INTRODUCTION

In studies of the inheritance of resistance of oats to smut it is desirable to obtain the heaviest possible infection. Smut infection from inoculated seed in hulled oat varieties frequently is insufficient to permit a satisfactory interpretation of the inheritance of resistance. The experiments reported in this paper were conducted on the Sherman County Branch Station at Moro, Oreg., in 1925 and 1926. Their object was to study the effect of removing the hull from the oat kernel and of the date of seeding on the germination of the seed. The results of previous investigations have shown that these factors may have considerable influence on the percentage of smut-infected plants in the crop.

REVIEW OF LITERATURE

Jensen (4), working in 1887 to 1888, found that the amount of infection in oats and barley was greatly increased by dehulling the seed. Tisdale (10) showed that the infection of barley by covered smut was materially increased by dehulling the seeds. Tisdale and Tapke (11) obtained similar results with loose smut of barley. Gaines (2), Gaines (3), Stanton, Stephens, and Gaines (9), and Johnston (5) have shown that a higher degree of smut infection may be obtained in oats by dehulling the seed before inoculation.

Bartholomew and Jones (1) and Jones (6) observed that optimum temperatures for the infection of oats by loose smut (Ustilago avenae) were between 18° and 22° C, and that low moisture content of the soil favored infection. Reed and Faris (7) observed that low soil moisture and high temperatures were conducive to high smut infection. Johnston (5) obtained low smut infection from very early or very late seedings, and found that soil having a moisture content of but 30% or less of its moisture-holding capacity, and in which temperatures of from 62° to 66° F existed, was favorable for maximum infection. He also showed that some varieties derive part of their freedom from smut infection from the mechanical protection afforded by the glumes.