FIELD NOTES

Moving ahead



Industry will wait and see if Bill C-49 improves reliability for grain movement in Canada



Some good news came for the Western Canadian agriculture industry in late May, with the passing of Bill C-49.

The Bill, which amended the Canadian Transportation Act, included several provisions meant to improve the reliability and accountability of the Canadian grain transportation system.

Specific amendments in the Bill include improved interswitching options, the introduction of reciprocal penalties, and required public information from carriers including performance and service indicators.

Although the changes are a step in the right direction, they came later than the industry would have liked.

The impact of shortcomings in the system has been



particularly impactful to Western Canadian farmers.

A report published by the Saskatchewan Wheat Development Commission estimated farmer losses for 2013/14 and 2014/15 at approximately 6.5 billion dollars.

At SaskBarley, we have been working with partner organizations such as the Saskatchewan Wheat Development Commission and the Agricultural Producers Association of Saskatchewan for years to lobby for changes to the transportation system.

Several other Western Canadian agriculture organizations also worked diligently over the past five years to demand changes for farmers.

Although we are pleased to see that results have come from this hard work, the next step will be watching to see how the new amendments play out for farmers and whether or not they have a significant effect on grain movement.

We will continue to monitor the situation closely and to work with other groups to ensure we are continually pushing for changes. This is a moving target.

Wishing you all a wonderful harvest this year.

Jason Skotheim, Chair

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Upcoming Events

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Canadian Malting Barley Tour

August 2018 Saskatoon & Banff

SaskBarley has partnered with the Canadian Malting Barley Technical Centre (CMBTC) to host a tour of the Saskatchewan malting production industry for key contacts and decision makers at the biggest brewing companies in China. The tour will aim to drive demand for Canadian malting barley amongst international brewing companies and build and strengthen partnerships with some of the world's biggest brewing companies.

The tour will take place this August in and around Saskatoon, with a stop in Banff, Alberta.

CropSphere 2019

January 7-9, 2019 TCU Place, Saskatoon

CropSphere 2018 will be held at TCU Place, in downtown Saskatoon.

A full agenda and registration information will be posted on the website this fall. Visit www.cropsphere.com for more information.

SaskBarley AGM 2018

January 7, 2019

SaskBarley's 2018 annual general meeting (AGM) will take place Monday, January 7, 2019. Watch for more details about the meeting later this year.



Malting barley specs for moisture and protein levels

An overview of malting barley specs for moisture and protein levels

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When it comes to malt barley specifications, moisture and protein levels are important.

Malt buyers are looking for certain specs to meet the needs of the end-use markets they are selling to and ensure the barley can be delivered in good condition.

Here's an overview for farmers of some considerations when it comes to moisture and protein levels.

Moisture levels

Barley moisture is an important quality parameter. A moisture content of more than 13.5% will generally not be selected, as too much moisture may result in infestation, mould growth and loss of germination during storage and transportation. Maltsters

generally want barley germination to exceed 95% for processing.

Customers also prefer a lower barley moisture content for economic reasons (i.e. they don't want to pay for water). Therefore Canadian malting barley is typically sold with a specification of maximum of 13.5% moisture content and as a result, grain companies will likely require that farmer deliveries of malting barley not exceed 13.5% moisture.

Protein levels

Buyers are also looking for different levels of protein in malting barley, depending on the brewing segment the barley is destined for.

Barley protein content affects the chemical composition and enzyme levels of malt. Protein should be high enough to provide sufficient enzymes for malting and mashing, enough nutrients for yeast growth and sufficient peptides for beer head retention.

Generally speaking, major brewers use supplements such as corn or rice in addition to barley malt. Because of this, they prefer higher protein content in the barley (11-

13.5%) which provides the enzymes necessary to break down starches into sugars, and sufficient free amino nitrogen (FAN) which feeds the yeast during fermentation.

