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Agronomic biofortification of zinc in basmati rice cultivars grown in soils of divergent characteristics

V. Girija Veni

Central Research Institute for Dryland Agriculture (CRIDA), India

Abstract

Cereals are the major energy source for a large proportion of the world population. Consequently, reliance on a high proportion of cereal-based diets is now inducing health problems due to poor grain nutritional quality that is mainly due to low micronutrient content. As a result more than 2 billion people in the world are affected by Micronutrient malnutrition. According to WHO, (2002) Zinc (Zn) deficiency ranks fifth leading risk factor for disease in the developing world. Thus, increasing concentrations of Zn in cereal grains is, therefore, an important global humanitarian challenge. Hence, a study was carried in Indian Agricultural Research Institute (IARI) to enhance the Zn density in the grains of three basmati rice cultivars containing low, medium and high Zn after screening the available germplasm in IARI. Their response to different sources and rate of Zn fertilization was studied in soils of divergent characteristics. The results showed that the three cultivars (CSR 30, Pusa Sugandh-5 and Pusa Basmati-6) differed in Zn accumulation in the grains. The Zn application through $ZnSO_4$ in the form of basal and biweekly foliar application has increased the Zn content up to 30.34 mg kg^{-1} which is near to have a measurable biological impact on human health.

Key words: micronutrient malnutrition, Zn deficiency, basmati rice cultivars, divergent soils

Biography

V. Girija Veni completed her PhD thesis work and yet to submit her PHD thesis. At the same time, she got posted as scientist in CRIDA, Hyderabad. At present she is working in NICRA (National Initiative on Climate Resilient Agriculture) network project under Dr. S. Dixit and Dr. Ch. Srinivas Rao. She was awarded ICAR JRF during 2007, CSIR (JRF+ lecturership) during 2010 and first rank in ARS (Agricultural research service) during 2010-11.