



# CHIT HAPPENS

Farmers struggle with pre-harvest sprouting

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**Editor-in-Chief**

Cole Christensen

**Creative Director**

Brent Morrison

**Contributing Writers**

Geoff Geddes  
Mitchell Japp  
Jenni Lessard  
Delaney Seiferling  
and SaskBarley Staff

**Cover Photo**

Courtesy Jill McDonald

**Publisher**

Cole’s Ag Communications

**Printing**

Houghton Boston

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Houghton Boston



**Executive Director**

Jill McDonald  
306-370-7237  
jmcDonald@saskbarley.com

**General Inquiries**

Phone: 306-653-7232  
Email: info@saskbarley.com

225-415 Wellman Cres  
Saskatoon, SK S7T 0J1



**Please be aware  
we are moving  
office locations as  
of May 1, 2024.**

**We will now be  
located at  
225-415 Wellman Cres.  
Saskatoon, SK S7T 0J1**

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DEVELOPMENT COMMISSION

# BOARD OF DIRECTORS

<b>Cody Glenn (Chair)</b> 306-293-7525 cglenn@saskbarley.com	<b>Maurice Berry</b> 306-452-7504 mberry@saskbarley.com	<b>Chad Ferguson</b> 306-874-8168 cferguson@saskbarley.com
<b>Matt Enns (Vice-Chair)</b> 306-717-6099 menns@saskbarley.com	<b>Zenneth Faye</b> 306-272-7080 zfaye@saskbarley.com	<b>Gordon Moellenbeck</b> 306-287-7799 gmoellenbeck@saskbarley.com

# Investments, collaborations shape the future

**G**reetings barley producers. I am happy to connect with you as the newly elected chair of SaskBarley. First, I'd like to extend my thanks to Keith Rueve for his dedicated leadership and commitment to advancing the interests of Saskatchewan's barley industry during his eight-year tenure, including the past two years as chair.

I'm going into my third year with SaskBarley, and I've learned a lot from its dedicated board members and staff. I am a pedigreed seed grower from Climax, SK and operate a grain-handling business. I value my time among the experienced members of this organization who have a deep understanding of the challenges and opportunities that lie ahead for our producers.

I firmly believe that the future of barley holds great promise, both locally and globally. However, to fully realize its potential, it is important that we, as growers, place a renewed emphasis on addressing the needs of both the feed and malt sectors. As such, SaskBarley has identified a deficit in agronomic research for barley across



***"GROW Barley represents a collective commitment of \$1.5 million over seven years to address this research gap head-on."***

Western Canada — a gap that undermines our competitiveness with other commodities.

Recognizing the pivotal role of agronomy in optimizing yields and increasing margins, the barley industry has rallied together to address this shortfall. In March, the Canadian Barley

Research Coalition (CBRC) and Brewing and Malting Barley Research Institute (BMBRI) announced the launch of the **Grant for Research Optimization of Western Barley Agronomy (GROW Barley)** initiative. GROW Barley represents a collective commitment of \$1.5 million over seven years to address this research gap head-on. This initiative will collaborate closely with stakeholders to develop a robust barley agronomic research program that will adapt practices to match the genetic potential of new barley varieties.

SaskBarley continues to make other strategic investments in research. This year the organization has invested over \$2.1 million towards new research that will benefit Saskatchewan barley farmers. The highlights of these funding commitments are on page 16.

Canadian barley is also facing multiple marketing challenges in 2024. The strong export program we've enjoyed over the last few years is struggling now that China has lifted the 80% tariff on Australian product. In addition, the feed barley market is challenged with competition

from greater volumes of U.S. corn imports. Peter Watts of the CMBTC highlights some of these challenges on page 9.

In the spirit of collaboration, SaskBarley has had a very active winter, participating in several events with industry partners, including:

- Grade School (with Sask Wheat)
- On-Farm Trial Results (with SaskCanola, SaskPulse, and Sask Wheat)
- Top Notch Farming (with SaskCanola and SaskFlax)
- Canadian Barley Symposium (CBRC and BMBRI)
- BarleyBin Live and Producer Malt Academy (with CMBTC).

These events have given us opportunities to connect with barley farmers across the province. If you missed us this winter, visit our website [SaskBarley.com](http://SaskBarley.com) and sign up for our mailing list to stay connected on our upcoming activities for the summer/fall of 2024.

**Cody Glenn**  
Chair

**SaskBarley**  
DEVELOPMENT COMMISSION




# THE CHALLENGE OF CHIT

Understanding pre-harvest sprouting challenges and future solutions

by Delaney Seiferling  
*Freelance writer*

**W**hen Keith Rueve took a sample of his malting barley to his local buyer last fall, he was surprised to be told it was 40% chitted.

Although he knew there had been some untimely rains in his area in August, he also thought his barley had been green enough leading up to harvest that his crops wouldn't be too heavily affected by the moisture.

"I was pretty comfortable that my barley wasn't ready yet," says Rueve, who farms south of Muenster.

"I've seen barley chit before when it's laying in a swath, but this was standing barley that wasn't one hundred percent mature."

Rueve says he swathed the barley around August 25 and picked it up before August 29.

"Conditions were nice and dry when we harvested it."

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## WHAT IS CHITTING

Pre-harvest sprouting or “chitting” is the premature sprouting of grain before harvest. The early stages of germination can occur without any visible changes to the kernel. One of the enzymes produced during the very early stages of germination is alpha-amylase. The level of alpha-amylase is very low in sound grain and higher in grain that is germinating. Rapid Visco Analysis, or RVA, is a fast and objective test for detecting and measuring the degree of pre-germination in barley. RVA indirectly estimates the amount of alpha-amylase in barley by measuring the viscosity of ground barley in water.

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**THE IMPACT OF UNTIMELY RAINS**

Rueve wasn't the only one to have a problem with pre-harvest sprouting (PHS) in barley last year.

Although the growing season was generally characterized as too hot and dry, certain pockets of the province — mainly the northwest, southwest, and northeast — saw untimely rainfalls in mid-August that led to reports of PHS.

**EARLY SEEDING AND VARIETY CHOICES IMPACT MARKETABILITY**

Zenneth Faye, who farms near Foam Lake, SK, saw many

of his neighbours suffer similar fates to Rueve. He believes the only reason he didn't is because he seeded his barley early.

"Seeding early usually works a bit better," he says. "You do have a better chance to avoid later harvest weather issues with moisture if you get it in early enough."

But he says seeding early is not always an option — or can be a challenge. He planted his barley three different times last year.

"We were lucky that, because of the spread in times of seeding, we were able to dodge the moisture that did come between the fog and high humidity that we had this fall for a few days."

