Notice of Release of ‘NC-Yadkin’ Wheat

‘NC-Yadkin’ soft red winter wheat, formally designated NC04-20814, was derived from the cross NC94-6275 / P86958RC4-2-1-10 // VA96-54-234, using a combination of mass selection and pedigree breeding methods. The release of ‘NC-Yadkin’ aims to provide North Carolina growers with a high yielding, disease resistant cultivar for the mid- to full-season market niche. ‘NC-Yadkin’ has excellent grain yield and a good test weight, combined with resistance to powdery mildew and leaf rust. It is tolerant to Barley Yellow Dwarf Virus (BYDV). It has fair resistance to Hessian fly, and it is moderately resistant to Fusarium Head Blight (FHB) (Scab). ‘NC-Yadkin’ has good flour yield and baking quality. ‘NC-Yadkin’ has performed well in official state variety trials in North Carolina and Virginia during the past two seasons.

After the final cross was made in the greenhouse in 1998, further plantings and selections were conducted at Central Crops Research Station, Clayton, at Tidewater Research Station at Plymouth, and at Cunningham Research and Extension Center at Kinston. Selection criteria during the development process included head size, bright yellow or cream color heads, winter survival, time of head emergence, plant height, straw strength, plant vigor and reaction to natural inoculums of powdery mildew and leaf rust. P26R12 is a dominant cultivar in the mid- to full-season market niche in North Carolina and was used as a reference for comparison, as was ‘NC-Neuse,’ a variety similar to ‘NC-Yadkin.’

‘NC-Yadkin’ was evaluated in a non-replicated observation nursery in the 2005 season and replicated multi-location trials in the 2006, 2007, 2008 and 2009 seasons. Due to a late spring freeze throughout North Carolina and much of the eastern United States in April 2007, data from that year were not utilized in this varietal description. ‘NC-Yadkin’ heads one day earlier than P26R12 and three days earlier than NC-Neuse. ‘NC-Yadkin’ has significantly better powdery mildew, leaf rust and FHB resistance than P26R12. It has similar straw strength, BYDV and Hessian fly ratings as P26R12. ‘NC-Yadkin’ has consistently had a test weight approximately one pound less than NC-Neuse (a consistently high test weight cultivar) and has consistently had a greater test weight than USG3209 (a low test weight cultivar). ‘NC-Yadkin’ yielded significantly greater than USG3209 (75 vs. 59 bu/A) in this data set.

In North Carolina and Virginia, ‘NC-Yadkin’ yielded similarly to the highest yielding varieties in OVT in both states, and yields were similar to or greater than P26R12. During Fusarium Head Blight epidemics in Beaufort County in 2008 and 2009, observations indicated that ‘NC-Yadkin’
is moderately resistant to this disease, and it had lower DON levels that P26R12 in a misted, inoculated nursery at Kinston in 2009. In addition, comparisons in the USDA-ARS Uniform Southern Soft Red Winter Wheat Nursery in 2008 and 2009 indicated its area of adaptation was Maryland, Kentucky, Virginia, North Carolina and north Georgia. In those tests, it has significantly higher yields and test weights than reference cultivars. It was four days later heading, and had shorter plant stature than contemporaries in the comparison. It is susceptible to Biotypes B, C, D, O and L of Hessian fly. ‘NC-Yadkin’ contains the RhtB1 dwarfing gene, the Sr36 gene for resistance to stem rust, the photoperiod insensitive gene Ppd-D1a, the Ax1 or null allele at Glu-A1 and the 2+12 allele at Glu-D1.

NC Foundation Seed Producers, Inc. increased seed of ‘NC-Yadkin’ in the 2009 and 2010 seasons. The variety has remained uniform and stable in composition since 2007. However, the seed increase fields in 2009 and 2010 contained up to 0.5% plants 1 to 15 cm taller than ‘NC-Yadkin’ and up to 0.1% plants with awned spikes. These taller plants and awned plants are variants.

‘NC-Yadkin’ will be available as a public release variety under the SUNGRAINS agreement. NCARS has offered ‘NC-Yadkin’ to the seed industry for one or more limited-exclusivity licenses to produce and sell seed of the variety. Breeder seed of ‘NC-Yadkin,’ to be 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 is being filed for this cultivar. Foundation seed will be maintained by the NC Foundation Seed Producers, Inc., 8220 Riley Hill Road, Zebulon, NC 27597 (919/269-5592).

\[\text{W. David Smith}\]

Director, North Carolina Agricultural Research Service

\[6/30/12\] Date