WHEAT
(Triticum aestivum)

Proposed denomination: **'AAC Hodge'**
Application number: 20-10257
Application date: 2020/06/04
Applicant: Agriculture & Agri-Food Canada, Brandon, Manitoba
Agent in Canada: Agriculture & Agri-Food Canada, Saskatoon, Saskatchewan
Breeder: Santosh Kumar, Agriculture & Agri-Food Canada, Brandon, Manitoba

Varieties used for comparison: 'AAC Magnet' and 'AAC LeRoy'

Summary: *At heading, the spike of 'AAC Hodge' is shorter than the spikes of 'AAC Magnet' and 'AAC LeRoy'. The awns of 'AAC Hodge' are longer than the spike while the awns of 'AAC Magnet' are shorter or equal to the spike length and those of 'AAC LeRoy' are equal to the spike length.*

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

SEEDLING (4-leaf stage): very weak to 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, strong glaucosity of lower side, glabrous blade and sheath

CULM: absent or very sparse hairiness on uppermost node, medium glaucosity, straight neck
STRAW: pith of thin to medium thickness in cross-section, no anthocyanin colouration at maturity

SPIKE: medium to strong glaucosity at heading, tapering to parallel sided shape in profile, medium density, brownish yellow at maturity, erect attitude, sparse hairiness of convex surface of apical rachis segment
AWNS: longer than spike, light brown at maturity
LOWER GLUME: medium in length, narrow to medium width, glabrous, sparse to medium extent of internal hairs
LOWER GLUME SHOULDER: narrow to medium width, slightly sloping to straight
LOWER GLUME BEAK: slightly to moderately curved
LOWEST LEMMA: very slightly curved beak

KERNEL: hard red, medium red, medium in size, ovate shape, rounded cheek, short brush hairs
GERM: small to medium sized, narrow to medium width crease of shallow to medium depth

AGRONOMIC TRAITS: good resistance to pre-harvest sprouting, good bread making quality

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

INSECT REACTION: resistant to Wheat Midge (*Sitodiplosis mosellana*)

Origin and Breeding: 'AAC Hodge' (experimental designations BW1069 and PT488) originated from a cross between 'BW430' and 'BW897' conducted in 2009 at the Agriculture and Agri-Food Canada Cereal Research Centre in Winnipeg, Manitoba. In the winter of 2009-2010, 24 F1 plants were grown in a greenhouse and, in 2010, 12 F2 bulk plots were grown in the field in Beaverlodge, Alberta. In 2010-2011, 360 spikes were harvested and planted in 163 hills in Palmerston North, New Zealand. 585 selected heads were grown as 1 metre single rows in Beaverlodge, Alberta with 156 seletions grown as single 1 metre rows in Palmerston North, New Zealand in 2011-2012. One line was selected to advance to F6 level yield

trials at 4 locations in Western Canada. Six F7 heads were selected and grown as 1 metre rows in Palmerston North New Zealand. One line advanced through yield trials in multiple locations in Western Canada from 2013 to 2016 and was tested as PT488 in the Parkland 'C' Registration Test from 2016 to 2018. In 2016, 250 F6:11 spikes were bulked as breeder seed. Selection criteria included seed appearance, flour yield, agronomic and quality traits and disease resistance.

Tests and Trials: The comparative trials for 'AAC Hodge' were conducted at the Agriculture and Agri-Food Canada Saskatoon Research and Development Centre in Saskatoon, Saskatchewan in 2019 and 2021. There were 3 replicates per variety arranged in an RCB design. Plots consisted of 5 rows, each row was 3.35 metres long with 0.18 metre inter-row spacing. The seeding density was 264 seeds per squared metre, resulting in approximately 3000 plants per variety per year. Measured characteristics were based on 21 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 'AAC Hodge'

	'AAC Hodge'	'AAC Magnet'*	'AAC LeRoy'*
Spike length (excluding the awns) (cm)			
mean 2019	78.0	83.0	85.0
std. deviation 2019	4.7	6.6	5.4
mean 2021	78.0	87.0	82.0
std. deviation 2021	4.6	4.4	4.4

*reference varieties

Wheat: 'AAC Hodge' (left) with reference varieties 'AAC Magnet' (centre) and 'AAC LeRoy' (right)

Proposed denomination: **'AAC Perform'**
Application number: 21-10476
Application date: 2021/04/27
Applicant: Agriculture & Agri-Food Canada, Lethbridge, Alberta
Agent in Canada: Agriculture & Agri-Food Canada, Saskatoon, Saskatchewan
Breeder: Harpinder S. Randhawa, Agriculture & Agri-Food Canada, Lethbridge, Alberta

Varieties used for comparison: 'Conquer' and '5701PR'

Summary: *At the 5 to 9 tiller stage, the plants of 'AAC Perform' have an erect growth habit while the plants of 'Conquer' have a semi-prostrate growth habit. At booting, the flag leaf auricles of 'AAC Perform' have an absent or very weak intensity of anthocyanin colouration while those of 'Conquer' have a weak intensity of anthocyanin colouration. At heading, the plants of 'AAC Perform' are shorter than those of 'Conquer'. The awns at the tip of the spike of 'AAC Perform' are equal in length to the spike while 'Conquer' has awns that are shorter than the length of the spike. The lower glume shoulder of 'AAC Perform' is narrow while the lower glume shoulder of 'AAC Conquer' is broad. The lower glume shoulder of 'AAC Perform' is sloping while the lower glume shoulder of 'AAC Conquer' is strongly elevated with a second point present and that of '5701PR' is slightly sloping. The lower glume of 'AAC Perform' is narrow while the lower glume of 'Conquer' is of medium width. The lower glume of 'AAC Perform' has a long beak while the lower glume of 'Conquer' has a very short beak and that of '5701PR' has a beak of medium length. The kernel weight of 'AAC Perform' is less than that of the reference varieties.*

Description:
PLANT: spring type, common wheat, erect growth habit at 5 to 9 tiller stage, low frequency of plants with recurved flag leaves, heads mid-season, matures mid to late 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, weak to medium glaucosity of sheath, weak glaucosity of lower side, glabrous blade and sheath

CULM: absent or very sparse hairiness on uppermost node, absent or very weak glaucosity, straight neck
STRAW: pith of medium thickness in cross-section, no anthocyanin colouration at maturity

SPIKE: weak to medium glaucosity at heading, tapering shape in profile, dense, white at maturity, erect attitude, absent or very sparse hairiness of convex surface of apical rachis segment
AWNS: equal to length of spike, white at maturity
LOWER GLUME: medium length, narrow, glabrous, sparse extent of internal hairs
LOWER GLUME SHOULDER: narrow, sloping
LOWER GLUME BEAK: long, straight
LOWEST LEMMA: straight beak

KERNEL: hard red, medium red, large, long, medium width, elliptical, rounded cheek, brush hairs of medium length

GERM: medium sized, broad elliptical, narrow crease of shallow depth

AGRONOMIC TRAITS: good resistance to shattering, fair resistance to pre-harvest sprouting, good bread making quality

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

INSECT REACTION: resistant to Wheat Midge (*Sitodiplosis mosellana*)

Origin and Breeding: 'AAC Perform' (experimental designations HY2074 and 16GPB-18) originated from a cross between '5701PR' and 'Faller' with a subsequent backcross to '5701PR' conducted in 2009 at the AAFC Cereal Research Centre in Winnipeg, Manitoba. Twenty nine F1 seeds were planted in a contra-season nursery in Leeston, New Zealand and the resulting F2 seed planted in several bulk plots under disease stress in Portage la Prairie, Manitoba in 2010. Selected F2 plants were bulked and planted in six rows in Palmerston North, New Zealand in 2010-2011 with 318 heads selected and planted in headrows in an early generation disease nursery in Glenlea, Manitoba in 2011. In 2010-2011, 41 F5 rows were planted in New Zealand with 19 lines selected for evaluation in single replicate yield trials at Glenlea and Brandon, Manitoba and Saskatoon, Saskatchewan in 2012. The 19 lines were simultaneously planted in disease nurseries in Glenlea and Portage la Prairie, Manitoba. Five heads were randomly selected from 18 lines and grown as 90 F7 headrows in Palmerston North, New Zealand in 2012-2013. Thirty seven F7:8 lines were screened in yield trials in 2014 in Brandon, Portage la Prairie and Saskatoon with nine F7:9 lines and one F7:10 line selected for evaluation in replicated trials in multiple locations in Alberta, Manitoba and Saskatchewan in 2015 and 2016 respectively. One line designated as16GPB-18 was evaluated in the High

