



TheWheatField

THE NEWSLETTER OF THE SASKATCHEWAN WHEAT DEVELOPMENT COMMISSION

JUNE 2020 EDITION

CHAIR'S MESSAGE:

COVID-19 impact and SVUA pilot program among top concerns for Saskatchewan wheat producers



I hope this newsletter finds all of Saskatchewan's wheat producers well and optimistic for a strong year ahead. After challenging conditions in the fall that caused some producers to complete their harvest in the spring, we could use a year of good weather and favourable market conditions.

The past few months have been difficult thanks to the COVID-19 pandemic. The crisis has created significant market

uncertainty, although wheat has recently been moving from farm to export customers in near-record volumes. In Canada, many people who have been quarantining at home have taken to baking, driving up the domestic demand for flour. This will only have a limited impact on prices and will likely be short lived, while issues such as the Canadian dollar, global weather, and the oil dispute between Russia and Saudi Arabia will have a greater impact on prices in our export-dominated industry during the 2020-2021 crop year.

Locally, the pandemic has created a few extra steps for some producers during seeding, but overall, the impact has been minimal. There were concerns that securing supplies may be more difficult as farm supply dealers implemented safety measures, but from what I am hearing, the delivery of fertilizer, fuel, and other inputs has been similar to past years.

Over the past few months, the Sask Wheat Board of Directors has been working on several issues in addition to tending to our own farms. An issue that has taken significant time to discuss

and understand, not only within Sask Wheat but also among the Prairie wheat commissions, is the amalgamation of the Canadian International Grains Institute (Cigi) and Cereals Canada.

As you will read on the second page, Cigi will now be operating as a division of Cereals Canada. Cigi will still be delivering the same programs that will promote and enhance the use of Canadian wheat by global customers while Cereals Canada will continue its work on trade and regulatory issues. However, by working together, they will be able to strengthen the voice of Canadian wheat farmers and enhance the returns to Canadian wheat globally.

It is important that Saskatchewan, as the province that grows the largest share of wheat and durum in Canada, is represented adequately within the amalgamated organization. While governance details have yet to be finalized, we expect that Saskatchewan wheat producers will be represented proportionally and that issues of importance to Saskatchewan wheat producers will be prominent within the new organization.

Sask Wheat has also been spending a significant amount of time on a seed variety use agreement (SVUA) pilot program which the seed industry announced it would be pursuing in February. The pilot program will see a trailing royalty collection mechanism imposed on farm-saved seed of selected crop varieties through a contract agreement.

Sask Wheat wants to ensure producers' rights, such as the right to use farm-saved seed, are being protected in any SVUA contracts and that producers clearly understand the impact of the contracts on their farms. We are especially concerned that the proposed trailing royalties could inhibit the adoption of new midge tolerant varieties, should they be included as part of the pilot, which would have negative implications for the Midge Tolerant Wheat program.

We will continue to work on these issues and others over the summer. Please remember to check out our FHB risk maps over the next few weeks and to scout your fields daily during the heading stage. We are hopeful that tools such as the FHB risk maps combined with the improved genetics of varieties that wheat producers have invested in will bring excellent yields and quality this year and in the future.

Brett Halstead, Chair



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Cigi and Cereals Canada merge into one organization

By Cam Dahl, President of Cereals Canada
Dean Dias, CEO of Cigi



Cereals Canada

The Canadian International Grains Institute (Cigi) and Cereals Canada, as of June 1st, 2020, have amalgamated. This is a positive development. If one were to start with a blank page in designing how the cereal grains sector were to be represented, we would not have started with two separate organizations. But that is not how the sector has developed. Moving operations into a single organization under the direction of a single Board of Directors is part of the ongoing evolution of the industry.

Collaboration between Cereals Canada and Cigi started long before discussions began on unifying the two organizations. The cohesive Canadian voice provided through the annual New Crop Missions is one example of the benefits of collaboration. Working together has also benefited the industry as a whole, which is one of the key advantages of amalgamation. The coordinated approach to outreach from Canada that has resulted from our informal collaboration will be cemented in place under a single roof.

