HarvestPlus leads a global effort to improve nutrition and public health by developing and disseminating staple food crops that are rich in vitamins and minerals. "It all starts with a seed."

HarvestPlus focuses on three critical micronutrients recognized by the World Health Organization as most lacking in the diet of the poor:

- Vitamin A: Globally, about 127 million pre-school children are vitamin A deficient. Every year, up to half a million children go blind from lack of vitamin A, and about as many die within months of going blind. Close to 20 million pregnant women in developing countries are iron deficient. Iron deficiency impairs mental development and learning capacity in children. It reduces adults’ capacity for physical labor and, when severe, increases the risk of mothers dying in childbirth.
- Zinc: About one-fifth of the world’s population is at high risk of zinc deficiency. Zinc deficiency can cause stunting and worsen diarrhea and pneumonia (the most common causes of death among children in developing countries). Almost half a million children die every year from infections that could have been easily overcome if they had enough zinc.
- Iron: Iron deficiency is the most common micronutrient deficiency in the world. Anemia (often due to iron deficiency) affects more than 1.6 billion people. Almost half of preschool children and pregnant women in developing countries are iron deficient. Iron deficiency impairs mental development and learning capacity in children. It reduces adults’ capacity for physical labor and, when severe, increases the risk of mothers dying in childbirth.

Hidden hunger is caused by a lack of vital minerals and vitamins in the diet. HarvestPlus leads a global effort to improve nutrition and public health by developing and disseminating staple food crops that are rich in vitamins and minerals. We work with public and private sector partners in more than 40 countries. HarvestPlus is part of the CGIAR Research Program on Agriculture for Nutrition and Health. CGIAR is a global agriculture research partnership for a food secure future. Its science is carried out by 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).

Hidden hunger leads a global effort to improve nutrition and public health by developing and disseminating staple food crops that are rich in vitamins and minerals. We work with public and private sector partners in more than 40 countries. HarvestPlus is part of the CGIAR Research Program on Agriculture for Nutrition and Health. CGIAR is a global agriculture research partnership for a food secure future. Its science is carried out by 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).
Combined vitamin A, zinc, and iron deficiency

HarvestPlus Crops

All initial crops released have at least 50 percent of the nutrient target; subsequent ‘waves’ will have progressively higher levels of the nutrient until the goal is reached. All crops are conventionally-bred. We use adult women in target countries as a reference to determine nutritional benefits. Children age 4–6 years will get about the same percentage of their daily needs met as adult women because although their average food intake is lower, they only need about half the amount of nutrients as adult women. The average amount of the food crop eaten and how often it is eaten is obtained through surveys. The amount of nutrient provided also depends on local food storage and preparation methods and habitual consumption patterns in the target country. Thus, benefits for consumers in other countries may not be the same, unless food preparation and consumption patterns are very similar. In any population, there are also people whose needs will be below or above the estimated average requirement. Nutrient deficiency data for women refers to non-pregnant and non-lactating women. Stunting is used as a proxy for zinc deficiency. Rates of iron deficiency are based on WHO’s estimates on iron deficiency anemia (IDA) and take into account that for every person without IDA there is at least one more person without anemia but who still is iron deficient. For up-to-date information and a complete list of our partners, please visit www.HarvestPlus.org

Vitamin A Cassava

Released: 2011

Cassava is a robust climate-smart crop able to withstand disease, drought, and pests. It grows well on marginal soils and is an important staple food in much of tropical Africa.

Target country: Nigeria
Other countries: Democratic Republic of Congo (DRC)

Vitamin A deficiency: Children under 5: 40% in Nigeria and 50% in DRC
Benefit to consumers: Provides up to 25% of daily vitamin A needs. Commonly grown cassava varieties provide almost none.
Goal: Provide 50% of daily vitamin A needs through fully biofortified cassava.

CGIAR Partners: International Institute of Tropical Agriculture (IITA), International Center for Tropical Agriculture (CIAT)

Iron Bean

Released: 2012

The common bean is among the world’s most important food legumes. Beans are an important part of the diet for millions of people in Africa and Central and South America.

Target country: Rwanda
Other countries: DRC, Uganda

Iron deficiency rates: Children under 5: 38% in Rwanda, 37% in DRC, and 45% in Uganda
Women: 57% in Rwanda, 55% in DRC, and 43% in Uganda

Benefit to farmers: High yielding, virus resistant
Benefit to consumers: Provides up to 25% of daily vitamin A needs. Commonly grown bean varieties provide almost none.
Goal: Provide 50% of daily vitamin A needs through fully biofortified beans.

CGIAR Partners: International Institute of Tropical Agriculture (IITA), International Center for Tropical Agriculture (CIAT)

Vitamin A Maize

Released: 2012

Maize is the most important cereal food crop in Sub-Saharan Africa and Latin America.

Target country: Zambia
Other countries: Nigeria

Vitamin A deficiency rates: Children under 5: 54% in Zambia and 50% in Nigeria

Benefit to farmers: High yielding, disease and virus resistant, drought tolerant
Benefit to consumers: Provides up to 25% of daily vitamin A needs. Commonly grown maize varieties provide almost none.
Goal: Provide 50% of daily vitamin A needs through fully biofortified maize.

CGIAR Partners: International Institute for the Semi-Arid Tropics (ICRISAT), International Centre for Insect Physiology and Ecology (ICIP), International Centre for Agricultural Research in the Dry Areas (ICARDA)

Iron Pearl Millet

Released: 2012

Pearl millet is a hardy cereal grain that grows well in hot and arid regions where soil fertility is often poor. It is widely eaten in drier parts of India and Africa.

Target country: India
Iron deficiency rates: Children under 5: 26% Women: 55%

Benefit to farmers: High yielding, disease and virus resistant, drought tolerant
Benefit to consumers: Provides up to 50% of daily iron needs through fully biofortified pearl millet.
Goal: Provide 70% of daily iron needs through fully biofortified pearl millet.

CGIAR Partner: International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

Zinc Rice

Released: 2013

Rice is the staple food for more than half the world’s population. In many Asian countries, rice provides up to 80 percent of the energy intake of the poor.

Target country: Bangladesh
Other countries: India
Zinc deficiency rates: Children under 5: 41% in Bangladesh and 43% in India (stunted)

Benefit to farmers: High yielding, disease and pest resistant
Benefit to consumers: Provides up to 50% of daily zinc needs through fully biofortified rice, 50% more than commonly grown varieties.
Goal: Provide 80% of daily zinc needs through fully biofortified pearl millet.

CGIAR Partner: International Rice Research Institute (IRRI)

Zinc Wheat

Release: 2013

Wheat is the second most consumed cereal in Asia, after rice, but is grown worldwide; wheat is sown on more than 200 million hectares of developing country farmland.

Target country: India
Other countries: Pakistan
Zinc deficiency rates: Children under 5: 45% in Pakistan and 45% in India (stunted)

Benefit to farmers: High yielding, disease resistant
Goal: Provide 60% of daily zinc needs through fully biofortified wheat, 25% more than commonly grown varieties.

CGIAR Partner: International Maize and Wheat Improvement Center (CIMMYT)

Combined vitamin A, zinc, and iron deficiency