTING MACHINE FOR SUB-SAHARAN AFRICA

*Fertilizer deep placement gets a boost in Uganda with the development of a machine capable of fabricating 5 mt or more per hour of urea supergranules.*



*Development of a high-capacity briquetting machine will increase farmer access to this climate-smart fertilizer technology.*



The most limiting factor for adoption of fertilizer deep placement in SSA and elsewhere is assured supply of and access to fertilizer briquettes. To mitigate this constraint, development of a high-capacity briquetting machine began in Uganda in 2019 with the assistance of the USAID-funded Feed the Future Soil Fertility Technology Adoption, Policy Reform, and Knowledge Management project and is near completion. This machine is anticipated to have a production rate of 5 mt or more per hour. This high-capacity model will be a key component of a briquette production and distribution model better suited to sub-Saharan Africa. Unlike Bangladesh, rice is grown in dispersed locations in sub-Saharan Africa, so it is logistically better to place a high-capacity briquetting machine at a urea distribution point, where briquettes can be distributed to diverse rice programs as well as cooperatives. This differs from the Bangladeshi model in which briquettes are fabricated at the point of sale of urea using a small briquetting machine that can run intermittently at a capacity of less than 0.5 mt per hour. The high-capacity machine has an adjustable feed and speed control to suit various characteristics of urea (prilled or granular of varying moisture concentrations) and can be equipped with a cooled motor or a diesel-powered engine to permit continuous operation.

# ECONOMICS AND POLICIES FOR CHANGE



*An input retailer in Bangladesh responds to the survey on micronutrients.*

During 2020, IFDC's economics and policy work focused primarily on research and advocacy efforts through focused surveys and consultations among stakeholders. The Kenya Fertilizer Platform (KeFERT), initiated in 2018 through IFDC's efforts, continued facilitating fertilizer forums of interest to the stakeholders with the Ministry of Agriculture during 2020 despite COVID-19, conducted a [webinar on Kenya soil mapping](#), and disseminated the new [Kenya soil map site](#).

To support the Fertilizer Sector Reform Plan (FSRP) process in Niger, the five key new fertilizer regulations were disseminated on a large scale across the country to the primary stakeholders (fertilizer suppliers, crop producers, and agricultural technicians) in the domestic fertilizer value chain. This activity sought to raise awareness among key stakeholders on the new legal framework for fertilizer and has involved the distribution of outreach materials (hard copies of the regulations in local languages through mass media, face-to-face meetings, and key informant sessions). Of the five regulations passed, fertilizer actors placed more value on those related to licensing, sales, and sanctions.

In 2020, a field-based economic study was conducted among farmers, input retailers, and extension agents to understand their knowledge and perceptions of micronutrient fertilizer use (Zn, B, and manganese [Mn]) and their access in rice farming in Bangladesh. The private sector is the sole source of micronutrient fertilizers, technologies, and knowledge. Preliminary survey results from input retailers (45) and agricultural extension officers (15) in rice-growing southwestern Bangladesh indicate the need for close monitoring of the quality of micronutrient fertilizers available in the market, with a multiplicity of brands being imported and supplied by private firms for consumption.



# FERTILIZER ENGINEERING, PRODUCTION, & RESEARCH

*IFDC's Engineering and Pilot Plant Services division helps fertilizer producers solve production problems.*

Despite the challenges caused by the COVID-19 pandemic, such as travel restrictions and working from home for some time, the pilot plant completed five projects for private sector partners. The team also provided technical assistance in troubleshooting operational problems in a foreign customer's full-scale plant. An engineering package based on pilot plant operations conducted at IFDC was completed and was used as the basis for a detailed design of a full-scale plant to be constructed overseas. Research support was provided for activation of phosphate rock for field trials in sub-Saharan Africa. The pilot plant also underwent major maintenance and refurbishing during the year.

Research on fertilizer formulations, properties, technical feasibility, and overall market feasibility of products is made possible through an interdisciplinary team of engineers, technicians, scientists, and economists.

## PILOT PLANTS & LABORATORIES

- Fully continuous fertilizer granulation plants.
- Phosphoric acid plants.
- Laboratories for chemical and physical characterizations of fertilizer materials.
- Laboratories for fertilizer compaction/granulation, briquetting, pelletizing, and tableting.





# NORTH & WEST AFRICA



*In 1987, IFDC opened its first office in West Africa, located in Lomé, the capital city of Togo. Since then, IFDC has established offices in eight additional countries (Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, Niger, Nigeria, and Senegal), and in 2020 projects operated in all nine countries plus Cameroon, Chad, Guinea, Guinea-Bissau, Liberia, Sierra Leone, and Mauritania.*

2020 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 improving the interactivity of scientific, financial, and government bodies.

## AFRICAFERTILIZER.ORG



*Men load fertilizer bags onto a truck for transport in sub-Saharan Africa.*

*Pan-Africa (ongoing)*

**BUDGET** – U.S. \$490,500

**IMPLEMENTING PARTNERS** – International Fertilizer Association (IFA), Argus Media, and Development Gateway

As the premier source for fertilizer statistics and information in Africa, the [AfricaFertilizer.org](https://africanfertilizer.org) (AFO) initiative has been collecting, processing, and publishing fertilizer production, trade, and consumption statistics for main fertilizer markets in sub-Saharan Africa. AFO worked with Development Gateway to develop an innovative dashboard – Visualizing Insights on Fertilizer for African Agriculture – to improve, manage, and visualize fertilizer data in [Kenya](#), [Ghana](#), and [Nigeria](#). We produced the [2020 Fertilizer Plant Register](#) recording/mapping operational fertilizer plants in SSA, excluding South Africa. AFO updated fertilizer data and statistics at

six workshops held in West Africa. We supported the publication of 12 editions of the [West Africa Fertilizer Watch](#), six editions of the [East and Southern Africa Fertilizer Watch](#), and six editions of the [Africa Fertilizer Watch](#) to monitor the fertilizer sectors' response to COVID-19. Twelve editions of the [FertiNews](#) e-newsletter were developed and disseminated on fertilizer statistics, market comments, and general fertilizer news.

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



The Memorandum of Understanding signed between ECOWAS and WAFA in late 2019 supported WAFA's ability to secure a \$520 million line of credit from the ECOWAS Bank for Investment and Development in 2020.

project, EnGRAIS has developed the innovative Fertilizer and Seed Recommendations for West Africa Map and its agricultural input packages to help farmers increase their productivity. In response to the COVID-19 pandemic, EnGRAIS published 12 weekly bulletins of the West Africa Fertilizer Watch to ensure access to fertilizers by West African farmers before the start of the 2020 planting season. The project assisted the West African Fertilizer Association to arrange and secure a \$520 million line of credit from the ECOWAS Bank for Investment and Development for its 60-plus members. With EnGRAIS support, several countries fast-tracked implementation of the harmonized ECOWAS fertilizer quality control regulation, which has now been published in 14 Member State national gazettes.

