



APPLICATIONS UNDER EXAMINATION

TRITICALE

TRITICALE (×*Triticosecale*)

Proposed denomination: '343CMS'
Application number: 21-10468
Application date: 2021/04/23
Applicant: Northern Agri Brands LLC, Great Falls, Montana, United States of America
Agent in Canada: Gordon & McLeod Law Office, Nanton, Alberta
Breeder: Racey Padilla, Northern Agri Brands LLC, Vernon, Texas, United States of America

Varieties used for comparison: '641512175' and 'AAC Delight'

Summary: *The plants of '343CMS' are an alternative type while the plants of 'AAC Delight' are spring type. The plants of '343CMS' head earlier than the plants of '641512175'. At full stem extension, the plants of '343CMS' are shorter than the plants of the reference varieties. The spike of '343CMS' is fully awned while that of '641512175' is awnless and that of 'AAC Delight' is half awned. Excluding the awns, the spike of '343CMS' is shorter than that of '641512175'. The first beak on the lower glume of '343CMS' is long to very long while the first beak on the lower glume of '641512175' is medium to long and that of 'AAC Delight' is short to medium. The lower glume of '343CMS' has hairs present on the external surface while hairs are absent on the lower glume of 'AAC Delight'. The kernel of '343CMS' is purple while the kernel of '641512175' is amber and that of 'AAC Delight' is red. The kernel of '343CMS' has very dark colouration with phenol while the kernel of '641512175' has medium colouration with phenol and that of 'AAC Delight' has none or very light to light colouration with phenol.*

Description:

PLANT: hexaploid, alternative type, erect growth habit at tillering, medium to high frequency of plants with recurved flag leaves at booting, heads early in the season

COLEOPTILE: weak intensity of anthocyanin colouration

FLAG LEAF: absent or very weak intensity anthocyanin colouration on auricles, strong glaucosity of sheath

CULM: slightly to moderately curved neck, dense to very dense pubescence

STRAW (STEM): thick to very thick pith in cross-section

SPIKE: absent or very weak to weak glaucosity, fully awned, white at maturity, dense, narrow in profile

ANTHERS: absent or very weak to weak intensity of anthocyanin colouration

AWNS: absent or very weak to weak intensity of anthocyanin colouration, short length above tip of spike

LOWER GLUME: long to very long first beak, absent or very small second beak, hairs present on external surface

KERNEL: purple, medium to large, medium to long, medium width, elliptical shape, very dark colouration with phenol

Origin and Breeding: '343CMS' originated from a cross conducted in the Resource Seeds International Triticale Breeding Program in Florida, USA in 2006. An initial cross between 'FL9810' and 'FL00005' resulted in a selection of 25 plants designated as FL05117-F4-1H which were then crossed with the cytoplasmic sterile (CMS) line M17. From this cross, two mostly sterile, F1 lines were selected, and five plants from each of the 2 lines were backcrossed to CMS line M17. One of the resulting lines showed low fertility and 5 plants were selected and again backcrossed to CMS line M17. This second backcross resulted in one completely sterile plant which was designated as 344. Eight additional backcrosses to CMS line M17 resulted in the cytoplasmic sterile line designated '343CMS'. Breeder seed was bulked at the BC8 generation in 2014.

Tests and Trials: The comparative trial for '343CMS' was conducted during the 2021 growing season at Ag-Quest in Taber, Alberta. The trial was arranged in a RCB design with 2 replicates. Each plot consisted of 6 rows with a row length of 6 metres and 0.2 metre inter-row spacing. The seeding density was approximately 320 grains per squared metre resulting in approximately 3945 plants per variety. Measured characteristics were based on 20 measurements per variety. Mean differences

were significant at the 5% probability level based on a paired Student’s t-test. Results were supported by the official technical examination report 201900255, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

