THE INFLUENCE OF MAGNESIUM DEFICIENCY ON PHOSPHATE ABSORPTION BY SOYBEANS

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There is abundant evidence that the assimilation of phosphates by plants is dependent on the supply of available calcium, but recently it has been suggested \(^3\) that phosphates are not efficiently utilized where magnesium is deficient. If this be true, the matter of phosphate assimilation from the sandy soils of the South Atlantic states, where magnesium deficiency is frequently so acute as to produce definite symptoms in practically all cultivated crops, should be one of considerable concern.

Two of these soils, Durham sandy loam and Norfolk sandy loam, are in many instances so deficient in magnesium as to require fertilization with some magnesium compound, and the deficiency is almost invariably accentuated by the application of non-magnesian lime.

An experiment including these two soils furnishes some data on the influence of calcium and magnesium on the absorption of phosphates.

Eight inches of the A horizon of these two soils underlaid by a foot of clean washed sand was placed in 24-inch glazed terra cotta drain tiles set in the ground in the open.

Pure calcite and pure dolomite, finely ground, were applied at the beginning of the experiment at rates indicated in Table 1. One of each of the lime treatments received potassium sulfate, one no potash, and one potassium chloride, and all the tiles received uniform amounts of mono-ammonium phosphate annually.

Soybeans were planted each year and cut just before maturity when the leaves began to be shed. Calcium, magnesium, and phosphorus were determined in samples of the air-dried plants. The data

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\(^1\) Contribution from the Department of Agronomy, North Carolina Agricultural Experiment Station, Raleigh, N. Car. Published with the approval of the Director as Paper No. 61 of the Journal Series. Received for publication, September 18, 1933.

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