Responding to Crisis, Building Resilience

2020 ANNUAL REPORT
HarvestPlus improves nutrition and health by working with partners worldwide to develop and promote biofortified crops that are rich in vitamins and minerals, and providing leadership on biofortification evidence and technology.

HarvestPlus is part of the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH) and is based at the International Food Policy Research Institute (IFPRI).

Results in 2020:

9.7m
Smallholder farming households growing biofortified crops, up 14% from 2019

48.5m
Total beneficiaries in farming households

23
HarvestPlus/CGIAR biofortified crop varieties released by governments in nine countries

262
HarvestPlus/CGIAR varieties released to date in 30 countries

286,000
Farmers trained in biofortified crop agronomy, production, processing, and nutrition

185,000
Women farmers trained (64% of all trainees)
Dear Friends,

The rapid expansion of the COVID-19 pandemic during 2020 posed serious challenges to people everywhere. For the primary beneficiaries of HarvestPlus—smallholder farming families and low-resource consumers in Africa, Asia, and Latin America—the pandemic’s health threat was compounded by increased economic, food, and nutrition insecurity.

To address these challenges, HarvestPlus and its partners pivoted to crisis-response mode. This Annual Report describes steps we took to ensure that millions of farming families dependent on biofortified crops for essential micronutrients, nourishment, and livelihood, did not miss a crucial planting season or lose their links to post-harvest markets. We helped biofortified food businesses—many run by women—continue to source needed raw material, and we contributed to humanitarian relief efforts for hard-hit communities.

I am pleased to report that quick innovation and agile execution yielded many positive results. Notably, by the end of 2020, 9.7 million farming households were growing biofortified crops, a 14 percent increase over 2019, and more than 48 million household members are now consuming and benefitting from these crops. This is particularly significant for the women and young children in these families, since they are most at risk of micronutrient deficiency and its ill effects.

The 2020 edition of the State of Food Nutrition and Security in the World (SOFI) report estimated that, even before the pandemic, 3 billion people worldwide could not readily afford healthy diets; the COVID-19 crisis has been adding many millions more to that grim tally, calling for an ambitious global response.

Indeed, the economic hardships caused by the pandemic have forced many families to rely even more on typically low-nutrient but less-costly staples, especially as supply chains for more-perishable, high-nutrient foods like meat, fruits, and vegetables were seriously disrupted. This underscored the value of biofortification as a complementary, accessible, and affordable nutrition response that can also increase the resilience of low-resource families to future shocks.

The proven ability of biofortification to make staples—the foundation of many diets—more nutritious at no additional cost to farming families, is an advantage that is being leveraged more fully. Indeed, even as national governments grappled with the pandemic’s immediate risks to their citizens in 2020, many also took steps to accelerate the scale-up of biofortification. Examples cited in this report include bold new commitments by leaders in India, Tanzania, and Guatemala. We also saw the CGIAR (of which HarvestPlus is a part) ramp up efforts to “mainstream” nutrition targeting in its global crop breeding programs, which supply improved seed varieties as public goods to hundreds of countries.

As we all aim to build back better, more-resilient food systems, biofortification is poised to play an important role in strategies to improve food and nutrition security, health, and livelihoods. We are committed to making all available foods as nutritious as possible. We thank our donors and partners for their continued support in this effort.

Yours Sincerely,

Arun Baral

Arun Baral
Chief Executive Officer
Adam Mayaki
Chief Financial Officer
Ekin Birol
Director, Impact & Strategy
Lynn Brown
Director, Alliances & Policy
Wolfgang Pfeiffer
Director, Research & Development
Donald Mavindidze
Regional Director, Africa
Erick Boy
Head, Nutrition
Country releases of biofortified crop varieties in 2020 that were developed by HarvestPlus and its CGIAR research partners.*

(Numbers indicate multiple varieties released)

**IRON CROPS:**
Nepal: *Lentil***
Tanzania: *Bean (4)*

**ZINC CROPS:**
Colombia: *Maize, Rice*
El Salvador: *Maize*
Guatemala: *Maize*
Nepal: *Wheat (6)*
Nicaragua: *Rice*
Pakistan: *Wheat*

**VITAMIN A CROPS:**
Ghana: *Cassava (4)*
Nigeria: *Maize (2)*

New varieties highlight: Zinc wheat in Asia

**PAKISTAN:** Akbar-2019 zinc wheat, developed by HarvestPlus and CIMMYT, was released by Ayub Agricultural Research Institute (AARI) in Pakistan’s Punjab province. Punjab accounts for 75 percent of national wheat output. High-yielding Akbar-2019 has up to 26 percent more zinc than popular non-biofortified varieties.

**NEPAL:** The Nepal Agricultural Research Council (NARC) released six zinc-biofortified, climate-resilient wheat varieties simultaneously in late 2020. They were developed in a “fast-track” approach, with CIMMYT and NARC scientists moving material from trials in CIMMYT’s research station in Mexico to multiple locations in Nepal for testing.

* The CGIAR breeding center partners of HarvestPlus are: The Alliance of Bioversity International and CIAT; International Crops Research Institute for the Semi-Arid Tropics (ICRISAT); International Institute for Tropical Agriculture (IITA); International Maize and Wheat Improvement Center (CIMMYT); International Potato Center (CIP); International Rice Research Institute (IRRI).