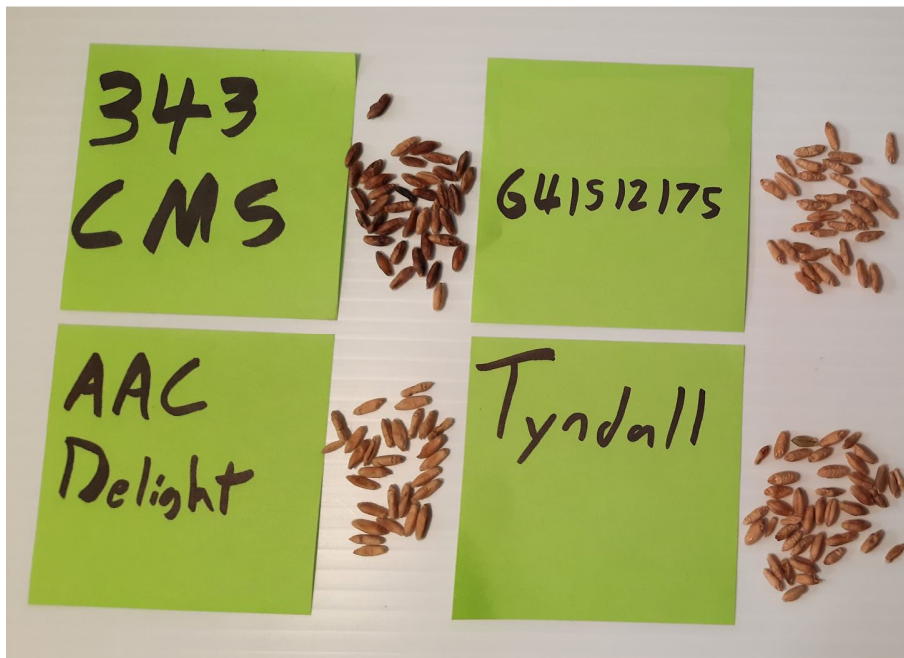
Comparison table for ‘343CMS’

	‘343CMS’	‘641512175’*	‘AAC Delight’*
<i>Days to heading (50% of heads fully emerged from boot)</i>			
mean 2021	50	57	51
<i>Plant height (at full stem extension; including awns) (cm)</i>			
mean 2021	42.8	61.1	51.6
std. deviation 2021	3.59	4.69	6.65
<i>Spike length (excluding awns) (cm)</i>			
mean 2021	6.8	7.6	6.5
std. deviation 2021	1.04	0.74	0.74

*reference varieties



Triticale: ‘343CMS’ (bottom right) with reference varieties ‘641512175’ (top right) and ‘AAC Delight’ (top left)



Triticale: '343CMS' (top left) with reference varieties '641512175' (top right) and 'AAC Delight' (bottom left)

Proposed denomination:	'641512175'
Application number:	19-9933
Application date:	2019/05/31
Applicant:	Northern Agri Brands LLC, Great Falls, Montana, United States of America
Agent in Canada:	Gordon & McLeod Law Office, Nanton, Alberta
Breeder:	Racey Padilla, Northern Agri Brands LLC, Vernon, Texas, United States of America

Varieties used for comparison: '934271498', 'AAC Delight' and 'Tyndal'

Summary: *The plants of '641512175' are an alternative type while the plants of 'AAC Delight' and 'Tyndal' are spring type. The plants of '641512175' head earlier than the plants of '934271498' and later than those of 'AAC Delight' and 'Tyndal'. The flag leaf sheath of '641512175' has strong glaucosity while that of '934271498' has medium glaucosity. At anthesis, the flag leaf of '641512175' is longer than the flag leaf of '934271498'. At full stem extension, the plants of '641512175' are taller than the plants of the reference varieties. The spike of '641512175' is awnless while those of 'AAC Delight' and 'Tyndal' are half awned. Excluding the awns, the spike of '641512175' is longer than those of the reference varieties. The first beak on the lower glume of '641512175' is medium to long while those of the reference varieties are short to medium length. The lower glume of '641512175' has hairs present on the external surface while hairs are absent on the lower glumes of the reference varieties. The kernel of '641512175' is amber while that of 'AAC Delight' is red. The kernel of '641512175' has medium colouration with phenol while the kernel of 'AAC Delight' has none or very light to light colouration with phenol and those of '934271498' and 'Tyndal' have strong colouration with phenol.*

