B22

EFFECT OF SOIL MOISTURE AND BULK DENSITY ON K UPTAKE BY CORN

B.V.R.Punyawardena, L.G.G.Yapa and G.Keerthisinghe
Dept. of Soil Science, Faculty of Agriculture
University of Peradeniya

Though it has been well established that moisture stress and excessive bulk

density inhibit root growth and consequently retard nutrient uptake, supportive data are scarce for Sri Lankan soils especially for highland crops. A pot experiment was conducted using Reddish Brown Latosolic soils with three levels of soil moisture (12%, 15% and 18%) and bulk density (1.00, 1.15 and 1.3 mg/m^3) at three K levels (0, 100 and 200 ppm). Exchangeable potassium and the K uptake were evaluated at 2, 4, 6 and 8 weeks after planting.

Generally, K uptake of all moisture and potassium levels was higher in the highest and lowest bulk density treatments than in the moderate level except for the first sampling stage. This trend was prominent with the increasing moisture and K levels. The increased K availability at the lowest bulk density may have been due to the fact that the root growth was not retarded due to low soil strength whereas in the highest level the amount of soil per unit volume was higher and the K diffusion was possibly enhanced due to increased number of micropores. Exchangeable K did not clearly reflect the K uptake as the remaining quantity of exchangeable potassium in the soil increased with the increasing bulk density irrespective of soil moisture and K levels.