AAC Synergy

Highlights:

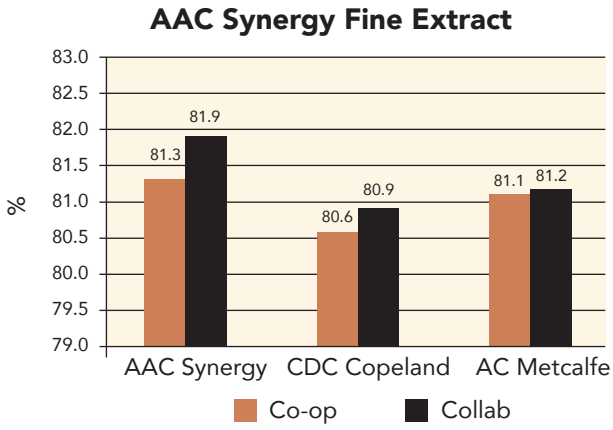
- ☆ Moderate grain protein content
- ☆ High extract
- ☆ Heavy, plump kernels
- ☆ High-extract yield
- ☆ Low beta-glucan content
- ☆ Good brewhouse performance and fermentability

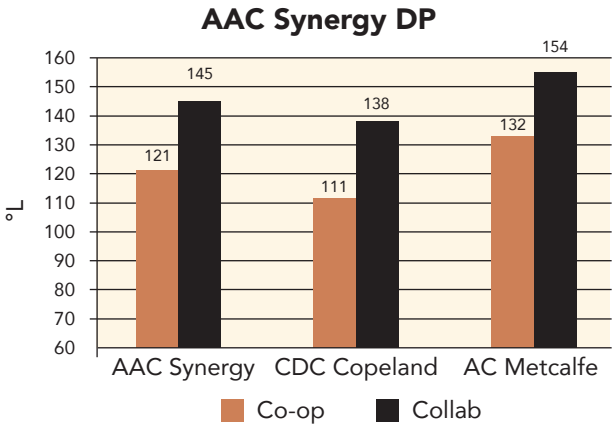
AAC Synergy is a two-row, spring, hulled malting barley variety registered in Canada in 2012. A cross of TR02267 and Newdale, it was developed by Dr. Bill Legge at the Brandon Research Centre, Agriculture and Agri-Food Canada.

Canadian malting barley varieties undergo a rigorous evaluation process prior to the registration. The following are highlights of the results of the Cooperative and Collaborative trials taken from the breeder's registration application[1].

Malting quality traits:

- Extract yield greater than both CDC Copeland and AC Metcalfe
- Lower beta-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
- Good brewhouse performance and fermentability





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].

AAC Synergy Results in CMBTC Pilot Scale Trials

The data below represents average results generated by pilot scale trials at the CMBTC for samples of AAC Synergy over four years from 2014-2018 crop years. In the case of controls, the data represents five-year averages (2014-2018). Range figures were derived from annual averages.

Table 1: Comparative malt quality parameters

AAC Synergy malt exhibited very high extract yield. Enzyme levels were comparable to CDC Copeland and lower than AC Metcalfe. Soluble protein and KI were comparable to CDC Copeland and lower than AC Metcalfe, suggesting good protein solubilization. FAN levels were comparable to CDC Copeland and lower than AC Metcalfe.

	AAC Synergy		CDC Copeland		AC Metcalfe	
	5 yr average (n=19)	5 yr range (n=19)	5 yr average (n=74)	5 yr range (n=74)	5 yr average (n=82)	5 yr range (n=82)
Fine Extract, %	81.9	80.7 – 83.4	81.8	80.1 – 83.8	82.0	80.6 – 83.1
Color, EBC	4.05	2.40 – 6.54	3.73	2.19 – 5.8	4.39	2.67 – 6.56
Color, ASBC	1.98	1.36 - 2.92	1.86	1.28 - 2.64	2.11	1.46 - 2.93
Total Protein, %	11.2	8.3 – 12.3	11.22	9.4 – 12.5	11.7	9.75 – 13.0
Soluble Protein, %	4.85	3.72 – 5.67	4.91	3.93 – 5.70	5.21	4.25 – 5.99
Kolbach Index	43.5	35.7 – 47.4	43.8	36.5 – 49.7	44.5	37.4 – 50.4
Diastatic Power, WK	417	367 – 479	443	327 – 510	500	443 – 560
Diastatic Power, L	129	114 - 153	137	102 - 157	154	137 - 172
Wort Beta-glucan, ppm	99	54 – 166	100	56 - 182	119	60 – 199
FAN, ppm	198	141 – 253	203	160 – 244	223	173 – 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.

Table 2: Comparative malt quality parameters

The malt processed well in the brewhouse. Conversion time, time to clear and runoff time were all comparable to CDC Copeland and AC Metcalfe. Wort colour was lower (lighter) than both CDC Copeland and AC Metcalfe. Although brewhouse efficiency was lower, attenuation limit was greater than both CDC Copeland and AC Metcalfe.

	AAC Synergy		CDC Copeland		AC Metcalfe	
	5 yr average (n=13)	5 yr range (n=13)	5 yr average (n=58)	5 yr range (n=58)	5 yr average (n=78)	5 yr range (n=78)
Conversion Time (min.)	16	11 – 19	17	7 - 33	14	6 - 22
Time to Clear (min.)	7	5 - 10	7	4 - 16	6	2 - 9
Runoff Time (min.)	50	47 - 55	49	40 - 55	49	40 - 58
Wort Colour (SRM)	3.89	2.44 – 5.36	3.71	2.29 - 7.03	4.37	2.59 - 10.11
Brewhouse Yield (min.)	71.3	69.0 – 73.4	71.5	66.5 - 74.1	71.8	66.5 - 75.2
Brewhouse Efficiency (%)	87.9	85.9 – 90.5	88.4	84.9 - 91.8	88.6	82.7 - 92.0
Attenuation Limit (%)	89.5	86.0 – 91.5	88.5	80.6 - 91.5	86.9	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.

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