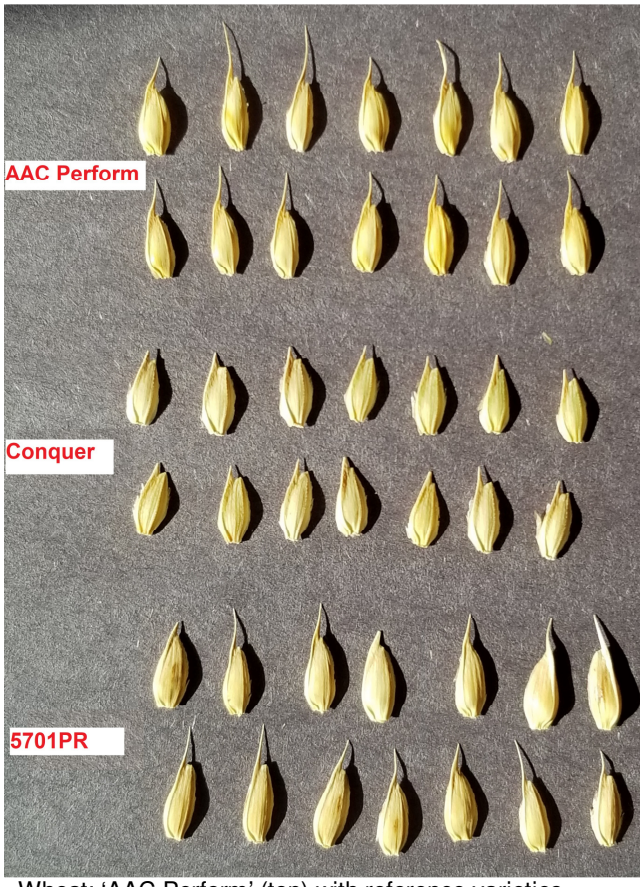
Yield Wheat Cooperative Registration trials from 2017 to 2019 as HY2074. Selection criteria included straw strength, maturity, plant height, maturity, kernel appearance, agronomic type, yield, disease resistance and quality traits.

Tests and Trials: The comparative trials for 'AAC Perform' were conducted at the Fairfield Farm, Agriculture and Agri-Food Canada in Lethbridge, Alberta in 2020 and 2021. There were 3 replicates per variety arranged in an RCB design. Plots consisted of 4 rows, each row was 3 metres long with 0.23 metre inter-row spacing. The seeding density was 250 seeds per squared metre, resulting in approximately 2100 plants per variety per year. Measured characteristics were based on 20 measurements per variety per year except kernel weight which was based on 10 measurements per variety per year. Mean differences were significant at the 5% probability level based on a paired Student's t-test.

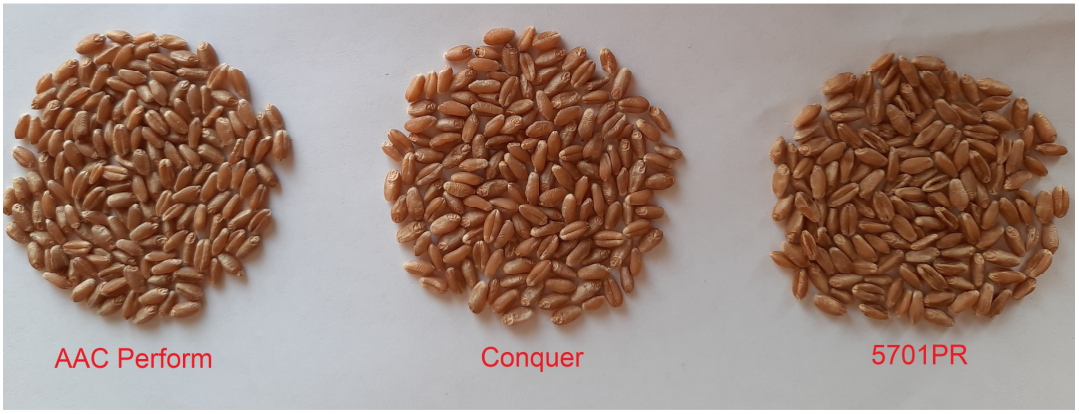
Comparison table for 'AAC Perform'

	'AAC Perform'	'Conquer'*	'5701PR'*
Plant height (at maturity, including awns) (cm)			
mean 2020	94.0	102.0	89.0
std. deviation 2020	3.0	3.0	4.0
mean 2021	75.8	85.7	77.8
std. deviation 2021	2.6	3.7	3.2
Kernel weight (grams per 1000 seeds)			
mean 2020	39.0	41.2	42.2
std. deviation 2020	0.4	0.5	0.3
mean 2021	38.0	42.4	39.8
std. deviation 2021	1.2	1.0	0.8

*reference varieties



Wheat: 'AAC Perform' (top) with reference varieties 'Conquer' (centre) and '5701PR' (bottom)



Wheat: 'AAC Perform' (left) with reference varieties 'Conquer' (centre) and '5701PR' (right)

Proposed denomination: **'AAC Whitehead'**
Application number: 20-10400
Application date: 2020/12/14
Applicant: Agriculture & Agri-Food Canada, Lethbridge, Alberta
Agent in Canada: Agriculture & Agri-Food Canada, Saskatoon, Saskatchewan
Breeder: Harpinder S. Randhawa, Agriculture & Agri-Food Canada, Lethbridge, Alberta

Varieties used for comparison: 'AAC Iceberg' and 'Snowstar'

Summary: *At heading, the plants of 'AAC Whitehead' are shorter than those of 'AAC Iceberg' and 'Snowstar'. The spike of 'AAC Whitehead' has an erect attitude while the spike of 'AAC Iceberg' has an inclined attitude. The lower glume shoulder of 'AAC Whitehead' is narrow and sloping while the lower glume shoulder of 'AAC Iceberg' is of medium width and slighlty sloping and that of 'Snowstar' is broad and straight. The lower glume of 'AAC Whitehead' is narrow while the lower glume of 'AAC Iceberg' is of medium width. The lower glume of 'AAC Whitehead' has a long to very long beak while the lower glume of 'AAC Iceberg' has a beak of medium length and that of 'Snowstar' has a very short beak. The kernel weight of 'AAC Whitehead' is greater than that of 'AAC Iceberg'.*

Description:
PLANT: spring type, common wheat, 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, absent or very weak glaucosity of sheath, absent or very weak glaucosity of lower side, glabrous blade and sheath

CULM: absent or very sparse hairiness on uppermost node, absent or very weak to weak glaucosity, straight neck
STRAW: pith of medium thickness in cross-section, no anthocyanin colouration at maturity

SPIKE: weak glaucosity at heading, tapering shape in profile, dense, white at maturity, erect attitude, absent or very sparse hairiness of convex surface of apical rachis segment
AWNS: equal to length of spike, white at maturity
LOWER GLUME: medium to long, narrow, glabrous, sparse extent of internal hairs
LOWER GLUME SHOULDER: narrow, sloping
LOWER GLUME BEAK: long to very long, slightly curved
LOWEST LEMMA: straight beak

KERNEL: hard white, medium in size, medium length, medium width, oval, rounded cheek, short brush hairs
GERM: medium sized, round, narrow crease of shallow depth

