The soil type in its broadest sense is generally accepted as the basis for establishing field experiments, or to state this in more practical terms, the experiment field is used as a basis for determining on a particular soil type certain requirements which may be necessary either to maintain or increase profitably and permanently its crop producing power. It does not necessarily follow that one experiment field on a single extensive soil type will answer this question. Soils of the same type often vary greatly in their response to treatment due to many factors, some of which may be such that they cannot be readily altered or controlled. There is in the field work conducted in this state, some very good examples of this particular point. One of our fields which is located on a soil type described as yellow-gray silt loam which was formerly timbered. The results secured on this field during the past twelve years show that there can be no successful cropping on this land without a liberal use of limestone, while the use of phosphorus so far has given only small and unprofitable gains. Another field located on the same soil type but in another locality has shown opposite results. Limestone is of no particular value on this field and the use of phosphate produced large and profitable gains. This is one example of several which might be cited indicating that field results obtained in one locality may differ from those obtained in another, although they both be located on the same soil type, according to the Illinois method of soil classification. This might tend to show that experiment field work at least in its earlier stages of development to be of the most practical value should be extensive rather than intensive. Field experiments also should be of long duration in order to determine if a continued treatment will in time overcome the differences in production found in various soil types, and within the same type. A soil survey to be of the most practical value must extend over a large area, and an extensive system of field experiments should go hand in hand with an extensive system of soil survey. One cannot develop its fullest possibilities without the other.

The University of Illinois in its soil investigational work has followed the plan of locating one or more experiment fields on each of the extensive soil types of the state. A plan similar to this is followed in many states, and particularly in Iowa, where a very extensive system of field experiments is being used in connection with an extensive system of soil survey. The field work in Illinois on various soil types was begun in 1901, and since that time there has been established over fifty experiment fields. At the present time there are in the state thirty-eight experiment fields, exclusive of the home station at Urbana. Thirty-four of these fields are devoted almost exclusively to soil fertility problems and represent ten distinct soil types.

Upon these various fields there has been used a definite system of soil treatment which includes the use of legumes, crop residues and animal manures to supply nitrogen and organic matter, ground limestone to correct acidity and supply calcium and magnesium, rock phosphate to supply phosphorus and kainite to supply potassium. This plan of soil treatment has been applied without variation to the various soil types of the state. The object has been to determine the influence of a simple and economical system of soil treatment found to be practical in its application under the prevailing farm conditions on the various soil types of the state.