

Title: Agronomic Performance of Mung Bean as Affected by Basal Zinc Supply and Cadmium Contamination

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Abstract: Zinc (Zn) deficiency and cadmium (Cd) toxicity in soils are both responsible for poor agronomic performance of crops. Mung bean was grown in a greenhouse under Cd contamination. Zn was applied to reduce the adverse effect of Cd on growth and yield of Mung beans. Zn and Cd rates (mg kg^{-1}) were 0, 5, 10, 20 and 0, 2, 4, respectively. Basal Zn supply boosted about 26% of yield and replenished 30% yield loss of Mung beans due to Cd contamination. Approximately 35% decline of grain yield was found due to Cd contamination in the soils as compared to Cd control. The decrease in grain yield per plant under Cd toxicity conditions was the result of reduced number of seeds per pod, 100 seed weight and number of seeds per plant. Improved grain yield was due to a significant increase in the number of pods, number of grains per pod and 100 grain weight owing to enhanced chlorophyll pigments in Mung bean leaves. Among the basal Zn application @ 5 mg Zn kg^{-1} soil was the best viable option to obtain a larger yield of Mung beans for Cd contaminated soils.

Keywords: Cadmium toxicity Zinc fertilization Mung bean yield Heavy metal stress Soil contamination and remediation

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