THE OCCURRENCE OF STRAINS RESISTANT TO LEAF RUST IN CERTAIN VARIETIES OF WHEAT

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In recent years plant breeders and others interested in the improvement of crop plants have relied principally on the use of controlled hybridization to obtain the characters desired. Before the practical application of the Mendelian principles of heredity came into such general use considerable improvement of crops had been accomplished through selection. Many crops had been improved in yield, quality, and other agronomic characters by intelligent selection. The widespread adoption of hybridization by modern plant breeders, however, has resulted in lessening the emphasis on the older methods of crop improvement. The purpose of this paper, therefore, is to call attention to the use which has been made of selection in the production of strains of wheat resistant to a known physiologic form of leaf rust (*Puccinia triticina* Eriks., p. f. 9). The results here reported emphasize the value of that method in certain types of crop-improvement experiments.

Several investigators (1, 6, 7, 8, 9) have reported the occurrence of varieties of wheat resistant to various rusts. In only a few instances, however, has it been clearly pointed out that some well-known varieties, once thought to be susceptible, contain rust-resistant strains. Varieties usually are considered as units, especially if particular care has been exercised to keep them pure, although they often contain several strains, indistinguishable morphologically, but differing in their reaction to disease.

Mains (3) and Mains and Jackson (4) have pointed out that resistance to leaf rust in general was found in many strains of wheat of different types. They state that different strains of Turkey under such names as Turkey, Malakof, Crimean, Kharkof, and Hungarian, and also several different strains of Mediterranean, differed in their reaction to the same physiologic form of leaf rust. Kiesselbach and Peltier (2) recently reported on the occurrence of a number of pure lines of Crimean wheat differing from each other in their resistance to stem rust, *P. graminis tritici* Eriks. & Henn.

The above results differ somewhat from those presented here in which the differences in reaction to leaf rust occur within a single lot.