Another factor affecting pre-harvest sprouting levels last

“  
**This is an opportunity to improve PHS resistance and still limit dormancy for consistent malting performance.**  
 Mitchell Japp  
 SaskBarley Research and Extension Manager

year was variety choice. Lower-enzyme varieties, such as CDC Churchill and CDC Copeland, tend to be less prone to PHS than higher enzyme varieties such as AC Metcalfe, CDC

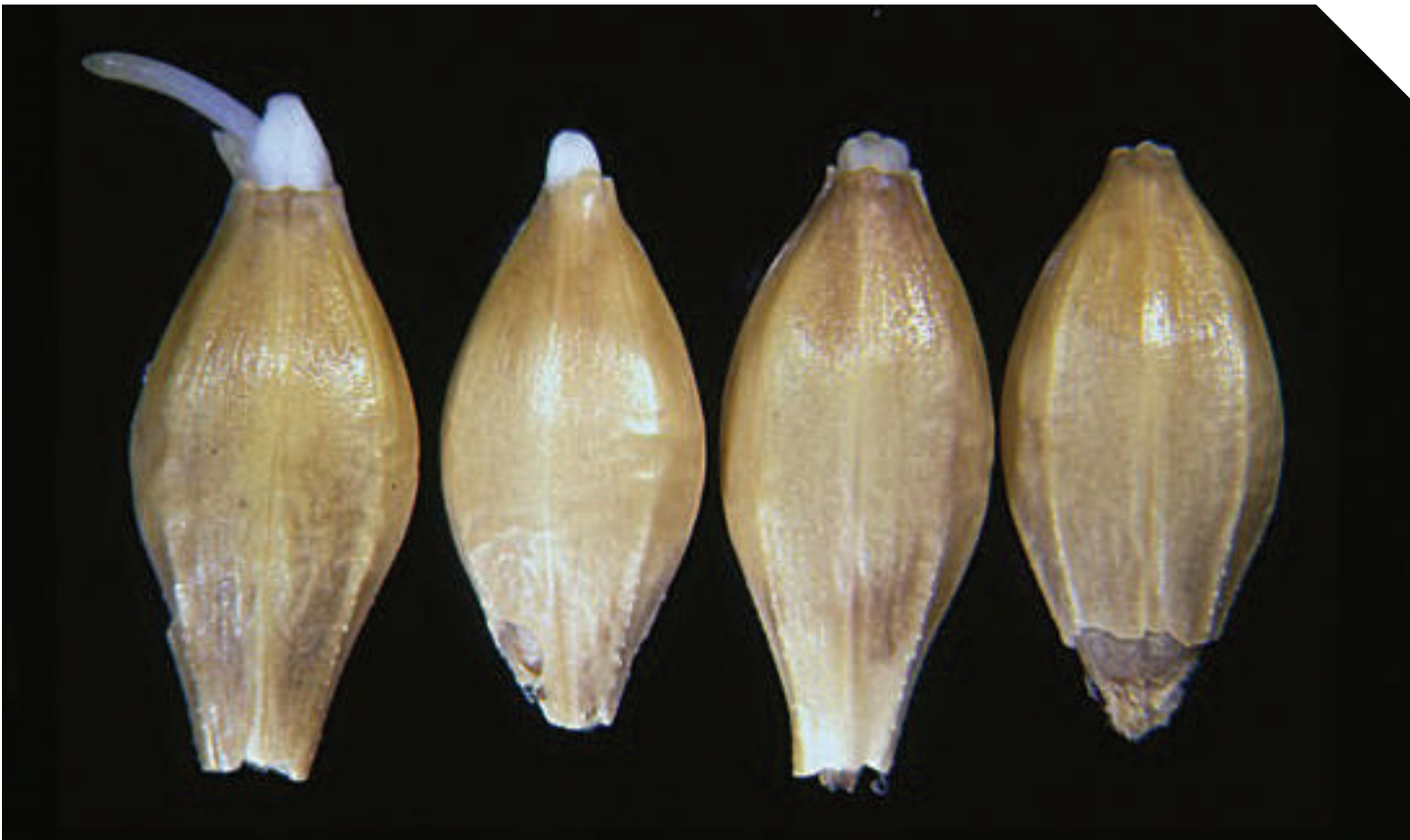
Fraser and AAC Prairie. CDC Fraser, which is climbing in popularity amongst Saskatchewan growers, accounted for 6.5% of seeded malt barley acreage in Saskatchewan last year.

Peter Watts of the Canadian Malting Barley Technical Centre (CMBTC) says these issues heavily impacted exports.

"It affected so much CDC Fraser that the grain companies weren't able to source a commercial cargo of 25,000 tonnes this year," he says.

The problem hit hard at a farm level as well. Rueve says he was able to sell his malting barley as feed, but he still took a big hit on price.

"It's at least a dollar a bushel difference," he says.



Untimely rains in the fall of 2023 saw many Saskatchewan growers struggle with pre-harvest sprouting (chit) in their barley crop. Photo courtesy of the Canadian Grain Commission Grains Research Laboratory

## DEVELOPING PHS-RESISTANT VARIETIES

For next year, he says he'll be growing something different. But in the longer term, some tools are in the works to help growers take back control over this frustrating issue.

SaskBarley has recently invested in research to develop newer varieties with optimal dormancy levels, as dormancy is the trait that allows seeds to delay germination until after maturity.

The project, which kicked off last year and will wrap up in 2025, will find and incorporate new malting barley traits to allow for the right balance of dormancy in the seed. This means that varieties will have a lower risk of PHS but lose their dormancy after harvest to still allow for quick and efficient germination when it comes to malting.

This will give growers who tend to experience high levels of humidity or moisture and/or who have had issues with PHS another option, says SaskBarley's Research and Extension Manager Mitchell Japp.

"We understand the challenges that preharvest sprouting presents and that varieties with PHS resistance helps barley growers," he says.

"This is an opportunity to improve PHS resistance and still limit dormancy for consistent malting performance."

He says SaskBarley also has a project concept in development that will review barley varieties for PHS resistance, in order to provide growers with more information to make the best strategic choices for their operations.

"PHS resistance ratings, like ratings for resistance to lodging or diseases, will help growers

choose a barley variety that works for their own operation."

## FOLLOW BEST PRACTICES TO AVOID PHS

In the meantime, growers can take comfort in the fact that there are more malting barley varieties available to them today than there were ten years ago, as market acceptance for newer varieties is slowly growing.

This means growers can increasingly choose lower enzyme varieties, such as CDC Churchill, without worrying if there will be a market for them, says Watts.

"It doesn't mean that Churchill can't sprout, but it's a lot less prone to sprouting in the field than some of the higher enzyme varieties," Watts says.