**Includes zinc as a secondary target nutrient.**
Responding to Crisis

The COVID-19 pandemic upended lives, food systems, societies, and economies worldwide during 2020, and continued to do so in 2021. For smallholder farming families, many of whom live from harvest to harvest, the threats to their food and nutrition security, health, and livelihoods were immediate and often dire.

In all countries where HarvestPlus is active, our teams worked closely with partners to rapidly innovate and adopt new practices to reach farming families, allowing them to continue to grow and benefit from their nutrient-enriched crops.

This meant ensuring farming families were still able to:

- access and plant biofortified seed;
- receive training and technical support;
- stay connected to crop markets.
A multipronged effort in Nigeria

An example of how HarvestPlus country teams worked with business, government, and NGO partners on comprehensive responses to the pandemic’s disruptions of seed, crop, and food value chains.

**Ensure availability of planting material:**
- Worked with government departments to secure road passes during lockdowns for breeders and seed companies.
- Negotiated with seed companies to give farmers a 10 percent discount on vitamin A maize (VAM) seed and 20 percent on vitamin A cassava (VAC) stems.

**Support post-harvest value chain actors:**
- Helped crop aggregators locate and access available harvest; facilitated aggregated supply delivery to food processors. For example, in June, we assisted Niji Foods to supply more than 25 tons of vitamin A cassava gari and flour to food companies.
- Trained 155 extension agents to provide technical assistance to food SMEs in four states where HarvestPlus staff could not travel.

**Address humanitarian threats:**
- Donated VAC stems and VAM seed to government for distribution to 50,000 farmers in Ogun State and 12,000 farmers in Anambra State.
- With value chain partners, supplied relief seed packages to 5000 farmers in five states.
- With Cato Foods and the Jessy Ojoma Drive for Environmental Development Foundation (JODED-F), arranged to source biofortified foods for relief efforts reaching more than 2000 vulnerable people in Osun State and Benue State.
- The Kaduna State Ministry of Agriculture procured 10 MT of VAM from HarvestPlus’ partner seed company, Seed Speers Ventures, for state COVID-19 response.

See a video about the HarvestPlus response to COVID-19 in Nigeria
Ensuring access to zinc rice in Bangladesh

COVID-19 severely impacted the lives of farming families across Bangladesh, greatly increasing their risk of food and nutrition insecurity, even though the government exempted the agriculture sector from many restrictions. About 36 percent of Bangladeshi children under five do not get enough zinc in their diets, leaving them vulnerable to stunting, diarrhea, and respiratory infections.

Among measures taken by HarvestPlus to sustain access to zinc-biofortified rice:
- Joined other stakeholders to advocate for a government subsidy on rice to cash-strapped consumers.
- Supported partners to donate food and health kit packages, including zinc rice, to nearly 700,000 at-risk households.
- Worked with RDRS Bangladesh in the northwest to distribute 1 metric ton of zinc rice seed.
- Worked with Ali Seed Farm in Jashore district to distribute 300 kilos of zinc rice seed and health kits to women farmers.
Reaching the most vulnerable

In December 2020, at a kickoff event for the Nutrition for Growth Year of Action, the Canadian Government committed CAD 520 million over five years to “address acute malnutrition and the underlying determinants of malnutrition.” A near-term priority was to support responses to immediate threats to the food, nutrition, and livelihood security of smallholder farming families.

One such response is the Integrated Food Systems Approach to Build Nutrition Security project, which HarvestPlus is implementing with local partners in six low-income countries: Bangladesh, Pakistan, DR Congo, Malawi, Zambia, and Zimbabwe. This 18-month, rapid-action initiative equips vulnerable families to grow nutrient-rich biofortified varieties of familiar staple crops, which also are high-yielding and cost the farming families the same to grow as non-biofortified local varieties.

The project also strengthens farms’ linkages to crop and food markets, providing livelihood opportunities for the families and extending the nutrition and health benefits of biofortified foods to non-farm consumers. The project aims to reach and benefit 7.8 million people across the six countries.

A key focus is benefiting and empowering women, who are more susceptible than men to micronutrient deficiency. Activities include improving women’s access to farm inputs, trainings, and technologies; strengthening women-led seed and food enterprises; and increasing women’s awareness of the nutrition and health benefits of biofortified foods in family meals.
Leveraging digital payments in Zambia

Ahead of the spring 2020 harvest season, HarvestPlus coordinated with the Ministry of Agriculture to identify farming area planted and farmers’ expected yields of vitamin A maize—information that was shared with crop processors so they could prepare for the procurement process and arrange for special transport. HarvestPlus also connected processors with a payments expert to arrange digital bank transfers or mobile money to pay farmers remotely.