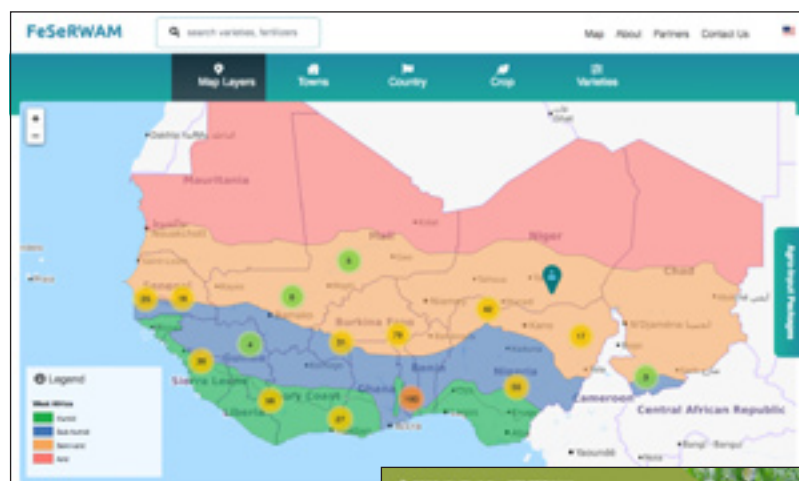
ECOWAS Member States and Chad and Mauritania (2018-2023)

**BUDGET** – U.S. \$14 million

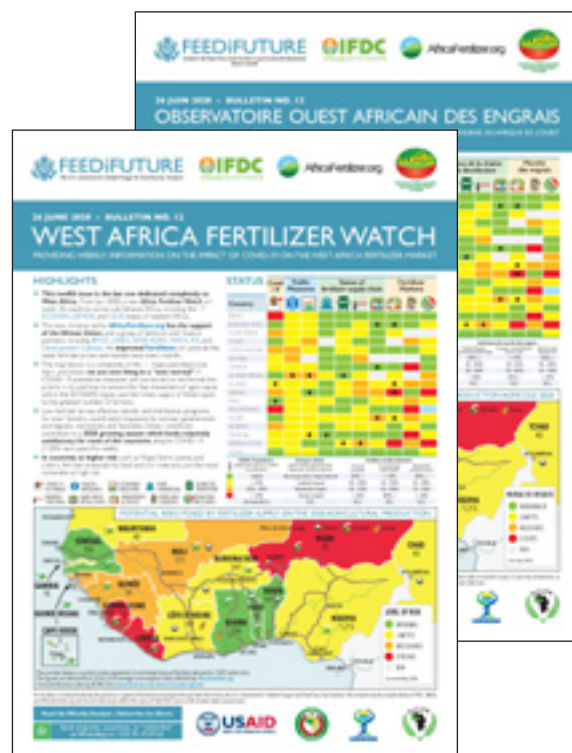
**KEY PARTNERS** – ECOWAS, West African Economic and Monetary Union (UEMOA), West and Central African Council for Agricultural Research and Development (CORAF), and West African Fertilizer Association (WAFA)

**DONOR** – United States Agency for International Development (USAID)/West Africa Regional Mission

In West Africa, EnGRAIS has supported regional institutions and fertilizer industry actors to address critical issues that constrain the effective supply and use of appropriate agricultural inputs, especially fertilizer. In partnership with CORAF's PAIRED



The Fertilizer and Seed Recommendations for West Africa Map website provides downloadable agricultural input packages (AIPs) in PDF format.



The West Africa Fertilizer Watch bulletins were published in English and French.



## FEED THE FUTURE SENEGAL DUNDËL SUUF PROJECT



*Women in the the Senegal River Valley have learned how to practice urea deep placement (UDP) for efficient fertilizer use.*

*Senegal (2019-2022)*

**BUDGET** – U.S. \$8.5 million

**IMPLEMENTING PARTNER** – Institut Sénégalais de Recherche Agricoles (ISRA), Agence Nationale pour le Conseil Agricole et Rural (ANCAR), Directorate of Agriculture, 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 inefficient subsidy program. The program supports improvement of soil fertilization to increase agricultural productivity in the country.

In its first year of implementation, 13 partners were selected to carry out 624 fertilizer deep placement (FDP) and microdosing (MD) demonstration plots on 1,037 hectares (ha) for 4,626 beneficiaries, 50% of whom are women. A total of 9,332 participants are being trained on FDP and MD application, monitoring and evaluation (M&E), and budget management. Four preliminary texts and an inspection manual have been drafted and validated to facilitate the adoption of the ECOWAS fertilizer regulation. To contribute to subsidy reform, 2,150 flyers on the smart fertilizer subsidy program were shared.

## FERTILIZER RESEARCH AND RESPONSIBLE IMPLEMENTATION (FERARI)



*In 2020, FERARI hosted 225 on-station and on-farm fertilizer response trials.*

*Ghana (2019-2024)*

**BUDGET** – U.S. \$5.8 million

**IMPLEMENTING PARTNERS** – Mohammed VI Polytechnic University, OCP, Wageningen University and Research, University of Liège, University of Ghana, Kwame Nkrumah University of Science and Technology, University for Development Studies, Ministry of Food and Agriculture (Ghana)

**DONOR** – OCP and institutional contributions

FERARI is an international public-private partnership that builds science-based approaches to site-specific fertilization for widespread adoption by farmers in Ghana for improved food and nutrition security. In its first year, 225 on-station and on-farm fertilizer response trials of maize, rice, and soybean were conducted in collaboration with two research centers and were demonstrated to about 1,000 farmers. A baseline survey of 1,450 farmers was done to understand their farm livelihoods. Through stakeholder surveys, FERARI designed a Ghana National Fertilizer Platform that is being established. Its soil mapping expertise is being developed as a step toward an IT platform. The project's activities support the Planting for Food and Jobs program of the Government of Ghana to embed development efforts into national policy priorities to reach impact at scale. The activities are being conducted using a transdisciplinary approach with 22 master's-level students supervised by staff from FERARI and nine universities in Ghana, Morocco, the Netherlands, and Belgium.



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



*A farmer group in Mali prepares to practice microdosing.*

*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 Royal Tropical Institute (KIT)

**DONOR** – Embassy of the Kingdom of the Netherlands

ISSD/Sahel's objective is to ensure the availability and use of high-quality seed by establishing a viable, autonomous commercial seed sector supported by client-oriented seed services in Mali and Niger. Targeted priority crops comprise cereals (millet, sorghum, maize, and rice), legumes (peanut and cowpea), and vegetables (okra, onion, tomato, cabbage, and eggplant). ISSD/Sahel will boost commercial seed production, facilitate the professionalization of seed suppliers, mobilize the expertise of the Dutch and international private seed sector to benefit seed actors, and promote large-scale availability and use of quality seeds to sustainably increase production of targeted food crops. Key results expected by the end of the project include improved food and nutrition security for rural and urban households, increased incomes for rural households, a strengthened private seed sector, an increase in permanent jobs for women and youth in agriculture, and more women engaged in commercial seed production.

