



APPLICATIONS UNDER EXAMINATION

WHEAT

WHEAT (*Triticum aestivum*)

Proposed denomination: 'CDC Reign'
Application number: 19-9970
Application date: 2019/07/09
Applicant: University of Saskatchewan, Saskatoon, Saskatchewan
Breeder: Curtis Pozniak, University of Saskatchewan, Crop Development Centre, Saskatoon, Saskatchewan

Varieties used for comparison: 'AAC Penhold', 'AAC Ryley', 'CDC Terrain' and '5702PR'

Summary: *At the 4 leaf stage, the lower leaf blade of the seedling of 'CDC Reign' is glabrous whereas the lower leaf blade is pubescent on the seedling of 'AAC Penhold'. At booting, the frequency of plants with recurved flag leaves is high for 'CDC Reign' whereas it is absent or very low to medium for '5702PR' and very high for 'AAC Penhold'. The intensity of anthocyanin colouration of the flag leaf auricles of 'CDC Reign' is absent or very weak whereas it is strong for 'AAC Penhold' and 'CDC Terrain'. The flag leaf of 'CDC Reign' is wider than that of 'AAC Penhold' and '5702PR'. The glaucosity on the flag leaf sheath of 'CDC Reign' is medium whereas it is strong for that of 'AAC Penhold' and weak for that of '5702PR'. At heading, the glaucosity on the spike of 'CDC Reign' is weak to medium whereas the glaucosity is absent to very weak on the spike of '5702PR' and strong on the spike of 'AAC Penhold'. At maturity, the plants of 'CDC Reign' are taller than those of 'AAC Penhold' and shorter than those of 'CDC Terrain'. The spike of 'CDC Reign' is of medium density whereas the spike of 'CDC Terrain' is dense. Excluding the awns, the spike of 'CDC Reign' is longer than that of 'AAC Penhold' and 'CDC Terrain'. The lower glume of 'CDC Reign' is medium length whereas those of the reference varieties are long. The extent of internal hairs on the lower glume of 'CDC Reign' is sparse to medium whereas it is high on the lower glume of '5702PR'.*

Description:

PLANT: common hard red spring type, erect growth habit at the 5 to 9 tiller stage, high frequency of plants with recurved flag leaves, heads emerge mid-season, matures early to mid-season

SEEDLING (4 LEAF STAGE): absent or very weak anthocyanin colouration of coleoptile, glabrous lower leaf sheaths and blades

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

CULM: medium glaucosity, curved neck

STRAW: thin in cross-section, no anthocyanin colouration at maturity

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

AWNS: shorter than spike, white at maturity

LOWER GLUME: medium length, medium width, glabrous, sparse to medium extent of internal hairs

LOWER GLUME SHOULDER: medium width, straight to strongly elevated with second point present

LOWER GLUME BEAK: long, moderately curved

LOWEST LEMMA: straight to slightly curved

KERNEL: medium red colour, medium size, medium length, medium to wide, broad elliptical, rounded cheek, medium length brush hairs, medium to wide crease, medium to deep crease

GERM: medium size, round or broad elliptical in shape

DISEASE REACTIONS: resistant to Leaf rust (*Puccinia recondita*); moderately resistant to Stem rust (*Puccinia graminis* f. sp. *tritici*), Stripe rust (*Puccinia striiformis*) and Loose smut (*Ustilago tritici*); moderately resistant to moderately susceptible

to Fusarium head blight (*Fusarium graminearum*, *Fusarium* species) and moderately susceptible to Common bunt (*Tilletia caries*, *Tilletia foetida*)