Going mobile in Pakistan

The COVID-19 pandemic heightened the resolve of HarvestPlus to leverage mobile platforms to engage farmers and value chain actors more efficiently and cost-effectively. In Pakistan, HarvestPlus is partnering with Precision Agriculture for Development (PAD) to promote zinc-biofortified wheat to about 100,000 farmers through text messages about zinc deficiency and its effects; the agronomic, nutritional, and commercial benefits of zinc wheat; and post-harvest market intelligence. The project is coordinated with the Government of Punjab’s Department of Agriculture Southern Punjab, which plays a critical role in ensuring the smooth functioning of the agricultural system in Pakistan.

Seeds by mail in Colombia

How do you get iron bean and zinc maize seed to farmers when travel is restricted? In Colombia, the HarvestPlus team opted for the public mail system which remained in service, and they relied on local farmers to confirm deliveries and organize virtual training sessions. This allowed for continued support to more than 1,550 farming households. The Colombia team also supported a government distribution of more than 14 tons of biofortified maize, bean, and rice seed to farming families.
Scaling Up to Build Resilience

For nutrition security stakeholders around the world, the COVID-19 pandemic underscored the value of biofortified staple crops as accessible, affordable, and equitable sources of essential vitamins and minerals that strengthen health and immune systems of resource-poor communities—particularly families who rely heavily on low-nutrient staples to anchor their diets.

As governments and global agencies addressed the immediate threats from COVID-19, many also took measures to accelerate the scale-up of biofortified crops and foods over the longer term, recognizing that they deliver micronutrient resilience to those most in need in times of shock.
Leaders in India endorse biofortification

On World Food Day 2020, Indian Prime Minister Narendra Modi endorsed biofortification as a sustainable and cost-effective solution to alleviate malnutrition. Modi also “dedicated to the nation” 17 recently-developed biofortified seed varieties that are being released to Indian farmers. He said this is an important step in strengthening the government’s campaign to improve nutrition.

Also in 2020, the Government of Bihar (India’s third most populous state with the highest rate of stunting in the country) committed to rapidly scale up zinc wheat production to reach millions more vulnerable farming families. The Bihar Government also established a “Nutritional Village” where 475 households are cultivating biofortified crops using organic methods, to help promote these nutritious varieties. HarvestPlus is working in Bihar and Odisha with public and private partners to scale up biofortified crops, under a project funded by the Bill & Melinda Gates Foundation.
Tanzania sets an example

The government issued comprehensive guidelines for biofortification activity across seed and food value chains that serve as a model for other countries. The guidelines are a reference point for value chain participants to spur faster integration of biofortified seeds, grains, and foods in the food system. “This will enable the country to have healthy people who will actively participate in economic activities, including agriculture, and thus contribute to national economic development...,” Gerald M. Kusaya, permanent secretary in the Minister of Agriculture, wrote in the guidelines’ Foreward. HarvestPlus provided technical support to Nutrition International, which worked with the government on the guidelines—an activity under the Enhancing Nutrition Services to Improve Maternal and Child Health in Africa and Asia (ENRICH) program, which is funded by the Government of Canada.

Guatemala has a plan

The Minister of Livestock and Food, José Ángel López, announced in September that biofortified crops would be part of the National System of Strategic Food Reserves, which is included in the government’s COVID-19 Economic Recovery Plan. The Ministry will also promote biofortified crop cultivation to help address food insecurity and malnutrition and boost families’ resilience. The reserves plan sees the government purchasing more than 22,000 tons of maize and more than 4,500 tons of beans annually, including some biofortified varieties developed by the Institute of Agricultural Science and Technology (ICTA) of Guatemala and other HarvestPlus partners.
“Mainstreaming” biofortification in crop breeding programs

A top priority to successfully scale up biofortification on the supply side is to make biofortification a core element in public and private staple crop breeding programs, at both the global and national levels. “Mainstreaming” nutrient targets in breeding programs of CGIAR global agricultural research centers, which supply improved staple crop varieties to hundreds of countries, started in earnest during 2020. Mainstreaming activities are funded by the UK Foreign and Commonwealth Development Office (FCDO) and the Bill & Melinda Gates Foundation.

The International Maize and Wheat Improvement Center (CIMMYT) officially integrated zinc targets in its core wheat breeding program. “We will select high grain zinc content across all CIMMYT wheat breeding pipelines, using rapid cycling breeding methods to accelerate gains, with the aim of providing farmers and consumers with high-performing varieties with enhanced nutritional value,” said Velu Govindan, a CIMMYT senior scientist and wheat breeder. Beside zinc wheat, CIMMYT is a HarvestPlus partner in the development of zinc maize and vitamin A maize varieties.

Meanwhile, HarvestPlus began assisting the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) to mainstream iron and zinc traits in its pearl millet program. The Indian Council of Agricultural Research had provided a regulatory push to mainstreaming when it set minimum levels of iron and zinc in new varieties of pearl millet. This crop is eaten daily by more than 50 million people in the semi-arid regions of India, as well as by millions of people in the Sahel region of Africa.
Biofortification promoted in global food and nutrition strategies

The State of Food and Nutrition Security in the World 2020 (SOFI) report highlighted strategies to transform food systems to deliver affordable, healthy diets for all. Noting that more than 2 billion people suffer from micronutrient deficiency, the report recommended biofortification as a “cost-effective measure to reduce these deficiencies,” particularly for smallholder farming families and low-income rural communities whose diets “continue to be dominated by staple foods.”

