



## APPLICATIONS UNDER EXAMINATION

## BARLEY

### BARLEY (*Hordeum vulgare*)

**Proposed denomination:** 'CDC Kamsack'  
**Application number:** 08-6352  
**Application date:** 2008/05/30  
**Applicant:** University of Saskatchewan, Saskatoon, Saskatchewan  
**Agent in Canada:** Canterra Seeds Ltd., Winnipeg, Manitoba  
**Breeder:** Bryan Harvey, University of Saskatchewan, Saskatoon, Saskatchewan

**Varieties used for comparison:** 'CDC Sisler' and 'Legacy'

**Summary:** 'CDC Kamsack' differs from the reference varieties, 'CDC Sisler' and 'Legacy' mainly in frequency of plants with recurved flag leaves, spike glaucosity, length and curvature of the first segment of the rachis, spiculation of the lemma awns and rachilla hair length. There is a medium number of plants with recurved flag leaves in 'CDC Kamsack' whereas it is very low to low in 'CDC Sisler'. The spike of 'CDC Kamsack' has medium glaucosity whereas it is weak on 'CDC Sisler'. The first segment of the rachis of 'CDC Kamsack' is short to medium in length whereas it is long on 'Legacy'. The curvature of the first segment of the rachis of 'CDC Kamsack' is very weak to weak whereas it is weak-medium to medium on 'CDC Sisler'. The lemma awns of 'CDC Kamsack' are rough whereas they are smooth on 'CDC Sisler' and semi-smooth on 'Legacy'. The rachilla hairs are short on 'CDC Kamsack' whereas they are long on both reference varieties.

#### **Description:**

JUVENILE PLANT: intermediate growth habit, green coleoptile

PLANT AT TILLERING: no pubescence on sheath of lower leaves, erect to intermediate growth habit

FLAG LEAF (at booting): medium frequency of plants with recurved flag leaves, weak-medium to medium pubescence on blade, strong glaucosity on sheath, very weak pubescence on sheath

FLAG LEAF AURICLES: weak to weak-medium intensity of anthocyanin colouration, very weak pubescence on margins

SPIKE: mid-season emergence, platform collar, erect to slightly semi-erect attitude, medium-strong to medium glaucosity, parallel shape, dense to medium-dense

LEMMA AWNS: medium-strong to medium anthocyanin colouration at tips, longer than spike, rough (barbs from tip to next to the kernel)

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

MEDIAN SPIKELET: glume and its awn longer than grain

KERNEL: very weak to weak anthocyanin colouration of nerves of lemma, whitish to weakly coloured aleurone layer, husk present, short rachilla hairs, very weak to medium-strong spiculation of inner lateral nerves of dorsal side of lemma, very weak hairiness of ventral furrow, medium to strong clasping of lodicules, transverse crease to incomplete horseshoe basal markings, medium to long, medium to medium-wide

AGRONOMIC TRAITS: fair to good resistance to lodging, shattering, straw and neck breaking, fair to good tolerance to drought, good malting quality

DISEASE: moderately susceptible to Common root rot (*Cochliobolus sativus*, *Fusarium* spp.), moderately resistant to Spot blotch (*Cochliobolus sativus*), susceptible to Net blotch (*Pyrenophora teres*) and Septoria speckled leaf blotch (*Septoria passerinii*), moderately susceptible to Scald (*Rhynchosporium secalis*), susceptible to Stem rust (*Puccinia graminis*) and *Fusarium* head blight (*Fusarium graminearum*), resistant to Covered smut (*Ustilago hordie*) and False loose smut, Black semi-loose smut (*Ustilago nigra*) and moderately susceptible to True loose smut (*Ustilago nuda*).

**Origin and Breeding:** 'CDC Kamsack' was developed at the University of Saskatchewan Department of Plant Sciences. It arose from the cross BT471/SM98213 conducted in a crossing nursery at Saskatoon, Saskatchewan in 1999. The F1 to F4 generations were grown as bulk populations where the F1 was increased under glass over the winter of 1999-2000 and the F2

was grown in the field in Saskatoon during the summer of 2000. The F3 was grown in winter nurseries in New Zealand in 2000-2001 and the F4 was grown at Saskatoon in 2001. 'CDC Kamsack' was grown and selected as a single F4 derived F5 row plot at Saskatoon in 2002. Seed from the F5 row plot was bulked as the line SM03152 and was tested in University of Plant Sciences yield trials in 2003-2004 and was further tested as SR410 in the Western Canadian Six-Row Cooperative Registration trials during the summers of 2005-06. Selection criteria included yield potential, plant maturity, plant height, disease resistance and grain quality.

**Tests and Trials:** Tests and trials for 'CDC Kamsack' were conducted at the University of Saskatchewan, Saskatoon, Saskatchewan during the summers of 2007 and 2008. The trials consisted of two replicates of each variety, with each replication consisting of five rows, 3.7 metres in length, planted in a randomized complete block design. Measured characteristics were based on a minimum of 20 measurements per variety per year.

