Barley

Malt Barley

Growing malt quality barley in western Canada is challenging due to the short growing season and variable climatic conditions. Research conducted by AAFC scientists shows agronomic management practices can favourably influence malt barley yield, quality and protein level.

- **Effect of preceding crop and nitrogen application on malting barley quality** – Dr. Breanne Tidemann
- **Effect of seeding date and rate on malting barley (Hordeum vulgare L.) quality** – Dr. Breanne Tidemann
- **Influence of production systems on return and risk from malting barley production in western Canada** – Dr. Elwin Smith
- **Relative responses of new malting barley cultivars to increasing nitrogen rates in western Canada** – Dr. Breanne Tidemann

In 2016, AAFC welcomed a new scientist, Breanne Tidemann. Breanne's hiring coincided with the retirement of Dr. John O'Donovan who had been leading malt barley research in western Canada for a number of years. During her PhD. tenure at AAFC Lacombe, Breanne participated in some of the malt barley agronomic research projects conducted by Dr. O'Donovan and is now reviewing the results of those projects for publication. We asked Breanne about the research results.

"Some of the general take-away messages of our research are that agronomic decisions can absolutely impact malt quality marketing assessments for producers selling grain, as well as the malting quality for maltsters and brewers. In particular, preliminary results of the research indicate that variety choice in combination with fertilization strategies can significantly affect a producer's ability to successfully grow malt quality barley. Additionally, while plant growth regulator applications could potentially aid in managing lodging (although results were inconsistent), negatives effects on days to maturity, kernel weight and percent plump kernels would suggest that applications may be riskier than initially anticipated. Using glyphosate as a desiccant is not supported by the industry for malting barley and our research highlights why - even with a structured..."
treatment profile there is no obvious way to determine high risk applications from low risk applications.

Future work is under consideration for funding to look at the effects of other agronomic decisions such as growing malting barley in rotation with pulses and paired row seeding.”

Feed Barley

Only a small portion of barley produced in western Canada is used for malt. In fact, most of the barley produced ends up as feed for livestock. However, whole grain barley requires treatment to allow and accelerate digestion by bacteria in the rumen of cattle. AAFC scientists are comparing different types of treatment to maximize barley’s nutritional value while maintaining low treatment costs.

- **Response of lactating dairy cows to degree of steam-flaked barley grain in low-forage diets** – Dr. WenZhu Yang
- **Effects of particle size of processed barley grain, enzyme addition and microwave treatment on in vitro disappearance and gas production for feedlot cattle** – Dr. Karen Beauchemin

Whole crop barley silage is one of the primary forages used in intensive farming operations in western Canada such as dairies and feedlots. AAFC researchers are investigating the nutritional value and digestibility of barley silage.

- **Comparison of barley silages with varying digestible fiber content to corn silage on rumen fermentation characteristics and microbial protein synthesis using rumen simulation technique** – Dr. WenZhu Yang
- **Ensiling barley cultivars selected for varied levels of in vitro neutral detergent fiber digestibility in mini and bunker silos to evaluate effects on fermentation** – Dr. Tim McAllister
- **Effect of variety and level of inclusion of barley varieties for silage selected to vary in neutral detergent fiber digestibility on performance and carcass characteristics of growing and finishing beef steers** – Dr. Tim McAllister

Fusarium Head Blight in Barley

Fusarium head blight is a fungal disease caused by several species of the pathogen *Fusarium*, which affects small grain cereal crops, like wheat and barley. The disease causes significant losses in both yield and grain quality and, for malt barley growers, the rejection of grains for malt production. AAFC scientists are working on evaluating resistance of different barley cultivars to the disease and are exploring options to improve resistance.

- **Inhibition of Fusarium graminearum and other Fusarium species by Cochliobolus sativus in culture and on barley plants** – Dr. Christof Rampitsch
- **Differential expression of proteins in response to the interaction between the pathogen Fusarium graminearum and its host, Hordeum vulgare** – Dr. François Eudes

New Varieties
New barley varieties were developed at the Agriculture and Agri-Food Canada Research and Development Centres in the Prairies

**Roseland** is a new two-row spring hullless food barley cultivar with excellent bread making qualities (Dr. Ana Badea).

**AAC Connect** is a two-row spring malting barley cultivar, has a desirable combination of agronomic, malting quality, and disease resistance traits (Dr. Ana Badea and James Tucker).

**AAC Synergy** is a two-row spring malting barley cultivar widely adapted to western Canada with excellent combination of agronomic traits, disease resistance and desirable malting quality traits (Dr. Ana Badea and James Tucker).

*Ce document est aussi disponible en français.

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