## LOCAL GOVERNMENT APPROACH TO THE AGRICULTURAL MARKET IN BENIN – PHASE 2 (ACMA2)



*Women work to process red palm oil, an important local cooking oil sold in markets across West Africa.*

*Benin (2017-2021)*

**BUDGET** – €17.5 million

**IMPLEMENTING PARTNERS** – CARE International Benin-Togo and KIT

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

Across four departments in Benin, ACMA2 engaged with nearly 80,000 farmers, processors, and traders (40% men, 60% women, and 20% youth) that are organized in 65 agribusiness clusters to increase their revenues by 20%. The project's implementation strategy is based on training and interventions in five integrated domains: access to agricultural inputs and innovations, market access and professionalization, access to agricultural finance, information and communications technology for agriculture (ICT4Ag), and public-private partnership at the communal level. ACMA2 introduced good agricultural practices and strategic information accessible on its ICT4Ag platform. To support productivity improvement, farmers are taught climate-friendly practices. Commercial infrastructure built by the project gave involved actors access to markets and financing. In 2020, more than U.S. \$1.7 million in credit was facilitated to support their activities. U.S. \$10 million in agricultural product sales were recorded, bringing the cumulative total for the first three years of the program to more than U.S. \$18,000,000.

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



Farmers in Niger place fertilizer briquettes in their rice field.

*Niger (2018-2021)*

**BUDGET** – U.S. \$2,783,000

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

IFDC's PARSEN project is providing 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. For 2020, activities were conducted to build the capacity of members of the national fertilizer importers, distributors, and agribusinesses association (ANIDE); strengthen its business relationships with farmer organizations, financial institutions, and the West African Fertilizer Association (WAFA); complete a specific fertilizer regulation framework, including adoption by Parliament and the Head of State, of an act on the suppression of offenses relating to fertilizer trade; establish

a new Directorate of Fertilizer Inspection and Quality Control (DICE) within the Ministry of Agriculture; and facilitate the signing of a joint act by the Ministries of Agriculture and Finance for the establishment of a Fertilizer Common Fund.

## FEED THE FUTURE NIGERIA RURAL RESILIENCE ACTIVITY



Participants outside the Feed the Future Nigeria Rural Resilience Activity's Regional Input Dialogue Workshop in Nigeria.

*Nigeria (2019-2024)*

**BUDGET** – U.S. \$1.5 million

**IMPLEMENTING PARTNERS** – Mercy Corps leads the consortium including IFDC and Save the Children International

**DONOR** – USAID

Feed the Future Nigeria Rural Resilience Activity 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/private extension service providers, input network actors, and others by ensuring appropriate technologies and practices are mainstreamed into the primary activities of the respective partners/stakeholders. IFDC supported the COVID-19 Rapid Assessment, conducted scoping studies that shaped the interventions, contributed to the evidence-based value chain selections and Agricultural Input Access Strategies and Extension Content workshops, and developed extension communication materials covering the maize, rice, cowpea, and groundnut value chains. Capacity building for agro-dealers, extension officers, and lead farmers on safer use of agrochemicals was conducted and five Memoranda of Understanding were signed, which will contribute to strengthening the resilience of the market actors to sustainably lift over 90,000 households out of chronic vulnerabilities and poverty.



## SMALLHOLDER AGRICULTURAL PRODUCTIVITY ENHANCEMENT PROGRAM (SAPEP)



Farmers in Burkina Faso learn about ISFM from SAPEP staff.

*Benin, Burkina Faso, Cameroon, Mali, Niger (2015-2021)*

**BUDGET** – U.S. \$7,315,000

**DONOR** – Islamic Development Bank

SAPEP is designed to provide proven and appropriate agricultural technologies to improve the living standards of 500,000 households. Specific outcomes of the program include increased use of effective integrated soil fertility management (ISFM) technologies, improved access to seed, improved access to financial services to actors along the value chain, and increased access to output markets. The program aims at increasing yield levels of major crops by at least 70% and income by at least 20%. In 2020, SAPEP hosted five regional workshops for country experts on soils, seed, markets and finance, and monitoring and evaluation. Furthermore, the project established a modern soil and plant analysis laboratory. Progress was made in setting up farmer field schools, demonstration plots on ISFM technologies, screening

of improved varieties, and production of improved seeds. Because of SAPEP's level of performance, three new projects were granted to IFDC.

## TECHNOLOGIES FOR AFRICAN AGRICULTURAL TRANSFORMATION (TAAT) – SOIL FERTILITY ENABLER COMPACT



Mamadou Nadio (at left) was able to double his millet yields using microdosing fertilizer technology.

*Benin, Burkina Faso, Ghana, Mali, Nigeria, Tanzania (2018-2021)*

**BUDGET** – U.S. \$1,802,097

**LEAD IMPLEMENTER** – International Institute of Tropical Agriculture (IITA)

**DONOR** – African Development Bank

The TAAT Soil Fertility Enabler (SFE), led by IFDC, is supporting seven TAAT commodity compacts in soil fertility management under three intervention areas: creation of an enabling environment for dissemination of technologies, strengthening the technology delivery infrastructure, and deployment of fertilizer technologies. Over the past three years, the SFE, with a network of 33 partners including national agricultural research system (NARS) and the

private sector, has registered 2,451 agro-input dealers in Burkina Faso and established a platform linking farmers to agro-input dealers, facilitating last-mile delivery of fertilizers; demonstrated 463 fertilizer technologies, including urea deep placement, microdosing, and ISFM; trained 492 farmers in the fundamentals of ISFM; produced 34 soil fertility maps to guide fertilizer recommendations; distributed 1,130 mini-kits (seed + fertilizer) for farmers' own testing of microdosing; and tested 13 fertilizers in farmers' fields.



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



Entrepreneur Nasiru Lawal used tools from 2SCALE to boost his business.

*Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Mali, Niger, Nigeria, South Sudan (2019-2023)*

**BUDGET** – €150,000,000 (€50,000,000 through public funding)

**IMPLEMENTING PARTNER** – 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 (PPPs) for inclusive business in agri-food sectors and industries across Africa.

2SCALE 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 to base-of-the-pyramid consumers. Despite the disruptions caused by COVID-19, 2SCALE managed to develop a full portfolio of 65 business partnerships in eight countries, including 30 newly established partnerships. This portfolio will provide a solid foundation to introduce innovations for eco-efficient agriculture, improve business skills, and develop nutritious, affordable food products for low-income consumers over the next two years of the program.

## TRANSFORMING IRRIGATION MANAGEMENT IN NIGERIA (TRIMING) EXTENSION SERVICE SUPERVISION



Farmer Kurman Isa stands in front of a UDP demonstration plot in Nigeria.