AGRONOMIC TRAITS: good resistance to shattering, fair resistance to pre-harvest sprouting, good bread making quality

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

INSECT REACTION: resistant to Wheat Midge (*Sitodiplosis mosellana*)

Origin and Breeding: 'AAC Whitehead' (experimental designations HW506 and W13798) originated from a three-way cross conducted between 'AAC Iceberg', 'Carberry' and 'Vesper' at the AAFC Lethbridge Research and development Centre in Lethbridge, Alberta in 2012. F1 derived double haploids were produced using maize hybridization techniques and 280 of the resulting DH lines were evaluated in a contra-season nursery in Leeston, New Zealand in 2013-2014. 165 of the resulting rows were harvested and further evaluated as single replicate yield trials in both irrigated and dryland sites and disease nurseries in Lethbridge, Alberta. In 2015, 16 lines were advanced to replicated yield trials in Lethbridge, Alberta, Bow Island, Alberta and Melfort, Saskatchewan and evaluated in disease nurseries. In 2016, 8 lines were advanced to replicated trials in multiple locations within Alberta, Manitoba and Saskatchewan. One line designated as W13798 was advanced to the 2017 Hard White Wheat Registration Trial as HW506 and was evaluated from 2017 to 2019. Selection criteria included plant type, plant height, maturity, yield, disease resistance and quality traits.

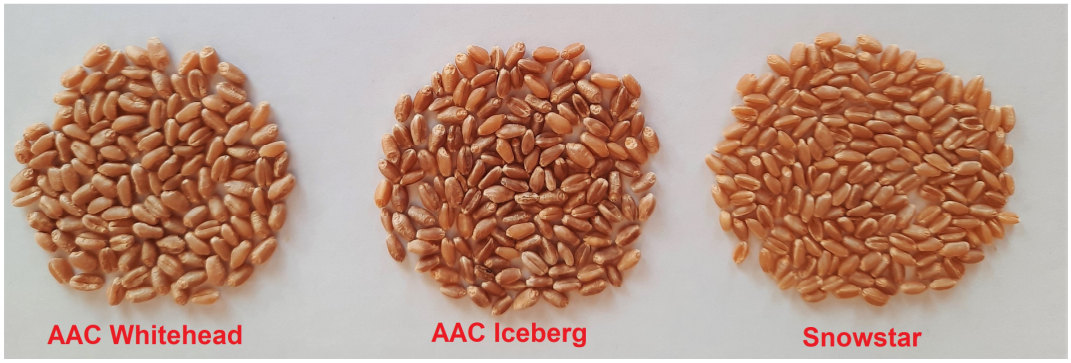
Tests and Trials: The comparative trials for 'AAC Whitehead' were conducted at the Fairfield Farm, Agriculture and Agri-Food Canada in Lethbridge, Alberta in 2020 and 2021. There were 3 replicates per variety arranged in an RCB design. Plots consisted of 4 rows, each row was 3 metres long with 0.23 metre inter-row spacing. The seeding density was 250 seeds per squared metre, resulting in approximately 2100 plants per variety per year. Measured characteristics were based on 20 measurements per variety per year except for kernel weight which was based on 10 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 'AAC Whitehead'

	'AAC Whitehead'	**'AAC Iceberg'***	**'Snowstar'***
Plant height (at maturity, including awns) (cm)			
mean 2020	89.7	105.7	97.2
std. deviation 2020	3.6	3.2	3.5
mean 2021	80.5	93.3	82.7
std. deviation 2021	2.8	3.2	2.8
Kernel weight (grams per 1000 seeds)			
mean 2020	36.3	35.3	28.1
std. deviation 2020	0.6	0.5	0.4
mean 2021	41.2	39.0	40.7
std. deviation 2021	0.6	0.4	0.7

*reference varieties

Wheat: 'AAC Whitehead' (top) with reference varieties 'AAC Iceberg' (centre) and 'Snowstar' (bottom)



Wheat: 'AAC Whitehead' (left) with reference varieties 'AAC Iceberg' (centre) and 'Snowstar' (right)

Proposed denomination: **'Coralia'**
Application number: 20-10267
Application date: 2020/06/16
Applicant: Selgen a.s., Praha 7, The Czech Republic
Agent in Canada: La Coop fédérée, Saint-Hyacinthe, Quebec
Breeder: Pavel Horcicka, Selgen a.s., Praha 7, The Czech Republic

Varieties used for comparison: 'AC Brio', 'Furano' and 'SS Blomidon'

Summary: *At booting, the anthocyanin colouration of the auricles on the flag leaf of 'Coralia' is absent or very weak whereas it is of medium intensity for 'AC Brio' and of a weak intensity for those of 'Furano' and 'SS Blomidon'. The flag leaf of 'Coralia' is shorter than those of 'Furano' and 'SS Blomidon' and narrower than that of 'Furano'. The plants of 'Coralia' head earlier than the plants of 'Furano' and 'SS Blomidon'. At heading, 'Coralia' has a weak degree of glaucosity on the spike whereas the glaucosity is medium for 'Furano' and medium to strong for 'SS Blomidon'. At maturity, the plants of 'Coralia' are shorter than the plants of 'AC Brio' and 'Furano'. In profile, the spike shape of 'Coralia' is fusiform whereas it is tapering for 'Furano' and parallel-sided for 'SS Blomidon'. The hairiness of the convex surface of the apical rachis segment of 'Coralia' is sparse to medium whereas it is strong for 'Furano' and absent or very sparse to sparse for 'AC Brio'. 'Coralia' has a lower kernel weight than the reference varieties.*

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

SEEDLING (4 LEAF STAGE): glabrous lower leaf sheaths

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

STRAW (AT MATURITY): thin pith in cross-section

SPIKE: weak degree of glaucosity at heading, fusiform shape in profile, medium density, white at maturity, inclined attitude, sparse to medium hairiness of convex surface of apical rachis segment
AWNS: shorter than spike length, white at maturity
LOWER GLUME: glabrous
LOWER GLUME SHOULDER: narrow to medium width, straight
LOWER GLUME BEAK: short, slightly curved

KERNEL: medium red

Origin and Breeding: 'Coralia' (experimental designations CFB1618 and C1M16057) was developed using the pedigree breeding method by Selgen a.s. in Stupice, Czech Republic. The initial cross took place in 2004 between 'Seance' and 'Prointa Oriental', which was subsequently crossed with 'SW Kadrilj'. The variety originates from a single plant selection in the F3 generation with subsequent selections in the F4, F5, F8, F9 and F10 generations. Breeder seed was established at the F11 generation in 2015. Selection criteria included yield, baking quality, lodging resistance and disease resistance.

