

# Catalyzing Biofortified Food Systems



**HarvestPlus**  
Better Crops • Better Nutrition

**2018 Annual Report**



**HarvestPlus** develops and promotes biofortified staple crops to improve human health and nutrition, and provides global leadership on biofortification evidence, technology, and enabling environments.

## What Is Biofortification?

The process of increasing the density of vitamins and minerals in a crop through conventional plant breeding or agronomic practices. Rigorous research has shown that regular consumption of biofortified crops generates measurable improvements in nutritional status.

## Addressing Hidden Hunger

More than two billion people in the world do not get enough essential vitamins and minerals, such as vitamin A, iron, or zinc, in their daily diets. Those living with this type of hidden hunger may appear healthy, but are vulnerable to illness, infection, or even death.



### Vitamin A deficiency:

- Impairs growth
- Causes eye damage leading to blindness
- Increases risk of infections such as diarrheal disease

### Iron deficiency:

- Increases weakness and fatigue
- Impairs mental development and learning capacity
- May increase risk of women dying in childbirth

### Zinc deficiency:

- Lowers immunity
- Contributes to stunting and loss of appetite
- Increases risk of diarrheal disease and respiratory infections

## HarvestPlus Crops

We support countries and partners globally to test, release, and market biofortified nutritious crops so that farmers and consumers can benefit from them.



### Iron Beans

**Nutritional Benefits:** Provides up to 80% of daily iron needs. **Farmer Benefits:** High yielding, virus resistant, heat and drought tolerant.



### Vitamin A Maize

**Nutritional Benefits:** Provides up to 50% of daily vitamin A needs. **Farmer Benefits:** High yielding, disease and virus resistant, drought tolerant.



### Zinc Maize

**Nutritional Benefits:** provides up to 70% of daily zinc needs. **Farmer Benefits:** High-yielding, virus resistant.



### Iron Pearl Millet

**Nutritional Benefits:** Provides up to 80% of daily iron needs. **Farmer Benefits:** High yielding, mildew resistant, drought tolerant.



### Zinc Wheat

**Nutritional Benefits:** Provides up to 50% of daily zinc needs. **Farmer Benefits:** High yielding, disease resistant.



### Vitamin A Cassava

**Nutritional Benefits:** Provides up to 100% of daily vitamin A needs. **Farmer Benefits:** High yielding, virus resistant.



### Vitamin A Sweet Potato

**Nutritional Benefits:** Provides up to 100% of daily vitamin A needs. **Farmer Benefits:** High yielding, virus resistant, drought tolerant.



### Zinc Rice

**Nutritional Benefits:** Provides up to 40% of daily zinc needs. **Farmer Benefits:** High yielding, disease and pest resistant.

## Dear Friends,

I look back on 2018 as a year when the efforts of HarvestPlus and our partners to advance the biofortification movement translated into strong commitments from more key actors in the global nutrition field.

On the supply side: Great strides were made in the drive to “mainstream” biofortification within the crop development programs of the **CGIAR**—the international network of agricultural research centers that develop new seed varieties for developing countries. The centers reached consensus on a new biofortification strategy to integrate the development of micronutrient-rich traits in their core seed breeding work. HarvestPlus will provide technical support as part of our close collaboration with the centers. (*see pp. 5–6 of this report*).

On the demand side: HarvestPlus formed a landmark partnership with the **Global Alliance for Improved Nutrition** to spur private-sector engagement and reach hundreds of millions more consumers with biofortified foods through market channels. Rising demand will also incentivize farmers to grow more biofortified crops. (*see p. 11*).

In policy and advocacy: **The African Development Bank** (AfDB) showed firm support for biofortification. AfDB President Akinwumi Adesina named me a champion within the African Leaders for Nutrition, a high-level advocacy movement the Bank jointly sponsors with the African Union. Far more significant, though, was that the AfDB



made biofortification a priority in its nutrition investment strategy (*see p. 13*).

**The scientific evidence for biofortification** also gained strength in 2018. We participated in a groundbreaking study that looked at economic and climate projections through 2050 and concluded that—under any scenario—low micronutrient intakes will remain a significant global challenge as dietary quality remains outside the reach of resource-poor people. Biofortification can significantly add to the supply of minerals and vitamins in foods at zero cost to consumers. Meanwhile, nutrition efficacy trials on biofortified foods continue to show improved functional outcomes: In one study, young children who ate foods prepared with high-zinc wheat spent far less time ill with pneumonia and vomiting. In another, adolescents who consumed foods made with high-iron pearl millet showed markedly improved nutritional and cognitive performance (*see p. 8*).

**HarvestPlus will continue to be a catalyzer, capacity strengthener, advocate, and knowledge hub for biofortified food systems** as the movement gains more adherents. We are deeply grateful for the ongoing support of our funders and the talent and energy of hundreds of partners around the world.

Finally, I'll mention two important milestones in the governance and management of HarvestPlus. I want to extend my personal gratitude to Peter McPherson, who served as chair of the Program Advisory Committee from inception in 2003 through the end of 2018 (*see p. 15*).

I also heartily welcome Arun Baral as my successor in 2019. Arun's considerable management and seed industry experience make him uniquely qualified as CEO to uphold our commitment to reaching the world's malnourished populations with biofortified crops.

Yours Sincerely,

*Howarth E. Bouis*

## HarvestPlus Leadership

**Howarth Bouis**  
Founder and Interim Chief  
Executive Officer;  
Institute Fellow, IFPRI

**Arun Baral**  
Chief Financial Officer

**Anna-Marie Ball**  
Director, External Affairs;  
Chief of Staff

**Ekin Birol**  
Director, Impact & Strategy

**Wolfgang Pfeiffer**  
Director, Research &  
Development;  
Regional Director, Asia

**Donald Mavindidze**  
Regional Director, Africa

**Marilia Nuti**  
Regional Director,  
Latin America & Caribbean

**Erick Boy**  
Head, Nutrition

# A Global Program

More than 150 HarvestPlus staff members based on four continents work with partners in the public, nonprofit, philanthropic, and private sectors to develop and deliver biofortified crops. We also conduct nutrition research and help build and support sustainable biofortified food systems that improve human nutrition and health.



 HarvestPlus focus countries

 Other countries where HarvestPlus-supported crops have been released or are in testing

# A Country Focus

Catalyzing biofortification requires holistic strategies based on partnerships. This example from **Nigeria** shows how we optimize local ownership and long-term sustainability of biofortified food systems so foods reach those most vulnerable to micronutrient deficiencies.

## Objectives

### BUILD SUPPLY

- Work with CGIAR breeding centers and national agricultural research systems to develop and release biofortified staple crops.
- Provide start-up seed and build capacity of seed and food producers.

### STIMULATE DEMAND

- Disseminate nutrition and market information through various channels to spur interest for consumption and investment.

### DEVELOP ENABLING ENVIRONMENT

- Integrate biofortification into policies, programs, and budgets for sustainability.

## The role of HarvestPlus

### Breeders

Develop varieties with higher nutrient levels.

### Farmers

Multiply seeds and supply them to other farmers for planting and provide raw materials to processors.

### Processors

Transform tubers/grains into consumable products.

### Aggregators

Bridge supply and demand gaps by aggregating and transporting crops where there is demand. With agricultural extension agents, build capacities of farmers and introduce new technologies to increase yield.

### Marketers

Sell biofortified seeds and foods in retail or wholesale markets.

### Media

Media coverage of trainings, events, and new developments raises awareness of biofortification.

### Access points

Support points of sale, model farms, processing centers, and more where consumers can purchase biofortified products, receive training, or assess activities for investment.

### Champions

Encourage leaders to speak publicly in support of biofortification.

**“I want to inspire young students to go into agriculture.”**

—Nollywood actor Segun Arinze, star of the biofortification-focused film “Yellow Cassava” and host of NutriQuiz, an agriculture, nutrition, and science competition for secondary school students

### Government agencies

Advocate for policies and regulations.

### Development agencies

Encourage inclusion of biofortification in nutrition programs.

### Traditional, religious, and academic institutions

Establish credibility of biofortification.

