

A conversation with PATH, April 24, 2018

Participants

- Katharine Kreis – Director of Strategic Initiatives, Lead, Nutrition Innovation, PATH
- Dr. Megan Parker – Senior Nutrition Research Officer, PATH
- Andrew Martin – Research Analyst, GiveWell

Note: These notes were compiled by GiveWell and give an overview of the major points made by PATH.

Summary

GiveWell spoke with Ms. Kreis and Dr. Parker of PATH as part of its preliminary investigation into PATH's Ultra Rice program. Conversation topics included an overview of Ultra Rice, PATH's work on Ultra Rice in India, its monitoring and evaluation of Ultra Rice, and how it would use additional funding.

Overview of Ultra Rice

Approximately 50% of the world's population consume rice as a staple food. Many regions of the world that most heavily depend on rice, such as South Asia, also experience high rates of vitamin and mineral deficiency. The fortification of rice with micronutrients can be an effective strategy to address this issue.

Fortification of rice with micronutrient powder (a.k.a. dusting)

One method for fortifying rice is applying a "micronutrient powder" to rice kernels. However, in the early 2000s, it was widely recognized that rice fortified with a micronutrient powder was not having a significant effect because consumers were washing the rice and discarding the water, which contained the micronutrients.

Introduction of Ultra Rice

The Ultra Rice technology was developed in 1989 by Bon Dente International, Inc., which donated the patent rights to PATH in 1997. PATH took this opportunity to improve upon rice fortification technologies by collaborating with private companies to enhance the delivery of iron to rice-consuming, anemic populations. Ultra Rice is made by forming a dough with rice flour and micronutrients, using a pasta machine to form the dough into rice kernel-shaped pieces, and blending the resulting fortified rice with normal rice kernels (typically at a 1 to 100 ratio). This method ensures that the micronutrients are protected during the cooking process and are delivered to the consumer. Although PATH tailors the micronutrient formula for Ultra Rice to a country's needs, it is usually fortified with iron, zinc, B vitamins (e.g. folic acid), and vitamin A.

Pilot project in Brazil

During a pilot project introducing Ultra Rice in Brazil, PATH made adjustments to the micronutrient formula and resolved other technical issues. A significant challenge for PATH was ensuring that fortified rice was indistinguishable from the local rice variety, as consumers would likely avoid eating rice kernels of different shapes or colors.

National scale-up and commercialization

PATH began evaluating the commercial potential of Ultra Rice during the national scale-up of production in Brazil. It found that rice millers were receptive of Ultra Rice because broken rice kernels, which are often discarded or repurposed as a less expensive product, could be ground into the rice flour used to create fortified rice kernels. Salvaging broken rice kernels not only increased the profit margins of rice millers but also reduced food waste.

Although PATH attempted to make Ultra Rice affordable to most consumers, the product was largely purchased by higher-income consumers after being introduced commercially in Brazil.

Expansion to India

PATH believed that it could reach significantly more people by expanding Ultra Rice to India, a country in which rice is a staple food and rates of malnutrition are high.

PATH worked with state governments in India to incorporate Ultra Rice into the Midday Meal Scheme, a public distribution system that provides midday meals to schoolchildren. As of 2017, Ultra Rice is being manufactured by three producers in three Indian states and is reaching over one million people in India, most of them low-income schoolchildren.

Ultra Rice in India

PATH commenced its Indian Ultra Rice program in Karnataka state in 2016, serving approximately 500,000 schoolchildren. The government expanded Ultra Rice to an additional 500,000 children in Karnataka in 2017 after recognizing the effectiveness of fortified rice for addressing micronutrient deficiencies. Prior to the Karnataka school feeding program, PATH was involved in various programs and studies documenting the benefits of fortified rice across India.

More recently, Ultra Rice has been expanded to the Indian states of Uttar Pradesh and Gujarat.

Process

PATH hopes to establish Ultra Rice programs that can eventually operate independently of its support. It believes that self-sufficient programs require financial sustainability as well as a strong policy and regulatory environment.

Policy advocacy

Before establishing a program in a new Indian state, PATH ensures that the local regulatory environment is conducive to the production and distribution of Ultra Rice. It has acquired a strong understanding of how to advocate for policy through its experience expanding Ultra Rice to several different locations.

Production and distribution

PATH licenses local companies to produce Ultra Rice and offers them technical assistance for the manufacturing and blending processes. It sometimes also provides manufacturers with financial assistance in the form of equipment used to manufacture Ultra Rice. Local producers, however, must independently secure government contracts through a bidding system.

After Ultra Rice has been produced, it is delivered to the Akshaya Patra Foundation (TAPF) to use for the preparation of school meals, which TAPF then distributes to children through its centralized feeding kitchens.

Behavior change interventions

PATH also supports behavior change programs such as WASH (water, sanitation, and hygiene) interventions in schools receiving Ultra Rice.

