YIELDS OF WHEAT FOLLOWING POTATOES AND THE RELATION OF NITRATES IN THE SOIL TO THESE

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INTRODUCTION

Among farmers the impression is general that the potato crop is a good one after which to sow wheat. The explanation of this belief has been for years, and still is, a topic for lively debate among wheat growers. In the consideration of this or any similar question, it is in order first to inquire if the notion is true; and if it be true, then secondly, to ask to what cause it may be due. So far as the writers are aware, this feeling among farmers is based, not on experimental evidence, but rather, upon the accumulated observation and experience of multitudes of farmers extending back through the years. Usually when an outstanding yield of wheat is reported, it is found to have been grown after potatoes. The most noteworthy instance of this kind of which the writers have knowledge is one reported by the United States Bureau of Crop Estimates (5). According to this Bureau, the highest yield of wheat, so far as it has ever been able to ascertain, is one obtained in 1895 in Island County, Washington. It was grown in an 18-acre field and the average yield per acre by weight was 17.2 bushels. The wheat, according to this report, had been preceded by three crops of potatoes.

Moreover, there is some experimental evidence which indicates that the farmers are correct in their opinion. For example, on the farm of the Ohio Agricultural Experiment Station, some 600 plots have been used in the production of wheat for more than a quarter of a century. These plots embrace many different rotations, and among them is one in which wheat follows potatoes, the rotation being potatoes, wheat and clover. In this series of plots, the more liberally fertilized ones have a higher quarter-of-a-century average yield of wheat than have those included in any other rotation on the farm. Moreover, it is believed by former Director Chas. E. Thorne that the most productive plot in the series, Plot 14, has the highest long-time average yield of wheat recorded anywhere in the world.

EXPERIMENTAL WORK

OBJECT

The purpose of this paper is to discuss two points: first, the valid-