## Partners

**“My job helps me deliver nutrition to hard-to-reach places.**

**Satisfaction comes from knowing that I am helping to proliferate a solution (biofortification) that is positively impacting on the health and nutrition of children and women.”**

—Crop aggregator  
Samuel Ajewole

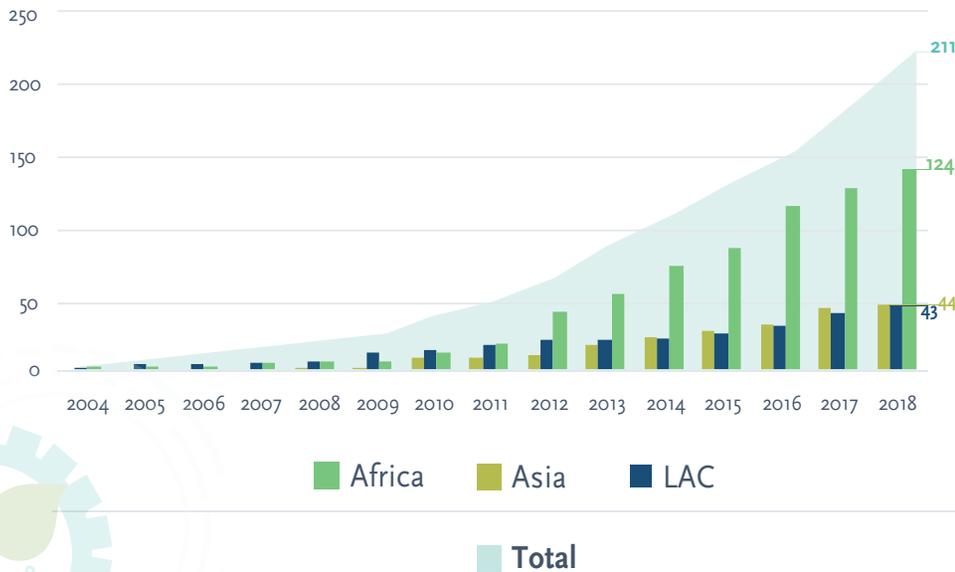


Segun Arinze

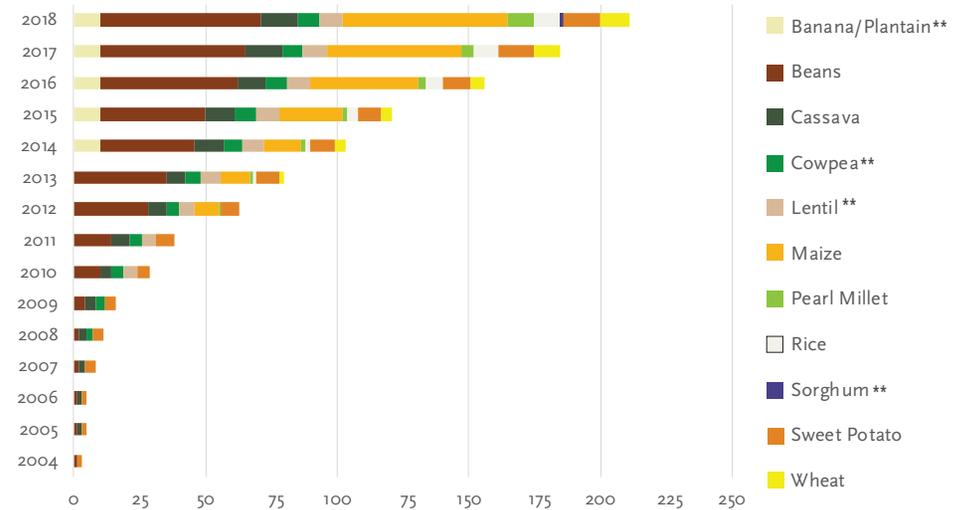
# HarvestPlus: Key Metrics

Since 2004, HarvestPlus has facilitated the release of 211 biofortified crop varieties in 30 countries. These crops are developed through conventional breeding techniques by contracted CGIAR centers\* and are tested and released by national agricultural research systems, with support and technical assistance from HarvestPlus.

**Crop Varieties Released, by Region**  
(cumulative totals since 2004)



**Crop Varieties Released, by Crop**  
(cumulative totals since 2004)



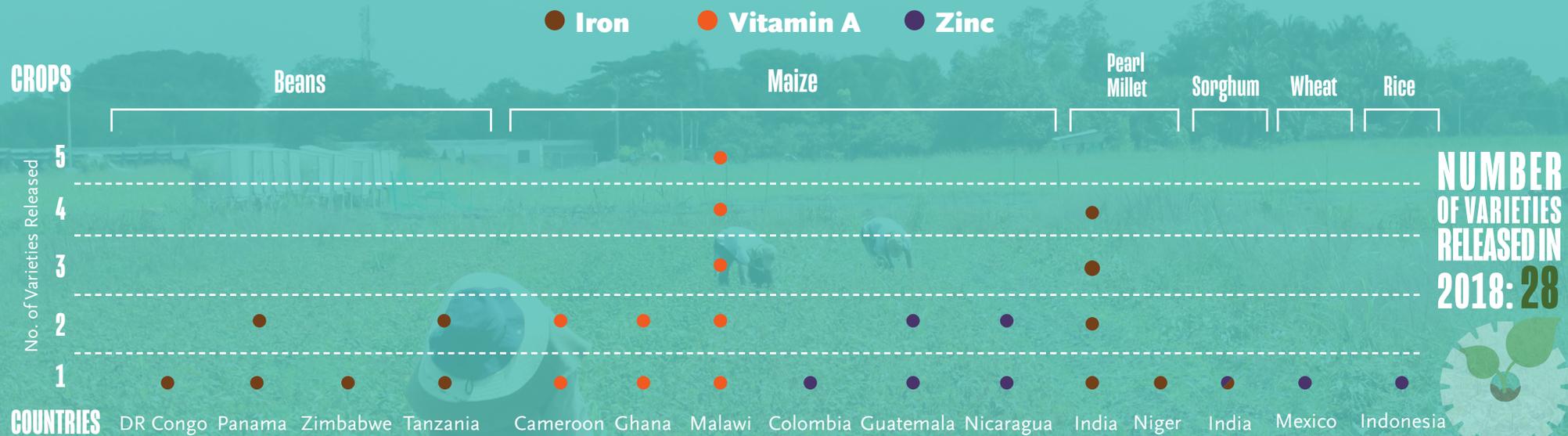
\*\*Staple crop not currently prioritized by HarvestPlus

**Households Growing Biofortified Crops**  
(cumulative by year)

An estimated **7.6 million** farming households in HarvestPlus focus countries are growing biofortified crops delivered by HarvestPlus and its partners, benefiting some 38 million farm family members who consume these crops. The figure of 38 million beneficiaries does not account for people who consume biofortified crops purchased in markets or who consume processed foods made from biofortified crops.



# Biofortified Crop Varieties Released in 2018



## Zinc Maize in Colombia, Guatemala, and Nicaragua

These high-zinc varieties will help address widespread stunting by improving childhood growth and immune system development. In Guatemala, nearly half of children under five are stunted and 30 percent of the population is estimated to consume inadequate amounts of zinc.

## Iron Pearl Millet in Niger

Well-suited for dryland cultivation, pearl millet is the major dietary energy source for millions of people in Africa's Sahel region. This variety of the cereal helps combat iron-deficiency anemia and supports healthy cognitive and physical development in children. There is potential to expand the release of iron pearl millet to other West African countries.

## Zinc Rice in Indonesia

Despite Indonesia's status as a middle-income country, an estimated 30 percent of the population suffers from stunting and there is strong official interest in addressing the problem. As part of a project funded by the Australian government to raise interest in biofortification in Asian countries, HarvestPlus organized a stakeholders' meeting in December 2018 to explore how Indonesia can catalyze scaling and uptake of this high-zinc rice variety.

\*HarvestPlus collaborates with the following **CGIAR centers** on the development of biofortified crops: Iron Beans: International Center for Tropical Agriculture (CIAT); Iron Pearl Millet: International Crops Research Institute for the Semi-Arid Tropics (ICRISAT); Vitamin A Cassava: International Institute of Tropical Agriculture (IITA) and CIAT; Vitamin A Maize: International Maize and Wheat Improvement Center (CIMMYT) and IITA; Vitamin A Orange Sweet Potato: International Potato Center (CIP); Zinc Maize: CIMMYT and IITA; Iron-Zinc Sorghum: ICRISAT; Zinc Rice: International Rice Research Institute (IRRI) and CIAT; Zinc Wheat: CIMMYT.

