

South Dakota Agricultural Experiment Station
South Dakota State University
Plant Science Department

Release of 'Advance' Hard Red Spring Wheat

'Advance' is a hard red spring wheat cultivar developed and released in 2011 by the South Dakota Agricultural Experiment Station. It was derived as a single spike from within an F₄ population (Granger/N98-0230) that was originally created in fall 2001. During early generation advancement Advance was tested as population 24023 and as SD4023 within South Dakota State University Preliminary Yield Trials (2006) and Advanced Yield Trials (AYT) from 2007 through 2011. Advance was tested in the Uniform Regional Spring Wheat Nursery (URN) during 2010 as well as the South Dakota Crop Performance Testing (CPT) trials in 2007 through 2011. Advance was also evaluated by the Wheat Quality Council in 2011. Coverage under the United States Plant Variety Protection Act will be sought.

Points of note associated with Advance include:

- 1 High yield potential
- 2 Good test weight
- 3 Adequate grain protein concentration
- 4 Late heading date
- 5 Resistant to moderately resistant ratings for leaf rust, stem rust, and Bacterial leaf streak.

When compared over 30 South Dakota AYT location-years, (6 locations, 5 years) Advance, 'Briggs', 'Select', 'Steele-ND', 'Knudson' and 'Traverse' all produced statistically similar amounts of grain (approximately 48.5 bushels per acre). Test weight of Advance (56.9 lb/bu) was similar to 'Brick' (56.9) and Select (56.9 lb/bu). Grain protein concentration of Advance (14.5%) was statistically similar to Brick (14.6%) and Traverse (14.4%). Advance (32.0 in.) is significantly shorter in height than Knudson (32.9 in.). Its heading date is approximately 0.5 days later than Steele-ND.

Greenhouse and field tests have revealed that Advance was resistant or moderately resistant when inoculated with regionally prominent leaf and stem rust races.

Tests carried out at the USDA Spring Wheat Quality Laboratory in Fargo, ND, have demonstrated that most milling and baking quality parameters associated with Advance are adequate, and bread loaf volume is similar to Knudson, Select, and Granger.

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Release of 'Forefront' Hard Red Spring Wheat

'Forefront' is a hard red spring wheat cultivar developed and released in 2011 by the South Dakota Agricultural Experiment Station. It was derived as a single spike from within an F₄ population (FN1700-155/FN1500-074/Walworth) that was originally created in spring 2001. During early generation advancement Select was tested as population 23775T and as SD3997 within South Dakota State University Preliminary Yield Trials (2005) and Advanced Yield Trials (AYT) from 2006 through 2011. Forefront was tested in the Uniform Regional Spring Wheat Nursery (URN) during 2009 and 2010 as well as the South Dakota Crop Performance Testing (CPT) trials in 2008 through 2011. Forefront was also evaluated by the Wheat Quality Council in 2011. Coverage under the United States Plant Variety Protection Act will be sought.

Points of note associated with Forefront include:

- 1 Good yield potential
- 2 High test weight
- 3 Good grain protein concentration
- 4 Early heading date
- 5 A good level of Fusarium Head Blight (FHB) resistance
- 6 Resistant to moderately resistant ratings for both leaf and stem rust

When compared over 36 South Dakota AYT location-years, (6 locations, 6 years) Forefront, 'Briggs', 'Granger', 'Brick', 'Select', 'Steele-ND' and 'Knudson' all produced statistically similar amounts of grain (approximately 49.5 bushels per acre). Over these location-years, however, all seven cultivars produced less grain than, 'Traverse' (52.1 bu/ac). Test weight of Forefront (57.8 lb/bu) was statistically similar to Brick (58.3), Select (57.6) and Steele-ND (57.3 lb/bu), though significantly greater than the remaining cultivars. Grain protein concentration of Forefront (15.3%) was statistically similar to Steele-ND (15.3%) and Briggs (15.2%). All were significantly higher than Traverse (14.4%). Forefront (36.4 in.) is similar in height to Granger (35.8 in.) and Traverse (35.2 in.). Its heading date is approximately 2.0 days later than Brick.

Several field studies designed to measure FHB resistance levels among AYT, URN, and CPT entries have shown that Forefront is moderately resistant. Greenhouse and field tests have revealed that Forefront was resistant or moderately resistant when inoculated with regionally prominent leaf and stem rust races.

Tests carried out at the USDA Spring Wheat Quality Laboratory in Fargo, ND, have demonstrated that most milling and baking quality parameters associated with Forefront are similar to Granger and Steele-ND, but superior to those of Traverse.

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Release of 'Ideal' Hard Red Winter Wheat

The South Dakota Agricultural Experiment Station announces the release of a new hard red winter wheat cultivar to certified growers.

Tested as SD05118-1 in the 2009, 2010 and 2011 Northern Regional Performance Nurseries (NRPN), the cultivar will be named 'Ideal' after a small community located in Tripp county SD. This community was reportedly so named because of its superb farmland.

Released in August 2011, Ideal was developed as a white chaff re-selection from SD05118, which itself was evaluated in the 2007 and 2008 NRPN. Ideal has the pedigree Wesley/NE93613, and it is well adapted to areas where the winter wheat cultivars Wesley and Overland are currently produced.

In the 2009 NRPN, SD05118-1 ranked first across all locations for mean grain yield among 25 evaluated breeding lines and check varieties, and in the 2010 NRPN, SD05118-1 ranked 16th for mean grain yield among 34 evaluated breeding lines and check varieties. According to 2011 NRPN data currently summarized, SD05118-1 ranks 13th for mean grain yield among 29 evaluated breeding lines and check varieties. In 2005, a line designated as SD05118 was an entry in an early yield trial nursery, and based on resistance to foliar diseases, approximately 45 individual heads were selected and planted to headrows the following year.

In 2006, the line originating from a single headrow selection was designated SD05118-1, and it was first tested in an early yield trial in 2007. Subsequently advanced to a preliminary yield trial in 2008 and an advanced yield trial in 2009, SD05118-1 was evaluated statewide in the 2010 and 2011 Crop Performance Trials (CPT).

Ideal has an excellent stem and leaf rust resistance package. It is postulated to have Sr24 and Lr34 host resistance genes, a combination that provides good resistance to prevalent stem and leaf rust races in the U.S. Northern Great Plains. In regional nursery comparisons with Overland, Ideal is rated slightly more susceptible to Fusarium head blight, but significantly more resistant than Wesley. It is moderately resistant to tan spot, moderately susceptible to stripe rust, and susceptible to BYDV and WSMV.

Ideal also exhibits excellent tolerance to acid soils and partial resistance to Hessian fly. It is of medium height and about 2 to 3 inches taller than Wesley, more similar in height to Overland. It is a mid-maturity type, typically flowering about 2 days later than Wesley. Winter hardiness and resistance to lodging of Ideal are similar to Wesley. Samples of Ideal from the 2009 and 2010 NRPN were tested for milling and baking, and larger 2010 samples were also tested in Wheat Quality Council Trials. In these tests, Ideal exhibited average to good milling quality and average to very good baking quality.

Ideal will have a 30-cents-per-bushel royalty assessed on all Certified Seed sold. It will also have three classes of certified seed; Foundation, Registered and Certified, and an application will be made for Title V Plant Variety Protection.