A STUDY OF CROP YIELD RECORDS BY SOIL TYPES

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DURING the 1939 meetings of the Soil Science Society of America, an outline was given of the methods being used by the Illinois Agricultural Experiment Station to collect data on the productive capacity of the more important soil types in Illinois. The present paper is a report of progress since the 1939 meetings.

During the first year the study was confined to the detailed mapping of the soils and the collection of crop yield and soil treatment data on 115 farms located in Livingston, McLean, Tazewell, and Woodford counties. During the following year the same type of information was gathered for an additional 120 farms located in DeKalb, Grundy, Henry, Kendall, Knox, LaSalle, Marshall, Peoria, Putnam, and Stark counties. The location of each of these counties is indicated on Fig. 1. On all of the farms studied continuous crop yield and soil treatment records by fields have been kept in cooperation with the Department of Agricultural Economics as a part of the Farm Bureau-Farm Management Service.

A large number of soil types have been recognized on the 235 farms mapped to date in connection with this study. However, there are only a few of the major soil types in Illinois on which sufficient yield data have been collected to permit an interpretation of the results. In the previous paper, an outline was given of the more important characteristics of seven of the soil types on which yield data are given in the present paper. All of these seven soil types developed under grass vegetation.

In the present paper yield data are given on one additional soil type, namely, Clinton silt loam, a Gray-Brown Podzolic soil, which has developed from loessial parent material on gently rolling to rolling topography. The surface soil is acid in reaction and low in organic matter.

METHOD OF CALCULATING AVERAGE YIELDS

The yield records obtained were first sorted on the basis of soil type. All fields used in computing average crop yields on a given soil type were composed of 90% or more of that type. A maximum of 10% of another type was permitted in the field, provided the minor type did not differ greatly in productivity from the more extensive type. All fields used in calculating average crop yields on an association of two types contained between 40% and 60% of one of the two types, and the remainder was composed of the second type. No areas including a third type were used. All fields not fitting into the above situations were rejected.

Having sorted the fields according to the soil types present, a second sorting was made on the basis of the soil management practices followed. The three classes of management recognized were defined in the previous paper.

Finally, annual farm yields were calculated for each farm on each of the types that were studied. In many cases, a given farm would have several fields of the same soil type growing the same crop. In computing the average annual farm yield for a given type, yields from different fields were

Fig. 1.—Map of Illinois showing location of counties in which crop yield data by soil type were studied in 1938 and 1939.