THE EFFECT OF DIFFERENT METHODS OF PREPARING A SEED BED FOR WINTER WHEAT UPON YIELD, SOIL MOISTURE, AND NITRATES.

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(Plates V and VI; text figures 24 and 25.)

The investigational work which it is wished to present at this time was undertaken for the purpose of studying the influence of different methods of preparing the seed bed for winter wheat upon conservation of moisture, liberation of plant food as indicated by available nitrogen and upon the growth of the crop as determined by the production of grain and straw. Considerable data are available to show that the earlier the seed bed is prepared, the greater the yield secured, but very little information is available to show what factors are responsible for the increased production. In most instances, where an explanation has been offered, the increase in yield has been attributed to the conservation of moisture in the early plowed and thoroughly prepared ground.

In the summer of 1909 fifteen one-tenth acre plats were laid out on the Kansas Agricultural College farm near Manhattan and the work, which has been continued to the present time, was started. For two seasons previous, some preliminary work had been done upon land that proved to be too ununiform for the project. The area of ground finally selected for the work is low upland. This soil is a dark brown silt loam about ten inches deep, the subsoil to a depth of at least six feet being a reddish-brown silty clay loam. The upper portion of the subsoil contains more clay and is quite plastic, but the content of fine and very fine sand increases with depth so that in the fifth and sixth foot the subsoil contains a considerable quantity of the finer grades of sand. As a rule, the soil is retentive of moisture and is not quickly affected by dry weather. The soil over the area shows some variation, the south part being slightly heavier, darker, and more plastic than the ground at the north end of the area. This condition is most noticeable in the subsurface soil.

The difference in texture affects the moisture equivalent and wilt-