



Category: Plant Genomics

Analysis of iron and zinc homeostasis in barnyard millet through transcriptome and ionome approach

V. Vijay Prabha¹, S. Varanavasiappan², M. Raveendran² and P. Jeyakumar¹

¹Department of Crop Physiology, Tamil Nadu Agricultural University, Coimbatore 641003, INDIA

²Department of Plant Biotechnology, Tamil Nadu Agricultural University, Coimbatore 641003, INDIA

Presenting author: prabhavijay.v@gmail.com

Abstract

Iron (Fe) and Zinc (Zn) are the most essential micronutrients needed for the growth and metabolism of higher plants. Fe and Zn has important role as a component of various enzymes that are involved in chlorophyll biosynthesis, photosynthesis and seed development. Plants have evolved with multifaceted Fe and Zn homeostatic mechanisms that regulate its acquisition from the environment and the movement between organelles, cells, tissues, and organs. In addition, Plant establishes a tightly controlled system including metal specific uptake transporters and transcriptional regulators to balance the uptake, utilization and storage of metal ions. Barnyard millet (*Echinochloa frumentaceae*), one of the minor millets is superior in Fe and Zn content compared to the most widely consumed cereals like rice and wheat. In the present study, ionomic profiling of grains of several barnyard millet accessions revealed that accession ACM-10-145 accumulates high Fe and Zn content (Fe: 14.5 mg/100g; Zn: 2.18 mg/100g). Furthermore, transcriptomic studies are in progress to understand the key factors involved in metal uptake and translocation in barnyard millet. The research outcome could be exploited for biofortification program in cereals.

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