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Biofortification: Breeding for 'hidden hunger', and prospects in *Sorghum*

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Micronutrient malnutrition, often known as 'hidden hunger', affects more than one-half of the developing world's population. Micronutrient deficiency especially that of iron, zinc and vitamin A affects more than 2 billion people, the most affected being women and preschool children. It leads to poor health and reduced output from the workforce, thus impacting national socioeconomic development. As staple foods form major part of the diet of poor people, these must supply micronutrients in required quantity. Nutritional improvement of the staple crops to promote human health didn't get sufficient priority as increased productivity and profitability were the focus of Agricultural research so far. Biofortification – the development of micronutrient-dense staple crop cultivars using the best traditional breeding practices and modern biotechnology is a powerful tool in this regard as it provides a cost-effective, sustainable, and long-term means of delivering more micronutrients to target populations and can significantly improve the health status. Biofortified crop varieties can be obtained through breeding, when sufficient genetic variability is present in the diversity spectrum or by exploiting transgressive segregation or heterosis.

Sorghum [*Sorghum bicolor* L. (Moench)] is the fifth most important cereal crop by area planted in the world, and supports more than 300 million lives in the arid and semi-arid tropics of Africa and Asia. It is a principal source of energy and nutrients for poor people, and is nutritionally superior with more micronutrients compared to fine cereals. In India, *Sorghum* is the fourth most important cereal consumed with annual per capita consumption up to 54 kg in rural areas and up to 34 kg in urban areas. Large genetic variability for grain iron (12-83 mg/kg) and zinc (6-51 mg/kg) contents as well as high heritability has been reported in sorghum. Significant variability for grain iron and zinc in the landraces and core collection accessions also has been found at ICRISAT, Patancheru. Thus, biofortification in sorghum appears to be a feasible strategy to alleviate the micronutrient malnutrition among the rural poor considering the high intake of sorghum in the major production/consumption regions in India.

Biography

Hariprasanna K has completed his MSc and PhD in Genetics (1996-2002) from Indian Agricultural Research Institute, New Delhi, and joined ARS of ICAR in 2003. Presently he is working as Senior Scientist (Plant Breeding) at DSR, Hyderabad. His research areas include genetic augmentation of sorghum parental lines and hybrid development, identification of molecular markers related to combining ability and heterosis, improving grain protein quality, etc. He is Co-PI for DBT funded project on sorghum Biofortification in collaboration with ICRISAT. He is acting as referee for a number of Indian and International journals, and actively involved in technical editing.

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