The consolidated organization is operating under the Cereals Canada name with Cigi maintaining its brand as a division within the overarching organization. The organization's approved governance structure has also ensured that all members can shape and influence future priorities and initiatives. Early on in the process, the memberships of Cigi and Cereals Canada agreed to a set of principles that would guide the development of the new governance model. These are:

1. The amalgamated organization will be national in scope;
2. The full value chain will be represented within the organization;
3. Representation at the Board table will have a linkage to financial contribution to the organization;
4. All Members, regardless of representation on the Board of Directors, will have the opportunity to participate in the work of the organization through standing committees and ad hoc working groups; and
5. The organization will strive for consensus decision making at both the Board and Member level.

This is an exciting time for Canadian agriculture. We are seeing new challenges, like the rapid growth of competitors around the Black Sea and the increase of non-tariff trade barriers. We are seeing new opportunities with millers in markets like Nigeria and Bangladesh adding Canadian wheat to their blends to create cost effective products. New plant breeding technologies will allow us to respond more rapidly to the changing needs of our customers both in Canada and offshore. We are seeing more demands for demonstration of the sustainability of our production practices, a task at which Canadian farmers can excel. World markets are changing, and the value chain organizations designed to represent the industry must continually evolve to adapt to these changes. We are excited by the opportunity that this evolution presents and know that a new and more effective organization has emerged, one that is built on the foundation of success established by both Cigi and Cereals Canada.



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GENERAL MANAGER'S REPORT:

Sask Wheat focused on safe continuation of wheat research in 2020



The spring of 2020 has been without recent precedence. I don't think any of us in the industry could have anticipated the impacts of COVID-19 on us as individuals or on our industry in general. As some producers struggled to finish harvest from the previous season and all producers worked to get this year's seed in the ground, issues of supply chain continuity, access to inputs, access to markets, and uncertainty in general weighed on the decisions being made.

While it will take time to understand the longer-term impacts of the COVID-19 pandemic, it is clear that our industry is resilient and adaptable. The recognition of agriculture as an "essential service" has also helped the grain markets to continue to function.

COVID-19 news has largely overshadowed some of the other big issues that producers dealt with in 2020, such as rail blockades and weather-related interruptions in transportation services. Most significantly, the very late and difficult harvest and the marketing of grains affected by adverse harvest conditions, e.g. "falling number" issues, created uncertainty around the marketability and value of wheat. However, the statistics for the 2019/20 grain marketing year show that producer deliveries of wheat and subsequent movement to export destinations to date have been near record levels, surpassed only by movement in the last crop year. This strong grain handling and movement for wheat, in particular, reflects lower demand for rail services by other grains and other commodities in this crop year. Movement will have to stay strong for the remainder of the crop year to meet export expectations and make way for our coming harvest.

COVID-19 related protocols will also affect the 2020 research efforts supported by wheat producers. While we are still getting specific information on what research efforts will be allowed to continue, it seems that wheat research that makes extensive use of laboratory or greenhouse facilities will be highly restricted. In addition, field operations for varietal development and other related research will be limited. It has been a struggle to get clarity in time for field operations to be safely undertaken by plant breeders, to get early generation crosses into field plots, and to continue with co-op testing for varieties looking to apply for varietal registration. Sask Wheat has been very vocal, along with the other Prairie wheat and barley commissions, in pushing for consideration to safely continue this important and essential research activity.

Sask Wheat and our partner wheat commissions, through our joint leadership via the Canadian Wheat Research Coalition (CWRC), have now implemented the new Core Wheat Breeding Agreement (CBA) with the Crop Development Center (CDC) at the University of Saskatchewan for \$9.66 million over the next five years. While some of this research will be impacted by the pandemic protocols, the CBA is critical to providing a solid foundation for producer focused research in the near future.

