UTILIZATION OF THE SOIL SURVEY IN CROP EXPERIMENTAL WORK.

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In this brief discussion I will have in mind only such conditions as are found in Tennessee and similar parts of the South where residual soils predominate. Unfortunately I am not in the possession of the experimental data which would enable me to speak with full assurance on all phases of the subject. The Tennessee Station has, however, conducted numerous crop experiments on widely different types of soil and out of the accumulated data I will try to draw such conclusions as I have reached during my experience of the past 30 years.

The Factor of Soil Requirement.

The Bureau of Soils surveys describe the general productivity conditions, but have not attempted to give the soil requirements, other than to make simple suggestions such as appeared appropriate to the survey workers. Suggestions of this kind, also indications reached from wire basket experiments, have not been proven of special value, but may call attention to the need of further information. When, however, the soil requirements have been determined at even one representative locality, the soil survey becomes doubly useful elsewhere on that type in the making of crop recommendations, for regard must always be had to the crop requirements. Alfalfa has a high lime requirement. Lotus, a legume resembling alfalfa in general appearance, has a low requirement. The lime requirement of crimson clover is less than that of red clover, which in turn is less than that of alfalfa. Barley thrives on an abundance of nitrogen and will make good use of an amount that would be too much for either wheat or rye. Considerable caution in the making of recommendations, both as to crop adaptability and special soil requirements, must, however, be exercised for soils of similar color and texture but originating from the decomposition of different geologic strata are apt to differ appreciably in plant food requirements. Also soils of the same origin vary with the lay of the land, kind of farming that has been practiced and the length of time under cultivation. For these reasons crop experiments under a number of different conditions may be necessary to determine both, what crops are capable of being advantageously grown, and what varieties should be used on a given type of soil as surveyed.

Crop and Varietal Adaptability.

That light soils are especially well suited to truck crops and that heavier types are preferable for wheat and grass has long been known. Outside of similar broad generalizations, however, the special adaptability of a crop to a special texture of soil seems to be a matter of uncertainty, but the results of experiments of the kind heretofore described indicate that the type of soil may determine the variety of a crop that may be successfully grown on a given soil.