*Nigeria (2019-2021)*

**BUDGET** – U.S. \$840,000

**IMPLEMENTING PARTNERS** – National Agriculture Extension and Research Liaison Services (NAERLS) and Agricultural Development Programs in 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

reached over 20,000 farmers in selected states. These farmers were trained through Farmer Field Business Schools (FFBSs) to boost their productivity. IFDC also employs a collaborative approach to link these farmers to input and output markets, as well as financial institutions, strengthening their capacities across the value chain. Nine productivity-enhancing technologies were promoted to farmers, with a particular focus on fertilizer deep placement (FDP). Farmers using this technology 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.

Opposite: Zouariatou Kampo practices microdosing in her maize field in Mali.







# FERARI'S SUCCESS IN GHANA



*IFDC's Fertilizer Research and Responsible Implementation (FERARI) project is collaborating with the Government of Ghana's Fertilizer Expansion Program to establish the Ghana Fertilizer Platform (GFP) for the sustainable development of the fertilizer sector for food and nutrition security. Fertilizer stakeholders in Ghana welcome a multi-stakeholder GFP.*

Many stakeholders have bought into the GFP concept as a result of FERARI's work in supporting the processes with research and analyses, including identification of and interaction with over 50 key stakeholder institutions that could possibly be represented on the platform. FERARI's studies on the GFP provide solid information and concise recommendations on how the GFP could be successfully designed and operationalized as a truly functional, sustainable, and stakeholder-inclusive platform to purposefully address fertilizer sector issues.

FERARI representatives presented detailed reports on success factors and considerations for a successful GFP at a stakeholder roundtable meeting in April 2021. This presentation stimulated insightful discussions, generated enthusiasm, and delivered a course of action by and among participants on the GFP.

Consequently, the enthusiastic stakeholders at the roundtable meeting demonstrated their consensus and endorsement of the GFP by actively discussing and subsequently signing a resolution for its establishment. Further, they developed an action roadmap including pursuance of the GFP's formal registration and the engagement of associations of farmers, fertilizer retailers, and importers/blending companies to participate for effective realization of the GFP by end of 2021.



Right: FERARI program stakeholders participate in a workshop in Ghana.

Below: The FERARI team, comprising both researchers and students, convenes at the 2019 Inception Workshop in Ben Guerir, Morocco.



Consistent with its principle of providing a strong evidence base for establishing a relevant, representative, and sustainable GFP, FERARI is currently conducting research on strategically important issues to make useful recommendations for the process. These include research on framing and discourse analysis to generate effective modes of communicating fertilizer issues among actors and on power relations among actors with varying interests in addressing issues of scaling in the fertilizer value chain.

With the support of its partners, FERARI has been striving to ensure that the GFP becomes a reality, adding to a number of other country and regional fertilizer stakeholder platforms that IFDC has assisted in establishing.

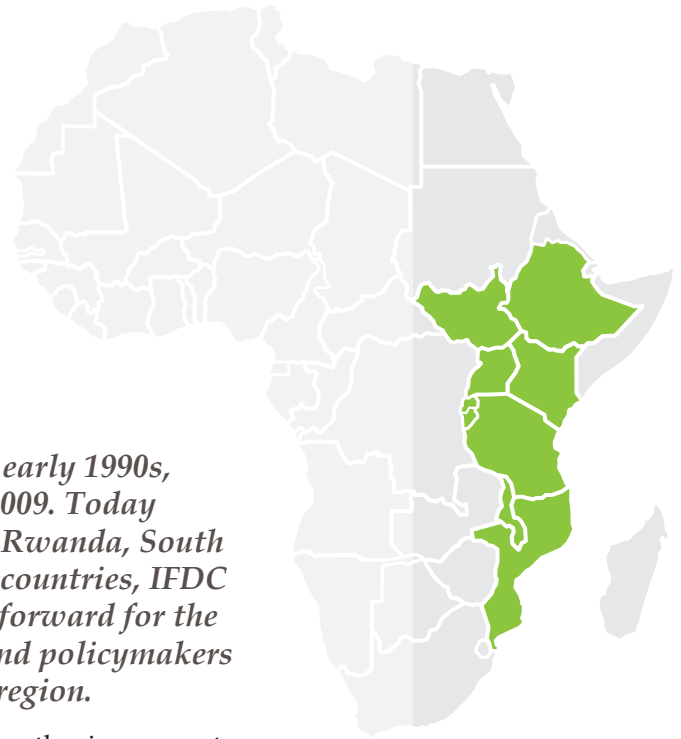
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FERARI activities run from 2019 to 2024 and are co-funded by OCP, Mohammed VI Polytechnic University (UM6P), IFDC, and other involved institutions. Partners also include Wageningen University and Research (WUR), University of Liège (ULiège), universities and research institutes in Ghana, including University of Ghana (UG), Kwame Nkrumah University of Science and Technology (KNUST), and the University for Development Studies (UDS).

**FERARI also shares in executing cross-cutting issues, such as increased access to finance by fertilizer value chain actors, increased youth and women empowerment, and improved actor database development and management.**



# EAST & SOUTHERN AFRICA



*IFDC has worked in East and Southern Africa since the early 1990s, and established a regional office in Nairobi, Kenya, in 2009. Today with offices in Burundi, Ethiopia, Kenya, Mozambique, Rwanda, South Sudan, and Uganda and projects underway in all seven countries, IFDC is helping develop, strengthen, and innovate new paths forward for the smallholder farmers and traders, transporters, banks, and policymakers who work together to put food security first across the region.*

2020 highlights of IFDC's work in the region 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.

## AFRICAFERTILIZER.ORG



Farmers apply fertilizer to their field in Uganda.

*Africa-wide (ongoing)*

**IMPLEMENTING PARTNERS** – International Fertilizer Association (IFA), Argus Media, and Development Gateway

As the premier source for fertilizer statistics and information in Africa, the [AfricaFertilizer.org](https://africafertilizer.org) (AFO) initiative has been collecting, processing, and publishing fertilizer production, trade, and consumption statistics for main fertilizer markets in sub-Saharan Africa. AFO worked with Development Gateway to develop an innovative dashboard – Visualizing Insights on Fertilizer for African Agriculture – to improve, manage, and visualize fertilizer data in [Kenya](#), Ghana, and Nigeria. We produced the [2020 Fertilizer Plant Register](#) recording/mapping operational fertilizer plants in SSA, excluding South Africa. AFO updated fertilizer data and statistics at six workshops held in West Africa. We supported the publication of 12 editions of the [West Africa Fertilizer Watch](#), six editions of the [East and Southern Africa Fertilizer Watch](#), and six editions of the [Africa Fertilizer Watch](#) to monitor the fertilizer sectors' response to COVID-19. Twelve editions of the [FertiNews](#) e-newsletter were developed and disseminated on fertilizer statistics, market comments, and general fertilizer news.