Origin and Breeding: ‘CDC Reign’ (experimental designations HY08.34.182 and ‘HY2062’) originated from the cross between ACS51638, as the female parent, and ‘Alsen’, as the male parent, conducted in the summer of 2008 at the Crop Development Centre of the University of Saskatchewan in Saskatoon, Saskatchewan. The F1 generation was increased at a contra-season nursery near Christchurch, New Zealand. The F2 and F3 generations were increased in bulk in Saskatoon and near Christchurch in 2009. In 2010, F4 plants with suitable plant height, maturity and straw strength were selected and grown as F5 head rows in a leaf and stem rust nursery in Saskatoon in 2011. Three random spikes from the head rows with suitable plant height, maturity and leaf and stem rust resistance were selected. Head rows were evaluated again in 2012 in leaf and stem rust nurseries as well as for Fusarium head blight resistance in Carmen, Manitoba. In 2013, the line designated, as HY08.34.182, was selected and evaluated in un-replicated yield trials near Saskatoon and in artificially inoculated nurseries for common bunt, leaf and stem rust in Saskatoon and for Fusarium head blight in Carmen. HY08.34.182 was evaluated for agronomic traits, advanced in replicated yield trials at various locations in Saskatchewan and Alberta in 2014 and also assessed in disease resistance trials conducted in Saskatoon, Saskatchewan and Carman, Manitoba. HY08.34.182 was evaluated in the High Yield Wheat B-Tests in 2015 and in the High Yield Red Wheat Co-operative Trials as ‘HY2062’ from 2016 to 2018. Selection criteria were plant height, maturity, straw strength, disease resistance, yield, thousand kernel weight, test weight, and quality traits such as grain protein, falling number, and baking qualities.

Tests and Trials: The comparative tests and trials of ‘CDC Reign’ were conducted during the 2018 and 2019 growing seasons at the Crop Science Field Laboratory, University of Saskatchewan, Saskatoon, Saskatchewan. There were three replications arranged in a RCB Design. Plots consisted of 5 rows spaced 20 cm apart. The plot size was 4.0 square metres with a minimum density of 300 plants per square metre. Measured characteristics are based on 20 measurements per variety each year. Mean differences are significant at the 5% probability level based on a paired Student’s T-test. Disease ratings for ‘CDC Reign’ were provided through the Disease Evaluation team of the Prairie Recommending Committee for Wheat, Rye and Triticale and the Prairie Grain Development Committee from the High Yield Red Wheat Co-operative Registration Trials conducted from 2016 to 2018.

Comparison table for ‘CDC Reign’

	‘CDC Reign’	‘AAC Penhold’*	‘AAC Ryley’*	‘CDC Terrain’*	‘5702PR’*
<i>Flag leaf width (mm)</i>					
mean 2018	14.9	13.7	14.2	14.7	13.0
std. deviation 2018	1.3	1.6	1.1	1.3	0.9
mean 2019	16.9	15.8	16.6	17.9	13.5
std. deviation 2019	1.3	1.1	1.8	1.3	1.5
<i>Plant height at maturity (including awns) (cm)</i>					
mean 2018	77.9	66.9	78.9	83.5	78.6
std. deviation 2018	3.4	2.6	3.3	3.7	3.9
mean 2019	78.3	68.4	79.6	83.8	78.2
std. deviation 2019	4.5	3.6	4.8	5.4	4.7
<i>Spike length (excluding awns) (cm)</i>					
mean 2018	9.3	8.1	9.1	7.7	9.4
std. deviation 2018	0.5	0.4	0.4	0.2	0.4
mean 2019	9.5	8.3	9.8	7.9	9.4
std. deviation 2019	0.5	0.5	0.6	0.5	0.4

*reference varieties



Wheat: 'CDC Reign' (left) with reference varieties 'CDC Terrain' (centre left), 'AAC Ryley' (centre), 'AAC Penhold' (right centre) and '5702PR' (right)

WHEAT

(Triticum turgidum subsp. durum)

Proposed denomination: 'CDC Covert'
Application number: 19-9949
Application date: 2019/06/24
Applicant: University of Saskatchewan, Saskatoon, Saskatchewan
Breeder: Curtis Pozniak, University of Saskatchewan, Crop Development Centre, Saskatoon, Saskatchewan

Varieties used for comparison: 'AAC Cabri', 'CDC Credence', 'CDC Precision' and 'Strongfield'

