
Request for Support for Registration of TR23198

Crop: Barley (*Hordeum vulgare* L.)
Type: Two-row, spring, hulled (Malt)

Proposers: A.D. Beattie
Crop Development Centre
51 Campus Drive
Saskatoon, SK S7N 5A8

Test #'s: TR23198 or SM202056
Pedigree: TR17169 x TR15152

Area of Adaptation: Western Canada

Description:

TR23198 is a two-row, hulled malt barley with good adaptability across Western Canada. It combines good grain yield (= AAC Synergy) and lodging resistance with average height and maturity. It shows very good physical grain quality (= AAC Synergy) and has an excellent disease resistance package, being resistant or moderately resistant to loose smut, surface smuts, spot blotch and FHB, and intermediate resistant to stem rust, net-form net blotch and scald. The malting profile of **TR23198** shows elevated diastatic power (> AAC Synergy), low beta-glucan (between the checks), high FAN (= AAC Synergy) and consistently high extract (> checks). Most other malt and wort characteristics are similar to the checks, with the exception of elevated soluble protein.

Strengths:

- Good grain yield (= AAC Synergy) and lodging resistance (= checks).
- Test weight, kernel weight, plumps/thins (= AAC Synergy).
- Elevated DP (> checks).
- Low malt beta-glucan (between checks).
- High extract (> checks).
- High FAN (= AAC Synergy).
- Resistance or moderate resistance to loose smut, surface smuts, spot blotch, FHB; intermediate resistance to stem rust, net-form net blotch and scald.

Neutral characteristics:

- Height and maturity (similar to checks).
- Protein, GE, RVA, friability, AA, KI (similar to checks).

Weaknesses:

- Moderately susceptible to spot-form net blotch.

Table 1. Grain yield for TR23198 and checks from the 2023 Western Co-operative 2R Malting Barley Registration Trial.

Entry	Black Soil Zone		Black & Grey Zone		Brown Soil Zone		Irrigated		Combined	
	kg/ha	% Synergy	kg/ha	% Synergy	kg/ha	% Synergy	kg/ha	% Synergy	kg/ha	% Synergy
CDC Copeland	5457	96	7474	94	4417	88	8549	101	6027	95
AAC Synergy	5690	100	7950	100	5046	100	8439	100	6337	100
CDC Austenson	5642	99	8027	101	5276	105	8556	101	6385	101
TR23198	5664	100	8399	106	4964	98	8367	99	6383	101
Station years	8		3		3		2		16	

Table 2. Grain yield for TR23198 and checks from the 2024 Western Co-operative 2R Malting Barley Registration Trial.

Entry	Black Soil Zone		Black & Grey Zone		Brown Soil Zone		Irrigated		Combined	
	kg/ha	% Synergy	kg/ha	% Synergy	kg/ha	% Synergy	kg/ha	% Synergy	kg/ha	% Synergy
CDC Copeland	4967	88	3482	92	4162	85	7359	94	4561	88
AAC Synergy	5635	100	3803	100	4879	100	7848	100	5175	100
CDC Austenson	5978	106	3673	97	4692	96	8271	105	5252	101
TR23198	5821	103	3556	94	4753	97	8504	108	5202	101
Station years	7		3		6		1		17	

Table 3. Grain yield for TR23198 and checks from the 2024 and 2025 Western Co-operative 2R Malting Barley Registration Trial.

Entry	Black Soil Zone		Black & Grey Zone		Brown Soil Zone		Irrigated		Combined	
	kg/ha	% Synergy	kg/ha	% Synergy	kg/ha	% Synergy	kg/ha	% Synergy	kg/ha	% Synergy
CDC Copeland	5538	102	5478	93	4247	86	8153	99	5272	92
AAC Synergy	5446	100	5876	100	4935	100	8242	100	5738	100
CDC Austenson	5731	105	5478	93	4887	99	8461	103	5801	101
TR23198	5484	101	5891	100	4823	98	8413	102	5729	100
Station years	15		6		9		3		33	

Table 4. Agronomic characteristics for TR23198 and checks from the 2023 Western Co-operative 2R Malting Barley Registration Trial.

Entry	Days to Head	Days to Mature	Height (cm)	Lodging (1-9)	Test Wt. (kg/hl)	Kern. Wt. (g/1000k)	Plump (% >6/64)	Thins (% <5/64)
CDC Copeland	57.4	86.4	76.1	1.9	65.9	46.5	93.6	1.6
AAC Synergy	52.4	86.3	70.4	1.6	66.6	49.1	96.0	1.1
CDC Austenson	54.8	87.1	71.1	1.9	68.9	48.6	92.1	1.9
TR23198	55.9	86.4	70.4	2.1	66.8	49.0	95.9	1.2
Station years	18	18	18	4	18	18	16	12

Table 5. Agronomic characteristics for TR23198 and checks from the 2024 Western Co-operative 2R Malting Barley Registration Trial.