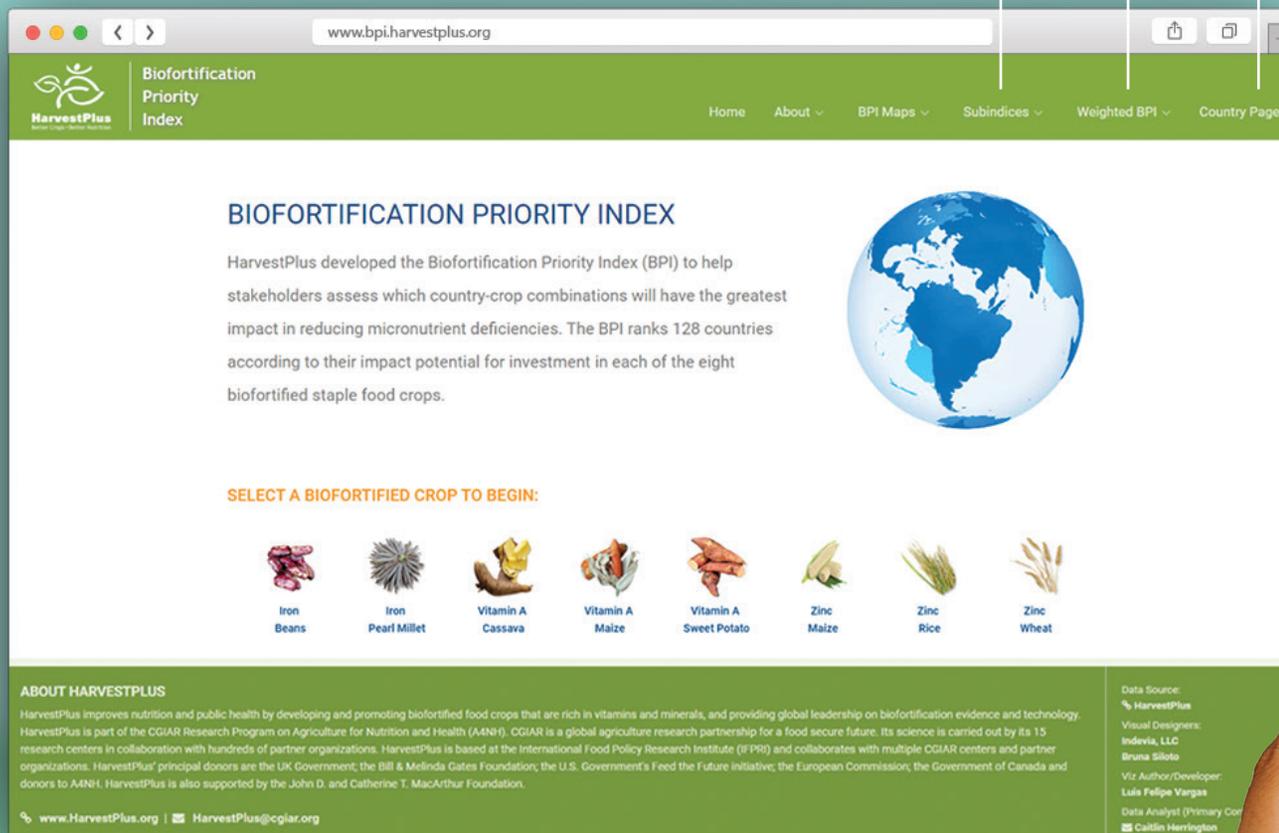
# Supporting Strategic Choices

HarvestPlus introduced the Biofortification Priority Index (BPI) in 2013 to help us and others assess which biofortification investments will have the greatest impact on micronutrient deficiency. The BPI covers 128 countries and provides priority rankings for eight biofortified staple crops. HarvestPlus developed a new BPI microsite in 2018 that launched publicly in early 2019 with updated data and analyses and several new features including:

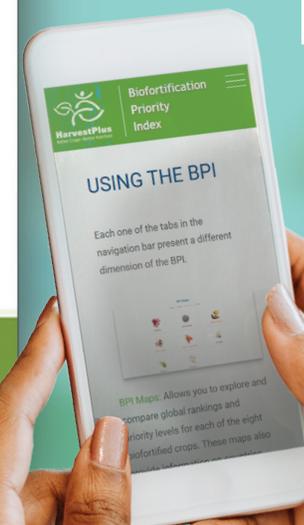
Maps for subindices that compose the BPI

Maps with data weighted for land area or population

Country pages



THE BPI MICROSITE IS A USER-FRIENDLY TOOL TO INFORM STRATEGIC DECISIONS BY BIOFORTIFICATION STAKEHOLDERS



BPI.harvestplus.org

## Research and Evidence:

# Key Findings In 2018

Through a robust research agenda, the nutritional content and impact of biofortified crops are assessed under various conditions. Our research staff also take part in projects looking at the role of biofortification within broader nutritional issues.

### Iron Pearl Millet Improves Cognitive Performance

A study published in the *Journal of Nutrition* in July 2018 showed that biofortified high-iron pearl millet can stem the negative ripple effects of iron deficiency by significantly improving nutrition and cognitive performance. When Indian adolescents consumed biofortified pearl millet twice daily as *bhakri* (a local flatbread) or *shev* (a savory snack) for six months, researchers found the students had significantly improved learning and mental abilities related to perception, attention, and memory. This is the second landmark study to demonstrate that iron biofortification results in functional cognitive improvements that could profoundly impact women and teens' daily lives, including their ability to succeed at school and work. The previous study, released in 2017, involved Rwandan college-age women.

**“If we can improve adolescents’ performance in school by improving their iron status we may also have longer term impacts in terms of their ability to secure a good job, or be admitted to a college program,”** said Samuel Scott, research fellow at the International Food Policy Research Institute and lead author of the latest study.

### Zinc Wheat Reduces Childhood Illness

When vulnerable young children in India eat foods prepared with agronomically zinc-enriched wheat, they spend significantly fewer days sick with pneumonia and vomiting, according to a study published in *Nutrition Journal* in September 2018. Diets in India commonly lack enough zinc and may consequently contribute to the nearly 40 percent of children under age five who are physically stunted and markedly vulnerable to common infections. If stunting is not corrected before the second year of life, it may become irreversible and gravely impair individual and societal development. **“This is the first large trial evaluating biofortified zinc wheat to increase zinc in diets and improve nutritional status and related health outcomes in young children and their mothers,”** said lead researcher Dr. Sunil Sazawal, director of the Center for Public Health Kinetics in New Delhi and senior associate of Global Disease Epidemiology and Control at Johns Hopkins University.

### Study Sees Persistent Micronutrient Gaps Through Midcentury

A landmark study, published in *Nature Sustainability* in December 2018, projects that billions of people are likely to remain vulnerable to the serious health effects of micronutrient deficiencies for decades to come—even under optimistic scenarios for global economic and income growth. **Keith Lividini**, head of strategy and policy research at HarvestPlus, was one of the authors of the study that looked at the dietary availability of several important nutrients and micronutrients through 2050 under several scenarios of future economic, income, and climate change trends worldwide.

The projections are particularly worrisome for low-income countries, where widespread malnutrition and its negative health consequences take big tolls on human well-being. The World Health Organization estimates that more than two billion people worldwide currently suffer from micronutrient deficiencies that can lead to stunted growth, weakened immune systems, and impaired intellectual development.

The authors note that the best way to address this challenge is by improving dietary diversity, but they also underline the need to step up support for research on other interventions—including biofortification. **“The ideal is to increase availability and access to animal source foods, fruits and vegetables. But the poorest people miss out because they can’t afford or can’t access these types of foods,”** said Lividini. “Biofortification puts the micronutrients in affordable staple foods that low-income families already consume,” he added.

# Engaging and Supporting Farmers

## Segmenting Seed Delivery

In **Guatemala**, which has the highest rates of stunting and anemia in Latin America, HarvestPlus has worked with partners since 2012 to expand access to zinc-biofortified maize and iron-biofortified beans. The maize varieties are also quality protein maize (QPM) with enriched levels of beneficial amino acids.

Different delivery mechanisms are needed to reach different types of farmers. Salomon Perez, HarvestPlus country coordinator in Guatemala, explained that subsistence and vulnerable farmers have access to QPM-zinc maize (and soon to ICTA Chorti iron-biofortified beans) through *Semillas Para Todos*, a public distribution program run by the Ministry of Agriculture. “This system ensures that the neediest farmers have access to more nutritious seeds,” said Perez.

HarvestPlus also partners with *Semilla Nueva*, a nonprofit organization, to sell commercial farmers HB18 hybrid maize seed under the brand name *Fortaleza F3*; the hybrid was developed by Guatemala’s national agricultural research center (ICTA) and the International Maize and Wheat Improvement Center (CIMMYT). Curt Bowen, co-founder and executive director of *Semilla Nueva*, said his team is focused on scaling its activities and showing that the maize seed it distributes has a positive nutritional impact on consumers of it. He said technical advice from HarvestPlus has been critical in this regard.

“It’s great to have input from the leaders in evaluating biofortified crop nutrition.”

—Curt Bowen, co-founder and executive director of *Semilla Nueva*

## Leveraging Nutrition and Health NGO Networks

Partnering with nutrition and health NGOs helps HarvestPlus reach smallholder farmers; it also helps farming families better connect the dots between healthy living practices, nutrition principles, and the benefits of biofortified crops. In 2018, HarvestPlus **Rwanda** collaborated with six organizations in water, sanitation, and hygiene (WASH) and community nutrition: CARITAS Rwanda, Catholic Relief Services, Food for the Hungry, FXB Rwanda, Gardens for Health International, and Global Communities. Collectively, they had broad geographical spread and established community networks.

Farming households reached by HarvestPlus Rwanda through these six partnerships accounted for 56 percent of the 160,000 farming households directly reached with improved high-iron beans and nutritional messages during the year.