Summary: At the 4 leaf stage, the intensity of anthocyanin colouration on the coleoptile of 'CDC Covert' is absent to very weak whereas it is weak on 'AAC Cabri' and 'Strongfield'. At booting, the frequency of plants with recurved flag leaves is very high for 'CDC Covert' whereas it is absent or very low for 'AAC Cabri', 'CDC Credence' and 'CDC Precision' and low for 'Strongfield'. The flag leaf of 'CDC Covert' is shorter than that of 'Strongfield' and wider than those of 'AAC Cabri', 'CDC Credence' and 'CDC Precision'. The anthocyanin colouration of the auricles on the flag leaf of 'CDC Covert' is absent or very weak whereas it is weak for that of 'CDC Credence'. At maturity, the plants of 'CDC Covert' are shorter than that of 'CDC Credence'. In cross-section, the straw pith of 'CDC Covert' is of medium thickness whereas it is thick for 'AAC Cabri'. The glaucosity on the culm of 'CDC Covert' is medium to strong whereas the glaucosity is weak on the culm of 'CDC Credence'. 'CDC Covert' has a longer spike than that of 'CDC Credence' and 'CDC Precision'. At maturity, the awns of 'CDC Covert' are white whereas they are black for 'CDC Credence'.

Description:

PLANT: durum spring type, erect growth habit at the 5 to 9 tiller stage, very high frequency of plants with recurved flag leaves, heads emerge mid-season, matures early to 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 the auricles, strong glaucosity of sheath, glabrous blade and sheath

CULM: medium to strong glaucosity, curved neck

STRAW: medium thickness of pith in cross-section, no anthocyanin colouration at maturity

SPIKE: strong glaucosity at heading, parallel-sided shape in profile, dense, yellow at maturity, erect attitude, medium density of hairiness of convex surface of apical rachis segment

AWNS: longer than spike, white at maturity

LOWER GLUME: long, medium width, glabrous, sparse extent of internal hairs

LOWER GLUME SHOULDER: narrow to medium width, strongly elevated with second point present

LOWER GLUME BEAK: medium length, moderately curved

LOWEST LEMMA: straight to slightly curved beak

KERNEL: amber, large, long, medium width, elliptical shape, angular cheek shape, short to medium brush hairs, medium to wide crease, medium to deep crease

GERM: medium size, broad elliptical to elliptical shape

PASTA QUALITY: good

DISEASE REACTIONS: resistant to Common bunt (*Tilletia laevis* Kühn in Rabenh., *T. tritici* Bjerk.), Leaf rust (*Puccinia recondita*), Stem rust (*Puccinia graminis* f. sp. *tritici*) and Stripe rust (*Puccinia striiformis*); moderately resistant to Loose smut (*Ustilago tritici*) and moderately susceptible to Fusarium head blight (*Fusarium graminearum*, *Fusarium* species)

Origin and Breeding: 'CDC Covert' (experimental designations D09.46.101 and 'DT1003') originated from the cross between 'DT558', as the female parent, and 'AAC Current', as the male parent, conducted in the summer of 2009 at the Crop