Entry	Days to Head	Days to Mature	Height (cm)	Lodging (1-9)	Test Wt. (kg/hl)	Kern. Wt. (g/1000k)	Plump (% >6/64)	Thins (% <5/64)
CDC Copeland	62.2	86.7	79.7	2.3	61.2	39.7	79.1	2.7
AAC Synergy	60.2	87.1	79.5	2.6	63.0	42.1	84.7	1.7
CDC Austenson	61.8	88.3	76.9	2.0	64.3	41.5	76.4	3.0
TR23198	62.1	87.3	78.1	2.0	63.1	43.4	84.7	1.6
Station years	15	15	15	9	18	18	17	14

Table 6. Agronomic characteristics for TR23198 and checks from the 2023 and 2024 Western Co-operative 2R Malting Barley Registration Trial.

Entry	Days to Head	Days to Mature	Height (cm)	Lodging (1-9)	Test Wt. (kg/hl)	Kern. Wt. (g/1000k)	Plump (% >6/64)	Thins (% <5/64)
CDC Copeland	58.4	86.5	77.7	1.9	63.6	43.1	86.2	2.5
AAC Synergy	56.7	86.6	74.5	1.9	64.8	45.6	90.2	1.6
CDC Austenson	57.9	87.7	73.7	1.7	66.6	45.0	84.0	3.3
TR23198	58.5	86.8	73.9	1.8	65.0	46.2	90.1	1.6
Station years	33	33	33	13	36	36	33	26

Table 7. Disease reaction summary for TR23198 and checks from the 2023 and 2024 Western Co-operative 2R Malting Barley Registration Trial.

Entry		Seedling			Net Blotch		Spot-form	Merit	Scald			Merit	Spot Blotch			Merit		
		102	858	MBV25	Net-form		Field		Seedling	Field			Seedling	Field				
					Lac	Mel	Lac		2275	Lac	Edm		1903	Brd	Ros		Mel	Lac
CDC Copeland	2023	2	5	2	3.0	-	4.5	0/0	S	6.0	8.0	-	7	7.0	-	-	5	-
	2024	3	6	3	1.5	-	3.0	0/+	S	5.0	4.5	-	5	6.5	7.5	5.5	3	-
					I/I			0/0		MS		-		MS				-
AAC Synergy	2023	1	2	1	0.0	-	4.0	+/+	S	6.0	7.5	-	3	2.0	-	-	3.5	+
	2024	1	2	2	0.0	-	2.0	+/+	S	3.5	7.0	-	3	4.5	6.5	5.0	2.0	0
					MR/MR			+/+		S		-		MR				+
CDC Austenson	2023	2	7	5	0.0	-	4.0	0/-	S	4.5	7.0	-	7	2.0	-	-	3.5	+
	2024	1	6	5	0.0	-	2.5	0/0	S	4.5	4.0	-	2	3.0	5.5	5.0	1.0	+
					I/I			0/0		MS		-		I				+
TR23198	2023	4	6	8	0.0	-	4.0	0/-	MS	5.5	4.0	0	2	1.5	-	-	3.5	+
	2024	2	4	7	3.0	-	1.5	0/-	MR	3.5	4.0	0	3	3.0	5.0	5.5	1.0	+
					I/MS			0/-		I		0		MR				+

Table 7 (cont). Disease reaction summary for TR23198 and checks from the 2023 and 2024 Western Co-operative 2R Malting Barley Registration Trial.

Entry		Surface Smuts			Loose Smut			Stem Rust				Fusarium Head Blight					DON	Avg	Merit		
		AAFC-MRDC			Merit	USask	Merit	Field	USask	Seedling	Merit	Rating		Charlottetown							
		USask	U. hordei	U. nigra								U. nuda	Cov	React	Rpgl	MCC				Bran	Mor
CDC Copeland	2023	-	8	17	+	-	NR	1	R	6R	0;	+	2.5	0.8	-	-	-	17.4	2.2	9.8	0
	2024	21	4	22	+	5.3	+	2	MR	6R	;11+	+	2.5	4.0	-	-	-	13.8	31.8	22.8	0
			MR		+	R	+			MR		+					I				0
AAC Synergy	2023	-	20	19	+	-	NR	1	R	6R	0;	+	1.3	0.2	-	-	-	29.5	0.3	14.9	0
	2024	25	21	28	+	22.6	+	1	R	6R	;1-	+	1.8	2.8	-	-	-	23.9	49.8	36.8	0
			MR		+	MR	+			R		+					I				0
CDC Austenson	2023	-	6	9	+	-	NR	1	R	6R	0;	+	1.5	0.2	-	-	-	36.0	2.1	19.0	-
	2024	6	10	9	+	-	NR	10	MR	6R	;1-	+	1.7	2.5	-	-	-	21.0	46.2	33.6	0
			R		+	-	NR			MR		+					I				0
TR23198	2023	-	15	17	+	-	NR	5	I	6R	0;	0	1.5	0.7	-	-	-	13.8	0.5	7.1	+
	2024	7	14	10	+	0.0	+	2	MR	6R	;1-	+	1.3	2.3	-	-	-	11.1	27.4	19.2	+
			MR		+	R	+			I		0					MR				+

Table 8. Average malting characteristics for TR23198 and checks from the 2023 Western Co-operative 2R Malting Barley Registration Trial.