Description:

PLANT: hexaploid, alternative type, semi-erect growth habit at tillering, high to very high frequency of plants with recurved flag leaves at booting, heads mid-season

FLAG LEAF: medium intensity of anthocyanin colouration on auricles, strong glaucosity of sheath

CULM: slightly to moderately curved neck, very dense pubescence

STRAW (STEM): thick pith in cross-section

SPIKE: very strong glaucosity, awnless, white at maturity, dense, narrow to medium width in profile

LOWER GLUME: medium to long first beak, absent or very small to small second beak, hairs present on external surface

ANTHERS: absent or very weak intensity of anthocyanin colouration

KERNEL: amber, medium to large, medium to long, medium width, elliptical shape, medium colouration with phenol

Origin and Breeding: ‘641512175’ (experimental designation RSI 202567) originated from a cross conducted prior to 2001 between a proprietary parental line designated as 49816AM and the variety ‘TriCal 2700’ in the Resource Seeds International Triticale Breeding Program in Woodland, California, USA. In 2001, 19 sister lines resulting from the cross were planted in Vega, Texas, USA with 2 of the lines selected and planted at several locations in Kentucky, Nebraska, Texas, Washington and Wisconsin, USA for observation from 2002 to 2004. After being shelved from 2005 to 2007, replicated silage trials resumed in Othello, Washington for one of the lines, from 2010 to 2016. In 2015, 15 progeny rows were identified as uniform and true to type and grown in progeny plots. Three plots were selected in 2016 and bulked to form breeder seed. ‘641512175’ was selected based on forage production.

Tests and Trials: The comparative trial for ‘641512175’ was conducted during the 2021 growing season at Ag-Quest in Taber, Alberta. The trial was arranged in a RCB design with 2 replicates. Each plot consisted of 6 rows with a row length of 6 metres and 0.2 metre inter-row spacing. The seeding density was approximately 320 grains per squared metre resulting in approximately 3945 plants per variety. Measured characteristics were based on 20 measurements per variety. Mean differences were significant at the 5% probability level based on a paired Student’s t-test. Results were supported by the official technical examination report 201700387, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

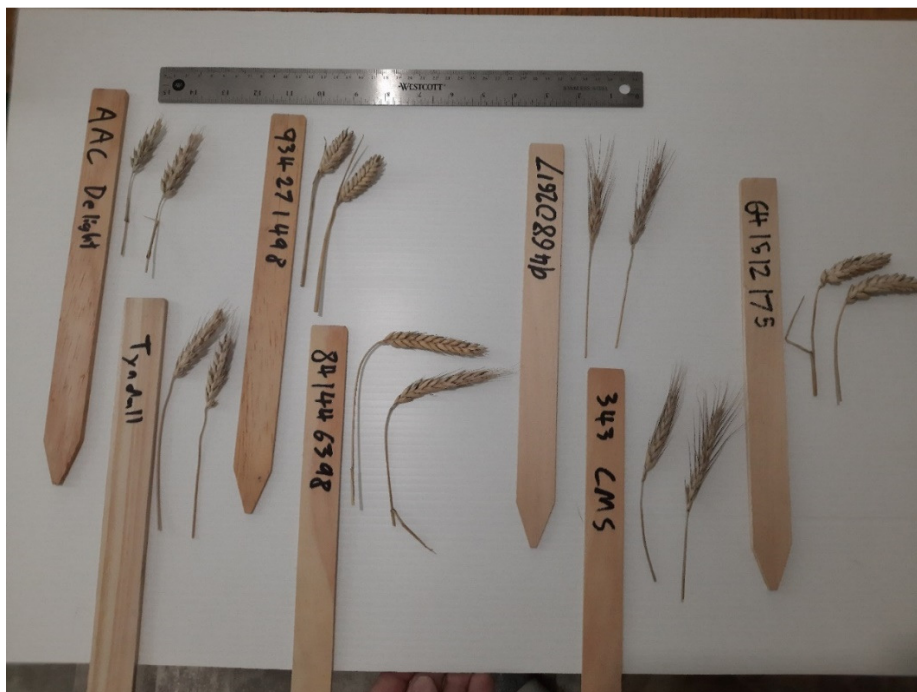
Comparison table for ‘641512175’

