REDUCTION OF SOIL NITRATES DURING THE GROWTH OF SOYBEANS

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INTRODUCTION

Within recent years the growing of soybeans in West Virginia has increased considerably. With this increased acreage there have been received lately a number of complaints that the yield of wheat following soybeans is decreased below that normally secured. A cursory review of the field data does not reveal this reported detrimental effect on wheat yields to any great extent. For instance, Slipher (5) collected data on wheat yields from various sources. He reports seven cases. Five of these show increases of from 2 to 7 bushels per acre more wheat after soybeans than after wheat, oats, and corn. In but two of the cases are there no increases. One of these indicates no increase, and the other a yield of 10 bushels less wheat after soybeans than after clover.

A pamphlet (6) issued for the Maryland Field Day of the National Soybean Growers’ Association in 1925 contains data secured from three Maryland fields showing that wheat increases are greater after soybeans than after corn. Although the majority of the results reporting yields of wheat after soybeans would seem to indicate that the decreased yields complained of in West Virginia are the exception, there is not a complete uniformity in the results reported.

Since the relatively high nitrogen content of soybean hay indicates a high nitrogen absorption, it was conjectured that possibly nitrogen assimilation by the soybean plants progresses until the nitrate nitrogen content of the soil is very low, and a consequent effect is one of lowering the yield of the wheat that follows. It was decided, therefore, to study the nitrate content of soil growing soybeans under controlled conditions, and accordingly investigations were started in the greenhouse in 1925.

METHOD

Dekalb silt loam from an area just bordering the horticulture farm, which to all indications had never been cropped nor fertilized, was air dried and thoroughly mixed. A screened amount of soil sufficient to...