



## APPLICATIONS UNDER EXAMINATION

## WHEAT

### WHEAT (*Triticum aestivum*)

**Proposed denomination:** 'AAC Network'  
**Application number:** 19-10061  
**Application date:** 2019/12/23  
**Applicant:** Agriculture & Agri-Food Canada, Lethbridge, Alberta  
**Agent in Canada:** Agriculture & Agri-Food Canada, Saskatoon, Saskatchewan  
**Breeder:** Robert Graf, Agriculture & Agri-Food Canada, Lethbridge, Alberta

**Varieties used for comparison:** 'AAC Gateway' and 'AAC Elevate'

**Summary:** *At booting, the anthocyanin colouration of the auricles on the flag leaf of 'AAC Network' is of weak to medium intensity whereas it is absent or very weak on the auricles of both reference varieties. At maturity, the plants, including the spike and awns, of 'AAC Network' are taller than the plants of 'AAC Gateway' and shorter than those of 'AAC Elevate'. Excluding the awns, the spike of 'AAC Network' is longer than that of 'AAC Gateway'. The spike attitude for 'AAC Network' is erect whereas the attitude for both reference varieties is inclined. The lower glume shoulder of 'AAC Network' is sloping with an absent or very narrow width whereas the lower glume shoulder of 'AAC Gateway' is straight with medium width and that of 'AAC Elevate' is slightly sloping to straight with a narrow to medium width. The 1000 kernel weight of 'AAC Network' is less than that of both reference varieties.*

#### **Description:**

**PLANT:** winter type, common wheat, semi-prostrate growth habit at 5 to 9 tiller stage, absent or very low to low frequency of plants with recurved flag leaves, heads and matures mid-season

**SEEDLING (4-leaf stage):** glabrous sheath and lower leaf blade

**FLAG LEAF:** weak to medium intensity of anthocyanin colouration of auricles, medium to strong glaucosity of sheath, glabrous sheath and blade

**CULM:** medium glaucosity, straight to weakly curved neck at maturity

**STRAW (at maturity):** pith very thin in cross-section, absent or very weak anthocyanin colouration

**SPIKE:** weak to medium glaucosity at heading, tapering shape in profile, medium density, erect attitude, absent or very sparse hairiness of the convex surface of the apical rachis segment, white to yellow at maturity

**AWNS:** shorter than spike, white to light brown at maturity

**LOWER GLUME:** medium to long, medium width, glabrous

**LOWER GLUME SHOULDER:** sloping, absent or very narrow

**LOWER GLUME BEAK:** medium length

**KERNEL:** hard red type, medium red

**AGRONOMIC TRAITS:** good resistance to lodging, fair to good winter survival

**BREAD MAKING QUALITY:** good

**DISEASE REACTIONS:** resistant to Stem rust (*Puccinia graminis*) and Stripe rust (*Puccinia striiformis*); resistant to moderately resistant to Leaf rust (*Puccinia triticina*) and Common bunt (*Tilletia tritici* and *Tilletia laevis*), moderately resistant to moderately susceptible to Fusarium head blight (*Fusarium graminearum*)

**INSECT REACTION:** susceptible to Wheat Curl Mite (*Aceria tosichella*)

**Origin and Breeding:** 'AAC Network' (experimental designation 'W569') originated from a cross between 'LG237' and 'LG278' made at Agriculture and Agri-Food Canada Lethbridge Research and Development Centre in Lethbridge, Alberta in