In contrast the craft brewers, who are typically not using adjuncts, want lower protein content (10-11.5%), as they get sufficient protein from the barley malt and don't need the extra FAN (too much FAN can negatively impact yeast performance). Also, if protein is too high, it can cause beer stability problems.

Farmers with contracts, often with the domestic malting companies, will generally be given a range of desired protein, outside of which discounts may apply

Malting barley grown without a contract is generally headed for the export market, in which case farmers should target a range of 11-13.5% protein.

*The protein contents cited are on a 13.5% moisture basis.

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Target malting barley quality parameters

1. Moisture Content

Target: Max. 13.5%

5. RVA (Rapid Visco Analysis)

Target: Above 120

Barley moisture is an important quality parameter. A moisture content of more than 13.5% will generally not be selected as too much moisture may result in infestation, mould growth and loss of viability (i.e. germination) during storage and transportation. Customers also prefer a lower barley moisture content for economic reasons (i.e. they don't want to pay for water).

2. Protein Content	Target 2R range: Mainstream: 11-13.5%, All-Malt 10-11.5%
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Barley protein content affects the chemical composition and enzyme levels of malt. Protein should be high enough to provide sufficient enzymes for malting and mashing, enough nutrients for yeast growth and sufficient peptides for beer head retention. If protein is too high, it can cause beer stability problems. It is of note that the main stream brewing industry is generally looking for higher protein content (e.g. 11-13.5%) while the all-malt brewing sector likes lower protein (e.g. 10-11.5%).

3. Germination Energy	Target: Min. 95%	7. Peeled and Broken Kernels	Target

A minimum of 95% germination is desired for malt production. Germination is measured by two terms:

1. Germination Energy (% of 100 kernels that germinate on filter paper in a petri dish with 4mL water for 72 hours in room temp, which measures dormancy e.g. 95%); and 2. Water Sensitivity (% of 100 kernels that germinate on filter paper in a petri dish with 8 mL water for 72 hours in room temp, which measures if barley will germinate when excessive amount water is provided).

4. 1000 Kernel Weight	Target: Min. 40g/1000 kernels	
		D

It is supplemental measure to Test Weight/Grain Density. High density kernels = potentially more malt extract. Specification: 40g required for export markets.

This test is conducted using an RVA instrument. The
final viscosity of a mixture of ground barley and water
is determined. The results are displayed as viscosity in
centipoise (cP) or Rapid Visco Units (RVU). Higher RVA
values (e.g. above 120) indicate no pre-germination in
barley; in this case the risk of germination loss during
storage is very low. In contrast, low RVA values (e.g.
below 50) indicate barley is pre-germinated, and the risk of
germination loss during storage is high.

6. Kernel Size Target: Above 85% over 6/64

High plumpness and uniform kernel size are desirable quality characteristics (malt extract potential, i.e. the amount of sugar that can be extracted from malt) is directly correlated to barley kernel size. Minimum requirements are specified at 85% over 6/64" slotted screen for two-rowed malting barley varieties and 75% over 6/64" for special select six-rowed varieties.

7. Peeled and Broken Kernels	Target: Above 85% over 6/64″	
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No more than 5% of kernels should be peeled or broken, as husk and kernel damage affect the uniformity of barley water uptake during steeping (e.g. too much water is absorbed and soggy kernels may not germinate). Husk and kernel damage often occurs during combining, auguring or conveying during handling. Some varieties have better husk adherence than others.

8. Varietal Purity

Different malting barley varieties require different processing conditions. As a result, high varietal purity is an important factor in producing malt with high homogeneity and uniform quality traits. Generally 95% or above is preferred, but it is not typically specified.

What to grow?

Sask Barley funded research aims to prove that newer malt varieties are comparable to feed varieties

The old recommendation to "grow a feed barley for yield if you can't achieve malt 50% of the time" may no longer be relevant.

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Some of the newer malt barley varieties can yield as well as feed varieties, and one Saskatchewan researcher is aiming to substantiate and quantify this claim.

