REACTION OF F₃ PROGENIES OF AN ORO × TURKEY-
FLORENCE CROSS TO TWO PHYSIOLOGIC RACES
OF TILLETIA TRITICI AND ONE OF T. LEVIS

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A major problem in the wheat-improvement program of the
Pacific Northwest is the production of bunt-resistant varieties
suitable for commercial use. This problem would be relatively simple
were it not for the continued appearance of previously unknown
physiologic races of bunt.

Oro (C. I. 8220) and Turkey-Florence (C. I. 10080) are highly
resistant to the other known races but are very susceptible to races
L-8 and T-11, respectively, and both are slightly susceptible to T-8.

A cross of these two varieties of wheat might be expected to produce
some segregates resistant to all the races of bunt.

METHODS

The cross Oro × Turkey-Florence was made at the Arlington Experiment Farm,
Arlington (near Washington, D. C.), Virginia, in 1932 and the F₂ plants were
grown under irrigation at the Arizona Agricultural Experiment Station, Tuscon,
Ariz., in 1934.

Seed of each of 168 F₂ plants was divided into three lots of 43 to 50 kernels,
depending upon the number available. One lot was inoculated with L-8, one with
T-11, and the third with T-8. Sufficient seed of 22 additional F₂ plants was available
for inoculating with L-8, and 13 of these were also inoculated with T-11. The
seeds were space-planted approximately 2 inches apart in 10-foot rows on October
18 and 19, 1934, at Pullman, Wash. One row of each parent was planted after each
10 rows of progeny. Plant selections from F₃ families were tested in 1936 for resistance
to the three races individually and for resistance to a composite of 18 collections
containing at least five additional races. Plant selections made from the F₄ families were tested in 1937 to the 19 races described by Rodenhiser and Holton.

The percentage of bunt of each row was determined on the basis of plant counts
according to the method described by Smith.