

DRIVING Impact



Annual Report 2016

HarvestPlus is developing and promoting biofortified staple crops to improve human health and nutrition, and providing global leadership on biofortification evidence and technology.

Hidden Hunger

More than two billion people in the world—roughly one person in three—do not get enough essential vitamins and minerals, such as vitamin A, zinc, and iron, in their daily diets. Their condition is known as “hidden hunger” because those suffering from this type of undernutrition often appear healthy, but are actually more vulnerable to illness and infections. The impact of vitamin and mineral deficiencies is as follows:

IRON DEFICIENCY

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

VITAMIN A DEFICIENCY

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

ZINC DEFICIENCY

- Contributes to stunting
- Lowers immunity
- Increases risk of diarrheal disease and respiratory infection

Biofortification

Biofortification is the process of increasing the density of vitamins and minerals in a crop, through plant breeding or agronomic practices, so that when consumed regularly will generate measurable improvement in nutritional status.



Dear Friends,

2016 was a truly impactful year for biofortification. Thanks to the extraordinary efforts of our partners, we reached more than 25 million people with nutritious biofortified crops. Our founder and ambassador-at-large Howarth “Howdy” Bouis won

the World Food Prize for his pioneering work in biofortification. Peer-reviewed studies continued to validate the nutritional and health impact of biofortified crops. And accolades from influential actors solidified the growing momentum behind our program, including TIME magazine’s listing of vitamin A-enriched orange sweet potato as one of the 25 best inventions of the year.

Since joining this visionary and dynamic team as CEO, I have been constantly amazed and inspired by the energies and passions of those involved. From Bangladesh to Zambia, our staff and partners are driving real impact by working innovatively and industriously to deliver immeasurable health benefits to rural households who rely on staple crops for their daily nutrition.

Last year’s successes strengthen our resolve to reach a billion people with biofortified foods by 2030 as part of our contribution to achieve Zero Hunger. Many challenges lie ahead, but our achievements to date and a new strategic plan give me confidence that we can take biofortification to scale, ensuring that hundreds of millions of people can benefit from this simple but vital technology.

We cannot do this alone. I am particularly grateful to our donors and partners for their unwavering faith in our mission to enrich the world through better crops and nutrition. Together, we can end the global scourge of hidden hunger.

Bev Postma
CEO, HarvestPlus

Our work contributes to the following Sustainable Development Goals.



Popular **Radio Drama Returns** to Ugandan Airwaves for Season 2



Orange Maize Steals Show at Major Zambian Agricultural Expo



Study: **Biofortified Beans Reverse Iron Deficiency** in Women



Global Panel Recommends Biofortification in its Quality Diets Brief



TIME lists **Orange Sweet Potato Among 25 Best Inventions** of 2016



2016 AT A GLANCE



Ambassador Wonekha Joins our **Women’s Day Campaign**



HarvestPlus Founder **Howarth Bouis Wins World Food Prize**



Beverley Postma Joins HarvestPlus as Chief Executive Officer



Study: **Orange Maize Improves Night Vision**



Breakthrough Research on Zinc Biomarkers Published

We work with...

...more than 440 partners from the public and private sectors to develop and deliver biofortified crops, educate farmers and consumers on the benefits of these foods, and build inclusive, sustainable markets.

COUNTRIES

GUATEMALA

2 ORANGE SWEET POTATO varieties released

30 organizations (NGOs, UN, government) participating in "Plataforma BioFort"

5,000+ reached with **IRON BEANS** (**3,900+**) and **ORANGE SWEET POTATO** (**1,400+**)

EL SALVADOR

20 food products developed from biofortified crops at the *Laboratorio de Alimentos del CENTA*

1 **IRON BEAN** variety released

BRAZIL

4,000 households reached with biofortified crops

15,000+ households now benefiting from biofortified crops in Latin America and the Caribbean

DEMOCRATIC REPUBLIC OF CONGO

270,000+ farming households reached with **VITAMIN A CASSAVA** **615,000+** households now benefiting

260,000+ households reached with **IRON BEANS** **455,000+** households now benefiting

Nearly **100** farmers and partners trained on **VITAMIN A CASSAVA**

2,000+ people reached with vitamin A cassava messaging through promotional events