Regardless of what variety they're growing though, growers are also still advised to follow best practices in order to control PHS to the best of their abilities, says Japp.

"From a management perspective, targeting barley harvest at 17-18% grain moisture content is optimal for preserving malt quality, as long as there is a willingness to dry the grain low and slow to preserve malt germination," he says.

Harvesting early can also increase flexibility with other crops and reduce potential impacts from fall precipitation, he says.

Faye also believes seeding dates matter.

"We know, in the grand scheme of things, seeding early does give you a bit of an edge." 🌾

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To hear more stories like this one, tune in to our BarleyBin Special Series podcast: A look back at 50 years of barley breeding in Western Canada: [barleybin.ca/podcast-special-series/](https://barleybin.ca/podcast-special-series/)



**Chitted barley seeds.** Photo courtesy of the Canadian Malting Barley Technical Centre.

# Barley, lentil and vegetable soup

by Jenni Lessard, [CanadianFoodFocus.org](http://CanadianFoodFocus.org)

The toasted barley and wild rice topping adds a tasty crunch to this whole grain barley soup packed with lentils and vegetables. This soup freezes well if you have any leftovers.



**Prep Time:** 15 minutes      **Cook Time:** 50 minutes      **Total Time:** 1 hour 5 minutes

**Servings:** 10 servings

## INGREDIENTS

### Soup

- 2 Tbsps canola oil
- 1½ cups onion diced
- 4 cloves garlic minced (reserve 1 tsp/ 5 mL for topping)
- 2 large carrots diced
- 4 celery stalks diced (reserve leaves for topping)
- 1 cup other vegetables diced, (use up what you have in your refrigerator)
- 8 cups water
- 28 oz can tomatoes whole or diced
- 1 tsp onion powder
- 1 tsp dried oregano
- 1 tsp dried basil
- 1 tsp salt
- ½ cup split red lentils well rinsed
- ½ cup pot or pearl barley
- 2-3 bay leaves
- ½ tsp chili flakes
- 2 Tbsps pickle liquid any kind, or vinegar
- 1 Tbsp maple syrup or honey
- salt and pepper to taste

### For Topping

- 1 Tbsp canola oil
- 1 clove garlic minced
- ⅓ cup pot or pearl barley
- ⅓ cup wild rice
- salt and pepper to taste

## FOR SOUP

1. In a large saucepan, heat oil over high heat. Add onion and garlic, sauté for about 2 minutes or until garlic starts to brown and onions are translucent.
2. Add carrots, celery, mixed raw vegetables and continue sautéing for 4 to 5 minutes or until vegetables are almost tender. Mix in onion powder, oregano, dried basil, salt and cook another few minutes.
3. In a large pot, add vegetable mixture, water, tomatoes with their liquid, lentils, barley, bay leaves and chili flakes. Bring to a boil, cover and reduce to a simmer for about 30 minutes or until barley has expanded, and lentils are soft.
4. Add pickle liquid and maple syrup to soup. Taste and add more salt and pepper if needed.
5. Allow to cook an additional 10 minutes to thicken. Remove bay leaves. Top with toasted barley and wild rice bits and celery leaves. Serve.

## FOR TOPPING

1. In a heavy bottomed or cast-iron pan heat oil over medium high heat. Add reserved garlic and cook just until browned. Remove garlic from pan and set aside. Remove barley and wild rice from pan and add to garlic, season with salt and pepper; Set aside.
2. Return pan to heat, add barley and wild rice, toast until wild rice pops and barley is browned. Stir occasionally to prevent burning.
3. Remove barley and wild rice from pan and add to garlic. Season with salt and pepper; Set aside.

### Notes

If using whole tomatoes break up into smaller pieces before adding to the soup.

### Vegetable suggestions:

mushrooms, cabbage, potato, cauliflower



Photo courtesy of [CanadianFoodFocus.org](http://CanadianFoodFocus.org)



# “It’s going to be a challenge for us to sell barley into China in this current year”

Q&A with Peter Watts about changes to recommended malting barley varieties, global supply and demand, and this year’s market outlook

Last year, SaskBarley’s Mitchell Japp sat down with the Canadian Malting Barley Technical Centre’s (CMBTC) Managing Director, Peter Watts, on the BarleyBin Podcast to discuss recent changes to the recommended malting barley varieties in Canada, supply and demand for Canadian barley, and factors affecting market demand for our products.

Here are some excerpts from the interview (which has been edited for clarity and brevity).

**Mitchell Japp: The 2024/25 Recommended Malting Barley Varieties list features some changes over previous years. Tell me about these changes.**

**Peter Watts:** We are trying to provide as much information as possible so that producers can make their own decisions and for the entire industry to understand the evolution of these varieties.

Last year we included a “demand” category, to indicate whether demand is growing, stable or decreasing, this year we broke the demand category into domestic and international to provide additional information.

For example, with a new variety like CDC Churchill, the international market hasn’t had

CMBTC’s 2024-25 RECOMMENDED MALTING BARLEY VARIETIES						
VARIETY	AAC CONNECT	CDC FRASER	CDC CHURCHILL	AAC SYNERGY	CDC COPELAND	
EXPORT DEMAND	Growing ↑	Growing ↑	Developing	Peaked ▲	Peaked ▲	
DOMESTIC DEMAND	Growing ↑	Growing ↑	Growing ↑	Declining ↓	Declining ↓	
PRODUCTION	Increasing ↑	Increasing ↑	Increasing ↑	Stable →	Decreasing ↓	
SEED DISTRIBUTOR	CANTERRA SEEDS	SeCan	SeCan	FP Genetics	SeCan	

a chance to test this variety – so it’s considered in development. But domestically the Canadian malting industry has already started to use Churchill, so we can indicate that there’s demand in the domestic market.

**MJ: We saw in stats from the Canadian Grain Commission that CDC Copeland is no longer the top variety, it’s been surpassed by AAC Synergy. So, a bit of a shift in dynamics there. As well, we saw the continued rise of CDC Fraser and AAC Connect, along with CDC Churchill.**

**PW:** We had AC Metcalfe and then CDC Copeland so dominant for a 20-year period and now finally AAC Synergy, which was registered in 2012, has

gained widespread acceptance both domestically and internationally and emerged as the number one seeded variety in 2023. This is not surprising. It’s a very good yielding variety and well accepted in the marketplace. I imagine that Synergy will be, for the next couple of years, the top-seeded malting barley variety.

**MJ: Are there other varieties listed that may be more ‘niche’ varieties, i.e. earlier in development, where the risk of getting a malt contract or purchase is a little bit higher? So maybe you want to start with a contract on any of those varieties, or understand there’s a higher risk if you do grow those without a contract?**

**PW:** Producers should always talk to their local elevator manager or malting company buyer about which varieties they’re interested in. They should also discuss opportunities to contract, particularly with the newer varieties on the CMBTC recommended list.