## Talking Zinc Rice

The first zinc rice variety—BRR1 dhan62 developed by the Bangladesh Rice Research Institute with support from HarvestPlus—was released in 2013. Since then, biofortified seed has been distributed to over 630,000 farming households in **Bangladesh**. In November 2018, HarvestPlus staff attended a “farmers field day” in a district near the town of Cox’s Bazar, where demo plots had been established. Such meetings with farmers are critical to promoting adoption of unfamiliar biofortified varieties—a weighty decision for farming families who depend on their crops for sustenance and income. To make the “sale,” HarvestPlus, partnering NGOs, and extension agents explain the role of zinc in health and how it can make a positive difference in the lives of farming families. But the farmers also want proof that zinc rice won’t add costs or lower yields in comparison to rice varieties they know.

At the meeting, HarvestPlus Country Manager Khairul Bashar told the farmers that growing zinc rice won’t mean lower yields and consuming it “can help make your children healthier and smarter.” This seemed to resonate: Bashar first asked how many farmers had cultivated the zinc rice seeds and several hands went up; he then asked how many other farmers were interested in trying the seeds, and many more hands were raised.

## Deepening Efforts in India

HarvestPlus received a grant in early 2018 from the Bill & Melinda Gates Foundation to expand our operations in **India** to the states of Bihar and Odisha, with a combined population of more than 160 million. These are two of India’s most nutritionally vulnerable states, with stunting levels at 48 percent and 38 percent respectively. HarvestPlus has operated in India since 2004, developing and promoting iron pearl millet, zinc rice, and zinc wheat varieties.

## Reaping the Benefits of Vitamin A Orange Sweet Potato

Walter Odongo is a 31-year-old farmer from Dokolo district in Northern **Uganda** who is married with two children ages nine months and two years. Walter decided to start growing vitamin A orange sweet potato (OSP) after receiving agronomy and nutrition training from **World Vision**, a HarvestPlus implementing partner in Uganda and other countries. Walter learned that the vitamin A OSP, a crop developed by the International Potato Center (CIP), is fast maturing, drought tolerant, and higher in vitamin A than the traditional white and cream sweet potato varieties (more than a quarter of preschool-aged children in Uganda suffer from vitamin A deficiency). Walter has also been selling his OSP roots and vines on a nearby roadside, with the goal of using the proceeds to create a better life for his family. “I now earn more than twice the amount of money I used to earn from my acre of land,” recounted Walter. He used some of the proceeds to buy land to expand his vitamin A OSP garden. He also bought some goats that he plans to breed and sell, and then buy oxen for plowing.

“I now earn [money] from both the vitamin A orange sweet potato roots and the vines.”

—Walter Odongo, farmer, Uganda



# Informing Consumers, Building Markets

## New Partnership Targets Commercial Channels

HarvestPlus and the **Global Alliance for Improved Nutrition (GAIN)** have made a bold joint commitment to accelerate progress in the fight against micronutrient deficiency. The new partnership combines the deep experience of HarvestPlus in all facets of biofortification with GAIN's acumen in working with private companies to create sustainable consumer markets for nutritious foods. The objective: scale up market-led production, delivery, and consumption of biofortified crops and foods more rapidly, especially in countries where the need for nutritional advances is greatest.

With funding from Germany's Federal Ministry of Economic Cooperation and Development (BMZ) and the Ministry of Foreign Affairs of the Netherlands, and others, the partnership will operate in Asian and African countries where micronutrient malnutrition is pervasive.

The partners will focus on better integrating biofortified crops into food systems through private sector partnerships, value chain development, and the integration of biofortification in national food and nutrition strategies. The partnership grew out of close ties between HarvestPlus CEO Howdy Bouis and GAIN Executive Director Lawrence Haddad, both recipients of the prestigious World Food Prize. The two previously worked together at IFPRI on research that led to the concept of biofortification.

“Together, we will leverage our linkages with the private sector to accelerate market uptake of [biofortified crops and foods]. Giving better access to hundreds of millions of consumers will make a big contribution to reducing life-damaging deficiencies of micronutrients.”

—Lawrence Haddad, GAIN Executive Director



Howarth Bouis (left) and  
Lawrence Haddad (right)

## Innovating in the Food Sector

Entrepreneurs are finding innovative ways to deliver biofortified foods to consumers. Tinashe Mbiriri, a former HarvestPlus **Zimbabwe** intern with a degree in agricultural economics, partnered with a former classmate to launch Sky Brands in 2017 to process and sell products containing vitamin A-enriched orange maize, including orange maize meal, samp, and porridges in several flavors. "As a company whose quest is to contribute significantly to the fight against hidden hunger and malnutrition, we have embraced [biofortification] and committed ourselves to the nutrition revolution," Tinashe said. They launched a website (skybrands.co.zw) in 2018 to sell their products online. HarvestPlus has assisted Sky Brands with logistical support, notably in managing aggregation of product delivered by hundreds of smallholder farmers growing vitamin A orange maize.

## Inspiring and Involving Youth

The HarvestPlus team in the **Democratic Republic of Congo (DRC)** saw a need to better engage young people and ensure that they are able to sustain interest in biofortification in the country. Given serious resource challenges faced by many students, the team started an "Ambassadors of Biofortification" scholarship program for exceptional secondary school graduates—those with top scores on nationally-administered exams—to motivate them to study plant breeding and agriculture at university. HarvestPlus DRC has also been collaborating since 2016 with three public universities to incorporate biofortification in plant breeding curriculums, help purchase lab equipment, and organize dedicated lectures. "The scholarship cost per student per year is less than US \$1000 but the long-term benefit for biofortification is much larger," said Antoine Lubobo, country manager for HarvestPlus in DRC.

## Naturally More Nutritious

Biofortified crops were first released in **Colombia** in 2016 with varieties of iron beans and, later, zinc maize. But the regional HarvestPlus team saw that work was needed on the demand side to generate better understanding among Colombian farmers and consumers of biofortification and its benefits. The team worked with an ad agency to devise a compelling, easily understood logo and message: *Naturalmente Más Nutritivo* (Naturally More Nutritious). Luz Adriana Jimenez, HarvestPlus country coordinator for Colombia, said the phrase captures the fact that biofortified crops are developed through conventional breeding methods that make them more nutritious than other varieties. "We want biofortification to be sustainable, and to do so we need to stimulate demand from consumers. This message will help small farmer associations sell their biofortified beans and maize," said Jimenez.

“We want biofortification to be sustainable, and to do so we need to stimulate demand from consumers. This message will help small farmer associations sell their biofortified beans and maize.”

—Luz Adriana Jimenez (pictured), HarvestPlus country coordinator for Colombia, referring to the Naturally More Nutritious campaign



# Catalyzing Policy Action

Supportive policies and regulations help create enabling environments for biofortification. HarvestPlus works with coalitions at the national, regional, and global levels to ensure decisionmakers know the evidence about the benefits of biofortification and receive guidance on formulating and implementing best-practice measures.

## African Development Bank Prioritizes Biofortification

In its *Multi-Sectoral Nutrition Action Plan for 2018–2025*, the **African Development Bank** pledged to invest in “grey matter infrastructure” to ensure Africans reach their full cognitive potential and their countries’ economies can realize demographic dividends. The Bank estimates member states’ gross domestic products are reduced by between 2 and 17 percent annually by the impacts of hunger, particularly stunting.

The plan, released in December 2018, includes biofortification among a few priority investments deemed to have “the greatest impact on nutrition.” The Bank’s Technologies for African Agricultural Transformation projects will also seek to increase agricultural production through activities that include scaling up biofortified nutritious crops. The Bank is targeting a 40 percent reduction in the number of African children whose cognitive and physical development are impaired by poor nutrition by 2025. More than a third of the world’s stunted children under age five reside in Africa.

Separately, the **African Leaders of Nutrition (ALN)**, an initiative of the Bank and the African Union, has played a key role in encouraging member states to elevate nutrition as a key driver of economic growth and development. Howarth Bouis, the founder of HarvestPlus, was welcomed into the ALN early in 2018 to help focus attention on the pervasive challenge of micronutrient malnutrition and the role of biofortification in addressing it.

## African Union Body Backs Biofortification

HarvestPlus works with several partners in Africa to build high-level political support for biofortification as a response to the continent’s nutritional challenges. In an important milestone, the African Union (AU) Executive Council endorsed biofortification in January 2018, increasing the odds that AU Heads of State will declare official support when they gather at a summit in February 2020. An official declaration by the Heads of State would catalyze action on biofortification by more AU member states; currently, 12 of 54 have adopted policy measures related to biofortification.

