

Nutrition and agriculture

Nutrition front and center

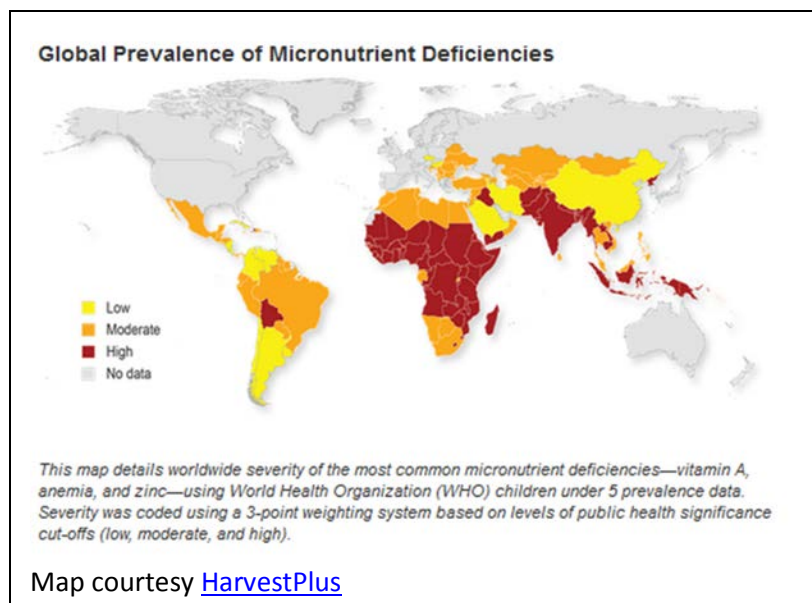
Good nutrition leads to healthy lives, livelihoods, and economies, even in the poorest communities and among the world's most vulnerable populations. Nutrition is a critical determinant of human and economic development.

Over the past few years, global commitments to eliminate undernutrition have soared. Malnourishment takes many forms: child stunting, micronutrient deficiencies, overweight and obesity, and associated non-communicable diseases. Nutrition-specific interventions, usually delivered by the health sector, have well documented effects. However, even if implemented at scale, they will only reduce about 20% of chronic undernutrition. Thus, there is growing interest in bringing agriculture and other large development sectors to support nutrition and make them more nutritionally sensitive.

What can agriculture do?

Healthy food is a core product of agriculture. Improving the quality and safety of food and diets is central to solving all forms of malnutrition. One of the underlying causes of undernutrition is insufficient access to diverse, nutritious foods such as fruits, leafy green vegetables, pulses, seeds and nuts, and animal-sourced foods. The diets of many people in low-income countries, especially mothers and children who are most vulnerable, often lack this diversity and do not meet their basic energy and micronutrient needs. These diets often lack highly nutritious perishable foods, such as meat, milk, and vegetables.

Good nutrition must not only reach vulnerable communities; it must reach all household members, especially mothers during pregnancy and lactation whose own health and nutritional status directly affects her children. Food, however, is not the only input into good nutrition; people must also have access to clean water, sanitation, and health services to maintain good health and utilize nutrients in food.



Pathways to better nutrition

Good nutrition depends on access to diverse and healthy foods, access to health, water and sanitation services, and adequate caregiving practices, often referred to simply as *food, health and care*. However,

research shows that the pathways through which agriculture can best improved nutrition and health are as follows:

- Food: through agricultural production
- Agricultural income: which can be used for food as well as non-food purchases, including health care
- Women's empowerment, nutrition, health, and time: for decision making on household expenditures, caring practices, and time and energy use.

The third pathway is especially important because to have healthy children, mothers need to be healthy and empowered.

Collectively, we can improve nutrition by building upon achievements in food security, especially from the three major staple crops rice, wheat, and maize. The 'Green Revolution' was a remarkable feat that took us from the brink of famine to food security in wheat and rice. However, providing calories is not enough. 'Hidden hunger', or micronutrient deficiency, is widespread throughout the developing world. Diets must contain vitamins and essential micronutrients.

Micronutrient deficiencies cause irreversible damage in children, stunting their growth and inhibiting their brain development and cognition, making it difficult for them to learn at school and perform at work later in life. Biofortification strengthens traditional diets by developing varieties of staple food crops that are rich in micronutrients such as vitamin A, iron and zinc. Ten million people in rural households in Africa, Asia, and Latin America are now growing and eating vitamin- and mineral-rich crops and 27 countries have approved new bio-fortified crop varieties.

