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Enhancement of grain Fe and Zinc Concentration in Cereals-Biofortification approach

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Micronutrient malnutrition alone afflicts more than two billion people, mostly among resource-poor families in developing countries, with Zn, Fe, I and vitamin A deficiencies most prevalent globally. More than five million childhood deaths occur from micronutrient malnutrition every year. Currently, mineral malnutrition is considered to be among the most serious global challenges to human kind and is avoidable. Among different micronutrients, Fe, Zn, deficiency is a well-documented problem in food crops, causing decreased crop yields and nutritional quality. Generally, the regions in the world with Fe, Zn-deficient soils are also characterized by widespread Fe, Zn deficiency in humans. Recent estimates indicate that nearly half of world population suffers from Fe, Zn deficiency. Cereal crops play an important role in satisfying daily calorie intake in developing world, but they are inherently very low in Fe, Zn concentrations in grain, particularly when grown on Fe, Zn-deficient soils. The reliance on cereal-based diets may induce Zn deficiency-related health problems in humans, such as impairments in physical development, Immune system and brain function. Among the strategies being discussed as major solution to Fe, Zn deficiency, genetic biofortification appears to be a most sustainable and cost-effective approach useful in improving Fe, Zn concentrations in grain. Scientific evidence shows this is technically feasible without compromising agronomic productivity.

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