	‘641512175’	‘934271498’*	‘AAC Delight’*	‘Tyndal’*
<i>Days to heading (50% of heads fully emerged from boot)</i>				
mean 2021	57	62	51	54
<i>Flag leaf length (at anthesis) (cm)</i>				
mean 2021	9.1	7.6	9.4	10.2
std. deviation 2021	2.34	1.27	1.85	2.28
<i>Plant height (at full stem extension; including awns) (cm)</i>				
mean 2021	61.1	57.7	51.6	54.8
std. deviation 2021	4.69	4.84	6.65	4.12
<i>Spike length (excluding awns) (cm)</i>				
mean 2021	7.6	6.4	6.5	6.5
std. deviation 2021	0.74	1.04	0.85	0.74

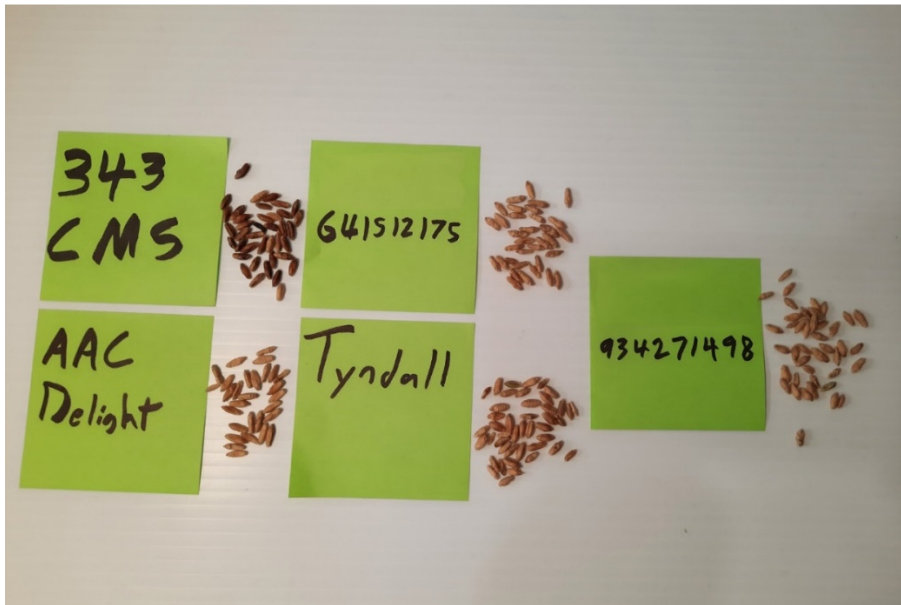
*reference varieties



Triticale: '641512175'



Triticale: '641512175' (top right) with reference varieties '934271498' (second from top left), 'AAC Delight' (top left) and 'Tyndal' (bottom left)



Triticale: '641512175' (top centre) with reference varieties '934271498' (right), 'AAC Delight' (bottom left) and 'Tyndal' (bottom centre)

Proposed denomination: '934271498'
Application number: 21-10469
Application date: 2021/04/23
Applicant: Northern Agri Brands LLC, Great Falls, Montana, United States of America
Agent in Canada: Gordon & McLeod Law Office, Nanton, Alberta
Breeder: Racey Padilla, Northern Agri Brands LLC, Vernon, Texas, United States of America

Varieties used for comparison: '641512175' and 'Tyndal'

Summary: *The plants of '934271498' are an alternative type while the plants of 'Tyndal' are a spring type. The plants of '934271498' head later than the plants of '641512175' and 'Tyndal'. The flag leaf sheath of '934271498' has a medium degree of glaucosity while the flag leaf sheath of '641512175' has a strong degree of glaucosity. At anthesis, the flag leaf of '934271498' is shorter than those of the reference varieties. At full stem extension, the plants of '934271498' are shorter than the plants of '641512175' and taller than the plants of 'Tyndal'. The spike of '934271498' is awnless while the spike of 'Tyndal' is half awned. Excluding the awns, the spike of '934271498' is shorter than the spike of '641512175'. The first beak on the lower glume of '934271498' is short to medium in length while that of '641512175' is medium to long. The lower glume of '934271498' has no hair on the external surface while hairs are present on the lower glume of '641512175'. The kernel of '934271498' has dark colouration with phenol while the kernel of '641512175' has medium colouration with phenol.*

