THE NUTRITIVE RELATION OF COPPER ON DIFFERENT
SOIL TYPES IN FLORIDA

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In recent years a number of papers dealing with the influence of copper salts on life processes have been published. Space will not permit a resumé of the literature here, but in general the results indicate that copper contributes to the life processes in a number of ways, namely, (a) oxidizing catalyst, (b) nutritive, (c) neutralizer of toxins, (d) fungicidal, and others. The exact function of copper on the life process is still obscure, yet the economical value of this element in agriculture, either as a fungicide or direct treatment of the soil, is well recognized in certain areas. Its use as a soil amendment has been increasing in importance within recent years.

The fact that copper is stored in the liver and other vital organs of newly born animals and in seeds of plants suggests its universal need in the metabolic processes of life; but because of the lack of refined chemical methods, it is difficult to demonstrate the exact function of copper in the life process. This is also true of other less abundant elements in plants, as well as some of the more abundant ones, such as potash which is indispensable, yet not known to exist as an integral part of proteins, carbohydrates, and fats.

Certain publications (~, 3, 4, 15, 17, and 19) indicate that copper is indispensable in the forage plants on certain soil types; moreover, that the copper content of some soils may be too low for normal plant growth. Other publications (3, 8, 13, 14) indicate that copper is necessary for animal metabolism. Assuming that copper is nutritive, then it would be logical to expect a greater deficiency of this element in poor soils than in productive soils.

The nature of Florida soils, being comparatively low in metals (6), offers an opportunity to study the possible nutritive relations of copper on plant growth. The object of this paper is to determine the behavior of plants with varying amounts of copper on a variety of soil types.

METHODS OF STUDY

Representative samples of soil were collected from areas of virgin soils known to be inherently poor and on which “salt sick” of cattle was known to occur. “Salt sick” (3) is a disease of cattle resulting from a deficiency of iron and copper in the forage food. For comparison, samples were also collected from productive soils. In all cases composite samples of the surface 6 to 7 inches of soil were collected. The soils were then brought to the greenhouse and mixed individually and equal amounts (1 kilogram) of each soil placed in glazed earthenware jars. Each culture was then given 1 gram of the following nutrient mixture to supply the

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3Figures in parenthesis refer to “Literature Cited”, p. 813.