



APPLICATIONS UNDER EXAMINATION

BARLEY

BARLEY (*Hordeum vulgare*)

Proposed denomination: 'AB Dram'
Application number: 21-10432
Application date: 2021/02/09
Applicant: Alberta Agriculture, Forestry and Rural Economic Development, Edmonton, Alberta
Agent in Canada: Olds College -Field Crop Development Centre, Lacombe, Alberta
Breeder: Patricia Juskiw, Alberta Agriculture and Forestry, Lacombe, Alberta

Varieties used for comparison: 'AC Metcalfe' and 'CDC Copeland'

Summary: *The flag leaf auricles of 'AB Dram' have a medium to strong intensity of anthocyanin colouration while those of 'AC Metcalfe' have a weak to medium intensity of anthocyanin colouration. The flag leaf of 'AB Dram' is longer than the flag leaf of 'AC Metcalfe'. The nerves of lemma on the kernel of 'AB Dram' have a medium intensity of anthocyanin colouration while those of 'AC Metcalfe' and 'CDC Copeland' have an absent or very weak to weak intensity of anthocyanin colouration. At maturity, the plants of 'AB Dram' are shorter than those of 'AC Metcalfe'. The spike of 'AB Dram' is lax while those of the reference varieties are of a medium density. Excluding the awns, the spike of 'AB Dram' is longer than that of 'AC Metcalfe'. The first segment of the rachis for 'AB Dram' is medium in length while it is short for the reference varieties. The sterile spikelet of 'AB Dram' has a parallel to weakly divergent attitude while those of the reference varieties have a divergent attitude.*

Description:

YOUNG PLANT: semi-erect growth habit at tillering, very sparse to sparse pubescence on lower leaf sheaths

PLANT: two row, spring malting barley, low to medium frequency of plants with recurved flag leaves

FLAG LEAF BLADE (AT BOOTING): sparse pubescence

FLAG LEAF SHEATH: medium glaucosity, sparse pubescence

AURICLES: medium to strong intensity of anthocyanin colouration, weak pubescence on margins

SPIKE: mid-season emergence, medium glaucosity at end of anthesis, semi-erect to horizontal attitude, platform shaped collar, tapering shape, lax, parallel to weakly divergent sterile spikelet attitude, glume and awn of median spikelet are equal to length of grain

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

FIRST SEGMENT OF RACHIS: medium length, weak curvature

KERNEL: medium intensity anthocyanin colouration of nerves of lemma, long rachilla hairs, husk present, absent or very weak to weak spiculation of inner lateral nerves of dorsal side of lemma, hairless ventral furrow, clasping disposition of lodicules, horseshoe shaped basal markings, medium in length and width

AGRONOMIC CHARACTERISTICS: good malting quality

Origin and Breeding: 'AB Dram' (experimental designations TR14617 and J03028003) originated from a cross between the variety 'Ponoka' and the Alberta Agriculture and Forestry Field Crop Development Centre breeding line H92015005, conducted in Lacombe, Alberta in 2003. The F2 generation was grown in Lacombe, Alberta in 2004 and the F3 bulk grown in California, USA during the winter of 2004-2005. Two hundred F3 heads were selected and the F4 and F5 generations grown in Lacombe in 2006 and 2007 under disease pressure. Two hundred F5 heads were selected and grown in F6 headrows in Lacombe in 2008. The selection designated as J03028003 was yield tested from 2009 to 2013. Breeder seed was established at the F13 generation in 2015. The variety was entered in the Western 2 Row Cooperative Registration Test from 2014 to 2015 as 'TR14617' with support for registration received in 2017. Selection criteria used in the development of 'AB Dram' was based on kernel weight, grain yield, test weight, lodging resistance, maturity, disease resistance and malting quality.

Tests and Trials: The comparative trials for ‘AB Dram’ were conducted at the Olds College Field Crop Development Centre in Lacombe, Alberta during the 2021 and 2022 growing seasons. The trials were arranged in a RCB design with 3 replicates. Plots consisted of 8 rows, 2.5 metres in length with 14 cm inter-row spacing and 40 cm between the plots. The seeding density was 270 seeds per square metre resulting in 2250 plants per variety. Measured characteristics were based on a minimum of 30 measurements. Mean differences were significant at the 5% probability level based on paired Student’s T-tests.

