REGISTRATIONS OF CULTIVARS

Registration of ‘Ok102’ Wheat

‘Ok102’ (Reg. no. CV-941, PI 632635) is a hard red winter wheat (Triticum aestivum L.) developed cooperatively by the Oklahoma Agric. Exp. Stn. and the USDA-ARS. Ok102 was released in March 2002, primarily on the basis of its resistance to several foliar diseases, excellent milling quality, and desirable dough strength for leavened bread products.

Ok102 was derived from the cross ‘2174’/Cimarron (PI 536993), performed in 1991. 2174 has the pedigree IL71-5662/PL145 (PI 600840)//’2165’ and was released by the Oklahoma Agric. Exp. Stn. in 1997. Cimarron has the pedigree ‘Payne’ (Citr 17717)*2/C0725052 and was released by the Oklahoma Agric. Exp. Stn. in 1990. Ok102 traces to the bulk progeny of a single F3, head row harvested in 1995. The F3 and F4 generations were evaluated and harvested as bulk populations in Stillwater, OK. The head row progeny was selected in 1996 from a non-replicated nursery at Lahoma, OK, for its acceptable winterhardiness, plant and head type, heading and maturity date, leaf rust (caused by Puccinia triticina Eriks.) resistance, lodging resistance, grain yield, volume weight, kernel plumpness, and mixograph properties. Subsequent generations were advanced by bulk selfing in the field, with roguing of taller variants each year until 2002. Ok102 was evaluated as OK7508 in replicated Oklahoma performance trials from 1997 to 2001, and in the Southern Regional Performance Nursery (SRPN) in 2000 and 2001.

Ok102 is semidwarf but shorter than most HRW wheat cultivars currently in production. Its mature-plant height (77 cm) is 8 cm shorter than 2174 and ‘Ok101’ (Carver et al., 2003) and 7 cm shorter than ‘Jagger’ (Sears et al., 1997). Lodging resistance on a scale of 1 (highest) to 5 (lowest) is about 2 for Ok102, compared with values of 1 for 2174, 3 for Ok101, and 4 for Jagger. Ok102 shows an intermediate reaction to acidic, aluminum-toxic soil. With a tolerance rating of 3.2 on a scale of 1 (most tolerant) to 5 (most susceptible), Ok102 is more sensitive to Al toxicity than Ok101 (1.3) and Jagger (1.6), but similar to 2174 (3.0). Ok102 breaks winter dormancy relatively late, but its heading date (123 d) is intermediate among current cultivars. Comparative placement of cultivars for date of first-hollow-stem stage is Jagger < Ok101 < 2174 and Ok102. Precise differences are highly year-dependent. Heading date of Ok102 is 2 d later than Ok101 and Jagger, the same as 2174, and 2 d earlier than ‘2137’. This phenological pattern makes Ok102 well suited for winter grazing and grain production in a dual-purpose (graze-plus-grain) management system. Another characteristic that lends Ok102 to dual-purpose production is coleoptile elongation, or the ability to emerge from deeper seed placement. When grown at 15°C in a growth chamber and until the sixth leaf, Ok102 has a coleoptile length of 8.7 cm, which is 2.1 cm longer than Ok101 (short coleoptile), and 0.4 cm shorter than Jagger (moderately long). Ok102 has a relatively high number of leaves on the flag leaf, with 75 and 16 for kernel hardness index. Hence, Ok102 has greater dough strength than 2174 on the basis of SKCS parameters. From 28 site-years in the field, similar to the reaction of one of its parents, 2174. Ok102 is moderately resistant to Russian wheat aphid (Diuraphia noxia Mordvilko) and Diuraphia noxia E.M. (2174), and is moderately resistant or susceptible to several foliar diseases, excellent milling quality, and desirable dough strength for leavened bread products.

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determined in replicated variety trials in Oklahoma in 2001 and 2002. Across seven environments, fall foliation (measured by hand clipping at the soil surface) at the 7-8 leaf stage of wheat varieties from Crop Science. Published by Crop Science Society of America. All copyrights reserved. Published July, 2004.

In greenhouse tests, juvenile plants of Ok102 exhibited a susceptible reaction to leaf rust comprised of uredinospores collected from wheat fields near Stillwater, OK from May 1999 and 2000. From 1999 to 2002, Ok102 has not shown a resistant reaction to leaf rust races conducted in Texas and Oklahoma, having a rating of 1 (resistant) on a 1-to-9 scale. Hence, Ok102 has adult-plant resistance to leaf rust races currently present in Oklahoma. Ok102’s tests conducted by the USDA-ARS Cereal Laboratory, St. Paul, MN, Ok102 is postulated to have adult-plant resistance on the basis of seedling responses in the greenhouse to population 1 (Ok101), 768 kg m⁻³ (Ok102), 734 kg m⁻³ (Ok101), and 748 kg m⁻³ (Jagger). Ok102 is intermediate among current cultivars. Comparative placement of cultivars for date of first-hollow-stem stage is Jagger < Ok101 < 2174 and Ok102. Precise differences are highly year-dependent. Heading date of Ok102 is 2 d later than Ok101 and Jagger, the same as 2174, and 2 d earlier than ‘2137’. This phenological pattern makes Ok102 well suited for winter grazing and grain production in a dual-purpose (graze-plus-grain) management system. Another characteristic that lends Ok102 to dual-purpose production is coleoptile elongation, or the ability to emerge from deeper seed placement. When grown at 15°C in a growth chamber and until the sixth leaf, Ok102 has a coleoptile length of 8.7 cm, which is 2.1 cm longer than Ok101 (short coleoptile), and 0.4 cm shorter than Jagger (moderately long). Ok102 has a relatively high number of leaves on the flag leaf, with 75 and 16 for kernel hardness index. Hence, Ok102 has greater dough strength than 2174 on the basis of SKCS parameters. From 28 site-years in the field, similar to the reaction of one of its parents, 2174. Ok102 is moderately resistant to Russian wheat aphid (Diuraphia noxia Mordvilko) and Diuraphia noxia E.M. (2174), and is moderately resistant or susceptible to several foliar diseases, excellent milling quality, and desirable dough strength for leavened bread products.