



Agronomic biofortification to fight zinc malnutrition

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Usman Zulfiqar, Ph.D. student and lead author of the study, working on digestion of rice grain samples

Usman Zulfiqar, Ph.D. student and lead author of the study, working on digestion of rice grain samples for determination of grain Zn concentration. Photo by Aqib Hussain.

Zinc (Zn) malnutrition is a major global health issue associated with cereal-based diets. Conventional and molecular plant breeding, genetic modification (transgenic technologies), and agronomic interventions including appropriate fertilizer applications are the possible tools that are used for the biofortification of food crops with Zn.

In an article recently published in the *Crop Science*, Dr. Saddam Hussain and his team reported the comparative effects of various Zn application methods (seed coating, seed priming, soil application, and foliar application) on yield and grain biofortification of rice planted in puddled transplanted and direct-seeding systems.

The researchers found that Zn application through either method improved the rice yield (ranging from 13 to 23%) and the highest grain yield was observed with Zn seed

priming. However, grain Zn concentration was the highest with seed priming in puddled transplanted rice (33% over control) and with soil application in direct-seeded rice (45% over control). These results suggest that Zn enrichment in grains through seed priming and soil application can be helpful to combat the Zn malnutrition problem, using nutrition to alleviate several syndromes caused by Zn deficiency in rural and peri-urban communities.

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Zulfiqar, U., Hussain, S., Maqsood, M., Ishfaq, M., & Ali, N. (2020). Zinc nutrition to enhance rice productivity, zinc use efficiency, and grain biofortification under different production systems. *Crop Science*. <https://doi.org/10.1002/csc2.20381>

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