TRITICALE
(×Triticosecale)

Proposed denomination: **'841446398'**
Application number: 20-10356
Application date: 2020/09/24
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: 'AAC Delight', 'Metzger', '641512175' and '934271498'

Summary: *The plants of '841446398' are alternative type while the plants of 'AAC Delight' are spring type. The plants of '841446398' head earlier than the plants of 'Metzger' and later than those of 'AAC Delight' and '641512175'. The flag leaf sheath of '841446398' has strong glaucosity while that of '934271498' has medium glaucosity. At anthesis, the flag leaf of '841446398' is shorter than the flag leaf of 'AAC Delight', '641512175' and '934271498'. The culm of '841446398' has very dense pubescence while that of 'Metzger' has a weak to medium density of pubescence, that of '641512175' has strong pubescence and that of '934271498' has a medium density of pubescence. At full stem extension, the plants of '841446398' are taller than the plants of 'AAC Delight', '641512175' and '934271498'. The spike of '841446398' is half awned while that of '934271498' is awnless. The first beak on the lower glume of '841446398' is short to medium in length while the first beak on the lower glume of 'Metzger' is long, that of '641512175' is very short to short and that of '934271498' is very short. The kernel of '841446398' has dark colouration with phenol while the kernel of '641512175' has medium colouration with phenol.*

Description:
PLANT: hexaploid, alternative type, 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 of auricles, strong glaucosity of sheath

CULM: straight to slightly curved neck, very dense pubescence
STRAW (STEM): thick pith in cross-section

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

KERNEL: amber, medium to large, medium length, medium to wide, elliptical shape, dark colouration with phenol

Origin and Breeding: '841446398' (experimental designation RSI 204719) originated from a cross conducted prior to 2001 between three proprietary lines in the Resource Seeds International Triticale Breeding Program in Woodland California, USA. The first cross was conducted between lines 'XG0696' and '28581 AWNLESS' with a subsequent cross to line 'L762'. The variety was shelved until it was selected for further evaluation in replicated silage trials in Othello, Washington from 2010 to 2016. In 2013, 50 lines were selected and planted in purification headrows and examined for uniformity, plant height, awnlessness and maturity. In 2015, 3 of these lines were selected and planted in progeny plots near Othello, Washington. In 2016, two of the progeny plots were selected based on uniformity and bulked to form breeder seed. '841446398' was selected based on reduced awns, silage yield, grain yield, maturity and standability.

Tests and Trials: The comparative trial for '841446398' was conducted during the 2022 growing season at Ag-Quest in Taber, Alberta. The spring sown trial consisted of 4 aligned replicates. Each plot consisted of 6 rows with a row length of approximately 6 metres with 0.23 metre inter-row spacing and 0.46 metre spacing between the plots. The seeding density was approximately 112kg per hectare resulting in approximately 4600 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 201700389, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

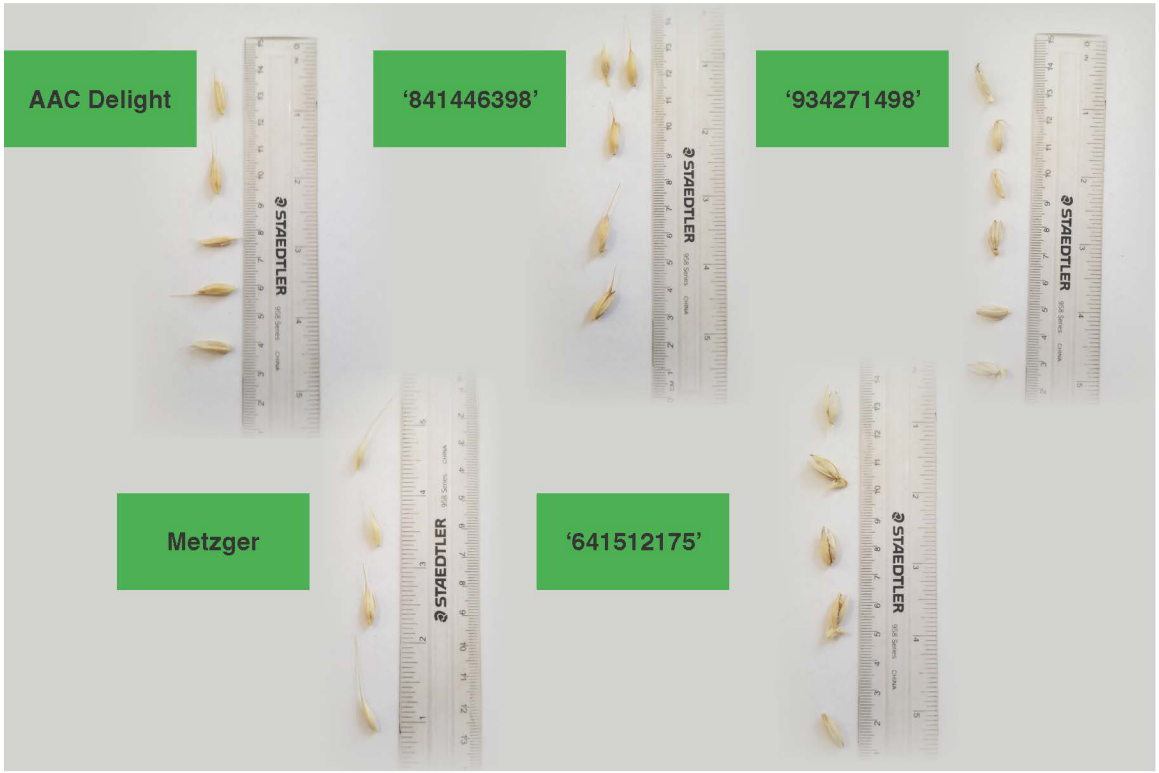
Comparison table for '841446398'

