

# Micronutrient Enhancement through Biofortification in Rice

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**Abstract**—Rice plays a pivotal role in Indian economy being the staple food for two thirds of the population. India ranks first in area with 44.62 million hectares, second in production with 31% of calories to Indian diet supplied through rice. But beyond easing hunger pains and providing carbohydrates for energy, it has little nutritional value. Currently, polished rice contains an average of only 2 parts per million (ppm) iron (Fe) and 12 ppm of zinc (Zn). In many Asian countries, rice provides 50–80 percent of the energy intake of the poor but it does not provide enough essential micronutrients to eliminate “hidden hunger,” in particular iron deficiency anaemia (IDA) and zinc deficiency. Bio fortification is the idea of breeding crops to increase their nutritional value. Bio fortification differs from ordinary fortification because it focuses on making plant foods more nutritious as the plants are growing, rather than having nutrients added to the foods when they are being processed. Plants are bred using either Selective breeding and Genetic modification of which selective breeding method is prevalent at present, as it is quicker, cheaper, and less controversial than genetically engineering crops. Rice biofortification program aims at biological and genetic enrichment of food products with vital nutrients, vitamins and proteins. Harvest Plus is a CGIAR initiative which started “biofortification” umbrella through which international agricultural and research centres have made efforts to develop new breeds of staple foods that are rich in vitamins and minerals. The fact that biofortified foods can have an impact on nutritional status in humans is an enormously exciting breakthrough. Now the agricultural research agenda should be shifted and the rice research agenda in particular, away from quantity and toward better-quality food. This may be the start of a nutritional revolution—a very appropriate follow-on from the Green Revolution and one that is desperately needed by millions of the world’s poor and undernourished.

**Keywords:** Rice, biofortification.

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