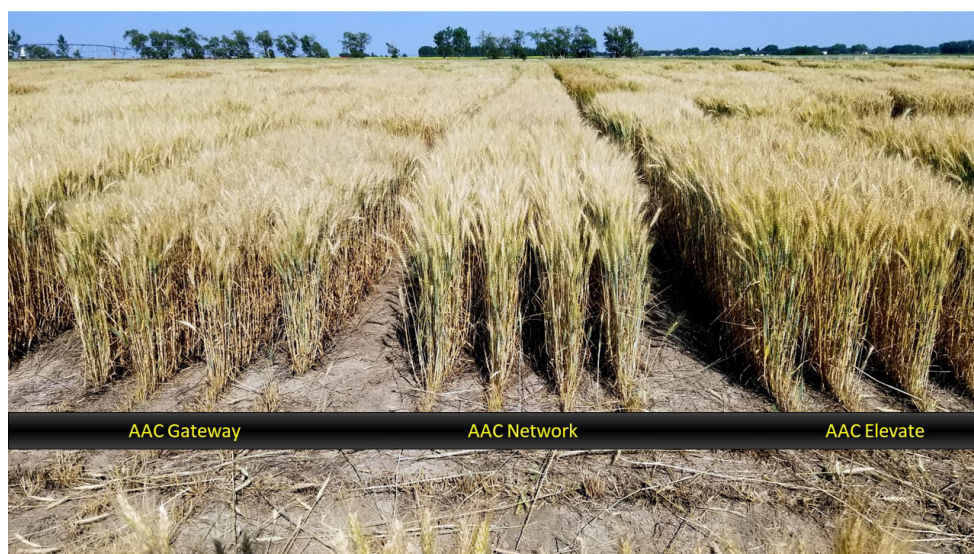
2008. The maize hybridization method was used to produce F1 double haploids from plants between 2009 and 2010. In 2011 selections were made for winter survival, spring vigour, plant type, height, and straw strength. In 2012, inoculations in disease nurseries were done to assess stem and leaf rust resistance at the University of Manitoba campus in Winnipeg and stripe rust and bunt resistance in Lethbridge. From 2013 to 2015, advanced selections were made for traits including yield and production characteristics, disease resistance and end use quality. 'W569' was entered into the Western Canadian Winter Wheat Cooperative registration trials from 2015 to 2016 and from 2018 to 2019 at multiple locations.

**Tests and Trials:** The comparative trials for 'AAC Network' were conducted at Agriculture and Agri-Food Canada, Lethbridge Research and Development Centre in Lethbridge, Alberta in 2020 and 2021. There were 3 replicates per variety arranged in an RCB design. Plots were 4.1 square metres, and consisted of 4 rows 3.5 in length with 0.23 metre inter-row spacing. The seeding density was 360 seeds per square metre, resulting in approximately 4300 plants per variety per year. Measured characteristics were based on 30 measurements per variety per year except for kernel weight which was based on 12 measurements per variety per year. Mean differences were significant at the 5% probability level based on a paired Student's t-test. Disease reaction ratings were provided through the disease evaluation of the Western Canadian Winter Wheat Cooperative Registration trials from 2016 to 2018.

#### Comparison table for 'AAC Network'

	'AAC Network'	'AAC Gateway'*	'AAC Elevate**
<i>Plant height at maturity (stem plus spike, including awns) (cm)</i>			
mean 2020	81.8	78.1	85.8
std. deviation 2020	2.5	2.3	1.2
mean 2021	82.8	80.8	85.6
std. deviation 2021	3.0	2.0	2.4
<i>Spike length (excluding awns) (cm)</i>			
mean 2020	9.8	8.6	9.6
std. deviation 2020	0.8	0.8	0.8
mean 2021	9.0	7.5	8.5
std. deviation 2021	0.8	0.8	0.6
<i>Kernel weight (grams per 1000 kernels) (g)</i>			
mean 2020	32.7	34.8	40.0
std. deviation 2020	0.6	0.8	0.5
mean 2021	26.3	28.5	29.3
std. deviation 2021	1.1	0.3	0.8

\*reference varieties



Wheat: 'AAC Network' (centre) with reference varieties 'AAC Gateway' (left) and 'AAC Elevate' (right)

**Proposed denomination:** 'AAC Vortex'  
**Application number:** 21-10477  
**Application date:** 2021/04/27  
**Applicant:** Agriculture & Agri-Food Canada, Lethbridge, Alberta  
**Agent in Canada:** Agriculture & Agri-Food Canada, Saskatoon, Saskatchewan  
**Breeder:** Robert Graf, Agriculture & Agri-Food Canada, Lethbridge, Alberta

**Varieties used for comparison:** 'Emerson' and 'AAC Goldrush'

**Summary:** *At maturity, the plants, including spike and awns, of 'AAC Vortex' are shorter than the plants of both reference varieties. The spike of 'AAC Vortex' has weak to medium glaucosity whereas the spike of 'Emerson' has absent or very weak to weak glaucosity. The 1000 kernel weight of 'AAC Vortex' is greater than the kernel weight of 'Emerson'.*