**Comparison table for 'CDC Kamsack'**

|  | 'CDC Kamsack' | 'CDC Sisler** | 'Legacy** |
|--|---------------|---------------|-----------|
| <i>Flag leaf length (cm)</i>             |               |               |           |
| mean (2007)                              | 12.39         | 10.89         | 12.70     |
| std. deviation (2007)                    | 1.19          | 1.09          | 1.81      |
| mean (2008)                              | 16.00         | 11.94         | 14.40     |
| std. deviation (2008)                    | 0.86          | 1.78          | 1.38      |
| <i>Flag leaf width (mm)</i>              |               |               |           |
| mean (2007)                              | 8.40          | 9.65          | 9.95      |
| std. deviation (2007)                    | 0.99          | 1.23          | 1.15      |
| mean (2008)                              | 15.40         | 13.70         | 14.45     |
| std. deviation (2008)                    | 0.60          | 1.42          | 1.23      |
| <i>Spike length, excluding awns (cm)</i> |               |               |           |
| mean (2007)                              | 6.39          | 8.42          | 7.55      |
| std. deviation                           | 0.50          | 0.49          | 0.74      |
| mean (2008)                              | 6.26          | 8.21          | 7.44      |
| std. deviation (2008)                    | 0.90          | 1.18          | 0.58      |
| <i>Plant height, including awns (cm)</i> |               |               |           |
| mean (2007)                              | 98.65         | 109.05        | 104.95    |
| std. deviation (2007)                    | 3.03          | 2.80          | 3.02      |
| mean (2008)                              | 74.30         | 89.80         | 80.10     |
| std. deviation (2008)                    | 5.48          | 3.71          | 3.08      |

\*reference varieties



Barley: 'CDC Kamsack' (centre) with reference varieties 'CDC Sisler' (left) and 'Legacy' (right)

**Proposed denomination:** 'CDC Lophy-I'  
**Application number:** 06-5470  
**Application date:** 2006/05/05  
**Applicant:** University of Saskatchewan, Saskatoon, Saskatchewan  
**Agent in Canada:** FP Genetics Inc., Regina, Saskatchewan  
**Breeder:** Brian Rosnagel, University of Saskatchewan, Saskatoon, Saskatchewan

**Varieties used for comparison:** 'CDC Freedom', 'CDC McGwire' and 'CDC Dolly'

**Summary:** 'CDC Lophy-I' has stronger pubescence on the flag leaf blade than 'CDC Dolly'. The intensity of the anthocyanin colouration of the auricles of the flag leaf of 'CDC Lophy-I' is weaker than in 'CDC Dolly'. 'CDC Lophy-I' has a longer spike excluding the awns than 'CDC Dolly'. The plant height of 'CDC Lophy-I' is taller than 'CDC Dolly' but shorter than 'CDC McGwire'. 'CDC Lophy-I' has weaker anthocyanin colouration of the nerves of the lemma than 'CDC Dolly'. 'CDC Lophy-I' has a hullless kernel while 'CDC Dolly' does not. The spiculation of inner lateral nerves of the dorsal side of the lemma of 'CDC Lophy-I' is weaker than in 'CDC Freedom'. 'CDC Lophy-I' has better lodging resistance than 'CDC McGwire' and 'CDC Dolly'. The resistance to True loose Smut in 'CDC Lophy-I' is better than the reference varieties.

**Description:**

**PLANT:** two row, low phytate spring feed barley, semi-erect to intermediate juvenile growth habit, green coleoptile, absent to very sparse pubescence on the sheaths of the lower leaves, intermediate growth habit

**FLAG LEAF (at booting):** low to medium frequency of plants with recurved flag leaves, medium to dense pubescence on blade, strong glaucosity on sheath, absent to very sparse pubescence on the sheath, medium anthocyanin colouration of auricles, very sparse to sparse pubescence on the margins of the auricles

**SPIKE:** mid-season spike emergence, mainly platform shaped collar, medium to strong anthocyanin colouration of the tips of the lemma awns, erect to semi-erect attitude, medium to strong glaucosity, parallel shape, medium to dense density, parallel to weakly divergent attitude of sterile spikelet, medium length of first segment of rachis, medium to strong curvature of first

segment of rachis, the length of the glume and its awn of the median spikelet is equal relative to the grain, the lemma awns are equal to slightly longer relative to the spike, lemma awns have spiculations over one-half to two-thirds

**KERNEL:** weak anthocyanin colouration of nerves of the lemma at beginning of ripening, whitish to weakly coloured aleurone layer, husk absent, long rachilla hair, weak spiculation of inner lateral nerves of dorsal side of lemma, no hairiness on ventral furrow, strong clasping disposition of lodicules, mainly incomplete horseshoe shape of basal markings, medium to long length, medium to wide width

**DISEASE REACTION:** resistant to True Loose Smut (*Ustilago nuda*), moderately resistant to False Loose Smut, Black semi-loose Smut (*Ustilago nigra*) and Net Blotch (*Pyrenophora teres*), moderately susceptible to Spot Blotch (*Cochliobolus sativus*) and Common Root Rot (*Cochliobolus sativus*, *Fusarium* spp.), susceptible to Stem Rust (*Puccinia graminis*), Fusarium Head Blight (*Fusarium graminearum*; perfect state *Gibberella zeae*) and Covered Smut (*Ustilago hordei*), very susceptible to Scald (*Rhynchosporium secalis*) and Septoria speckled leaf blotch (*Septoria passerinii*)

