INTRODUCTION.

The Farm Crops Section of the Division of Agronomy and Farm Management of the Minnesota Agricultural Experiment Station has under way a series of plot studies of various crop rotations, both with and without the application of manure and of various forms of commercial fertilizers. These plots serve very well for a study of the effect of the soil treatment and of clover in the rotation upon the chemical composition of the succeeding crops. Several different lines of study of this sort are in progress. The present paper deals with certain results which have been obtained with oats.

Samples of the crop of oats from each of the several plots involved in the study were taken each year to the chemical laboratory and the percentage of dry matter and of protein which they contained determined in the usual manner. No field data other than the plot numbers accompanied the samples and it was not until the analytical figures were finally compiled for record that the regular effect of the various plot treatments upon the protein content of the oats was discovered. This effect is so definite and so striking that it seems desirable to publish the results at the present time, although the studies will be continued over a considerably longer period of years.

There are a few previous reports of results of analyses of oats to show the effect of fertilizers used upon the composition of the grain, but they are generally the results of a single season's tests, often with inconclusive results. Woods found an apparent increase in protein content of both grain and straw with increased application of nitrogen in the fertilizer. Weibull, using the composition of the crop as an index for fertilizer requirement of the soil, concluded that since he found slightly increased percentages of nitrogen in the grain and

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