The UN Global Action Plan on Child Wasting recommended including biofortification as a key food-based strategy. To reduce the instance of low birth weight, the report authors urged the use of conventionally-bred biofortified crops “as part of food security and resilience agricultural strategies to improve diets of vulnerable rural communities that rely heavily on few staples.”

The communique from the 22nd Global Child Nutrition Forum urged integration of biofortified foods in nutrition-centered school feeding programs. “Local procurement of nutrient-dense foods can support nutrition priorities, dietary diversity and local preferences,” the communiqué stated.

In its Foresight 2.0 report released in September 2020, the Global Panel on Agriculture and Food Systems for Nutrition asserted that biofortification is a solution to narrow gaps in affordability of nutritious diets to help the most vulnerable communities. “Once developed and if widely disseminated, some biofortified crops can be multiplied by rural households without additional costs,” it noted.
Adding commercial value

The Commercialisation of Biofortified Crops (CBC) Programme, a partnership between the Global Alliance for Improved Nutrition (GAIN) and HarvestPlus, shifted to full implementation mode during 2020 in Bangladesh, India, Kenya, Nigeria, Pakistan, and Tanzania. Working with value chain actors, the partnership is catalyzing markets for biofortified seeds, grains, and food products to significantly expand the reach of biofortification. The CBC Programme is funded by the Government of the Netherlands and the German Federal Ministry for Economic Cooperation and Development.

Product standards matter

Buyers in all markets want to be able to verify the quality of the products they purchase; it is no different for buyers of biofortified seed, crops, and foods. But these relatively young markets are short on agreed product standards that would facilitate scale up in production and consumption.

Enter a collaboration launched in 2020 between the British Standards Institution (BSI) and HarvestPlus, as part of the CBC Programme. BSI and HarvestPlus are developing “publicly available standards” (PAS) for zinc-, iron-, and vitamin A biofortified products, starting with zinc maize, rice, and wheat. PAS are created in partnership with end users and available for use by vendors to demonstrate best practice and compliance.

Separately, HarvestPlus is developing a process to certify that products are made with high-quality biofortified ingredients, as well as a related certification stamp for product packaging and marketing materials. A survey of market participants showed strong interest in the certification and stamp concept.
The mighty cassava

Cassava is a staple for hundreds of millions of Africans; varieties of vitamin A-biofortified cassava are currently grown in five African countries, including by nearly 1 million farming families in Nigeria and nearly half a million in DR Congo. In a research study, when preschool children in Nigeria ate foods made from vitamin A cassava for three months, their vitamin A status significantly improved compared to children who ate foods made with non-biofortified white cassava during the same period. This study, published in the American Journal of Clinical Nutrition in 2020, builds on 2015 findings that showed the positive impact of biofortified cassava in Kenyan school-age children. Vitamin A is critical for supporting immune systems and resilience against diseases such as measles, diarrhea, and respiratory infections.

Zinc and noncommunicable diseases

Diet-related noncommunicable diseases (NCDs) are the leading causes of deaths globally. NCD rates are rising rapidly in low- and middle-income countries as diets evolve, creating a “double burden of disease” alongside widespread malnutrition. Could zinc-biofortified crops help address both of these health challenges? Scientific experts, taking part in a global consultation convened by HarvestPlus, agreed that the question is well worth exploring. They considered a recent meta-analysis indicating that zinc supplements delivered in low doses and in long duration—akin to how biofortification works—can improve risk factors for two common NCDs: type 2 diabetes and cardiovascular disease. The experts endorsed research to assess the potential benefits of biofortified zinc wheat varieties on biomarkers of zinc status and type 2 diabetes in adults. It is an exciting prospect that zinc-biofortified crops may provide a “double duty” response to disease burdens.
Empowering Women with Nutritious Crops

Women are priority beneficiaries in every aspect of advancing biofortification. For HarvestPlus and its partners, this begins at the crop development stage, when the breeding targets for crops’ micronutrient levels are set to meet the specific nutritional requirements of reproductive-age women and adolescent girls, as well as all young children.

Biofortified crops are also bred to provide practical value for women. For example, some varieties of iron-biofortified beans are bred to cook more rapidly, freeing up time for women to engage in other activities, including income-generating activities. Varieties of vitamin A cassava and orange sweet potato contain levels of dry matter that facilitate post-harvest processing, which is often performed by women for these types of crops.
Women in the Family
Nutrition-based education is integrated in the farmer community engagement work done by HarvestPlus and national partners. This includes coverage of nutritional concepts, the elements of a nutritious diet, and food preparation techniques.

SmartMothers in Nigeria
HarvestPlus Nigeria facilitates the SmartMother Platform to educate and rally mothers around the need to ensure good nutrition for themselves, their young children, and everyone in their families. The platform supports champion SmartMothers who hold community sensitization programs to share nutrition information with other mothers, and provide guidance on making foods from biofortified crops for household consumption as well as income generation. The platform maintains a community of practice for the SmartMother participants to hold joint activities and cross-mentor.
Women as Farmers

In 2020, 286,000 farmers were trained worldwide by HarvestPlus and its partners in production, harvesting, and processing of biofortified crops, and nearly two-thirds of these trainees were women. And, as women’s farming is generally more focused on producing food for the household, the added nutrition is likely to reach children in the family. This is critical, since the highest need for micronutrients in the lifecycle is during the first 1,000 days, from conception to age two.

