WHEAT VARIETAL REACTION TO DWARF BUNT IN THE WESTERN WHEAT REGION OF THE UNITED STATES

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The growing of resistant varieties offers the only known method of controlling dwarf bunt, a disease now widely prevalent in sections of Montana, Idaho, Utah, and Washington. Fortunately, many of the varieties used in breeding for resistance to the ordinary bunt (2) are also resistant to dwarf bunt.

Pathological researches and general observations have demonstrated several characteristics peculiar to dwarf bunt which are pertinent to practical control of the disease. Dwarf bunt attacks fall-sown wheat only and thus can be controlled by growing spring wheat. It appears to be largely soil-borne (1), thus precluding effective control by seed treatment. It cannot be reproduced effectively by seed inoculation with chlamydospores (4), thus increasing the difficulty of experimentation.

Isolated new outbreaks and local spread of dwarf bunt with instances of damage exceeding 75% have been observed during surveys in recent years. The disease has persisted in certain fields in Utah for more than 10 years under alternate cropping and fallow, despite intervening culture of varieties equal to Ridit in resistance. In the 1942 uniform dwarf bunt nursery at Clarkston, Utah, in a field thrice previously cropped to a resistant variety, infections ranged up to 90% in susceptible varieties. On the other hand, in northern Idaho, infestation in susceptible varieties such as Golden has declined appreciably since 1938, coincident with increased rainfall, introduction of crops other than wheat, and elimination of fallow. It is evident that adequate information on the causal organism and on the influence of environmental and ecological factors on the development of dwarf bunt in epidemic proportions is lacking. However, additional information on varietal resistance presented here should be helpful. The reaction of certain hard red winter wheats to dwarf bunt has been reported by Rodenhiser and Quisenberry (3).

MATERIAL AND METHODS

Fifty-two winter wheats, including commercial varieties, hybrid selections of potential value as commercial varieties or parent stocks, and varieties used in physiologic race identification were grown for 2 to 6 years in uniform nurseries at five locations. Nurseries were grown for 6, 5, 4, and 2 years, respectively, at Logan, Utah; Bozeman, Mont.; High Prairie, Wash.; and Malad and Troy, Idaho. High

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3Figures in parenthesis refer to "Literature Cited", p. 583.