

# CDC Bow

**CDC Bow** is a two-row, hulled malting barley variety registered in Canada in 2016. A cross of SM04261 x TR05285, it was developed by Dr. A. Beattie, Dr. B.G. Rosnagel and T. Zatorski at the Crop Development Centre, University of Saskatchewan.

## Highlights:

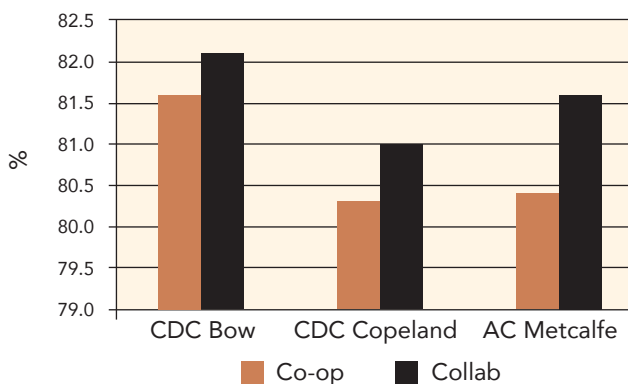
- ★ 9% higher yield than AC Metcalfe
- ★ Barley protein content comparable to CDC Copeland
- ★ Higher soluble protein and FAN levels than AC Metcalfe and CDC Copeland
- ★ Enzyme levels higher than CDC Copeland, comparable to AC Metcalfe
- ★ Good overall brewhouse performance

Canadian malting barley varieties undergo a rigorous process of evaluation prior to registration. The following are highlights of the Cooperative and Collaborative Trial results taken from the breeder's registration application.<sup>1</sup>

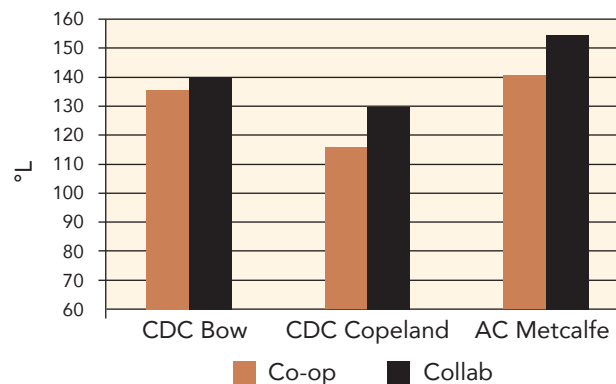
### Malting quality traits:

- Extract yield higher than CDC Copeland and AC Metcalfe
- High friability
- Higher soluble protein and FAN levels than AC Metcalfe and CDC Copeland
- Higher colour than CDC Copeland
- Enzyme levels higher than CDC Copeland
- Lower beta-glucan than AC Metcalfe and CDC Copeland

**CDC Bow Fine Extract**



**CDC Bow DP**



### Agronomic traits:

- 9% higher yield than AC Metcalfe
- Stronger straw and good resistance to lodging
- Higher kernel weight and improved plumpness
- Grain protein content comparable to CDC Copeland
- Exhibited resistance to covered smut and stem rust

Variety	Year of Registration	Yield Index (% of AC Metcalfe grain yield)	Date to Maturity (+/- AC Metcalfe)	Lodging Rating	FHB Resistance*
AC Metcalfe	1997	100	0	Good	Intermediate
CDC Copeland	2003	108	1	Good	Intermediate
CDC Bow	2017	109	1	Excellent	Moderately Susceptible

## CMBTC PILOT SCALE MALTING & BREWING RESULTS

Once varieties have been registered in Canada and supply begins to be scaled up by the seed company responsible for commercializing the variety, or by a contracting party, samples are sent to the CMBTC for pilot scale malting and brewing trials conducted under standard process conditions.

**Malting Process conditions:** Steep: 36-42 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.

**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.

### CDC Bow Results in CMBTC Pilot Scale Trials

The data below represents average results generated by pilot scale trials at the CMBTC for samples of 2016 crop CDC Bow. In the case of controls, the data represents five-year averages (2012-2016). Range figures derived from annual averages.

#### Comparative malt quality parameters

The malt exhibited very good extract yield with enzymes higher than CDC Copeland and AC Metcalfe. Soluble protein and FAN levels also higher than AC Metcalfe and CDC Copeland. Lower beta-glucan than both controls.

	CDC Bow		CDC Copeland		AC Metcalfe	
	Avg	Range	5 yr avg	5 yr range	5 yr avg	5 yr range
Fine Extract, %	81.5	81.0 – 81.9	81.6	81.0 – 82.4	81.6	80.9 – 82.5
Color, EBC	4.87	4.8 – 4.9	4.2	3.8 – 4.4	4.9	4.6 – 5.8
Total Protein, %	11.6	10.9 – 12.3	11.3	10.8 – 11.7	12.0	11.5 – 12.6
Soluble Protein, %	5.62	5.4 – 5.9	5.14	5.0 – 5.4	5.40	5.30 – 5.56
Kolbach Index	48.6	47.6 – 49.5	46.1	44 – 48	45.0	43 – 48
Diastatic Power,	152	137 – 167	129	126 – 139	152	145 – 160
Wort Beta-glucan, ppm	118	78 – 158	119	85 - 198	149	137 – 170
FAN, ppm	264	254 – 273	212	182 – 230	223	204 – 247

#### Comparative brewing quality parameters

Runoff and time to clear for CDC Bow were longer than the 5-year CDC Copeland and AC Metcalfe averages, while conversion time was quicker. Brewhouse yield and efficiency were both good, with excellent attenuation limit.

Parameter	CDC Bow Average	CDC Copeland Average	AC Metcalfe Average
Conversion Time (min.)	12	19	13
Time to Clear (min.)	9	7	7
Runoff Time (min.)	51	46	46
Wort Colour (SRM)	5.04	4.25	4.95
Brewhouse Yield (min.)	70.7	69.1	71.3
Brewhouse Efficiency (%)	87.6	86.2	88.7
Attenuation Limit (%)	90.1	89.0	86.7

<sup>1</sup> Near the end of the breeding cycle, selected lines enter the "Cooperative" testing program, coordinated by breeders, for 2 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 better lines 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 recommendations for registration by the Canadian Food Inspection Agency.