



Request for Support for Registration of *HB379*

Crop: Barley (*Hordeum vulgare L.*)
Type: 2-Row Hulless Feed

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Test #'s: HB379 or SR03044
Pedigree: M2-635/4* CDC Freedom
Area of Adaptation: Western Canada

Description:

HB379 is a 2-rowed hulless low-phytate barley that has demonstrated good physical grain quality with average agronomic performance. If supported, HB379 would be the first commercially available low-phytate barley variety. HB379 is the result of four backcrosses to CDC Freedom with selection for the 75% lower phytate trait, this is essentially 75% lower phytate CDC Freedom.

NOTE: *Poor seed lot quality of HB379 used for the 2005 HBCoop trials resulted in very thin stand at all sites as reported to HBCoop coordinator in July, 2005.*

Strengths:

- 75% phytate reduction.
- Kernel weight.
- Straw strength.
- Resistant to loose smut.
- Low Fusarium Head Blight and DON.

Neutral characteristics:

- Yield – comparable to Tyto.
- Threshability.
- Plant maturity.
- Plant height.
- Kernel quality including grain density (test weight) and plumpness.
- Resistant to covered smut and moderately resistant to false-loose smut.
- Net-blotch resistance – good seedling reactions (similar to CDC McGwire).

Weaknesses:

- Spot-blotch resistance.
- Susceptible to scald.

Table 1a. Grain yield (kg/ha) for HB379 and checks from 2004 Hulless Barley Cooperative trial.

Entry	Black Soil Zone		Black & Grey Zone		Brown Soil Zone		Combined	
	Yield (kg/ha)	Yld as % McGwire	Yield (kg/ha)	Yld as % McGwire	Yield (kg/ha)	Yld as % McGwire	Yield (kg/ha)	Yld as % McGwire
AC Metcalfe	6426	112	6739	107	6177	111	6372	111
CDC McGwire	5722	100	6300	100	5555	100	5760	100
CDC Rattan	5315	93	6106	97	5236	94	5436	94
AC Bacon	5888	103	6991	111	5857	105	6094	106
Falcon	5022	88	6037	96	4611	83	5034	87
Tyto	5294	93	6195	98	4966	89	5321	92
HB379	4984	87	5933	94	5147	93	5250	91
#SY	5		3		7		15	

Table 1b. Grain yield (kg/ha) for HB379 and checks from 2005 Hulless Barley Cooperative trial.

Entry	Black Soil Zone		Black & Grey Zone		Brown Soil Zone		Combined	
	Yield (kg/ha)	Yld as % McGwire	Yield (kg/ha)	Yld as % McGwire	Yield (kg/ha)	Yld as % McGwire	Yield (kg/ha)	Yld as % McGwire
AC Metcalfe	5098	108	7512	103	4835	111	5760	109
CDC McGwire	4728	100	7318	100	4341	100	5406	100
CDC Rattan*	4712	100	6980	95	4081	94	5216	97
AC Bacon	4932	104	7588	104	4712	109	5681	107
Tyto	4343	92	7198	98	3717	86	5029	92
HB379	3725	79	6242	85	3616	83	4466	83
#SY	5		4		4		13	

Table 2a. Agronomic characteristics for HB379 and checks from 2004 Hulless Cooperative trials.

Entry	Days to Head	Days to Mature	Plant	Lodging	D. Test	C. Test	Kernel	Plump (% > 6/64)
			Height (cm)	Score (1 - 9)	Weight (kg/ha)	Weight (kg/ha)	Weight (g/1000k)	
AC Metcalfe	60.6	105.1	85.8	2.8	63.2	65.6	46.2	91.5
CDC McGwire	62.7	105.0	88.1	4.0	76.5	78.5	39.3	86.3
CDC Rattan	61.0	103.3	79.7	3.3	73.8	77.7	36.8	88.3
AC Bacon	58.5	103.2	90.5	4.3	65.8	74.3	39.6	89.7
Falcon	62.4	103.4	72.1	1.0	69.0	74.8	35.6	71.6
Tyto	62.4	105.8	83.5	1.3	58.9	72.3	39.8	90.8
HB379	59.6	103.4	87.3	2.0	71.7	74.5	42.6	87.3
#SY	10	10	11	4	9	10	10	9

Table 2b. Agronomic characteristics for HB379 and checks from 2005 Hulless Cooperative trials.

