

Registration of KS92WGRC21 and KS92WGRC22 Hard Red Winter Wheat Germplasms Resistant to Wheat Spindle-Streak Mosaic Virus, Wheat Soilborne Mosaic Virus, and Powdery Mildew

KS92WGRC21 (Reg. no. GP-389, PI 566670) and KS92WGRC22 (Reg. no. GP-390, PI 566671) are hard red winter wheat (*Triticum aestivum* L.) germplasms resistant to wheat soilborne mosaic virus, wheat spindle-streak mosaic virus, and powdery mildew [caused by *Erysiphe graminis* (DC.) f. sp. *tritici* Ém. Marchal]. They were developed cooperatively by the USDA-ARS; the Wheat Genetics Resource Center at Kansas State University; the Kansas Agricultural Experiment Station; the Cornell Agricultural Experiment Station; the North Carolina Agricultural Research Service; and University College Dublin, Republic of Ireland. They were tested under experimental numbers U1261-2-5-7 and U1273-5-18-8 (1,2), respectively, and released as germplasms in 1992.

The pedigree of KS92WGRC21 is 'TAM 200'*3/TA 2570, and that of KS92WGRC22 is 'Century'*3/TA 2567. Both are BC₂F₂-derived lines. TA 2567 and TA 2570 are two closely related accessions of *T. tauschii* (Coss.) Schmal. from Armenia. Both germplasms were highly resistant to a combined infection of wheat spindle streak and soilborne mosaic viruses in head rows at Manhattan, KS, in 1990 and in replicated experiments at Oxford, KS, in 1991. The recurrent parents, TAM 200 and Century, displayed severe symptoms in the same nurseries. At Oxford, KS92WGRC21 and KS92WGRC22 yielded 359 and 425 g m⁻², respectively; this is significantly more than their recurrent parents, which yielded 148 and 277 g m⁻², respectively.

At Ithaca, NY, in 1991 and 1992, where only the spindle-streak virus was present, KS92WGRC21, KS92WGRC22, and Century were rated as highly resistant (all with mean scores of 1.7 on a 1 to 9 scale), whereas TAM 200 was severely infected (with a mean score of 7.3). The local check cultivar, Geneva, which is considered moderately resistant, had a mean score of 5.0.

The genetic basis of resistance has not been determined, but our unpublished results suggest that resistances to the two viruses are conditioned by different loci. Resistances to both viruses in KS92WGRC21 are derived from TA 2570, and resistance to soilborne mosaic virus in KS92WGRC22 is derived from TA

2567. We do not know whether KS92WGRC22 carries a gene or genes for resistance to spindle-streak mosaic virus from TA 2567 in addition to those from Century.

In a replicated field experiment at Dublin, Ireland, in 1991, both germplasms displayed a significantly lower level of infection from powdery mildew than did their respective recurrent parents (both of which carry the *Pm17* resistance gene). In tests at Raleigh, NC, both germplasms and their recurrent parents had resistant reactions as seedlings to isolates of powdery mildew that are avirulent to *Pm17*. In absence of infection by either virus or powdery mildew, KS92WGRC21 and KS92WGRC22 are similar to TAM 200 and Century, respectively, in height, maturity, reaction to other diseases, and overall phenotype. Of the two germplasms, KS92WGRC22 has shown the better adaptation to New York conditions.

Small quantities (3 g) of seed of KS92WGRC21 and KS92WGRC22 are available upon written request. Appropriate recognition of source should be given when this germplasm contributes to research or development of new cultivars. Seed stocks are maintained by the corresponding author.

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References and Notes

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Registration of KS91WGRC11, KS92WGRC15, and KS92WGRC23 Leaf Rust-Resistant Hard Red Winter Wheat Germplasms

KS91WGRC11 (Reg. no. GP-391, PI 566668), KS92WGRC15 (Reg. no. GP-392, PI 566669), and KS92WGRC23 (Reg. no. GP-393, PI 566672), are hard red winter wheat (*Triticum aestivum* L.) germplasm lines resistant to leaf rust (caused by *Puccinia recondita* Roberge ex Desmaz.) and developed cooperatively by the Wheat Genetics Resource Center of Kansas State University, the USDA-ARS, and the Kansas Agricultural Experiment Station.

KS91WGRC11 seedlings produced low infection types (01C to 23X) when inoculated with cultures PRTUS19, PRTUS24, and PRTUS25 of *P. recondita*. Adult plants exhibited low infection types in the field in Manhattan and Hutchinson, KS, in 1991, 1992, and 1993. The pedigree of KS91WGRC11 is 'Century'*3/TA2450. TA2450 is an accession of *T. tauschii* (Coss.) Schmal. collected by Kyoto University, Japan, near Behshahr in north

central Iran. KS91WGRC11 is a BC₂F₂-derived line homozygous for the leaf rust-resistance gene *Lr42* from TA2450. *Lr42* is on chromosome 1D, linked to the *Lr21* locus, with a recombination value of 28 ± 2 units. KS91WGRC11 is similar to Century in height, maturity, and overall phenotype, but Century (which carries the *Lr24* gene) exhibits a high infection type (88P) when inoculated with PRTUS19, PRTUS24, and PRTUS25. KS91WGRC11 was released as germplasm in 1991.

KS92WGRC15 seedlings produced a low infection type (01C to 03C) when inoculated with cultures PRTUS19, PRTUS24, and PRTUS25 of *P. recondita*. Adult plants exhibited low infection types in the field at Manhattan and Hutchinson, Kansas in 1991, 1992, and 1993. KS92WGRC15 is an F₄-derived line with the pedigree 'Karl'/'TAM 200'/KS86WGRC2. It results from an effort to transfer an allele of *Lr21* from KS86WGRC2 into a more desirable agronomic background. KS92WGRC15 is similar to Karl in height and overall phenotype and heads 1 d later. Under an early and severe leaf rust infection at Hutchinson, KS, in 1992, KS92WGRC15 yielded 22 percent more than