

Entry No. IRRC-0281

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| Category | : International Rice Research Conference |
| Select Theme | : Pathways to health and nutrition |
| Endorsement email | : |
| Keyword 1 | : Biofortification |
| Keyword 2 | : Food security |
| Keyword 3 | : Nutrition security |
| Title of Entry | : Agronomic Biofortification of Rice with Zinc and Iron in Bangladesh |
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| Select only one type of presentation | : 15 minute oral presentation |
| Abstract | : Biofortification is a process of adding nutrients to food crops (e.g. rice, wheat, lentil) through breeding or agronomic approach. The majority people of Bangladesh are taking Zn and Fe through foods less than the Recommended Daily Intake (12 ppm Zn, 17 ppm Fe). Rice is the primary resource of calorie intake for this country's people. The present study was done with an objective of improvement of yield and biofortification of Zn and Fe in rice by fertilizer application and crop variety selection. A series of field trials with rice were carried out over two years (2015 & 2016) in calcareous and non-calcareous soils having low Zn status. |

Twenty-nine varieties for Boro rice (January - May) and 36 varieties for T. Aman rice (July - November) were tested under four treatments: T1: Zn0Fe0, T2: Zn3Fe0, T3: Zn0Fe4 & T4: Zn3Fe4; the subscripts represent the dose in kg ha⁻¹. Zinc and Fe were supplied as ZnSO₄.7H₂O and FeSO₄.7H₂O, respectively. Other nutrients viz. N, P, K & S were used at their recommended rates for all plots. The layout was made following split-plot design with three replications. The grain yield of Boro rice due to Zn application increased depending on the varieties and years 2.5-28.8% in non-calcareous and 4.5-32.3% in calcareous soils. The corresponding increment for T. Aman rice was 1.0 - 26.8% and 1.0-33.3% in the two soils, respectively. Iron fertilization had no effect on rice yield. The grain-Zn concentration generally increased with Zn application and the grain-Fe increased with Fe application. However, not all varieties were equally responsive to Zn fertilizer application in terms of grain yield as well as grain-Zn concentration. Based on Zn concentration and yield improvement, the rice genotypes as identified were Kheyliboro, BRRI dhan47, BRRI dhan64, BRRI dhan66, Binadhan-5 & Binadhan-17 for Boro rice, and BRRI dhan30, BRRI dhan32, BRRI dhan39 Binadhan-7, Binadhan-11, Kutiaugni, Kalogira, Biroi, Hori & Kumri for T. Aman rice. The results suggest that biofortification by use of fertilizer and selective cultivars could be an effective strategy to reduce malnutrition of people whose major diet is rice based.

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