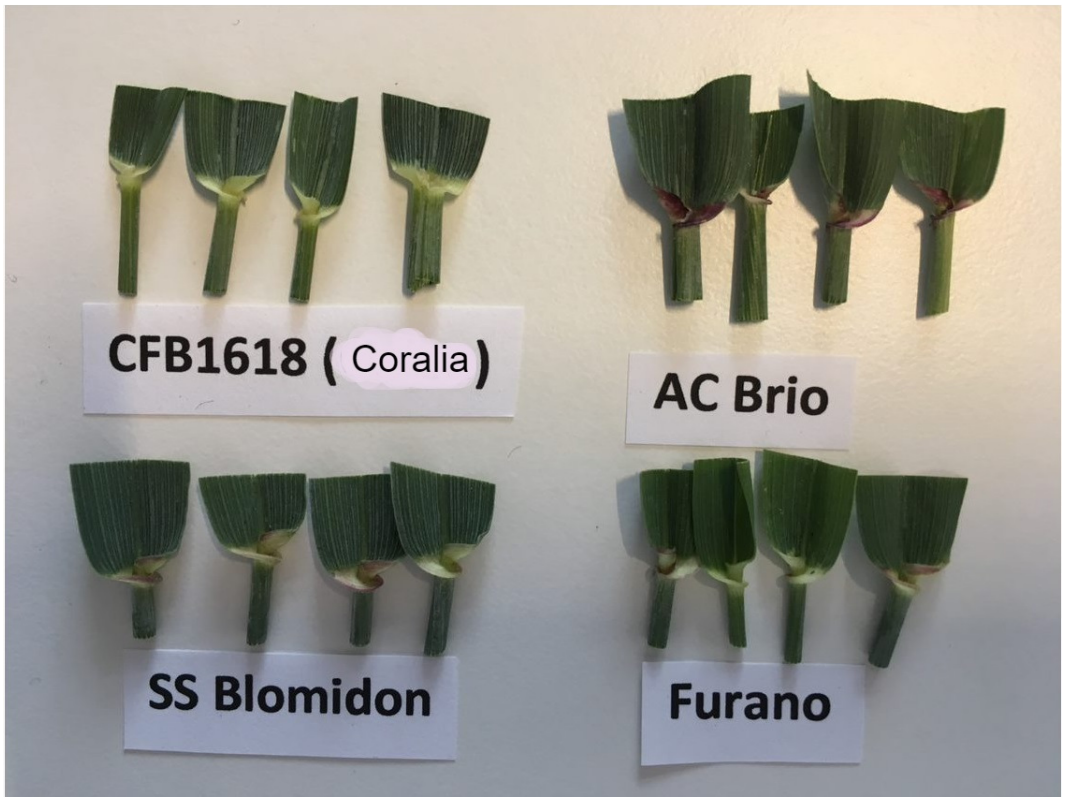
Tests and Trials: The comparative trials for 'Coralia' were conducted at the La Coop Fédérée Research Farm in Saint-Hyacinthe, Québec in 2020 and 2021. There were 4 replicates arranged in a RCB design. In 2020, the size of the plots were 5 square metres and consisted of seven 5 m long rows spaced 0.18 m apart. In 2021, the size of the plots were 6 square metres and consisted of seven 4.5 m long rows spaced 0.18 m apart. The seeding density was 375 seeds per square metres resulting in a minimum of 6500 plants per variety per year. The measured characteristics were based on a 20 measurements per variety each year. Mean differences were significant at the 5% probability level based on a Tukey test.

Comparison table for 'Coralia'

	'Coralia'	**'AC Brio'***	**'Furano'***	**'SS Blomidon'***
Flag leaf length (at booting) (cm)				
mean 2020	11.8	13.0	14.0	15.1
std. deviation 2020	1.9	2.9	1.8	2.4
mean 2021	10.5	9.7	13.6	12.5
std. deviation 2021	2.0	1.5	2.0	1.7
Flag leaf width (at booting) (mm)				
mean 2020	10.4	12.4	13.9	12.3
std. deviation 2020	1.0	1.1	1.4	1.1
mean 2021	9.6	9.9	11.7	10.3
std. deviation 2021	1.5	1.1	1.1	1.1
Days to heading (days from planting to when 50% heads are fully emerged from boot)				
mean 2020	181	180	184	183
mean 2021	180	174	183	182
Plant height (at maturity) (including awns) (cm)				
mean 2020	63.6	67.1	70.5	66.8
std. deviation 2020	2.9	3.1	3.4	3.4
mean 2021	72.3	75.3	79.0	74.6
std. deviation 2021	2.4	3.6	3.9	2.6

Kernel weight (grams per 1000 kernels)				
mean 2020	26.0	30.3	31.4	34.0
std. deviation 2020	0.4	0.5	0.1	0.2
mean 2021	28.8	35.6	34.0	39.3
std. deviation 2021	0.5	1.0	0.5	1.1

*reference varieties



Wheat: 'Coralia' (top left) with reference varieties 'AC Brio' (top right), 'SS Blomidon' (bottom left) and 'Furano' (bottom right)

Proposed denomination: **'SY Cast'**
Application number: 20-10223
Application date: 2020/05/13
Applicant: Syngenta Participations AG, Basel, Switzerland
Agent in Canada: Syngenta Canada Inc., Guelph, Ontario
Breeder: John Davies, Syngenta Crop Protection, LLC., Glyndon, Minnesota, United States of America

Varieties used for comparison: 'Glenn' and 'SY Crossite'

Summary: *At the 5 to 9 tiller stage, the plants of 'SY Cast' have a semi erect growth habit while the plants of 'Glenn' have an erect growth habit. At booting, 'SY Cast' has a very high frequency of plants with recurved flag leaves while 'Glenn' has a low to medium frequency of plants with recurved flag leaves. The flag leaf auricles of 'SY Cast' have an absent or very weak intensity of anthocyanin colouration while the flag leaf auricles of 'Glenn' have a medium to strong intensity of anthocyanin coloration and those of 'SY Crossite' have a weak to medium intensity of anthocyanin colouration. The flag leaf of 'SY Cast' is larger than the flag leaf of 'Glenn'. The plants of 'SY Cast' head later than the plants of 'Glenn'. At heading, the spike of 'SY Cast' has medium glaucosity while the spike of 'Glenn' has weak glaucosity. At maturity, the spike of 'SY Cast' has an erect attitude while the spike of 'Glenn' has an inclined attitude. The lower glume shoulder of 'SY Cast' is narrow to medium in width while that of 'Glenn' is broad.*

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

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

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

CULM: medium glaucosity, curved neck
STRAW: thin pith in cross-section, no anthocyanin colouration at maturity

SPIKE: medium glaucosity at heading, tapering shape in profile, medium density, brown at maturity, erect attitude, absent or very sparse hairiness of convex surface of apical rachis segment
AWNS: shorter than spike, light brown at maturity
LOWER GLUME: medium length, medium width, glabrous, sparse internal hairs
LOWER GLUME SHOULDER: narrow to medium width, straight to elevated
LOWER GLUME BEAK: short to medium in length, slightly curved
LOWEST LEMMA: slightly curved beak

KERNEL: hard red, amber, medium in size, medium length, narrow to medium width, elliptical, rounded cheek, short brush hairs
GERM: medium sized, oval, narrow crease of medium depth

Origin and Breeding: 'SY Cast' (experimental designation CS11200104-11) originated from a cross between 'BW952' and 'Muchmore' conducted in Berthoud, Colorado in 2011. F2 head selections were made at the Syngenta Canada Inc. breeding nursery in Rosebank, Manitoba in 2012 with single seed descent technique used to advance the selections through the F3 and F4 generations in a greenhouse. In 2013, F5 headrows were individually bulked and entered into a yield trial in Rosebank, Manitoba in 2014. One of the bulk selections designated CS11200104-11 was advanced and increased in a winter nursery in New Zealand in 2014-2015 and entered in Syngenta Canada Inc. multiple location research plots in 2015. The new variety was tested in the Syngenta Private Registration Trials from 2016 to 2018. In 2018, seventeen F4:12 plots were bulked in Eaton, Colorado to establish breeder seed. Selection criteria used in the development of 'SY Cast' included plant height, plant maturity, disease resistance, yield, test weight and comprehensive milling and baking quality.

Tests and Trials: The comparative trials for 'SY Cast' were conducted at the Syngenta Canada Inc., Rosebank Research Farm in Rosebank, Manitoba in 2019 and 2021. There were 3 replicates per variety arranged in an RCB design in each year of trials. In 2019, plots consisted of 7 rows, each row was 3.0 metres long with 0.18 metre inter-row spacing. The seeding density in 2019 was 645 seeds per squared metre, resulting in approximately 7200 plants per variety. In 2021, plots consisted of 6 rows, each row was 5 metres long with 0.25 metre inter-row spacing. The seeding density in 2021 was 330 seeds per squared metre, resulting in approximately 6000 plants per variety. Measured characteristics were based on a minimum of 20 measurements per variety per year. Mean differences were significant at the 5% probability level based on a paired Student's t-test.