**AGRONOMY:** good resistance to lodging and shattering, good tolerance to straw and neck breaking, fair to good tolerance to drought

**Origin and Breeding:** 'CDC Lophy-I' (experimental number HB379) was developed using the pedigree breeding method at the Crop Development Centre, University of Saskatchewan, Saskatoon, Saskatchewan. It originates from the initial cross M2-635 x 'CDC Freedom' followed by backcrossing to 'CDC Freedom' 4 times with the final backcross occurring in 2000. Selection criteria included 75% phytate reduction, good yield potential, straw strength, early maturity, disease resistance and grain quality including good threshability and large grain size. The BC4F1 generation was increased during the winter of 2000/2001 in a New Zealand nursery with the resulting BC4F2 grown in the field in Saskatoon, Saskatchewan in the summer of 2001. The BC4F3 generation was advanced during the winter of 2001 and summer of 2002 in greenhouses in Saskatoon, Saskatchewan. 'HB379' was grown and selected as a single BC4F4 hill plot in Saskatoon, Saskatchewan in 2002. The seed from that BC4F4 plant was bulked to form the line. The line was increased in a New Zealand winter nursery in 2002 and 2003. The line was tested in CDC yield trials in 2003 and 2004 as SR03044 followed by testing in the Western Hulled Barley Coop Trials as HB379 during 2004 and 2005.

**Tests and Trials:** Tests and trials occurred during the summers of 2006 and 2008 in Saskatoon, Saskatchewan. The plots consisted of 5 rows with a row length of 3.7 metres and a row spacing of 20 cm. There were 2 replicates arranged in an RCB design.

**Comparison table for 'CDC Lophy-I'**

|                          | 'CDC Lophy-I' | 'CDC Freedom** | 'CDC McGwire** | 'CDC Dolly** |
|--------------------------|---------------|----------------|----------------|--------------|
| <i>Spike length (cm)</i> |               |                |                |              |
| mean 2006                | 10.34         | 8.89           | 8.82           | 7.54         |
| std. deviation           | 0.89          | 0.61           | 0.57           | 0.55         |
| mean 2008                | 10.26         | 10.53          | 9.82           | 8.02         |
| std. deviation           | 0.78          | 1.18           | 1.12           | 1.26         |
| <i>Plant height (cm)</i> |               |                |                |              |
| mean 2006                | 87.15         | 88.45          | 90.35          | 82.40        |
| std. deviation           | 3.25          | 3.02           | 2.25           | 3.38         |
| mean 2008                | 70.55         | 81.00          | 80.40          | 64.30        |
| std. deviation           | 3.87          | 4.45           | 3.07           | 3.26         |

\*reference varieties



Barley: 'CDC Lophy-I' (far right) with reference varieties 'CDC Dolly' (far left), 'CDC Freedom' (centre left) and 'CDC McGwire' (centre right)

**Proposed denomination:** 'CDC Mayfair'  
**Application number:** 08-6294  
**Application date:** 2008/04/17  
**Applicant:** University of Saskatchewan, Saskatoon, Saskatchewan  
**Agent in Canada:** Canterra Seeds Ltd., Winnipeg, Manitoba  
**Breeder:** Bryan Harvey, University of Saskatchewan, Saskatoon, Saskatchewan

**Varieties used for comparison:** 'CDC Sisler' and 'Legacy'

**Summary:** 'CDC Mayfair' differs from the reference varieties, 'CDC Sisler' and 'Legacy' mainly in flag leaf length and width, collar shape, spike length, spiculation on the margins of the lemma awns and plant height. The flag leaves of 'CDC Mayfair' are longer and wider than those of 'CDC Sisler'. The collar of 'CDC Mayfair' is v-shaped whereas it is platform in both reference varieties. The spike of 'CDC Mayfair' is shorter than that of 'CDC Sisler'. The lemma awns of 'CDC Mayfair' are semi-smooth whereas they are smooth on 'CDC Sisler'. The plants of 'CDC Mayfair' are shorter than those of 'CDC Sisler'.

**Description:**

JUVENILE PLANT: intermediate growth habit, green coleoptile

PLANT AT TILLERING: very sparse pubescence on sheath of lower leaves, erect to intermediate growth habit

FLAG LEAF (at booting): low to low-medium frequency of plants with recurved flag leaves, weak to medium to strong to very strong pubescence on blade, medium-strong to strong glaucosity on sheath, very weak pubescence on leaf sheath

FLAG LEAF AURICLES: weak to weak-medium intensity of anthocyanin colouration, very weak pubescence on margins

SPIKE: mid-season emergence, v-shaped collar, erect to slightly semi-erect attitude, weak to medium glaucosity, parallel shape, medium-dense to dense

LEMMA AWNS: medium-strong to strong anthocyanin colouration at tips, longer than spike, semi-smooth (barbs on one half to two thirds of the awn)