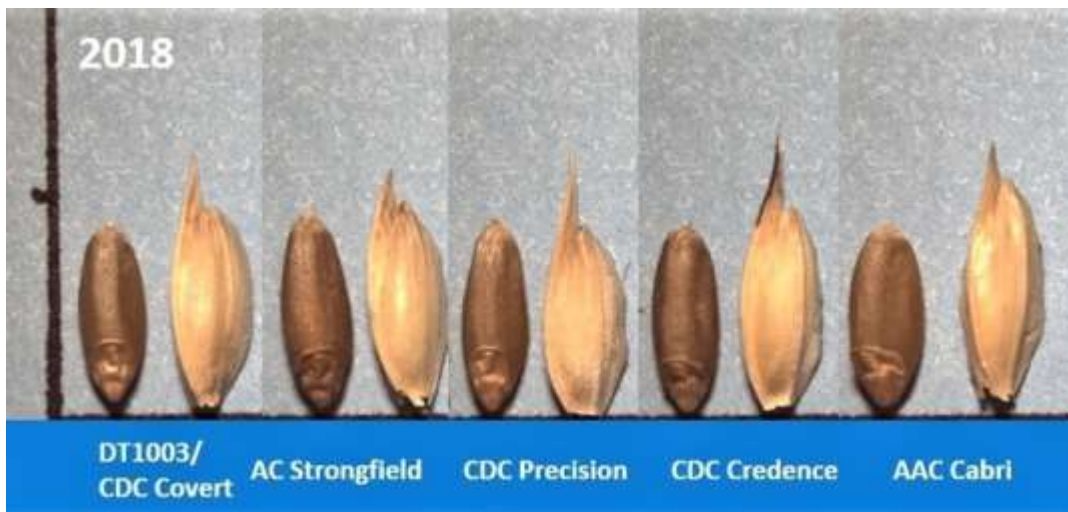
Development Centre of the University of Saskatchewan in Saskatoon, Saskatchewan. The F1 generation was increased at a contra-season nursery near Christchurch, New Zealand. The F2 and F3 generations were increased in bulk in Saskatoon and near Christchurch in 2010. In 2011, the F4 generation was planted in a nursery in Saskatoon with another 600 single spikes selected and grown as F5 head rows at Saskatoon in 2012. From these head rows, a line designated, as D09.46.101, was selected based on plant height, maturity and straw strength. In 2013, D09.46.101 was evaluated in un-replicated F6 yield trials in Saskatoon. In 2013, the resistance to Fusarium head blight and to leaf, stem and stripe rusts were evaluated in inoculated nurseries in Carmen, Manitoba. D09.46.101 was further evaluated in 2014 and 2015 at various locations in Saskatchewan and Alberta in the Western Durum Wheat B-test. From 2016 to 2018, 'DT1003' was evaluated in the Durum Wheat co-operative tests. Selection criteria were yield, plant maturity, plant height, straw strength, test weight, thousand kernel weight, and quality traits such as yellow pigment, protein and gluten content, and milling properties such as semolina milling yield and semolina ash content.

Tests and Trials: The comparative tests and trials of 'CDC Covert' were conducted during the 2018 and 2019 growing seasons at the Crop Science Field Laboratory, University of Saskatchewan, Saskatoon, Saskatchewan. There were three replications arranged in a RCB Design. Plots consisted of 5 rows spaced 20 cm apart. The plot size was 4.0 square metres with a minimum density of 300 plants per square metre. Observations and measured characteristics are based on 20 measurements per variety per year. Mean differences are significant at the 5% probability level based on a paired Student's T-test. Disease ratings for 'CDC Covert' were provided through the Disease Evaluation team of the Prairie Recommending Committee for Wheat, Rye and Triticale and the Prairie Grain Development Committee from the Durum Wheat Co-operative Registration Trials conducted from 2016 to 2018.

Comparison table for 'CDC Covert'

	'CDC Covert'	'AAC Cabri'*	'CDC Credence'*	'CDC Precision'*	'Strongfield'*
<i>Flag leaf length (cm)</i>					
mean 2018	16.6	17.2	16.3	16.9	18.0
std. deviation 2018	1.1	2.5	2.5	2.3	1.8
mean 2019	19.6	21.6	21.4	20.2	22.4
std. deviation 2019	2.6	1.5	2.2	2.3	2.6
<i>Flag leaf width (cm)</i>					
mean 2018	13.1	12.1	11.8	12.1	12.8
std. deviation 2018	0.6	0.9	1.1	1.0	0.8
mean 2019	14.3	12.8	12.8	12.8	14.3
std. deviation 2019	1.1	1.4	1.2	1.1	1.3
<i>Plant height at maturity (including awns) (cm)</i>					
mean 2018	79.7	82.4	87.8	77.2	75.6
std. deviation 2018	3.2	3.4	4.3	3.4	3.8
mean 2019	84.2	86.1	90.8	84.4	85.3
std. deviation 2019	4.9	5.3	4.0	3.3	5.1
<i>Spike length (excluding awns) (cm)</i>					
mean 2018	6.7	6.7	6.3	6.4	6.5
std. deviation 2018	0.4	0.7	0.5	0.4	0.4
mean 2019	7.1	6.9	6.7	6.6	7.0
std. deviation 2019	0.6	0.7	0.5	0.5	0.5

