THE EFFECT OF Rotation AND TILLAGE ON Foot-ROT OF Wheat IN KANSAS, 1920–1924

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INTRODUCTION

Tillage projects at the agronomy farm of the Kansas agricultural experiment station indirectly have thrown some light on how to combat foot rot of wheat. This disease was first reported in Kansas in 1920. During the past three years, it has caused considerable damage to wheat in the eastern part of the wheat belt of the state.

Foot rot was first noted in the field plots at the Kansas agricultural experiment station in 1921. The disease manifests itself by two more or less distinct symptoms. In the plots at the agronomy farm, badly stunted plants have occurred in well defined areas throughout the fields. In these spots, the plants produced only a few weak culms which turned brown and dry before the heads swelled in the boot. Figure 1 illustrates this symptom and Figure 2 shows a bundle of normal wheat in contrast. The second symptom is the presence of "white head" spots several weeks before harvest. The plants in these spots produce normal sized culms, but the heads turn white and contain, if any, only shriveled grain. A review of the literature on this disease has been made by Stevens (2).

FOOT ROT OF WHEAT IN RELATION TO ROTATION

The appearance of foot rot in the tillage and fertility project plots, in which wheat has been grown both continuously and in rotation, has afforded an excellent opportunity to study the effect both of cropping systems and tillage methods on the disease.

The wheat seed-bed project at the agronomy farm (1) consists of two sections; an area of 15 plots which is cropped continuously to wheat, and an area in which the wheat is grown in rotation with corn and oats. The part of this experiment involving the continuously cropped wheat plots had to be abandoned in 1923 because foot rot decreased the yields to such an extent that they were no longer criteria of the effect of tillage on yield. Wheat in the rotation division of this project did not show the presence of foot rot, although it ad-

*Reference by number is to "Literature Cited," p. 771.