FIRST SEGMENT OF RACHIS: medium to short-medium length, medium to weak curvature  
 MEDIAN SPIKELET: glume and its awn longer than grain

KERNEL: very weak anthocyanin colouration of nerves of lemma, whitish to weakly coloured aleurone layer, husk present, long rachilla hairs, very weak to medium-strong spiculation of inner lateral nerves of dorsal side of lemma, no hairiness of ventral furrow, medium to strong clasping of lodicules, transverse crease to incomplete horseshoe basal markings, medium to long, medium to medium-wide

AGRONOMIC TRAITS: fair to good resistance to lodging, shattering, straw and neck breaking, fair to good tolerance to drought, good malting quality

DISEASE: moderately susceptible to Common root rot (*Cochliobolus sativus*, *Fusarium* spp.), moderately resistant to moderately susceptible to Spot blotch (*Cochliobolus sativus*), susceptible to Net blotch (*Pyrenophora teres*) and Septoria speckled leaf blotch (*Septoria passerinii*), moderately susceptible to Scald (*Rhynchosporium secalis*), susceptible to Stem rust (*Puccinia graminis*) and Fusarium head blight (*Fusarium graminearum*), resistant to covered smut (*Ustilago hordei*) and False loose smut, Black semi-loose smut (*Ustilago nigra*) and susceptible to True loose smut (*Ustilago nuda*).

**Origin and Breeding:** 'CDC Mayfair' was developed by the Department of Plant Sciences, University of Saskatchewan. It arose from the cross BT459/BT941 originally conducted under glass during the winter of 1998-99 in Saskatoon, Saskatchewan. The F1 to F4 generations were grown as bulk populations where the F1 was increased under glass in 1999 and the F2 was grown in a winter nursery in New Zealand in 1999-2000. The F3 and F4 were grown in the field at Saskatoon during the 2000 and 2001 growing seasons. 'CDC Mayfair' was grown and selected as a single F4 derived F5 row plot at Saskatoon in 2002. Seed from that F5 plot was bulked as the line SM03219 and was tested in University of Saskatchewan yield trials in 2003-2004 and was further tested as SR412 in the Western Canadian Six-Row Cooperative Registration trials during the summers of 2005-06. Selection criteria included yield potential, plant maturity, plant height, disease resistance and grain quality.

**Tests and Trials:** Tests and trials for 'CDC Mayfair' were conducted at the University of Saskatchewan, Saskatoon, Saskatchewan during the summers of 2007 and 2008. The trials consisted of two replicates of each variety, with each replication consisting of five rows, 3.7 metres in length, planted in a randomized complete block design. Measured characteristics were based on a minimum of 20 measurements per variety per year.

**Comparison table for 'CDC Mayfair'**

|  | 'CDC Mayfair' | 'CDC Sisler'* | 'Legacy'* |
|--|---------------|---------------|-----------|
| <i>Flag leaf length (cm)</i>             |               |               |           |
| mean (2007)                              | 12.16         | 9.83          | 12.83     |
| std. deviation (2007)                    | 1.59          | 0.76          | 1.35      |
| mean (2008)                              | 13.01         | 11.94         | 14.40     |
| std. deviation (2008)                    | 2.34          | 1.78          | 1.38      |
| <i>Flag leaf width (mm)</i>              |               |               |           |
| mean (2007)                              | 12.30         | 10.60         | 12.55     |
| std. deviation (2007)                    | 0.98          | 0.75          | 0.69      |
| mean (2008)                              | 14.20         | 13.70         | 14.45     |
| std. deviation (2008)                    | 1.28          | 1.42          | 1.23      |
| <i>Spike length, excluding awns (cm)</i> |               |               |           |
| mean (2007)                              | 7.65          | 8.61          | 7.82      |
| std. deviation (2007)                    | 0.47          | 0.59          | 0.68      |
| mean (2008)                              | 7.21          | 8.21          | 7.44      |
| std. deviation (2008)                    | 0.80          | 1.18          | 0.58      |
| <i>Plant height, including awns (cm)</i> |               |               |           |
| mean (2007)                              | 99.85         | 115.10        | 103.30    |
| std. deviation (2007)                    | 3.27          | 3.06          | 3.92      |
| mean (2008)                              | 75.20         | 87.75         | 76.75     |
| std. deviation (2008)                    | 4.26          | 5.61          | 4.76      |

\*reference varieties



Barley: 'CDC Mayfair' (centre) with reference varieties 'CDC Sisler' (left) and 'Legacy' (right)

**Proposed denomination:** 'CDC PolarStar'  
**Application number:** 07-5885  
**Application date:** 2007/04/18  
**Applicant:** University of Saskatchewan, Saskatoon, Saskatchewan  
**Breeder:** Brian Rossnagel, University of Saskatchewan, Saskatoon, Saskatchewan  
 Wataru Saito, Sapporo Breweries Ltd., Gumma, Japan