HONDURAS

1 **IRON BEAN** variety released

COLOMBIA

2 **IRON BEAN** varieties released

NIGERIA

800,000+ households reached with **VITAMIN A CASSAVA**

1.3 million households now benefiting

60,000+ households reached with **VITAMIN A MAIZE**

5,000 reached with **VITAMIN A CASSAVA** messaging and products at the first Nutritious Food Fair

300+ sales points distributed and sold **VITAMIN A CASSAVA** products

3,300+ trained on investment opportunities in the biofortified food sector

ZAMBIA

175,000+ households reached with **VITAMIN A ORANGE MAIZE**

205,000+ households now benefiting

8 of 10 provinces growing **VITAMIN A ORANGE MAIZE**

1,200 students experienced the benefits of biofortified maize through a competition to get schools growing and eating **ORANGE MAIZE**

100+ agrodealers trained

RWANDA

160,000+ households reached with **IRON BEANS**

425,000+ households now benefiting

55,600 reached with key messages on iron beans via community-based promotional activities

Nearly **100** agrodealers, cooperatives, and agronomists trained

UGANDA

110,000+ households reached with **ORANGE SWEET POTATO** **58,000** households reached with iron beans **660,000+** households now benefiting from biofortified crops

5 **IRON BEAN** varieties developed, released, bulked and disseminated

280 lead mothers and **375** community resource persons trained

10,000+ people reached with key messages on biofortified crops through **5** agricultural and trade exhibitions

BANGLADESH

125,000+ households reached with **ZINC RICE**

360,000+ households now benefiting **350+** (sub-districts) of **62** districts growing zinc rice

300+ private companies partnered in zinc rice seed production

4,000 farmers trained on zinc rice cultivation, seed production, and preservation

INDIA

75,000+ households reached with **IRON PEARL MILLET**

PAKISTAN

40,000 households reached with **ZINC WHEAT**

40,000+ households now benefiting

2 potential new zinc wheat varieties (NR-443 and NR-488) developed and under testing

600 farmers, **25** agronomists, and **110** seed multipliers trained

126,000 households reached with **ZINC WHEAT**

280,000+ households now benefiting from biofortified crops

200 farmers reached with messaging during field days **IRON PEARL MILLET**

2,000+ people attended **4** information sharing events

RESEARCH & PROGRAMS

Our impact is underpinned by ...



The continuous work of our crop development specialists and CGIAR partners enabled governments to release

30+ NEW varieties of

IRON BEANS (11)

IRON PEARL MILLET (1)

ZINC WHEAT (1)

ZINC RICE (1)
VITAMIN A MAIZE (20)



Breakthrough findings on zinc biomarkers showed that a modest increase in dietary zinc, such as provided by biofortified crops like

ZINC RICE

reduces DNA wear and tear and positively impacts chemical reactions in cells.



Results of an efficacy trial in Rwanda revealed that daily consumption of

IRON BEANS

helped to prevent and reverse iron deficiency among university women within four-and-a-half months. Further analysis showed significant cognitive performance improvements among the same women.



An efficacy study in rural Zambia revealed that consumption of

VITAMIN A MAIZE

resulted in improved night vision among school-aged children within six months.



The global independent network of health experts, announced its protocol for reviewing the evidence on biofortification.

...a rigorous evidence-based approach and the world-class expertise of our researchers and specialists. We bank on the knowledge and skills of our crop development, nutrition, impact, advocacy, marketing, and communications experts.

An independent assessment of the evidence on biofortification's effectiveness resulted in a special issue on biofortification in the venerable

ANNALS of THE NEW YORK ACADEMY OF SCIENCES



An impact assessment in Rwanda confirmed that farmers are willing to grow

IRON BEANS

and that adopters increased the proportion of their bean-growing land area to iron bean varieties over time. Iron beans constituted up to 12% of national bean output among smallholder bean farmers, and growers used up to 80% of their iron bean harvests for home consumption.

The Codex Committee on Nutrition and Foods for Special Dietary Uses (CCNFSDU) agreed to re-establish the electronic Working Group (eWG) led by Zimbabwe and South Africa to further develop the proposed draft definition of biofortification.

We collaborated with more than

440 partners to develop, deliver, and promote biofortified crops.