Orange-fleshed sweetpotato

A horticulture program, jointly run by the International Potato Center and the World Vegetable Center, increased access to nutritious food for women and school-age children in Bangladesh, through homestead gardens containing vitamin A-rich orange-fleshed sweetpotato and other vegetables. This was complimented with nutrition education provided by community-based scholars. Previous work in Mozambique had shown that a modest scoop of the orange sweetpotato met a young child's daily vitamin A needs, also significantly reduced the impact and duration of diarrhea, a leading cause of death in poor children. The Bangladesh program showed clear improvements in children's nutrition and health. Young children were more likely to meet their minimum dietary requirements and had less anemia, wasting, and diarrhea. The mothers' social status, health and nutrition knowledge, and their own nutritional status, also improved.

Iron-rich beans



by HarvestPlus.

In Rwanda, where 44% of the country’s population suffers from malnutrition and micronutrient deficiency, bio-fortified iron beans reached an estimated 800,000 households in 2014 alone, providing Rwandans with up to 45% of their daily iron needs. The new iron-rich bean varieties were bred by the Rwanda Agriculture Board (RAB) and the International Center for Tropical Agriculture (CIAT) using conventional breeding methods, funded

Fish powder

Worldfish and its partners have developed several complementary food products containing fish. The first was a food powder containing ground fish, rice, and orange-fleshed sweetpotato that is rich in iron, zinc, vitamin A, and calcium. It is also easy to prepare into a smooth porridge, hygienically and safely, and ideal for 6–9 month old infants. Next developed was a fish chutney, rich in iron and essential fats, targeted to pregnant and lactating women. They also developed a high-energy fish powder—rich in iron, zinc, and calcium—which can be added to family meals to provide a nutritional boost.



“Before the project, we only ate the fish from our pond,” says Tsbina Begum, a mother of two from Jogahati village in Jessore district, southern Bangladesh. “But now, not only do we eat them but we also sell them in the market. Twice a week, we catch mola from our pond and eat them with orange sweetpotatoes and their leaves, when they’re in season,”

Photo courtesy [WorldFish](#)

High-zinc rice

Back in Bangladesh, yields and varieties of rice, the country’s dominant staple food, grew by more than 70% between 1997 and 2011, resulting in falling rice prices, increased calorie consumption, and food security. Rice provided an affordable base diet that is available and accessible year-round, in addition to providing an economic boost for producers. However, Bangladeshi diets remain among the least diverse in the world. More than 20 million people, particularly women and children, suffer from chronic deficiencies of vitamin A, iron, and zinc. More than 40 percent of children under five are zinc deficient. In 2014, the Bangladesh Rice Research Institute released a more nutritious variety of rice that can

provide up to 40 percent of daily zinc needs, with yields comparable to other varieties.

Yassir/HarvestPlus may have a photo of this farmer to include.

Humaun Kabir, a farmer from Jessore, said “Initially, I took a risk of cultivating zinc rice,” he says. “But the gamble paid off. I am really happy with the harvest. I will do it in the next season as well.”

Forest food

We don’t always think of forests when it comes to food, but we should. Research led by CIFOR in 2014 showed a statistically positive association between forest cover and dietary diversity across 21 African countries, as well as an association between forests and fruit and vegetable consumption. CGIAR is digging deeper into this in five countries, including Burkina Faso, where we found that, while grain is mostly produced on farmland, leafy vegetables

and fruits are often obtained from trees scattered throughout the landscape. This demonstrates that uncultivated and forested land can offer an important source of the nutritious vegetables, fruits, and animal source foods needed to balance out diets.

Coming together for the future

Central to the strategy for improving nutrition globally is strengthening country leadership, implementation, and accountability. CGIAR can and has played a strong role. CGIAR is strengthening cross-sectoral approaches to nutrition in Africa in collaboration with the *Comprehensive Africa Agriculture Development Programme*, CAADP, and the Scaling up Nutrition (SUN) movement. For example, CGIAR contributed to CAADP's new results framework, through the Regional Strategic Analysis and Knowledge Support System (*ReSAKSS*), which includes an increased emphasis on improved nutrition.

In addition to building capacity and working cross-sectorally, CGIAR also emphasizes evaluation, data, and accountability for its work towards improved nutrition. The first *Global Nutrition Report* in 2014 brought together an international network of nutrition professionals, including CGIAR researchers, supported by IFPRI, to help countries track progress with World Health Assembly indicators, the six global nutrition targets unanimously endorsed by Member States at the 65th World Health Assembly in 2012.

Building on CGIAR research

Addressing malnutrition is a global challenge that requires multi-sectoral action and investment. Agriculture plays a key role, and CGIAR research has emphasized a set of pathways through which agriculture can best contribute to better health and nutrition. By building on past CGIAR achievements, we can focus on other important elements of the food security equation: on improving access to and consumption of healthy, diverse foods that make up a nutritious diverse diet. Effective solutions must emphasize diverse, nutrition-rich, and safe food: from production and processing, through utilization and consumption. CGIAR is committed to working together with implementers, researchers, investors, and leaders, to meet these evolving challenges and to work with other sectors to achieve synergies in tackling malnutrition globally.