Comparison table for ‘AB Dram’

	‘AB Dram’	‘AC Metcalfe’*	‘CDC Copeland’*
<i>Flag leaf length (cm)</i>			
mean 2021	15.8	13.5	13.8
std. deviation 2021	2.06	2.72	3.24
mean 2022	19.0	15.9	18.1
std. deviation 2022	1.84	2.85	2.89
<i>Plant height (at maturity) (cm)</i>			
mean 2021	87.2	90.0	98.5
std. deviation 2021	3.67	3.89	5.67
mean 2022	111.9	116.5	113.0
std. deviation 2022	6.76	8.05	7.60
<i>Spike length (excluding awns) (cm)</i>			
mean 2021	8.9	8.3	8.9
std. deviation 2021	0.55	0.60	0.94
mean 2022	9.2	8.5	8.7
std. deviation 2022	0.49	0.54	0.55

*reference varieties



Barley: ‘AB Dram’ (centre) with reference varieties ‘AC Metcalfe’ (left) and ‘CDC Copeland’ (right)



Barley: 'AB Dram' (centre) with reference varieties 'AC Metcalfe' (left) and 'CDC Copeland' (right)

Proposed denomination: 'AB Prime'
Application number: 20-10239
Application date: 2020/05/14
Applicant: Alberta Agriculture, Forestry and Rural Economic Development, Edmonton, Alberta
Agent in Canada: SeedNet Inc., Lethbridge, Alberta
Breeder: Patricia Juskiw, Alberta Agriculture and Forestry, Lacombe, Alberta

Variety used for comparison: 'CDC Austenson'

Summary: *The flag leaf of 'AB Prime' is shorter than the flag leaf of 'CDC Austenson'. The lemma awn tips of 'AB Prime' have a weak intensity of anthocyanin colouration while those of 'CDC Austenson' have a very weak intensity of anthocyanin colouration. At maturity, the plants of 'AB Prime' are taller than those of 'CDC Austenson'. Excluding the awns, the spike of 'AB Prime' is longer than that of 'CDC Austenson'. The plants of 'AB Prime' have a good resistance to lodging while those of 'CDC Austenson' have a fair resistance to lodging.*

Description:

YOUNG PLANT: semi-erect growth habit at tillering, absent or very sparse pubescence on lower leaf sheaths

PLANT: two row, spring feed barley, medium frequency of plants with recurved flag leaves

FLAG LEAF BLADE (AT BOOTING): sparse pubescence

FLAG LEAF SHEATH: medium glaucosity, sparse pubescence

AURICLES: medium to strong intensity of anthocyanin colouration, weak pubescence on margins

SPIKE: mid-season emergence, medium glaucosity at end of anthesis, horizontal attitude, platform shaped collar, tapering shape, medium density, parallel to weakly divergent sterile spikelet attitude, glume and iawn of median spikelet are equal to length of grain

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

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

KERNEL: weak intensity of anthocyanin colouration of nerves of lemma, long rachilla hairs, husk present, weak spiculation of inner lateral nerves of dorsal side of lemma, hairless ventral furrow, clasping disposition of lodicules, transverse crease shaped basal markings, medium length and width

AGRONOMIC CHARACTERISTICS: good resistance to lodging

Origin and Breeding: 'AB Prime' (experimental designations J08046022 and TR18645) originated from a cross between the variety 'Merit 57' and the Alberta Agriculture and Forestry Field Crop Development Centre breeding line J08041(F1), conducted in Lacombe, Alberta in 2008. The F2 generation was grown in Lacombe, Alberta in 2009 and the F3 bulk grown in California, USA during the winter of 2009-2010. Selected F3 heads were advanced through the F4 to F6 generations in Lacombe, AB from 2010 to 2012. In 2012, 200 F6 heads were selected and grown out as individual F7 headrows from which J08046022 was selected and yield tested from 2013 to 2017. Breeder seed was established at the F13 generation in 2019. The variety was entered in the Western 2 Row Cooperative Registration Test from 2018 to 2019 as 'TR18645' with support for

registration received in 2020. Selection criteria used in the development of 'AB Prime' was based on kernel weight, grain yield, test weight, lodging resistance, maturity, disease resistance and quality.

Tests and Trials: The comparative trials for 'AB Prime' were conducted at the Olds College Field Crop Development Centre in Lacombe, Alberta during the 2021 and 2022 growing seasons. The trials were arranged in a RCB design with 3 replicates. Plots consisted of 8 rows, 2.5 metres in length, with 14 cm inter-row spacing and 40 cm between the plots. The seeding density was 270 seeds per square metre resulting in 2250 plants per variety. Measured characteristics were based on a minimum of 30 measurements. Mean differences were significant at the 5% probability level based on paired Student's T-tests.

