

2011 North American Barley Researchers Workshop

The road to quality hulless malting barley - Where to now?

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History of hulless barley for malting in Canada

Hulless barley, with its high level of digestible energy for feeding or high level of malt extract for brewing, has always intrigued end users of barley. In western Canada hulless barley first came into prominence with the registration in 1985 of Scout, a hulless feed barley variety. Several more feed varieties were to follow, many with inherent problems of adhering hulls which, along with poor price discovery, limited the commercial success of hulless barley for feed.

Investigations into the malting potential of hulless barley began in 1995. Results indicated a significant increase in extract level, which was encouraging, but problems with adhering hulls, high levels of wort β -glucan and low friability were a concern (Table 1). Commercial brewers were attracted to the high extract level along with reduced amounts of spent grain and lower transportation costs for hulless barley but showed limited commercial interest.

Table 1. Malt quality in original hulless study.

	Malt Extract (%)	Wort β -glucan (ppm)	Friability (%)
Harrington	79.4	115	86.6
Hulless barley malt*	83.9	750	35.0

*average 22 hulless breeder lines (1995)

As mash filters became more common, however, the lure of high extracts peaked the interest of one international brewer and they tried some small commercial trials with hulless barley malt. They were encouraged by the results which provided stimulus to continue the development of hulless malting barley in Canada. Canadian breeders began making specific crosses for improving the malt potential of hulless barley but quality objectives for breeding were still not well defined.

Timelines for development of hulless barley for malting in Western Canada

1985

Scout released; 1st Canadian hulless (feed) barley



Numerous hulless feed barley varieties released in the 1990's
Condor, Falcon, AC Bacon, CDC Dawn, CDC McGwire

1995

International brewers investigate hulless barley malt from Canada



2000

Industry suggests breeders concentrate on:
Adhering hulls (low)
Grain protein (low)
Malt extract (high)
Wort β -glucan (low)

Release of hulless barley varieties specifically for malting
CDC ExPlus
Taylor



2005



Specialized malts produced commercially from Canadian hulless barley

2010

Hulless Barley varieties bred specifically for malting are now registered
Industry must now test and demonstrate commercial demand

Future of hulless barley for malting

The future of hulless barley for malt was given a boost when the malting and brewing industry indicated high extracts was their only interest in hulless barley malt. They suggested breeders limit their quality objectives to reducing adhering hulls, lowering grain protein, increasing malt extract, and decreasing wort β -glucan. Enzymes, soluble protein and other commonly analysed malt parameters were not to be a concern. Any commercial use of hulless barley malt would be limited to blends with covered malts, and the covered malts would supply all the necessary enzymes and soluble protein.

Breeders have since concentrated on improving these specific aspects of quality, along with agronomic and pathological objectives, and the first hulless barley varieties bred specifically for malting were registered in 2009 (CDC ExPlus, Taylor).

Table 2. Malt quality of recently released hulless barley varieties.

	Grain Protein (% dm)	Malt Extract (%)	Wort β -glucan (ppm)
CDC McGwire	9.2	88.3	364
CDC ExPlus	9.5	89.2	130
Taylor	9.6	89.7	83
HB08304*	9.1	90.7	88

* recommended for registration 2011

Despite the availability of hulless barley varieties with exceptional malt quality potential (Table 2), commercial demand has been limited. Large commercial maltsters and brewers remain skeptical due to potential processing concerns, such as stickiness of hulless barley during processing and acrospire loss; the need for separate storage bins and general conservatism.

Micro brewers have shown some interest in this unique product and commercial quantities of specialty malts were recently produced from Canadian hulless barley. Hulless barley malt, however, will only become a commercial success if the malting and brewing industries pursue the full processing potential of the new varieties, including potentially new markets such as the food industry and small brewers where the full marketing potential of this unique grain can be pursued.

