Participating organizations

The International Rice Research Institute (IRRI) is a nonprofit independent research and training organization, the largest in the world focused on rice. IRRI is leading and coordinating this project and is directly involved in breeding, capacity building, and safety research with national partners.

National agricultural research organizations are developing Golden Rice varieties tailored to farmers’ needs in each country. They will also conduct safety research needed by national regulatory authorities.

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References:

For more information, contact:
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The need

Many people in the developing world do not get enough vitamin A or beta carotene from the food they eat, contributing to the serious public health problem of vitamin A deficiency. According to the World Health Organization, an estimated 190 million children and 19 million pregnant women are affected globally.1

- Vitamin A deficiency impairs the immune system, which increases the risk of death from certain common infections among young children. Globally, approximately 670,000 children die every year because they are vitamin A-deficient.1
- It is also the leading cause of blindness among children with approximately 350,000 children going blind each year.1
- Vitamin A deficiency also particularly affects women who are pregnant or nursing as their nutrient needs increase. Vitamin A deficiency can cause night blindness and may increase the risk of death during or shortly after their pregnancy.2

Vitamin A deficiency is often severe in countries where people primarily consume micronutrient-poor staple foods and where other nutritious foods are scarce, unavailable, or too expensive. Rice is the staple food crop for more than half of the world’s population, and is especially important in Asia. Rice is an affordable, filling and popular food, but it is not a source of vitamin A.

Golden Rice

Golden Rice is unique because it contains beta carotene, which gives it a golden color. When people eat food containing beta carotene, it is converted to vitamin A as needed by the body. Recent studies estimate that about one cup of Golden Rice may provide half of an adult’s vitamin A needs.3

Because rice is widely produced and consumed, Golden Rice has the potential to reach many people, including those who do not have reliable access to or cannot afford other sources of vitamin A. Golden Rice is intended to be used in combination with existing approaches to reduce vitamin A deficiency.

Golden Rice was developed using genetic modification, with genes from maize and a common soil microorganism that together produce beta carotene in the rice grain. Golden Rice was first developed by Professor Ingo Potrykus, then of the Institute for Plant Sciences, Swiss Federal Institute of Technology, and Professor Peter Beyer of the University of Freiburg, Germany. It is a gift to resource-poor farmers in developing countries from these inventors. Scientific research and international collaboration on Golden Rice are supported by funding and in-kind donations from the private, public, and philanthropic sectors, and is being developed on a non-profit basis.

Develop Golden Rice varieties suitable for Asia.

Breeders at the Philippine Rice Research Institute (PhilRice), the Bangladesh Rice Research Institute (BRRI), and the Indonesian Center for Rice Research (ICRRI) are developing Golden Rice versions of existing rice varieties that are popular with their local farmers, retaining the same yield, pest resistance and grain qualities. Cooking and taste tests will be done to help make sure that Golden Rice meets consumers’ needs. Golden Rice seeds are expected to cost farmers the same as other rice varieties.

Help assess the safety of Golden Rice.

To help assess the safety of Golden Rice in the environment, field tests and other evaluations will be done in each partner country. Golden Rice will be analyzed according to internationally accepted guidelines for food safety. The national rice research institutes plan to submit all safety information to government regulators, who will review these data as part of the approval process for Golden Rice before it can be made available to farmers and consumers.

Evaluate whether consumption of Golden Rice improves vitamin A status.

IRRI is now collecting information to develop strategies to ensure that Golden Rice could reach farmers and consumers. If Golden Rice is found to be safe and efficacious, a sustainable delivery program will ensure that Golden Rice is acceptable and accessible in vitamin A deficient communities. If approved by national regulators, IRRI and others will continue to work together to introduce Golden Rice as another food-based approach to improve vitamin A status.

The Golden Rice project will:

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Our work aims to develop Golden Rice varieties that grow as well as other varieties.
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Explore how Golden Rice could reach those most in need.

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www.irri.org/goldenrice
Vitamin A deficiency is a serious public health problem affecting millions of children and pregnant women globally. Golden Rice is a new type of rice that contains beta carotene, a source of vitamin A. Golden Rice is being developed as a potential new food-based approach to improve vitamin A status.

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