## Engaging High-Level Champions

The HarvestPlus booth at the 2018 Agricultural and Commercial Show in **Zambia**, received an extended visit from **President Edgar Lungu** (pictured below, right), a strong supporter of biofortification. He said he regularly eats products made with vitamin A orange maize, most recently the day before he visited the booth. Support from high-level champions like President Lungu are essential to generating interest in biofortified foods among the general public, government agencies, and businesses.



## India Sets Minimum Iron and Zinc Levels In Releases of Pearl Millet Varieties

Establishing minimum standard levels of micronutrients for release of varieties is an impactful way to mainstream biofortification in crop development. In 2018, the All India Coordinated Research Project on Pearl Millets, coordinated by the Indian Council of Agricultural Research, officially set minimum standard levels of iron and zinc for the release of pearl millet cultivars. Diets deficient in iron and zinc can be a major cause of anemia and stunting, respectively, and in India, 59 percent of children under five and 54 percent of women are anemic, while 38 percent of children under five are stunted.

Because of its ability to grow well in dry soil, pearl millet is a staple crop for over 90 million people across the world. Biofortified versions of this staple crop present a cost-effective, sustainable strategy to improve nutrition for resource-poor families and communities who rely on pearl millet for the bulk of their diets.

Equally significant, the Indian government declared in 2018 that millets are “nutri-cereals” important for improving food and nutrition security, and recommended their inclusion in the country’s extensive public food distribution system, or PDS. When this is implemented, millets with minimum micronutrient traits will be available to millions more low-income Indians.

## Global Definition Drive Enters New Stage

Work on a global definition for biofortification is progressing within the Codex Alimentarius, the international food standards-setting body comprising 188 member governments and 250 observer NGOs. A draft definition for biofortification advanced to step 4 of the 8-step Codex standard-setting procedure. Many member governments await a Codex-approved definition before they proceed with national regulations or policies on biofortification.



# Governance and Financial Summary

The HarvestPlus program is based at the International Food Policy Research Institute (IFPRI) and collaborates with multiple CGIAR centers and partner organizations. The Board of Trustees of IFPRI have delegated the responsibility for oversight of HarvestPlus to a Program Advisory Committee (PAC), which acts in effect as a Board of Trustees for HarvestPlus.

**Andrew Natsios (Chair)\***  
 Director, Scowcroft Institute of International Affairs, and Executive Professor, Bush School of Government and Public Service, Texas A&M University

**Esi Foriwa Amoafu**  
 Director of Nutrition, Ghana Health Service

**Jeroen A. Bordewijk**  
 Senior Vice President (Retired), Unilever Corporation, Supply Chain Excellence Programme

**Ken Noah Davies**  
 Director (Retired), Purchase for Progress, World Food Programme

**Ruben G. Echeverría**  
 Director General, International Center for Tropical Agriculture (CIAT)

**Ismahane Elouafi**  
 Director General, International Center for Biosaline Agriculture

**Shenggen Fan**  
 Director General, International Food Policy Research Institute

**Richard Flavell**  
 Chair, Science and Impact Executive Board, International Wheat Yield Partnership, Texas A&M University

**John Hamer**  
 Managing Partner, Data Collective

**Patrick J. Murphy**  
 Vice President (Retired), Bank of America

**Andrew M. Prentice**  
 Head, MRC International Nutrition Group, London School of Hygiene and Tropical Medicine

**Margret Thalwitz**  
 Board Chair, International Center for Agricultural Research in the Dry Areas

**Barbara Wells**  
 Director General, International Potato Center

**Peter McPherson (Chair Emeritus)**  
 President, Association of Public and Land-grant Universities

\*Andrew Natsios became chair of the PAC on Jan. 1, 2019, succeeding Peter McPherson.



## HarvestPlus Thanks Peter McPherson for His Service

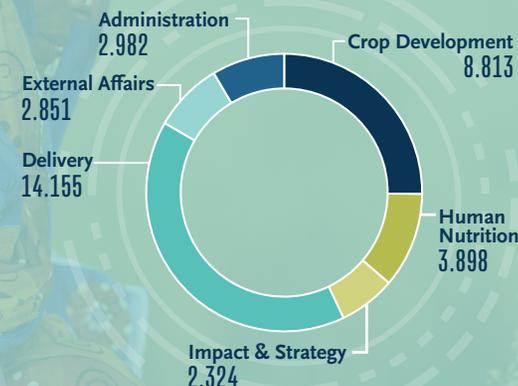
**Peter McPherson** stepped down as chair of the PAC on Dec. 31, 2018, after serving in this capacity since the inception of HarvestPlus in 2003. McPherson, president of the Association of Public and Land-grant Universities and a former administrator of the United States Agency for International Development, has been instrumental

in the development and successes of HarvestPlus. He worked tirelessly to advance a culture of delivering impact through focused research investments and multi-disciplinary collaboration. He has also been a consistent champion of our global leadership in biofortification. Throughout, HarvestPlus benefited immensely from his wise counsel, unwavering support, and thoughtful contributions to our strategic and operational activities.

## 2018 Receipts and Disbursements (in million US\$)

Receipts	
Grants and Contracts	38.990
Interest Income	0.171
<b>Total Receipts</b>	<b>39.161</b>

## Disbursements



**Total Disbursements 35.023**

## 2018 Donors to HarvestPlus

- Australian Department of Foreign Affairs and Trade
- Bill & Melinda Gates Foundation
- CGIAR Research Program on Agriculture for Nutrition and Health (A4NH)
- The European Commission
- Federal Ministry for Economic Cooperation and Development of Germany (BMZ)
- MacArthur Foundation
- UK Department for International Development
- United States Agency for International Development

# 2018 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.

## CG CENTERS

Bioversity International  
International Center for Agricultural Research in the Dry Areas (ICARDA)  
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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

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Children's Hospital Oakland Research Institute-CHORI  
Chinese Academy of Agricultural Sciences (CAAS)  
Cornell University  
Ethiopian Institute of Agricultural Research (EIAR)  
Flinders University  
Greenwich University  
Indonesian Center for Rice Research (ICRR)  
Iowa State University  
Johns Hopkins Bloomberg School of Public Health  
Punjab Agricultural Research Board (PARB)  
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Swiss Federal Institute of Technology (ETH-Zurich)  
United States Department of Agriculture, Agricultural Research Service (USDA-ARS)  
University of Adelaide  
University of California, Davis  
University of Freiburg  
University of Hohenheim  
University of Melbourne  
Wageningen University

## IN-COUNTRY PARTNERS

### Bangladesh

Agricultural Advisory Society (AAS)  
Amra Kaj Kori (AKK)  
AVA Development Society  
Bangladesh Rice Research Institute (BRRI)  
Christian Commission for Development in Bangladesh (CCDB)  
Department of Agricultural Extension, Ministry of Agriculture (DAE)  
Friends in Village Development Bangladesh (FIVDB)  
Green the Environment (GTE)  
Integrated Social Welfare Association (ISWA)  
Natun Zibon Rochi (NAZIR)  
Prokash Gano Unnayan Kendra (PGUK)  
RDRS Bangladesh  
Society Development Committee (SDC)  
Shariatpur Development Society (SDS)  
Small & Medium Seed Producing Association (SMSPA)  
Shawdesh Unnayan Kendra (SUK)  
Socio Economic Health Education Organization (SEHEO)  
South West Seed Producer Association of Bangladesh (SWSPAB)  
Thengamara Mohila Sabuj Sangha (TMSS)  
Unnayan Dhara (UD)  
Voluntary Rural Development Society (VRDS)  
World Vision Bangladesh  
ZHUMKA Bangladesh

### Bolivia

Integral Agricultural Cooperative (CAISY Ltda)

### Brazil

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Associação Regional das Escolas Famílias Agrícolas do Piauí (AEFAPI)  
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Escritório Regional Emater (Ijuí & Santa Rosa)  
Escritório Unidade Indígena Emater Tenente Portela  
Fundação Dom Edelberto, 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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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 Desenvolvimento Agropecuário e da Pesca do Pará (Sedap)  
Secretaria de Estado da Agricultura e do Desenvolvimento Agrário de Sergipe  
Secretaria Municipal de Agricultura Pecuária e Pesca  
Abastecimento de Alto Alegre  
Sindicato dos Agricultores (Eliseu Martins & Queimada Nova, PI)  
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Universidade Federal (Sergipe; Uberlândia; Viçosa; Maranhão; Mato Grosso; Rio de Janeiro; Rio Grande do Sul, Unidade Três Passos; Fronteira Sul, Campus Cerro Largo)

### Colombia

Association of Agronomists of the Atlantic  
Colombian Agricultural Research Corporation (AGROSAVIA)  
Del Valle University  
Guerrero Seeds  
Latin American and Caribbean Consortium to Support Research and Development of Cassava (CLAYUCA)  
Maxisemillas  
Ministry of Health  
National Federation of Cereal and Leguminous Plant Growers

