Breeder seed will be maintained by the Seedstocks Project, Agricultural Experiment Station, North Dakota State Univ., Fargo, ND 58105-5051. U.S. plant variety protection (PVP Certificate no. 9800221) is pending for Foundation, Registered, and Certified seed.

E. M. ELIAS,* R. W. STACK, AND J. D. MILLER (8)

References and Notes

REGISTRATION OF GERmplASM

Registration of STARS-9577B
Russian Wheat Aphid Resistant
Barley Germplasm

STARS-9577B (Reg. no. GP-135, PI 591617) is a six-rowed, spring barley (Hordeum vulgare L.), selected by USDA-ARS as a source of resistance to the Russian wheat aphid (RWA) (Diuraphis noxia (Mordvilko)). This line is a selection from Clfo 4165, a landrace originally collected in Heart, Afghanistan, by N.I. Vavilov in 1924. Although this accession appeared fairly homogeneous for RWA resistance (seedlings were rated either 3, resistant, or 9, susceptible), the potential for segregation of RWA resistance genes necessitated the testing and selection of 10 RWA-resistant plants with uniform agronomic appearance. Progeny of the selected plants were restested in the greenhouse and all were reconfirmed for RWA resistance before seed was bulked for release.

STARS-9577B is highly resistant to the Russian wheat aphid when seedling plants are tested in the greenhouse using greenhouse-reared RWA colonies. On Webster's scale of 1 to 9 (1 = no damage, 9 = dead plant), STARS-9577B was rated 3, while susceptible cultivars, such as 'Morex', were rated 9 (6). Further testing showed this resistance to persist when plants were grown to maturity in the greenhouse under constant RWA infestation where populations of the aphid built up to levels 100 times greater than natural field infestations (4). In the same test, Morex plants did not survive to produce spikes. In a 2-yr field experiment conducted in Wyoming under artificial RWA infestations, grain yield of STARS-9577B was not reduced, while the susceptible check Morex suffered a 60% loss in grain yield (5). Leaves of STARS-9577B do not streak or roll in response to RWA feeding and therefore plant damage and yield reduction due to chlorosis and head dropping do not occur. Tolerance to RWA feeding is the main mechanism of resistance in STARS-9577B, with a low level of antibiosis also detected.

Genetic analysis of parent, F₁, F₂, backcross (BC), and F₁-derived F₂ populations of the cross Morex/STARS-9577B indicated that two genes control RWA resistance in this line (1). Chi-square analysis of F₂ and BC to either parent, and the number of homozygous resistant, intermediate, and susceptible F₂-derived F₃ families suggests that RWA resistance is conferred by two dominant genes with recessive epistasis (1). Inheritance of RWA resistance in STARS-9577B differs from that of the barley germplasm line STARS-93018 (3), where RWA resistance is conferred by one incompletely dominant and one dominant gene with epistatic effects (2).

STARS-9577B is an excellent source of RWA resistance. However, it is an unadapted germplasm line, which is similar to Morex in plant height, and is 1wk later than Morex in maturity in greenhouse studies and field tests ranging from Colorado to Canada.

Written requests for small quantities (5 g) of STARS-9577B should be sent to the corresponding author until 2003, after which time seed will be available from the National Small Grains Collection in Aberdeen, ID, as PI 591617. We ask that appropriate recognition of the source of this germplasm be given whenever it is used for research or breeding purposes. Seed will be maintained at the Plant Science and Water Conservation Research Laboratory, Stillwater, OK.

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