Mike Hall is leading a project, funded by Sask Barley and Saskatchewan Agriculture's ADOPT Program, that compares the difference between malt and feed barley varieties, aiming to demonstrate that newer malt varieties can provide comparable yields to the best feed varieties.

"Previous work would suggest that feed, rather than malt varieties, should be grown if the chance of making malt is less than 50%," he says.

"However, some of the newer varieties of malt barley are yielding the same or better than feed varieties."

For example, AAC Synergy is a newer malting variety that has a comparable yield to CDC Austenson. CDC Bow is another variety of growing interest to the malting and brewing industry, that yields 111-116% of AC Metcalfe.

varieties become more widely accepted by maltsters, farmers need to be made aware of how feed versus malting varieties compare to each other, Hall says.

"Farmers will need to be aware they can grow malt varieties without sacrificing feed yields if their grain is rejected for malt."

Another element of Hall's research is looking at the agronomic factors that go into growing feed versus malt. For example, the importance of adequate plant populations for yield and malt acceptance and the differences in nitrogen.



As these newer malting





Trials for this research are currently ongoing at test plots throughout the province, comparing yields of newer malt varieties and the best feed varieties

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management for malt versus feed of barley.

"Farmers need to be aware of the importance of seeding rate and nitrogen management for malt and feed varieties," he says.

"Higher seeding rates maximize yield and improve acceptance for malt."

Managing nitrogen is particularly important for malt barley where protein levels must not exceed 13.5%, he says.

"In order to determine how much nitrogen to apply to new malt varieties, farmers will need to consider the likelihood of being selected for malt and know how much yield potential is being sacrificed when reducing fertilizer rates for this market."

Overall, the research will aim to demonstrate basic agronomic practices for newer malt varieties to help barley producers stay competitive in a changing market.

This will help give Saskatchewan barley farmers better options for barley varieties, to help improve their bottom lines.

"Farmers who continue to grow feed varieties will be missing more economical opportunities with the maltsters," Hall says.

Trials for this research are currently ongoing at test plots in Yorkton, Prince Albert, Indian Head, Melfort, Redvers, Outlook and Scott. Research is expected to completed by next February.

Do your part to keep our crops clean

The important role farmers play in upholding Canada's quality standards

Every year, Canada exports over 20,000,000 metric tonnes of wheat, oats and barley to the world.

Between 25% and 30% of that is barley (both in bulk and as value added products), making it a very important part of our national agriculture system.

With numbers like these, it's incredibly important that we maintain our reputation as a reliable exporter. This system is only good if we continue to deliver high quality, safe exports.

Domestic processors and importers are increasingly inspecting their shipments, as they have every right to. They test arriving shipments to ensure that contract specifications are being met. When grain contains things like wheats of other classes, undeclared barley varieties, excessive pesticide residues or mycotoxins such as Ochratoxin (OTA) and Deoxynivalenol (DON), it can derail domestic and export sales and damage Canada's reputation. Blocked shipments cause millions of dollars in losses and place future business at risk.

So what can you do to help protect Canada's cereals business? Follow these guidelines closely to help us deliver on our commitments as an industry.

Consider market acceptance

In some cases, a crop protection product is registered in Canada without a Maximum Residue Limit (MRL) established in our major export markets. This means that cereal crops are treated with certain pesticides that may not be accepted in some markets. Best practices are:

- Consult your crop input provider and your grain buyer to know your requirements before using products.
- Ensure that the grain will meet all the requirements at its final destination.
- Always follow the label.

Be cognizant of your glyphosate use

Glyphosate (e.g. Roundup) has come under increased scrutiny for use in cereals, when compared to other pesticides. Farmers' rigorous adherence to guidelines, including the sciencebased label, will keep this important product in our toolbox for years to come.

For malt barley specifically, glyphosate (Saflufenacil; e.g. Kixor) will not be accepted by grain buyers if treated

pre-harvest.

