

AAC Connect

Highlights:

- ✿ Very heavy, plump kernels
- ✿ High extract yield
- ✿ Moderate enzyme and FAN levels
- ✿ High brewhouse efficiency
- ✿ High attenuation limit

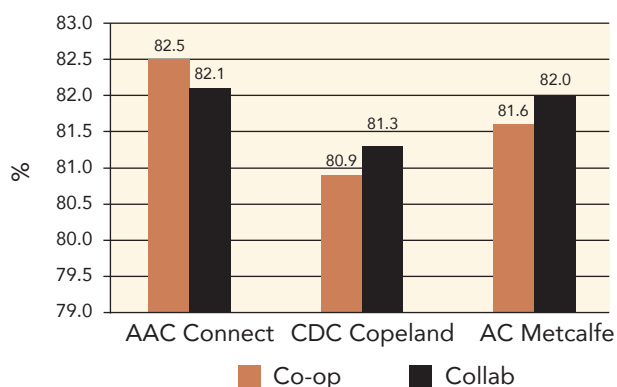
AAC Connect is a spring two-row, hulled malting barley variety, registered in Canada in 2016. A cross of TR04282 and BM9831D-229; it was developed by Dr. Bill Legge at the Brandon Research Centre, Agriculture and Agri-Food Canada.

All barley varieties in Canada undergo a rigorous process of evaluation prior to registration, and are required to meet minimum agronomic, disease and quality standards established by check varieties. The following are highlights of the results of the Cooperative and Collaborative trials¹ taken from the breeder's registration application.

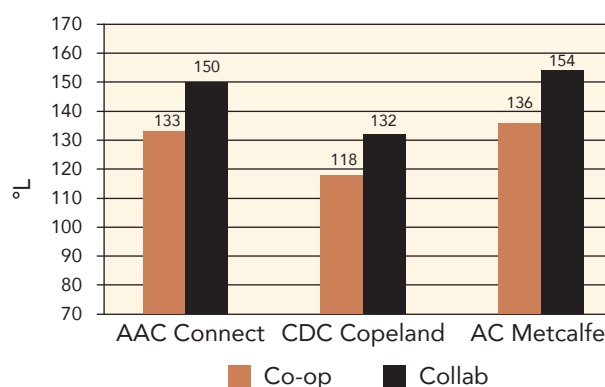
Malting Quality Traits:

- Extract yield higher than AC Metcalfe and CDC Copeland
- Kolbach Index higher than AC Metcalfe and CDC Copeland
- Malt enzyme levels lower than AC Metcalfe, higher than CDC Copeland
- FAN levels higher than CDC Copeland and lower than AC Metcalfe
- Malt β -glucan content lies between AC Metcalfe and CDC Copeland
- Malt colour higher than AC Metcalfe and CDC Copeland
- Conversion time quicker than CDC Copeland and comparable to AC Metcalfe
- Higher attenuation limit than AC Metcalfe and comparable to CDC Copeland

Fine Extract



Diastatic Power



Agronomic Traits:

- 11% higher yield than AC Metcalfe; 5% higher than CDC Copeland
- Shorter and stronger straw than AC Metcalfe and CDC Copeland
- Heavier and plumper kernels than AC Metcalfe and CDC Copeland
- Maturity date similar to AC Metcalfe
- Resistance to spot-form net blotch, surface-borne smuts and stem rust
- Moderate resistance to FHB with significantly lower DON accumulation than AC Metcalfe and CDC Copeland

¹ Near the end of the breeding cycle, selected lines enter the "Cooperative" testing program, coordinated by breeders, for two years where they are grown in up to 20 sites across the prairies alongside check varieties (AC Metcalfe, CDC Copeland and AAC Synergy). After the first-year, the best lines from Cooperative trials also enter the "Collaborative" testing program grown at 8 sites across the prairies alongside the same check varieties for two years (coordinated by the Brewing & Malting Barley Research Institute). Cooperative and Collaborative test samples are evaluated for malting quality through micro-malting trials. Results are presented to the Prairie Registration Committee for Oats and Barley (PRCOB) leading to the recommendations for registration by the Canadian Food Inspection Agency.

