

NUTRIENT AVAILABILITY IN CALCAREOUS SOILS AS AFFECTED
BY SULPHUR AND ZINC APPLICATION

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ABSTRACT

The effect of S-application on plant availability of nutrients, was studied in two calcareous soils, of widely different CaCO_3 content and clay/ CaCO_3 ratio. The effect of zinc application to Zn-deficient highly calcareous Dirab soil, was also compared with that of S-application. The experiments were carried out in the greenhouse, using 0.5, 1.0 and 1.5% elemental sulphur and 2, 4 and 8 ppm Zn as Zn SO_4 .

S-application had no significant effect on dry matter of barley plants and the uptake of N, P, K, Mn and Zn in highly calcareous Dirab loamy sand of low clay/ CaCO_3 ratio, while the uptake of Fe generally increased. On the other hand, dry matter of barley plants and the uptake of N, K, Fe, Mn and Zn were significantly increased by S-addition to low CaCO_3 Qasseem sandy loam of high clay/ CaCO_3 ratio. Fe and Mn-uptake were affected most, whereas Zn-uptake was least affected by S-addition in Qasseem soil. S-application to Zn-treated highly calcareous Dirab soil had generally no significant effect on dry matter of barley and the content and uptake of all studied nutrients. Zn-addition to this soil, however, considerably increased dry matter of barley plants and their uptake of N, P, K, Fe, Mn and Zn.

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