# CDC Fraser

## Highlights:

- ☆ Moderate grain protein content
- ☆ High extract yield
- ☆ High enzyme levels
- ☆ High FAN
- ☆ Very high grain yield
- ☆ Good disease resistance

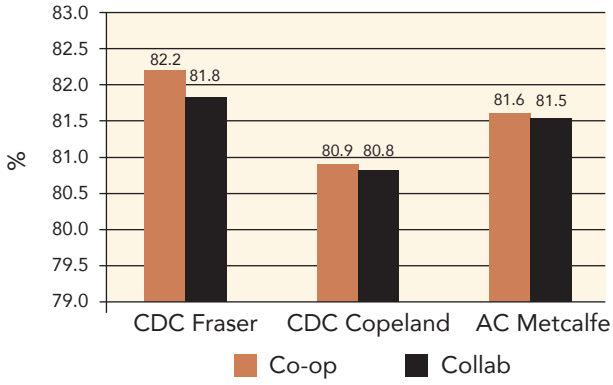
**CDC Fraser** is a two-row, hulled malting barley variety registered in Canada in 2016. A cross of TR04280 x SM04261, it was developed by Dr. Aaron Beattie at the Crop Development Centre, University of Saskatchewan.

As per the registration requirement, this barley has undergone a rigorous evaluation process prior to the registration. The following are highlights of the results of the Cooperative and Collaborative trials[1] taken from the breeder's registration application.

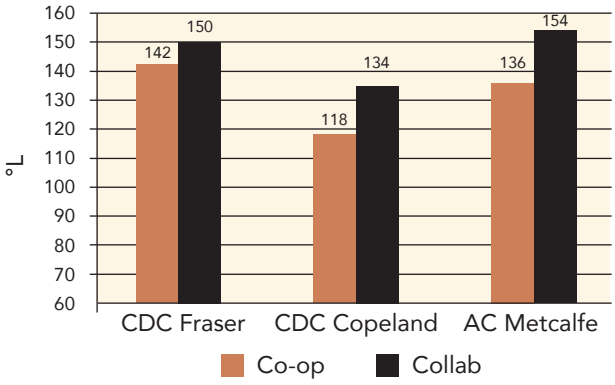
## Malting quality traits:

- Extract yield significantly higher than CDC Copeland and AC Metcalfe
- Enzyme levels higher than CDC Copeland, similar to AC Metcalfe
- FAN levels higher than CDC Copeland, similar to AC Metcalfe
- Beta-glucan lower than both AC Metcalfe and CDC Copeland
- Brewhouse yield, brewhouse efficiency and attenuation limit were all greater than CDC Copeland and AC Metcalfe.

**CDC Fraser Fine Extract**




**CDC Fraser DP**




## Agronomic traits:

- Moderate grain protein, similar to CDC Copeland
- Yields 14% higher than AC Metcalfe and 8% higher than CDC Copeland
- Shorter and stronger straw with good resistance to lodging
- High kernel weight and plumpness
- Good resistance to spot blotch and spot-form net blotch
- Maturity date similar to 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 & 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].

## CDC Fraser Results in CMBTC Pilot Scale Trials

The data below represents average results generated by pilot scale trials[2] at the CMBTC for samples of 2017 and 2018 crop CDC Fraser. 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

The malt exhibited very good extract yield with enzymes higher than CDC Copeland and close to AC Metcalfe. Soluble protein comparable to CDC Copeland and lower than AC Metcalfe; FAN levels lower than AC Metcalfe and CDC Copeland. Beta-glucan content was higher than CDC Copeland and comparable to AC Metcalfe.

| | CDC Fraser | | CDC Copeland | | AC Metcalfe | |
|---|---|---|---|---|---|---|
| | 2 yr average (n=2) | 2 yr range (n=2) | 5 yr average (n=74) | 5 yr range (n=74) | 5 yr average (n=82) | 5 yr range (n=82) |
| Fine Extract, % | 81.9 | 80.9 – 82.8 | 81.8 | 80.1 – 83.8 | 82.0 | 80.6 – 83.1 |
| Color, EBC | 4.07 | 3.65 – 4.49 | 3.73 | 2.19 – 5.8 | 4.39 | 2.67 – 6.56 |
| Color, ASBC | 1.99 | 1.83 - 2.15 | 1.86 | 1.28 - 2.64 | 2.11 | 1.46 - 2.93 |
| Total Protein, % | 11.7 | 11.5 – 11.8 | 11.22 | 9.4 – 12.5 | 11.7 | 9.75 – 13.0 |
| Soluble Protein, % | 4.81 | 4.27 – 5.34 | 4.91 | 3.93 – 5.70 | 5.21 | 4.25 – 5.99 |
| Kolbach Index | 41.1 | 37.1 – 45.1 | 43.8 | 36.5 – 49.7 | 44.5 | 37.4 – 50.4 |
| Diastatic Power, WK | 476 | 427 – 503 | 443 | 327 – 510 | 500 | 443 – 560 |
| Diastatic Power, L | 144 | 132 - 155 | 137 | 102 - 157 | 154 | 137 - 172 |
| Wort Beta-glucan, ppm | 120 | 56 – 183 | 100 | 56 - 182 | 119 | 60 – 199 |
| FAN, ppm | 184 | 171 – 197 | 203 | 160 – 244 | 223 | 173 – 279 |

[2] **Malting Process conditions:** Steep: 44-46 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 exhibited very good extract yield with enzymes higher than CDC Copeland and close to AC Metcalfe. Soluble protein comparable to CDC Copeland and lower than AC Metcalfe; FAN levels lower than AC Metcalfe and CDC Copeland. Beta-glucan content was higher than CDC Copeland and comparable to AC Metcalfe.

| | CDC Fraser | | CDC Copeland | | AC Metcalfe | |
|---|---|---|---|---|---|---|
| | 2 yr average (n=2) | 4 yr range (n=2) | 5 yr average (n=58) | 5 yr range (n=58) | 5 yr average (n=78) | 5 yr range (n=78) |
| Conversion Time (min.) | 15 | 14 – 15 | 17 | 7 - 33 | 14 | 6 - 22 |
| Time to Clear (min.) | 7 | 7 | 7 | 4 - 16 | 6 | 2 - 9 |
| Runoff Time (min.) | 46 | 45 - 46 | 49 | 40 - 55 | 49 | 40 - 58 |
| Wort Colour (SRM) | 1.99 | 1.83 – 2.15 | 3.71 | 2.29 - 7.03 | 4.37 | 2.59 - 10.11 |
| Brewhouse Yield (min.) | 73.5 | 73.1 – 73.8 | 71.5 | 66.5 - 74.1 | 71.8 | 66.5 - 75.2 |
| Brewhouse Efficiency (%) | 94.0 | 89.6 – 92.5 | 88.4 | 84.9 - 91.8 | 88.6 | 82.7 - 92.0 |
| Attenuation Limit (%) | 89.2 | 88.8 – 89.7 | 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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