

IMPACT OF NITROGEN AND ZINC CO-FERTILIZATION ON GROWTH VARIABLES, YIELD AND MICRO-NUTRIENTS BIO-FORTIFICATION IN RICE

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Executive Summary

The study was conducted at the Research Farm of the Department of Agricultural Botany, Sher-e-Bangla Agricultural University, Dhaka-1207 during November, 2021 to May, 2022 in *Boro* season to analyze the influence of nitrogen and zinc co-fertilization on the growth, yield and micronutrients bio-fortification in rice. The experiment included three doses of N (100, 130 and 160 kg ha⁻¹) and four doses of Zn (0, 2, 4 and 6 kg ha⁻¹) fertilization. The experiment was laid out in a Randomized Complete Block Design with three (3) replications. Results showed that tillers hill⁻¹, LAI, flag leaf chlorophyll content, CGR and biological yield (BY) were progressively increased with the integrated use of higher nitrogen (160 kg N ha⁻¹) and zinc rates (6 kg Zn ha⁻¹). Combination of N₃Zn₂ (160 kg N ha⁻¹ and 4 kg Zn ha⁻¹) produced the highest grain yield (8.91 t ha⁻¹) attributed by panicles hill⁻¹, grains panicle⁻¹ and 1000-grain weight, and it was 85.63% higher grain yield over the N₁Zn₀ (100 kg N ha⁻¹ and no zinc). The application of 160 kg N ha⁻¹ (N₃) increased the concentration of Fe, Mn, Cu and Zn in rice grain by 14.95%, 8.28%, 16.36% and 10.34%, respectively compared to the dose of 100 kg N ha⁻¹ (N₁). The concentration of Fe, Zn and Cu in rice grain gradually increased up to application of 4.0 kg Zn ha⁻¹ and in comparison with the control, by about 12.67%, 5.90% and 8.50%, respectively. Similarly, the concentration of Mn was increased by 5.67%. Therefore, N and Zn co-fertilization with high doses can be a good means of micronutrients bio-fortification and yield improvement in rice.

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