Taking the prize

Emelda Ngwarati (pictured) grows vitamin A-biofortified orange maize and iron-biofortified beans in Mazowe District, Zimbabwe. She also claimed the top prize for her harvest at the 2020 Zimbabwe Agricultural Show, receiving a trophy from the President of Zimbabwe, His Excellency Emmerson Dambudzo Mnangagwa. Ngwarati was introduced to biofortified crops through the Zimbabwe Livelihoods and Food security Programme (LFSP); HarvestPlus is the biofortification technical partner on LFSP, which is funded by the United Kingdom Government through the Foreign, Commonwealth & Development Office (FCDO).

“I could not believe my ears when I heard my name being called out. I am so happy with my achievement, I will not stop growing orange maize because I am a living testimony of its benefits,” said Ngwarati. “Apart from getting these awards, I have also been able to live a happy and healthy life with my family through eating food crops rich in vitamins and minerals,” she added. Ngwarati was also chosen by LFSP to be a Community Based Mobiliser to help disseminate nutrition and production messages, and promote consumption of biofortified foods.
Women as Entrepreneurs
Biofortification’s benefits for women extend beyond the farm. Through technical assistance and training, women are starting and expanding small- and medium-size businesses to produce and sell biofortified seed and food products.

Seeding a livelihood
Pramila Devi (pictured) has gone from farming zinc wheat to running a seed supply business for farmers near her village in the Gorakhpur district of Uttar Pradesh. She was one of only seven women farmers growing zinc wheat in her area when she started doing so in 2018. Now, in part thanks to her seed business, 91 nearby women farmers were growing zinc wheat in the most recent season.
HarvestPlus Program Advisory Committee (PAC)

HarvestPlus is based at the International Food Policy Research Institute (IFPRI), one of the CGIAR research centers. The Board of Trustees of IFPRI have delegated responsibility for oversight of HarvestPlus to the PAC.*

PAC Chair
Andrew Natsios
Director of the Scowcroft Institute of International Affairs and Executive Professor, Bush School of Government and Public Service, Texas A&M University

PAC Members
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Jeroen Bordewijk
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Margret Thalwitz
Board Chair, International Center for Agricultural Research in the Dry Areas (ICARDA)

Joe Tohme
Research Director, CIAT Agrobiodiversity Programs

Designated Representative to the PAC
Lawrence Kent
Senior Program Officer, Agricultural Development, The Bill & Melinda Gates Foundation

*PAC membership as of the October 2020 PAC meeting.

In Memoriam: Robin Graham, Biofortification Pioneer

The HarvestPlus program and the global biofortification community lost a founding father in 2020: Robin David Graham, who was a professor of plant nutrition at the University of Adelaide and a recipient of the C.M. Donald Medal from the Australian Society of Agronomy in 2008. Graham and his colleague Ross Welch of Cornell University collaborated with Howdy Bouis in the 1990s and early 2000s to demonstrate the scientific feasibility of nutrient targeting in staple crop breeding.

In an article written after Graham’s passing, Bouis recalled the heavy skepticism about biofortification that he had encountered in the global agriculture research community in the early 1990s; the general wisdom was that breeding for nutrients would only come at the expense of yield and other agronomic gains. But Graham and Welch disagreed, and they convinced Bouis “that the biofortification strategy was feasible.”

The trio joined forces over the next decade and a half to spread the word about biofortification and advocate for investments in it. Without Graham’s contributions, HarvestPlus likely would not have emerged within the CGIAR, and nearly 50 million people would not be benefiting from biofortified crops today.
2020 Financials

Receipts and Disbursements
(in million USD)

Receipts
Grants and Contracts 24.237
Interest Income .184

Total Receipts 24.421

Total Disbursements 24.862

2020 Donors to HarvestPlus

UK Foreign, Commonwealth and Development Office (FCDO)
The Bill & Melinda Gates Foundation
The John D. and Catherine T. MacArthur Foundation
CGIAR Research Program on Agriculture for Nutrition and Health (A4NH)
The Government of Canada
United States Agency for International Development/US Feed the Future Initiative
Children’s Investment Fund Foundation (CIFF)

Disbursements by Category
(in million USD and percentage of total)

- Administration 2 (8%)
- External Affairs 1.9 (8%)
- Crop Development 6.1 (24%)
- Delivery and Scaling 11 (44%)
- Human Nutrition 2.3 (9%)
- M&E, Impact & Strategy 1.6 (7%)
2020 HarvestPlus Partners

We are proud to work with hundreds of partners around the world to achieve our shared goal of improving nutrition, health, and livelihoods.

