The authors wish to thank Dr. R.M. DePauw, Dr. K.D. Kofoid, and Mr. R.K. Thompson for generously sharing their germplasm.


REGISTRATION OF LRS-7-50 WHEAT GERMPLASM

The LRS-7-50 wheat (*Triticum aestivum* L.) germplasm (CN 18127) (Reg. no. GP-294) (PI 525452) was released by the Lethbridge Research Station, Agriculture Canada, Lethbridge, Alberta, in 1988. This germplasm carries resistance to colonization by *Eriophyes tulipae* Keifer, the mite vector of wheat streak mosaic virus and the wheat spot mosaic agent. There is no known effective chemical control of the mite, and cultural control of the disease based on time of seeding of winter wheat is sometimes not effective.

The resistance to colonization by the mite was first identified in a line of *T. aestivum* 'Rescue' × *Agropyron elongatum* (Host). Beauv. (2n = 21") in which the wheat chromosomes 4D, 5D, and 6D had been replaced by homoeologous chromosomes from decaploid (2n = 70) *A. elongatum*. Resistance involved the *A. elongatum* chromosome 6 (1), hereafter referred to as 6Ag.

The new germplasm is a Robertsonian translocation, which was first identified during studies of male and female transmission of chromosome 6Ag (2). In these studies, a resistant plant from the cross between the susceptible hard red spring wheat *Rescue* as the female parent and *Rescue* monosomic for chromosomes 6D and 6Ag as the pollen parent was found to have 21 bivalents in meiosis rather than the expected configuration of 20 bivalents and two univalents. Progeny from selfed seed of this plant segregated for resistance, so it was not a susceptible escape from the mite test. Subsequent crosses with the group 6 chromosome monosomics identified chromosome 6D as the translocated chromosome 6Ag.

Studies of enzymes encoded by genes on the group 6 chromosomes of the *Triticaceae*, such as aminopeptidase-1 (3). This enzyme is absent in the susceptible line for the p arm of chromosome 6 and present in the resistant lines, indicating that the translocated chromosome 6Ag contains the p arm of chromosome 6D and the arm of 6Ag that is homoeologous to the p arm of chromosome 6D.

Breeding studies (3) showed relatively normal transmission of the translocated chromosome. Resistance through the pollen and the egg was significantly different in the absence of the chromosome 6Ag. The frequency of resistance in the F2 generation of 65.6% was lowered by the translocation to a single, dominant gene; 26.7% of the resistant lines were homozygous for resistance. Using the nomenclature suggested for translocated chromosomes in the *Triticeae* by Koebner and Miller (4), the translocation has been designated Rescue:6Dq.6Agp.

The translocation involves the same 6Ag chromosome as that of germplasm GP 206 (5) which was a Robertsonian translocation, and presumably the same chromosome arm of 6Ag is present in both translocation lines. However, the breeding behavior of this new translocation line is much superior to that of GP 206 where transmission of the translocated chromosome through the pollen was only about 5% in heterozygous lines (6).

Small samples of seed of LRS-7-50 (CN 18127) may be obtained from Dr. Brad Fraleigh, Plant Gene Resources of Canada, Agriculture Canada, Research Branch, Ottawa, Ontario, Canada, K1A OC6.

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References and Notes