Sask Wheat is now working through the CWRC to finalize the next CBAs with Agriculture Canada (AAFC) and the Universities of Alberta and Manitoba. Producers have provided approximately \$28 million through the Western Grains Research Foundation CBAs with AAFC and the universities to maintain plant breeders, technicians, and specialists involved in all efforts to finish wheat varieties for the benefit of producers. This effort is now being taken on by the three prairie wheat commissions on behalf of producers.

Producers have significant money on the table and they have a unique interest in the direction of new variety development. They have told us they want a voice in how the public wheat breeding institutions develop and release varieties in the future. We will have a special focus this year on the development of mechanisms to deliver value to producers that recognize the producer investments in the research process. While COVID-19 has captured our near-term attention, the importance of investment in research and how farmers benefit from the results will continue to be our critical focus!

Harvey Brooks, General Manager

Pest monitoring in Saskatchewan: Why it is important and how you can get involved

The Saskatchewan Ministry of Agriculture (SMA) and its partners monitor for crop pests, including insects, diseases and weeds. The information from the monitoring is used to create forecast maps, guide research decisions, detect and track new or emerging pests, and support management decisions.

The SMA needs your help to build a robust pest-monitoring system. Your consent will allow staff to monitor pests on your property and contribute to the health of the agriculture industry in Saskatchewan. To participate, sign up through an online form: ca.surveygizmo.com/s3/50060966/Pest-Monitoring-Sign-up. It will only take a minute or two.

Links to this form and the SMA website are available on the Sask Wheat website: saskwheat.ca.

Your help is appreciated by the entire growing community in Saskatchewan.

Managing wheat midge

By James Tansey

Provincial Specialist, Insect/Vertebrate Pest Management, Saskatchewan Ministry of Agriculture

A relatively small number of insect species can be major limiting factors in wheat production. Several parts of plants are attacked by specific species and each can cause damage that reduces yields and quality.

One of the more important of these is the *Sitodiplosis mosellana*, more commonly known as the wheat midge. This small (2-3 mm) fly lays eggs under the glumes or floret grooves of newly emerged heads. Eggs are laid late June to early July in the evening, near sunset, individually or in clusters of 3-4. Adult activity can occur for up to six weeks and is greatest around 8:30 p.m.

The adult midge is a very delicate insect, so windy conditions can reduce activity or drive egg laying to lower portions of the plant. Adult midge have short lives – usually less than a week. Eggs hatch in under a week. Newly hatched larvae, which can number as high as 26 in individual florets, begin to feed on developing kernels. Larval feeding continues for up to three weeks. When larvae are mature, they fall off the plant and burrow into the soil where they pupate and emerge as adults the following year. Dry conditions reduce midge pressure and emergence can be erratic and reduced if rainfall is less than 25 mm in May.

There are options for managing wheat midge. If wheat is planned as part of a rotation, there are midge-tolerant wheat varieties available as varietal blends (VB). For 2020, VBs are available in CWRS, CPSR, CWSP, CWSWS, CNHR, CWES, and durum wheat classes. Visit the Midge Tolerant Wheat Stewardship Team's website (midgetolerantwheat.ca) for information on midge-tolerant wheat and VBs. Also refer to the 2020 Saskatchewan Seed Guide for information.

