



APPLICATIONS UNDER EXAMINATION

BARLEY

BARLEY (*Hordeum vulgare*)

Proposed denomination: 'Pinnacle'
Application number: 09-6605
Application date: 2009/04/07
Applicant: NDSU Research Foundation, Fargo, North Dakota, United States of America
Agent in Canada: FP Genetics Inc., Regina, Saskatchewan
Breeder: Jerome Franckowiak, NDSU, Fargo, North Dakota, United States of America

Varieties used for comparison: 'Conlon' and 'Rawson'

Summary: *The intensity of anthocyanin colouration on the flag leaf auricles of 'Pinnacle' is strong whereas it is medium on 'Rawson' and weak on 'Conlon'. The spikes of 'Pinnacle' emerge mid-season whereas they emerge very early in 'Conlon' and early in 'Rawson'. Spike glaucosity of 'Pinnacle' is weak whereas it is medium on 'Conlon' and strong on 'Rawson'. The spike of 'Pinnacle' is dense whereas it is lax in 'Conlon' and medium in 'Rawson'. The lemma awns of 'Pinnacle' are equal in length to the spike whereas they are longer than the spike on 'Conlon' and 'Rawson'. The plants of 'Pinnacle' are taller than those of 'Conlon'.*

Description:

PLANT: two row, spring barley, semi-prostrate growth habit at tillering, medium pubescence on the lower leaf sheaths

FLAG LEAF: high frequency of plants with recurved flag leaves, weak pubescence on blade

FLAG LEAF SHEATH: medium glaucosity, weak pubescence

AURICLES: strong anthocyanin colouration, weak pubescence on the margins

SPIKE: emerges mid-season, platform shaped collar, erect attitude, weak glaucosity, tapering shape, dense, parallel to weakly divergent attitude of sterile spikelet, glume and awn length of the median spikelet is shorter than the grain

FIRST SEGMENT OF RACHIS: medium length and curvature

LEMMA AWNS: no anthocyanin colouration of the tips, equal in length of spike, semi-smooth spiculations on margins

KERNEL: medium anthocyanin colouration of nerves of the lemma at beginning of ripening, whitish aleurone layer, husk present, short rachilla hairs, strong spiculation of inner lateral nerves of dorsal side of lemma, no hairiness on ventral furrow, frontal disposition of lodicules

AGRONOMY: good resistance to lodging

Origin and Breeding: 'Pinnacle' (experimental designation ND21863) originated from the cross ND15147//F103-5/ND14636/3/ND15468/ND16092//ND16461 made in the fall of 2000 and arose from a modified pedigree breeding method. From the F2 to F4 generations, highly heritable traits such as maturity, plant height, straw strength, kernel colour and awn type were selected. Starting in the F5 generation, selection criteria also included agronomic characteristics (i.e. heading date, plant height, straw strength, grain yield, etc.), disease and malt quality (i.e. grain protein, malt extract, wort protein, kernel plumpness and weight, and enzyme activity). Based on multiple locations and years, 'Pinnacle' was selected for its high yield potential, large kernel size and high kernel weight.

Tests and Trials: Trials for 'Pinnacle' were conducted during the 2009 growing season at AgQuest (Alberta) Inc. Research Station in Taber, Alberta. A 3 replicate design was planted using 1.5 x 4 metre plots, with 6 rows per plot space 20 cm apart. Measured characteristics were based on 1 year of data. Results were supported by the official technical examination report purchased from the Plant Variety Protection Office in the U.S.A.

