Request for Support for National Registration of CH9622-7 Barley

Crop Kind: Two-row barley (*Hordeum vulgare* l.) **Type:** Spring barley

Breeders: Dr. T.M. Choo[1] and Dr. R. A. Martin[2]

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Pedigree and Breeding Method:

A cross between AB163-4/DB200 was made at Charlottetown during the winter of 1995-1996. The F1-F6 generations were grown in the field at Harrington in 1996-2001. Selection was conducted for superior heads in F4 and for superior lines in F5 and F6. One of the F4-derived F7 lines, CH9622-7, was tested in a preliminary test at Harrington in 2002 and in the Maritime Two-Row Barley Screening Test in 2003. CH9622-7 was tested in the Maritime Two-Row Barley Registration and Recommendation Test in 2004-2007, Ontario Two-Row Barley Advanced Test in 2005, Ontario Two-Row Barley Orthogonal Test in 2006-2007, and Quebec Two-Row Barley Registration and Recommendation Test in 2007, .

Adaptation: Maritimes, Quebec, and Ontario

Performance:

Strength: CH9622-7 yielded higher than the two check cultivars Formosa and Sunderland by 5.2% and 5.7%, respectively in Ontario (Tables 1, 2a, 2b, & 2c). It yielded higher than the two check cultivars AC Queens and Island by 9.5 % and 8.7%, respectively in the Maritimes (Table 4). In addition, CH9622-7 had greater test weight, greater seed weight, and better resistant to lodging than the checks (Tables 1 and 4).

Weaknesses: CH9622-7 was susceptible to net blotch, rust, scald, and septoria (Tables 3 and 5).

Table 1. Summary of agronomic data for CH9622-7 and check cultivars in the Ontario Two-Row Barley Advanced Test in 2005 and Ontario Two-Row Barley Orthogonal Test in 2006-2007

Cultivar	Yield (kg/ha)	Test wt. (kg/hl)	Seed wt. (mg)	Height (cm)	Lodging (0-9)[z]	Heading (days)	Maturity (days)
Formosa	3681	65.9	45.9	70	3.4	53	88
Sunderland	3665	66.5	44.7	72	2.8	54	86
CH9622-7	3873	66.7	50.5	80	2.1	53	89
No. of tests	12	12	11	12	4	12	5

[z] 0 = no lodging, 9 = severe lodging.

Table 2a. Yield (kg/ha) for CH9622-7 and check cultivars in the 2005 Ontario Two-Row Barley Advanced Test (4 replicates for each site)

Cultivar	NEWL	PALM	OTTA	BORN
Formosa	4101	4039	2633	3164
Sunderland	3843	4024	2670	3685
CH9622-7	3964	3756	2767	4106
CV (%)	9.4	7.9	5.4	6.7

Table 2b. Yield (kg/ha) for CH9622-7 and check cultivars in the 2006 Ontario Two-Row Barley Orthogonal Test (4 replicates for each site)

Cultivar	OTTA	PALM	NAIR
Formosa	3199	4160	3880
Sunderland	3318	4620	3860
CH9622-7	3440	5760	4160
CV (%)	7.1	7.3	13.9

Table 2c. Yield (kg/ha) for CH9622-7 and check cultivars in the 2007 Ontario Two-Row Barley Orthogonal Test (4 replicates for each site except PALM which had 3 replicates)

Cultivar	ELOR	BORN	NAIR	OTTA	PALM
Formosa	5550	4230	2950	2898	3370
Sunderland	5430	4230	2330	2651	3320
CH9622-7	5190	3870	2010	4466	2990
CV (%)	8.0	7.8	6.2	9.5	7.3

Table 3. Summary of disease data severity (0-9)[z], brightness (0-9)[y], stem break (0-9)[x], and neck break (0-9)[x] for CH9622-7 and check cultivars in the Ontario Two-Row Barley Advanced Test, 2005 and Ontario Two-Row Barley Orthogonal Test in 2006-2007

Cultivar	Powdery Mildew (0-9)[z]	Net blotch (0-9)[z]	BYD (0-9)[z]	Brightness (0-9)[y]	Neck break (0-9)[x]	Stem break (0-9)[x]	Rust (0-9)[z]	FHB (0-9)[z]	Spot blotch (0-9)[z]
Formosa	0.6	6.7	3.0	7.6	3.6	3.9	0.0	7	5.3
Sunderland	1.2	5.9	3.3	7.3	2.0	3.0	5.1	6	6.9
CH9622-7	2.9	6.4	3.3	6.9	5.5	3.0	7.1	4	4.8
No. of tests	5	3	3	4	2	2	1	1	2

[z] 0 = no disease, 9 = severe disease; [y] 0 = severe discoloration, 9 = brightest color; [x] 0 = no breakage, 9 = severe breakage.

Table 4. Maritime 2-Row Barley Registration and Recommendation Test: Four Year Means Summary, 2004-2007

Cv	Status	Site yrs (yld)	Yield Rank	Yield (t/ha)	Test weight (kg/hl)	1000 kwt (gm)	Height (cm)	Lodg. (0-9)	Scald (0-9)	Net blotch (0-9)	Head. (days)	Matur. (days)	Smut (no.)	Stem Rust (0-9)	FHB (0-9)
Island	c	12	2	4.03	66.3	44.3	90	2.8	3.4	2.9	63	103	0.8	0.6	1.3
AC Queens	c	12	3	4.00	65.0	46.2	92	2.9	4.7	3.0	63	102	0.0	0.4	1.4
CH9622-7	4	12	1	4.38	67.4	49.4	92	1.2	4.9	2.4	61	102	0.2	0.2	1.8

Table 5. Maritime Two-Row Barley Registration and Recommendation Test, 2004-2007: Seedling Foliar Disease Reactions conducted by Dr. A Tekauz, Cereal Research Centre, Agriculture and Agri-Food Canada, Winnipeg MB

Reaction to:

	Net Blotch			Scald	Septoria	Spot Blotch
Cultivar	102[a]	858[a]	857[b]	1493[c]	1998[d]	1903[e]
AC Queens	8.0[f]	8.7	6.0	S [g]	S[h]	4.2[i]
Island	8.2	8.5	5.0	S	S	5.5
CH9622-7	8.5	9.0	6.0	S	S	4.5
No. of tests	4	4	4	4	2	4

a *Pyrenophora teres* net-form isolates
b *Pyrenophora teres* spot-form isolate
c *Rhynchosporium secalis* isolate
d *Septoria passerinii* isolate
e *Cochliobolus sativus*: isolate
f Reaction categories: 10=VS, 9=S, 7=MS, 5=MR-MS, 3=MR, 1=R
g Reaction categories: R,MR,MS,S
h Reaction categories: R,(MR),(MS),S; ( ) rarely-used categories
i Reaction categories: 0-9 scale: 0= no visible lesions; 4= small; 9= very large, coalescing