*reference varieties



Wheat: 'CDC Covert' (left) with reference varieties 'Strongfield' (centre left), 'CDC Precision' (centre), 'CDC Credence' (right centre) and 'AAC Cabri' (right)

Proposed denomination: 'CDC Defy'
Application number: 19-9950
Application date: 2019/06/24
Applicant: University of Saskatchewan, Saskatoon, Saskatchewan
Breeder: Curtis Pozniak, University of Saskatchewan, Crop Development Centre, Saskatoon, Saskatchewan

Varieties used for comparison: 'AAC Cabri', 'CDC Carbide', 'CDC Credence' and 'CDC Precision'

Summary: *The intensity of anthocyanin colouration on the coleoptile of 'CDC Defy' is absent or very weak whereas it is weak on 'AAC Cabri' and 'CDC Carbide'. At booting, the glaucosity on the flag leaf sheath of 'CDC Defy' is strong whereas it is medium for that of 'CDC Precision' and 'AAC Cabri' and weak to medium for 'CDC Credence'. The frequency of plants with recurved flag leaves is medium on 'CDC Defy' whereas it is absent or very low on the reference varieties. The anthocyanin colouration of the auricles of the flag leaf of 'CDC Defy' is weak to medium whereas it is absent or very weak to weak for 'AAC Cabri'. The flag leaf of 'CDC Defy' is longer than that of the reference varieties and narrower than that of 'AAC Cabri', 'CDC Carbide' and 'CDC Precision'. At maturity, the plants of 'CDC Defy' are taller than those of 'CDC Precision'. In cross-section, the straw pith of 'CDC Defy' is of medium thickness whereas it is thick for 'AAC Cabri'. Excluding awns, 'CDC Defy' has a longer spike than those of the reference varieties. The awns of 'CDC Defy' are white whereas they are black for 'CDC Credence'.*

Description:

PLANT: durum spring type, erect growth habit at the 5 to 9 tiller stage, medium frequency of plants with recurved flag leaves, heads emerge mid-season, matures early to mid-season

SEEDLING (4 LEAF STAGE): absent or very weak intensity of anthocyanin colouration of coleoptile, glabrous sheath and blade of the lower leaves

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

CULM: strong glaucosity, curved neck

STRAW: medium thickness of pith in cross-section, no anthocyanin colouration at maturity

SPIKE: medium to strong glaucosity at heading, parallel-sided shape in profile, dense, yellow at maturity, erect attitude, sparse to medium density of hairiness of convex surface of apical rachis segment

AWNS: longer than spike, white at maturity

LOWER GLUME: long, medium width, glabrous, sparse extent of internal hairs

LOWER GLUME SHOULDER: narrow to medium width, slightly sloping to strongly elevated with second point present

LOWER GLUME BEAK: medium to long, moderately curved

LOWEST LEMMA: straight beak

KERNEL: amber, large, long, medium width, elliptical shape, angular cheek shape, short brush hairs, medium to wide crease, medium to deep crease

GERM: medium size, broad elliptical to elliptical shape

DISEASE REACTIONS: resistant to Common bunt (*Tilletia laevis* Kühn in Rabenh., *T. tritici* Bjer.) Loose smut (*Ustilago tritici*) and Leaf rust (*Puccinia recondita*); moderately resistant to Stem rust (*Puccinia graminis* f. sp. *tritici*) and Stripe rust (*Puccinia striiformis*) and moderately susceptible to Fusarium head blight (*Fusarium graminearum*, *Fusarium* species)