**Varieties used for comparison:** 'Harrington', 'CDC Kendall' and 'AC Metcalfe'

**Summary:** 'CDC PolarStar' differs from the reference varieties, 'Harrington', 'CDC Kendall' and 'AC Metcalfe' mainly in frequency of plants with recurved flag leaves, anthocyanin colouration of the flag leaf auricles, anthocyanin colouration of the tips of the lemma awns, spike length and disposition of the lodicules. The frequency of plants with recurved flag leaves is very low to low in 'CDC PolarStar' whereas it is low-medium to medium in 'AC Metcalfe'. The flag leaf auricles of 'CDC PolarStar' have medium intensity of anthocyanin colouration whereas it is very strong in 'Harrington'. The tips of the lemma awns of 'CDC PolarStar' have medium to medium-strong intensity of anthocyanin colouration whereas it is weak to medium on 'AC Metcalfe'. The spike of 'CDC PolarStar' is longer than that of 'AC Metcalfe'. The disposition of lodicules on the kernel of 'CDC PolarStar' are mid range between frontal and clasping whereas they are strongly clasping in 'CDC Kendall'.

**Description:**

JUVENILE PLANT: semi-erect to intermediate growth habit, green coleoptile

PLANT AT TILLERING: very sparse pubescence on sheath of lower leaves, semi-erect to intermediate growth habit

FLAG LEAF (at booting): very low to low frequency of plants with recurved flag leaves, medium density of pubescence on blade, strong to medium-strong glaucosity on sheath, weak to medium pubescence on leaf sheath

FLAG LEAF AURICLES: medium intensity of anthocyanin colouration, very weak pubescence

**SPIKE:** mid-season emergence, platform to platform to cup collar, erect to slightly semi-erect attitude, medium to strong glaucosity, parallel shape, dense, sterile spikelet parallel to weakly divergent to divergent

**LEMMA AWNS:** medium to medium-strong anthocyanin colouration at tips, longer than spike, rough (barbs from tip to next to kernel)

**FIRST SEGMENT OF RACHIS:** medium to short-medium length, weak to medium-strong curvature

**MEDIAN SPIKELET:** glume and its awn equal in length relative to the grain

**KERNEL:** very weak to medium anthocyanin colouration of nerves of lemma, whitish to weakly coloured aleurone layer, husk present, long rachilla hairs, weak to medium-strong spiculation of inner lateral nerves of dorsal side of lemma, no hairiness of ventral furrow, medium clasping of lodicules, horsehoe and incomplete horseshoe basal markings, medium-long to long, medium to medium-wide

**AGRONOMIC TRAITS:** fair resistance to lodging, good resistance to shattering, straw and neck breaking, fair to good tolerance to drought, good malting quality

**DISEASE:** susceptible to Common root rot (*Cochliobolus sativus*, *Fusarium* spp.), Spot blotch (*Cochliobolus sativus*) and Net blotch (*Pyrenophora teres*), very susceptible to Septoria speckled leaf blotch (*Septoria passerinii*), Scald (*Rhynchosporium secalis*) and Stem rust (*Puccinia graminis*), moderately resistant to Fusarium head blight (*Fusarium graminearum*), resistant to covered smut (*Ustilago hordie*) and False loose smut, Black semi-loose smut (*Ustilago nigra*) and very susceptible to True loose smut (*Ustilago nuda*).

**Origin and Breeding:** ‘CDC PolarStar’ was developed through a collaborative breeding program of the Sapporo Breweries Ltd., Crop Development Centre and Prairie Malt Ltd. It arose from the cross OIU003/CDC Kendall originally conducted in Gumma, Japan in 2001, with five subsequent backcrosses to CDC Kendall made at Gumma and the Crop Development Centre between 2001-2003. During the winter of 2003-04, the BC5F1 was increased under glass, with the subsequent BC5F2 and BC5F3 being increased under glass in Saskatoon the following winter. Seed from these increases was grown in a yield trial in Saskatoon during the summer of 2005. Seed from these plots were bulked and increased in a winter nursery in New Zealand in 2005-2006. Bulked seed from the BC5F6 lines was used for testing in the Western Canadian 2-row Cooperative Registration trials as TR06918. Selection criteria included yield potential, early to moderate maturity, grain quality which included test weight, kernel weight and kernel plumpness.

**Tests and Trials:** Tests and trials for ‘CDC PolarStar’ were conducted at the Crop Development Centre, University of Saskatchewan, Saskatoon, Saskatchewan during the summers of 2007 and 2008. The trials consisted of two replicates of each variety, with each replication consisting of five rows, 3.7 metres in length, planted in a randomized complete block design. Measured characteristics were based on a minimum of 20 measurements per variety per year.

