

TR20661

Variety Information Sheet for TR20661

Malt Barley



Description

TR20661 is a two-row, hulled malting barley line developed at the Field Crop Development Centre at Olds College of Agriculture and Technology (FCDC). TR20661 has good malting quality for the adjunct segment of the brewing market, with very high diastatic power, low protein and high extract. This line has good adaptation across Western Canada, it is high yielding, with yields higher than the two malting checks and overall 110% of 'CDC Copeland' and 101% of 'AAC Synergy' in the Western Cooperative Two-Row Barley Registration Trials in 2020 and 2021.

TR20661 was selected using marker-assisted selection for scald resistance, for which it has intermediate resistance, better than the checks. It has a very good disease resistance package for all the economically-relevant diseases in Western Canada.

It is anticipated that up to 300 kg of Breeder Seed will be available in spring 2023.

Strengths

- Overall grain yield is 110% of the malting check CDC Copeland, 101% of the malting check AAC Synergy, and is equal to the feed check CDC Austenson, for the 2-year Coop average. It is especially well adapted to the Brown soil zone and the Black/Grey soil zones.
- Lodging resistance was better than the malting checks in 2021 and similar to checks in the two-year average.
- TR20661 has a good disease resistance package, with:
 - Resistance to loose smut,
 - Moderate Resistance to the surface-borne smuts, loose smut, and stem rust
 - Intermediate resistance to FHB and scald spotted-net blotch and Netted-Net Blotch.
- TR20661 has good malting quality for the adjunct segment of the market, with high Diastatic Power, low protein, high extract and low beta-glucans in most locations.
- Most malting quality traits are better than the checks, with usually low beta-glucans, very good alpha-amylase, good friability, low grain peeling, and levels of viscosity lower or equal to the checks CDC Copeland and AAC Synergy.

Table 1a. Yield and agronomic traits of TR20661 averaged over the 2021 Western Cooperative Two-Row Barley Registration Trials.

Entry	Black Soil Zone		Black and Grey Soil Zone		Brown Soil Zone		Overall	
	kg/ha	% CDC Copeland	kg/ha	% CDC Copeland	kg/ha	% CDC Copeland	kg/ha	% CDC Copeland
CDC Copeland	3998	100	2753	100	2290	100	2895	100
AAC Synergy	4203	105	3313	107	2928	128	3387	117
CDC Austenson	4355	109	3224	109	3230	141	3566	123
TR20661	4509	113	3050	113	2876	126	3401	117
LSD	363		306		222		226	
No. of Reps.	9		6		15		30	
CV	9.4		8.6		10.4		9.8	

Entry	Heading	Maturity	Height	Lodging	Test Weight	Kernel Weight	Plump >6/64	Thins <5/64
	days	days	cm	0-9	kg/hL	mg	%	%
CDC Copeland	59.1	84.4	64.8	3.3	64.1	47.9	95.8	0.7
AAC Synergy	57.5	83.6	62.9	2.3	64.9	47.7	96.7	0.6
CDC Austenson	59.3	85.6	59.7	1.3	67.1	47.0	93.2	1.2
TR20661	56.5	83.8	60.2	1.0	64.8	47.2	95.1	1.1
LSD	0.43	0.65	1.50	1.04	1.00	1.30	1.80	0.50
No. of Reps.	39	39	45	3	12	13	3	3
CV	1.69	1.70	5.9	33.2	1.8	3.6	2.4	47.8

Table 1b. Yield and agronomic traits of TR20661 averaged over the 2020 Western Cooperative Two-Row Barley Registration Trials.

Entry	Black Soil Zone		Black and Grey Soil Zone		Brown Soil Zone		Overall	
	kg/ha	% CDC Copeland	kg/ha	% CDC Copeland	kg/ha	% CDC Copeland	kg/ha	% CDC Copeland
CDC Copeland	5767	100	7104	100	5976	100	5980	100
AAC Synergy	6222	108	7062	99	6650	111	6456	108
CDC Austenson	6284	109	7301	103	6502	109	6394	107
TR20661	5993	104	7479	105	6929	116	6552	110
LSD	415		518		280		214	
No. of Repls.	15		6		21		45	
CV	9.7		6.1		6.9		8.1	

