

Genetically Modified Rice

The International Rice Research Institute believes that genetic modification and genetically modified (GM) rice have the potential to safely benefit rice farmers and consumers.

The dawn of agriculture saw the emergence of the world's first rice breeders—farmers. By selecting the best-performing rice plants to cultivate, rice farmers and nature have been changing the genetic composition of rice for thousands of years.

Today, modern breeding helps farmers produce crops that help supply the food requirements of a continually rising population, alongside the challenges of climate change and decreasing resources.



Traditional or conventional breeding accounts for about 95% of all of IRRI's rice breeding research; GM rice research accounts for about 5%.

Why use genetic modification?

IRRI believes that responsible and ethical research and development for GM rice represents another opportunity to help overcome the challenges to food security, and must be explored. Genetic modification and GM rice have the potential to safely provide for the farming and food needs of rice farmers and consumers that cannot be achieved through other breeding methods.

IRRI uses genetic modification only when other methods of breeding have been exhausted and when it offers a potentially very high humanitarian, productivity, or environmental benefit.

Many organizations around the world, including IRRI, are using genetic modification as a tool for research and in developing potential GM rice varieties. Many technologies and rice breeding techniques are needed to develop and deliver solutions that will help overcome the challenges posed by food insecurity, poverty, climate change, and declining resource availability that rice producers and consumers face.

Genetic modification is also used to understand how genes work—even without the intent of developing a new rice variety.

GM rice research at IRRI

Traditional or conventional breeding accounts for about 95% of all of IRRI's rice breeding research; GM rice research accounts for about 5%.

IRRI has not developed any GM rice varieties yet that are commercially available. However, we are doing research on the development and delivery of GM rice that will have:

- Increased photosynthetic capacity to make the rice plant more efficient in using sunlight, water, and nitrogen fertilizer, and thus increase yield (C4 rice); and
- Enhanced nutritional value in the grain, including higher beta-carotene (Golden Rice) and iron and zinc content.

Throughout the conduct of its GM rice research, IRRI adheres strictly to national and international biosafety regulations and ensures that rigorous science is undertaken and independently assessed. IRRI also has its own Institutional Biosafety Committee that oversees the biosafety aspect of all of its GM research.



Golden Rice is the best known and most advanced example of IRRI's research on GM rice. Golden Rice is a new type of rice that contains beta-carotene, a source of vitamin A.



For more information:

www.irri.org
+63 2 580 5600

April 2014

What is genetically modified (GM) rice?

GM rice is one that has had a gene or genes from another species or rice variety introduced into its genetic makeup, using modern biotechnology techniques. The resulting GM rice exhibits the desired traits from the introduced gene or genes.

Currently, no varieties of GM rice are grown commercially. Nevertheless, research and development on GM rice continues to advance globally and is being done by both public and private sectors.