2. ORGANIC MATTER SUPPLIED IN CROP RESIDUES

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INTRODUCTION

One of the important effects upon the soil of bringing it under the plow is the acceleration of oxidative processes and the consequent decline in the amount of soil organic matter. Recognizing the importance of offsetting this destruction of organic matter, the Illinois Experiment Station has for many years urged upon the farmer the necessity of replacement to some extent of the organic materials thus destroyed by whatever means are at his disposal and practicable as to application.

With this thought in mind, the soil fertility experiments carried out upon the various experiment fields were either laid out originally or later modified in such a way as to provide for regular additions of organic materials to the soil. These were to be made in the form of farm manure in the livestock system of farming; while in the grain system, the organic matter was supplied by the return to the soil of such materials as cornstalks, straw of small grains, clover or soybean straw, second growth of clover, and legume green manure crops grown for the purpose. On all of the fields used in the study to be described the soil is too acid to grow satisfactory green manure crops of sweet clover without liming, except the Clayton field, which in some years makes a poor growth but usually none. These fields thus afford an opportunity for determining the effect of crop residues, which are for the most part nonlegumes, upon organic matter accumulation. This is done by a comparison of the untreated check plats with those receiving crop residues alone.

EXPERIMENTAL METHODS

Samples of soil were obtained from seven experiment fields in which the above-mentioned comparison is possible. Results from the Morrow plats at Urbana are added for reasons to be explained later. These fields were selected, in the first place, upon a basis of soil uniformity. Only those fields were sampled which contained four or more series in which the plats to be sampled were of the same soil type as determined by the classification published in Illinois Agri-

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