SELECTED WORKING PAPERS

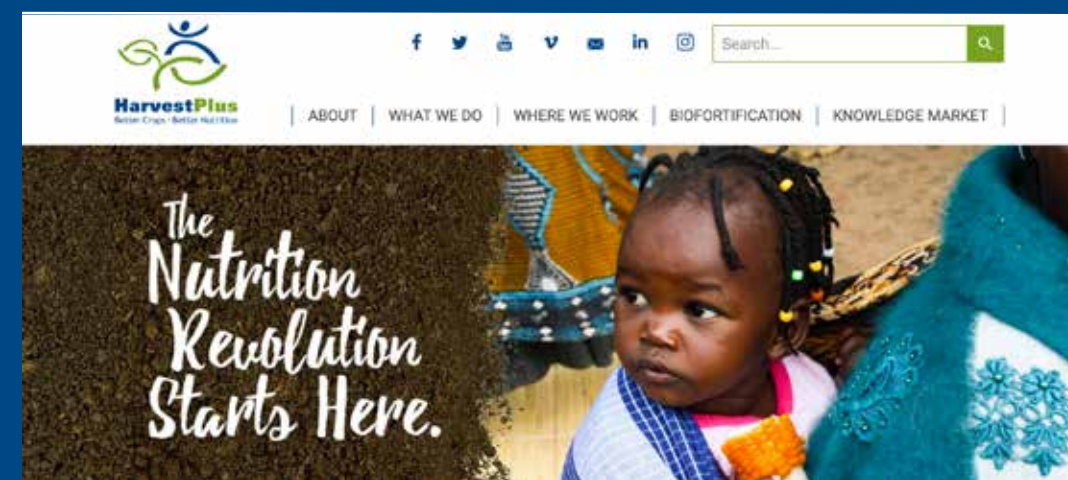
An Assessment of the Vitamin A Maize Seed Delivery Efforts to Date: Agro-dealer Sales and Farmer Production in Zambia

Demand-Pull Creation, Public Officer's Endorsement, and Consumer Willingness-to-Pay for Nutritious Iron Beans in Rural and Urban Rwanda

Assessing the Adoption of Improved Bean Varieties in Rwanda and the Role of Varietal Attributes in Adoption Decisions

Understanding the Adoption of High-Iron Varieties in Maharashtra, India: What Explains Popularity?

A Technical Review of Modern Cassava Technology Adoption in Nigeria (1985–2013): Trends, Challenges, and Opportunities



We launched our bold, colorful, and dynamic new website

www.harvestplus.org

containing a wealth of resources available free of charge.

NEWS & EVENTS

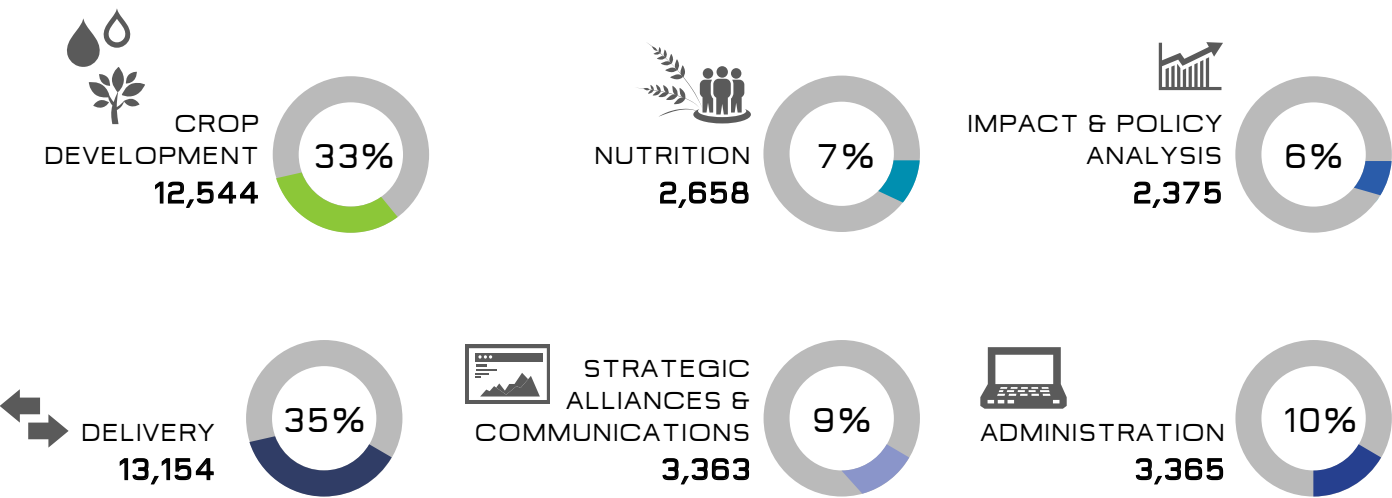
In 2016, we registered nearly 400 hits in the media, including in the most popular and influential news outlets globally. Our experts showcased biofortification at more than 30 major conferences and events.



