

# OUT WITH THE OLD AND IN WITH THE NEW

By Caalen Covey  
**Business development and  
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**A**s technology advances around the world, consumers learn it, adapt to it and move on with life at lightning speed. It was not that long ago that many of us would have great debates about how many seasons Wayne Gretzky scored more than 50 goals or who won the 1970 Stanley Cup. Today, we all have access to Google on our phones, which will tell us the answers to these questions and more in a few seconds. In those debates of the past, we would end up with a best guess and, unless we could verify that answer, there was always room for error. The technology of today can quickly verify answers with scientific measure and accuracy, taking error and doubt out of our decision-making.

Vomitoxin (otherwise known as deoxynivalenol or DON) tests and Falling Number (FN) tests are two good examples of technology that can increase accuracy when grading your wheat. Both tests are used internationally today.

Canada currently uses a visual-based grading system to review factors for wheat grades (see opposite page). The visual factors for Fusarium-damaged kernels and sprout damage are used to find the percentage of damaged kernels, which is then used to estimate the impact on quality for our buyers.

During a year of good quality and



relatively low amounts of downgrading, the visual method provides a good evaluation and quickly assesses samples, which helps keep Canada's supply chain moving efficiently. In years of mixed quality, it is important to understand your quality and align it with a buyer's needs. If you are downgraded for Fusarium or sprouting, you should seriously consider getting a vomitoxin or FN test to accurately review your wheat quality, which will give you more bargaining power when you go to negotiate your grade and price.

Many local elevators have access to FN tests, and some have access to vomitoxin tests as well. They have these testing methods to ensure they are meeting the standards set by their

export buyers. For milling wheat, an FN over 300 and vomitoxin levels below two parts per million typically indicate to a buyer that it's good quality.

Knowing this, if your wheat has been downgraded, you can get a second opinion on grade, including lab tests to review the quality, or ask your local elevator if it will do these tests for you. It is quite likely that your visual test will give you results that do not correlate with the scientific tests, meaning your wheat may be getting downgraded even though your wheat quality aligns with world market demands. If your quality does not fall within these limits, you can use the guide on the next page to help you assess your marketing options.

# Grading Factors

Take ownership of your wheat and discover its true quality.

If you're not satisfied with your visual test results, be sure to ask for a lab test to find the true value of your grain.



## >> What is deoxynivalenol (DON)?

Fusarium damage in wheat is becoming more prominent in Alberta and is caused by high moisture levels during the growing season. The strain of concern is *fusarium graminearum*, as it causes DON, also known as vomitoxin, to accumulate in the grain which is toxic for consumption at specific levels.

### How is DON measured in wheat?

#### Visual Test

The percentage of fusarium-damaged kernels is used to estimate levels of DON in a sample.



Depending on the strain of fusarium found in your sample, the visual results may not highly correlate with DON levels, which is the key concern for end users.

#### Lab Test

Vomitoxin level (DON) testing looks at actual levels of DON in parts per million (ppm).



- **2 ppm or less** = Acceptable for human consumption in Canada. Lower levels could be required depending on the export market.
- **5 ppm or less** = Acceptable for swine at less than 20 per cent of diet.
- **10 ppm or less** = Acceptable for beef and feedlot cattle at less than 50 per cent of diet.

## >> What is sprout damage?

Sprout damage is caused by high-moisture conditions and can lead to downgrading of your wheat.

### How is sprout damage assessed in wheat?

#### Visual Test

The percentage of sprout-damaged kernels in a sample is used to grade wheat as an estimate of alpha ( $\alpha$ )-amylase activity in your wheat.



#### Lab Test

Falling Number (FN) tests measure the time in seconds required for a viscometer stirrer to fall, with the result being an estimate for  $\alpha$ -amylase activity.



High  $\alpha$ -amylase activity results in a low FN and causes starch degrading that reduces the water-holding capacity of starch. This results in low water absorption during baking and therefore a lower bread yield.

- **FN > 300** = No sprout damage
- **300 > FN > 200** = Some sprout damage
- **200 > FN** = Severe sprout damage

# WHY TEST FOR GERMINATION, VIGOUR AND *FUSARIUM GRAMINEARUM*?

By Sarah Foster

President and senior seed analyst, 20/20 Seed Labs



Photo: Shutterstock

Seed testing restores your confidence in quality before it goes in the ground.