Entry	Heading	Maturity	Height	Lodging	Test Weight	Kernel Weight	Plump >6/64	Thins <5/64
	days	days	cm	0-9	Kg/hL	mg	%	%
CDC Copeland	58.3	87.9	84.4	3.4	66.3	44.5	92.5	0.6
AAC Synergy	56.2	88.4	79.3	3.6	67.8	47.0	95.8	0.4
CDC Austenson	58.8	89.3	79.6	3.6	69.1	47.5	94.2	0.7
TR20661	55.4	88.4	78.5	3.9	66.2	45.5	92.4	0.8
LSD	0.49	0.69	1.98	0.93	0.90	1.58	2.09	0.35
No. of Repls.	45	42	42	18	17	17	14	6
CV	2.1	1.8	1.98	41.7	2.0	5.0	3.0	52.5

Table 1c. Yield and agronomic traits of TR120661 averaged over the 2020 and 2021 Western Cooperative Two-Row Barley Registration Trials.

Entry	Black Soil Zone		Black and Grey Soil Zone		Brown Soil Zone		Overall	
	kg/ha	% CDC Copeland	kg/ha	% CDC Copeland	kg/ha	% CDC Copeland	kg/ha	% CDC Copeland
CDC Copeland	5103	100	4929	100	4543	100	4799	100
AAC Synergy	5465	107	5187	105	5099	112	5228	109
CDC Austenson	5560	109	5262	107	5139	113	5263	110
TR20661	5436	107	5264	107	5240	115	5291	110
Station Years	8		4		12		25	

Entry	Heading	Maturity	Height	Lodging	Test Weight	Kernel Weight	Plump >6/64	Thins <5/64
	days	days	cm	0-9	Kg/hL	mg	%	%
CDC Copeland	58.6	86.2	74.9	3.4	65.1	46.1	94.0	0.6
AAC Synergy	56.8	86.1	71.3	3.4	66.3	47.3	96.0	0.5
CDC Austenson	59.0	87.5	70.0	3.3	68.3	47.3	93.8	0.9
TR20661	55.6	86.2	69.6	3.5	65.6	46.2	93.7	0.9
Station Years	28	27	31	7	29	30	26	12

Table 2. Overall disease ratings of TR20661 and the checks from the 2020 and 2021 Western Cooperative Two-row Barley Registration Test Disease Reaction Report. Prepared by K. Turkington.

Entry	Net Blotch			Smut				
	Net Form	Spot Form	Scald	Spot blotch	Loose	Surface	Stem Rust	FHB
CDC Copeland	MR	MS	MS	MS	I	MR	R	I
AAC Synergy	MR	MR	MS	I	MR	MR	R	I
CDC Austenson	I	I	MS	I	I	R	I	MS
TR20661	I	I	I	MS	R	MR	MR	I

Table 3. Disease Reaction Summary for the 2020 and 2021 Western Cooperative Two-row Barley Registration Test, 2nd Year Entries

Entry	Year	Rec	Net Blotch										Scald			Spot Blotch					
			Netted form				Spotted form			Scald			Spot Blotch								
			102 ^a	858 ^a	Melfort ^b	Lacombe NF ^b	Rating/ Merit Netted form	MBV25 ^c	Lacombe SF ^b	Rating/ Merit Spotted form	2275 ^d	Lacombe ^e	Edmonton ^e	Rating/ Merit Scald	1903 ^f	Brandon ^g	U of SK ^h	Melfort ⁱ	Lacombe ⁱ	Rating/ Merit Spot	
CDC Copeland (TR150)	2020		2	5	.	2.5	MR/+	3	5.0	I/0	MS	9.0	6.5	S-MS/-	5	7.0	.	1.0	6.5	MS/-	
	2021		3	7	.	2.5	I-MR/+	7	5.5	MS/-	MS	4.0	4.5	MS/-	5	2.0	.	2.0	4.0	I/0	
Overall		0					MR/+			MS/-				MS/-						MS/-	
AAC Synergy (TR09208)	2020		1	1	.	0.0	R/+	2	3.5	MR/+	MS	9.0	6.5	S-MS/-	2	4.0	.	1.0	4.5	I-MR/+	
	2021		3	6	.	0.0	I-MR/+	3	3.5	I-MR/+	MS	3.0	4.5	MS-I/-	3	4.0	.	1.0	2.0	I-MR/+	
Overall		0					MR/+			MR/+				MS/-						I/0	
CDC Austenson (TR06389)	2020		1	5	.	0.0	MR/+	7	3.5	MS-I/-	S	8.5	6.5	S/-	3	4.5	.	3.0	5.0	I-MR/+	
	2021		6	7	.	0.0	I/0	6	3.0	I/0	S	3.5	4.0	MS-I/-	5	4.5	.	2.0	0.0	I-MR/+	
Overall		0					I/0			I/0				MS/-						I/0	
2nd Year Entries																					
TR20661	2020		1	2	.	5.0	I-MR/+	7	5.0	MS-I/-	MS	6.0	3.0	MS-I/-	3	7.0	.	2.0	6.0	MS-I/-	
	2021		5	9	.	1.5	I/0	6	4.5	I/0	MS	1.5	0.0	I/0	7	5.5	.	2.0	5.0	MS/-	
Overall		0					I/0			I/0				I/0						MS/-	
Priority							1			1				1						1	
Min. Desired Resistance							I			I				I						I	