**Description:**

**PLANT:** winter type, common wheat, semi-prostrate growth habit at 5 to 9 tiller stage, medium to high frequency of plants with recurved flag leaves, heads and matures mid-season

**SEEDLING (4-leaf stage):** glabrous sheath and lower leaf blade

**FLAG LEAF:** absent or very weak to weak intensity of anthocyanin colouration of auricles, strong glaucosity of sheath, glabrous sheath and blade

**CULM:** weak glaucosity, straight to weakly curved neck at maturity

**STRAW (at maturity):** pith very thin in cross-section, absent or very weak anthocyanin colouration

**SPIKE:** weak to medium glaucosity at heading, tapering shape in profile, medium density, white to yellow at maturity, inclined attitude

**AWNS:** shorter than spike, white to light brown at maturity

**LOWER GLUME:** medium length and width, glabrous

**LOWER GLUME SHOULDER:** absent or very narrow, sloping to slightly sloping

**LOWER GLUME BEAK:** medium to long

**KERNEL:** hard red type, medium red

**AGRONOMIC TRAITS:** very good resistance to lodging, good winter survival

**BREAD MAKING QUALITY:** good

**DISEASE REACTIONS:** resistant to Leaf rust (*Puccinia triticina*), Stem rust (*Puccinia graminis*), Stripe rust (*Puccinia striiformis*); moderately resistant to Fusarium head blight (*Fusarium graminearum*), susceptible to Common bunt (*Tilletia tritici* and *Tilletia laevis*)

**Origin and Breeding:** 'AAC Vortex' (experimental designation 'W583') originated from the three way cross (LF1815 and LD1829) and, then, 'Emerson' completed at Agriculture and Agri-Food Canada, Lethbridge Research and Development Centre in Lethbridge, Alberta in 2008. The maize hybridization method was used to produce F1 double haploids from plants between 2009 and 2011. In 2012, selections were made for winter survival, plant type, height, straw strength, stripe rust resistance, and leaf health. From 2014 to 2016, advanced selections were made based on grain yield and production characteristics, disease resistance and end use quality. 'W583' was entered into the Western Canadian Winter Wheat Cooperative registration trials from 2016 to 2017 and 2018 to 2019 at multiple locations.

**Tests and Trials:** The comparative trials for 'AAC Vortex' Agriculture and Agri-Food Canada, Lethbridge Research and Development Centre in Lethbridge, Alberta in 2020 and 2021. There were 3 replicates per variety arranged in an RCB design. Plots were 4.1 square metres, consisted of 4 rows, with each row being 3.5 metres long with 0.23 metre inter-row spacing. The seeding density was 360 seeds per squared metre, resulting in approximately 4300 plants per variety per year. Measured characteristics were based on 30 measurements per variety per year except for kernel weight which was based on 12 measurements per variety per year. Mean differences were significant at the 5% probability level based on a paired



Student's t-test. Disease reaction ratings were provided through the disease evaluation of the Western Canadian Winter Wheat Cooperative Registration trials from 2017 to 2019.

**Comparison table for 'AAC Vortex'**

	'AAC Vortex'	'Emerson'*	'AAC Goldrush'*
<i>Plant height at maturity (stem plus spike, including awns)(cm)</i>			
mean 2020	85.0	89.0	86.8
std. deviation 2020	2.0	3.2	2.2
mean 2021	84.8	87.2	89.6
std. deviation 2021	3.0	2.5	2.7
<i>Kernel weight (grams per 1000 kernels) (g)</i>			
mean 2020	35.1	30.2	35.4
std. deviation 2020	0.6	0.7	0.6
mean 2021	27.8	24.8	26.9
std. deviation 2021	0.9	0.5	0.7

\*reference varieties



Wheat: 'AAC Vortex' (left) with reference varieties 'Emerson' (centre) and 'AAC Goldrush' (right)

**Proposed denomination:** 'Alban'  
**Application number:** 21-10431  
**Application date:** 2021/02/05  
**Applicant:** Céréla inc., St-Hugues, Quebec  
**Breeder:** Annie Archambault, Céréla inc., St-Hugues, Quebec

