UNIFORM hard red winter wheat bunt nurseries have been grown as a part of the coordinated cooperative improvement program in the principal winter-wheat growing states of the Great Plains since 1931. The data for two preceding periods, 1932–57 and 1938–42, have been summarized and published (3, 4). This constitutes the third report and summarizes the data obtained during the 5-year period, 1943–47.

Materials and Methods

The general plan for the nurseries was the same as outlined in the previous reports although some changes were made in procedure. The number of nurseries was reduced and the stations selected were representative of states or adjoining parts of several states with similar crop conditions. The stations at which ordinary bunt nurseries were grown in some or all of the 5 years reported, and the physiologic races used in the inoculum for each station were as follows: Denton, Tex., L2, L3, L4, L5, L16; Woodward, Okla., L3, L4, L10; Manhattan, Kans., L3, L5, L7; Lincoln and North Platte, Nebr., L2, L3, L7; Fort Collins, Colo., L3, L5, L10; Bozeman, Mont., L2, L3, L4, L8, T3, T6, T8, T11; Beltsville, Md., and Kearneysville, W. Va., composite of all of the preceding races. In addition nurseries were grown at Logan, Utah, and Bozeman, Mont., where clean seed was sown in soil presumed to be contaminated with the dwarf bunt fungus.

The inoculum used from 1943 to 1947 differed from that in preceding years in that the seed for each station was inoculated with a composite of spores of the physiologic races known to occur in the state or area that station represented, except for the Beltsville, Md., and Kearneysville, W. Va., nurseries where a composite of all of the races was used. Inoculum of pure physiologic races for preparing the composites was furnished by C. S. Holton of the Washington Agricultural Experiment Station. Only races of Tilletia foetida (Wallr.) Liro were used for nurseries in Texas, Oklahoma, Kansas, Nebraska, and Colorado, while races of both T. foetida and T. caries (D.C.) Tul. were used for nurseries in Montana, Maryland, and West Virginia. Inoculum was prepared by mixing chlamydospores of the desired races in approximately equal proportions. Spore composites were prepared at

Experimental Results

The results obtained in the ordinary bunt nurseries in years when appreciable amounts of the smut developed are presented in Table 1. A total of 155 varieties and strains were tested from 1 to 5 years during the period 1943 to 1947. To shorten the table, selections with higher average infections than Kharkof are omitted. These included four varieties and four hybrid selections.

Some of the selections shown in Table 1 as having been tested only in 1943 had been tested in earlier years as shown in the report for the preceding 5 years (3). Selections tested for only 1 or 2 years were those which proved to be susceptible or were dropped at the suggestion of cooperators. Thus the only varieties included in all 5 years were the 10 resistant or susceptible varieties maintained as checks or testers. These included four varieties and four hybrid selections.

The data in Table 1 show the average infection in each variety for each year it was grown, the weighted