

**NEBRASKA AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEBRASKA-LINCOLN
DEPARTMENT OF AGRONOMY AND HORTICULTURE**

and

**UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
WASHINGTON, D. C.**

RELEASE OF NT06427 WINTER TRITICALE

NT06427 is a winter triticale (x *Triticosecale* Wittmack) cultivar developed cooperatively by the Nebraska Agricultural Experiment Station and the USDA-ARS and released in 2014 by the developing institutions. It was released primarily for its awnletted spike, good grain yield, and good forage yield when compared to currently grown triticale cultivars. It is adapted to rainfed triticale production systems in Nebraska and in adjacent states. NT06427 will be licensed with the expectation that the name will emphasize the short awns on the spike as it is considered a valuable trait in forage small grains because feeding small grains hay with long awns is a mouth irritant and affects hay consumption..

NT06427 was selected from the cross NE96T431/Titan where the pedigree of NE96T431 is TSW250783//GWT88-12/LAD285. The cross was made in 2000. The F₁ generation was grown in the greenhouse in 2001 and the F₂ to F₃ generations were advanced using the bulk breeding method in the field at Lincoln, NE in 2002 to 2003. In 2004, single F₃-derived F₄ rows were planted for selection at Lincoln. There was no further selection thereafter. The F_{3:5} was evaluated as a single four row plot at Lincoln, NE in 2005. NT06427 was identified in 2006 as the experimental line, NT06427, and selected for further testing in multilocation trials (Lincoln, Mead, and Sydney, NE). Thereafter it was tested in multilocation replicated trials at the same three NE locations.

NT06427 was evaluated in Nebraska replicated yield nurseries starting in 2007 for grain yield. In 2008, limited forage trials began. In the Nebraska Triticale Grain and Forage Nurseries (2008 to 2013, Table 1), NT06427 was compared to our previous released cultivars NE422T, (Baenziger and Vogel, 2002) and NE426GT (Baenziger et al., 2005). NT06427 had significantly higher grain yield (3718 lba/a) than NE422T and was not significantly lower in grain yield than NE426GT. For forage yield (cut approximately 10 days after flowering) NT06427 was not significantly lower yielding (8112 lbs/a) than NE422T or NE426GT.

Other measurements of performance from comparison trials (Table 1) indicate that NT06427 is medium early in maturity (flowering 139 days after Dec. 31) , most similar to NE426GT and 4 days earlier than NE422T which is considered as being late in maturity. NT06427 is mid-tall triticale slightly shorter than NE426GT and significantly shorter than NT4422GT. In the two trials where winter injury occurred, NT06427 was not significantly different (78% winter survival) from NE422T and NE426GT, hence would be considered as comparable to the currently grown triticale cultivars. Historically winter triticale is not as

winterhardy as the more winterhardy winter wheat cultivars, but in most years and locations in Nebraska, winter injury is minor.

Triticale has few diseases in Nebraska and there are no regional nurseries, hence there is little disease or insect data to report. NT06427 was tested in Kenya in 2012 and scored as 1 (on a 0 to 100 scale with 0 being low) for stem rust (caused by *Puccinia graminis Pers.: Pers. f. sp. tritici* Eriks & E. Henn.) using the races common to Kenya (TTKSK and its derivatives). In the same trial, popular wheat (*Triticum aestivum* L.) cultivars (Jagger, 50-60; Scout 66 known to contain *Sr₂*, 55/20; and Overland believed to contain *Sr_{tmp}*, 10) scored higher. NT06427 was also scored in Kenya for field races of stripe rust (caused by *P. striiformis* Westendorp f. sp. *tritici*) and scored as moderately resistant. In Nebraska, when leaf (caused by *P. tritricina* Eriks.), stripe, or stem rust were present on wheat, NT06427 would be considered as resistant. In years of high infection of ergot (caused by *Claviceps purpurea* (Fr.) Tul.), NT06427 has had very low infections. During its selection, lines with ergot are routinely discarded.

In positioning NT06427, based on performance data to date, it should be well adapted to most rainfed wheat production systems in Nebraska and in adjacent areas of the Great Plains where grain or forage triticale are grown. In limited testing outside of Nebraska, NT06427 is competitive to other Nebraska developed cultivars. NT06427 has not been tested under irrigation.

NT06427 is an awnleted, ivory-glumed cultivar. The coleoptile color is white. Its field appearance is most similar to NT0426GT, but can be easily separated from NE426GT because NE426GT is awned. The flag leaf is recurved and twisted at the boot stage. The foliage is green with a waxy bloom on the leaf sheath. The auricle is colorless or white and lightly pubescent. The neck is pubescent (hairy). The head is oblong and middense. The glume is pubescent, white, long, and the glume shoulder is wanting. The beak has an acuminate tip. Kernels are amber colored, elliptical in shape, moderately wrinkled, with a large and long brush.

NT06427 has been uniform and stable since 2010. Less than 4.0 % of the plants were rogued from the Breeder's seed increase in 2010-14. The rogued variant plants were taller in height or were awned. Up to 6% off types may be encountered in future generations. The Nebraska Foundation Seed Division, Department of Agronomy and Horticulture, University of Nebraska-Lincoln, Lincoln, NE 68583 had foundation seed available to qualified certified seed enterprises in 2013 with the first sale of certified seed in 2014. The U.S. Department of Agriculture will not have commercial seed for distribution. The seed classes will be Breeder, Foundation, Registered, and Certified. NT06427 will be submitted for plant variety protection under P.L. 10577 with the certification option. A fee will be assessed on all certified seed sales. Small quantities of seed for research purposes may be obtained from Dr. P. S. Baenziger and the Department of Agronomy and Horticulture, University of Nebraska-Lincoln for at least 5 years from the date of this release. In addition, a seed sample has been deposited in the USDA-ARS National Small Grains Collection, Aberdeen, ID, and this seed is freely available to interested researchers.

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Approval

Director, Nebraska Agricultural
Experiment Station

date

Administrator, Agricultural Research Service
United States Department of Agriculture
Washington, D. C.

date

Table 1. Head to head comparisons of NT06427 to NE422T and NE426GT for grain and forage yield, winter survival, anthesis date, and plant height from trials in Nebraska beginning in 2008 until 2013. Data on grain yield was from trials at up to three rainfed locations (Mead, Lincoln, and Sidney) and for forage yield was from up to two locations (Mead and Sidney) in Nebraska.

Trait	Cultivar	Trial Number	Cultivar Data	NT06427 Data	Percent of NT06427	Significance‡
Grain Yield (lbs/a)	NE422T	12	3360	3718	90.4	**
Grain Yield (lbs/a)	NE426GT	12	3816	3718	103	n.s.
Forage Yield (lbs/a)	NE422T	5	9008	8112	111	n.s.
Forage Yield (lbs/a)	NE426GT	5	8720	8112	107	n.s.
Winter Survival (0 to 100)	NE422T	2	78	78	99	n.s.
Winter Survival (0 to 100)	NE426GT	2	76	78	97	n.s.
Anthesis Date (Julian d)	NE422T	12	143	139	103	**
Anthesis Date (Julian d)	NE426GT	12	139	139	100	n.s.
Plant Height (in)	NE422T	11	55.1	44	125	**
Plant Height (in)	NE426GT	11	44.9	44	102	n.s.

‡ n.s., *, **, not significantly different, significantly different at the P=0.05 and P=0.01 probability level, respectively.