Effects of Level of a Fertilizer Element on the Uptake and Concentration of That Element and Other Elements in a Plant

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In work with the foliar diagnosis of plants, decisions as to the need or sufficiency of an element are based on the concentration of that element in the plant at time of sampling. The level of the element in the plant, however, is influenced both by its concentrations in the soil and the plant, and by the concentration of the other elements present in these two mediums. This study is concerned with the effect of the level at which a fertilizer element is applied on the uptake and concentration of that element and of other elements in the material from greenhouse experiments with sorghum and field experiments with sugar cane and coffee, a wide range of Puerto Rican soils was utilized in this study.

PROCEDURES

The sorghum plant material was obtained from tests on the available nutrient contents of Puerto Rican soils conducted by Capó (2). The details of the greenhouse procedures have been described in a previous publication (2). The fertilizer levels utilized in these experiments and the mean yields and nutrient contents of the sorghum are given in table 1. The sugar cane-plant material was obtained from field experiments in which different levels of nitrogen (N), phosphate (P₂O₅), and potash (K₂O) were applied. Leaf samples were taken from this experiment and lime. The treatment levels and nutrient contents for this experiment are given in table 3.