Comparison table for 'Pinnacle'

	'Pinnacle'	'Conlon'*	'Rawson'*
Plant height (cm)			
mean	71	63	69
std. deviation	3	4	4

*reference varieties



Barley: 'Pinnacle' (left) with reference varieties 'Conlon' (centre) and 'Rawson' (right)

Proposed denomination: 'TR07728'
Application number: 09-6651
Application date: 2009/05/29
Applicant: WestBred LLC, Bozeman, Montana, United States of America
Agent in Canada: Viterra Inc., Calgary, Alberta
Breeder: Dale Clark, WestBred LLC, Bozeman, Montana, United States of America

Varieties used for comparison: 'Xena' and 'Champion'

Summary: *The flag leaves of 'TR07728' are longer and wider than those of 'Xena' and shorter and narrower than those of 'Champion'. The collar of 'TR07728' is cup shaped whereas it is platform shaped on 'Champion'. The spike shape of 'TR07728' is parallel whereas it is tapering in 'Champion'. The spike of 'TR07728' is longer than that of both reference varieties. The curvature of the first segment of the rachis of 'TR07728' is weak to medium whereas it is medium to strong on 'Xena'.*

Description:

PLANT: two row, spring feed barley, intermediate growth habit at tillering, absent or very sparse pubescence on the lower leaf sheaths

FLAG LEAF: weak to medium pubescence on blade

FLAG LEAF SHEATH: medium glaucosity, weak pubescence

AURICLES: very weak anthocyanin colouration

SPIKE: emerges mid-season, weak to medium glaucosity, semi-erect attitude, cup shaped collar, parallel shape, lax to medium density, parallel to parallel to weakly divergent attitude of sterile spikelet, glume and awn length of the median spikelet are equal in length to the grain

LEMMA AWNS: weak anthocyanin colouration of the tips, longer than length of spike, rough spiculations on margins

FIRST SEGMENT OF RACHIS: short to medium length, weak to medium curvature

KERNEL: very weak to weak anthocyanin colouration of nerves of the lemma at beginning of ripening, whitish aleurone layer, long rachilla hairs, husk absent, absent or very weak spiculation of inner lateral nerves of dorsal side of lemma, no hairiness on ventral furrow, clasping disposition of lodicules, transverse crease basal markings, long, wide

AGRONOMY: good resistance to lodging, fair to good resistance to shattering, fair to good tolerance to straw breakage and drought

