TRITICALE
(×Triticosecale)

Proposed denomination: **'AB Provider'**
Application number: 20-10392
Application date: 2020/12/09
Applicant: Alberta Agriculture and Forestry, Olds, Alberta
Agent in Canada: Corns Brothers Farm 2016 Ltd., Taber, Alberta
Breeder: Mazen Aljarrah, Alberta Agriculture and Rural Development, Lacombe, Alberta

Variety used for comparison: 'Metzger'

Summary: *The intensity of anthocyanin colouration on the coleoptile of 'AB Provider' is absent or very weak while it is weak on the coleoptile of 'Metzger'. The plants of 'AB Provider' head earlier than the plants of 'Metzger'. The culm of 'AB Provider' has absent or very sparse to sparse pubescence while that of 'Metzger' has a medium to strong density of pubescence. At the completion of stem extension, the plants of 'AB Provider' are shorter than the plants of 'Metzger'. The first beak on the lower glume of 'AB Provider' is short while that of 'Metzger' is very short. The lower glume of 'AB Provider' has hair present on the external surface while that of 'Metzger' is hairless.*

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

NECK OF CULM: slightly curved, absent or very sparse to sparse pubescence
STRAW (STEM): thin pith in cross-section

SPIKE: strong glaucosity, half awned, slightly coloured at maturity, medium density, medium width in profile
ANTHERS: absent or very weak intensity of anthocyanin colouration
AWNS: weak intensity of anthocyanin colouration, short
LOWER GLUME: short first beak, small second beak, hairs present on external surface

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

AGRONOMIC TRAITS: good winter survival

Origin and Breeding: 'AB Provider' (experimental designations 06D013002 and WT0009) originated from the cross between 'Metzger' and 04D009 conducted in 2006 at the Field Crop Development Centre, Alberta Agriculture and Forestry in Lacombe, Alberta. The F1 seed was increased indoors in 2007 with the subsequent F2 to F4 bulked in Lacombe, AB from 2008 to 2010, respectively. In 2011, 100 F4 heads were selected and planted in a headrow nursery. Selected F5 headrows were grown in multiple winter hardiness nurseries in Central Alberta, Canada and Hermiston, Oregon, USA in 2012 and 2013. One line was designated 06D013002 and tested for grain yield, forage yield and feed quality in multiple locations in Western Canada in 2014 and 2015. Simultaneously, from 2012 to 2015, F5 to F8 purification increases were grown out with 80 F9 plots bulked as breeder seed in 2016. The variety was advanced into the Western Winter Triticale Cooperative Nursery as WT0009 from 2016 to 2019. Selection criteria for 'AB Provider' was based on grain and forage yield, winter hardiness, lodging resistance, forage quality, kernel characteristics and disease resistances.

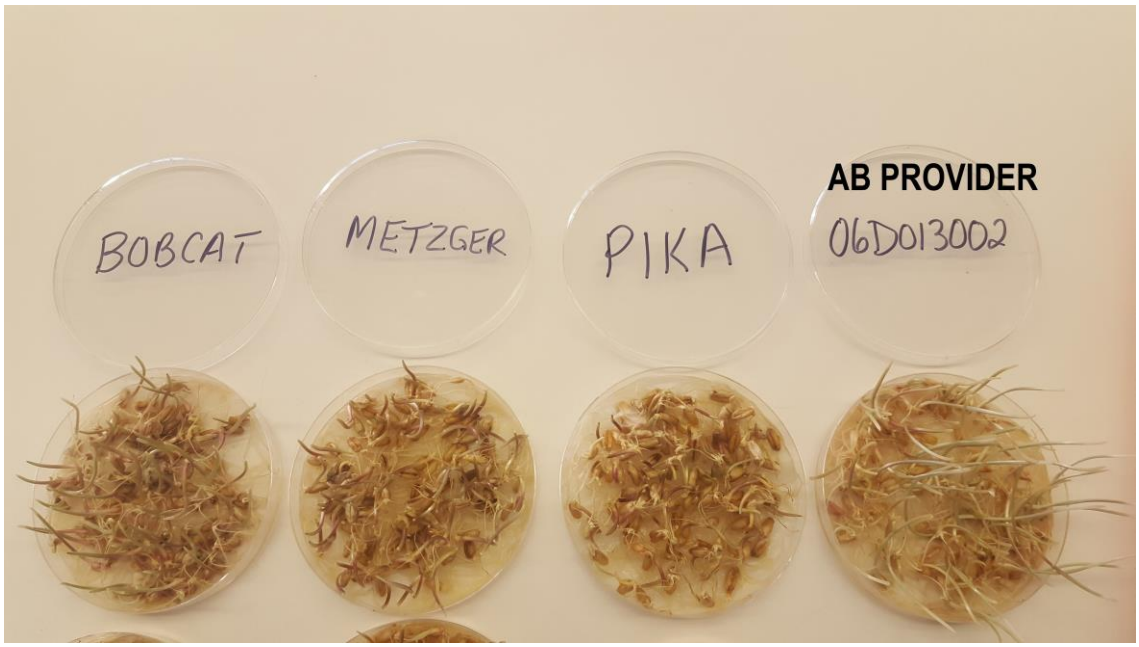
Tests and Trials: The comparative trials for 'AB Provider' were conducted during the 2020 and 2021 growing seasons at Olds College Field Crop Development Centre in Lacombe, Alberta. The trial was arranged in a RCB design with 3 replicates. Each plot consisted of 8 rows with a row length of 2.5 metres. There was 0.14 metre inter row spacing with 0.61 metres between the plots. The seeding density was 269 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 Provider'