Origin and Breeding: ‘CDC Defy’ (experimental designations D09.60.065 and ‘DT1004’) originated from the cross between ‘CDC Verona’, as the female parent, and ‘DT563’, as the male parent, made in the summer of 2009 at the Crop Development Centre of the University of Saskatchewan in Saskatoon, Saskatchewan. The F1 generation was increased at a contra-season near Christchurch, New Zealand. The F2 and F3 generations were increased in bulk in Saskatoon and near Christchurch in 2010. In 2011, the F4 generation was planted in a nursery at Saskatoon with 550 single spikes selected and grown as F5 head rows at Saskatoon in 2012. From these head rows, a line designated, as D09.60.065, was selected for plant height, maturity and straw strength. In 2013, D09.60.065 was evaluated in un-replicated F6 yield trials in Saskatoon and the resistance to Fusarium head blight and to leaf rusts were evaluated in endemic nurseries in Carmen, Manitoba. In 2014 and 2015, D09.60.065 was evaluated for agronomic traits, advanced in replicated yield trials at various locations in Saskatchewan and Alberta in 2014 and also assessed in disease resistance trials conducted in Saskatoon and Carman. From 2016 to 2018, ‘DT1004’ was evaluated in the Durum Wheat co-operative tests. Selection criteria were plant height, maturity, straw strength, disease resistance, yield, test weight, thousand kernel weight, and quality traits such as, yellow pigment, protein and gluten content, and milling properties such as semolina milling yield and semolina ash content.

Tests and Trials: The comparative tests and trials of ‘CDC Defy’ were conducted during the 2018 and 2019 growing seasons at the Crop Science Field Laboratory, University of Saskatchewan, Saskatoon, Saskatchewan. There were three replications arranged in a RCB Design. Plots consisted of 5 rows spaced 20 cm apart. The plot size was 4.0 square metres with a minimum density of 300 plants per square metre. Measured characteristics are based on 20 measurements per variety per year. Mean differences are significant at the 5% probability level based on a paired Student’s T-test. Disease ratings for ‘CDC Defy’ were provided through the Disease Evaluation team of the Prairie Recommending Committee for Wheat, Rye and Triticale and the Prairie Grain Development Committee from the Durum Wheat Co-operative Registration Trials conducted from 2016 to 2018.

Comparison table for ‘CDC Defy’

	‘CDC Defy’	‘AAC Cabri’*	‘CDC Carbide’*	‘CDC Credence’*	‘CDC Precision’*
<i>Flag leaf length (cm)</i>					
mean 2018	21.3	17.2	17.1	16.3	16.9
std. deviation 2018	2.9	2.5	1.8	2.5	2.3
mean 2019	24.1	21.6	21.9	21.4	20.2
std. deviation 2019	2.6	1.5	2.0	2.2	2.3
<i>Flag leaf width (cm)</i>					
mean 2018	11.5	12.1	12.0	11.8	12.1
std. deviation 2018	0.8	0.9	0.6	1.1	1.0
mean 2019	12.0	12.8	13.1	12.8	12.8
std. deviation 2019	0.9	1.4	1.0	1.2	1.1
<i>Plant height at maturity (including awns) (cm)</i>					
mean 2018	79.8	82.4	80.7	87.8	77.2
std. deviation 2018	3.7	3.4	2.8	4.4	3.4
mean 2019	88.3	86.1	88.0	90.8	84.4
std. deviation 2019	4.7	5.3	3.8	4.0	3.3

Spike length (excluding awns) (cm)

mean 2018	7.2	6.7	6.8	6.3	6.4
std. deviation 2018	0.5	0.7	0.5	0.5	0.4
mean 2019	7.5	6.9	6.7	6.7	6.6
std. deviation 2019	0.6	0.7	0.5	0.5	0.5

*reference varieties



Wheat: 'CDC Defy' (left) with reference varieties 'CDC Carbide' (centre left), 'CDC Precision' (centre), 'CDC Credence' (right centre) and 'AAC Cabri' (right)