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



Fertilizer, carefully applied with other good agricultural practices, can dramatically improve crop yields.

by women and youth, and ensure over 42,000 hectares of farmland is under agroecological production and resilient to shocks and that 50% of relief seed is procured locally.

*South Sudan (2020-2025)*

**BUDGET** – U.S. \$10 million

**IMPLEMENTING PARTNER** – Royal Tropical Institute (KIT)

**DONOR** – Embassy of the Kingdom of the Netherlands in Juba

A3-SEED is supporting the commercialization of the seed sector to transition South Sudan from humanitarian relief support to a commercial, sustainable, and adaptive agriculture sector. Through existing private sector seed companies and outgrowers, seed production practices and input marketing and distribution will be improved so that quality seed is available down to the last mile. Smallholder farmers are being encouraged in the use of quality seed as well as good agricultural and climate-resilient farming practices. Over the next five years, A3-SEED will improve the livelihoods of more than 100,000 farming households, facilitate the development of 100 agro-dealers and 400 new businesses owned or managed

## FOOD SECURITY THROUGH CLIMATE ADAPTATION & RESILIENCE (FAR-SOFALA)



Simple techniques like mulching help farmers conserve water and produce more vegetables in Mozambique.

produce. In 2020, COVID-19 awareness and practices were incorporated into the project's field days. Measures included convening small groups of no more than 15 farmers, with social distancing of 1-1.5 meters and hygienic practices, such as handwashing. Educating farmers in rural areas about COVID-19 has allowed food-insecure countries, such as Mozambique, to continue business as usual, without interrupting their farming operations while practicing measures to prevent the spread of the disease among their communities.

*Mozambique (2017-2022)*

**BUDGET** – U.S. \$1,039,500

**MANAGING ORGANIZATION** – Swisscontact

**DONOR** – Swedish International Development Cooperation Agency (Sida)

Since 2017, the FAR-Sofala project has been working to achieve sustainable availability of and access to nutritious foods for 5,000 farming households in the cereal, legume, and vegetable value chains in Buzi District, Mozambique. The introduction of improved seed and fertilizer, climate-smart agricultural practices, capacity building for farmers, and linkages to input and output markets has provided 3,587 farmers (74% women) access to nutritious food as well as money from selling

## POTATO VALUE CHAIN CAPACITY BUILDING (PCB) PROJECT



Potato storage enables farmers to bulk produce and bargain for higher prices.

*Kenya (2018-2022)*

**BUDGET** – €2.3 million (€1 million cost share from partners)

**IMPLEMENTING PARTNER** – IPM Potato Group, Kenya Plant Health Inspectorate Services, Kevian Kenya Limited, Kirinyaga Seed Limited, National Potato Council of Kenya, Nyandarua County Government, Sustainable Food Systems Ireland, Teagasc

**DONOR** – Irish Aid, Embassy of Ireland in Kenya

The PCB project is a public-private partnership with the overall objective of improving livelihoods of small-scale farmers and families living within Nyandarua County, Kenya, by increasing the revenue generated from potato farming at least 30% through the adoption of new technologies. These technologies

include the use of certified seed potato, consistent use of good agricultural practices, improved farm management skills, and market access. In 2020, the project reached 1,558 farmers (56% female) using the Farmer Field Business School training model. Cumulatively, the project has trained 3,827 farmers directly and over 6,000 others indirectly. PCB has availed over 100 mt of certified seed potato and 350 mt of clean seed multiplied by farmers using skills acquired from the project. The project has trained 95 lead farmers who cascade farmer-to-farmer extension, thereby supporting government extension personnel.

## PRIVATE SEED SECTOR DEVELOPMENT (PSSD)



A Burundian farmer shows off his maize crop grown with certified seed.

*Burundi (2018-2022)*

**BUDGET** – €7,761,600

**IMPLEMENTING PARTNER** – Royal Tropical Institute (KIT)

**DONOR** – Embassy of the Kingdom of the Netherlands in Burundi

PSSD aims to double production and incomes of 108,000 farmer households in Burundi by ensuring sustainable access to certified seed and agricultural advisory services. In 2020, the project made significant strides toward the establishment of a sustainable seed industry in Burundi. The project supported 58 Burundian seed producers and companies to establish 6,261 micro-demonstration plots and train 68,140 farmers. The close proximity of the micro-demonstration plots to farmer communities ensured that 44% of all training participants were women. Because sales and distribution strategies were tailored to Burundian farmer households, private sector partners sold

a cumulative 1,343 mt of certified seed at commercial rates directly to 87,376 Burundian farmers. The inherent gender-inclusiveness of these tailored sales and distribution strategies meant that 36,094 of all clients were women.



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



*Cherista Irene is now a seed producer after receiving training from 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) GmbH

PNSP aims to increase productivity and associated incomes of 3,307 smallholder potato farmers (67% female) while simultaneously improving nutrition through dietary diversification for 5,136 farmers (75% female) in Eastern Uganda. Through the promotion of good agricultural practices, potato yields have improved from 12.5 mt/ha at baseline to 14.4 mt/ha in 2020. To address shortages of quality seed in the Mount Elgon highlands, four farmer-based seed producer associations were supported in their establishment of screenhouses to produce early generation seed, and 34 seed producers have been trained to produce quality declared seed potato. Through hands-on training in the establishment of 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 over 5 in 2020.

## RESILIENT EFFICIENT AGRIBUSINESS CHAINS IN UGANDA (REACH-UGANDA)



*Mugarika Bakyala Twimyuke Women's Group of Uganda can now access better healthcare and food markets because of REACH-Uganda's infrastructure work completed in 2020.*

*Uganda (2016-2021)*

**BUDGET** – €13,286,700

**IMPLEMENTING PARTNERS** – Cardno Emerging Markets and Royal Tropical Institute (KIT)

**DONOR** – Embassy of the Kingdom of the Netherlands, Uganda

By the end of 2020, REACH-Uganda had been implemented in 20 districts in Southwestern and Eastern Uganda, targeting the improvement of potato and rice market systems. Using the market systems development approach, the project has improved market engagement for farmers, strengthened household resilience, and deepened availability of agricultural support services. As a result, 36,398 farmers (62% women, 37% youth) have been trained in farming as a business, good agricultural practices, and climate-smart agriculture. A total of 6,627 potato and 17,532 rice farmers have earned an additional U.S. \$10.2 million from increased productivity. Rehabilitation of 67 km of feeder roads has allowed improved access to markets, health, and education for more than 156,000 people. By 2024, REACH-facilitated agribusiness linkages between farmers and 26 private sector firms, including banks, will assist 59,798 farmers and create 826 full-time jobs. Furthermore, 3,600 farmers are projected to register increased savings of U.S. \$2.1 million.

## SOIL FERTILITY STEWARDSHIP (PAGRIS)



Attendees at a farmer training organized by the PAPAB project in Benin.