CMBTC PILOT SCALE MALTING AND BREWING RESULTS

Once varieties have been registered in Canada and supply begins to be scaled up by the corresponding seed company responsible for commercializing the variety or by a contracting party, representative barley samples are sent to the CMBTC for pilot scale malting and brewing trials under standard processing conditions ^{2,3}.

The data below represents average results generated by pilot scale trials at the CMBTC for samples of AAC Connect and the controls (AC Metcalfe and CDC Copeland) over five years from 2015 - 2019. Range figures are derived from annual data.

Malting Performance

AAC Connect barley performs well in the malting process. The malt exhibits very high extract yield that is higher than both CDC Copeland and AC Metcalfe and has good enzyme levels that are slightly lower than AC Metcalfe and higher than CDC Copeland. Soluble protein is higher than both control varieties, while FAN levels are higher than CDC Copeland and lower than AC Metcalfe. β -glucan levels fall between that of CDC Copeland (higher) and AC Metcalfe (lower).

Table 1. Comparative Malt Quality Parameters

	AAC Connect		CDC Copeland		AC Metcalfe	
	5 yr average (n=16)	5 yr range (n=16)	5 yr average (n=99)	5 yr range (n=99)	5 yr average (n=101)	5 yr range (n=101)
Fine Extract, %	82.8	81.7 – 84.9	81.6	78.7 – 83.8	82.0	79.3 – 83.9
Color, EBC	4.78	2.96 – 7.12	3.68	1.66 – 6.91	4.39	2.30 – 8.92
Color, ASBC	2.26	1.57 - 3.14	1.84	1.08 - 3.06	2.11	1.30 - 3.80
Total Protein, %	11.55	9.6 – 12.9	11.56	9.40 – 13.41	11.84	9.75 – 13.32
Soluble Protein, %	5.35	4.43 – 6.43	4.86	3.84 – 5.80	5.14	4.25 – 6.20
Kolbach Index, %	46.7	34.7 – 59.2	42.3	30.4 – 50.8	43.4	34.7 – 51.9
Diastatic Power, WK	483	380 – 579	455	334 – 600	516	336 – 586
Diastatic Power, °L	143	113 - 170	135	100 - 176	152	109 - 172
Wort β -glucan, ppm	124	77 – 194	117	56 - 372	139	60 – 341
FAN, ppm	202	153 – 251	191	128 – 253	214	158 – 279

² **Malting process conditions:** Steep: 38-42 hours at 14-15°C; Germination: up to 96 hours @14-16°C; Kiln: 21 hours with cure temperature @80-82°C for up to 4 hours.

Brewhouse Performance

AAC Connect performs well in the brewhouse. Conversion time, time for wort to clear to <100 FTU during vorlauf and runoff time are all comparable to AC Metcalfe and CDC Copeland with the exception of AAC Connect having a slightly quicker conversion time than CDC Copeland. Wort colour is slightly darker than CDC Copeland and comparable to AC Metcalfe. Although its brewhouse efficiency is slightly lower than AC Metcalfe and CDC Copeland, its attenuation limit is comparable to CDC Copeland and significantly higher than AC Metcalfe.

Table 2. Comparative Brewing Quality Parameters

	AAC Connect		CDC Copeland		AC Metcalfe	
	5 yr average (n=17)	5 yr range (n=17)	5 yr average (n=65)	5 yr range (n=65)	5 yr average (n=77)	5 yr range (n=77)
Conversion Time, min.	14	7 – 25	18	7 - 26	15	6 - 22
Time to Clear During Vorlauf, min.	7	5 – 10	6	2 - 9	6	2 - 11
Runoff Time, min.	50	38 - 66	49	40 - 55	49	40 - 58
Wort Colour, SRM	3.97	2.86 – 6.13	3.39	2.29 - 7.03	4.04	2.59 - 6.67
Brewhouse Efficiency, %	91.8	85.9 – 95.1	92.3	87.8 - 96.1	92.6	85.9 - 96.5
Attenuation Limit, %	88.8	84.9 – 92.1	88.6	80.6 - 92.4	86.7	79.6 - 90.4

³ **Brewing process conditions:** Mash for 30 min. @ 48°C, 30 min. @65°C, 1 min. @77°C using 3.75:1 Water grist ratio. 135L sparge. 90 min. boil. 15 min. whirlpool rest.