- FENALCE  
SENA – Agribusiness Buga  
UMATA (Florida; Versailles; Pradera; Tenerife – Magdalena)  
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World Food Programme (WFP)  
Paso Colombia Foundation  
Cepromegua Guaviare

### DR Congo

Adventist Development and Relief Agency (ADRA)  
AGRIFORCE  
APAEKA  
APAFED  
APDIK  
APIPE  
Association Coopérative en Synergie Féminine (ACOSYF)  
Association de Producteurs de Semences du Katanga (APSKA)  
Association de Vendeurs de Vivres et de Semences (ADVS)  
Association des Agronomes Professionnels (AGROPRO)  
Association des Femmes Paysannes de Gimbi (AFPG)  
Association pour le Développement de Fermiers de Dwale (ADFD)  
Association pour le Développement de l'Élevage et de l'Agriculture (ADEA)  
Association pour le Développement Endogène de Matadi (ADEM)  
Bukavu Youth Agripreneurs (BYA)  
Bureau Diocésain de Développement (BDD)-Lubumbashi  
Centre d'Adaptation et de Production de Semences Améliorées (CAPSA) – Lohutu  
Centre pour la Promotion Rurale (CPR)- IDJWI  
CEPROIA  
Communauté locale de développement de Nkolo (CLD-Nkolo)  
Communauté pour le développement villageois Sakivuuvu  
Département Femme et Famille Provinciale (DFFP)  
Dynamique Féminine Paysanne

(DPF)  
ELIORE  
ETHN-Agrobusiness  
ETS NFUNU  
FABIS  
FEDAAC  
Ferme Kaloboka (FERKAL)  
Ferme Makelele (FM)  
FODDR  
Food and Agriculture Organization (FAO)-Bukavu  
Food for the Hungry  
FONIMIS  
Fraternité  
Groupe Agro-Pastoral de Kivu (GAP)  
Groupe de Recherche et d'Action des Femmes du Bas Fleuve (GRAFBAF)  
IITA Youth Agripreneurs/Kalabo  
Institut Facultaire d'Agronomie (IFA) de Yangambi-WAVE  
Institut National pour l'Etude et la Recherche Agronomiques-Station de recherche de Mvuzi  
Institut National pour l'Etude et la Recherche Agronomiques-Station de recherche de Ngandajika  
Institut National pour l'Etude et la Recherche Agronomiques (INERA)  
Institut Technique Agricole de Katanga (ITAK)  
Initiatives pour la Promotion des Démunis (IPD)-Buzi  
Bulenga  
Institut Facultaire d'Agronomie (IFA) de Yangambi  
Institut Supérieur Technique de Développement (ISTD)/Kalehe  
K-GBM  
La Voie Internationale  
Laboratoire de Recherche en Biofortification, Défense et Valorisation des Cultures (BIODEV)  
Layuka Sprl  
LBM  
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Programme National de Nutrition (PRONANUT)  
Projet Agricole de Buhengere (PABU)  
Radio Communautaire de Kinzau-Mvuete  
Radio Kimvuka na Lutondo/Kenge  
Radio Lukula/Lukula (GAP)  
Radio Munku/Mbankana  
Radio Mwindu/Masi-Manimba  
Radio Ntemo/Mbanza-Ngungu  
Radio Télévision Nationale Congolaise (RTNC)  
Regina Mundi  
SAFARI INTERNATIONAL – SOD  
Service d'Appui au Développement Régional Intégrée (SADRI)  
Service National de Semences (SENASSEM)  
Service National de Vulgarisation (SNV)  
Tabernacle chrétien de Bilonda  
UFEDI  
Union des paysans pour le développement des ménages agricoles  
Union de Producteurs Agricoles pour le Développement Intégré (UPROADI)  
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Université de Kinshasa (UNIKIN)  
Université de Lubumbashi (UNILU)  
Université Evangélique en Afrique (UEA)  
UPROADI  
World Vision

### El Salvador

Food and Agricultural Organization (FAO)  
National Center of Agricultural, Livestock and Forestry Technology "Enrique Álvarez Córdova" (CENTA)  
World Food Programme (WFP)

## Guatemala

Del Valle University, Department of Engineering in Food Sciences  
Food and Agricultural Organization (FAO)  
Fundación para la Innovación Tecnológica Agropecuaria y Forestal (FUNDIT)  
Institute of Agricultural Science and Technology (ICTA)  
Institute of Nutrition of Central America and Panama (INCAP)  
Inter-American Institute for Cooperation on Agriculture (IICA)  
Livestock and Food (MAGA)  
Secretary of Food and Nutrition Security (SESAN)  
Agronomy Faculty (FAUSAC)  
Seed Network of Guatemala Semilla Nueva  
USAID  
World Food Programme (WFP)  
World Vision International (WVI)

## Haiti

Catholic Relief Services (CRS)  
CHIBAS Foundation  
Ministry of Agriculture (MARNDR)  
Ministry of Public Health and Population (MSPP)  
Organization for the Rehabilitation of the Environment (ORE)  
Project AKOSAA/University Laval  
Program School Food (PNCS)

## Honduras

Directorate of Agricultural Science and Technology (DICTA)  
Inter-American Institute for Cooperation on Agriculture (IICA)  
Panamerican School of Agriculture, Zamorano  
World Food Programme (WFP)  
Pan American Development Foundation (PADF)  
Mesas de Seguridad Alimentaria y Nutricional (SAN)

## India

Aarti Flour Mill  
Action for Social Advancement - ASA  
Ajeet Seeds Limited  
Ambuja Cement Limited  
Ankur Seeds  
Ashok Sansthan  
Astha Beej Pvt. Ltd.  
Bagaha Krishak Agro Producer Co.  
Banaras Hindu University  
Bapudham Smridhi Agro Producer Co.  
Basant Agrotech (I) Ltd  
Basix - Krishi Vikas Farmers Producer Co. Ltd.  
Basix - Mahatmane Spices Producer Co. Ltd  
Basix - Navijyoti Kisan Producer Co. Ltd  
Bayer BioScience Pvt. Ltd.  
Bharti Lok Vikash & Anusandhan Sansthan  
Bhawani Seeds and Biotech  
Bihar Agricultural Growth & Reform Initiative  
Bihar Agricultural University  
Bihar Water Development Society - BWDS  
Bioseed Research India Pvt. Ltd.  
Bombay Super Hybrid Seeds  
Borlaug Institute for South Asia – BISA  
CARITAS  
Catholic Relief Services- CRS  
CCS Haryana Agricultural University  
Daftari Agro Biotech Pvt. Ltd.  
Dhule College of Agriculture  
Dhurva Seeds  
Dumraon Agro Producer Company  
G.B. Pant University of Agriculture and Technology (GBPUAT)  
Ganga Kaveri Seeds Pvt. Ltd.  
Gramin Development Services (GDS)  
GUeVVS - Gramin Uthan Evam Vaikalpik Vikas Samiti  
Gurua Agro Producer Company  
Hytech Seed India Pvt. Ltd.  
ICAR - AICRP - All India Coordinated Research Project on Pearl Millet  
ICAR - Indian Agricultural Research Institute (IARI)  
ICAR - Indian Institute of Wheat

and Barely Research Institute (IIWBRI)  
Indian Institute of Rice Research (IIRR)  
IMRB  
India Biofortification Program  
Indian Agricultural Research Institute (ICAR)  
Indira Gandhi Krishi Vishwavidyalaya (IGKV)  
ITC Limited  
JK Agri Genetics Ltd.  
Junagadh Agricultural University  
Karnataka State Seeds Corporation Limited (KSSC)  
Kaveri Seeds Co. Ltd.  
Maa Boudhi Devi Samridhhi Agro Producer Company  
Maharashtra State Seeds Corporation Ltd. (MSSC)  
Mahatma Phule Krishi Vidyapeeth (MPKV)  
Mahyco  
Marthwada Agricultural University  
Metahelix Lifesciences Pvt. Ltd.  
Ministries of Agriculture, Health, and Education  
Moti Seeds  
Nath Biogene Pvt. Ltd  
National Institute of Nutrition (NIN)  
National Seed Association of India (NSAI)  
Nidan  
Nirmal Seeds Pvt. Ltd.  
Nu Genes Private Limited  
Nuziveedu Seeds Pvt. Ltd.  
Orissa University of Agriculture and Technology (OUAT)  
Pioneer Overseas Pvt. Ltd  
Pradan  
Prof. Jayashankar Telangana State Agricultural University (PJTSAU)  
Punjab Agricultural University (PAU)  
Rajendra Prasad Central Agricultural University - RPCAU  
Rasi Seeds  
Ratnagiri Seeds & Farm  
Reliance Foundation  
Shakti Vardhak Hybrid Seeds Pvt. Ltd.  
Shiv Shakti Seeds  
Sona Seeds  
Sone Ganga Seeds  
Sood Seeds

