CROP REGISTRATIONS

Registration of TX76-40-2 Wheat Germplasm

TX76-40-2 (Reg. no. GP-399, PI 557538) is a soft red winter wheat (Triticum aestivum L.) breeding line developed by the Texas Agricultural Experiment Station. It originated from a segregating bulk from Ron Barnett's wheat breeding program at the North Florida Research and Education Center at Quincy. TX76-40-2 is an F₃, sib-line to 'Florida 302' and resembles that cultivar in several characteristics. From 125 F₃ head rows grown in 1977-1978, several were bulked to form the experimental line TX76-40-2. The pedigree is Coker 65-20//'Purdue 4946A4-18-2-10-1/Hadden'//Vogel/'5/Anderson//'Purdue 4946A4-18-2-10-1/Hadden. TX76-40-2 was tested from 1980 to 1991 and increased for possible release as a new cultivar, but it lacks adequate test weight, and perhaps adequate yield potential, for release as a cultivar. TX76-40-2 produced grain yields in excess of 5170 kg ha⁻¹ (77 bu acre⁻¹) in East Texas in 1991, compared with 5220 kg ha⁻¹ for Florida 302. The mean yield of TX76-40-2 at Aberdeen, ID, and Ladisville, PA, in 1991 was 7054 kg ha⁻¹, compared with 7861 kg ha⁻¹ for Florida 302, when they were tested in the Uniform Southern Soft Red Winter Wheat Nursery. When averaged over 13 year-locations in East Texas and compared with Florida 302, TX76-40-2 has yielded 174 kg ha⁻¹ (2 bu acre⁻¹) less, had 25 mg m⁻² (2 lb bu⁻¹) lower test weight, was 3 d later, and 10 cm shorter.

Coleoptile color is slightly reddish and seedling anthocyanin normally is present. Juvenile plant growth is erect, and the line tillers profusely. Seed shape is elliptical, cheeks are rounded, brush size is large and is not collared. Shoulder shape is oblique. Seeds normally are about 6 mm in length and 3 mm in width. Kernel weight varies between 30 and 36 mg. Plant color at booting is green. Anthocyanin pigment is normally absent in stems. Waxy bloom on stems is absent. Internodes are hollow and there usually are four nodes above ground. The internode length between the flag leaf node and the leaf below is =18 cm at Overton, TX. The leaf below the flag leaf is normally about 10 mm in width and 20 cm in length. The spike is mid-dense, tapering, and apically awnletted (awns 1 to 2 cm long). Spikes normally are yellow, about 7 cm in length and 11 mm in width; there are usually three seeds per spikelet.

TX76-40-2 should be useful germplasm because of its superior resistance to glume blotch [caused by Phaeosphaeria nodorum (E. Müller) Hedjaroude], field resistance to powdery mildew [caused by Erysiphe graminis DC. f. sp. tritici Ém. Marchal], lodging resistance, and good yield potential. TX76-40-2 has been one of the more glume blotch-resistant wheat lines tested at Overton; the only line which has been consistently more resistant has been 'Coker 762'. The resistance to glume blotch is expressed in both seedling and adult plants. It is more evident in the seedling stage when inoculated in greenhouse tests. Research on components of partial resistance to glume blotch at Overton (1) indicated that TX76-40-2 had a latent period longer than that of Coker 762 in the seedling stage, and an above-average length of latent period in the adult stage. TX76-40-2 has not been subject to attack by powdery mildew in Texas; however, it has been susceptible at several other locations in the southeastern USA, perhaps due to different area biotypes.

TX76-40-2 has appeared to be moderately resistant to endemic races of leaf rust (caused by Puccinia recondita Roberge ex Desmaz.) present in Texas. Research at the leaf rust laboratory at Dallas indicated that TX76-40-2 has Lr 9, as well as one or more other resistance genes, probably Lr 10. The resistance generally appears similar to that of Florida 302, whose resistance has been overcome under field conditions in Texas. However, in variety tests at both Dallas and Prosper in 1991, TX76-40-2 had significantly lower leaf rust ratings than Florida 302. Ratings at Prosper were 5MR for TX76-40-2 and 80MS for Florida 302. At Dallas, the leaf rust ratings were 1R and 40MS, respectively. Apparently, TX76-40-2 has an additional Lr gene not possessed by Florida 302. Data from D.V. McVey at the USDA-ARS Cereal Rust Laboratory in St. Paul, MN, for 1991 indicate that TX76-40-2 had stem rust (caused by Puccinia graminis Pers. Pers.) resistance genes 10, 17, and possibly one other gene. TX76-40-2 has no resistance to Hessian fly (Mayetiola destructor Say), according to research by R.H. Ratcliff and G. Safranski, USDA-ARS at West Lafayette, IN. Milling and baking analysis at the Soft Wheat Quality Laboratory (USDA-ARS) at the Ohio Agricultural Research and Development Center at Wooster, OH indicate that TX76-40-2 has poor soft wheat quality. Seed will be maintained by the Texas Agricultural Experiment Station at Overton.


References and Notes


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Registration of Idaho Snow Mold Male Sterile Population, Cycle 0, Winter Wheat Germplasm

Idaho Snow Mold Male Sterile Population, Cycle 0 (IDSMM-Co), is a winter wheat (Triticum aestivum L.) population (Reg. no. GP-398, PI 573191) segregating for the dominant male

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