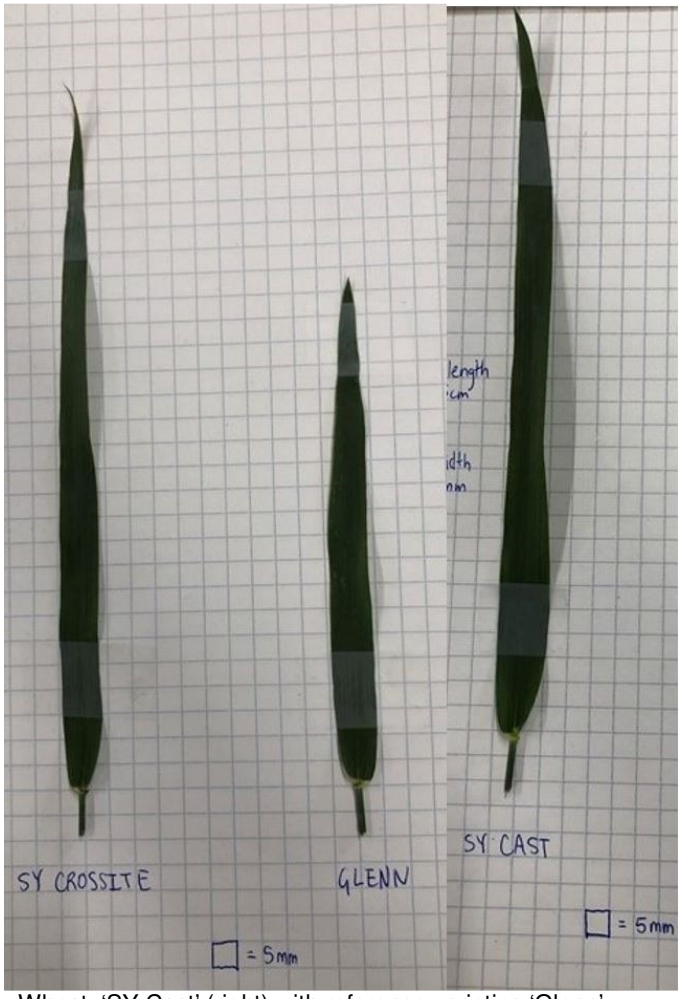
Comparison table for 'SY Cast'

	'SY Cast'	**'Glenn'***	**'SY Crossite'***
Flag leaf length (cm)			
mean 2019	22.2	16.6	21.8
std. deviation 2019	2.23	1.63	2.25
mean 2021	19.5	13.0	17.8
std. deviation 2021	2.6	1.6	2.3
Flag leaf width (mm)			
mean 2019	14.0	13.0	14.0
std. deviation 2019	0.9	1.2	0.9
mean 2021	12.6	10.4	11.3
std. deviation 2021	1.2	0.7	0.8

Days to heading (days from planting to when 50% of heads are fully emerged from boot)

2019	56	53	56
2021	55	51	55

*reference varieties



Wheat: 'SY Cast' (right) with reference varieties 'Glenn' (centre) and 'SY Crossite' (left)

Wheat: 'SY Cast' (left) with reference varieties 'Glenn' (centre) and 'SY Crossite' (right)

Wheat: 'SY Cast' (right) with reference varieties 'Glenn' (centre) and 'SY Crossite' (left)

Proposed denomination: **'SY Crossite'**
Application number: 20-10224
Application date: 2020/05/13
Applicant: Syngenta Participations AG, Basel, Switzerland
Agent in Canada: Syngenta Canada Inc., Guelph, Ontario
Breeder: John Davies, Syngenta Crop Protection, LLC., Glyndon, Minnesota, United States of America

Varieties used for comparison: 'Glenn' and 'SY Cast'

Summary: *At the 5 to 9 tiller stage, the plants of 'SY Crossite' have a semi erect growth habit while the plants of 'Glenn' have an erect growth habit. At booting, 'SY Crossite' has a high to very high frequency of plants with recurved flag leaves*

while 'Glenn' has a low to medium frequency of plants with recurved flag leaves. The flag leaf auricles of 'SY Crossite' have a weak to medium intensity of anthocyanin colouration while the flag leaf auricles of 'Glenn' have a medium to strong intensity of anthocyanin colouration and that of 'SY Cast' have an absent or very weak intensity of anthocyanin colouration. The flag leaf of 'SY Crossite' is larger than the flag leaf of 'Glenn'. The plants of 'SY Crossite' head later than the plants of 'Glenn'. At heading, the spike of 'SY Crossite' has medium glaucosity while the spike of 'Glenn' has weak glaucosity. At maturity, the spike of 'SY Crossite' has an erect attitude while the spike of 'Glenn' has an inclined attitude. The lower glume shoulder of 'SY Crossite' is narrow to medium in width while that of 'Glenn' is broad. The kernel weight of 'SY Crossite' is greater than the kernel weight of 'Glenn'.

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

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

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

CULM: medium glaucosity, curved neck
STRAW: thin pith in cross-section, no anthocyanin colouration at maturity

SPIKE: medium glaucosity at heading, tapering shape in profile, medium density, brown at maturity, erect attitude, absent or very sparse hairiness of convex surface of apical rachis segment
AWNS: shorter than spike, light brown at maturity
LOWER GLUME: medium to long, medium width, glabrous, sparse internal hairs
LOWER GLUME SHOULDER: narrow to medium width, elevated
LOWER GLUME BEAK: medium to long, slightly curved
LOWEST LEMMA: slightly curved beak

KERNEL: hard red, medium red, medium to large, medium length, narrow to medium width, elliptical, rounded cheek, short brush hairs
GERM: medium sized, oval, narrow crease of medium depth

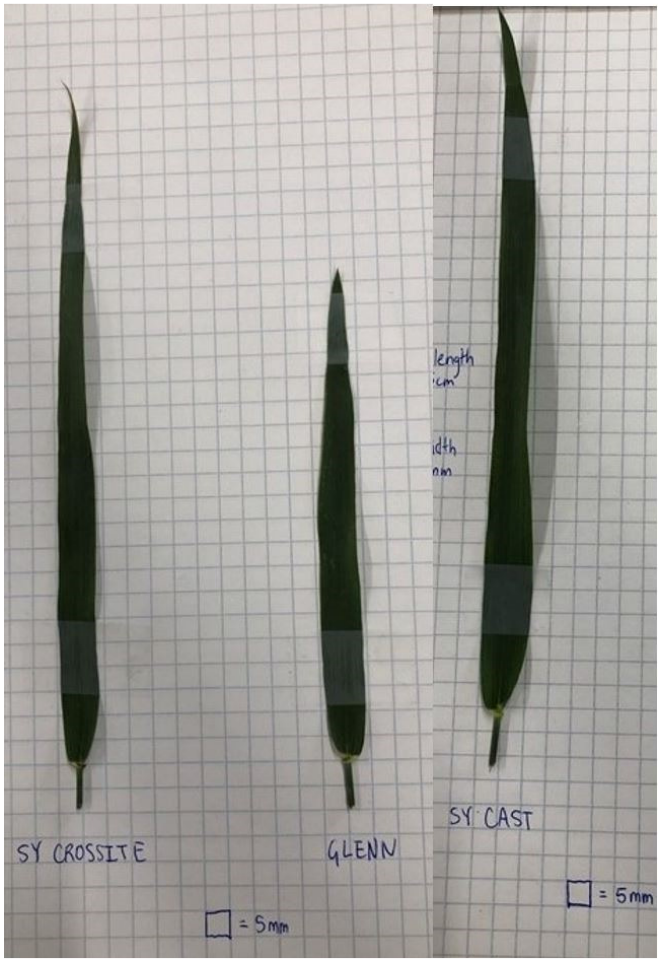
Origin and Breeding: 'SY Crossite' (experimental designation CS11200214-17) originated from a cross between 'CS11200010' and 'Muchmore' conducted in Berthoud, Colorado in 2011. F2 head selections were made at the Syngenta Canada Inc. breeding nursery in Rosebank, Manitoba in 2012 with single seed descent technique used to advance the selections through the F3 and F4 generations in a greenhouse. In 2013, F5 headrows were individually bulked and entered into a yield trial in Rosebank, Manitoba in 2014. One of the bulk selections designated CS11200214-17 was advanced and increased in a winter nursery in New Zealand in 2014-2015 and entered in Syngenta Canada Inc. multiple location research plots in 2015. The new variety was tested in the Syngenta Private Registration Trials from 2016 to 2018. In 2018, F4:12 plots were bulked in Eaton, Colorado to establish breeder seed. Selection criteria included plant height, plant maturity, disease resistance, yield, test weight and comprehensive milling and baking quality.