*Burundi (2020-2024)*

**BUDGET** – €8.8 million

**IMPLEMENTING PARTNER** – 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. After a six-month inception phase, the project identified 42 pilot villages, 215 relevant watersheds of around 20 ha each, and 294 research farmers. The communities within the watersheds have been taught to develop their own plan to improve

landscape management, tackle soil erosion, reach stewardship agreements, and implement integrated practices through collective community action. The research farmers have been trained to co-create their own integrated farming plan and to test and implement land stewardship strategies and practices using the participatory learning and action approach. At the institutional level, PAGRIS supported the Soil Fertilization Directorate (DFS) to improve the strategic and technical quality of fertilizers that have been produced and distributed in Burundi through the National Fertilizer Subsidy Program (PNSEB).

## SUPPORTING AGRICULTURAL PRODUCTIVITY IN BURUNDI (PAPAB)



Theophile and Calinie Ntahondereye proudly display their Integrated Farm Plan (PIP) in Uganda.

*Burundi (2015-2020, concluded)*

**BUDGET** – €33.5 million

**IMPLEMENTING PARTNER** – Wageningen Environmental Research, Oxfam Novib, and ZOA

**DONOR** – Embassy of the Kingdom of the Netherlands in Burundi

**PAPAB** promoted market-oriented, climate-resilient, and sustainable agricultural techniques, supported by fertilizer subsidies. The project sustainably increased agricultural productivity, strengthened resilience, and raised incomes for 865,666 farming households during Component 1 and 59,575 farming households during Component 2 (see the [PAPAB final report](#)). A 2019 [impact study](#) carried out to assess the integrated farm planning approach showed that over 80% of households significantly increased their incomes over three years. In 2020, the project supported the National Fertilizer Subsidy Program (PNSEB) to give about 800,000 farming households access to 56,236 mt of fertilizers and 9,210 mt of dolomite.



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



*Stawi Foods and Fruits Limited, a Kenyan processing company, demonstrates its fortified porridge flour products during a 2SCALE market day.*

*Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Mali, Niger, Nigeria, South Sudan (2019-2023)*

**BUDGET** – €150,000,000 (€50,000,000 through public funding)

**IMPLEMENTING PARTNER** – SNV, BoP Innovation Center

**STRATEGIC PARTNER** – Partnership Resource 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 (PPPs) for inclusive business in agri-food sectors and industries across Africa. 2SCALE 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 to base-of-the-pyramid consumers. Despite the disruptions caused by COVID-19, 2SCALE managed to develop a full portfolio of 65 business partnerships in eight countries, including 30 newly established partnerships. This portfolio will provide a solid foundation to introduce innovations for eco-efficient agriculture, improve business skills, and develop nutritious, affordable food products for low-income consumers over the next two years of the program.



*Low-tech shaded seedling nurseries helped increase market vegetable production in South Sudan.*



# REACH-UGANDA & ACCESS TO FINANCE



*A few years ago, Jamila Nabirye grew rice on a small plot of land near her home in Nakwijja village, Busolwe Town Council in the Butaleja district. Despite the effort she and her family put in, they could only harvest one or two bags of rice per season. She could barely sustain her family of 8 children by selling the 200 kg of rice she produced.*

To end this cycle of low yields, Jamila considered hiring more land to expand her rice field, but such an idea was costly; she simply didn't have the money. Consequently, Jamila opted to borrow from a bank, but she didn't have collateral for the loan and could not afford to pay high interest rates.

When Jamila shared her dilemma with members of her farmer group, Geshaho Farmers' Group, she realized that other members of the group shared the same plight.

In 2019, IFDC, through its [Resilient Efficient Agribusiness Chains in Uganda \(REACH-Uganda\)](#) project connected with the Geshaho Farmers' Group and linked them with the Microfinance Support Centre (MSC), which provides farmers access to agricultural loans and group loans with low interest rates.

To Jamila and the 40 members of her farmer group, this was a great relief. "I was able to expand my rice field from just a plot to one acre with a loan of 3 million Uganda shillings that I got from the Microfinance Support Centre through my group," says Jamila. She could not hide her excitement as she explained that she harvested 20 bags of rice from the one acre she had hired during the previous season.

Malingi John Joshua, the Secretary of Geshaho Farmers' Group says their organization, which started off as a home saving group for social support and emergencies, grew from village saving to parish saving and now has membership across the entire Butaleja district.



At right: Jamila Nabirye built a new house for her children using her increased income from the REACH-Uganda project.

Below: Drone photography shows Jamila at work in her rice field.



“Last year, the Microfinance Support Centre gave us a loan of 30 million, which has already been paid off, and we applied for another loan of 60 million shillings which is being processed,” he says.

Joshua attributes the success of the farmer group to cohesion of all members as he says that they do everything as a group – clearing the fields, planting, weeding, harvesting, drying, and even selling their paddy to [Diners Group, Ltd.](#), another REACH project partner linked to Geshaho Farmers’ Group. Diners Group transports and mills paddies for the farmers at low rates to increase the farmers’ profit margins.

Jamila and Joshua are among the first 120 farmers from six farmer groups to receive loans totaling 108 million shillings through the partnership between the REACH project and MSC. MSC aims to enhance the productivity of market-oriented farmers in rice and potato value chains by addressing the barriers of access to finance for farmers through expanding group loans to help farmers make investments for increased yields and profitability.

The benefits from these loans will reach 3,600 farmers from 360 farmer groups in 17 districts of Eastern and Southwestern Uganda and will result in an estimated additional income of more than U.S. \$2 million for the farmers.

“I sold 20 bags of rice and got money to plaster my house, buy a cow, and support my family’s basic needs. I also managed to pay school fees for my children.”

— Jamila Nabirye



# ASIA

*IFDC has worked in Asia since 1977, with its first field trials of fertilizer deep placement (FDP) taking place in Bangladesh. In 1992, it established its Asia Division with a permanent office opened in Dhaka, Bangladesh. Since then, IFDC has implemented projects in 30 countries across the continent. In 2020, IFDC also opened its first office in India, located in Hyderabad.*

The year 2020 saw IFDC projects active in India's Telangana State, and in Myanmar and Nepal. These projects worked to improve fertilizer availability, share techniques to improve fertilizer efficiency, conduct soil mapping to identify fertilizer needs, and engage women and youth in the agriculture sector. The project teams structured their plans around COVID-19 restrictions to achieve their goals to reach the target populations.