Table 4. Malting quality data for TR20661 from the 2020 and 2021 Western Cooperative Two-Row Barley Registration Trial.

Entry	Barley				Malt					Wort					
	>7/64	>6/64	TKW	Protein	Friability	P&B	Protein	DP	Alpha-Amylase	Fine Extract	Soluble Protein	Kolbach Index	α- Glu.	Visc	FAN
	%	%	g	%	%	%	%	°L	D.U.	%	%	%	mg/L	cP	mg/L
2020															
KERNEN															
CDC Copeland	-	93.9	40.3	12.1	89.4	-	11.7	135	64.0	78.0	4.72	40.3	106	1.49	137
AAC Synergy	-	98.4	43.0	11.9	94.7	-	11.3	142	88.2	80.4	4.92	43.5	37	1.44	162
TR20661	-	93.4	38.6	11.5	97.3	-	10.9	171	88.1	79.4	4.97	45.6	35	1.46	169
INDIAN HEAD															
CDC Copeland	61.5	93.5	46.7	12.2	76.1	3.0	12.0	155	88.4	80.9	5.02	41.9	99	1.45	169
AAC Synergy	77.7	96.1	48.3	11.6	76.2	2.7	12.2	173	98.8	80.9	5.13	42.1	68	1.42	172
TR20661	62.2	93.7	46.1	12.7	78.6	3.7	13.2	218	108.6	79.3	5.82	44.2	60	1.42	197
HALKIRK															
CDC Copeland	51.4	89.7	44.7	12.3	71.4	14.7	12.5	156	70.9	79.3	5.09	40.6	77	1.46	176
AAC Synergy	66.2	94.4	46.3	10.9	77.7	21.5	11.6	146	76.1	82.1	5.37	46.2	72	1.45	186
TR20661	52.6	87.7	44.7	11.6	79.4	13.6	11.4	201	92.0	80.9	5.48	48.1	61	1.44	204
2021															
BRANDON															
CDC Copeland	-	95.3	40.8	12.3	-	-	12.3	155	76.8	80.0	5.26	42.9	95	1.44	198
AAC Synergy	-	97.4	42.9	12.4	-	-	11.2	157	98.2	80.9	5.56	49.6	34	1.40	234
TR20661	-	95.2	40.0	11.2	-	-	10.4	175	99.0	80.4	5.42	52.2	25	1.40	231
LETHBRIDGE-IRR															
CDC Copeland	72.8	97.3	49.2	11.0	89.1	4.2	11.0	137	66.2	81.8	4.97	45.3	133	1.47	170
AAC Synergy	68.3	96.0	48.8	10.5	87.6	5.5	10.9	137	73.7	81.9	4.86	44.8	137	1.46	159
TR20661	67.5	96.1	46.1	10.4	95.3	4.1	10.7	181	84.2	81.6	5.06	47.2	74	1.43	184
GLASLYN															
CDC Copeland	15.4	92.0	38.6	13.1	82.8	4.9	13.4	160	68.9	77.2	5.47	40.8	73	1.40	206
AAC Synergy	52.7	94.2	43.8	13.5	63.0	4.8	13.5	157	75.0	78.6	5.40	40.1	77	1.40	199
TR20661	30.3	91.5	41.4	12.5	82.0	6.4	13.5	199	71.3	78.5	5.71	42.2	72	1.41	233