Tests and Trials: The comparative trials for 'SY Crossite' were conducted at the Syngenta Canada Inc., Rosebank Research Farm in Rosebank, Manitoba in 2019 and 2021. There were 3 replicates per variety arranged in an RCB design in each year of trials. In 2019, plots consisted of 7 rows, each row was 3.0 metres long with 0.18 metre inter-row spacing. The seeding density in 2019 was 645 seeds per squared metre, resulting in approximately 7200 plants per variety. In 2021, plots consisted of 6 rows, each row was 5 metres long with 0.25 metre inter-row spacing. The seeding density in 2021 was 330 seeds per squared metre, resulting in approximately 6000 plants per variety. Measured characteristics were based on a minimum of 20 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 'SY Crossite'

	'SY Crossite'	'Glenn'*	'SY Cast'*
Flag leaf length (cm)			
mean 2019	21.8	16.6	22.2
std. deviation 2019	2.25	1.63	2.23
mean 2021	17.8	13.0	19.5
std. deviation 2021	2.3	1.6	2.6
Flag leaf width (mm)			
mean 2019	14.0	13.0	14.0
std. deviation 2019	0.9	1.2	0.9
mean 2021	11.3	10.4	12.6
std. deviation 2021	0.8	0.7	1.2
Days to heading (days from planting to when 50% of heads are fully emerged from boot)			
2019	56	53	56
2021	55	51	55
Kernel weight (grams per 1000 kernels)			
mean 2019	42.4	40.7	40.0
std. deviation 2019	0.50	0.42	0.39
mean 2021	31.7	29.2	31.1
std. deviation 2021	0.57	1.00	1.30

*reference varieties



Wheat: 'SY Crossite' (left) with reference varieties 'Glenn' (centre) and 'SY Cast' (right)

Wheat: 'SY Crossite' (right) with reference varieties 'Glenn' (centre) and 'SY Cast' (left)

Wheat: 'SY Crossite' (left) with reference varieties 'Glenn' (centre) and 'SY Cast' (right)

Proposed denomination: **'SY Donald'**
Application number: 21-10539
Application date: 2021/05/10
Applicant: Syngenta Crop Protection AG, Basel, Switzerland
Agent in Canada: Syngenta Canada Inc., Guelph, Ontario
Breeder: David Lee, Syngenta Canada Inc., Arva, Ontario

Variety used for comparison: 'Glenn'

Summary: *At booting, the flag leaf auricles of 'SY Donald' have an absent or very weak intensity of anthocyanin colouration while the flag leaf auricles of 'Glenn' have a strong intensity of anthocyanin colouration. The flag leaf sheath of*

'SY Donald' has absent or very weak glaucosity while the flag leaf sheath of 'Glenn' has weak glaucosity. The plants of 'SY Donald' head later than the plants of 'Glenn'. The culm neck of 'SY Donald' has weak glaucosity while that of 'Glenn' has medium glaucosity. At maturity, the spike of 'SY Donald' has an erect attitude while the spike of 'Glenn' has an inclined attitude. The spike of 'SY Donald' has white awns while the spike of 'Glenn' has light brown awns. The lower glume of 'SY Donald' is short with a slightly sloping shoulder while the lower glume of 'Glenn' is of medium length with an elevated shoulder. The kernel weight of 'SY Donald' is less than the kernel weight of 'Glenn'.

Description:
PLANT: spring type, common wheat, 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): glabrous sheath and blade of lower leaves

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

CULM: weak glaucosity, curved neck
STRAW: thin pith in cross-section, no anthocyanin colouration at maturity

SPIKE: weak glaucosity at heading, tapering shape in profile, medium density, brown at maturity, erect attitude, absent or very sparse hairiness of convex surface of apical rachis segment
AWNS: shorter than spike, white at maturity
LOWER GLUME: short, medium to wide, glabrous, sparse internal hairs
LOWER GLUME SHOULDER: medium to broad, slightly sloping
LOWER GLUME BEAK: short to medium in length, slightly curved
LOWEST LEMMA: slightly curved beak

KERNEL: hard red, medium red, medium in size, medium length, narrow to medium width, elliptical, rounded cheek, short brush hairs
GERM: medium sized, oval, narrow crease of medium depth

AGRONOMIC TRAITS: good bread making quality

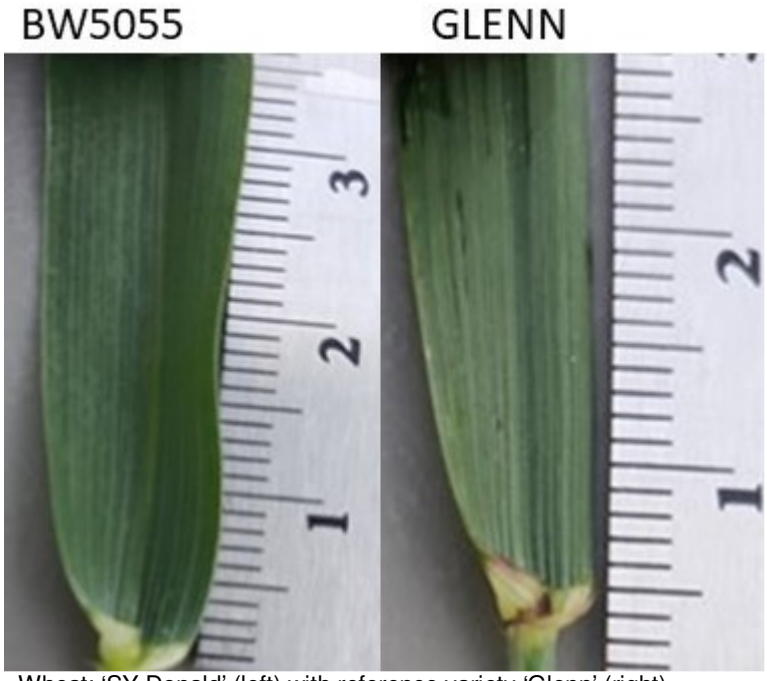
Origin and Breeding: 'SY Donald' (experimental designations BW5055 and CS12200342-2) originated from a cross between 08S2074-5 and 07S2055-16 conducted in Berthoud, Colorado in 2012. F2 head selections were made at the Syngenta Canada Inc. breeding nursery in Rosebank, Manitoba in 2013 with single seed descent technique used to advance the selections through the F3 and F4 generations in a greenhouse. In 2014, F5 headrows were individually bulked and entered into a yield trial in Rosebank, Manitoba in 2015. One of the bulk selections designated CS12200342-2 was advanced and increased in a winter nursery in New Zealand in 2015-2016 and entered in Syngenta Canada Inc. multiple location research plots in 2016. The new variety was tested in the Western Bread Wheat Coop during the 2017 to 2019 seasons as BW5055. In 2020, 17 F4:12 plots were bulked in Eaton, Colorado to establish breeder seed. Selection criteria included plant height, plant maturity, disease resistance, protein content, yield, test weight and comprehensive milling and baking quality.

