The Influence of Sulfur on the Yield and Composition of Clovers Fertilized with Different Sources of Phosphorus

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EXPERIMENTAL evidence is accumulating in the United States to support further the assumption of the Russian chemist, Bogdanor, that the natural supply of sulfur might not be sufficient everywhere for the normal growth of some crops. Sulfur-deficient areas and growth responses to applications of sulfur have been reported for 12 states and from 3 provinces in Canada. Sulfur deficiencies may also exist in other states since it has been shown by improved techniques that the annual amount of sulfur supplied by precipitation in rural areas might be insufficient to replenish that lost by leaching and removed by crops (1, 7).

The annual amount of sulfur obtained through rainfall in Florida is not known, but it is no doubt low and may be expected to range between 3 and 6 pounds per acre in the Gainesville area as reported for rural sections of southern Alabama (7). Due to the high annual rainfall and leaching, with the possibility of a relatively low amount of sulfur in the atmosphere of that area, it was assumed that the available soil sulfur might be insufficient for maximum yields of leguminous plants. Furthermore, reported results show that clover yields frequently were increased on some soil types when superphosphate was used as the source of phosphorus or when other forms of phosphorus were supplemented with superphosphate (3). The increased yields might have been due to the sulfur of the superphosphate rather than the availability of phosphorus since the clovers did not differ appreciably in phosphorus content regardless of the source of phosphorus.

This paper presents some preliminary results of a detailed experiment on the effects of sulfur fertilization on the growth and chemical composition of two clovers.

EXPERIMENTAL PROCEDURE

The experiment was established on a virgin Leon fine sand which, at a depth of 0 to 4 inches, had a pH value of 4.3 and a base exchange capacity of 6 m.e. per 100 grams of dry soil. The soil is typical of a large portion of the flat pine land in peninsular Florida.

The fertilizer treatments were applied to plots randomized in three replicated blocks. A uniform application of high calcium limestone at the rate of 2,600...