Registration of KS94WGRC29, KS94WGRC30, and KS94WGRC31 Wheat Germplasm Resistant to Russian Wheat Aphid

KS94WGRC29 (Reg. no. GP-496, PI 586954), KS94WGRC30 (Reg. no. GP-497, PI 586955), and KS94WGRC31 (Reg. no. GP-498, PI 586956) are winter wheat (Triticum aestivum L.) germplasms resistant to Russian wheat aphid (RWA) [Diuraphis noxia (Mordvilko)] developed and released in 1995 by the Kansas Agricultural Experiment Station (KAES), Manhattan, KS.

The pedigree of KS94WGRC29 and KS94WGRC30 is PI 220127/P5//TAM 200/'KS87H66 and that of KS94WGRC31 is PI 220350/KS87H57/TAM 200/KS87H66/3/KS87H325. In the pedigrees, names starting with KS are unreleased Kansas experimental lines. P5 is a random mated population that had gone through two cycles of recurrent selection for resistance to leaf rust (caused by Puccinia recondita Roberge ex Desmaz.) and Hessian fly [Mayetiola destructor (Say)]. All germplasms are increases of F3-derived headrows, which were tested in the 1994 and 1995 preliminary yield tests at Hays and Colby, KS. They are all of winter habit, awned, white glumed, and semidwarf in stature. PI 220127 and PI 220350, the RWA-resistant parents, are winter wheat accessions from Afghanistan (1). They are of late maturity and tall under Kansas conditions. PI 220127 has hard white seed and PI 220350 has hard red seed. In seedling greenhouse tests, the improved germplasms were rated homogeneous and equal to their RWA resistant parent. Using a RWA damage scale of 1 to 9, PI 220127 was rated 2 and PI 220350 was rated 4, while the RWA susceptible check cultivar, TAM 107, rated 9 (1).

KS94WGRC29 is a white-seeded selection, 2 cm taller than ‘Rio Blanco’ and with a similar coleoptile elongation potential. The 2-yr, two-location mean yield for KS94WGRC29 was 2688 kg ha\(^{-1}\), compared with 2670 kg ha\(^{-1}\) for Rio Blanco. The mean grain volume weight for KS94WGRC29 was 753 kg m\(^{-3}\), compared with 771 kg m\(^{-3}\) for Rio Blanco. The peak mixing time of this line was 0.5 min longer than that of ‘Larned’, as measured with the mixograph, and its grain protein content was 1 percentage point higher than that of Rio Blanco.

KS94WGRC30 is a red-seeded selection that headed 1 d earlier, was 7 cm shorter, and had a 0.5-cm longer coleoptile than ‘Ike’. Mean grain yield was 3274 kg ha\(^{-1}\), compared with 3193 kg ha\(^{-1}\) for Ike; mean grain volume weight was 775 kg m\(^{-3}\), compared with 772 kg m\(^{-3}\) for Ike. The mixing strength of KS94WGRC30 was 1.5 min longer than that of Ike, and grain protein was 1% lower.

KS94WGRC31 is a red-seeded selection that headed 1 d earlier, was 5 cm shorter, and had a coleoptile length equal to that of Ike. Its mean grain yield was 3538 kg ha\(^{-1}\), compared with 3370 kg ha\(^{-1}\) for Ike; its mean grain volume weight was 775 kg m\(^{-3}\), compared with 770 kg m\(^{-3}\) for Ike. The mixing strength of KS94WGRC31 was 1 min longer than that of Ike, and grain protein was 0.5% lower.

All the improved germplasms have effective field resistance to Russian wheat aphid (RWA) at Colby, KS, during 1994 and 1995.

References and Notes


2. T.J. Martin, Kansas State Univ. Agric. Res. Dep. of Entomology, Kansas State Univ., Manhattan, KS 66506. Registration of KS94WGRC29, KS94WGRC30, and KS94WGRC31, in wheat (Triticum aestivum L.) germplasm resistant to Russian wheat aphid (Diuraphis noxia [Mordvilko]) developed and released in 1995 by the Kansas Agricultural Experiment Station (KAES), Kansas State Univ., Manhattan, KS. The germplasm is increased from improved headrows, which were tested in the 1994 and 1995 preliminary yield tests at Hays and Colby, KS. The parents are winter wheats, PI 220127 and PI 220350, which are RWA resistant. The improved germplasms are increases of F3-derived headrows, which were tested in the 1994 and 1995 preliminary yield tests at Hays and Colby, KS. The improved germplasms were rated homogeneous and equal to their RWA resistant parent. Using a RWA damage scale of 1 to 9, PI 220127 was rated 2 and PI 220350 was rated 4, while the RWA susceptible check cultivar, TAM 107, rated 9. Crops Sci. 37:296 (1997).