Sri Karan Narendranath  
Agricultural University  
Sri Sai Seeds  
Sunagro Seeds Private Limited  
Super Seeds Pvt. Ltd.  
Sustainable Human Development Association  
Institute (SHDA)  
Swami Keshwanand Rajasthan Agricultural University  
Tamil Nadu Agricultural University (TNAU)  
Tempest Advertising Pvt. Ltd.  
The Coalition for Food and Nutrition Security (CFNS)  
Vasant Rao Naik Marathwada Krishi Vidyapeeth Parbhani (VNMKV)  
Wheat Berry Agro Tech (WBAT)

## Kenya

Bubayi Products  
Pan-Africa Bean Research Alliance (PABRA)  
Kenya Agricultural & Livestock Research Organization (KALRO)  
Nutrition International  
World Vision Kenya

## Nicaragua

Central American University (UCA)  
Fabretto Foundation  
Foundation for Research and Rural Development (FIDER)  
Caritas-Matagalpa  
Nicaraguan Institute of Agricultural Technology (INTA)  
PAIPSAN Project  
Apta (high-quality) Seed Producers  
Community Seed Banks  
Sanseco project  
Semillas Mejoradas S.A. (SEMSA)  
World Food Programme (WFP)  
Programa Campesino a Campesino (PCaC) from the Unión Nacional de Agricultores y Ganaderos (UNAG)  
Unión de Campesinos  
Organizados de San Dionisio (UCOSD)  
Aldeas S.O.S.  
Asilo de Ancianos de Chagüitillo  
TeSac/Nitlapan from the UCA  
Catholic Relief Services (CRS)

## Nigeria

4-Media Solutions  
Adamawa State Agricultural Development Programme  
Adefunke-Desh Variety Stores  
Agricultural Transformation Agenda Support Program (ATASP)  
Agricultural Society of Nigeria  
Agriculture Graduates Association of Nigeria (AGAN)  
AgroShop  
Ahalson Nig. Limited  
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Akwa Ibom State University (AKSU)  
Almat  
American University of Nigeria  
Anambra Agric Dev Programme (ASADEP)  
Anambra State Polytechnic  
Ashoka  
Bauchi State Agricultural Development Programme  
Benue State Agric Dev Programme (BNARDA)  
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Cross River State Agric Dev Programme (CRADP)  
Crowther Foods  
Cultivating New Frontiers in Agriculture  
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Dangote Foundation  
Development Dynamics  
Dizengoff Nigeria  
Dominican Centre for Human Resource Development (DCHRD)  
Doreo Partners  
Ebonyi State Agric Dev Programme  
ENVOY Agricultural Services  
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Farm Best International  
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Federal Ministry of Agriculture and Rural Development (FMARD)  
Federal Ministry of Budget and

National Planning  
Federal Ministry of Health (FMOH)  
Federal Radio Corporation of Nigeria (FRCN)  
Forward Africa  
GAINCODE  
GIZ  
Global Alliance for Improved Nutrition (GAIN)  
Gold Agric  
Gombe State Agricultural Development Programme  
GraceCo  
Greenspore Seeds  
Greetings FM 105.7/Green Radio Abuja  
Habgito Nig. Limited (Smallholder mechanization Home Grown School Feeding Programme (HGSFP)  
Human Empowerment and Development Project (HEMADEP)  
IFAD Cassava Value Chain Development Project - Anambra, Ebonyi, Niger, Taraba, Ogun, Benue  
Imo State Agric Dev Programme (IMOADP)  
Institute for Agricultural Research (IAR), Zaria  
Institute of Agricultural Research & Training (IAR&T), Moor Plantation  
International Fertilizer Development Center (IFDC)  
Japan International Cooperation Agency (JICA)  
Jifatu Foods  
Jirkur Seeds  
Justice Development and Peace Commission (JDPC) Uyo  
Justice Development and Peace Movement (JDPM) Oyo  
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Kaduna State Min. of Agriculture  
Kebbi State Agricultural and Rural Development Authority (KARDA)  
Kolping international  
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LORYB  
Maina Seeds  
Maize Growers, Processors and Marketers Association of Nigeria (MAGPAMAN)

Maslaha Seeds  
Medugu Farms  
Micmakin Nigeria Limited (Oyato Foods)  
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Miraj Nig. Ltd  
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National Orientation Agency, HQ Abuja  
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National Television Authority (NTA)  
Nestle  
Newage Solutions  
News Agency of Nigeria (NAN)  
Niger State Agricultural and Mechanisation Deve Agency (NAMDA)  
Niji Lukas Nigeria Limited (Niji Foods)  
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Oyo State Agric Dev Programme (OYSADEP)  
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Premier Tropicana  
Redeemed AIDS Programme  
Action Committee (RAPAC) – Benue State  
Rotary  
Saleh Soba and Sons Ltd  
Savannah Seeds  
Scaling Up Nutrition (SUN)  
Business Network  
SeedCo  
Sen. Adeyemo Women Empowerment Coop (SAWEC)  
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Taraba State Agricultural Development Programme  
Techniseed  
TechnoServe  
The Guardian  
The Nations  
This Day  
Tiger Farms Nig. Ltd  
Tukunyar Gwari Nig. Ltd  
University of Abuja  
University of Calabar

University of Ibadan – Oyo State  
Value Seed

#### Pakistan

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Al Shamas Seed Corporation,  
Liaquat Pur  
Alzaraun Seed Corporation,  
Bahawalpur  
Bahauddin Zakria  
University, Multan  
Beacon Seed Corporation, Kunri,  
Umar Kot  
Bhugio Seed Corporation,  
Mirpur Khas  
CKD Seeds, Gujranwala  
Family's Farm Foods, Lahore  
Fatima Fertilizer Company Fauji  
Fertilizer Company Limited  
Federal Seed Certification  
& Registration Department  
(FSC&RD)  
JB Seed Corporation, Liaquat Pur  
Jullunder Seed Corporation,  
Rahim Yar Khan  
Ministry of National Food  
Security & Research  
Ministry of National Health  
Services, Regulation and  
Coordination  
Ministry of Planning,  
Development and Reform  
MNS Agriculture University,  
Multan  
National Agricultural Research  
Center (NARC)  
National Agricultural Research  
System (NARS)  
Neelam Seed Corporation,  
Multan  
Pakistan Agricultural Research  
Council (PARC), Islamabad  
Pakistan Floor Mills Association  
PMAS Arid Agriculture  
University, Rawalpindi  
Punjab Seed Corporation  
Resham Seed Corporation,  
Rahim Yar Khan  
Scaling Up Nutrition Movement  
(SUN)  
Shan Seeds, Khanewal  
Shoaib Seed Corporation,  
Sukkur  
Tando Adam Seed Corporation  
Tara Seed, Lahore  
TASSCO, Tando Allah Yar  
Trigon Int. Multan

World Vision Pakistan  
4-Brothers, Lahore

#### Panama

Agricultural and Livestock  
Research Institute of Panama  
(IDIAP)  
Food and Agricultural  
Organization (FAO)  
Ministry of Agricultural  
Development  
Ministry of Education  
Ministry of Health  
Ministry of Social Development  
National Secretary for National  
Food Program  
Panama University  
Patronato de Nutrición  
Specialized Analysis Institute  
World Food Programme (WFP)

#### Rwanda

Adventist Development and  
Relief Agency Rwanda  
(ADRA)  
African Evangelistic Enterprise  
Rwanda (AEE)  
Agro Processing Industry (API)  
Association François-Xavier  
Bagnoud Rwanda (FXB)  
Best in Rwanda Group Ltd  
Catholic Relief Services –  
Gikururo Project  
Caritas-Rwanda – Gimbuka  
Project  
COAEBU Cooperative  
CODERNYA Cooperative  
COMIXBU Cooperative  
COTUMU Cooperative  
CNFA (Hinga Weze Project)  
Clinton Development Initiative  
(CDI)  
Development Rural du Nord  
(DERN)  
Ebenezer Seed Company  
Eglise Presbyterienne au  
Rwanda (EPR)  
FarmFresh  
Food and Agriculture  
Organization (FAO)  
Food for the Hungry (FH)  
Garden for Health International  
(GHI)  
Global Alliance for Improved  
Nutrition (GAIN)  
Global Communities Improved  
Services for  
Howard G. Buffett Foundation