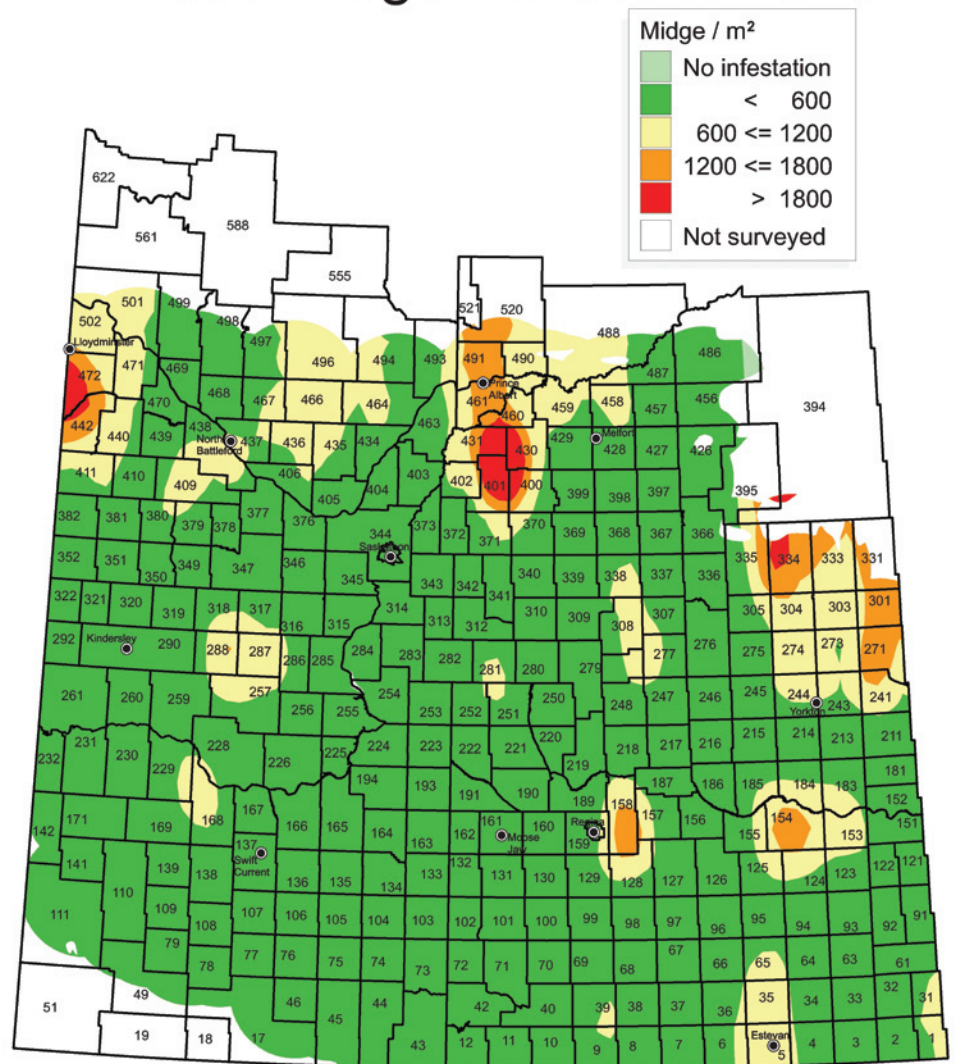
Chemical control can also be achieved when adults are active; insecticides registered for control include products with the active ingredients chlorpyrifos or dimethoate. It is important to monitor wheat in July when the crop emerges from boot stage until flowering. Check the crop canopy at dusk for signs of wheat midge adult activity. At each stop, examine 10 heads and count midge adults on or near the heads. You'll likely need to crouch down to do this. To protect yield and grade, economic thresholds of one midge per four-to-five heads, and one adult per eight-to-ten heads, respectively, are recommended.

The Saskatchewan Ministry of Agriculture (SMA) monitors wheat midge populations

on approximately 420 sites throughout the wheat growing region annually, and produces a map of local pressures anticipated for the following year. These numbers represent the local counts of viable (unparasitized) pupae. Wheat midge populations are often well-controlled by a one-to-two mm long parasitic wasp, *Macrogenes penetrans*.

These maps are presented at grower meetings and are available on the SMA website (<https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/insects/wheat-midge/wheat-midge-map>), the Sask Wheat website, and on the Prairie Pest Monitoring website (<http://prairiepestmonitoring.blogspot.com/>) beginning in early winter.

Wheat Midge Forecast 2020



Learn how to navigate your grain contracts

Do you read and understand everything in the grain contracts you sign? If you are like the majority of producers, the answer is no.