The 2016/17 crop year presented numerous harvesting challenges across the Prairies, with Mother Nature playing a huge role in how your seed developed and behaved after harvest. In the fall, we saw a lot of quality issues, which became more troublesome as the season progressed.

Every year, regardless of environmental conditions, as soon your seed is harvested, it's time to think about getting it tested. The earlier you test your seed after harvest, the better. Seed physiologists will tell you that seed is at its peak within hours of being harvested, and begins to deteriorate as soon as it goes in the bin.

When it comes to seed testing, a

simple germination test can quickly reveal a number of quality issues. This year, *Fusarium graminearum* is the main reason for low germination results. If you suspect that your seed has come in contact with *Fusarium graminearum*, you can submit a sample to an accredited laboratory that has a qualified pathologist or molecular scientist on staff. In addition to the *Fusarium graminearum* test, you should consider testing for vomitoxin, also known as deoxynivalenol (DON), which predominantly occurs in wheat and barley.

Many of our samples that were tested had high germination ability for a couple of months, but this dropped drastically in January. There were clues

early on—symptoms like dormancy, which alluded to loss of quality. Vigour tests with poor results also indicated there would be a problem later. There is a tight correlation between germination and vigour, and it should never be underestimated, regardless of environmental or post-harvest conditions.

This season, there are four key factors that are affecting quality: immaturity/dormancy, frost, chemical injury and disease. All of these can hurt the quality and longevity of your seed, regardless of crop type.

Seed testing is a crucial element in your farm operation and using these tests will give you confidence in your quality when its time to seed. Often, seed goes into the ground without a scrap of information about its potential performance. That's like choosing the wrong fuel for a high-performance car. In years when environmental factors affect quality, put a sample aside for testing and reference. Always keep a small bag on the farm as a benchmark, and remember that accurate sampling is critical for obtaining a representative sample.

Preliminary and subsequent repeat germination tests are worth every penny. Farmers should keep testing seed that has been stressed, either while maturing or during harvest. Germination is the foundation upon which farmers should base storage, treating, sales and, later, seeding plans. It is one of the most economical inputs that should be considered as a return on your investment. An accredited germination test will provide a sound result and should give you an indication of the seed's physical quality.

# FUSARIUM RISK MAPS COMING SOON FOR ALBERTA WHEAT FARMERS

By Brian Kennedy  
**Grower relations and extension  
co-ordinator**

One of the greatest things about social media is how it gives us the ability to stay up to date on the concerns of many wheat farmers in Alberta, across Canada and around the world. This past summer, while monitoring Twitter, I noticed Fusarium head blight (FHB) risk maps from both Manitoba and Saskatchewan being updated on a regular basis. As the rain kept falling, I noticed more and more Twitter users interacting with the Manitoba and Saskatchewan maps. Emails and phone calls soon followed, as Alberta wheat farmers started to ask whether these maps were available here in our province.

In response to farmer demand, the Alberta Wheat Commission (AWC) organized a meeting of pathology experts, extension staff, Alberta Agriculture and Forestry's AgMet unit lead—in place to provide meteorological information for the agriculture industry—and other stakeholders to discuss the possibility of producing FHB risk maps for Alberta. We learned that most of the pieces required to produce the maps already existed, along with an overwhelming eagerness to create this resource for Alberta farmers. Now it is just a matter of putting the pieces together.

AWC is taking the lead on assembling the FHB risk map puzzle, using the information provided by scientists and other experts. This process is already well underway. A model has



Photo: Michael Harding

Kernels that have been damaged by *Fusarium graminearum* contain vomitoxin, which negatively affects the grain's grade and impacts profitability.

been obtained and rough maps will be produced. The biggest piece of the puzzle will be validating the model to provide accurate risk maps for Alberta. Historical data on FHB infestations does exist and will be used to validate and adjust the model for use in the province.

The final step will be delivering the maps to wheat farmers and providing good information on how this new decision-making tool can be used.

FHB risk maps have been available in Manitoba for more than 15 years and growers see them as a valuable resource. Ron Krahn, who farms near

Rivers, MB, views the FHB risk maps as another tool in the broader arsenal farmers can employ against disease in their crops.

"Being in a drier area of the province, I'm more concerned with disease at the flag leaf stage than with FHB, but I still monitor the FHB risk maps regularly," Krahn said. He added that, in addition to being a management tool, the maps create awareness of the disease.

AWC looks forward to rolling out this valuable resource for Alberta's wheat farmers to manage FHB throughout the province.