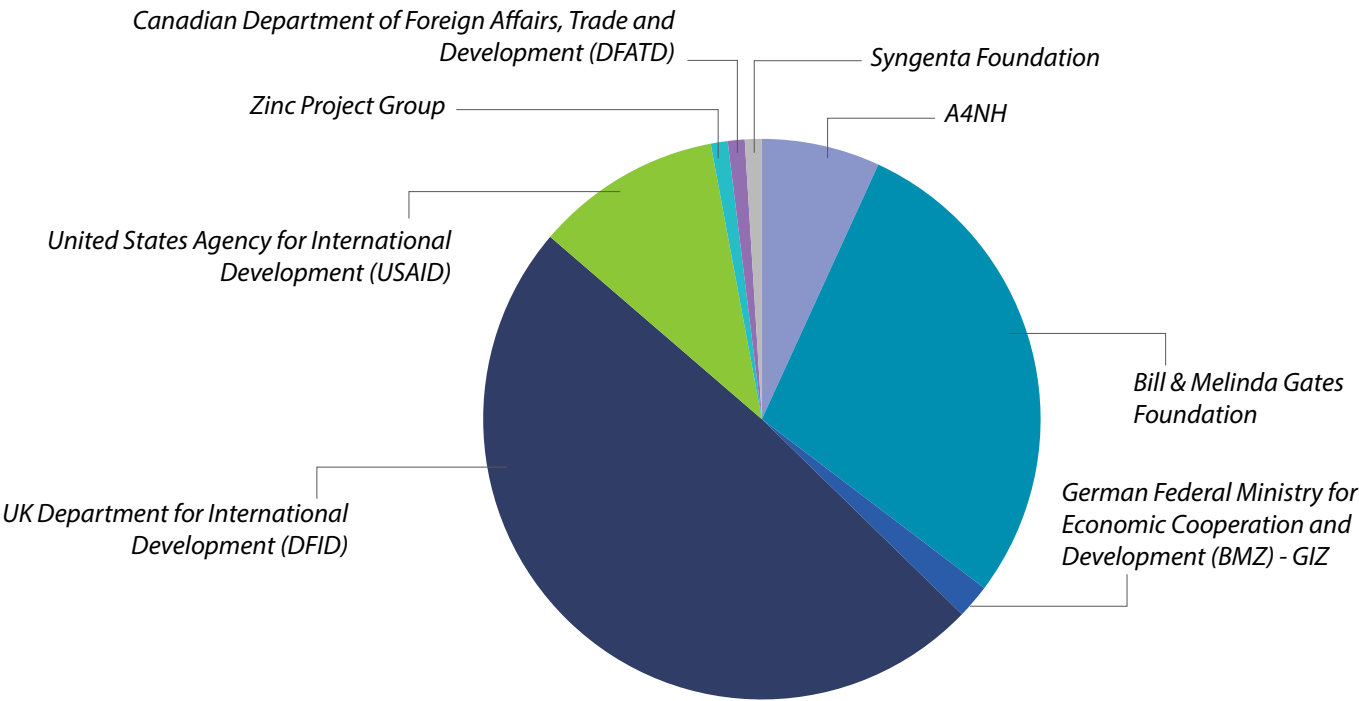
FINANCIAL SUMMARY

2016 HarvestPlus Disbursements by Category

(In thousand US dollars)



2016 Donor Contributions



MICRONUTRIENT FORUM
GLOBAL CONFERENCE,
CANCUN (MEXICO)



CLINTON GLOBAL INITIATIVE
2016 ANNUAL MEETING, NEW
YORK (USA)



NUTRITIOUS FOOD FAIR
2016, CALABAR (NIGERIA)