**Comparison table for ‘CDC PolarStar’**

|   | ‘CDC PolarStar’ | ‘Harrington’* | ‘CDC Kendall’* | ‘AC Metcalfe’* |
|---|-----------------|---------------|----------------|----------------|
| <i>Spike: length, excluding awns (cm)</i> |                 |               |                |                |
| mean (2007)                               | 8.13            | 8.49          | 8.09           | 7.40           |
| std. deviation (2007)                     | 0.57            | 0.94          | 0.70           | 0.31           |
| mean (2008)                               | 8.25            | 8.50          | 7.81           | 7.54           |
| std. deviation (2008)                     | 0.68            | 1.05          | 0.59           | 1.02           |
| <i>Height, including awns (cm)</i>        |                 |               |                |                |
| mean (2007)                               | 94.85           | 95.35         | 97.60          | 96.05          |
| std. deviation (2007)                     | 3.15            | 3.10          | 3.33           | 5.55           |
| mean (2008)                               | 66.70           | 65.00         | 68.30          | 66.10          |
| std. deviation (2008)                     | 2.49            | 3.96          | 2.75           | 2.65           |

\*reference varieties





Barley: 'CDC PolarStar' (left) with reference varieties 'Harrington' (centre left), 'CDC Kendall' (centre right) and 'AC Metcalfe' (right)

**Proposed denomination:** 'Desperado'  
**Application number:** 07-5886  
**Application date:** 2007/04/18  
**Applicant:** Agriculture & Agri-Food Canada, Brandon, Manitoba  
**Agent in Canada:** Agriculture & Agri-Food Canada, Lacombe, Alberta  
**Breeder:** Mario Therrien, Agriculture & Agri-Food Canada, Brandon, Manitoba

**Varieties used for comparison:** 'Binscarth', 'Ranger' and 'Virden'

**Summary:** 'Desperado' differs from the reference varieties, 'Binscarth', 'Ranger' and 'Virden', mainly in plant growth habit, frequency of plants with recurved flag leaves, anthocyanin colouration of the flag leaf auricles, spike emergence, collar shape, rachis length and disposition of lodicules. The plant growth habit of 'Desperado' is semi-erect whereas it is erect in 'Virden'. The frequency of plants with recurved flag leaves is medium in 'Desperado' whereas it is high in 'Binscarth' and 'Ranger'. There is no anthocyanin colouration of the flag leaf auricles of 'Desperado' whereas it is very weak in 'Binscarth'. Spike emergence of 'Desperado' is earlier than 'Virden', slightly earlier than 'Binscarth' and slightly later than 'Ranger'. The collar shape of the spike of 'Desperado' is predominantly platform whereas it is predominantly v-shaped in both 'Binscarth' and 'Virden' and predominantly cup shaped in 'Ranger'. The rachis of 'Desperado' is medium in length whereas it is short in 'Virden'. The disposition of lodicules of 'Desperado' are clasping whereas they are frontal in 'Ranger'.

**Description:**

JUVENILE PLANT: semi-erect growth habit, green coleoptile with medium elongation

PLANT AT TILLERING: glabrous green sheath of lower leaves, semi-erect growth habit, slightly pubescent leaf blade

FLAG LEAF (at booting): medium green, glossy, glabrous blade and sheath, strong glaucosity on sheath, intermediate attitude

FLAG LEAF AURICLES: anthocyanin colouration absent, no pubescence

STEM: full exertion, medium thickness, weak glaucosity, straight, medium green at maturity

**SPIKE:** mid-season emergence, platform collar, semi-erect attitude, weak glaucosity, fusiform shape, medium density, very short

**LEMMA AWNS:** no anthocyanin colouration at tips, longer than spike, rough (barbs from tip to next to kernel), lateral veins with many barbs

**RACHIS:** short first segment, medium curvature, glabrous margin

**GLUME:** medium length, hair restricted to middle vein, short hairs, awns longer than length of glume, glume awns smooth, no anthocyanin colouration

**KERNEL:** medium anthocyanin colouration of nerves of lemma, whitish aleurone layer, husk present, long rachilla and rachilla hairs, no abnormal rachillas, weak spiculation of inner lateral nerves of dorsal side of lemma, hairiness of ventral furrow absent, clasping lodicules, horsehoe and transverse crease basal markings, medium length and width

**AGRONOMIC TRAITS:** forage type, fair resistance to lodging, good resistance to shattering

**DISEASE:** moderately resistant to Common root rot (*Cochliobolus sativus*), resistant to covered smut (*Ustilago hordei*), highly susceptible to fusarium head blight (*Fusarium graminearum*), resistant to false loose smut (*Ustilago nigra*), moderately susceptible to true loose smut (*Ustilago nuda*) western races, resistant to net blotch (*Pyrenophora teres*) race 857, susceptible to scald (*Rhynchosporium secalis*) and Septoria sepckled leaf blotch (*Septoria passerinii*) race 1493, moderately susceptible to spot blotch (*Cochliobolus sativus*) and resistant to stem rust (*Puccinia graminis* s. sp. *tritici*) race MCC

**Origin and Breeding:** ‘Desperado’ was derived from the cross Brandon CC53/B1602/2/Bran. 806F6/Argyle/Lacombe/Minn. M82/Rosser/3/Chapais/BT375 conducted in 1997 at the Agriculture and Agri-Food Canada (AAFC) Brandon Research Centre and was developed using conventional pedigree selection. The F1 and F2 generations were sown and bulk harvested as cross EX695. Individual heads were selected from 360 F3 plants which were then planted in head rows. Individual rows (147) were selected based on phenotype which were then planted in unreplicated plots alternating with ‘Virden’ and ‘AC Rosser’ as check varieties every tenth plot using a Nearest Neighbour (NN) design. Each plot was evaluated for heading, height, lodging, disease load, maturity, grain yield, dry matter yield, thousand kernel and test weights. The line, EX695-6-12, was selected and underwent further evaluation in multi-site replicated trials from the F6 to F9. In 2005, EX695-6-12 was entered in the Western Co-operative Forage Barley Registration Trial, where it was tested as FB012 and demonstrated improved forage yield, equal grain yield and higher kernel test weight when compared to the check varieties. As a result, FB012 was supported for registration by the Prairie Recommending Committee for Oat and Barley in February 2007.