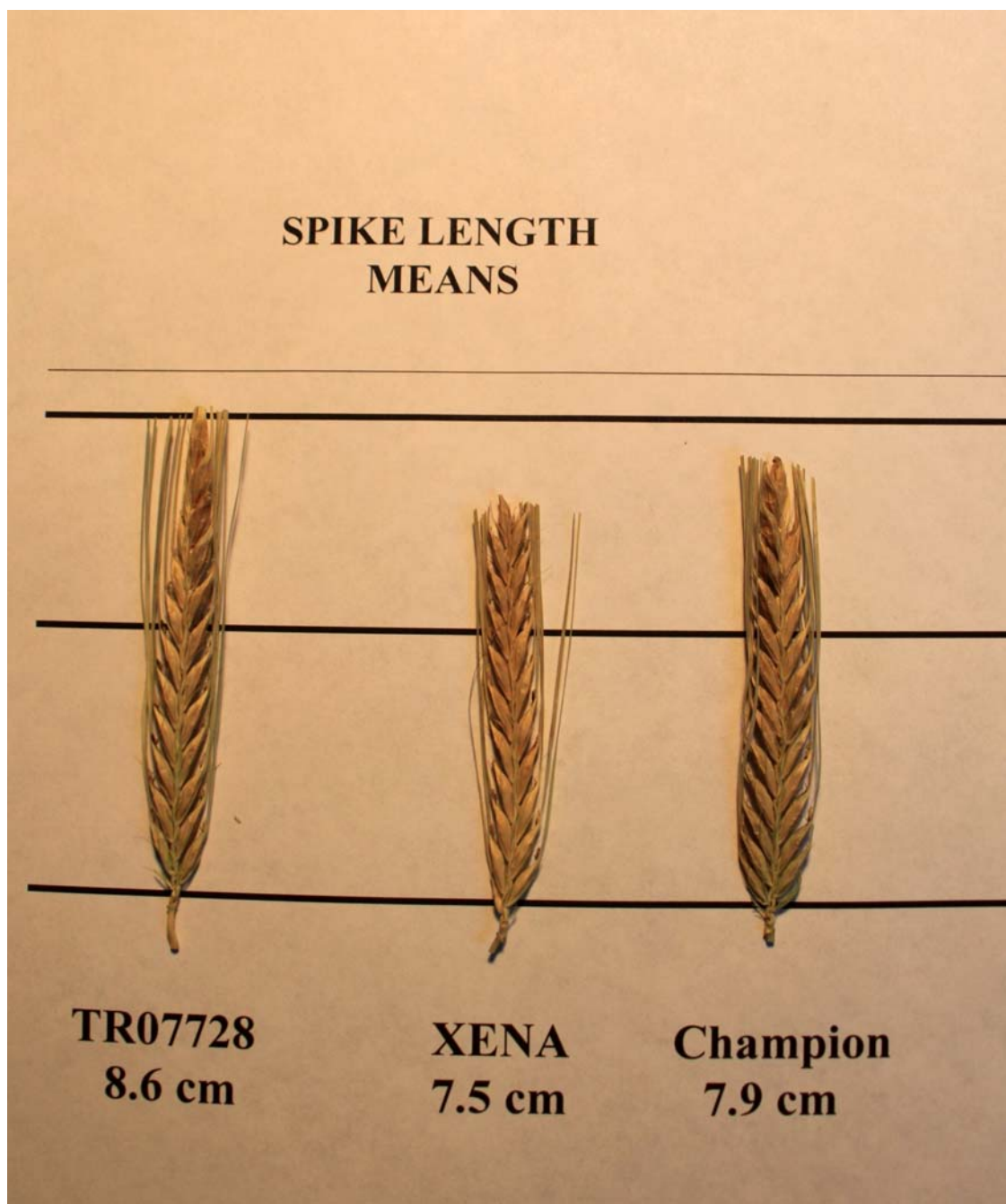
Origin and Breeding: 'TR07728' originated from the cross 'Salute'/'Xena' made near Yuma, Arizona in March, 2002 and was advanced using the standard pedigree method. The F1 was grown near Bozeman, Montana in the spring of 2002 and F2 seed was planted near Yuma in November, 2002. Single F2 spikes were selected in April, 2003, were threshed in bulk and planted as an F3 population in May, 2003 near Bozeman, Montana. Several F4 rows from this cross were selected based on plant height, straw strength and disease tolerance and were harvested in the fall of 2004. One such row was selected and designated BZ504-125. The F5 through F8 generations were tested for grain yield and other agronomic traits from 2005 through 2008. 'TR07728' was tested in the Canadian Two Row Barley Coop in 2007 and 2008 and was recommended for registration by the Prairie Recommending Committee for Oat and Barley in February 2009.

Tests and Trials: Tests and trials for 'TR07728' were conducted in Neapolis, Alberta during the 2008 and 2009 growing seasons. The trials were planted in a RCB design and consisted of 3 replicates of each variety, with each variety grown and replicated 4 times in each replicate. Each replicate was approximately 5 metres in length with 5 rows per replicate spaced .23 metres between rows. Measured characteristics were based on a minimum of 24 measurements per variety.

Comparison table for 'TR07728'

	'TR07728'	'Xena'*	'Champion'*
<i>Flag leaf length (cm)</i>			
mean	9.6	9.1	13.7
std. deviation	1.02	1.01	2.01
<i>Flag leaf width (cm)</i>			
mean	0.66	0.59	0.76
std. deviation	0.07	0.05	0.08
<i>Plant height (cm)</i>			
mean	81.7	83.8	83.8
std. deviation	7.8	10.6	8.9
<i>Spike length (cm)</i>			
mean	8.6	7.5	7.9
std. deviation	0.83	0.59	0.40

*reference varieties



Barley: 'TR07728' (left) with reference varieties 'Xena' (centre) and 'Champion' (right)