AAC Synergy

Highlights:

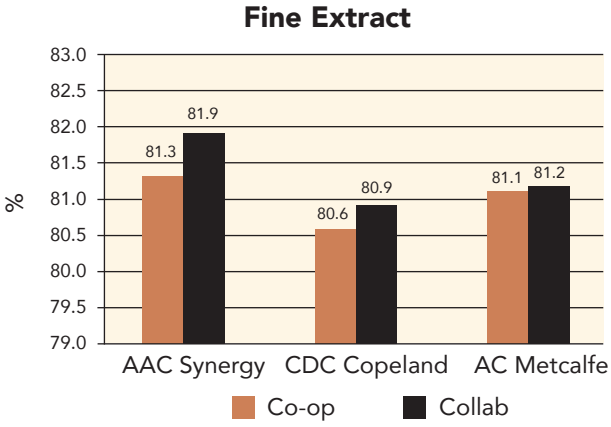
- Moderate grain protein content
- Heavy, plump kernels
- High-extract yield
- Low β-glucan content
- High attenuation limit

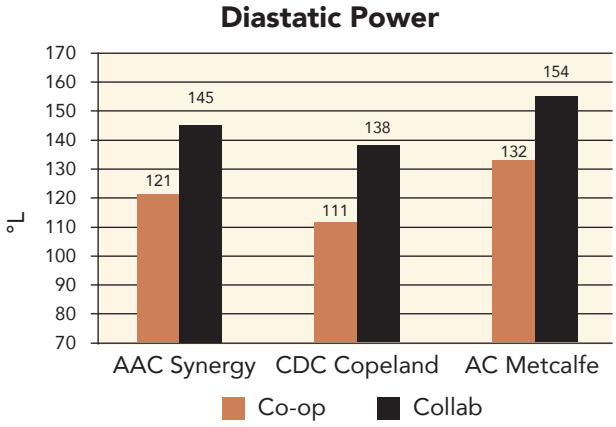
AAC Synergy is a two-row, spring, hulled malting barley variety registered in Canada in 2012. A cross of TR02267 and Newdale, it was developed by Dr. Bill Legge at the Brandon Research Centre, Agriculture and Agri-Food Canada.

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 trials[1] taken from the breeder's registration application.

Malting Quality Traits:

- Extract yield greater than both CDC Copeland and AC Metcalfe
- Lower β-glucan and viscosity than AC Metcalfe and CDC Copeland
- Enzymes comparable to CDC Copeland, lower than AC Metcalfe
- Comparable FAN to CDC Copeland, lower than AC Metcalfe
- Quicker conversion time than AC Metcalfe and comparable to CDC Copeland
- Attenuation limit higher than AC Metcalfe and comparable to CDC Copeland





Agronomic Traits:

- 13% higher yield than AC Metcalfe, 7% 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 and CDC Copeland
- Resistance to spotted net blotch, netted net blotch and spot blotch

[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 & 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 Synergy and the controls (AC Metcalfe and CDC Copeland) over five years from 2015 - 2019. Range figures are derived from annual averages.

Malting Performance

AAC Synergy malt exhibits very high extract yield. Enzyme levels are lower than CDC Copeland and AC Metcalfe. Soluble protein is higher than CDC Copeland and lower than AC Metcalfe while KI is higher than both controls, suggesting good protein solubilization. FAN levels are closer to CDC Copeland and lower than AC Metcalfe.

Table 1. Comparative Malt Quality Parameters

	AAC Synergy		CDC Copeland		AC Metcalfe	
	5 yr average (n=27)	5 yr range (n=27)	5 yr average (n=99)	5 yr range (n=99)	5 yr average (n=101)	5 yr range (n=101)
Fine Extract, %	82.3	80.7 – 83.6	81.6	78.7 – 83.8	82.0	79.3 – 83.9
Color, EBC	4.33	2.40 – 6.99	3.68	1.66 – 6.91	4.39	2.30 – 8.92
Color, ASBC	20.9	1.36 - 3.09	1.84	1.08 - 3.06	2.11	1.30 - 3.80
Total Protein, %	11.12	8.3 – 13.2	11.56	9.40 – 13.41	11.84	9.75 – 13.32
Soluble Protein, %	5.00	3.72 – 6.04	4.86	3.84 – 5.80	5.14	4.25 – 6.20
Kolbach Index, %	44.9	35.7 – 53.1	42.3	30.4 – 50.8	43.4	34.7 – 51.9
Diastatic Power, WK	428	327 – 520	455	334 – 600	516	336 – 586
Diastatic Power, °L	127	98 - 153	135	100 - 176	152	109 - 172
Wort β-glucan, ppm	108	54 – 207	117	56 - 372	139	60 – 341
FAN, ppm	195	141 – 253	191	128 – 253	214	158 – 279

[2] **Malting process conditions:** Steep: 41-45 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 Synergy performs well in the brewhouse. Its runoff time is comparable to AC Metcalfe and CDC Copeland. While conversion time is quicker than CDC Copeland and comparable to AC Metcalfe, time for wort to clear to <100 FTU during vorlauf is slightly longer than both CDC Copeland and AC Metcalfe. Wort colour is slightly darker than CDC Copeland and comparable to AC Metcalfe. While brewhouse efficiency is lower than AC Metcalfe and CDC Copeland, its attenuation limit is comparable to CDC Copeland and greater than AC Metcalfe.

Table 2. Comparative Brewing Quality Parameters

	AAC Synergy		CDC Copeland		AC Metcalfe	
	5 yr average (n=21)	5 yr range (n=21)	5 yr average (n=65)	5 yr range (n=65)	5 yr average (n=77)	5 yr range (n=77)
Conversion Time, min.	15	10 – 22	18	7 - 26	15	6 - 22
Time to Clear During Vorlauf, min.	8	5 - 10	6	2 - 9	6	2 - 11
Runoff Time, min.	49	42 - 55	49	40 - 55	49	40 - 58
Wort Colour, SRM	3.88	2.44 – 5.83	3.39	2.29 - 7.03	4.04	2.59 - 6.67
Brewhouse Efficiency, %	91.6	86.1 – 95.5	92.3	87.8 - 96.1	92.6	85.9 - 96.5
Attenuation Limit, %	88.8	83.0 – 91.5	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.

For more information: **Peter Watts** - Managing Director Tel: 204-983-1981 E-mail: pwatts@cmbtc.com
Dr. Yueshu Li - Director of Malting & Brewing Operations Tel: 204-984-0561 E-mail: yli@cmbtc.com