**Tests and Trials:** Tests and trials for ‘Desperado’ were conducted in Brandon, Manitoba during the summers of 2007 and 2008. The trials consisted of 3 replicates of each variety arranged in complete randomized block design. Each plot measured approximately 6 metres long x 1 metre wide spaced approximately 15 cm apart. Measured characteristics were based on approximately 60 measurements per variety per year.

**Comparison table for ‘Desperado’**

|  | ‘Desperado’ | ‘Binscarth’* | ‘Ranger’* | ‘Virden’* |
|--|-------------|--------------|-----------|-----------|
| <i>Plant height, including awns (cm)</i> |             |              |           |           |
| mean                                     | 97.5        | 84           | 93        | 98.5      |
| <i>Kernel weight</i>                     |             |              |           |           |
| grams per 1000 kernels                   | 35.6        | 38.0         | 35.6      | 38.0      |
| *reference varieties                     |             |              |           |           |



Barley: 'Desperado' (left) with reference varieties 'Binscarth' (centre left), 'Ranger' (centre right) and 'Virden' (right)

**Proposed denomination:** 'Enduro'  
**Application number:** 07-5820  
**Application date:** 2007/04/03  
**Applicant:** WestBred LLC, Bozeman, Montana, United States of America  
**Agent in Canada:** Agricore United, Calgary, Alberta  
**Breeder:** Dale Clark, WestBred LLC, Bozeman, Montana, United States of America

**Varieties used for comparison:** 'CDC Alamo' and 'CDC Rattan'

**Summary:** 'Enduro' has a narrower flag leaf than 'CDC Alamo'. The flag leaf blade of 'Enduro' has weaker pubescence than 'CDC Alamo'. 'Enduro' has weaker anthocyanin colouration of the tips of the lemma awns at anthesis than 'CDC Rattan'. The spike attitude of 'Enduro' is less erect than 'CDC Rattan'. 'Enduro' has a shorter spike, excluding the awns, than 'CDC Alamo' and 'CDC Rattan'. The kernel of 'Enduro' has longer rachilla hairs than 'CDC Alamo'. 'Enduro' has a taller plant height than 'CDC Rattan'.

**Description:**

**PLANT:** two row, hullless waxy spring barley, absent or very sparse pubescence on the sheaths of the lower leaves, intermediate to semi-prostrate growth habit

**FLAG LEAF (at booting):** very sparse to sparse pubescence on the blade, very sparse to sparse pubescence on the sheath, no anthocyanin colouration of the auricles, sparse pubescence on the auricle margins

**SPIKE:** mid-season emergence, v-shaped collar, very weak to weak anthocyanin colouration of the tips of the lemma awns, semi-erect to horizontal attitude, strong to very strong glaucosity, parallel shape, medium to dense density, divergent attitude of the sterile spikelet, medium length of first segment of rachis at ripening, medium curvature of first segment of rachis at ripening, the length of the glume and awn relative to grain of the median spikelet is equal, lemma awns are longer relative to spike, lemma awns are rough

**KERNEL:** husk absent, long rachilla hair, weak spiculation of inner lateral nerves of dorsal side of lemma, no hairiness of the ventral furrow, frontal to clasping disposition of lodicules, horseshoe shaped basal markings, medium to long length, medium width

**AGRONOMY:** fair to good resistance to lodging and shattering, fair to good tolerance to straw breaking and neck breaking, fair tolerance to drought, poor malting quality

