

Request for Support for Registration of TR23101

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: TR23101 or SM201205
Pedigree: CDC Copper x CDC Churchill

Area of Adaptation: Western Canada

Description:

TR23101 is a two-row, hulled malt barley with good adaptability across Western Canada. It combines good grain yield (= AAC Synergy) and very good lodging resistance with shorter height and average 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, net-form net blotch, scald and stem rust, and intermediate resistant to spot-form net blotch and FHB. The malting profile of **TR23101** shows diastatic power similar to AAC Synergy, low beta-glucan (between the checks), very high RVA (> checks) and consistently high extract (> checks). Most other malt and wort characteristics are similar to the checks.

Strengths:

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

Neutral characteristics:

- Maturity (similar to checks).
- Protein, GE, friability, DP, AA, KI, FAN (similar to checks).

Weaknesses:

- Moderately susceptible to spot blotch.

Table 1. Grain yield for TR23101 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
TR23101	5664	100	7420	93	5285	105	8703	103	6302	99
Station years	8		3		3		2		16	

Table 2. Grain yield for TR23101 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
TR23101	5392	96	3854	101	4818	99	7938	101	5068	98
Station years	7		3		6		1		17	

Table 3. Grain yield for TR23101 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
TR23101	5546	102	5637	96	4973	101	8448	103	5644	99
Station years	15		6		9		3		33	

Table 4. Agronomic characteristics for TR23101 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
TR23101	53.1	86.3	67.1	1.6	67.4	50.0	96.3	1.2
Station years	18	18	18	4	18	18	16	12

Table 5. Agronomic characteristics for TR23101 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
TR23101	59.1	87.3	75.5	1.9	62.2	41.9	83.8	1.6
Station years	15	15	15	9	18	18	17	14

Table 6. Agronomic characteristics for TR23101 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
TR23101	55.5	86.7	70.9	1.6	64.8	45.9	89.8	1.6
Station years	33	33	33	13	36	36	33	26

Table 7. Disease reaction summary for TR23101 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			+
TR23101	2023	1	5	5	0.0	-	4.0	+/-	MR	0	2.5	+	6	6.5	-	-	4.0	-
	2024	2	3	5	1.5	-	2.5	+/0	MR	0	0.0	+	4	3.5	6.5	5.5	2.5	0
					MR/I			+/0		R		+			MS			-

Table 7 (cont). Disease reaction summary for TR23101 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						Merit				
		AAFC-MRDC		Merit	USask		Merit	Field	USask	Seedling	Merit	Rating			Charlottetown			DON			
		USask	U. hordei		U. nigra	U. nuda						Cov	React	Rpg1	MCC	Bran		Mor	Sev.	Inc.	Index
CDC Copeland	2023	-	8	17	+	-		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	+	-		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	+	-		1	R	6R	0;	+	1.5	0.2	-	-	-	36.0	2.1	19.0	-
	2024	6	10	9	+	-		10	MR	6R	;1-	+	1.7	2.5	-	-	-	21.0	46.2	33.6	0
			R		+					MR		+					I				0
TR23101	2023	-	10	16	+	-		1	R	6R	;1-	+	2.5	0.5	-	-	-	23.0	0.6	11.8	0
	2024	7	13	12	+	13.5	+	2	MR	6R	;1-	+	2.2	3.5	-	-	-	12.4	63.2	37.8	+
			MR		+	MR	+			MR		+					I				0

Table 8. Average malting characteristics for TR23101 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
TR23101	66.1	96.7	98.8	51.8	12.2	99	92	149	46.3	82.5	2.4	165	71	81.8	4.86	39.9	198	62	1.44
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 TR23101 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
TR23101	67.3	94.7	98.5	46.2	12.7	99	93	84	47.4	85.8	4.4	173	78	81.1	5.49	44.9	208	44	1.42
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 TR23101 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
TR23101	53.7	93.7	98.7	45.5	12.3	3.3	98	92	44.8	89	77.9	3.2	154	70	81.2	5.27	44.7	210	121	1.47
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 TR23101 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
TR23101	82.7	98.0	99.5	50.7	12.3	5.1	99	84	44.8	96	77.7	10.1	187	79	82.2	5.67	47.1	223	181	1.48
Station Years	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5