Registration of GRS1201 Greenbug Multi-Biotype-Resistant Wheat Germplasm

GRS1201, (Reg. no. GP-357, PI 561948) is a multi-biotype greenbug, Schizaphis graminum (Rondani), resistant winter wheat (Triticum aestivum L.) germplasm developed by USDA-ARS in cooperation with the Oklahoma Agric. Exp. Stn. It was formally released in March 1992. GRS1201 is resistant to biotypes B, C, E, G, and I of the greenbug (1). GRS1201 is a 1AL/1RS wheat/rye (Secale cereale L.) translocation line developed from an alien substitution plant that was derived from a wheat × rye hybrid (short wheat selection/‘Scout’/[TX66A345-2]/‘Insane F.A.’). Spikes of the alien substitution plant were irradiated with a total of 7.5 Sv to induce chromosomal breakage and translocation of chromatin. Maturation, irradiated pollen of the alien substitution plant was used to pollinate ‘TAM W-101’ hard red winter wheat. X₁ (X₁ denotes generation following irradiation treatment) plants were selected for self-fertility. Progeny were selfed for seven generations with selection for self-fertility performed for each generation. In the X₇ generation, seedlings resistant to greenbug biotype G were identified utilizing standard protocols (2). Further tests revealed that GRS1201 is resistant to biotypes B, C, E, G, and I (D.R. Porter, 1992, unpublished data), but susceptible to F (1) and H (D.R. Porter, 1992, unpublished data). Greenbug resistance of GRS1201 is conditioned by the translocated 1RS chromosome arm derived from ‘Insane F.A.’ rye (D.R. Porter, 1992, unpublished data). Resistance is dominant.

GRS1201 is a composite of 40 homozygous resistant X₄ lines that were tested in the X₅ generation (30 seedlings from each line) to verify homozygous greenbug biotype G resistance. GRS1201 is similar to TAM-W-101 in maturity and height. It also carries stem rust (caused by Puccinia graminis Tans=Pers.) resistance genes SrS, Sr7b, and Sr17. GRS1201 is susceptible to F (1) and H (D.R. Porter, 1992, unpublished data). Greenbug resistance of GRS1201 is conditioned by the translocated 1RS chromosome arm derived from ‘Insane F.A.’ rye (D.R. Porter, 1992, unpublished data). Resistance is dominant.

Written requests for small quantities of GRS1201 seed should be sent to the corresponding author. Recognition of origin of this germplasm should be indicated whenever it is used for research or breeding purposes. Seed will be maintained at the Plant Science Research Laboratory, Stillwater, OK.

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Registration of KS84HW196 Hard White Winter Wheat Germplasm

KS84HW196 (Reg. no. GP-358, PI 564282) is a hard white winter wheat (Triticum aestivum L.) released in 1992 and developed cooperatively by the Kansas Agricultural Experiment Station and the USDA-ARS. It was selected from the cross ‘Bison’/‘Sterling’/3 ‘Scout’/3 ‘Eagle’/4 ‘Pinnacle’/2 ‘Eagle’. The last cross was made at Hays, KS, during the winter of 1977-1978. KS84HW196 is an increase from an F₁ head row selected at Hays in 1983.

The American Association of White Wheat Producers has been producing KS84HW196 on an experimental basis since 1990. KS84HW196 and ‘Rio Blanco’ are being used in the development of an identity-preserved, production and marketing system for hard white winter wheats produced in the southern Great Plains.

KS84HW196 is awned, white-glumed, and semidwarf. It is slightly shorter than ‘Newton’ or ‘TAM 107’, but has a coleoptile length equal to the tall cultivar, Eagle. It is early maturing, equivalent to TAM 107, and its winterhardiness is equivalent to ‘Scout 66’. Pre-harvest sprouting tolerance of KS84HW196 is less than that for most hard red winter cultivars but is equal to ‘TAM 200’. Spikes of KS84HW196 are inclined, oblong to fusiform, and middense. Glumes are white, midlong, and narrow to midwide. Shoulders are absent on basal glumes, oblique at midspike, and nearly square at the top. Beaks are midwide, acuminate, and 2 mm at the base of the spike to 17 mm at the top. Awns are white and range from 5 to 8 cm long on a single spike. The kernel is white, hard, midlong, and elliptical; the germ is small to midsmall; the crease is midwide and middeep; the cheeks are rounded to angular; and the brush is midsized, midlong, and without a collar.

KS84HW196 was tested in the Kansas advanced yield nurseries from 1985 to 1988 and evaluated in both the Southern Regional Performance Nursery and the Western Kansas Wheat Variety Performance Tests in 1987 and 1988. It has performed best under western Kansas dryland conditions. Yields of KS84HW196 have averaged 2.2 kg ha⁻¹ better than ‘Larned’ and Newton, but 4.7 kg ha⁻¹ less than TAM 107, the most popular cultivar currently grown in Kansas.

Hard wheat milling and bread making qualities of KS84HW196 are very good. Its white seed coat, high test weight and kernel weight are associated with excellent flour extraction rates. Mixing time, loaf volume, and protein content have been equal to Scout 66. KS84HW196 was evaluated by the Wheat Quality Council in its Small-Scale Mill and Bake Test in 1986 and in its Large-Scale Mill and Bake Test in 1987 and 1988. KS84HW196 was rated average or above average in overall baking quality each year.

The disease and insect reactions of KS84HW196 are similar to Scout. It is resistant to stem rust caused by Puccinia graminis Pers.: P., but susceptible to leaf rust caused by P. recondita Roberge ex Desmaz. soilborne mosaic virus, wheat streak mosaic virus, and Hessian fly, Mayetiaola destructor (Say). KS84HW196 is very susceptible to bacterial leaf blight caused by Pseudomonas syringae Van Hall.

Germplasm amounts of seed (5g) are available from the Fort Hays Branch Exp. Stn., Hays, KS 67601.