Project/MINAGRI  
HUGUKA KAGEYO Cooperative  
IMBARAGA  
Impakomu Cooperative  
INADES – Rwanda  
INGANZO KABEZA Cooperative  
IZMGM Cooperative  
KABOKU Cooperative  
KIBUNGO DIOSES Cooperative  
KMUYANZA Cooperative  
KOABICYA Cooperative  
KOABIKA Cooperative  
KOAINYA Cooperative  
KOHIIKA Cooperative  
KOPAMUNYA Cooperative  
KOTEBARU Cooperative  
KOTWINDIKA Cooperative  
Mbakungahaze Cooperative  
Ministry of Agriculture and  
Animal Resources (MINAGRI)  
Ministry of Education  
(MINEDUC)  
Ministry of Gender and Family  
Promotion  
(MIGEPROF)  
Ministry of Health (MOH)  
Ministry of Local Government  
(MINALOC)  
National Early Childhood  
Development Program  
Nyagatare Dawn Bells Seed  
One Acre Fund  
Red Cross Rwanda  
Rural Sector Support Program  
(RSSP)/MINAGRI  
Rwanda Agriculture Board  
(RAB)  
Rwanda Development  
Organization (RDO)  
Rwanda Improved Seed  
Company (RISCO)  
Rwanda Seed Multipliers  
Organization (RWASMO)  
SARURA Commodities  
SeedCo Rwanda  
Society for Family Health-  
Rwanda  
Twigire Muhinzi Extension  
Platform  
UATA Cooperative Umucyo  
Cooperation  
Union des Coopératives  
Agricoles Intégrées  
(UNICOOPAGI)  
University of Rwanda  
USAID (Integrated  
Strengthening for Vulnerable  
Populations (ISVP) Program)

Win Win  
World Food Programme (WFP)  
(FtMA Project)

#### Tanzania

Ministry of Agriculture  
Nutrition International  
World Vision Tanzania  
  
**Uganda**  
Africa 2000 Network (A2N)  
BioCrops (U) Limited  
Caritas - Hoima Diocese  
Central Broadcasting Station  
(CBS)  
Community Enterprise  
Development Organization  
(CEDO) Seeds  
Divine Organic Foods  
Farm Radio International  
Isimba Prison Farm  
Korean Friend of Africa  
Kigarama Cooperative and  
Marketing Society  
Makerere University,  
Department of Agricultural  
Production, College of  
Agricultural and Environmental  
Sciences  
Mbarara University - Healthy  
Child Uganda Project  
Ministry of Agriculture, Animal  
Industry and Fisheries  
Ministry of Health  
National Agricultural Research  
Organization (NARO)  
National Crops Resources  
Research Institute (NaCRRI)  
New Vision  
Office of the Prime Minister  
Peace Corps  
Pearl Seeds  
NASECO Seeds  
Self Help Africa  
Samaritan's Purse  
Senai Biosciences  
Send a Cow  
Volunteer Efforts for  
Development Concerns  
(VEDCO)  
Welthungerhilfe  
World Vision

#### Zambia

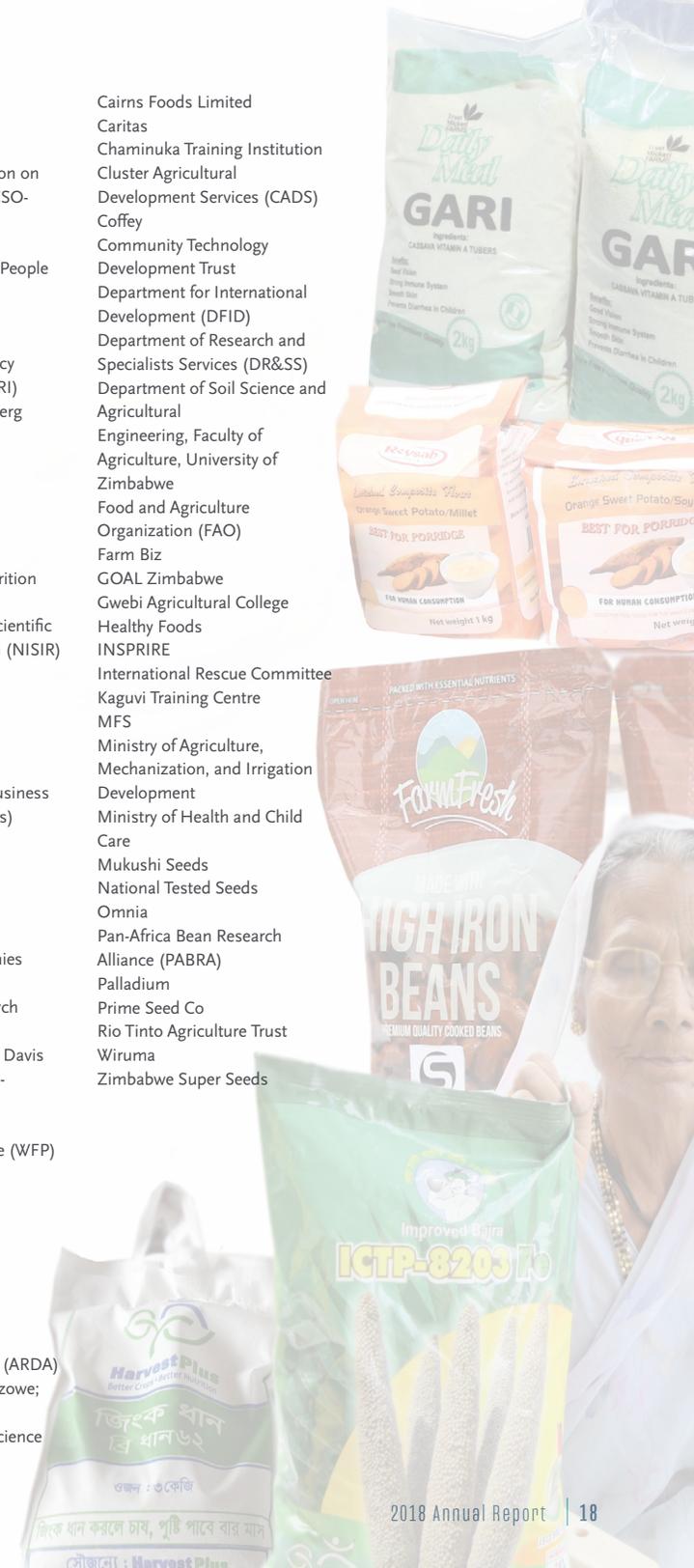
Advanta Seed  
AfriSeed  
AgResults  
Butemwe Milling

Care International  
Chimusoro Milling  
Choma Milling  
Civil Society Organisation on  
Scaling Up Nutrition (CSO-  
SUN)  
Concern WorldWide  
Development Aid from People  
to People (DAPP)  
Fanyate Milling  
FVG Milling  
Indaba Agricultural Policy  
Research Institute (IAPRI)  
Johns Hopkins Bloomberg  
School of Public Health  
Kamano Seed  
Ministry of Agriculture  
Ministry of Education  
Musanza Milling  
Mushe Milling  
National Food and Nutrition  
Commission (NFNC)  
National Institute for Scientific  
and Industrial Research (NISIR)  
NutriAID  
Peace Corps  
Programme Against  
Malnutrition (PAM)  
Purdue University  
Scaling Up Nutrition Business  
Network (SUN Business)  
Seba Foods  
SeedCo  
Self-Help Africa (SHA)  
SHAIS Foods  
Star Milling  
Sylva Group of Companies  
Total Land Care  
Tropical Disease Research  
Center (TDRC)  
University of California, Davis  
University of Wisconsin-  
Madison  
University of Zambia  
World Food Programme (WFP)  
World Vision  
Yoyo Foods  
Zambia Seed Traders  
Association (ZASTA)  
ZamSeed

#### Zimbabwe

Agricultural and Rural  
Development Authority (ARDA)  
AGRITEX (Bindura; Mazowe;  
Zimba)  
Bindura University of Science  
Education

Cairns Foods Limited  
Caritas  
Chaminuka Training Institution  
Cluster Agricultural  
Development Services (CADS)  
Coffey  
Community Technology  
Development Trust  
Department for International  
Development (DFID)  
Department of Research and  
Specialists Services (DR&SS)  
Department of Soil Science and  
Agricultural  
Engineering, Faculty of  
Agriculture, University of  
Zimbabwe  
Food and Agriculture  
Organization (FAO)  
Farm Biz  
GOAL Zimbabwe  
Gwebi Agricultural College  
Healthy Foods  
INSPIRE  
International Rescue Committee  
Kagavi Training Centre  
MFS  
Ministry of Agriculture,  
Mechanization, and Irrigation  
Development  
Ministry of Health and Child  
Care  
Mukushi Seeds  
National Tested Seeds  
Omnia  
Pan-Africa Bean Research  
Alliance (PABRA)  
Palladium  
Prime Seed Co  
Rio Tinto Agriculture Trust  
Wiruma  
Zimbabwe Super Seeds





HarvestPlus produced an animated video in 2018 about our work in biofortification.

Watch it at:  
[harvestplus.org/BetterCrops](https://harvestplus.org/BetterCrops)

HarvestPlus improves nutrition and public health by developing and promoting biofortified food crops that are rich in vitamins and minerals, and providing global 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).

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c/o IFPRI | 1201 Eye Street, NW | Washington, D.C. 20005 USA  
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