A variety like Synergy or Copeland is pretty low risk for producers in terms of making a sale. Some of the newer varieties — even the ones on the main box like Connect and Fraser — are probably still good varieties to have a contract with.

There are still opportunities to contract older varieties like AC Metcalfe and there are newer varieties, like CDC Copper for

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example, that haven't gained widespread acceptance, but may have contracting opportunities available. Or a variety like CDC Goldstar, which is a proprietary variety of Boortmalt — Prairie Malt in Biggar. Producers interested in growing that variety can reach out to Boortmalt.

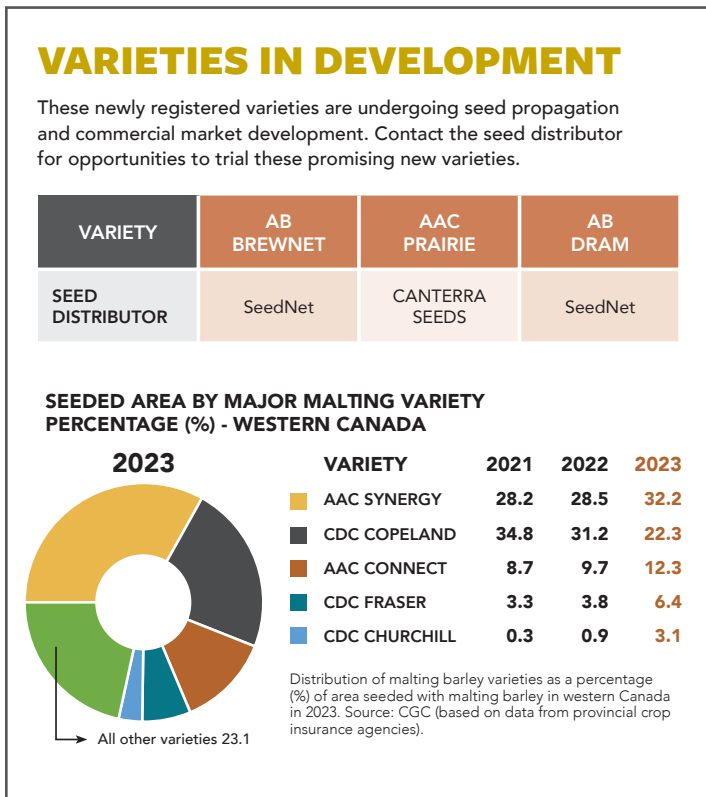
So, yes, there are a number of varieties in addition to the five in the main box on the CMBTC recommended list, where there are definitely markets. Producers should take a look at that list ... there may be some additional niche opportunities there.

**MJ: We've seen a big shift in the Chinese market recently. Canadian barley had previously set record exports there, year after year, as China had a steep tariff on Australian barley imports. Now that China and Australia have made amends and they're accepting Australian barley again, what do you think that means for the Canadian crop?**

**PW:** I'm not going to sugarcoat it: with the world's largest malt barley exporting country, Australia, back in the Chinese market, there's no question that is going to have an impact on Canada and our barley exports to that market.

There is an intrinsic demand in China for Canadian quality, so we still are going to be exporting there, but certainly not in the same quantities that we have been over the past three years.

We want to make sure we go and visit our customers in China to reinforce that we're still here, there's barley in Canada available, and to talk



about the new varieties and the quality advantages. We've got high enzyme and high protein content that generally isn't available from other origins in the world and is important for adjunct brewers — those using corn or rice to supplement fermentable sugars in the grist like major brewers do in China and around the world.

But we do have to be competitive. Barley prices have been very high historically in Canada over the past three or four years after the drought of 2021. Prior to that, the big purchases from China really drew down our stocks so we're still feeling the effects of that. The prices are still relatively strong.

On the flip side, with Australia being locked out of the Chinese market for several years, they built up stocks, so their prices are very competitive today. It's going to be a challenge for us to sell much barley into China in the current year.

But we have to look to the future. This is our biggest market for malt barley exports. Making sure we're talking to the customers there and understanding their needs. Visiting them is very important. It's a symbol of the value that we place in that market. The end users really appreciate that. It's those relationships that help maintain access to that marketplace.

**MJ: Our customers in China value relationships, so that's worth something. But at the end of the day, we still have to be competitive. And that's why it's so critical to get new varieties accepted. Producers can't grow them if there is no market.**

**Canada's malting industry is pretty reliant on a fairly small number of markets so any advantage we can get in a new marketplace makes a lot of sense.**

**PW:** For sure. We have to get end users in new markets testing Canadian malting barley to understand the performance characteristics and advantages. But we also have to recognize that it's not just as simple as getting a malt variety accepted in a market. It's about price. It's about logistics.

It seems strange that a market like Mexico, which seems relatively close to us, would be a logistical challenge. But actually, to get Canadian malting barley to the malt plants in Mexico is logistically difficult.

For example, there's a large malt plant in southeastern Mexico, close to Puebla. The barley has to go in through the east side of Mexico so it would have to be shipped through the Port of Vancouver down through the Panama Canal and then come back up to Veracruz in Mexico. That's a long way. Freight-wise, it's more expensive for Canada to ship to Mexico than Australia, and certainly much more expensive than it is for France.

Those are some of the challenges that we face.

But again, we have an advantage in terms of our quality, so we have to demonstrate that to the end users.

That, in my mind, is pretty promising. Trying to get into new markets, it's not straightforward, it's not easy. But we need to diversify our market base so we aren't reliant on such a limited number of markets. 🍷

Watch for this episode in Season 3 of the BarleyBin Podcast this fall. You can catch up on the first two seasons at BarleyBin.ca or wherever you get your podcasts.

# Malt evolution

Growers embrace new varieties, propelling innovation in brewing and malting sectors

by Delaney Seiferling  
Freelance writer

## A CHANGING OF THE GUARD

For almost 20 years, the Canadian Malting Barley Technical Centre (CMBTC) has released an annual list of recommended malting barley varieties for Western Canadian growers.

And for almost 20 years, it has remained mostly unchanged.

Until recently.

Last year for the first time, CDC Copeland — the top seeded variety in Saskatchewan for many years — fell from the top of the list.

AC Metcalfe, which was the dominant variety for about 15 years before Copeland took over, dropped off the list completely last year.

Replacing these are newer varieties, including CDC Fraser and AAC Connect, both registered in 2016.

This was welcome news to many barley growers, including veteran Keith Rueve.

He planted CDC Fraser last year and although he had troubles with pre-harvest sprouting (see cover story on page 4), he was pleasantly surprised with some of the variety's other attributes.