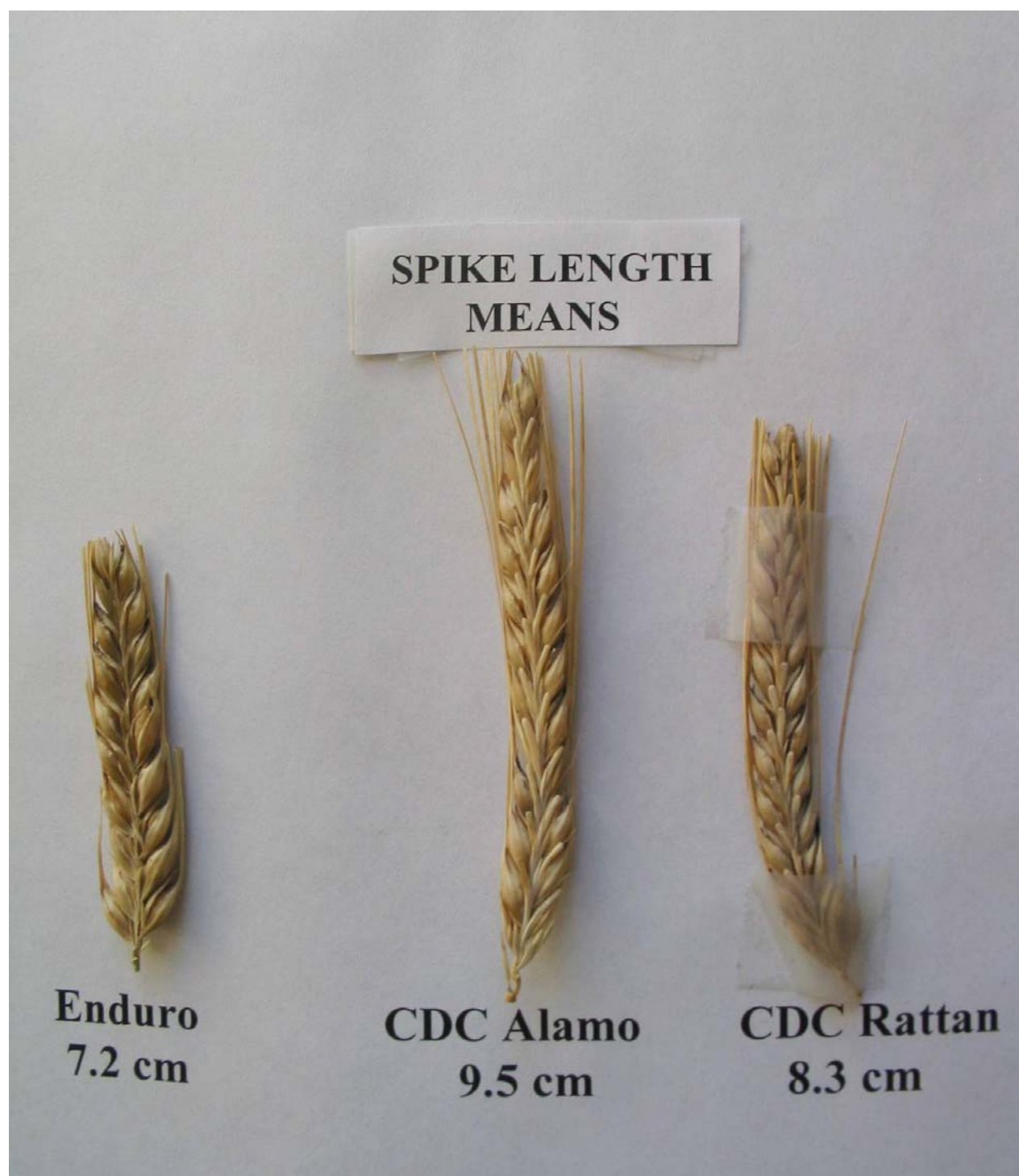
**Origin and Breeding:** 'Enduro' (experimental designations YU 501-039 and HB813) originated from the cross Merlin/\*2 Baronesse made in Bozeman, Montana in July 1997 using the pedigree breeding method. The F1 was grown near Yuma, Arizona in the spring of 1998 and F2 seed planted near Bozeman, Montana in the spring of 1998. F2 heads were selected in September 1998, threshed and planted as F3 head rows near Bozeman, Montana in May 1999. Individual F3 heads were selected from agronomically acceptable rows in the fall of 1999 and planted as F4 head rows in the spring of 2000. In the fall of 2000, individual F4 heads were selected and these were planted as single F5 head rows near Yuma, Arizona in the fall of 2000. One of the F5 rows was selected in April 2001 and given the designation YU 501-039. The F6 through F9 were tested for yield and other agronomic traits in Westbred, LLC's and Agricore United's trials from 2001 through 2005. 'Enduro' was tested in the Canadian Hulless Barley Coop test as HB813 in 2004 and 2005.

**Tests and Trials:** Test and trials were conducted during the summers of 2006 and 2007 in Neapolis, Alberta. Plots consisted of 5 rows with a row length of 5 meters and a row spacing of 23 cm. There were 3 replicates arranged in an RCB design with each variety appearing 12 times within the trial.

**Comparison table for 'Enduro'**

|  | 'Enduro' | 'CDC Alamo'* | 'CDC Rattan'* |
|--|----------|--------------|---------------|
| <i>Flag leaf width (mm)</i>              |          |              |               |
| mean                                     | 9.5      | 13.5         | 9.5           |
| std. deviation (LSD=0.78)                | 3.1      | 3.97         | 3.69          |
| <i>Spike length, excluding awns (cm)</i> |          |              |               |
| mean                                     | 7.2      | 9.5          | 8.3           |
| std. deviation (LSD=0.46)                | 0.63     | 0.92         | 0.81          |
| <i>Plant height (cm)</i>                 |          |              |               |
| mean                                     | 98       | 96           | 90            |
| std. deviation (LSD=2.94)                | 3.2      | 2.4          | 2.3           |

\*reference varieties



Barley: 'Enduro' (left) with reference varieties 'CDC Alamo' (centre) and 'CDC Rattan' (right)