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



*Shadenets and biodegradable surface mulch help vegetable farmers increase production and minimize labor.*

*India (2019-2022)*

**BUDGET** – U.S. \$2,513,472

**DONOR** – Walmart Foundation

**PROJECT HOSTING** – International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

AFI is helping peri-urban farmers of Telangana State exploit the ever-growing consumer demand for fresh produce in the Hyderabad metropolitan area. During 2020, emphasis was placed on dissemination of good agricultural practices (GAPs) to farmers. Diffusion of improved technologies requires attention to both demand- and supply-side issues and concurrently to

stimulating entrepreneurial investment in agro-input and quality product supply. The strategy strengthened farmer-market linkages for timely sales and better prices, with special emphasis on gender and youth by providing training and advisory services and disseminating climate-resilient, adaptable innovative technologies for enhancing the efficiency of natural resources, mechanization, quality seed use, and post-harvest loss reduction in rice, maize, pulses, and vegetable cropping systems. In 2020, a quick assessment was done on the impact of COVID-19 on farmers and agro-input dealers, four leaflets were produced on COVID-19-related issues, 10 vegetable training modules were prepared, and 160 farmers were trained (34% women).



## DRY ZONE AND UPLANDS AGRO-INPUT & FARM SERVICES (AIFS)



*Agro-input retailers participate in a field day at Bogalay.*

*Myanmar (2015-2020, concluded)*

**BUDGET** – U.S. \$6,069,474

**IMPLEMENTING PARTNER** – Private sector input and service providers (ISPs), Myanmar Department of Agriculture (DOA), and financial institutions

**DONOR** – Livelihoods and Food Security Fund (LIFT), United Nations Office for Project Services (UNOPS)

Starting in the Dry Zone and continuing in the Uplands, AIFS worked to strengthen a network of agricultural input and service

providers to enable commercial agricultural production, with the ultimate aim of improving smallholder farmer incomes. Enhancing the partnership between ISPs, DOA, and farmers was the pathway to ensuring sustainability of information sources after project completion. In 2020, COVID-19 presented a major disruption for the project, which already had a short time frame. By late March, all field operations had ceased. While field-based training was not possible during this period, other activities were conducted. Demonstrations were harvested with good collaboration from DOA and the farmers. ISPs continued to receive remote contact from the project to gather data and prepare business development proposals. Stakeholders now have the confidence to give advice on what factors to consider when choosing inputs. Capacity development gradually builds resilient systems that can better face future pressures and shocks from the climate or market. A total of 42,551 stakeholders directly benefited from the project.

## FEED THE FUTURE NEPAL SEED AND FERTILIZER (NSAF)



*Maize is one of six crops undergoing field trials in the NSAF project.*

*Nepal (2016-2021)*

**BUDGET** – U.S. \$1,143,000

**IMPLEMENTING PARTNER** – International Maize and Wheat Improvement Center (CIMMYT)

**DONOR** – USAID

IFDC is implementing fertilizer sector-related activities as a subcontractor on the NSAF project in collaboration with public and private sector actors, including the Nepal Agricultural Research Council, Ministry of Agriculture and Livestock Development (MoALD), Department of Agriculture, Nepal Entrepreneurs and Fertilizer Association, and agro-input companies. The project is working on rice, maize, lentils, onions, cauliflower, and tomatoes in 26 districts, comprising

21 districts in the Feed the Future Zone of Influence in Nepal plus five earthquake-affected districts in Bagmati Province. In response to COVID-19, an initial assessment was conducted with partner cooperatives in April 2020 to determine the availability of fertilizer. IFDC assisted the national agricultural research system (NARS) in preparing digital soil mapping, the scope of work for the fertilizer blending policy activity for MoALD, and training materials on organic matter buildup in Nepalese soils. IFDC also assisted the Government of Nepal in importing 50,000 mt of urea fertilizers from Bangladesh during the pandemic.

# MANAGING NUTRIENT BALANCE IN NEPAL



In 2020, the ISFM program increased the crop productivity of each household by 25-50%.

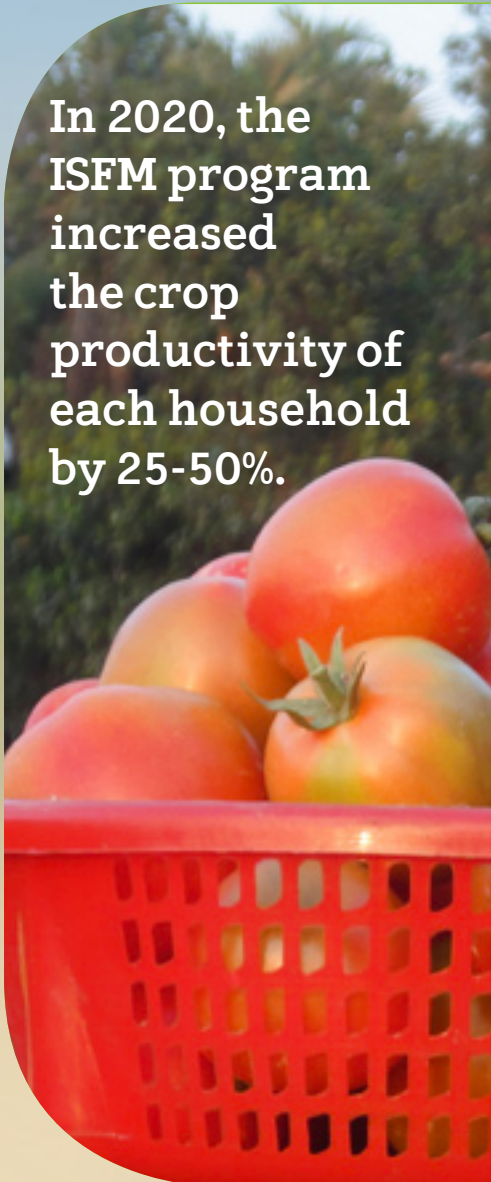
*In the years of the civil war in Nepal (1996-2006), women in rural villages like Masuriya faced the burden to make ends meet for their children and elderly family members, as most men fled in fear of war or migrated to earn income. It was during this time that Bandana Joshi and a group of 24 women who were operating a savings and credit firm realized that more women in their village needed monetary support to carry out their livelihood activities.*

They decided to expand their services and formed a cooperative to empower rural women and make finance available in the village. Their cooperative, Sana Kisan Sahakari Sanstha Limited, now has 1,186 women members, more than half of whom belong to marginalized communities.

Many of the members are small commercial farmers, owning about 1.4 hectares (ha) of land for farming as their sole source of income. Most have traditionally grown cereals, such as rice and wheat, alongside a few vegetables and had limited knowledge on cash crop farming and soil fertility management. They would produce and sell their surplus rice and wheat when they needed cash to buy groceries or pay household bills.

In October 2016, researchers from the International Maize and Wheat Improvement Center's (CIMMYT) Nepal Seed and Fertilizer (NSAF) project and the International Fertilizer Development Center (IFDC) launched an integrated soil fertility management (ISFM) program and worked alongside the cooperative to disseminate and encourage the use of ISFM technologies among its members.

As a strategic entry point, the cooperative in coordination with female community volunteers helped implement the ISFM program. Women farmers received training on the right source and amount of fertilizer that matches





At right: Women farmers participate in a farmer field day of cauliflower in Masuriya. (Photo: Uttam Kunwar/CIMMYT)

Below right: Balanced nutrient management helps farmer Dharma Devi generate better household income from cauliflower cultivation. (Photo: Uttam Kunwar/CIMMYT)



crop needs and the right time and place to apply these fertilizers to maximize nutrient uptake and improve crop yields.