*Peter Watts discusses the complexities of generating market demand for new varieties and how Canadian brewers are more willing to accept them than others. Photo by FarmStockImages.com.*

“It was the highest yielding barley I’ve ever gotten in my life,” says Rueve, who farms south of Muenster, SK.

“We netted well over a hundred bushels an acre.”

## NEW VARIETIES MEAN NEW MARKET OPPORTUNITIES

Like Rueve, more and more Saskatchewan barley growers have been growing these newer varieties in recent years.

In 2023, CDC Fraser accounted for just under 6% of seeded malt barley acreage in Western Canada (from 3% in 2021) while AAC Connect jumped to 12% of seeded malt barley acreage. At the same time, CDC Copeland acreage fell to under 22% (down from 44% in 2019) and Metcalfe to 4% (down from closer to 24% in 2019).

These changes may not seem Earth-shattering, but they are

positive developments that have been long in the making, says Peter Watts, Managing Director of the CMBTC.

“We’re gradually getting these varieties broadly accepted into the marketplace,” he says.

With support from SaskBarley, Watts and his team have been working to support more rapid market acceptance of newer malting barley varieties for many years now.

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Five years ago, they launched a commercial production trial project, which saw them shipping commercial quantities of newer varieties, including AAC Connect and CDC Fraser, to processors in China.

“They would then test the variety in their plant, and then sends samples of the malt to brewers to test, as a way to gain acceptance,” he says.

Watts says this project has yielded positive results and he expects this to continue.

## KEEP YOUR EYES ON CHURCHILL

Last year, he shipped production trial samples of CDC Churchill to China and has already had positive feedback on it. He expects to see more interest in this variety, from the buyer side, in coming years — especially because maltsters are already familiar with it and it’s growing in popularity with farmers. Seeded acreage increased from under 1% in 2022 to just over 3% in 2023.

“Churchill is sort of a natural successor to Copeland in terms of quality profile,” he says. “It’s a lower protein variety, a little bit more tailored towards craft sector, but everybody uses Copeland — the Chinese market, and domestic industry, macro brewers, so there’s no reason they couldn’t use Churchill.”

Jon White, a barley buyer with Viterra, is also optimistic about the future for CDC Churchill.

“With the amount of acres the market is expecting, I think Churchill will find a home both domestically and export.”

## THE CHALLENGES OF CHANGE

But while recent

developments have been positive, Watts cautions that there is still lots of work to be done — and that fostering demand is a complicated concept. There are different categories of beer amongst all types of brewers, he says, and each category has different malt varieties approved for its production.

“There are still many brewers that have not accepted those newer varieties either at a macro level or at a specific product level,” he says.

He says balancing out

role in nurturing international market demand, and to date, it has widely adopted newer varieties.

“All of the Canadian maltsters have accepted these varieties and are using them to varying degrees, depending on their end use customers,” Watts says. “They’re the first market for those new varieties.”

Canadian brewers are generally recognized as leaders for their innovation, says Hilary Hoogsteen with the Canadian Craft Brewers Association.

“They are always looking



***Our international judging panel has noted that Canadian brewers are making world class beers, and that our beers certainly measure up on the global stage. I think that that could certainly speak to the innovation of Canadian breweries.***

**Hilary Hoogsteen**

*Canadian Craft Brewers Association*

acceptance of new varieties amongst farmers, maltsters and brewers can also be tough.

“It’s the proverbial chicken-or-egg thing, because buyers can’t use a new variety commercially until there are sufficient quantities. But farmers don’t want to grow a variety unless there’s a market.”

## CANADIAN MALTING AND BREWING INDUSTRY MORE INNOVATIVE THAN MOST

The good news is that the Canadian malting and brewing industry plays an important

to have an edge on creativity so I would say that’s probably why you’re seeing a very open-minded approach to new varieties, because they’re constantly innovating.”

Hoogsteen manages Canada Beer Cup, an annual competition for Canadian brewers which brings in a panel of esteemed international judges.

Their feedback has re-affirmed the innovative spirit of the Canadian brewing sector, she says.

“Our international judging panel has noted that Canadian brewers are making world class beers, and that our beers certainly measure up on

the global stage. I think that that could certainly speak to the innovation of Canadian breweries.”

Shawn Moen, co-owner of craft brewery 9 Mile Legacy, based in Saskatoon, says that Canadian artisanal maltsters, such as Makers Malt in Saskatchewan and Red Shed in Alberta, also deserve recognition for helping evolve demand for newer malting barley varieties.

“If the sector is too dominated by larger players, uniformity will be preferred,” he says.

“Multiple maltsters can result in new varieties arriving in the boil kettle sooner, particularly when paired with a vibrant craft brewing industry.”

White also believes the Canadian malting and brewing sector is a key factor in driving international demand for newer varieties.

“Since that is more consistent of a demand piece, they likely need to be a key factor in varietal switching”

He is also optimistic about the future adoption of newer varieties.

“I don’t overly see issues with the Chinese customers trying new varieties as most have an appetite to use them. I am expecting to see Copeland decline, Synergy slightly decline, where Connect/Fraser/Churchill will all increase.”

And although Watts cautions that changes will still take time and effort on the part of the Canadian barley industry, these small developments in recent years are welcome news to growers like Rueve.

“The CMBTC has done a fantastic job of promoting these newer varieties and I’m confident that we will be able to replace these 25-year-old varieties with these newer ones.” 🍷

# Keeping stress low for your seed this spring

Exploring the dynamic relationship between seed treatments and plant health and performance in Saskatchewan's varied seeding conditions

by Mitchell Japp

Research & Extension Manager for SaskBarley

When are seed treatments necessary? Cool and wet conditions may come to mind in response to that question. What about wet and warm conditions, or dry and cool? Or dry and warm? We experience a range of seeding conditions in Saskatchewan, but how do those conditions impact your decision to treat your seed?

Last spring, I saw a thread on Twitter/X by Adam Vossepoel (@voss\_ag). Adam presented a range of conditions where seed treatment would be useful, none of which included disease or insect pressure. The thread got me thinking about what we know about a seed's response to seed treatment when the stresses the seed faces are not insects or disease. In his thread, Adam explored how plants respond to stress and how seed treatments influence that response. But first, he posed three simple questions.

- 1) Do you wait until soil temperature is 10°C?
  - 2) Does your seed bed have at least 65% moisture?
  - 3) Is there zero risk of frost?
- If you answer "no" to any of the preceding questions, a seed treatment may be beneficial. Of course, seed treatments



**Seed treatments are well established solutions to disease and insect pressure, but they support against abiotic pressures as well.** Photo courtesy of Delaney Seiferling.

are well established solutions to disease and insect pressure. In my correspondence with Dr. Kelly Turkington, Plant Pathologist at Agriculture and Agri-Food Canada in Lacombe, he shared that cool and wet soil conditions at seeding aren't necessarily when seedling and

root disease pressure is the highest.