To partner with HarvestPlus, email us at: harvestplus@cgiar.org

CGIAR CENTERS
Alliance of Biodiversity International and CIAT
International Center for Agricultural Research in the Dry Areas (ICARDA)
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
International Food Policy Research Institute (IFPRI)
International Maize and Wheat Improvement Center (CIMMYT)
International Potato Center (CIP)
International Institute of Tropical Agriculture (IITA)
International Rice Research Institute (IRRI)

UNIVERSITIES & OTHER RESEARCH ORGANIZATIONS
British Nutrition Foundation
Centers for Disease Control (CDC)
Children’s Hospital Oakland Research Institute-CHORI
Chinese Academy of Agricultural Sciences (CAAS)
Cornell University
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Food and Agriculture Organization of the UN
Global Alliance for Improved Nutrition (GAIN)
Leatherhead Food Research
Precision Agriculture for Development
The New York
US Dry Bean Council

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Agrani Trading
Agricultural Advisory Society (AAS)
Agromars Limited
Ali Seed Farm
Amra Kaj Kori (AKK)
AVA Development Society
Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU)
Bangladesh Institute of Nuclear Agriculture (BINA)
Bangladesh Rice Research Institute (BARI)
Bhui Bhai Traders
Christian Commission for Development in Bangladesh (CCDB)
Department of Agricultural Extension (DAE)
Friends in Village Development Bangladesh (FIVDB)
Green Century Limited
Kobadak Enterprise
Mother Seeds & Agro Industries Ltd.
National Agricare Import & Export Ltd.
Natur Zibon Roche (NAZIR)
Prokash Group
RDRS Bangladesh
Sharitapur Development Society (SDS)
Shawdesh Unny Kendra (SU)
Society Development Committee (SDC)
South Bengal Seed Association (SBSA)
Thengamara Mohila Sabuj Sangha (TMSS)
Ushi Seeds
Uzipur Organic Multipurpose Co-operative Society Ltd
Voluntary Rural Development Society (VRDS)
World Vision Bangladesh

Bolivia
Integral Agricultural Cooperative (CAISY Ltda)

Brazil
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Companhia de Desenvolvimento dos Vales do São Francisco e do Parnaíba (Codafes)
Companhia Nacional de Abastecimento (CONAB), regional do Maranhão
Conselho Estadual de Segurança Alimentar e Nutricional do Estado do Maranhão (CONSEMA-MA)
Cooperativa Agropecuária dos Agricultores Familiares (Cooperfamiliar)
COOSERT – Cooperação de Serviços Técnicos de Coroátá-MA
Embrapa
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Rio Grande do Sul (EMATER-RS)
Empresa de Pesquisa Agropecuária do Estado do Rio de Janeiro (Emepagro-Rio)
Empresa Mato-grossense de Pesquisa, Assistência e Extensão Rural (Emapaer)
Escola Superior de Agricultura “Luiz de Queiroz” (ESALQ/USP)

Colombia
Afacoyucy Association
Asogrocar Association
Association of Agronomists of the Atlantic
Canal del Dique Foundation
Ceprodet
Cepromegua Guaviare
Colombian Agricultural Research Corporation (AGROSAVIA)
Córdoba University
Del Valle University
Food and Agricultural Organization (FAO)
Fedearroz

Escritório Regional Emater (Ijuí & Santa Rosa)
Escritório Unidade Indígena Emater Tenente Portela
Fundação Dom Edilberto, PI
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Fundação Santa Angela, PI
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Instituto Federal do Triângulo (Inconfidentes; Mineiro de Bambuí; Pomba)
Movimentos dos Pequenos Agricultores (MPA)
Prefeituras de Arari, MA; Capim Branco, MG; Cascavel, PR; Codó, MA; Coroátá, MA; Corumbá, MS; Guaraniacu, PR; Itabirito, MG; Itagui, RJ; Magé, RJ; Monte Carmelo, MG; Patrocínio, MG; Pinheiral, RJ; Presidente Dutra, MA; Regeneração, PI; Santa Vitória, MG; Santo Antônio dos Lopes, MA; São Gabriel do Oeste, MS; São Miguel do Oeste, SC; Sete Lagoas, MG;
Tanque, PI; Timon, MA; Urbanos Santos, MA; Viana, MA; São João do Soter, MA
Rede ECOVIDA, Núcleo Missões
Secretaria Adjunta de Segurança Alimentar e Nutricional do Maranhão
Secretaria de Agricultura do Município de Caxias-MA & Timbiras-MA
Secretaria de Agricultura Familiar do Maranhão
Secretaria de Comunicação da Embrapa
Secretaria de Desenvolvimento Agropecuário e da Pesca do Pará (Sedap)
Secretaria de Estado da Agricultura e do Desenvolvimento Agrário, da Educação de Sergipe
Secretaria de Estado da Inclusão, assistência e desenvolvimento Social de Sergipe
Secretaria de Estado do Desenvolvimento Social do Maranhão
Secretaria de Negócios da Embrapa
Secretaria de Relações Internacionais da Embrapa
Secretaria de Educação e Cultura do Estado do Piauí
Secretaria Extraordinária de Estado da Igualdade Racial do Maranhão
Secretaria Municipal de Agricultura Pecuária e Pesca do Desenvolvimento Social de Sergipe
Secretaria Municipal de Fomento ao Empreendedorismo, Mato Grosso do Sul; São Gabriel do Oeste, MS; São Miguel do Oeste, SC; Sete Lagoas, MG; São Paulo, SP
Secretaria Municipal de Saúde do Piauí
Secretaria de Estado de Sergipe
Secretaria do Desenvolvimento Agropecuário e Pesca do Piauí
Secretaria de Estado do Desenvolvimento Socioeconômico do Piauí
Secretaria de Estado do Desenvolvimento Social do Piauí
Secretaria de Estado do Desenvolvimento Social do Piauí
Secretaria de Estado do Desenvolvimento Social do Piauí
Secretaria de Educação e Cultura do Estado do Piauí
Secretaria Extraordinária de Estado da Igualdade Racial do Maranhão
Secretaria Municipal de Agricultura Pecuária e Pesca do Piauí

