STUDIES OF THE INHERITANCE OF AND THE RELATIONSHIPS BETWEEN KERNEL TEXTURE, GRAIN YIELD, AND TILLER-SURVIVAL IN CROSSES BETWEEN REWARD AND MILTURUM SPRING WHEATS

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Hard kernel texture in bread wheats is generally associated with high protein content, and with high milling and baking qualities. The opinion is held that the texture of the kernels is determined almost entirely by the climatic conditions under which the wheat is grown. Recent investigations (1, 2, 3) at the University of Alberta, Edmonton, Canada, have indicated that soil and heredity play a much greater part in influencing the bread-making qualities of wheat than has generally been accepted. Intensive studies are being made on the influence of black and gray soils on the kernel texture, protein content, and baking qualities of several wheat varieties (1, 2). The mode of inheritance of kernel texture, protein content, and baking quality in several wheat crosses is also being studied under the same conditions (3).

Bryan and Pressley (7) have recently called attention to the possible connection between texture of kernels and tillering in Early Baart wheat. As one phase of the general studies mentioned above, the writers of the present paper were interested in determining the interrelationships existing in the number of tillers per plant, grain yield, and texture of kernels in segregating populations from crosses between Reward and Milturum spring wheats.

MATERIALS AND METHODS

MATERIALS

Eight entire F₂ populations and 100 F₃ lines of Reward X Milturum were used in the present study. Reward, C. A. N. 1509, is a hard red spring wheat originating from a Marquis X Prelude cross, at the Central Experimental Farm, Ottawa. It is fair in yielding ability, possesses exceptionally good baking quality, and produces a kernel of vitreous texture even when grown on the gray wooded (Fallis, Alberta) soil (podsol). Milturum o.321, C. A. N. 1415, is a soft red spring wheat obtained in 1928 from Dr. Talanov of the West Siberian Experimental Station, U. S. S. R. It is high in yielding ability, possesses poor baking quality, and produces a kernel of starchy texture even when grown on the black (Edmonton) soil (chernozen).

1 Contribution from the Department of Field Crops, University of Alberta, Edmonton, Canada. Published as paper No. 75 of the Associate Committee on Grain Research of the National Research Council and the Dominion Dept. of Agriculture. Received for publication March 12, 1935.

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3 Reference by number is to "Literature Cited", p. 465.

4 C. A. N. = Canadian Accession Number.