	'841446398'	'AAC Delight'*	'Metzger'*	'641512175'*	'934271498'*
Days to heading (number of days from planting to 50% of heads fully emerged from boot)					
mean	63	51	69	57	62
Flag leaf length (at anthesis) (cm)					
mean	7.8	10.2	8.3	12.9	10.2
std. deviation	3.72	3.72	1.53	1.82	1.68
Plant height (at full stem extension; including awns) (cm)					
mean	101.6	80.3	101.9	89.2	92.4
std. deviation	3.48	4.39	6.01	6.52	5.02

*reference varieties

Triticale: '841446398' (centre) with reference varieties '934271498' (left) and 'AAC Delight' (right)

Triticale: '841446398' (top centre) with reference varieties 'AAC Delight' (top left), '934271498' (top right), 'Metzger' (bottom left) and '641512175' (bottom right)



Triticale: '841446398' (top centre) with reference varieties 'AAC Delight' (top left), '934271498' (top right), 'Metzger' (bottom left) and '641512175' (bottom right)

Proposed denomination: **'946802617'**
Application number: 20-10258
Application date: 2020/06/08
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

Variety used for comparison: 'Pika'

Summary: *The plants of '946802617' head earlier than the plants of 'Pika'. At anthesis, the flag leaf of '946802617' is shorter and narrower than the flag leaf of 'Pika'. The culm of '946802617' has a medium density of pubescence while that of 'Pika' has sparse pubescence. At full stem extension, the plants of '946802617' are shorter than the plants of 'Pika'. The first beak on the lower glume of '946802617' is long while that of 'Pika' is very long. The external surface of the lower glume of '946802617' has hairs while that of 'Pika' is hairless. Excluding the awns, the spike of '946802617' is shorter than that of 'Pika'.*

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

COLEOPTILE: absent or very weak intensity of anthocyanin colouration

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

CULM: straight to slightly curved neck, medium density of pubescence
STRAW (STEM): thick pith in cross-section

SPIKE: strong to very strong glaucosity, fully awned, strongly coloured at maturity, dense, medium width in profile
AWN: absent or very weak anthocyanin colouration, short
LOWER GLUME: long first beak, small second beak, hairs present on external surface
ANTHERS: absent or very weak intensity of anthocyanin colouration

KERNEL: amber, small to medium size, short, medium to wide, oval shape, dark colouration with phenol

Origin and Breeding: '946802617' (experimental designations KS-154, 154E and 154) originated from the cross conducted prior to 1998, between 'OCTO NV' and 'DRIRA/KGR' with a subsequent cross to 'MUS'S'/LYNX's' in the Resource Seeds International Triticale Breeding Program in Woodland California, USA. Resulting from this cross, the line KS-154 was originally selected and developed as a parental line. In 1998, the line 154E was reselected based on plant height and maturity and tested from 1999 to 2000 in Kansas, USA and selected as a hybrid parental line based on maturity and grain yield. After a period of being shelved, the line was assessed in grain silage and grazing tests as 154 in Texas, Kansas, Arkansas, Pennsylvania and New York, USA from 2010 to 2015. Simultaneously, 80 selected heads were planted in 2011 as headrows in Vernon, Texas, from which 40 selections were subsequently grown as progeny plots in Berthoud, Colorado in 2013. Further advancement and selections resulted in the establishment of breeder seed in Berthoud, Colorado in 2015. '946802617' was selected based on winter hardiness, silage yield and maturity.

Tests and Trials: The comparative trial for '946802617' was conducted during the 2022 growing season at Ag-Quest in Taber, Alberta. The fall sown trial consisted of 4 aligned replicates. Each plot consisted of 6 rows with a row length of approximately 6 metres with 0.23 metre inter-row spacing and 0.46 metre spacing between the plots. The seeding density was 112kg per hectare resulting in approximately 4600 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 201600410, purchased from the Plant Variety Protection Office in Washington, District of Columbia, USA.

Comparison table for '946802617'

	'946802617'	'Pika'*
Days to heading (number of days from planting to 50% of heads fully emerged from boot)		
mean	256	261
Flag leaf length (at anthesis) (cm)		
mean	7.5	9.1
std. deviation 2022	1.4	1.7
Flag leaf width (at anthesis) (cm)		
mean	1.0	1.1
std. deviation	0.1	0.1
Plant height (at full stem extension; including awns) (cm)		
mean	82.9	104.0
std. deviation	4.5	8.9
Spike length (excluding awns) (cm)		
mean	9.0	12.0
std. deviation	1.4	1.5

*reference variety

Triticale: '946802617' (right) with reference variety 'Pika' (left)

Triticale: '946802617' (left) with reference variety 'Pika' (right)

Triticale: '946802617' (left) with reference variety 'Pika' (right)