For several pathogen species, the optimum temperature for growth is well above 10°C, and in some cases will be in the 15-25°C range. When seeding starts, many soils will be below 10°C, which is too

cool for these pathogens to grow, and if they do grow, it will be slowly. For seed and root rot pathogens like *Fusarium*, *Cochliobolus*, *Pythium*, and *Rhizoctonia* that prefer warmer conditions, they will be less aggressive on the seed and seed health when conditions are cool in the planting and early growth stages. At the same time, plant growth is slower at lower temperatures. Seeding into cool soils may result in a weaker plant that is more susceptible to disease once conditions are warmer; so, seed treatments can be worthwhile, even if the pathogen pressure will be delayed.

There are also pathogens that favour cool and dry conditions. Dry seed rot can be caused by saprophytic fungi, like *Penicillium* and *Aspergillus*, reducing stand establishment. These pathogens develop in storage on grain that has been kept in damp conditions. Dry seed rot is an issue when germination is delayed due to cold or dry soil conditions.

Beyond disease and insect pests, abiotic stressors, including temperature and moisture conditions, influence the health and performance of seedlings. Enhancing the seedling's ability to cope

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# Unlocking growth

Exploring the impact of Plant Growth Regulators on barley yield and lodging reduction

by Geoff Geddes  
Freelance writer

While some regulations, like the ban on purple garage doors in Kanata, Ontario, border on the absurd, plant growth regulators (PGRs) may keep farmers in the black. These synthetic compounds offer a host of potential benefits for cereal producers, including shorter and stronger stems which reduced lodging and increased harvest efficiencies. Making the most of those benefits was the focus of the project “Maximizing feed barley yield while minimizing lodging”.

“Producer yields are dependent on a number of factors, including cultivar selection and agronomic practices,” says Dr. Francois Paradis, Director of Applied Research at Lakeland College in Edmonton, Alberta. The study was led by a team of scientist out of the college and overseen by Dr. Paradis.

“Cereal crops are a significant contributor to the economy in western Canada, but lodging is a serious issue faced by producers. Barley can grow quite high and, depending on the weather, may get flattened, making it hard for farmers to harvest. In addition, PGR



*Dr. Francois Paradis, Director of Applied Research at Lakeland College in Edmonton, Alberta led a team of scientists in the SaskBarley funded study to “Maximize feed barley yield while minimizing lodging”. Photo courtesy of Lakeland College.*

treatment generally requires its own separate application to ensure that the product is applied at the right time. As a result, growers must contend with production and management challenges that they would rather avoid.”

In terms of timing, the study followed the approval of Syngenta’s PGR, Moddus®, for use in Canada. The product reduces lodging by limiting the production of gibberellic acid (a hormone found in plants and fungi) and shortening the internodes on cereals (sections of

stem between nodes that carry water, hormones and food).

Though gauging the effectiveness of Moddus was a big focus of the project, it wasn’t the only priority for scientists.

“Producers are reluctant to adopt new feed barley cultivars despite the promise of higher yields,” says Dr. Paradis. “Therefore, we examined the effect of PGRs on three barley varieties - CDC Austenson, Esma, and Hague – at a number of sites in Alberta (Vermilion, Fahler and Lethbridge). We chose these lines to ensure

we had a blend of established options and ‘up and comers’”.

The study also wanted to minimize the number of trips producers must make to the field for spraying of fungicides and herbicides, so it incorporated tank mixing, looked at single versus split rate application, and examined the impact of spraying at various stages of plant growth.

With two years of the project completed to date, preliminary analysis of the results shows that Moddus does reduce height with the proper



***“Based on our findings thus far, PGRs are a tool that farmers can have in their arsenal to mitigate lodging”***

**Dr. Francois Paradis**  
Director of Applied Research  
at Lakeland College

application timing, and the effect seems to vary between cultivars.

“We have also seen evidence that PGRs in general produce different effects on different cultivars.” We saw that the split rate application seemed more effective in reducing plant height, and that PGRs had a greater impact on CDC Austenson. There were also changes in performance from site to site, suggesting that soil conditions or weather at these locations played a role. Of note, we did not observe any negative

effect on maturity or yield.”

In the always competitive crop industry, growers need every edge available, and scientists hope they will find one in this initiative.

“Based on our findings thus far, PGRs are a tool that farmers can have in their arsenal to mitigate lodging. That said, the decision to apply them should be based on factors like farm location, weather conditions and amount of precipitation expected, rather than using a blanket application approach.”

While those who feed the world do it largely out of passion and purpose, making a living is kind of important too, something that is top of mind in this study.

“Our results show that PGRs would not necessarily add value in a dry year where plants don’t reach their height potential and present a lower lodging risk. One of our goals is to provide some input into future best management practices for when you should consider using PGRs due to potential economic benefits, versus when it could be avoided. Everything in agriculture has a cost, so if we can save unnecessary outlays for producers, and ensure that their use of PGRs is as cost-effective as possible, we can really make a difference.”

Of course, making a difference is a big task, one that requires multiple stakeholders, and this study is no exception. With chief funding supplied by the Agriculture Funding Consortium, led by Results Driven Agricultural Research (RDAR), the project also received financial support from Manitoba Crop Alliance, SaskBarley, Alberta Grains, Western Grains Research Foundation and Alberta Beef Producers.

Since ag research is all about the end user, Dr. Paradis would love to welcome interested parties to their annual field day and show them the project up close. Those wanting to register can visit the Lakeland College website ([www.lakelandcollege.ca](http://www.lakelandcollege.ca)). 🌾

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with abiotic stress can lead to improved plant health and performance throughout the growing season.

Anecdotally, I’ve heard of crops having a positive response to seed treatments in the absence of disease or insect pressure. Research is confirming those anecdotes. Dr. Brian Beres, Research Scientist at Agriculture and Agri-Food Canada in Lethbridge, observed some positive effects from seed treatments in his agronomic research on winter wheat. He found that stand establishment was improved with a seed treatment in general. And, in conditions where the agronomic package was not ideal (low seeding rate and thin seed), a seed treatment could compensate (partially) for the reduced performance compared to an optimal agronomic package.

Research is available with the specifics of how these responses are possible, based on changes within the plant. Effects from seed treatments will vary by product, but a quick summary of positive effects may include:

- physiological changes that improve root development
- improved seedling vigour
- improved freeze tolerance
- improved drought tolerance
- improved growth
- and early flowering.