**Varieties used for comparison:** 'AAC Synox', 'Topaze', 'Touran' and 'Agora'

**Summary:** At booting, the frequency of plants with recurved flag leaves is low for 'Alban' whereas the frequency is medium for 'Touran', medium to high for 'AAC Synox' and high to very high for 'Agora'. The intensity of anthocyanin colouration of

the auricles on the flag leaf of 'Alban' is absent to very weak whereas it is of medium intensity on the auricles of 'AAC Synox' and it is of weak to medium intensity on the auricles of 'Topaze'. The plants of 'Alban' head later than the plants of 'AAC Synox', 'Touran' and 'Agora'. At maturity, the culm of 'Alban' has a straight neck whereas that of 'Touran' has a curved neck. The plants of 'Alban' are shorter than the plants of 'Topaze' and taller than those of 'AAC Synox', 'Touran' and 'Agora'. Excluding the awns, the spike of 'Alban' is longer than that of 'Touran' and 'Agora'. The lower glume of 'Alban' has a medium length beak whereas the lower glume of 'Touran' and 'Agora' have a long to very long beak. The 1000 kernel weight for 'Alban' is greater than that of 'AAC Synox' and less than that of 'Touran'.

**Description:**

PLANT: spring type, common wheat, semi-erect growth habit at 5 to 9 tiller stage, low frequency of plants with recurved flag leaves, heads mid-season, matures mid-season

SEEDLING (4-leaf stage): absent or very weak intensity of anthocyanin colouration of coleoptile, glabrous sheath and blade of lower leaves

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

CULM: strong glaucosity, straight neck

STRAW (at maturity): thin pith in cross-section

SPIKE: strong degree of glaucosity at heading, tapering shape in profile, medium density, white at maturity, erect to inclined attitude, sparse to medium density of hairiness of the convex surface of the apical rachis segment

AWNS: equal to spike length, white at maturity

LOWER GLUME: medium to long, narrow to medium width, pubescent, very sparse to sparse extent of internal hairs

LOWER GLUME SHOULDER: narrow to medium width, slightly sloping to straight

LOWER GLUME BEAK: medium length

KERNEL: hard red type, medium red to dark red

**Origin and Breeding:** 'Alban' (experimental designation BS15-15,02) originated from a controlled cross conducted in Sainte-Rosalie, Quebec between the varieties 'Torka' (female parent) and 'BS04-339' (male parent) in 2007, the progeny coded as SB07-38A. The F1 to F5 generations were mass cultivated in Ste. Rosalie Quebec from 2008 to 2012 where seed selections were made based on grain density at each generation. Spikes were selected from the F5 plants in 2012 and planted in single rows. F6 individual rows were selected using a pedigree selection method based on lodging resistance, grain yield, early maturity and minimal expression of disease symptoms. From 2014 to 2016, the line designated as BS15-15,02 was initially evaluated with other lines in screening trials for the grain yield, volumetric grain weight and resistance to Fusarium head blight. Additional controlled inoculation trials with *Fusarium* sp. were also conducted in 2015 and 2016 to assess the Fusarium head blight resistance. BS15-15,02 was evaluated in yield trials in 2017 and entered in the registration trials conducted by the Réseau Grandes Cultures du Québec from 2018 to 2019.

**Tests and Trials:** The comparative trials for 'Alban' were conducted at Céréla Inc. in St-Hugues, Quebec, during the 2020 and 2021 growing seasons. There were 2 replications per variety arranged in an RCB design. Plots consisted of 5 rows, each row 5 metres long with an inter-row spacing of 0.19 metres. The seeding density was approximately 425 seeds per squared metre resulting in at least 3825 plants in total per variety each year. Measured characteristics were based on 20 measurements per variety per year. Mean differences were significant at the 5% probability level based on paired Student's t-tests.

**Comparison table for 'Alban'**

	'Alban'	'AAC Synox'*	'Topaze'*	'Touran'*	'Agora'*
<i>Days to heading (days from planting to when 50% heads are fully emerged from boot)</i>					
mean 2020	62	60	63	59	60
mean 2021	53	51	57	45	50
<i>Plant height at maturity (stem plus spike, including awns) (cm)</i>					
mean 2020	78.95	70.80	84.50	73.15	74.60
std. deviation 2020	3.46	4.24	3.55	2.87	4.47
mean 2021	84.70	78.80	90.00	80.90	78.25
std. deviation 2021	4.55	4.21	4.05	4.29	4.62

