BUNT REACTION OF SOME VARIETIES OF HARD RED WINTER WHEAT

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In the fall of 1930 a coordinated cooperative improvement program for hard red winter wheat was started in the principal winter wheat producing states of the Great Plains. Because of the importance of covered smut or bunt in this area, a study of the reaction of wheats to the bunt organisms was included in the program in 1931 on a more extensive scale than studies then in progress at the state and federal experiment stations. Prior to this time many of the promising selections and hybrid lines were being tested for bunt reaction at a single station and with inoculum obtained from one locality or even from a single field. As a result, certain varieties found to be resistant in these tests were susceptible when grown commercially and subjected to other races of the bunt organism. It was apparent that, for an adequate test of varieties and promising strains, bunt reaction should be determined under a wide range of environmental conditions and by using collections of inoculum representative of various sections of the Great Plains. The purpose of this paper is to present results of bunt tests with uniform sets of winter wheat varieties and strains inoculated with the bunt organisms of a large number of collections and grown at a number of stations throughout the hard red winter wheat region.

PLAN OF THE UNIFORM NURSERIES

Fifty varieties and strains of wheat were planted in duplicate 8-foot rows each year. Most of the wheats tested were new hybrid strains found to be resistant to bunt at the stations where they were developed, but, in addition, wheats grown in the uniform plat and nursery tests and a few varieties adapted primarily to the Northwest also were included. Kharkof (C. I. 1444), Cheyenne (C. I. 8885), and Quivira (C. I. 8886) were included in all tests as susceptible checks. Varieties were discontinued from the experiments as soon as it seemed that a satisfactory determination of their bunt reaction had been obtained, if they had developed an average of more than 10% bunt or proved to be undesirable agronomically.

Seed used in the tests in the first three years was treated with formaldehyde, thoroughly washed with water, and dried before applying the inoculum. In later years the seed was not treated but was taken from sources free from bunt infection.

The inoculum used for each of the nurseries was a composite of collections obtained not only in the vicinity of the station but also from fields selected at random throughout the state in which the test or