

Efficacy of crushed ore colemanite as boron fertilizer for rice grown under calcareous soil conditions

ABSTRACT

Boron (B) deficiencies occur over a wider range of soils and crops in the world. Different sources of fertilizers are used to supply sufficient amounts of B for healthier plant growth. The effectiveness of crushed ore colemanite as B source for rice crop under flooded calcareous soil was evaluated in a glass house study. We studied the effects of powder colemanite (PC) and granular colemanite (GC) at the rates of 0, 1, 2, and 3 kg B ha⁻¹ on growth and yield parameters of rice crop. Powder colemanite application at 2 and 3 kg B ha⁻¹ significantly increased plant height, number of tillers and panicles plant⁻¹, number of grains panicle⁻¹, weight of 1000 grains and B concentration in grain compared to those observed due to application of 0 and 1 kg B ha⁻¹. Rice crop applied B at 3 kg ha⁻¹ in the form of PC produced significantly (18% increase over control) higher grain yield than 0 kg B ha⁻¹ treatment. The effectiveness of PC was higher in terms of yield and yield parameters of rice than the GC, The B source of PC was very effective in supplying B to rice crop, however GC applied pots produced significantly lower yields because of its larger particle size which was the controlling factor in B release from the fertilizer.

Keyword: Boron; Calcareous soil; Colemanite; Rice; Rice grain