THE EFFECT OF SOIL TREATMENT IN STABILIZING YIELDS OF CORN

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Either failure or extreme over-production of a given crop is unfortunate both to farmers as a group and to society in general.

The purpose of this paper is to point out the effect of soil treatment and of soil type upon the regularity or stability of corn production over a period of years and on several different soil conditions in Illinois.

SOURCE OF DATA

The crop yield data used in this study were secured from the soil experiment fields operated by the Illinois Agricultural Experiment Station. Most of these fields were established during the years 1910 to 1915. The crops considered in the discussion are those of the 15-year period ending in 1935; hence, the plats were well established by several years of preliminary cropping prior to 1920, the first season from which data for this particular study were used. Substitute crops or other irregularities occurred once during the period on five of the fields and an earlier year's yields were used to complete the 15-year sample. This shift seemed justified because it was possible to secure an income by growing a crop other than corn. The fields were laid out so that each crop of the rotation used was represented each year. Most of the plats were one-tenth acre in size. A few fifth-acre and a few twentieth-acre plats were used.

SOIL TREATMENT

Plats 1, 5, and 10 in each series are untreated. Plats 2, 3, and 4 receive animal manure usually once during each 4-year rotation in amounts equal in weight to the crops removed. Plats 6, 7, 8, and 9 are designated "residue plats." They receive residual plant materials in the form of cornstalks, second growth clover, and a legume catch crop (usually sweet clover) wherever it can be conveniently used in the rotation. Applications of limestone are made as needed to plats 3, 4, 7, 8, and 9 (called the limed plats) and generous applications of rock phosphate were made to plats 4, 8, and 9 (the phosphate plats). Potash is regularly used on plat 9. Expressed by the usual symbols, the soil treatments on the entire series on all fields have been as follows: Plat 1, check; plat 2, M; plat 3, ML; plat 4, MLP; plat 5, check; plat 6, R; plat 7, RL; plat 8, RLP; plat 9, RLPK; and plat 10, check.

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