Description:

PLANT: hexaploid, alternative type, erect to semi-erect growth habit at tillering, absent or very low to low frequency of plants with recurved flag leaves at booting, heads late in the season

FLAG LEAF: strong intensity of anthocyanin colouration on auricles, medium glaucosity of sheath

CULM: straight to slightly curved neck, very dense pubescence

STRAW (STEM): medium thickness of pith in cross-section

SPIKE: very strong glaucosity, awnless, white at maturity, medium to dense, medium width in profile

ANTHERS: absent or very weak intensity of anthocyanin colouration

LOWER GLUME: short to medium length first beak, absent or very small to small second beak, hairs absent on external surface

KERNEL: amber, medium sized, medium length and width, elliptical shape, dark colouration with phenol

Origin and Breeding: ‘934271498’ (experimental designation APT1426023) originated from a cross conducted in 2005 between two unreleased experimental lines designated 04TF 107 and 04TF 104 in the Resource Seeds International Triticale Breeding Program in Fort Collins, Colorado, USA. Early generation selections were made using a pedigree breeding method based on plant height, maturity, disease tolerance, straw strength and awnedness. In 2014, an F4:F5 headrow designated as APT1426023, was bulk harvested and tested for grain yield, boot stage silage yield and vegetative forage production in multiple locations in Texas, Montana, New York, Washington and Idaho from 2015 to 2019. Simultaneously, a seed purification program, using head to row techniques, was used to identify rows that were uniform and true to type. Head rows were selected in 2016 and planted in Yuma, Arizona as progeny plots in 2018. In 2019, 2 progeny plots were bulk harvested and planted in Yuma to produce breeder seed.

Tests and Trials: The comparative trial for ‘934271498’ was conducted during the 2021 growing season at Ag-Quest in Taber, Alberta. The trial was arranged in a RCB design with 2 replicates. Each plot consisted of 6 rows with a row length of 6 metres and 0.2 metres between rows. The seeding density was approximately 320 grains per squared metre resulting in approximately 3945 plants per variety. Measured characteristics were based on 20 measurements per variety. Mean differences were significant at the 5% probability level based on a paired Student’s t-test. Results were supported by the official technical examination report 202000217, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

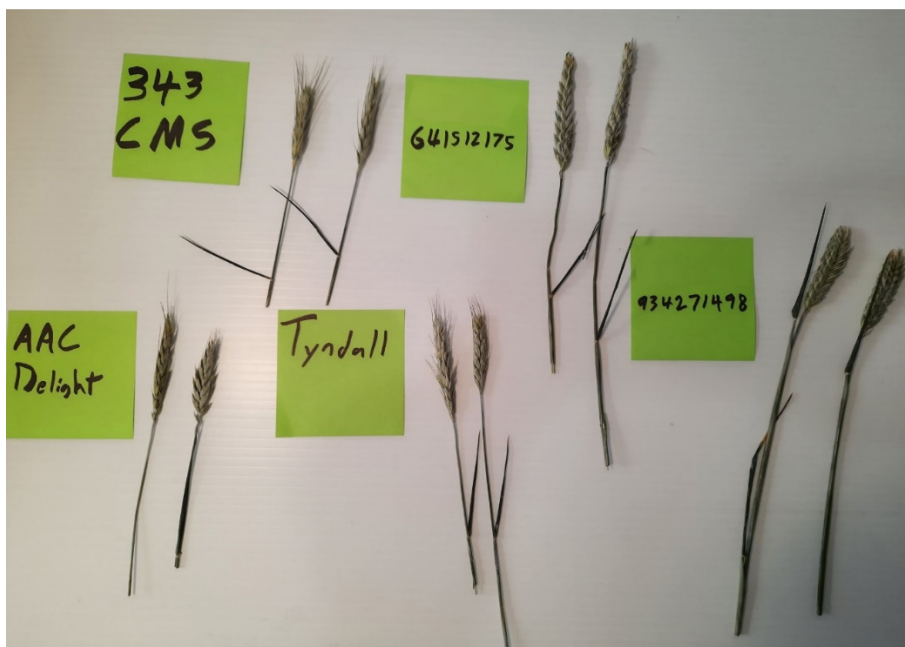
Comparison table for ‘934271498’

