



Making Agriculture Work for Nutrition

IFPRI's research has changed the way the international development community thinks about the links between agriculture and nutrition, and highlighted the synergies with health, education, gender, and social protection that can improve poor people's health and nutrition.

The story of nutrition at IFPRI is one that highlights decades-long, groundbreaking work on the synergies between nutrition and agriculture. Early on, in the 1980s, IFPRI focused its research on assessing the effects that economic growth and agricultural development could have on increasing the income of poor households and whether this, in turn, helped reduce childhood undernutrition. Work on agricultural commercialization, for example, investigated whether promoting export crops to boost income—instead of supporting basic staple crops for consumption—would harm the welfare of poor households, as measured by their calorie consumption. The results proved otherwise: agricultural commercialization increased incomes, leading to higher caloric intakes, with little evidence that it harmed nutrition. In fact, as incomes increased, households purchased more expensive sources of calories, possibly improving diet quality. However, the research also showed that calorie consumption grew much more slowly than income, and significant increases in income did not bring about expected health improvements, such as decreases in child morbidity or infections. In other words, improved nutrition was not an automatic outcome of poverty reduction or development. Interestingly, the research also revealed that elevating the role of women and investing in water and sanitation played an important role in improving nutrition outcomes.

Moving beyond Calories

While this research critically improved the understanding of how economic and agricultural growth interact with food consumption, the focus was still on food security, defined as having enough food and calories, rather than nutrition security. In the early days, most economists believed that good health could be best achieved by consuming more energy, presumably from staple food crops like maize, wheat, and rice. While calories are certainly important, IFPRI's research from the 1980s into the 1990s showed that sufficient calorie consumption is not enough: to achieve better growth or less frequent illness, for example, individuals need to consume nonstaple foods and animal products high in vitamins and minerals, known as micronutrients.

In 1993, an IFPRI researcher proposed the innovation of breeding crops to increase levels of micronutrients such as iron and zinc—biofortification. While the idea was initially met with skepticism, donors eventually got on board and the HarvestPlus program was launched with a research grant from the Bill & Melinda Gates Foundation. Its aim was to determine whether micronutrients from new crop varieties could be easily absorbed by the human body and whether farmers and consumers would adopt the new varieties on a large scale.

Nearly 25 years later, HarvestPlus (coordinated by IFPRI, through the CGIAR Research Program on Agriculture for Nutrition and Health, and the International Center for Tropical Agriculture) works with diverse partners in more than 40 countries to reach over two million farmers with nutritious varieties of sweet potato, cassava, maize, beans, rice, wheat, and pearl millet. Recent evaluations of pilot sweet potato extension programs in Uganda and Mozambique showed that farmers adopted varieties at a high rate, women and children got more vitamin A in their diet, and the vitamin A status of children in Uganda improved. When biofortified sweet potato was introduced as part of an integrated agriculture and nutrition intervention, it reduced the prevalence of vitamin A deficiency among children by 15 percent. National-level legislative support for biofortification has spread widely, from Brazil, China, and Panama to Nigeria, Rwanda, and Uganda.

IFPRI's early work succeeded in highlighting the critical role of agriculture not only in producing enough food and calories but also in ensuring that households and individuals have enough of the right types of foods that constitute a healthy and nutritious diet.

Taking a Deeper Look at Gender within the Household

IFPRI's work on agricultural commercialization had hinted that households were not unitary—individuals within a household have different preferences, resources, and vulnerabilities. In the 1980s, the Institute focused on intrahousehold resource allocation and found that additional income in the hands of women is associated with higher per capita calorie and protein intake, as well as faster increases in children's growth. These results linked naturally to gender roles within the household and, in the 1990s, the Institute began to emphasize the central role of women in food and nutrition security and to frame gender as a cross-cutting issue that should be integrated into all research questions. This early work contributed greatly to a “shift in norms [in that] it is now widely accepted that there are alternative models of households to the unitary household,” with implications for the design of poverty programs. The design of the Programa de Educación, Salud y Alimentación (PROGRESA), Mexico's highly successful conditional cash transfer program, for example, benefited from this work in that program designers immediately recognized that resource transfers should be targeted to women to ensure greater benefits for households' food security, health, and nutrition.

Today, IFPRI's wide-reaching gender research program continues to assess the role of women in agriculture and the implications for nutrition. The Gender, Agriculture, and Assets Project, for example, has brought to light the bottlenecks faced by women in accessing critical resources such as land, livestock, agricultural credit and extension, and market information. *The Women's Empowerment in Agriculture Index* provides a validated tool to measure different dimensions of women's empowerment, including decisionmaking, access to resources, and control over income, and tracks the status of women farmers along with the impact of strategies to improve their status. The tool has been endorsed and widely used by the US Agency for International Development's Feed the Future program.

The work is also closely linked with IFPRI's evaluations of integrated agriculture-nutrition programs. Early evaluations of Helen Keller International's (HKI) homestead food production programs, for example, found that while the program had positive impacts on food production and intake, it had little effect on child growth or iron deficiency. The Institute and HKI have since collaborated to improve the program by supporting the involvement of female participants and providing them with intensive education on water, sanitation, and disease prevention, with the new model already generating multiple nutrition and health benefits for both women and young children. This is one example of how IFPRI's partnership with program implementers strengthens the design and implementation of on-the-ground programs, helping them achieve their goals.