Colombia
Afacoyucy Association
Asogrocar Association
Association of Agronomists of the Atlantic
Canal del Dique Foundation
Ceprodet
Cepromegua Guaviare
Colombian Agricultural Research Corporation (AGROSAVIA)
Córdoba University
Del Valle University
Food and Agricultural Organization (FAO)
Fedearroz

Escritório Regional Emater (Ijuí & Santa Rosa)
Escritório Unidade Indígena Emater Tenente Portela
Fundação Dom Edilberto, PI
Fundação para o Desenvolvimento Científico e Tecnológico (Fundetec)
Fundação Santa Angela, PI
Instituto Federal de Educação, Ciência e Tecnologia (Codó, MA; Farroupilha, Campus Santa Rosa & Campus Santo Augusto
Instituto Federal do Triângulo (Inconfidentes; Mineiro de Bambuí; Pomba)
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Fedearroz
Syngenta Foundation
Taal Farmer Producer Company
Tamil Nadu Agricultural University (TNAU)
TetraPak Agro-ecology Farmer Producer Company
Tilothu Farmer Producer Company
Tirnikut Krishak Producer Company Limited
Trust Community Livelihood
Umanagare Concept Pvt Ltd
Unnati Farmer Producer Company
Vasantrao Naik Marathwada Krishi Vidyapeeth Parbhani (VNMKV)
Wheat Berry Agro Tech (WBAT)

Indonesia
Government of Indonesia (BAPPENAS)
Indonesian Center for Rice Research (ICRR)

Kenya
Agriscope (Africa) Ltd – Formerly East Africa Seed Company
Bubai Products
Global Alliance for Improved Nutrition (GAIN)
Jomo Kenyatta University of Agriculture and Technology
Kenya Agricultural & Livestock Research Organization (KALRO)
Ministry of Agriculture-Agro-Nutrition Department
Ministry of Health- Nutrition Department
Nutrition International
One Acre Fund
Pan-Africa Bean Research Alliance (PABRA)
Seed Co Kenya
World Food Program (WFP)
World Vision Kenya

Malawi
Africa Fertilizers and Agribusiness Partnership (AFAP)
Alliance for a Green Revolution in Africa (AGRA)
Clinton Development Initiative
COMSIP Union
Department of Agricultural Extension Services (DAES)
Department of Agricultural Research Services (DARS)
Department of Nutrition, HIV & Aids (DHNA)
Ekwendeni Hospital Aid Support Unit
Farmers Union of Malawi
Focus
Global Seeds
Malawi Prison Farms
Ministry of Education School Feeding Program
Mphalabungo CBO
Multi Seeds Company
Nascent Solutions Inc.
Perisha Agro Packaging
QualiBasic Seeds (Zambia)
Seed Co Malawi Ltd
Seed Tech
Smallscale Livestock and Livelihood Program
Total Land Care
U.S. Agency for International Development (USAID)
Virelisharma Seed Company
World Bank

Nicaragua
Apta (high-quality) Seed Producers
Asilo de Ancianos de Chaguitillo
Caritas-Matagalpa
Catholic Relief Services (CRS)
Central American University (UCA)
Community Seed Banks
Fabretto Foundation
Foundation for Research and Rural Development (FIDER)
Nicaraguan Institute of Agricultural Technology (INTA)
Nitaplan from the UCA
ODESAR
Programa Campesino a Campesino (PCaC) from the Unión Nacional de Agricultores y Ganaderos (UNAG)
Pueblo Indígena Totogalpa
Sanseco project
Self Help International
Semillas Mejoradas S.A. (SEMSA)
TeSac Tuma-La Dalia
Unión de Campesinos Organizados de San Dionisio (UCOSD)
World Food Programme (WFP)