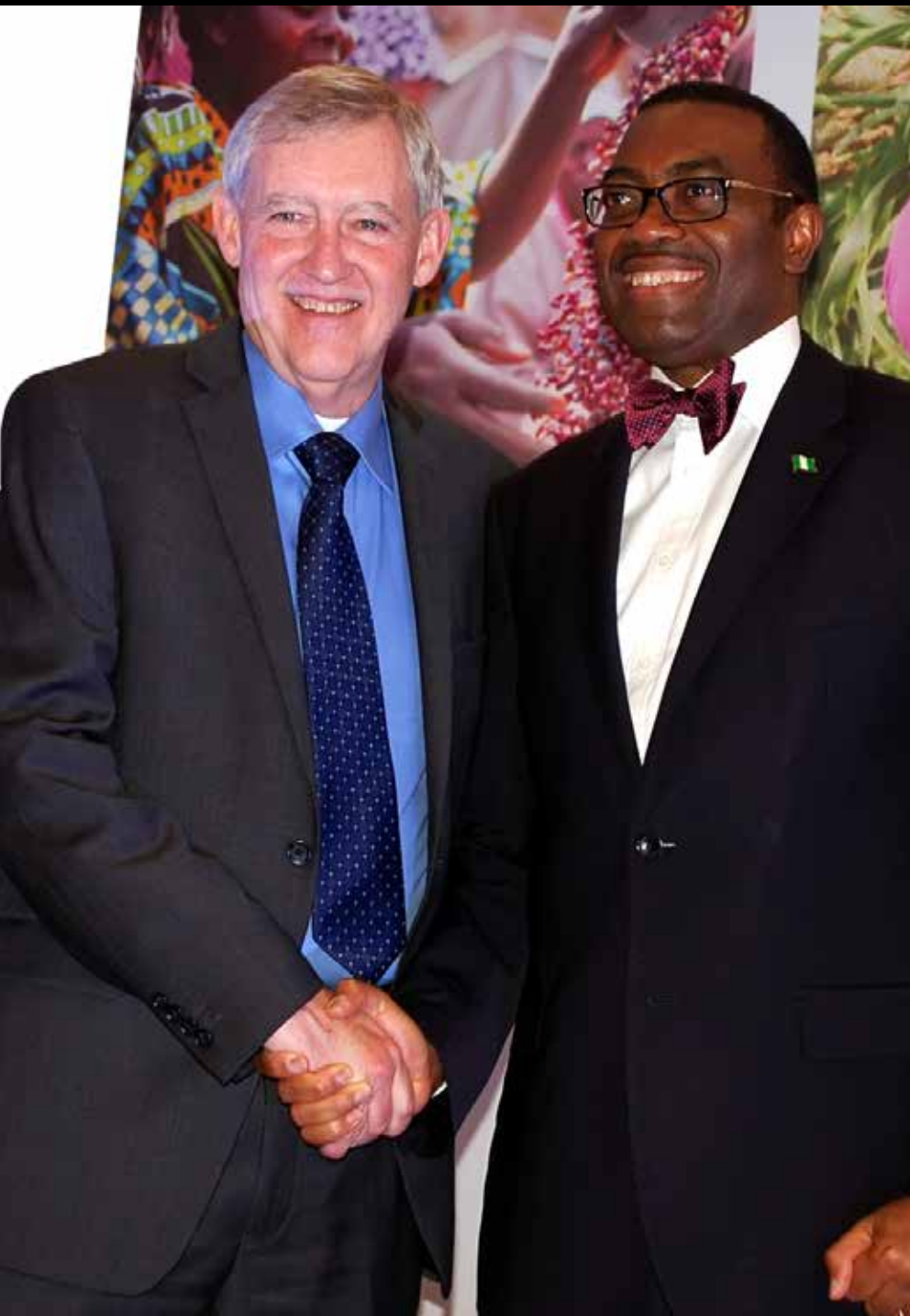
1ST INTERNATIONAL
AGROBIODIVERSITY
CONGRESS 2016, NEW DELHI
(INDIA)



INTERNATIONAL SYMPOSIUM ON
SUSTAINABLE FOOD SYSTEMS
FOR HEALTHY DIETS AND
IMPROVED NUTRITION ROME
(ITALY)



5TH INTERNATIONAL
CONFERENCE OF THE
AFRICAN ASSOCIATION OF
AGRICULTURAL ECONOMISTS,
ADDIS ABABA (ETHIOPIA)



