Registration of ‘Whitestone’ Oat

‘Whitestone’ spring oat (Avena sativa L.) (Reg. no. CV-343, Pl 591810) was developed at the North Dakota Agricultural Experiment Station in cooperation with the USDA-ARS and was released by the Agricultural Experiment Station, North Dakota State University, in 1994. It was designated ND87025 during development and testing. Whitestone was developed from a series of crosses with the pedigree ‘Porter’/4/M23/RL3038/Otana/3/‘Frokcer’/RL3038/’Hudson’, with the final cross made in 1983. RL3038 and M23 were provided by R.H. McKenzie (Agriculture & Agri-Food Canada Res. Stn., Winnipeg, MB). RL3038 possesses genes Pc-38, Pc-39, Pg-2, and Pg-13 and was derived from a complex pedigree that included ‘Rodney’ and ‘Pendek’. M23 is a stiff-strawed, lodging-resistant line developed in New Zealand with the pedigree ‘Avon’/Rodney//’Milford’. The F2 was grown in the field in 1985, and panicles were selected based on plant reaction to natural infection of stem rust (caused by Puccinia graminis Pers.:Pers. f. sp. avenae Eriks. & E. Henn.) and crown rust (caused by P. coronata Corda var. avenae W.P. Fraser & Ledingham). The F3 and F4 were advanced in the greenhouse using modified single-seed descent from seedlings resistant to P. coronata races CR13 and CR36 and P. graminis race NA27. F5 lines from resistant F4 seedlots were grown in panicle hill plots in 1986 at Fargo, ND, with further selection for stem and crown rust resistance. The line that became Whitestone resulted from bulking seed of an F4 seed line. Hail in 1987 and drought in 1988 delayed further evaluation of Whitestone until 1989. Breeder seed of Whitestone was produced in 1991 by roguing off-type plants from an F3 bulk and harvesting the remaining plants.

Whitestone has been evaluated for yield in North Dakota since 1989, and in the Uniform Midseason Oat Performance Nursery (UMOPN) in 1992. Based on 36 location-years in North Dakota and 23 location-years in the UMOPN, Whitestone is high yielding and has late maturity similar to ‘Valley’. In North Dakota, Whitestone’s average grain yield was 7% higher than Valley and its test weight was higher than ‘Newdak’, but slightly lower than Valley. Experimental milling yield of Whitestone is less than Valley or Newdak. Relative to Valley, Whitestone is similar in height, but has less lodging resistance. It possesses genes Pc-38 and Pc-39 for resistance to crown rust and Pg-13 for resistance to stem rust. Whitestone has moderate tolerance to barley yellow dwarf virus (BYDV). Whitestone produced the highest grain yield of any oat cultivar in North Dakota variety trials during 1991 to 1993 and was released to provide a high-yielding, disease-resistant cultivar adapted to western North Dakota.

Culms and leaf margins of Whitestone are glabrous and ligules are present. It has equilateral panicles with ascending branches. Spikelet separation occurs by fracture and floret separation by heterofracture. Lemmas are glabrous and basal hairs are absent. Kernels of Whitestone are white, fluorescent, medium size, and midlumped. Awns are absent.

 Variety protection under the Plant Variety Protection Act, Public Law 91-577, is pending (no. 9600003), with the option that Whitestone seed may be sold by name only under the certified seed classes designated as breeder, foundation, registered, and certified. Breeder and foundation seed will be maintained by the Seedstocks Project, N. Dak. Agric. Exp. Stn., North Dakota State Univ., Fargo, ND 58105-5051. Limited quantities of seed for research are available upon request from the corresponding author. Recipients of seed are asked to make appropriate recognition of the source of Whitestone if it is used in the development of a new cultivar, germplasm, parental line or genetic stock.

M. S. McMullen,* D. C. Doehlert, and J. D. Miller (1)

References and Notes

1. M.S. McMullen, Dep. of Plant Sciences, D.C. Doehlert, USDA-ARS and Dep. of Crop Science and Food Technology, and J.D. Miller, USDA-ARS and Dep. of Plant Pathology, North Dakota State Univ., Fargo, ND 58105-5051. Research supported in part by the Quaker Oats Co. Cooperative investigations of the North Dakota Agric. Exp. Stn. and the USDA-ARS. Registration by CSSA. Accepted 31 Aug. 1996. *Corresponding author (mmcmull@plains.nodak.edu).