	'AB Provider'	'Metzger'*
Days to heading (50% of heads fully emerged from boot)		
2020	177	180
2021	175	178
Plant height (including awns) (cm)		
mean 2020	113.27	140.97
std. deviation 2020	4.01	4.18
mean 2021	95.93	107.40
std. deviation 2021	4.48	6.83

*reference variety



Triticale: 'AB Provider' (right) with reference variety 'Metzger' (centre left)

Triticale: 'AB Provider' (left) with reference variety 'Metzger' (right)

Proposed denomination: **'AB Stampeder'**
Application number: 20-10255
Application date: 2020/05/26
Applicant: Alberta Agriculture and Forestry, Olds, Alberta
Agent in Canada: Solick Seeds Ltd., Halkirk, Alberta
Breeder: Mazen Aljarrah, Alberta Agriculture and Rural Development, Lacombe, Alberta

Varieties used for comparison: 'Bunker' and 'Taza'

Summary: *The intensity of anthocyanin colouration on the coleoptile of 'AB Stampeder' is strong while it is weak on the coleoptiles of 'Bunker' and 'Taza'. The flag leaf of 'AB Stampeder' is narrower than the flag leaves of 'Bunker' and 'Taza' and longer than the flag leaf of 'Taza'. The culm of 'AB Stampeder' has a medium density of pubescence while the culm of 'Bunker' has very dense pubescence and that of 'Taza' has dense pubescence. At the completion of stem extension, the plants of 'AB Stampeder' are shorter than those of the reference varieties. The lower glume of 'AB Stampeder' has hair present on the external surface while that of 'Taza' is hairless. Excluding the awns, the spike of 'AB Stampeder' is shorter than those of the reference varieties. The spike of 'AB Stampeder' is medium to broad in profile while those of the reference varieties are narrow to a medium width in profile.*

Description:
COLEOPTILE: strong intensity of anthocyanin colouration
PLANT: hexaploid, spring type, semi-erect growth habit at tillering, low to medium 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, medium density of pubescence
STRAW (STEM): pith of medium thickness in cross-section

SPIKE: strong glaucosity, half awned, white at maturity, lax, medium to broad in profile
ANTHERS: absent or very weak intensity of anthocyanin colouration
AWNS: weak to medium intensity of anthocyanin colouration, medium in length
LOWER GLUME: very short first beak, small second beak, hairs present on external surface

KERNEL: amber, small, medium in length, narrow, ovate shape, dark colouration with phenol

AGRONOMIC TRAITS: poor winter survival

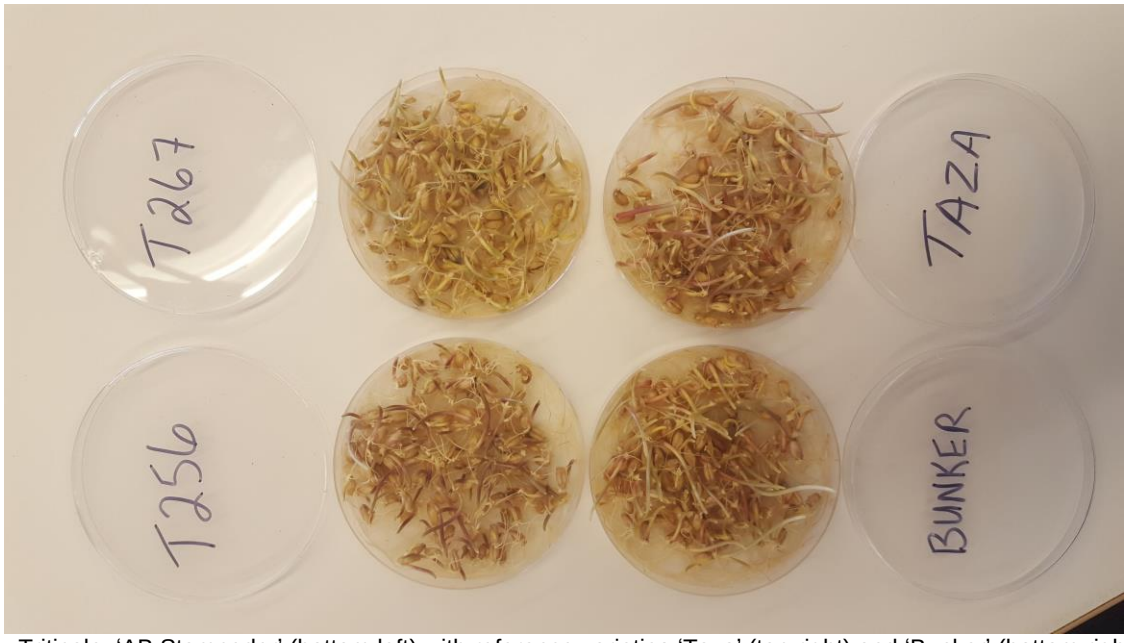
Origin and Breeding: 'AB Stampeder' (experimental designations 09P144 and T256) originated from a line nursery introduced to the Alberta Agriculture and Forestry Centre for Crop Development in Lacombe, Alberta in 2009 by the International Maize and Wheat Improvement Centre, a non-profit research and training organization headquartered in Texcoco, Mexico. The line T256 was selected and screened in 2010 in Lacombe, Alberta and subsequently placed in yield trials from 2011 to 2015. Simultaneously, the line was grown in purification nurseries and 100 heads selected for pre-breeder rows. Ninety six of the pre-breeder rows were advanced into breeder plots in 2017 with 94 of the plots bulked to form breeder seed. In 2016, T256 was entered into Coop trials and supported for registration in 2018 by the Prairie Recommending Committee for Wheat, Rye and Triticale. Selection criteria for 'AB Stampeder' was based on grain yield and quality, test weight, 1000 kernel weight, lodging resistance, maturity and disease resistances.

