BEGINNING in 1935 and continuing until the end of 1943, the Ohio State Agricultural Experiment Station and the Division of Sugar Plant Investigations of the U. S. Dept. of Agriculture, cooperated in an experiment designed to determine the influence of certain crops, grown in one season, upon each of those same crops when grown on the same soil during the following season.

A report stressing the usefulness of crop-sequence data in planning a crop rotation has already been published. The crops included in the project, the area devoted to the work, and the manner in which the work was performed were specified and described in the earlier report.

The present report is based upon the results obtained during the period of 1940 to 1943, inclusive. The field devoted to this experimental work, the crops included, and the manner in which the crops were grown are the same as for the former report, with the exception that beginning with the 1939 season certain portions of the crop-strips were fertilized and beginning with the season of 1940 the crops grown upon the crop-strips were rotated so that no one crop was grown upon any plot for more than two years in succession.

The fertilization factor was introduced into the experimental plan by the application of 300 pounds per acre of a 4-10-6 mixture to the soil of one lengthwise half of each crop-strip in the spring prior to the planting of the crops. This fertilizer was drilled in with a grain drill. When the crop-strips extended east and west, the north half received the application; when the crop-strips extended north and south, the west half received the fertilizer. The cropping plan of this project, together with the fertilization plan, resulted in the crop-sequence × fertilization-condition combinations indicated in Table 1. Thus there were for each year, in quadruplicate, 25 different crop-sequences, each with four different fertilization-conditions or a total of 100 crop-sequence × fertilization-condition combinations for comparison.

The work upon which this report is based, as has been indicated, was continued through four seasons, but for two of the crops in-

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1Cooperative investigations of the Ohio Agricultural Experiment Station and the Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Dept. of Agriculture. Received for publication March 12, 1946.


4The 1939 results presented in the former report were based upon the unfertilized half of the crop-strips.

5Rate and mixture representative of practices in commercial fields of sugar beets in the immediate area.