	‘934271498’	‘641512175’*	‘Tyndal’*
<i>Days to heading (50% of heads fully emerged from boot)</i>			
mean 2021	62	57	54
<i>Flag leaf length (at anthesis) (cm)</i>			
mean 2021	7.6	9.1	10.2
std. deviation 2021	1.27	2.34	2.28
<i>Plant height (at full stem extension; including awns) (cm)</i>			
mean 2021	57.7	61.1	54.8
std. deviation 2021	4.84	4.69	4.12
<i>Spike length (excluding awns) (cm)</i>			
mean 2021	6.4	7.6	6.5
std. deviation 2021	0.85	0.74	0.92

*reference varieties



Triticale: '934271498'



Triticale: '934271498' (bottom right) with reference varieties '641512175' (top right) and 'Tyndal' (bottom centre)

Proposed denomination: 'AB Bronco'
Application number: 22-10889
Application date: 2022/04/25
Applicant: Alberta Agriculture, Forestry and Rural Economic Development, Edmonton, Alberta
Agent in Canada: Olds College -Field Crop Development Centre, Lacombe, Alberta
Breeder: Mazen Aljarrah, Alberta Agriculture and Rural Development, Lacombe, Alberta

Varieties used for comparison: 'Bobcat' and 'Metzger'

Summary: *The flag leaf of 'AB Bronco' is narrower than those of 'Bobcat' and 'Metzger'. The culm of 'AB Bronco' has absent or very sparse pubescence while that of 'Metzger' has dense pubescence. The plants of 'AB Bronco' are shorter than those of 'Metzger'. The awns above the tip of the spike for 'AB Bronco' are short while those of 'Bobcat' are very short. At maturity, the spike of 'AB Bronco' is slightly coloured while it is white for 'Metzger'. The spike of 'AB Bronco' is lax while it is of medium density for 'Metzger'. Excluding the awns, the spike of 'AB Bronco' is longer than that of 'Bobcat'. The external surface of the lower glume for 'AB Bronco' is hairless while hairs are present on the external surface of the lower glume for 'Bobcat'. The kernel of 'AB Bronco' has medium colouration with phenol while that of 'Bobcat' has light colouration with phenol and that of 'Metzger' has dark colouration with phenol.*

Description:

COLEOPTILE: absent or very weak intensity of anthocyanin colouration

PLANT: hexaploid, winter type, semi-erect growth habit at tillering, low frequency of plants with recurved flag leaves at booting, heads mid-season

FLAG LEAF: weak intensity of anthocyanin colouration on auricles, strong glaucosity of sheath

NECK OF CULM: slightly curved, absent or very sparse pubescence

STRAW (STEM): medium thickness of pith in cross-section

SPIKE: strong glaucosity, half awned, slightly coloured at maturity, lax, medium width in profile

ANTHERS: absent or very weak intensity of anthocyanin colouration

AWNS: weak intensity of anthocyanin colouration, short

LOWER GLUME: short to medium length first beak, small second beak, hairs absent on external surface

KERNEL: amber, medium size, medium length and width, elliptical shape, medium colouration with phenol