Comparison table for 'AB Prime'

	'AB Prime'	'CDC Austenson'*
<i>Flag leaf length (cm)</i>		
mean 2021	13.8	17.0
std. deviation 2021	2.64	2.93
mean 2022	16.2	20.9
std. deviation 2022	2.70	3.15
<i>Plant height (at maturity) (cm)</i>		
mean 2021	94.1	91.1
std. deviation 2021	4.24	4.39
mean 2022	113.6	106.7
std. deviation 2022	6.27	6.49
<i>Spike length (excluding awns) (cm)</i>		
mean 2021	9.1	7.8
std. deviation 2021	0.95	0.53
mean 2022	9.2	8.8
std. deviation 2022	0.51	0.54

*reference variety



Barley: 'AB Prime' (left) with reference variety 'CDC Austenson' (right)



Barley: 'AB Prime' (right) with reference variety 'CDC Austenson' (left)



Barley: 'AB Prime' (left) with reference variety 'CDC Austenson' (right)

Proposed denomination: 'AB Wrangler'
Application number: 19-10051
Application date: 2019/12/03
Applicant: Alberta Agriculture, Forestry and Rural Economic Development, Edmonton, Alberta
Agent in Canada: Canterra Seeds, Winnipeg, Manitoba
Breeder: Patricia Juskiw, Alberta Agriculture and Forestry, Lacombe, Alberta

Varieties used for comparison: 'Lowe' and 'Canmore'

Summary: 'AB Wrangler' has a low frequency of plants with recurved flag eaves while 'Canmore' has an absent or very low frequency of plants with recurved flag leaves. The flag leaf auricles of 'AB Wrangler' have a medium intensity of

anthocyanin colouration while those of 'Canmore' have a strong intensity of anthocyanin colouration. The flag leaf of 'AB Wrangler' is wider than the flag leaf of 'Canmore'. The anthocyanin colouration of the nerves of lemma on the kernel of 'AB Wrangler' is of a weak to medium intensity while it is of an absent or very weak to weak intensity for 'Canmore'. The collar on the spike of 'AB Wrangler' is platform shaped while it is cup-shaped for 'Lowe' and 'Canmore'. The spike of 'AB Wrangler' is of a medium density while it is lax for 'Lowe'. The sterile spikelet of 'AB Wrangler' has a parallel to weakly divergent attitude while that of 'Lowe' has a divergent attitude. The plants of 'AB Wrangler' have good resistance to lodging while those of 'Canmore' have a fair resistance to lodging.

Description:

YOUNG PLANT: semi-erect growth habit at tillering, absent or very sparse to sparse pubescence on lower leaf sheaths

PLANT: two row, spring feed barley, low frequency of plants with recurved flag leaves

FLAG LEAF BLADE (AT BOOTING): sparse pubescence

FLAG LEAF SHEATH: medium glaucosity, sparse pubescence

AURICLES: medium intensity of anthocyanin colouration, weak pubescence on margins

SPIKE: mid-season emergence, medium glaucosity at end of anthesis, semi-erect attitude, platform shaped collar, tapering shape, medium density, parallel to weakly divergent sterile spikelet attitude, glume and its awn of the median spikelet are equal to length of grain

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

FIRST SEGMENT OF RACHIS: short, weak curvature

KERNEL: weak to medium intensity of anthocyanin colouration of nerves of lemma, long rachilla hairs, husk present, weak to medium spiculation of inner lateral nerves of dorsal side of lemma, hairless ventral furrow, clasping disposition of lodicules, horseshoe shaped basal markings, medium length and width

AGRONOMIC CHARACTERISTICS: good resistance to lodging, poor malting quality

Origin and Breeding: 'AB Wrangler' (experimental designations J07046021 and TR17639) originated from a cross between the variety 'Busby' and the line 'TR06390', conducted in Lacombe, Alberta in 2007. Using a modified bulk breeding method, the variety was advanced with an F7 head row designated as J07046021. Head selections were performed from 2013 to 2018 where 200 F12 lines were grown as individual plots and the resulting F13 seed bulked as breeder seed in 2019. The variety was entered in the Western 2 Row Cooperative Registration Test from 2018 to 2019 as 'TR17639' with support for registration received in 2019. Selection criteria used in the development of 'AB Wrangler' was based on kernel weight, grain yield, test weight, lodging resistance, maturity, disease resistance and quality.

Tests and Trials: The comparative trials for 'AB Wrangler' were conducted at the Olds College Field Crop Development Centre in Lacombe, Alberta during the 2020 and 2022 growing seasons. The trials were arranged in a RCB design with 3 replicates. Plots consisted of 8 rows, 2.5 metres in length, with 14 cm inter-row spacing and 40 cm between the plots. The seeding density was 270 seeds per square metre resulting in 2250 plants per variety. Measured characteristics were based on a minimum of 30 measurements. Mean differences were significant at the 5% probability level based on a paired Student's T-test.

Comparison table for 'AB Wrangler'

	'AB Wrangler'	'Lowe'*	'Canmore'*
<i>Flag leaf width (cm)</i>			
mean 2020	8.90	9.93	7.97
std. deviation 2020	1.03	1.14	1.45
mean 2022	12.9	13.4	11.9
std. deviation 2022	1.55	1.55	1.53

*reference varieties



Barley: 'AB Wrangler' (left) with reference varieties 'Lowe' (centre) and 'Canmore' (right)



Barley: 'AB Wrangler' (centre) with reference varieties 'Canmore' (left) and 'Lowe' (right)