

EFFECT OF ZINC AND COPPER FERTILIZATION ON RICE YIELD AND SOIL/PLANT CONCENTRATIONS

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ABSTRACT

A study was conducted to evaluate the uptake of zinc(Zn) and copper(Cu) by rice, cv. IRRI-6, and their role in yield potential at Agricultural Research Institute, Ratta Kulachi, Dera Ismail Khan during Kharif 2000. Zinc and copper were applied at the rates of 5, 10, 15 kg ha⁻¹ alone and in combination, in the form of sulphate salt, alongwith the basal dose of 120 kg N + 120 kg P₂O₅ + 100 kg K₂O ha⁻¹. A check without zinc and copper was also included. The results showed that number of panicles m⁻², dry matter, 1000-grain weight and grain yield were significantly affected by Zn and Cu fertilization. Maximum number of panicles m⁻² (356.7), dry matter (15230 kg ha⁻¹) and grain yield (5312 kg ha⁻¹) were observed in the treatment receiving Zn alone @ 10 kg ha⁻¹ while 1000-grain weight was found maximum in the treatments where Zn & Cu were applied @ 10 kg ha⁻¹ each. Zn and Cu were determined in soil and leaf samples at panicle stage of growth. The results showed that zinc and copper contents in soil and leaves of rice were directly related to incremental application of these elements. The highest values of Zn and Cu in soil and or leaves at panicle stage were found in the treatments receiving both Zn and Cu at the rate of 15 kg ha⁻¹. Comparative effects of Zn and Cu on paddy yield indicated more response to Zn as compared to Cu. Based on yield potential, critical levels of zinc were found to be 2.40 and 48.25 mg kg⁻¹ in soil and leaves at panicle stage, respectively. The study suggested that Zn @ 10 kg ha⁻¹ was the optimum dose for rice under prevailing soil conditions of Dera Ismail Khan.