From Concept to Practice

While IFPRI's early work examined the links between agriculture and nutrition at a conceptual level, it did not look in depth at the specific ways in which agriculture's contributions to nutrition could be maximized or how, in turn, nutrition could contribute to a more productive and sustainable agricultural system. In the early 2010s, the time was ripe for a number of activities. The Institute held the 2020 Conference on "Leveraging Agriculture for Improving Nutrition and Health" in 2011 in New Delhi. The event, attended by more than 1,000 participants from 65 countries, initiated cross-sectoral shifts in thinking about how to marry nutrition and agriculture, according to an independent impact assessment. CGIAR, for example, moved to create a new research program on Agriculture for Nutrition and Health; the Food and Agriculture Organization of the United Nations evaluated its own work in the nutrition arena; and the UK Department of International Development used the momentum to help push a major expansion of its funding in the agriculture-nutrition-health arena, including significant additional funding for HarvestPlus.

The Institute also continued its longstanding work on the Asian Enigma—the puzzlingly high rates of undernutrition in India and other South Asian countries that persist despite impressive rates of economic and agricultural growth—with the Tackling the Agriculture-Nutrition Disconnect in India (TANDI) project. One important accomplishment of TANDI was to underscore the medi-

ating role that women's status, time, health, and nutrition play in leveraging agriculture to improve nutrition. Another was to clarify and simplify the key pathways linking agriculture and nutrition, identifying specific areas along these pathways where program implementers and policymakers could take action. This understanding is a particularly useful tool in IFPRI's program evaluation work, which increasingly relies on randomized methods to determine whether programs reach their intended recipients, their impact, why and how these impacts are achieved, and which program packages and elements are most cost-effective.

In 2013, IFPRI researchers published a seminal literature review of the impact of nutrition-sensitive programs in agriculture, social protection, education, health, and other sectors in the influential journal *The Lancet*, as part of a new Series on Maternal and Child Nutrition. The highly acclaimed series framed nutrition as part of a multisectoral approach to development that requires all sectors to work together and address both the direct and underlying determinants of nutrition in order to accelerate progress in improving nutrition at scale.

A second article written by IFPRI researchers for the same issue of *The Lancet* stressed the importance of creating an enabling environment for nutrition, that is, favorable social, economic, and political conditions under which nutrition-specific and nutrition-sensitive initiatives can thrive. These key themes are evident in the large global nutrition research partnerships led by IFPRI, such as Transform Nutrition and Leveraging Agriculture for Nutrition in South Asia.

Important Strides outside of Agriculture

IFPRI researchers have made a number of other advances. In 2001, they were the first to draw wide attention to "the double burden of malnutrition," referring to undernutrition and obesity, now widely recognized by policymakers and practitioners. Their work has also confirmed that early nutrition matters for development later in life. In 2006, IFPRI determined that undernourished preschoolers in Zimbabwe were three centimeters shorter than their peers, started school later, and completed fewer grade levels. In 2009 in Guatemala, researchers showed that nutrition interventions in early childhood improved men's hourly wages and men's and

women's reading and cognitive abilities as adults. These findings, described as "one of the most innovative studies in the field of health and development," were the first to show direct evidence of high adulthood returns on preschool-nutrition investments and confirmed IFPRI's hypothesis that nutrition can be a driver for economic growth. They influenced the Copenhagen Consensus, which concluded that investing in nutrition interventions yields more significant returns than many other investments.

During this same time, IFPRI found that a food-assistance-based maternal and child nutrition program in Haiti was more effective at preventing childhood undernutrition when it targeted pregnant mothers and children under two years of age than when it enrolled under-five children once they had become underweight. IFPRI's recommendation to use a preventative rather than a curative approach to tackle childhood undernutrition was adopted by several aid agencies, nongovernmental organizations, and the US Agency for International Development's Title II programming guidelines. Together with the Guatemala findings, it provided the evidence needed for the nutrition community, including the Scaling Up Nutrition movement, to universally adopt the first 1,000 days (from conception to the child's second birthday) as the critical window of opportunity for improving nutrition.

Looking Forward

Much of the work highlighted here formed an early basis for IFPRI's current portfolio of strong policy- and program-relevant research that highlights the links between nutrition and agriculture. What is more, IFPRI's efforts have coalesced into long-lasting relationships with implementing organizations around the world, making

it a true on-the-ground research partner. Looking forward, the Institute will continue to expand its work in important new directions, such as identifying and testing effective platforms to deliver nutrition interventions to adolescent girls and testing innovations in nutrition-sensitive value chains and food systems. These strides will strengthen IFPRI's leadership in increasing knowledge of the synergies between nutrition and agriculture and make an impact on the lives of poor and vulnerable people around the world.

Resources

For IFPRI's nutrition-related research, see <http://www.ifpri.org/topic/nutrition>.

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