Tests and Trials: The comparative trials for 'SY Donald' were conducted at the Syngenta Canada Inc., Rosebank Research Farm in Rosebank, Manitoba in 2019 and 2021. There were 3 replicates per variety arranged in an RCB design. Plots consisted of 7 rows, each row was 3.0 metres long with 0.18 metre inter-row spacing. The seeding density was 645 seeds per squared metre, resulting in approximately 7200 plants per variety per year. Measured characteristics were based on a minimum of 20 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 'SY Donald'

	'SY Donald'	'Glenn'*
Days to heading (days from planting to when 50% of heads are fully emerged from boot)		
2019	55	53
2021	51	49
Kernel weight (grams per 1000 kernels)		
mean 2019	36.5	40.7
std. deviation 2019	0.5	0.5
mean 2021	29.3	31.3
std. deviation 2021	2.4	2.6

*reference variety



Wheat: 'SY Donald' (left) with reference variety 'Glenn' (right)

Wheat: 'SY Donald' (right) with reference variety 'Glenn' (left)

Wheat: 'SY Donald' (right) with reference variety 'Glenn' (left)

Proposed denomination: **'SY Manness'**
Application number: 21-10540
Application date: 2021/05/10
Applicant: Syngenta Crop Protection AG, Basel, Switzerland
Agent in Canada: Syngenta Canada Inc., Guelph, Ontario
Breeder: David Lee, Syngenta Canada Inc., Arva, Ontario

Variety used for comparison: 'Glenn'

Summary: *At the 5 to 9 tiller stage, the plants of 'SY Manness' have a semi erect growth habit while the plants of 'Glenn' have an erect growth habit. At booting, the flag leaf auricles of 'SY Manness' have an absent or very weak intensity of anthocyanin colouration while the flag leaf auricles of 'Glenn' have a strong intensity of anthocyanin colouration. The flag leaf of 'SY Manness' is larger than the flag leaf of 'Glenn'. The plants of 'SY Manness' head later than the plants of 'Glenn'. At heading, the spike of 'SY Manness' has very strong glaucosity while the spike of 'Glenn' has weak glaucosity. The culm neck of 'SY Manness' has strong glaucosity while that of 'Glenn' has medium glaucosity. At maturity, the plants of 'SY Manness' are shorter than the plants of 'Glenn'. At maturity, the spike of 'SY Manness' is white with white awns and has an erect attitude while the spike of 'Glenn' is light brown with light brown awns and has an inclined attitude. The lower glume shoulder of 'SY Manness' is of a medium width and slightly sloping while that of 'Glenn' is broad and elevated. The lower glume of 'SY Manness' is short while the lower glume of 'Glenn' is of a medium length. The lower glume beak of 'SY Manness' is moderately curved while that of 'Glenn' is slightly curved. The kernel weight of 'SY Manness' is less than the kernel weight of 'Glenn'.*

Description:
PLANT: spring type, common wheat, semi-erect growth habit at 5 to 9 tiller stage, medium 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, weak glaucosity of sheath, glabrous blade and sheath

CULM: strong glaucosity, curved neck
STRAW: thin pith in cross-section, no anthocyanin colouration at maturity

SPIKE: very strong glaucosity at heading, tapering shape in profile, lax to medium density, white at maturity, erect attitude, absent or very sparse hairiness of convex surface of apical rachis segment
AWNS: shorter than spike, white at maturity
LOWER GLUME: short, medium to broad, glabrous, sparse internal hairs
LOWER GLUME SHOULDER: medium width, slightly sloping
LOWER GLUME BEAK: short to medium in length, moderately curved
LOWEST LEMMA: slightly curved beak

KERNEL: hard red, medium red, small to medium in size, short, narrow to medium width, broad elliptical, rounded cheek, short brush hairs
GERM: medium to large, oval, narrow and deep crease

AGRONOMIC TRAITS: good bread making quality

Origin and Breeding: 'SY Manness' (experimental designations BW1093 and NH032) originated from a cross between 03S0227-2 and 'Faller' conducted in Berthoud, Colorado in 2008. F2 head selections were made at the Syngenta Seeds breeding nursery in Argusville, North Dakota, USA in 2009 with single seed descent technique used to advance the selections through the F3 and F4 generations in a greenhouse. In 2010, F5 headrows were individually bulked and entered into a spring preliminary yield trial in Argusville, North Dakota in 2011. One of the bulk selections designated 08S0303-16 was entered into Northern Plains Y2 to Y5 Yield Trial from 2012 to 2015 and then entered in Syngenta Canada Inc. multiple location research plots in Canada in 2016. The new variety was tested in the Canadian Northern Hard Red Coop in 2017 as NH032 and then based on milling and baking profile, was entered in the Central Bread Wheat Co-op Trial during the 2018-2019

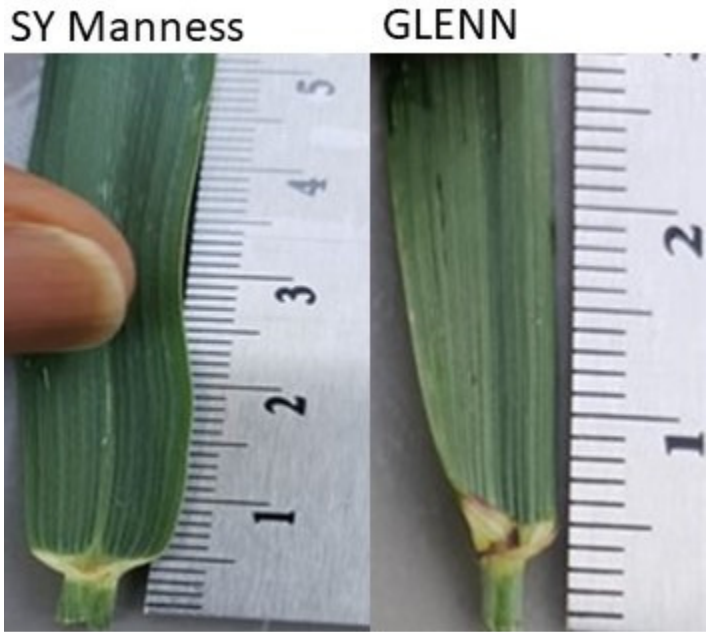
growing seasons as BW1093. In 2016, F4:12 plots were bulked in Eaton, Colorado to establish breeder seed. Selection criteria included plant maturity, disease resistance, yield, test weight and milling and baking quality.

Tests and Trials: The comparative trials for 'SY Manness' were conducted at the Syngenta Canada Inc., Rosebank Research Farm in Rosebank, Manitoba in 2019 and 2021. There were 3 replicates per variety arranged in an RCB design. Plots consisted of 7 rows, each row was 3.0 metres long with 0.18 metre inter-row spacing. The seeding density was 645 seeds per squared metre, resulting in approximately 7200 plants per variety per year. Measured characteristics were based on a minimum of 20 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 'SY Manness'

	'SY Manness'	**'Glenn'***
Flag leaf length (cm)		
mean 2019	22.5	16.6
std. deviation 2019	2.52	1.63
mean 2021	21.5	18.9
std. deviation 2021	2.63	2.50
Flag leaf width (mm)		
mean 2019	14.0	13.0
std. deviation 2019	0.9	1.2
mean 2021	12.3	11.1
std. deviation 2021	1.24	1.06
Days to heading (days from planting to when 50% of heads are fully emerged from boot)		
2019	57	53
2021	53	49
Plant height (at maturity, including awns)(cm)		
mean 2019	60.0	64.0
std. deviation 2019	2.3	2.2
mean 2021	70.8	79.1
std. deviation 2021	5.86	5.49
Kernel weight (grams per 1000 kernels)		
mean 2019	36.0	40.7
std. deviation 2019	0.5	0.5
mean 2021	25.9	31.3
std. deviation 2021	1.6	2.6

*reference variety



Wheat: 'SY Manness' (left) with reference variety 'Glenn' (right)

