NEW DISEASE-RESISTANT EARLY OATS FROM A VICTORIA-RICHLAND CROSS

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Prior to the introduction of Victoria (C. I. 2401) in 1927, no varieties of oats possessing high resistance to crown rust were available to the plant breeder. The best resistance up to this time was found in some of the Australian varieties, such as Ruakura and Sunrise, and in certain strains of the Green Russian oat, such as Rainbow and Schoolmam. The discovery of the high resistance of Victoria to crown rust in 1928 has served greatly to stimulate interest in breeding to eliminate the destructive effects of this disease in the United States. The introduction of Bond (C. I. 2733) in 1929 made available to breeders another variety with high resistance to many physiologic races of crown rust.

Victoria also is highly resistant to all races of the oat smuts tested, which includes most of those so far collected and identified, while Bond apparently has resistance only to certain races. Since their introduction these varieties have been employed extensively in breeding improved varieties with high resistance to crown rust and smut. Results obtained with a cross of Victoria on Richland are reported in this paper.

A considerable portion of the present oat acreage of the Corn Belt is sown to improved early varieties developed cooperatively by the Iowa Agricultural Experiment Station and the U. S. Dept. of Agriculture. The commercial production of these early varieties, namely, Albion (Iowa 103, C. I. 729), Iowar (C. I. 847), Richland (Iowa 105, C. I. 787), and Iogold (C. I. 2329), has contributed materially to the agricultural wealth of the country. Richland and Iogold have been especially outstanding because of high yield and excellent resistance to stem rust, although lacking resistance to crown rust and to smut. Burnett, Stanton, and Warburton (2), Stanton, Griffes, and Ether--

1Contribution from the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Dept. of Agriculture, and the Iowa Agricultural Experiment Station, cooperating. Journal Paper No. J-574 of the Iowa Agricultural Experiment Station, Ames, Iowa. Project No. 73. Some data were obtained on the smut resistance of these selections in cooperation with the Idaho Agricultural Experiment Station and the Brooklyn Botanic Garden. Yield data were obtained only in 1937 in cooperation with the Ohio, Indiana, Illinois, Missouri, Nebraska, Michigan, Wisconsin, North Dakota, and Oregon Agricultural Experiment Stations. Received for publication, September 27, 1938.

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3Accession number of the Division of Cereal Crops and Diseases, formerly Division of Cereal Investigations.

4Figures in parenthesis refer to "Literature Cited", p. 1008.