Tests and Trials: The comparative trials for 'AB Stampeder' were conducted during the 2020 and 2021 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 300 seeds per squared metre resulting in approximately 2500 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.

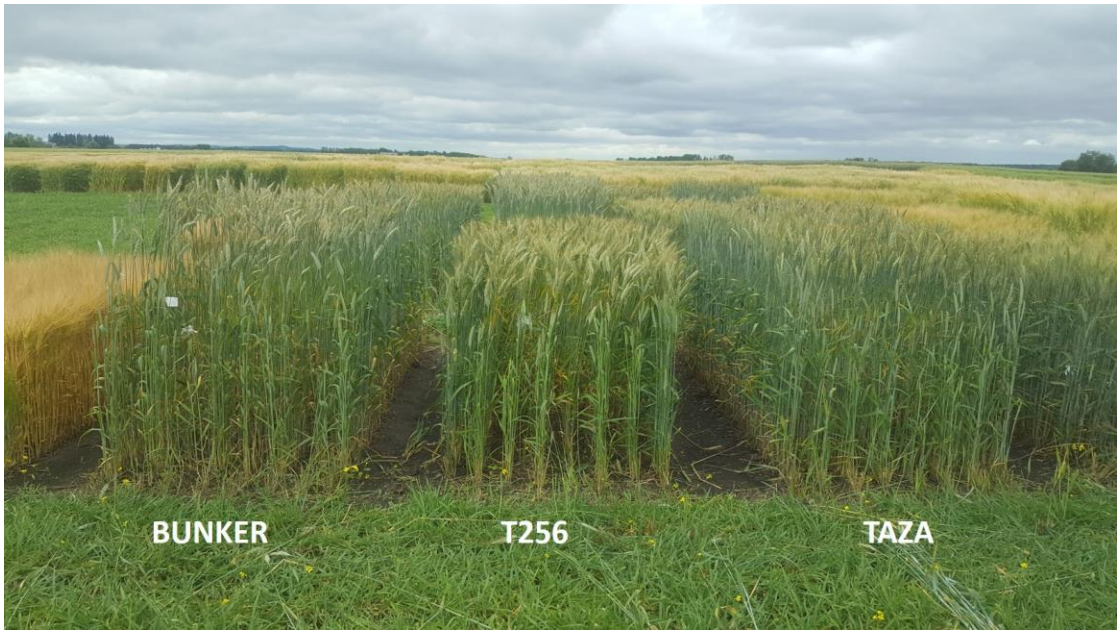
Comparison table for 'AB Stampeder'

	'AB Stampeder'	**'Bunker'***	**'Taza'***
Flag leaf length (cm)			
mean 2020	18.10	17.35	15.20
std. deviation 2020	3.56	3.60	3.66
mean 2021	20.28	22.24	16.87
std. deviation 2021	3.49	2.30	2.57
Flag leaf width (mm)			
mean 2020	15.13	16.17	16.70
std. deviation 2020	1.17	2.07	1.97
mean 2021	14.90	17.43	15.93
std. deviation 2021	1.54	1.28	1.48
Plant height (including awns) (cm)			
mean 2020	113.97	139.73	127.87
std. deviation 2020	2.72	4.21	2.93
mean 2021	94.73	115.90	111.63
std. deviation 2021	5.23	6.76	5.74
Spike length (excluding awns) (cm)			
mean 2020	9.27	9.74	10.99
std. deviation 2020	0.55	0.97	1.18
mean 2021	8.82	9.60	10.04
std. deviation 2021	0.51	0.86	0.79

*reference varieties



Triticale: 'AB Stampeder' (bottom left) with reference varieties 'Taza' (top right) and 'Bunker' (bottom right)



Triticale: 'AB Stampeder' (centre) with reference varieties 'Bunker' (left) and 'Taza' (right)

Triticale: 'AB Stampeder' (centre) with reference varieties 'Bunker' (left) and 'Taza' (right)