THE DIAGNOSTIC VALUE OF PLANT SYMPTOMS IN DETERMINING NUTRIENT DEFICIENCIES OF SOILS

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Determining the nutrient deficiencies of soils is one of the most important of agronomic problems. The success of the farmer, the economical and intelligent use of fertilizers, and, in fact, a continued adequate food supply depend to a considerable extent upon how readily soil deficiencies can be recognized and how efficiently such information can be utilized. Numerous methods have been proposed for estimating the nutrient deficiencies of soils. There are the chemical methods, the micro-biological methods, the vegetation pots methods, and the field plat methods.

THE OBJECT OF DIAGNOSTIC METHODS

The object of all these diagnostic methods is to detect nutrient deficiencies, to distinguish which of the several nutrients is lacking, and to estimate the amounts needed to give the maximum yield and quality in crops. This at once centers them around the plant, or particular crop grown, and makes it necessary to judge their effectiveness by the precision with which they indicate just what the plant is lacking. The plant, if given careful study, can assist very much in this regard. By its unusual growth characteristics, by the variation in foliage colors, and in other ways, it is often possible to judge what is lacking and to determine the treatment necessary.

INVESTIGATIONAL WORK

In investigational work designed to study particular soil deficiencies, plant symptoms can be used to advantage. An excellent illustration of this is afforded by the study (3) with magnesium made at the Massachusetts Agricultural Experiment Station. On one of the old experiment fields, a soil condition developed which caused a chlorosis on corn, manifesting itself chiefly by a striping of the leaves. The tissue between the veins turned yellow, and in the late stages brown, while that immediately surrounding the veins retained the normal green color. After considering a number of the

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2 Agronomist.

3 Reference by number is to "Literature Cited," p. 356.