Entry	Days to Head	Days to Mature	Plant	Lodging	D. Test	C. Test	Kernel	Plump
			Height (cm)	Score (1 - 9)	Weight (kg/hl)	Weight (kg/hl)	Weight (g/1000k)	
AC Metcalfe	59.6	97.4	86.1	5.0	60.4	64.3	41.6	85.9
CDC McGwire	62.6	100.8	85.3	3.3	71.3	77.2	37.8	83.4
CDC Rattan*	60.7	98.3	80.0	3.4	71.2	76.8	34.4	85.1
AC Bacon	59.2	98.7	90.9	2.8	62.1	71.4	37.0	82.0
Tyto	61.7	101.2	82.3	2.0	56.2	69.5	37.2	84.1
HB379	58.7	97.1	86.0	3.6	66.6	71.9	38.4	74.6
#SY	11	10	11	3	10	12	12	11

Table 3. Quality characteristics for HB379 and checks from 2004 and 2005 Hulless Coop. trials.

Entry	2004			2005				2004 and 2005 - Averaged		
	BG (%)	AEV (cps)	Protein (%)	Hull (%)	BG (%)	AEV (cps)	Protein (%)	BG (%)	AEV (cps)	Protein (%)
AC Metcalfe	4.2	4.9	12.0	---	4.5	5.5	12.3	4.4	5.2	12.2
CDC McGwire	4.2	8.2	13.8	10.1	4.9	9.7	12.7	4.5	8.9	13.3
CDC Rattan	6.7	30.2	13.8	6.2	7.7	63.6	13.4	7.2	46.9	13.6
AC Bacon	4.3	8.3	12.7	21.1	4.7	9.7	13.7	4.5	9.0	13.2
Falcon	3.8	8.9	14.7	---	---	---	---	3.8	8.9	14.7
Tyto	4.1	16.7	12.9	31.7	4.6	18.5	13.7	4.4	17.6	13.3
HB379	4.7	6.8	12.5	11.7	5.0	6.5	12.6	4.8	6.7	12.6
#SY	7	7	1	3	7	7	2	14	14	3

Table 4. Disease reaction summaries for HB379 and checks from 2004 Hulleless Cooperative trial.

Name	Brandon, MB		Melfort, SK		Saskatoon, SK	Winnipeg, MB			CRR (%)
	Net Blotch ^b 12-Aug	Spot Blotch ^c 12-Aug	Net Blotch	Spot Blotch	Spot Blotch	102 ^a	858 ^a	857 ^b	
AC Metcalfe	3	2.5	4.5	4.0	4.5	6 ^f	9	7	28
CDC McGwire	---	2.0	1.5	3.5	4.0	4	7	2	---
CDC Rattan	5	3.5	4.5	5.0	5.0	9	9	3	40
AC Bacon	4	6.0	3.0	5.5	6.0	9	9	5	41
Falcon	---	2.5	2.0	5.0	4.8	7	6?	3	17
Tyto	---	3.5	4.0	5.5	5.8	8	7	5	52
HB379	---	2.0	1.0	3.3	5.0	2	8	3	53

Name	False		Covered ^b Smut	Stem Rust ^d Incidence	Stem Rust Rating	Brandon, MB		Glenlea, MB		
	Loose ^a Smut (%)	Covered ^a Smut (%)				Loose ^a Smut (%)	FHB Rating ^d	DON ^e (ppm)	FHB Rating	DON ^g (ppm)
AC Metcalfe	0.0	4.0	7.0	MR	5.0	mss	4.3	32.5	4.0	38.5
CDC McGwire	0.9	0.0	5.0	MS	7.0	mss	3.8	30.8	2.8	9.8
CDC Rattan	0.8	0.8	1.3	S	2.0	ms	3.3	24.4	4.6	29.1
AC Bacon	0.2	6.0	5.0	S	3.0	ms	3.8	10.3	4.3	23.4
Falcon	0.8	0.0	0.0	R	2.0	ms	4.3	30.2	3.9	55.1
Tyto	0.5	0.0	0.5	R	3.0	ms	4.3	43.3	4.1	63.9
HB379	0.0	2.5	8.5	HS	2.0	ms	2.0	14.5	3.6	22.3

