THE INFLUENCE OF SEASON AND LOCATION ON THE GRAIN OF SEVERAL WHEAT VARIETIES

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TEN varieties of winter wheat were grown each year at 15 locations in Ohio during the four seasons of 1930 to 1933, inclusive. Baldrock was substituted for Berkeley Rock after 2 years and Gladden was omitted in 1930. Studies on these varieties have already been published by Bayfield (1) and by Bayfield and Shiple (2). The present paper is concerned with a more detailed analysis of certain of the data with the object of estimating the influence of variety, season, and location upon yield, weight per bushel, wheat ash, and wheat protein, and the interrelationship of these factors.

The plots were grown at widely distributed points in the Ohio. Locations 1 to 5, inclusive, were close together in Fulton County and on markedly different soil types; all the rest, except location 6 (Henry County), were on silt loam but widely spread over the state. Numbers 1 to 5, inclusive, and number 10 were on private farms; the remainder on farms operated by the state. Location numbers are those used by Bayfield (1). Further details regarding soil type, etc., are also given by him.

The individual plot yield, weight per bushel, and wheat protein figures have been published by Bayfield (1). Wheat ash was determined later and will be presented in a bulletin of the Ohio Agricultural Experiment Station in the near future. This bulletin will report on soft wheat quality studies in Ohio, 1930-1939.

ANALYSIS BY INDIVIDUAL SEASONS

Table 1 gives the mean values of each of the characteristics considered by varieties and also by locations for each year separately. In Table 2 the results of the 16 analyses of variance are presented.

In so far as yield is concerned, differences between varieties are highly significant. For 1930 the F value indicates odds not greatly in excess of 19 : 1, but this low value is obviously due to the large error term. The variance for interaction was large in this particular season because of the very low yields of some varieties at the Miami County farm (location 12). Trumbull gave only 6.3 bushels per acre and Nabob and Red Rock were also definitely below the average. At all other places these three varieties yielded at or above the average. Since differences between varieties were as large in 1930 as in other years, it seems reasonable to conclude that they were equally significant and that the lower F value was due to the low-yielding plots.

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3Numbers in parentheses refer to “Literature Cited” p. 303.