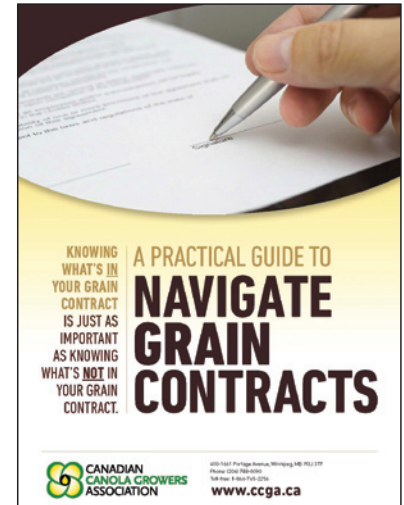
This is why the Canadian Canola Growers Association (CCGA) developed *A Practical Guide to Navigate Grain Contracts*. The guide assists producers with interpreting and negotiating contracts, helping you to understand what you are signing and how to avoid surprises when you deliver grain.

Some key things you need to know about contracts include:

1. **Read and understand the entire contract, including all the terms and conditions.** Signing a contract implies you understand the terms and conditions, and it makes you responsible for delivering grain based on the requirements set by the buyer.
2. **Make sure you get all agreements in writing.** Verbal agreements are risky for producers. All terms and conditions written into the contracts are legally binding on both parties. The buyer may not have to comply with any unwritten conditions.
3. **Get the whole contract.** At times, there are two or more parts of each contract: The terms and conditions and the purchase contracts. Make sure you receive the entire contract for your review, as there may be separate terms and conditions in each.
4. **Know the grade and quantity of grain you are responsible to deliver.** You may face penalties if you do not meet the specifications in the contract. Be aware of this so there are no surprises at the elevator.

5. **Be familiar with the grading process and quality parameters.** An elevator's grade determination may differ from what you are expecting, so it is wise to make yourself familiar with the Canadian Grade Commission's (CGC) *Official Grain Grading Guide*. If you don't agree with the assessment, you may also use the CGC's Subject to Inspector's Grade and Dockage dispute mechanism.
6. **Be aware of the terms of delivery.** Make sure you are delivering at the time and location specified in the contract. If you have any questions about this, or if you anticipate delays, make sure you contact the grain buyer to discuss alternative arrangements.

A Practical Guide to Navigate Grain Contracts includes details on these and other contract-related issues you should be aware of. You can download a copy of the guide on the CCGA website: www.ccca.ca/knowyourgrade/Pages/Resource-Library.aspx.



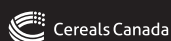
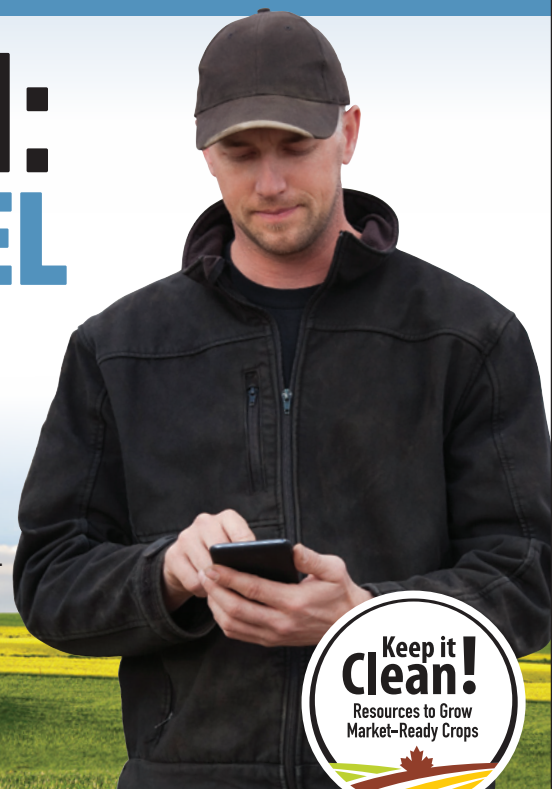
KEEP IT CLEAN: FOLLOW THE LABEL

Your on-farm practices can help protect market access for all.
Always follow the label on all crop protection products for application rate, timing and pre-harvest interval (PHI).

