For the last few years it has been realized that soil erosion was a factor which should have been considered in determining the relation between soil deterioration and crop yields on the fertility experiment plots at Wooster. When this study was begun no method had been devised whereby the erosion factor could be evaluated and be given its specific place in a discussion of soil deterioration. Therefore, it has been the aim of this investigation to determine the amount of soil lost and to study the relationship of erosion to slope, fertility treatment, nitrogen content and the reflection of these in the crop yields, on the Wooster silt loam.

Agricultural History of the Land

The land included in the old fertility experiments at Wooster was taken over by the Station and laid out in plots in 1883. The first patents from the Government were issued for this land in 1821. The original vegetation of the region was a mixed oak forest with some hard maple, chestnut and an undergrowth of blue beech, dogwood and cherry. The average annual rainfall at Wooster (l) is 38.7 inches. The monthly average for October, November, December and February is slightly below three inches; that for March is the highest in the spring (3.49 inches), whereas July is the highest for the summer (3.97 inches).

This study has been confined to the areas occupied by the Continuous Culture, the Five-Year Rotation and the Potato (three-year) Rotation experiments. The area included in the Continuous Culture and Five-Year Rotation experiments is part of the "East Farm" which had been cultivated for a period of about sixty years, prior to acquisition by the Station. The land had been farmed by a tenant operator for many years and hence the experiments were started on a soil already depleted of fertility. The Potato Rotation is located on the "South Farm" which area had been partially under cultivation for about forty years, a small farm operated by its owner. Since the operator kept livestock and carefully utilized the manure, this farm was in a higher state of fertility than the "East Farm." About half of the area included in this farm had been cropped for many years, the other half was cleared at the time the tests started.

The areas under experimentation were laid out in one-tenth acre plots (16 ft. by 272 1/3 ft.) separated by two-foot alleyways. Each block of ten plots is bordered by sodded roadways either twelve or twenty feet wide. Every third plot is a check or untreated plot, the others being given a treatment of fertilizer or manure.

The Continuous Culture Experiments which include ten plots each of corn, oats and wheat on which each crop has grown continuously since 1894, are located near the border of an upland flat which ranges from 2.8% for corn to 4.7% for wheat.

In the Five-Year Rotation Experiment corn, oats, wheat, clover and timothy are grown in succession on five tracts of land containing thirty-one-tenth acre plots. Section C and the first ten plots on Section D were selected for this study because extensive chemical studies were made of these soils in 1925. This area extends from a low divide down a gentle slope to the west. The slope varies from 2 to 6.4%. In this experiment, the west half of each plot was limed once in a rotation since 1900.

The Potato Rotation (potatoes, wheat and clover) is located on a broad upland divide with a gentle slope to the south and southeast. Plots 25 to 34 in Sections A, B, and C have been included in this study. On this area the slope varies from 1 to 2.5%.

The soil on the Experiment Farm is largely Wooster silt loam, a glacial soil derived from sandstone and shale material. It is a mature, gray-brown podzolic soil formed by the weathering of non-calcareous parent material and hence is acid in reaction.