Entry	Plump			1000		G. E.		Steep		Friab.	P&B	DP	AA	F.Ext.	SP	KI	FAN	BG	Visc.
	>7.0 (%)	>6.0 (%)	>5.5 (%)	K.Wt. (g)	Prot. (%)	4 ml (%)	8 ml (%)	RVA (RVU)	Moist (%)										
CDC Copeland	47.7	93.7	97.3	48.8	12.2	99	95	141	46.0	79.5	2.6	160	67	80.1	4.77	38.3	187	87	1.45
AAC Synergy	64.9	96.9	98.7	51.5	12.3	99	90	116	46.2	80.6	2.6	165	75	80.8	4.88	40.6	200	48	1.42
TR23198	63.3	96.6	98.8	51.4	12.1	99	86	91	46.0	84.6	3.2	180	73	82.3	4.98	42.0	196	58	1.46
Station Years	3	3	3	3	3	3	3	2	3	3	2	3	3	3	3	3	3	3	3

Table 9. Average malting characteristics for TR23198 and checks from the 2024 Western Co-operative 2R Malting Barley Registration Trial.

Entry	Plump			1000		G. E.		Steep		Friab.	P&B	DP	AA	F.Ext.	SP	KI	FAN	BG	Visc.
	>7.0 (%)	>6.0 (%)	>5.5 (%)	K.Wt. (g)	Prot. (%)	4 ml (%)	8 ml (%)	RVA (RVU)	Moist (%)										
CDC Copeland	49.0	91.6	97.6	43.6	12.3	97	93	79	46.6	83.0	2.6	166	76	79.5	5.04	40.5	206	59	1.44
AAC Synergy	67.6	95.5	98.3	46.9	12.9	99	96	59	47.2	74.1	4.1	175	85	80.4	5.37	44.1	221	47	1.42
TR23198	69.1	94.5	98.2	48.5	12.9	95	82	62	46.3	75.5	2.7	173	73	81.6	5.73	44.3	211	53	1.46
Station Years	3	3	3	3	3	3	3	2	3	2	2	3	3	3	3	3	3	3	3

Table 10. Average malting characteristics for TR23198 and checks from the 2024 Collaborative Trial.

Entry	Plump			1000		Barley	G. E.		Steep	Malt										
	>7.0 (%)	>6.0 (%)	>5.5 (%)	K.Wt. (g)	Prot. (%)	P&B (%)	4 ml (%)	8 ml (%)	Moist (%)	Chit (%)	Friab (%)	P&B (%)	DP (°L)	AA (D.U.)	F.Ext. (%)	SP (%)	KI (%)	FAN (mg/L)	BG (mg/L)	Visc. (cP)
CDC Copeland	40.1	86.4	95.9	43.2	12.6	2.4	95	87	44.2	86	74.5	3.0	159	67	79.8	5.30	42.3	220	138	1.46
AAC Synergy	48.6	91.4	98.1	44.4	12.0	3.7	95	88	44.6	87	79.4	3.3	151	80	81.3	5.22	44.9	217	76	1.44
TR23198	51.7	92.6	97.8	46.1	12.7	2.8	94	84	44.3	85	82.1	4.5	161	72	82.2	6.02	47.1	235	116	1.48
Station Years	5	5	5	5	5	4	5	5	5	5	3	3	5	5	5	5	5	5	5	5

Table 11. Average malting characteristics for TR23198 and checks from the 2025 Collaborative Trial.

Entry	Plump			1000		Barley	G. E.		Steep	Malt										
	>7.0 (%)	>6.0 (%)	>5.5 (%)	K.Wt. (g)	Prot. (%)	P&B (%)	4 ml (%)	8 ml (%)	Moist (%)	Chit (%)	Friab (%)	P&B (%)	DP (°L)	AA (D.U.)	F.Ext. (%)	SP (%)	KI (%)	FAN (mg/L)	BG (mg/L)	Visc. (cP)
CDC Copeland	69.5	95.8	98.8	39.4	11.7	1.9	98	90	43.8	97	81.2	5.8	169	72	81.4	5.20	45.8	210	171	1.48
AAC Synergy	79.8	97.1	99.3	40.6	12.1	2.1	99	85	44.8	95	83.1	5.9	176	82	82.0	5.42	47.4	226	106	1.45
TR23198	80.4	97.5	99.4	51.2	12.3	2.4	99	83	44.1	94	81.8	7.6	191	86	82.8	5.43	43.5	223	148	1.49
Station Years	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5