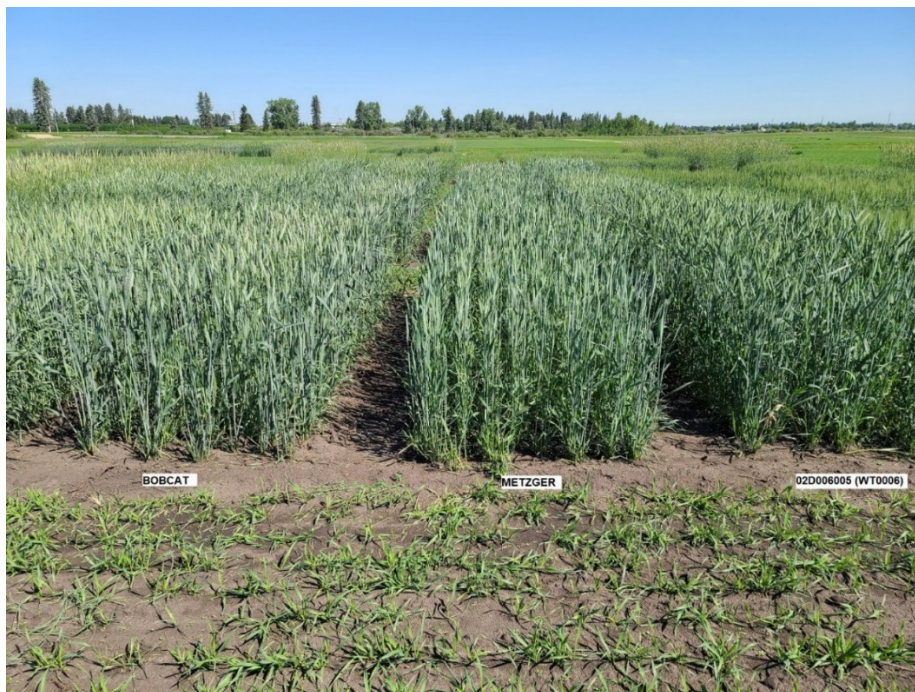
Origin and Breeding: 'AB Bronco' (experimental designations 02D006005 and WT0006) originated from the cross between the variety 'Bobcat' and breeding line 01D006 conducted at the Field Crop Development Centre, Alberta Agriculture and Forestry in Lacombe, Alberta in 2002. A segregating F2 population designated 02D006, was increased to the F8 generation with plant and headrow selections for cold tolerance, lodging and ergot resistance from 2003 to 2011. A single row selected in 2010 was designated 02D006005 based on grain yield, agronomic and forage quality. The line was entered in the Western Winter Triticale Coop Pre-registration trials as WT0006 where it was evaluated in yield trials in multiple locations in western Canada from 2011 to 2015. Breeder seed was established from 80 F17 lines in 2020. The line received support for registration in 2021.

Tests and Trials: The comparative trials for 'AB Bronco' were conducted during the 2021 and 2022 growing seasons at Olds College Field Crop Development Centre in Lacombe, Alberta. The trial was arranged in a RCB design with 3 replicates. Each plot consisted of 8 rows with a row length of 2.5 metres. There was 0.14 metre inter-row spacing with 0.61 metres between the plots. The seeding density was 270 seeds per squared metre resulting in approximately 2250 plants per variety. Measured characteristics were based on 30 measurements per variety per year. Mean differences were significant at the 5% probability level based on a paired Student's t-test.

Comparison table for 'AB Bronco'

	'AB Bronco'	'Bobcat**	'Metzger**
<i>Flag leaf width (at anthesis) (cm)</i>			
mean 2021	9.9	12.0	11.3
std. deviation 2021	1.38	1.46	1.84
mean 2022	8.9	11.6	10.0
std. deviation 2022	1.60	2.18	1.85
<i>Plant height (at full stem extension; including awns) (cm)</i>			
mean 2021	100.0	87.8	107.4
std. deviation 2021	5.62	4.80	6.83
mean 2022	98.5	97.7	116.9
std. deviation 2022	6.17	4.65	5.88
<i>Spike length (excluding awns) (cm)</i>			
mean 2021	9.9	9.0	9.9
std. deviation 2021	0.80	0.77	0.93
mean 2022	8.9	7.5	8.0
std. deviation 2022	0.73	0.37	0.62

*reference varieties



Triticale: 'AB Bronco' (right) with reference varieties 'Bobcat' (left) and 'Metzger' (centre)



Triticale: 'AB Bronco' (centre) with reference varieties 'Bobcat' (left) and 'Metzger' (right)