2020-2021 Mean

CDC Copeland	50.3	93.6	43.4	12.2	87.8	6.7	12.1	150	72.5	79.5	5.09	42.0	97	1.45	176
AAC Synergy	66.2	96.1	45.5	11.8	79.8	8.6	11.8	152	85.0	80.8	5.21	44.4	71	1.43	185
TR20661	53.2	92.9	42.8	11.7	86.5	6.9	11.7	191	90.5	80.0	5.41	46.6	55	1.43	203

2020-2021 Standard Deviation

CDC Copeland	24.8	2.6	4.1	0.7	7.9	5.4	0.8	11	8.9	1.7	0.26	1.9	22	0.03	24
AAC Synergy	10.3	1.6	2.7	1.1	12.1	8.7	0.9	13	11.7	1.3	0.28	3.3	37	0.03	28
TR20661	16.4	3.0	3.3	0.9	9.0	4.6	1.3	18	12.8	1.2	0.34	3.5	20	0.02	26

Table 5. Malting quality data for TR20661 from the 2021 and 2022 Barley Collaborative Trials (2021 means of Saskatoon and Hamiota; 2022 means of Lacombe, Lethbridge, Neapolis, Saskatoon, Melfort, and Brandon)

Entry	Barley			Malt					Wort					
	>6/64	TKW	Protein	Friability	P&B	Protein	DP	Alpha-Amylase	Fine Extract	Soluble Protein	S/T Ratio	β- Glu.	Visc	FAN
	%	g	%	%	%	%	°L	D.U.	%	%	%	mg/L	cP	mg/L
2021 Mean														
CDC Copeland	97.1	15.1	0.7	76.2	1.2	15.1	191	80.6	78.4	5.41	35.8	175	1.46	198
AAC Synergy	96.2	13.4	1.1	87.5	1.2	13.7	183	93.9	79.8	5.04	36.8	109	1.42	182
TR20661	97.0	13.5	1.2	88.9	1.9	12.9	212	76.5	79.7	5.64	44.2	156	1.46	231
2021 Standard Deviation														
CDC Copeland	1.5	0.0	-	-	-	1.2	32	7.8	0.3	1.13	4.7	60	0.04	47
AAC Synergy	0.9	0.5	-	-	-	0.1	34	19.4	0.0	0.79	5.4	38	0.04	38
TR20661	0.4	1.7	-	-	-	1.2	61	20.4	1.3	0.81	10.1	105	0.06	98
2022 Mean														
CDC Copeland	95.9	11.7	3.3	90.0	5.7	11.4	154	65.0	80.7	4.86	42.0	75	1.47	203
AAC Synergy	96.9	12.1	2.9	88.4	7.3	11.6	160	77.8	81.7	5.15	44.2	64	1.45	215
TR20661	95.4	11.8	2.5	91.2	3.7	11.7	192	76.2	81.1	5.12	43.6	78	1.45	217
2022 Standard Deviation														
CDC Copeland	10.0	1.0	3.8	5.5	4.3	0.9	11	5.2	1.1	0.36	3.8	34	0.02	26
AAC Synergy	6.4	0.8	3.8	8.2	5.8	1.1	19	11.4	1.1	0.30	4.4	35	0.03	37
TR20661	11.7	1.2	1.7	3.0	2.9	1.2	23	10.5	1.3	0.36	5.4	36	0.03	38
2021-2022 Mean														
CDC Copeland	96.2	12.7	2.8	87.7	4.2	12.3	163	68.9	80.1	5.00	40.4	100	1.46	202
AAC Synergy	96.7	12.4	2.5	88.3	5.3	12.1	165	81.3	81.2	5.12	42.3	75	1.44	207
TR20661	95.8	12.3	2.0	90.8	3.1	12.1	197	76.3	80.6	5.29	43.8	104	1.45	222
2020-2021 Standard Deviation														
CDC Copeland	1.8	1.8	3.5	7.5	4.0	1.9	23	9.0	1.4	0.58	4.7	59	0.03	28
AAC Synergy	1.2	0.9	3.4	7.4	5.4	1.4	23	14.2	1.3	0.39	5.4	39	0.03	38
TR20661	1.8	1.5	1.5	2.8	2.3	1.2	36	13.5	1.4	0.56	6.6	71	0.04	58