Wheat: 'SY Manness' (right) with reference variety 'Glenn' (left)

Wheat: 'SY Manness' (left) with reference variety 'Glenn' (right)

Proposed denomination: **'Sibia'**
Application number: 20-10268
Application date: 2020/06/16
Applicant: PZO Pflanzenzucht Oberlimpurg, Schwäebisch Hall, Germany
Agent in Canada: La Coop fédérée, Saint-Hyacinthe, Quebec
Breeder: Stephanie Franck, PZO-Pflanzenzucht Oberlimpurg, Schwäbisch Hall, Germany

Varieties used for comparison: 'AAC Harlaka', 'AAC Maurice' and 'Raven'

Summary: *At booting, the flag leaf auricles of 'Sibia' have an absent or very weak intensity of anthocyanin colouration while those of 'AAC Harlaka' have a strong intensity of anthocyanin colouration. The flag leaf of 'Sibia' is narrower than the flag leaves of 'AAC Harlaka' and 'Raven'. The flag leaf sheath of 'Sibia' has medium glaucosity while that of 'AAC Harlaka' has strong glaucosity. The plants of 'Sibia' head later than the plants of 'AAC Harlaka' and 'AAC Maurice'. At heading, the plants of 'Sibia' are taller than those of 'AAC Maurice'. The spike of 'Sibia' has an erect to inclined attitude while the spike of 'AAC Maurice' has an inclined to nodding attitude. The convex surface of the apical rachis segment for 'Sibia' has sparse hairs while that of 'AAC Harlaka' has absent or very sparse hairs. The lower glume shoulder of 'Sibia' is narrow while the lower glume shoulder of 'AAC Harlaka' is of medium width. The lower glume shoulder of 'Sibia' is elevated while the lower glume shoulder of 'AAC Maurice' is sloping and that of 'Raven' is slightly sloping. The lower glume beak of 'Sibia' is long to very long while the lower glume beak of 'Raven' is medium to long.*

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

SEEDLING (4 LEAF STAGE): glabrous sheath and blade of lower leaves

FLAG LEAF: absent or very weak intensity of anthocyanin colouration of auricles, medium glaucosity of sheath
STRAW (AT MATURITY): thin pith in cross-section

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

AWNS: shorter than length of spike, white at maturity
LOWER GLUME: pubescent
LOWER GLUME SHOULDER: narrow, elevated
LOWER GLUME BEAK: long to very long, straight to slightly curved

KERNEL: medium red, short brush hairs

GERM: medium to large, crease of medium depth

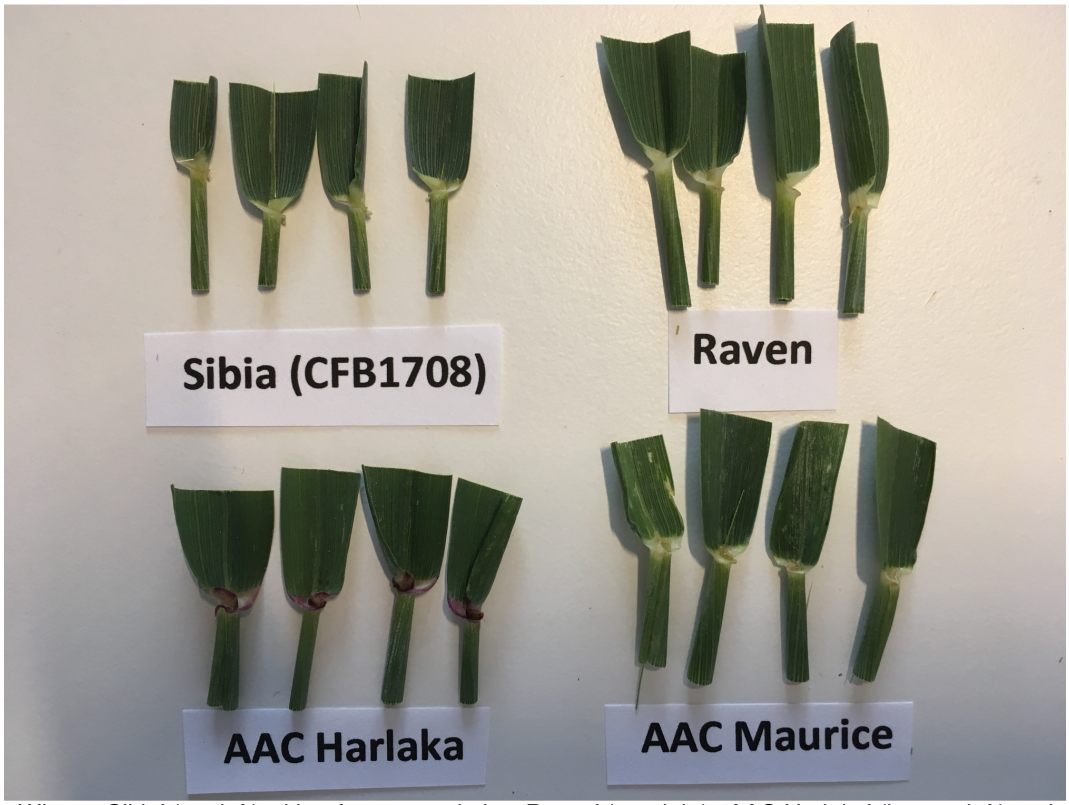
Origin and Breeding: 'Sibia' (experimental designations CFB1708 and C1M17172) originated from a cross between 'Volt' and 'Taifun' with a subsequent cross to 'Glenn' conducted in 2009 at Schwaebisch Hall, Germany. The F1 and F2 generations were increased and single F3 plant selections in 2012 were planted in F4 headrows in 2013. In 2014, selected F4 lines were grown as 2.5 metre squared plots. The F5 selections were assessed for yield in Germany in 2015 and F6 selections assesed for yield simultaneously in Germany and in Ontario and Quebec, Canada in 2016. Twenty single F7 plants were selected in Quebec and the F8 generation was further advanced into evaluation trials in Quebec. Breeder seed was established in 2018 based on controlled single F9 plant progenies and was tested in the registration trials in Quebec in 2018-2019. Selection criteria included straw strength, plant maturity, yield, disease resistance and quality traits.

Tests and Trials: The comparative trials for 'Sibia' were conducted at La Coop Fédérée Research Farm in Saint-Hyacinthe, Quebec in 2020 and 2021. There were 4 replicates per variety arranged in an RCB design. In 2020, the size of the plots were 5 square metres and consisted of seven 5 m long rows spaced 0.18 m apart. In 2021, the size of the plots were 6 square metres and consisted of seven 4.5 m long rows spaced 0.18 m apart. The seeding density was 375 seeds per metre squared resulting in a minimum of 6500 plants per variety per year. Measured characteristics were based on 20 measurements per variety per year. Mean differences were significant at the 5% probability level based on a Tukey test.

Comparison table for 'Sibia'

	'Sibia'	**'AAC Harlaka'***	**'AAC Maurice'***	**'Raven'***
Flag leaf width (at booting) (mm)				
mean 2020	10.3	12.9	10.5	12.4
std. deviation 2020	1.0	1.7	1.1	1.1
mean 2021	8.9	11.4	9.1	10.4
std. deviation 2021	0.7	1.1	0.6	0.6
Days to heading (days from planting to when 50% heads are fully emerged from boot)				
2020	182	178	177	181
2021	182	174	172	180
Plant height (at maturity) (including awns) (cm)				
mean 2020	62.8	61.7	57.3	64.3
std. deviation 2020	4.6	3.2	2.7	2.7
mean 2021	80.9	76.0	72.7	80.4
std. deviation 2021	4.3	3.5	3.5	3.2

*reference varieties



Wheat: 'Sibia' (top left) with reference varieties 'Raven' (top right), 'AAC Harlaka' (bottom left) and 'AAC Maurice' (bottom right)