The research that has been conducted on seed treatments has shown some clear benefits. While seed treatments may not be necessary in all conditions, they can provide protection to the seed from both biotic and abiotic stressors — anticipated or not. 🌾

# A multi-million dollar commitment to innovation

SaskBarley’s strategic investments promise breakthroughs in barley production, collaborating with industry partners for a brighter future

by Mitchell Japp

Research & Extension Manager for SaskBarley

In January, SaskBarley announced a commitment of \$508,655 to funding barley research over the next four years through the Agriculture Development Fund (ADF) program. In the same vein, this organization has also committed \$856,651 to even more barley research through the Agriculture Funding Consortium (AFC).

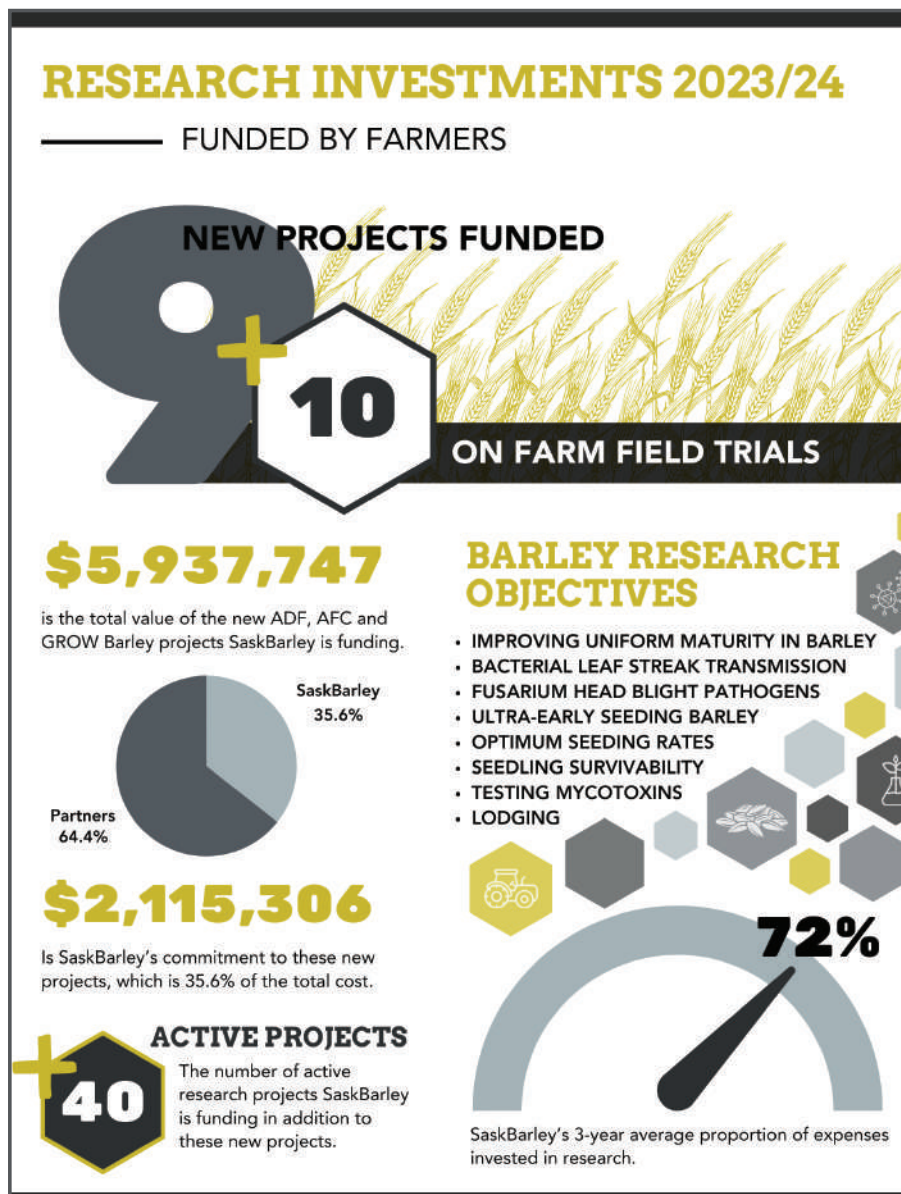
These research projects focus on areas of the highest concern to Saskatchewan barley farmers, including:

- improving uniform maturity in barley
- bacterial leaf streak transmission
- fusarium head blight pathogens
- ultra-early seeding barley
- optimum seeding rates
- seedling survivability
- testing mycotoxins
- and lodging

SaskBarley is partnering with other organizations to fund these projects, including: the Saskatchewan Ministry of Agriculture, Results Driven Agriculture Research, Alberta Grains, Manitoba Crop Alliance, Sask Wheat, and the Western Grains Research Foundation.

Through the Canadian Barley Research Coalition (CBRC), SaskBarley is jointly funding the Grant for Research Optimization of Western Barley Agronomy (GROW Barley) initiative. With other CBRC partners and the Brewing and Malting Barley Research Institute (BMBRI) – this program is designed to advance barley agronomic research over the next seven years. SaskBarley’s commitment is \$750,000 over that time frame.

In addition to these programs, SaskBarley will also be working directly with Saskatchewan farmers on up to



10 on-farm research trials this summer through the BarleyBin Field Lab. SaskBarley partners with SaskCanola, SaskPulse, Sask Wheat and the Indian Head Agriculture Research Foundation

(IHARF) to deliver these on-farm trial projects. The Seeding Rate Protocols and results from last year’s trials can be found at [SaskBarley.com/projects/barley-bin-field-lab](https://SaskBarley.com/projects/barley-bin-field-lab).



Revolutionizing varietal purity testing: ZoomAgri has created a game-changing AI solution. Photo courtesy ZoomAgri.

# Cutting costs and time

## SaskBarley funds CMBTC's initiative to explore rapid varietal purity assessment

by Mitchell Japp

Research & Extension Manager for SaskBarley

Malt companies usually require a minimum of 95% varietal purity. Typically, this is not a problem. The malt industry tends to be dominated by only one or two varieties. Many farms choose a variety and grow it for several years. Some malt companies require that producers buy certified seed every other year to ensure varietal purity is maintained.

One of the challenges of varietal purity has been that testing for it is both costly and quite slow. DNA tests for varietal purity cost a couple hundred dollars and may take several days or more to get results. That means

that the grain is delivered and subject to discounts in the rare circumstances where varietal purity standards are not met.

Recently, SaskBarley funded a project at the Canadian Malting Barley Technical Centre to evaluate the possibility of using ZoomAgri to monitor varietal purity. ZoomAgri is an Argentinian company that has developed an algorithm that, combining image processing and artificial intelligence, is able to rapidly determine the varietal purity of a malt barley sample for a low cost.