Use registered pesticides only

Only apply pesticides registered for use on your crop type, and always follow the rates and timing listed on the label. Applying product too early or too close to harvest can reduce yield or crop quality and leave higher than acceptable pesticide residues.

Grow disease-tolerant varieties and use practices that reduce infection

Fusarium head blight (FHB) has become increasingly prevalent in Western Canada, causing yield and quality losses. Tolerances are set very low because of the presence of harmful mycotoxins (DON or Deoxynivalenol). Diseasetolerant varieties do not eliminate the problem, so it's important to use multiple agronomic practices to reduce infection.

Store cereals properly

Countries have strict regulations for residues in food and feed. Proper cereal storage will help prevent downgrading of your grain due to cross contamination, chemical residues, or the formation of harmful mycotoxins such as

Disease management practices

FHB infection is initiated by spores released from infected residue or stubble. Follow these practices to keep FHB from impacting yield and profitability, and to reduce the presence of FHB on seed:

Grow Disease-Resistant Varieties

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Growing the most disease-resistant varieties available in areas at risk for FHB is one of the most important decisions in managing fusarium. Cereals also vary in their susceptibility: durum is highly susceptible, barley is less susceptible than wheat and oats are the least susceptible cereal crop.

Apply Fungicide When There Is an Elevated Risk Of FHB

The risk of fusarium infection increases when hot, humid or wet conditions persist during head emergence and flowering, taking as little as three days for infection to occur. Timely application of a foliar fungicide with a specialized nozzle or nozzle combination for maximum head coverage can help protect crops from FHB at these critical stages.

The agricultural departments in each province have relevant material on their websites, including risk maps, and producers are encouraged to make use of the provincial specific materials available.

Plan Crop Rotations to Manage Fusarium

Fusarium can overwinter in crop stubble, so planning crop rotations that allow adequate time for residues to decompose before returning to cereal crops is crucial. Rotate away from cereal crops for at least one, and preferably two, years on fields that were recently affected by FHB.

• Plant clean seed and consider a seed treatment in high-risk areas to improve the crop stand.

Always use clean seed that is low in fusarium (0% to 5% depending on provincial regulations) to reduce the potential for seedling blight. Applying a fungicide seed treatment can improve seedling germination and vigour in areas under pressure from FHB.

Use a Combination of Best Management Practices to Control Fusarium

Using as many best management practices as possible provides the best chance to limit the spread and severity of fusarium outbreaks. Growing disease resistant varieties, applying fungicides, rotating crops and using clean, treated seed may have the highest impact.

Other options include timing crop development to escape the disease, management of crop residues to facilitate the breakdown of disease infectious structures, establishing a strong stand by using high quality, vigorous seed and appropriate seeding rates and avoiding irrigating during flowering.

By managing fusarium in the field, growers are keeping marketing options open for cereal grains.



Ochratoxin A (OTA), a potent toxin that forms in high moisture.

- Make sure your storage bins are free of treated seed (which contains pesticides) and animal protein like blood meal and bone meal.
- Clean bins thoroughly prior to storing grain using only approved bin treatments (e.g. diatomaceous earth).
- Ensure that crops are harvested or dried to a level safe for storage.
- Store grain in cool, dry and well-ventilated bins to avoid spoilage and insect issues, and check their condition regularly.

Deliver what you declare

When you sign a Declaration of Eligibility affidavit at the elevator, you are making a legal assertion that your grain is of the class you've declared. It also states whether your grain may contain residues of any crop input product specified in the Declaration. It's important to be clear that this declaration is a legally binding document. Any intentional or unintentional mistake traced back through retained samples will expose individuals and their farms to significant liability. We raise these concerns to ensure that individual producers and the reputation of Canadian domestic and export sales are each protected and preserved.

For more information on how to keep your cereals clean, call 1-204-942-2166.

THE SASKATCHEWAN BARLEY DEVELOPMENT COMMISSION:

The Saskatchewan Barley Development Commission was established in 2013 under the Agri-Food Act, 2004

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