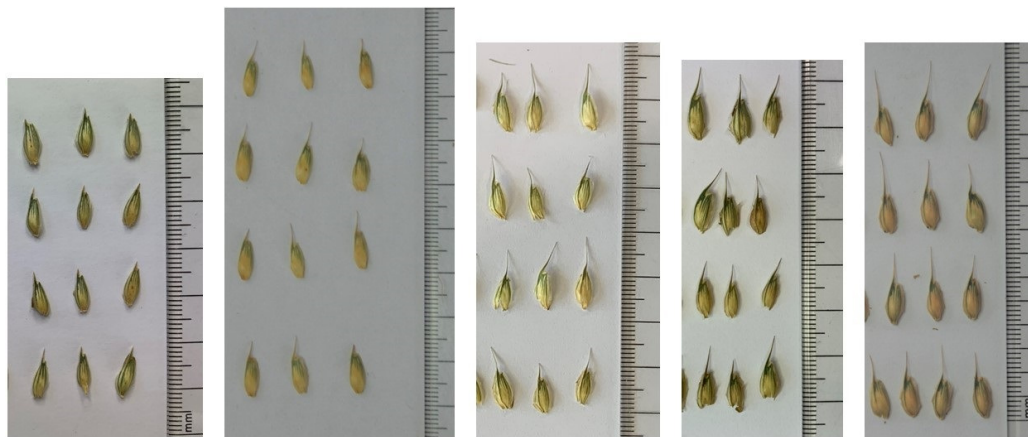
*Spike length (excluding awns) (cm)*

mean 2020	9.12	8.84	8.40	7.11	7.15
std. deviation 2020	0.55	0.77	0.84	0.65	0.48
mean 2021	8.85	9.00	8.77	7.40	7.29
std. deviation 2021	0.68	1.04	0.98	0.67	0.86

*Kernel weight (grams per 1000 kernels) (g)*

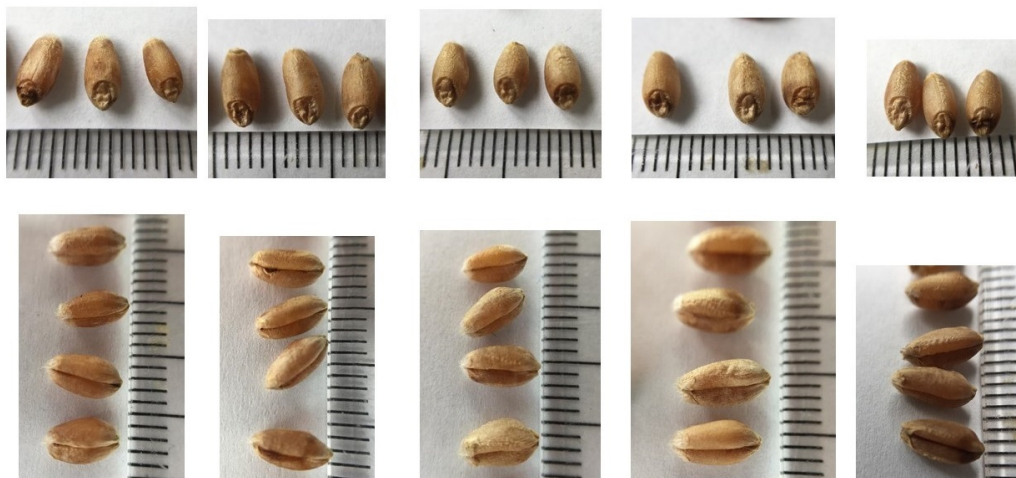
mean 2020	34.81	33.7	35.05	43.49	37.44
std. deviation 2020	1.10	0.52	0.48	0.58	0.71
mean 2021	44.38	38.65	40.51	49.66	41.26
std. deviation 2021	0.46	0.74	0.69	0.64	1.09

\*reference varieties



**Alban AAC Synox Topaze Touran Agora**

Wheat: 'Alban' (left) with reference varieties 'AAC Synox' (centre left), 'Topaze' (centre), 'Touran' (centre right) and 'Agora' (right)



**Alban AAC Synox Topaze Touran Agora**

Wheat: 'Alban' (left) with reference varieties 'AAC Synox' (centre left), 'Topaze' (centre), 'Touran' (centre right) and 'Agora' (right)