L-R: World Food Prize Laureates Howarth Bouis (2016)
and Akinwumi Adesina (2017)

CONGRATULATIONS TO THE **BIOFORTIFICATION** CHAMPIONS

GOVERNANCE

HarvestPlus is a joint venture between the International Center for Tropical Agriculture (CIAT) and International Food Policy Research Institute (IFPRI). The Boards of Trustees of CIAT and 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:

PETER MCPHERSON (*PAC Chair*)
President, Association of Public and
Land-grant Universities (APLU), United States

ESI FORIWA AMOAFUL
Director of Nutrition, Ghana Health
Service, Ghana

JEROEN A. BORDEWIJK
Senior Vice President (Retired), Unilever
Corporation, Supply Chain Excellence
Programme, Netherlands

KEN NOAH DAVIES
Director (Retired), Purchase for
Progress, World Food Programme, Uganda

S. MAHENDRA DEV
Director & Vice Chancellor, Indira Gandhi
Institute of Development Research, India

RUBEN ECHEVERRIA
Director General, CIAT, Colombia

ISMAHANE ELOUAFI
Director General, ICBA, UAE

SHENGGEN FAN
Director General, IFPRI, United States

RICHARD (DICK) FLAVELL
Chief Scientific Officer, Ceres Inc.,
United Kingdom

JOHN EDWARD HAMER
Investment Director, Monsanto Growth
Ventures, United States

PATRICK J. MURPHY
Vice-President (Retired), Bank of
America, United States

ANDREW M. PRENTICE
Head, MRC International Nutrition Group,
London School of Hygiene & Tropical
Medicine, United Kingdom

CREDITS

Concept & Content: Denis Okello
Graphic Design: Maria Montas
Photos: HarvestPlus staff and partners

We support countries globally to test and release
biofortified nutritious crops so that farmers and
consumers can enjoy the benefits of these crops.



BEANS

Provide: Iron
Other Benefits: High yielding, virus
resistant, heat and drought tolerant
Countries: Bolivia, Brazil, Colombia,
Democratic Republic of Congo, El
Salvador, Guatemala, Haiti, Honduras,
Nicaragua, Rwanda, Uganda, Zimbabwe



CASSAVA

Provides: Vitamin A
Other Benefits: High yielding, virus
resistant
Countries: Brazil, Colombia, Democratic
Republic of Congo, Guatemala, Haiti,
Nigeria, Panama



MAIZE

Provides: Vitamin A
Other Benefits: High yielding, disease
and virus resistant, drought tolerant
Countries: Brazil, Colombia, Haiti, Mexico,
Nigeria, Panama, Zambia, Zimbabwe

Provides: Zinc
Other Benefits: High yielding
Countries: Colombia, El Salvador,
Guatemala, Honduras, Mexico, Nicaragua,
Panama



PEARL MILLET

Provides: Iron
Other Benefits: High yielding, mildew
resistant, drought tolerant
Country: India



ORANGE SWEET POTATO

Provides: Vitamin A
Other Benefits: High yielding, virus
resistant, drought tolerant
Countries: Brazil, Guatemala, Haiti,
Nicaragua, Panama, Uganda



RICE

Provides: Zinc
Other Benefits: High yielding, disease
and pest resistant
Countries: Bolivia, Brazil, Bangladesh,
Colombia, Guatemala, Haiti, India,
Nicaragua, Panama



WHEAT

Provides: Zinc
Other Benefits: High yielding, disease
resistant
Countries: Bolivia, Brazil, India, Pakistan





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). CGIAR is a global agriculture research partnership for a food secure future. Its science is carried out by its 15 research centers in collaboration with hundreds of partner organizations. The HarvestPlus program is coordinated by two of these centers, the International Center for Tropical Agriculture (CIAT) and the International Food Policy Research Institute (IFPRI).



**RESEARCH
PROGRAM ON
Agriculture for
Nutrition
and Health**

Led by IFPRI

HarvestPlus' principal donors are the UK Government; the Bill & Melinda Gates Foundation; the US Government's Feed the Future initiative; the European Commission; and donors to the CGIAR Research Program on Agriculture for Nutrition and Health.

c/o IFPRI 1201 Eye Street, NW • Washington, DC 20005 USA
Tel: 202-862-5600 | Fax: 202-467-4439 | www.HarvestPlus.org