Research

In addition to implementing the Ultra Rice program, PATH conducts research to improve the effectiveness of Ultra Rice. For example, in 2013, PATH discovered that the addition of certain micronutrients to the iron-only formulation of Ultra Rice reduced the impact on hemoglobin and anemia in children. Concerned by this finding, in 2015, PATH commissioned an isotope study by researchers from ETH Zurich to determine the cause of Ultra Rice's reduced impact. The studies found that children were not absorbing sufficient levels of iron from Ultra Rice due to the combination of the types of iron and zinc used in the new micronutrient formula. To address this issue, PATH added iron absorption enhancers to Ultra Rice.

Nutritional composition of Ultra Rice

One serving of Ultra Rice in India is equivalent to approximately 33% of a child's daily recommended dietary allowance of the included micronutrients. This augments vitamins and minerals obtained through other foods that a child eats, boosting their daily intake, while reducing the risk that they would get too high a dose. PATH worked with the Indian Ministry of Health and Family Welfare to reach a decision on the appropriate nutritional content of Ultra Rice. After fortified rice was approved by the Food Safety and Standards Authority of India, guidelines were also set on the specific vitamins and minerals to be included in any fortified rice product.

Other programs in India addressing micronutrient deficiency

PATH believes that Ultra Rice in India is a highly beneficial program regardless of whether or not children already consume fortified foods or receive micronutrient supplements, as national rates of iron-deficiency anemia are still high.

Iron and folic acid supplementation program in Gujarat

The Indian Ministry of Health and Family Welfare conducts an iron and folic acid (IFA) supplementation program that distributes IFA tablets to schoolchildren once every week. However, anecdotal evidence indicated that IFA tablets were not being consistently delivered to local schools.

Fortified wheat programs

The target populations for Ultra Rice and for fortified wheat programs do not overlap significantly because in most areas in India, the local population either consumes rice or wheat as a staple food but not both.

Monitoring and evaluation of Ultra Rice

Monitoring activities

As part of its ongoing monitoring activities, PATH conducts monthly onsite tests of each batch of Ultra Rice produced in India. During site visits, PATH tests samples of the micronutrient mixture, fortified rice kernels, and the final blended rice product for correct amounts and ratios of micronutrients.

Impact evaluation

PATH has conducted studies of Ultra Rice's impact on child health outcomes—such as cognitive function, physical activity, hemoglobin status, iron status, and vitamin A status—using representative and random samples of children who receive Ultra Rice from school meals in India. It has also conducted clinical trials that evaluate Ultra Rice's impact on child health outcomes in Burundi and Cambodia.

Use of additional funding

Expansion of Ultra Rice within India and Myanmar

Expansion to different states in India

PATH believes that additional funding could be used to significantly expand the Ultra Rice program within India. It is currently focused on delivering Ultra Rice through school meals, as it believes school-based distribution is a cost-effective and systemic approach to addressing micronutrient deficiencies in a high-risk population (young children).

India's national government has expressed interest in scaling up Ultra Rice, as delivered through school meals, across the entire country. However, for the program to be most effective, malnutrition rates and regulatory environments

across Indian states need to be considered to inform the most cost-effective and useful areas in which to expand.

Scale-up of public distribution in Myanmar

PATH currently licenses the production and blending of Ultra Rice in Myanmar to private companies, and the final product is stocked in grocery stores. It has also been working with the World Food Programme to deliver Ultra Rice to the Rohingya population living in Rakhine state.

PATH believes that with additional funding, it could begin large-scale public distribution of Ultra Rice by working with Myanmar's national government, which has already committed to providing hospitals and sports programs with fortified rice.

Expansion of Ultra Rice to additional countries

PATH could use additional funding to expand Ultra Rice to additional countries. Nations that have expressed interest in Ultra Rice, mainly for its positive impacts on nutritional status and cognitive development, include:

- **Bhutan** – The national government of Bhutan has toured PATH's Ultra Rice operations in Karnataka and is interested in conducting a pilot project of Ultra Rice in Bhutan before scaling up the program.
- **Bangladesh** – Bangladesh, similar to India, operates programs that distribute subsidized foods to vulnerable populations. The Bangladeshi national government is interested in having PATH license local manufacturers to produce Ultra Rice, which could then be delivered through the nation's public distribution system.
- **Ghana** – Rice fortification programs have been established primarily in Southeast Asia and Latin America. In 2017, the Global Fortification Technical Advisory Group identified 12 different countries in West Africa, including Ghana, as priorities for rice fortification. PATH is conducting a preliminary analysis of nutrition and other pertinent factors for rice fortification in Ghana, with plans to eventually introduce Ultra Rice into the country.

Leveraging funding through the Power of Nutrition

PATH could potentially leverage funding from GiveWell to receive a large additional grant from the Power of Nutrition, which has expressed interest in significantly scaling up Ultra Rice and certifying PATH as an implementing partner.

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