- ➔ **RATE:** Always follow the correct application rate.
- ➔ **TIMING:** Apply crop protection products only at the recommended crop stage.
- ➔ **PHI:** Stick to the PHI – the number of days between spraying and cutting the crop.

Remember – off-label use is illegal and may result in unacceptable residues, putting the marketability of your crop at risk.

Learn more at keepingitclean.ca/follow-the-label



A step change for seed treatment?

By Clare Stanfield

A few years ago, Drs. Andrew Olkowski and Bernard Laarveld from the Department of Animal and Poultry Science at the University of Saskatchewan (U of S) were looking for a treatment that would break down animal manure. They developed a catalytic solution that worked on the manure but, to make sure there were no toxic side effects on plants, they tested it on some barley seed. Turns out, it wasn't toxic at all – the opposite, in fact.

"It was a completely serendipitous discovery," says Karen Tanino, a professor in the Department of Plant Sciences at the U of S. She explains that instead of hurting barley seed as expected, this unique chemical concoction seemed to help it germinate and grow better through some unknown means.

Tanino is a specialist in plant physiology, so she was intrigued and wanted to find out what was going on. With funding in part from Sask Wheat, she started a three-year research project looking into how this novel seed treatment could work on a field scale and on multiple crops. She wants to know if the treatment will enhance early crop performance and, if so, by how much.

"Some seed treatments are based on plant extracts with unknown properties," explains Tanino. "But this is not an extract, it's a known catalytic reaction that uses food grade chemicals off the shelf."

A catalyst, in this case a transition metal (check your periodic table), induces a reaction in these chemicals to form a new active compound. The end result is a very inexpensive, new kind of seed treatment. "That's one reason it's novel," says Tanino. Another reason is that this seed treatment seems to activate natural defence mechanisms in plants by inducing a stress signal that appears to prompt them to develop resistance strategies to abiotic stressors.

To test this novel seed treatment, Tanino ran trials in wheat and canola research plots, as well as field-scale, on-farm trials with a cooperating producer near Aberdeen, Saskatchewan.

For the research plot work, seeds were treated by soaking, which is how they would be treated in the lab. "If you want to test the response of a treatment from the lab to the field, the best way is to initially repeat the lab-based application," says Tanino. For the farm-scale work, researchers devised a way to apply the catalytic seed treatment to wheat using a Storm treater, which is similar to how existing seed treatments are applied to wheat.

In the farm trials, wheat seed treated with a commercial fungicidal seed treatment acted as the control and was compared against seed treated with the same commercial product as well as the catalytic seed treatment.

Tanino was looking for differences from germination right through to harvest. Unfortunately, poor weather conditions in the 2018 crop year prevented the field-scale trials to be taken to harvest. But what she saw earlier in the season is very encouraging.

"There are a lot of other factors from seeding to harvest that can affect yield," she says. "The faster the establishment in the spring, the better a crop performs and we saw so much lateral and fine root growth with the catalytic treatment." The enhanced root structure was consistent from the lab to the research field (plots) to the farm, and the catalytic seed treatment led to more tillering in the field.

Tanino says results so far are promising. The challenge now is to ensure consistent transfer of results from the lab to the field. She wants to get some in-season plant development and harvest data to complete the picture. There's so much promise that the U of S has applied for a patent on the novel seed treatment. Should it reach commercialization, farmers could have a new, inexpensive, easy-to-use seed treatment for many of their crops.

Have modern wheat varieties caused an increase in celiac disease?

By Clare Stanfield

For the last decade or so, wheat has been the target of many health claims. Several theories have come forward, declaring that modern wheat is fundamentally different from its ancient counterparts and that this has led to a huge rise in celiac disease, among other things.

