

# Fortified rice for the midday meal

A case study of Ultra Rice® in a Naandi Kitchen in Andhra Pradesh

In 2008, PATH and the Global Alliance for Improved Nutrition (GAIN) partnered with the Naandi Foundation to launch a pilot project that provides iron-fortified lunches each day to 61,000 school-aged children in Vishakhapatnam, Andhra Pradesh. The iron-rich meal comes in the form of Ultra Rice—a manufactured, micronutrient packed rice-shaped grain that is blended with traditional rice during the cooking process at Naandi's large centralized facility prior to distribution to local schools. PATH has partnered with Swagat Food Products (P), a pasta and snack foods company in West Bengal, to manufacture the Ultra Rice grains that are purchased by GAIN and Naandi at an affordable price.

## Efficacy

Ultra Rice has been intensively studied to ensure it is efficacious, shelf stable, and acceptable to consumers. Several efficacy studies show that Ultra Rice can improve the iron status and reduce the prevalence of anemia in vulnerable, rice-consuming populations.

- **Schoolchildren:** India's National Institute of Nutrition conducted a study from 2007 to 2008 to assess the impact of iron-fortified Ultra Rice on the iron status of schoolchildren participating in a public-sector funded midday meal program. The study showed a significant increase in the iron stores (measured by serum ferritin levels) of the children that consumed Ultra Rice compared to that of the control group. The children who consumed Ultra Rice also experienced a significant reduction in the incidence of morbidities compared to the control group during the study period.

Similarly positive results were found in Latin America among different demographic groups.

- **Young children (ages 6–24 months):** In 2008, researchers compared the effectiveness of iron-fortified Ultra Rice to iron drops (in supplement form) for improving the iron status of children in Brazil. After five months, the shift from severe to moderate and mild anemia was significantly greater in the group receiving Ultra Rice.
- **Women:** In 2006, researchers conducted a feeding trial of Ultra Rice among women in Mexico. Post intervention analyses indicated daily consumption of iron-fortified Ultra Rice significantly improved the iron status of study participants. The prevalence of anemia decreased by 80 percent in the group of women who received Ultra Rice.

## Operational Feasibility (Blending)

In centralized kitchens, the incremental cost of adding Ultra Rice to the rice-based meals is nominal because the fortified grains are easily blended with traditional rice either during or right before cooking. Kitchen staff simply add a pre-measured amount of Ultra Rice grains to the cooking vessels containing the traditional rice and then stir vigorously to ensure a thorough blend. PATH has tracked the incremental, operational costs associated with adding Ultra Rice to the traditional rice cooked at Naandi's central kitchen and found them to be insignificant.

Ultra Rice is a registered trademark in the United States of Bon Dente International, Inc.



## Naandi's Costs in India

Iron-only Ultra Rice, when blended with traditional rice at a ratio of 1:100, provides half the Recommended Daily Intake for iron

Cost to Fortify	Indian Rupee	US Dollars (USD)
Cost of Ultra Rice grains per	INR 111.86	\$ 2.38*
Cost of 1 metric ton of traditional rice	INR 23,500.00	\$ 500.00
Cost of kilograms of traditional rice	INR 23.50	\$ 0.50
Cost of Ultra Rice in 1 kg fortified rice	INR 1.12	\$ 0.02
Cost of traditional rice in 1 kg fortified rice	INR 23.27	\$ 0.50
Total cost of 1 kg fortified rice	INR 24.38	\$ 0.52
<b>Incremental cost to fortify 1 metric ton of rice (1:100)</b>	<b>INR 83.60</b>	<b>\$ 18.80</b>
<b>Percent premium over traditional rice</b>	<b>3.76 %</b>	<b>3.76 %</b>

\*\$2.38 per kg was the Ultra Rice price for the pilot activity in Vishakhapatnam; future Ultra Rice pricing may fluctuate based on raw material cost, cost of traditional rice, target fortification level in each serving, and other factors.

Cost Per Child	Indian Rupee	US Dollars (USD)
Daily cost to feed child with fortified rice	INR 2.68	\$ 0.06
Daily cost to feed child with rice	INR 2.59	\$ 0.06
Cost to feed a child rice for a year	INR 517.00	\$ 11.000
Cost to feed a child fortified rice for a year	INR 36.44	\$ 11.414
<b>Incremental Cost Per Year</b>	<b>INR 19.44</b>	<b>\$ 0.41</b>
<b>Incremental Cost Per Day</b>	<b>INR 0.10</b>	<b>\$ 0.0021</b>

Calculations based on a price point of 500 USD for 1 metric ton of traditional rice.

Calculations also based on a child eating 100 grams of dry rice over a 200-day period.

Prices are subject to change based on market pricing of raw materials.

Exchange rate of 47 INR to 1 USD.

## Overall Cost

To fortify rice with half the recommended daily intake of iron, Naandi's costs are less than a quarter of a penny per child per day, or \$0.41 per child per school year.