So far, the use of balanced fertilizer application has benefited more than a hundred members of the cooperative who gained an average income of \$219 in a season from cultivating cauliflower – a cash crop in Nepal's Terai region. This additional return has helped farmers to adequately feed an average family of 4.5 people for the entire year.

After witnessing positive results, many other farmers in the village started applying major nutrients using urea, DAP (diammonium phosphate) and MOP (muriate of potash) to increase crop productivity. In 2017, Joshi and other members noticed a sharp rise in fertilizer procurement from the cooperative among farmers resulting in almost double the sales compared to 2015.

Now more organized and well-equipped, the cooperative has started organizing programs this year on off-seasonal and seasonal vegetable cultivation of crops such as tomato, cauliflower, and cucurbits, which has aided around 150 member households. Although it started small, the cooperative has now made strides towards improving rural women's economic empowerment and sparking better livelihood opportunities in the area.



*By Bandana Pradhan and Roshan Subedi, CIMMYT*

# 2020 PUBLICATIONS & PRESENTATIONS

The following technical publications and presentations are a representation of the work our highly skilled researchers and field experts accomplished in 2019. These, and much of our other research, can be accessed through our [online library portal](#).

## PUBLICATIONS

- Agyin-Birikorang, S., I. Tindjina, A.R.A. Fuseini, H.W. Dauda, and R.A. Issahaku, U. Singh. 2020. "Application Timing of Urea Supergranules for Climate-Resilient Maize Cultivars Grown in Northern Ghana," *Journal of Plant Nutrition*, 43:7, 949-964. <https://doi.org/10.1080/01904167.2019.1702207>
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## PRESENTATIONS

- Bindraban, P.S., R. Pandey, C. Dimkpa, and W.K. Atakora. 2020. "Adapting Agriculture to Degrading Soils and Changing Climate in Africa." The International Conference on Phosphates (ICP): Fundamentals, Processes, Technologies, October 13-17, 2020, Ben Guerir, Morocco.
- Bindraban, P.S., et al. 2020. "Balanced Nutrition Improves Plant Health and Protection." Panel abstract submitted to 2020 Plant Health, Agriculture and Bioscience Conference, September 9-11, 2020. The Hague, The Netherlands.
- Demiss, Mulugeta. 2020. "Developing Teff Model in DSSAT and Teff's Response to Different Growth Factors Study," IFDC Webinar, February 11, 2020, Muscle Shoals, Alabama.
- Dimkpa, C., P. Bindraban, W. Elmer, and J. White. 2020. "Fertilizer-Nutrients for Sustaining Plant Health Under Drought Stress," Abstract submitted to 2020 Plant Health, Agriculture and Bioscience Conference, September 9-11, 2020. The Hague, The Netherlands.
- Saharawat, Y.S. 2020. "Climate Smart Nutrient Management and Role of Youth in Doubling Farmers Income," presented at a one-week training program on Secondary Agriculture for Doubling Farmers Income: Using Efficient Technologies conducted by National Agriculture High Education Program and Indian Council of Agricultural Research at SKUAST Kashmir, India on October 5, 2020.
- Singh, U. 2020. Role of Micronutrients in Improving Climatic Resilience and Future Research Areas for Improving Use Efficiency. IFA Webinar on "Improving human health with micronutrient fertilization," October 26, 2020. <https://www.youtube.com/watch?v=dBk2v0hdJnI>
- Singh, U. 2020. The Role of Nanotechnology in Enhancing Efficiency of Fertilizers. Presented at Materials Innovation for Sustainable Agriculture (MISA) 2020 – Scientific Program organized by MISA and NanoScience Technology Center, University of Central Florida. November 12, 2020.
- Singh, U. Improving Yield and Nutrition through Fertilizer Formulation and Management. Presented during the session on "Fertilizer Strategies in Improving Micronutrient Status of Food Crops" at Micronutrient Forum (MNF) Conference. November 9-13, 2020.
- Stewart, Z.P. 2020. "Market Place: Introduction to the SOILS Consortium. Supporting Soil Health Interventions in Ethiopia: Opportunities for Accelerating Impact," Gates, GIZ, EIAR, February 6-7, 2020, Addis Ababa, Ethiopia.
- Wendt, J. 2020. "Determining Lime Requirement," presented at a workshop hosted by KeFERT on lime impact study dissemination workshop of Kenya Markets Trust (KMT), January 5, 2020, Nairobi, Kenya.

# 2020 FINANCIAL STATEMENT

The following is a summary of financial information for the year ended December 31, 2019. 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, 2020*

REVENUES & GAINS (US \$'000)	2020	2019
Alliance for a Green Revolution in Africa	898	1,693
African Fertilizer and Agribusiness Partnership (AFAP)	–	9
African Development Bank	281	833
Board of Directors Donations	41	–
Dutch Embassies	18,102	18,531
International Fertilizer Association (IFA)	167	151
Islamic Development Bank	674	766
Embassy of Ireland (Irish Aid)	402	434
Millennium Challenge Corporation (MCC)	690	1,599
Netherlands Directorate-General for International Cooperation (DGIS)	13,304	8,341
OCP Foundation	2,044	–
Swiss Agency for Development and Cooperation (SDC)	571	199
United Nations Office for Project Services (UNOPS-LIFT)	941	1,351
U.S. Agency for International Development	8,620	9,310
Walmart Foundation, Inc.	290	132
Others	3,579	4,446
<b>Total revenues and support</b>	<b>50,604</b>	<b>47,795</b>
EXPENSES & LOSSES (US \$'000)	2020	2019
Research and development	3,416	3,602
Field projects	36,331	35,716
Capacity building	3,256	2,710
Support activities	5,491	5,460
<b>Total Expenses</b>	<b>48,494</b>	<b>47,470</b>
<b>Surplus/(loss)</b>	<b>2,110</b>	<b>316</b>



**BALANCE SHEET***For the year ended December 31, 2020*

<b>(US \$'000)</b>	<b>2020</b>	<b>2019</b>
Total assets	29,665	26,204
Total liabilities	30,038	28,543
Unrestricted net assets	(373)	(2,339)
<b>Total Liabilities and Net Assets</b>	<b>29,665</b>	<b>(2,339)</b>

**EXPENSES BY FUNCTION***For the year ended December 31, 2020*

<b>(US \$'000)</b>	<b>2020</b>	<b>2019</b>
Personnel	20,596	20,605
Travel	1,744	3,750
Operations	4,342	4,349
Workshops & training	3,242	4,066
Equipment & supplies	2,639	2,422
Subcontracts & grants	15,931	12,287
<b>Total Expenses</b>	<b>48,494</b>	<b>47,479</b>



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