That got Dr. Ravi Chibbar thinking. "The way it started was about seven or so years ago, all of a sudden there was this idea in the popular press that wheat was bad and this was somehow due to genetic improvements," he says.

Chibbar, a professor in the Department of Plant Sciences at the University of Saskatchewan, is a biochemist and molecular biologist who studies the genetic determinants of grain quality. He was struck by how many of the people making claims about modern wheat had no experience in, or knowledge of, genetic improvement in general, and wheat improvement in particular.

So he developed an idea for a research project that would take a comprehensive look at wheat gluten proteins to see if and how they have changed over time and what impact that has had on the growing incidence of celiac. With funding from a number of organizations, including Sask Wheat, Chibbar and his colleagues set to work.

"We had access to a set of 37 historical CWRS wheat varieties going back to Red Fife," he says, adding that this cultivar was introduced in Western Canada in the 1860s. The newest cultivar in the set is from 2007, and Chibbar says that the entire set includes representative cultivars from all decades in between, representing major wheat improvements made over this time span.

One of the first things the team discovered was that the grain protein concentration is similar in newer cultivars of wheat when compared to older varieties, rising only one per cent over the last 100 years. "So if there are no changes in the quantity, what about the quality of proteins?" asks Chibbar. The next step, therefore, was to study if there was a definitive link between wheat gluten quality and celiac disease.

Gluten is composed of two major groups of polypeptides: gliadins and glutenins. Celiac disease is an autoimmune reaction to gluten, specifically gliadin, and affects roughly one percent of people worldwide. Working with a gastroenterologist from the University of Alberta, Chibbar was able to obtain blood serum from 13 known celiac patients with varying levels of disease severity, as well as serum from one patient with no celiac disease to use as a control.

Then, using a process called gel electrophoresis, researchers separated glutenin and gliadin proteins from all 37 study cultivars. "The separated polypeptides were transferred to nitrocellulose membranes that were treated with patient

serum to identify the antibodies that reacted with wheat grain polypeptides," says Chibbar. Essentially, the process allowed him to identify wheat proteins that reacted to antibodies from celiac patients.

Researchers wanted to see if this reaction differed depending on the cultivar. Specifically, they wanted to know if the peptides in older wheats were less reactive than those in newer ones. They found that there was no significant difference. Chibbar says that glutenin and gliadin composition does differ between cultivars, but that this diversity is not time-specific. In other words, someone with celiac can have a response to ancient as well as modern wheat cultivars.

"Indications so far are that wheat improvement has not been responsible for the increase in celiac reactive polypeptides," says Chibbar. But there is still much work to be done to figure out exactly what is happening. "We want to find how wheat proteins changed over time, and if that change has any bearing on the severity of celiac or the expansion of celiac."

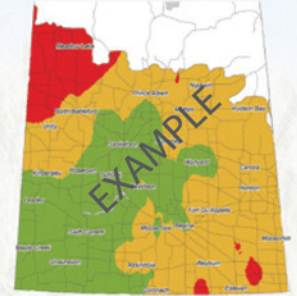
Health issues like celiac are complex and solutions not easy or straightforward. Chibbar hopes that, as he and his team analyze the data they've amassed, this research will provide some much needed scientific evidence around the actual role wheat proteins have played in the increased prevalence of celiac disease and how wheat improvement can even be a part of the solution to reduce it. "Wheat is a part of the staple diet around the world and everyone should be able to enjoy it without reservations," says Chibbar.

"Doing the work is the easy part," he laughs. "Coming to conclusions is much more challenging. That's the stage we're at now."



2020 FHB RISK MAPS

Sask Wheat's FHB risk maps help wheat producers identify their level of risk for FHB infection. The maps, in conjunction with daily monitoring and a cost/benefit analysis tool, help producers determine if the application of a fungicide is necessary.



The FHB risk maps are generated daily through June and July on:

saskwheat.ca

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