Nigeria
AACE Foods
Accelerating Nutrition Results in Nigeria (ANRiN)
Agricultural Society of Nigeria
Agriculture Graduates Association of Nigeria (AGAN)
AgroShop
Ahalmao Nigeria Ltd
Akwa Ibom State Agribusiness Directorate
Akwa Ibom State Agric Dev Programme (AKADEP)
Akwa Ibom State University (AKSU)
All Farmers Ass. Of Nigeria (AFAN)
Association of Vitamin A Cassava Entrepreneurs (AVACE)
August Secrets
Benue State Agric Dev Programme (BNARDP)
Cassava Growers Association of Nigeria (CGAN)
Cassava Processors Association of Nigeria (CAPAN)
Cato Foods
Central Bank of Nigeria - Abeokuta Branch
Cross River State Agric Dev Programme (CRADP)
Crowther Foods
Cultivating New Frontiers in Agriculture
Dangote Fertiliser Development Dynamics
Federal Ministry of Agriculture and Rural Development (FMARD)
Federal Ministry of Budget and National Planning
Federal Ministry of Health (FMoH)
Forward Africa
Fresh FM 105.9 Ibadan
FrieslandCampina Wampco
GAINCODE
Global Alliance for Improved Nutrition (GAIN)
Gold Agric
GraceCo
Green Sahel Agriculture and Rural Development Initiative (GSARDI)
Greenspore Seeds
Home Grown School Feeding Programme (HGSFP)
Human Empowerment and Development Project (HEDMADP)
Institute for Agricultural Research (IAR), Zaria
Institute of Agricultural Research & Training (IAR&TL), Moor Plantation
International Center for Research in Semi-Arid Tropics (ICRISAT)
International Fertilizer Development Center (IFDC)
International Institute of Tropical Agriculture (IITA)
International Potato Center (CIP)
Ise-Oluwa Foods
Jeny Ojoma Drive for Environmental Development Foundation (JODED-F)
Jimawa Agriculture & Rural Development Authority (JARDA)
Jirikur Seeds
Justice Development and Peace Commission (JDCP) – Oyo, Uyo
Kaduna State, Ministry of Agriculture
Kagara Local Government Council, Agriculture Department
Kellong’s
Magnitade Plus Media
Main Seeds
Maize Association of Nigeria (MAN)
Maize Growers, Processors and Marketers
Association of Nigeria (MAGPAMAN)
Mamora Seeds
Masla Seeds
Micmaakin Nigeria Limited (Oyoto Foods)
NAMALCHO
Nasarawa State Agric Dev Programme (NARDP)
National Agricultural Extension & Research Liaison Services (NAERLS)
National Agricultural Seed Council
National Orientation Agency, HQ Abuja
National Root Crops Research Institute (NRCRI), Umudike
Nestlé
News Agency of Nigeria (NAN)
Niger State Agricultural and Mechanisation Development Agency (NAMDA)
Niger State, Ministry of Agriculture
Niij Lukas Nigeria Limited (Niji Foods)
North Central Agro Input Dealers Association (NOCAIDA)
Obafemi Awolowo University (OAU)
Ogun State, Ministry of Agriculture
Oyo State Agric Dev Programme (OYSADEP)
Pacific Ring West Africa
Premier Seed
Promasidor
Prothrive (Grandios)
Redeemed Aids Programme Action Committee (RAPAC) – Benue State Rotary
Saleh Soba and Sons Ltd
Sassakawa Global 2000
Savannah seeds
Scaling Up Nutrition (SUN) Business Network
Seed Peers
SeedCo
Sen. Adeyemo Women Empowerment Coop (SAWEC)
Techniseed
TechnoServe
The Guardian Newspaper
The Nations Newspaper
ThisDay Newspaper
Top Aim Printing Press
University of Ibadan – Oyo State
Value Seed
WACOT Seeds
WUL Nigeria Ltd

Pakistan
Abad Seed Company, Jhang
AI Shamas Seed Corporation Rahim Yar khan
AlHaider Seed Company, Rajapur
Alzaraan Seed Corporation, Bahawalpur
Ayub Agricultural Research Institute, Faisalabad
Baba Fareed Seed Company, Vehari
Bihar Seed Company, Rahim Yar Khan
BIOFORTIFIED CROPS

**IRON BEAN**
For Nutrition: Provides up to 80% of daily iron needs  
For Farmers: High yielding, virus resistant, heat and drought tolerant  
CGIAR Partner: The Alliance of Bioversity International and CIAT

**IRON PEARL MILLET**
For Nutrition: Provides up to 80% of daily iron needs  
For Farmers: High yielding, mildew resistant, drought tolerant  
CGIAR Partner: ICRISAT

**VITAMIN A ORANGE SWEET POTATO**
For Nutrition: Provides up to 100% of daily vitamin A needs  
For Farmers: High yielding, virus resistant, drought tolerant  
CGIAR Partner: CIP

**VITAMIN A CASSAVA**
For Nutrition: Provides up to 100% of daily vitamin A needs  
For Farmers: High yielding, virus resistant  
CGIAR Partner: IITA and Bioversity/CIAT

**VITAMIN A MAIZE**
For Nutrition: Provides up to 50% of daily vitamin A needs  
For Farmers: High yielding, disease and virus resistant, drought tolerant  
CGIAR Partner: CIMMYT and IITA

**ZINC WHEAT**
For Nutrition: Provides up to 50% of daily zinc needs  
For Farmers: High yielding, disease resistant  
CGIAR Partner: CIMMYT

**ZINC RICE**
For Nutrition: Provides up to 40% of daily zinc needs  
For Farmers: High yielding, disease and pest resistant  
CGIAR Partner: IRRI and Bioversity/CIAT

**ZINC MAIZE**
For Nutrition: Provides up to 70% of daily zinc needs  
For Farmers: High yielding, virus resistant  
CGIAR Partner: CIMMYT and IITA