The idea behind the project was to provide a fast and cost-effective solution in real time for varietal purity determination to the Canadian malting industry that would complement the standard DNA testing. Specifically, that would include assessing the ZoomAgri platform's ability to determine varietal purity of Canadian barley varieties, as well as the accuracy, precision and repeatability ZoomAgri can provide compared to DNA testing.

The project was designed to be a preliminary test; some

follow-up testing will be required. The preliminary results are very promising though. Initially, the first steps were to use pure lines

**ZoomAgri has developed an algorithm that is able to rapidly determine the varietal purity of a malt barley sample for a low cost.**

of several malting barley varieties (AAC Connect, CDC Copeland, AAC Synergy, AC Metcalfe, CDC Churchill and CDC Fraser) to allow the artificial intelligence to develop an algorithm to recognize specific varieties and differentiate between them.

The algorithm for varieties CDC Austenson and Esma, as well as data collection for AAC Prairie, AB Brewnet, AB Dram,

Sirish, Claymore and Oreana are currently under development as the next phase of the project.

ZoomAgri's ability to detect varieties accurately was very promising, with consistency above 98%. When ZoomAgri was compared to DNA based testing methodology, ZoomAgri was generally within two to three per cent of the DNA results. Some initial steps have been taken to see if ZoomAgri can manage blended samples and so far, it has performed well.

Further testing is required, but to date, ZoomAgri has been delivering positive results. The testing phase has expanded to include a trial hardware installation with four customers — all major malt barley buyers and malting companies. There is potential that ZoomAgri's AI powered platform could be installed in elevator driveways or wherever you deliver malt barley to. Before the grain is dumped, a varietal purity result could be delivered, allowing more marketing options for the farmer delivering the grain. 🌾



*The original 16 founders of the Great Western Brewing Company. Photos courtesy Great Western Brewing Company.*

With Great Western you don't have to choose between buying local and buying the best.

by Geoff Geddes  
*Freelance writer*

These days, we sometimes have to choose between buying local and buying the best; but when it comes to beer, why can't you have your brew and drink it too? As it turns out, you can,

which may explain why the Great Western Brewing Company is one of Canada's most successful regional brewers and recognized across the globe for its world-class beer.

Started in 1927 in Saskatoon as Hub City Brewing Company, the brewery changed hands in 1956 when it became the O'Keefe Brewing Company. In 1989, an amalgamation between Carling O'Keefe and the Molson Brewing Company threatened to close its doors for good. That's when 16 brave staff members put down their mugs, put their money where their mouths were, and joined forces to form the Great Western Brewing Company (GW).

"Today, there is only one brewing operation in western Canada, in the heart of barley country, that has been around for almost a century," says Keith Armstrong, retired head brewer at GW. "Our history is closely linked with the Prairies, and Saskatchewan in particular, and that's special. As a result, our products fit perfectly with the palette of our customers, offering a more flavourful beer than global companies provide."

#### **BEST OF BOTH WORLDS**

While a tiny portion of their specialty malts must be sourced elsewhere, the vast majority



of GW offerings come from Saskatchewan barley and malt. Ask Armstrong if the biggest selling point for GW is supporting local or enjoying a better beer, and the answer is simple: “Yes.”

“Not only do we buy from local farmers, but our heritage means that our beers have more barley malt per bottle, can or glass than other beers produced around the world. This results in GW lines that are eminently drinkable and have the flavour to go the distance.”

Creating those lines is no small feat, as current GW brew master Devin Sherling can attest. Throughout his 30 year career in food processing, he has always been interested in working behind the scenes to make the best possible product. That said, he finds brewing to be far more complicated than anything he has ever experienced.

“There is so much going on, and one small change can wreck everything you’ve done to that point.”

### **BIGGAR IS BETTER**

“All of our malt comes from Biggar, SK, and everyone knows that our province produces the best barley on the planet, so we’re very lucky to be situated here. As well, we have so many long-term employees who know their jobs well and really care about what they do. Finally, we have the greatest customers you could ask for; they know us, support us, and help us to get better every day.”

In return, GW gives back at every turn,

*Great Western operates on the site of the original O’Keefe Brewing facility that was built in Saskatoon, Saskatchewan, Canada in 1927 for the Hub City Brewing Company.*

sponsoring junior hockey and curling in cities and small towns across western Canada. The company also supports a vast range of festivals in centers throughout Saskatchewan.

“Promoting and funding activities that bring communities together has always been a huge focus of our company,” says Armstrong. “Large global businesses prioritize the big affairs with the greatest visibility, which leaves a lot of smaller events underfunded. We prefer to work with local communities, ensuring that they have the resources they need to have fun while enjoying sports and other activities.”

While the customer is the ultimate judge of quality, the wealth of awards bestowed on GW beers is further evidence of what sets it apart. These include medal wins at The Canadian Brewing Awards, the World Beer Awards and the Monde Selection World Quality Award.

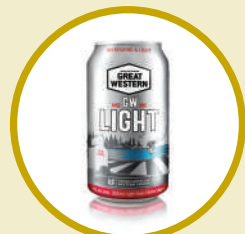
Somehow, the Great Western Brewing Company has managed to find the best ingredients close to home, use them to make amazing beer, support local farmers and events, and have fun at the same time, for almost 100 years and counting.

It’s a lot of work, but then, if it wasn’t, everyone would do it, and what’s the fun in that? 🍷



**ORIGINAL 16  
PALE ALE  
5.0% abv**

Our Original 16 beer is a tribute to the 16 employees who founded GW in 1989. It is a bit differently fermented and exceptionally well balanced. With 80% malt, it is a product of high quality and low complexity, keeping beer the way it should be.



**GW LIGHT  
4.0% abv**

GW Light is malted at Prairie Malt in Biggar, SK, with 4 different kinds of hops. The result is a very clean and refreshing beer that is easy to drink, so you can have as many as you want (within reason!) and not feel too full.

**THE SASKATCHEWAN BARLEY  
DEVELOPMENT COMMISSION:**

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

**SASKATCHEWAN BARLEY DEVELOPMENT  
COMMISSION (SASKBARLEY)**

Jill McDonald, Executive Director  
Direct Tel: 306-370-7237  
jmcdonald@saskbarley.com

**OFFICE HOURS:**

Monday to Friday  
8:30 a.m. - 4:30 p.m.

**SASKBARLEY OFFICE:**

225-415 Wellman Cres  
Saskatoon, SK S7T 0J1  
General Inquiries: 306-653-7232

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225-415 Wellman Cres  
Saskatoon, SK S7T 0J1  
General Inquiries: 306-653-7232