



## Golden Rice

- The **International Rice Research Institute (IRRI)** and its partners, the Philippines Rice Research Institute and the Bangladesh Rice Research Institute, have successfully cultivated **Golden Rice** in a controlled environment on IRRI campus.
- The safety evaluations have shown that Golden Rice is as safe and nutritious as conventional rice but comes with the added benefit of increased beta-carotene content in the grain.
- This is aimed at covering a vast rice-eating population in the world with high prevalence of deficiencies.

### About Golden Rice

- Golden Rice is a new type of rice that contains **beta-carotene (provitamin A), which is converted into vitamin A** as needed by the body and gives the grain its **golden color**.
- It is **developed through genetic engineering** and produces two new enzymes that complete the beta-carotene expression in the rice grain.
- Research has indicated that one cup of Golden Rice can provide up to 50% of the daily requirement of an adult for vitamin A.
- But presently, it has a **low shelf life of not more than 3 months** as it may lose its nutrients after that.
- Golden Rice can be grown just like ordinary rice and varieties **containing the GR2E Golden Rice trait** have the same yield and agronomic performance as their conventional counterparts.
- It is intended to complement current strategies in the **fight against vitamin A deficiency (VAD)** and is intended to supply up to 30-50 percent of the estimated average requirement for vitamin A for preschool age children and pregnant or lactating mothers.

### Vitamin A Deficiency (VAD)

- Vitamin A is a **fat-soluble vitamin** that is good for healthy vision, skin, bones and other tissues in the body.
- **Source:** There are two types of vitamin A.
  - **Preformed vitamin A**, also called **retinol**, is found in animal products. Good sources are fortified milk, eggs, meat, cheese, liver, halibut fish oil, cream and kidneys.
  - **Pro-vitamin A** is found in plant-based foods such as fruits and vegetables. The most common type of pro-vitamin A is **beta-carotene**, a carotenoid that produces dark pigments in plant foods.
- As vitamin A affects a wide range of body functions, a deficiency can lead to a variety of problems. These include:
  - night blindness
  - a higher risk of infections, especially in the throat, chest, and abdomen
  - follicular hyperkeratosis, leading to dry, bumpy skin.
  - fertility issues
  - delayed growth in children
- Vitamin A deficiency (VAD) **afflicts around 250 million people worldwide**.
- **Women and children are the most vulnerable to VAD**, the leading cause of childhood blindness and inability of the immune system to combat disease.
- Vitamin A availability could prevent 1.3-2.5 million of the nearly 8 million late-infancy and

preschool-age child deaths annually in developing countries with the highest risk.

- **Multiple approaches are needed to combat VAD**, including nutrition education and consuming a diverse and nutrient rich diet; promoting breastfeeding and complementary feeding practices; vitamin A capsule supplementation; **food fortification**; and other public health measures aimed at the control of infectious diseases.

### **International Rice Research Institute (IRRI)**

- IRRI is an independent, non-profit, research and educational institute, founded in 1960 by the Ford and Rockefeller Foundations with support from the Philippine government.
- The institute, **headquartered in Los Baños, Philippines**, has offices in 17 rice-growing countries in Asia and Africa.
- It is the world's premier research organization dedicated to reducing poverty and hunger through rice science; improving the health and welfare of rice farmers and consumers; and protecting the rice-growing environment for future generations.

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