Notice of Release of ‘NC02-8331’ Winter Oat (Golden Hull)

‘NC02-8331’ winter oat (*Avena sativa* L.) (PI XXXXXX) is a high yielding, full-season maturity, short stature, hulled oat with good test weight and winter hardiness, and a bright, golden hull. ‘NC02-8331’ was developed using mass selection and pedigree breeding approaches, which ultimately resulted in the greenhouse cross NC93-2978 / FL874-S1-G3 // ARFOB30 during the winter 1995-96. ‘NC02-8331’ is distinguished from other cultivars with the bright, golden hull especially desired by the equine industry. An oat seed producer in North Carolina has specifically asked that this line be released because of its desirable hull color.

*F₂* through *F₅₋₆* populations were multiplied and samples selected for subsequent plantings between fall 1997 through the 2001-02 season. A single *F₅₋₆* panicle-row selection, designated ‘NC02-8331’ was harvested in June 2002. ‘NC02-8331’ was evaluated in a non-replicated observation nursery in the 2003 season and in replicated multi-location trials in the 2004, 2005, 2006, 2007, 2008 and 2009 seasons. ‘Rodgers’, ‘Brooks’ and ‘SS76-40’ are the dominant hulled cultivars in commercial North Carolina oat production and served as checks in the NC small grains program in-house evaluations. ‘NC03-8331’ significantly out-yielded ‘Rodgers’ and ‘Brooks’ over seven location-years’ of data. The test weight of ‘NC02-8331’ was similar to the three check cultivars. The heading date of ‘NC02-8331’ was significantly later than the check cultivars. There was no difference among entries for leaf freezing damage.

‘NC02-8331’ was evaluated in nine locations in eight states in the 2006-07 Uniform Winter Oat Yield Nursery. It had similar yields compared to checks ‘Rodgers’, ‘Horizon 321’ and ‘Harrison’ and test weights similar to ‘Rodgers’ and ‘Horizon 321’, but significantly less than ‘Harrison’. Later heading date and shorter plant heights were observed relative to checks. It was susceptible to crown rust and stem rust. Groat, protein, b-glucan, and lipid percentages of grain were similar to ‘Rodgers’.

In the 2007-08 Uniform Winter Oat Yield Nursery, ‘NC02-8331’ was evaluated at 11 locations in 10 states. Yields were similar to checks ‘Rodgers’, ‘Horizon 321’ and ‘Harrison’, and its test weight was similar to ‘Rodgers’ and ‘Horizon321’, but significantly less than ‘Harrison’. ‘NC02-8331’ was later heading and had significantly shorter plant height compare with checks. It had significantly lower percentages of groat, protein and b-glucan than ‘Rodgers’ and significantly greater lipid percentage than ‘Rodgers’. It was susceptible to crown rust and stem rust.

‘NC02-8331’ was rated over nine location-years in the NC Official Oat Variety Tests in the 2006-07 through the 2008-09 seasons. It had significantly greater grain yield than ‘SS76-40’ and ‘Brooks’, and test weight was similar to ‘Brooks’ and significantly less than ‘Rodgers’ and ‘SS76-40’. It was later heading and was 6 to 13 inches shorter than the checks. Straw strength was about twice as good as ‘Brooks’.

In 2007-08, ‘NC02-8331’ was entered in the Uniform Oat Winter Hardiness Nursery. Based on data from eight locations in the USA and Europe, ‘NC02-8331’ had a mean winter survival rating similar to the winter hardy check cultivars ‘Norline’ and ‘Wintok’. Winter survival rating was significantly higher than the winter tender check ‘Fulghum’.
In 2007-08, 76 F_{10:11} panicle selections were grown at Clayton, NC and 10 uniform panicle-rows that were true-to-type were harvested and seed was bulked to produce Breeder Seed. This material underwent seed increase during 2008-09, and in fall 2009, F_{10:13} seed was transferred to the North Carolina Foundation Seed Producers Inc., for further increase. Although ‘NC02-8331’ has remained uniform and stable in composition since 2007, the Breeders Seed increase fields in 2009 and 2010 contained up to 0.5% plants 10 to 15 cm taller than ‘NC02-8331’ and up to 0.1% plants with awned spikelets. These taller plants and plants with awned spikelets were variants.

‘NC02-8331’, a SUNGRAINS agreement variety, will be licensed exclusively to a seed company selected from responses to an open bidding process made available to potentially interested seed companies. Breeder seed of ‘NC02-8331’, maintained by NCARS, will be available with a fully executed seed transfer agreement, to interested breeders or companies. Application for U.S. Plant Variety Protection will be filed for this cultivar, and the licensee will be expected to pay the PVP fee. Foundation seed will be maintained by the N.C. Foundation Seed Producers, Inc., 8220 Riley Hill Road, Zebulon, NC 27597 (919/269-5592).

David Smith
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10/23/13
Date