Entry	Lacombe, AB			Edmonton, AB			Winnipeg, MB		
	Scald 5-Jul	Scald 20-Jul	Scald 5-Aug	Scald ^f 15-Jul	Scald 28-Jul	Scald 3-Aug	Scald 1493 ^e	Septoria 692 ^d	Spot Blotch 1903 ^e
AC Metcalfe	1.5	4.5	7.0	1.5	5.0	6.0	S ^g	S ^h	6 ⁱ
CDC McGwire	0.0	4.0	6.0	0.0	0.0	0.0	S	S	6
CDC Rattan	0.5	4.5	6.5	0.0	0.0	0.0	MR	S	6
AC Bacon	1.0	4.0	6.5	0.0	5.0	5.5	R	S	7
Falcon	0.0	3.5	5.5	0.0	4.5	6.0	R	S	6
Tyto	1.0	3.5	6.0	0.5	4.5	6.0	MR	S	5
HB379	0.5	5.0	7.0	0.0	5.0	6.0	S	S	6

Table 5. Disease reaction summaries for HB379 and checks from 2005 Hulless Cooperative trial.

Name	Brandon, MB			Melfort, SK		Saskatoon, SK	Winnipeg		
	Spot Blotch ^a	FHB Rating ^b	DON ^c (ppm)	Net Blotch ^d	Spot Blotch	Spot Blotch	102 ^a	858 ^a	857 ^b
AC Metcalfe	5.5	3.0	2.7	5.0	5.0	4.5	9 ^f	9	3
CDC McGwire	5.0	3.0	1.2	1.0	3.0	2.8	5	9	2
CDC Rattan*	5.5	3.7	2.1	4.0	4.5	3.5	9	10	5
AC Bacon	5.5	3.3	1.9	1.5	6.8	5.0	9	9	5
Tyto	3.5	4.0	4.0	1.5	5.0	3.0	9	7	5
HB379	6.0	3.7	0.9	2.5	5.0	4.8	3	8	5

Name	Winnipeg			Saskatoon	BYDV ^c (1 - 9)	Winnipeg		
	Loose ^a Smut (%)	Covered ^a Smut (%)	False Loose ^a Smut (%)	Covered ^b Smut		MCCF Seedling IT ^d	Septoria 1998 ^d	Spot Blotch 1903 ^e
AC Metcalfe	0	0.0	0.0	R	---	0;1-	S ^h	7 ⁱ
CDC McGwire	88	0.0	25(b)	MR	---	10;2	S	6
CDC Rattan*	92	12.5(a)	5.0	S	---	120;	S	4
AC Bacon	47	35.0	15.0	S	---	10;	S	7
Tyto	70	7.5	15(a)	MR	---	0;	S	3
HB379	0	---	10(a)	MR	---	0;	S	5

Entry	Lacombe, AB			Edmonton, AB			Winnipeg	CRR (%)
	Scald ^e 5-Jul	Scald 19/20-Jul	Scald 2-Aug	Scald 14-Jul	Scald 26-Jul	Scald 9-Aug	Scald 1493 ^c	
AC Metcalfe	3.0	4.5	5.5	1.5	2.5	7.5	S ^g	57.3
CDC McGwire	3.0	4.0	6.0	0.0	1.0	3.0	R	37.3
CDC Rattan*	2.5	4.0	6.0	0.0	1.0	1.5	R	42.7
AC Bacon	2.5	4.5	6.5	1.0	1.0	4.0	R	52.0
Tyto	2.5	3.5	6.0	0.5	2.0	4.0	R/MR	45.3
HB379	3.5	4.0	6.5	1.0	2.5	5.5	S	40.0