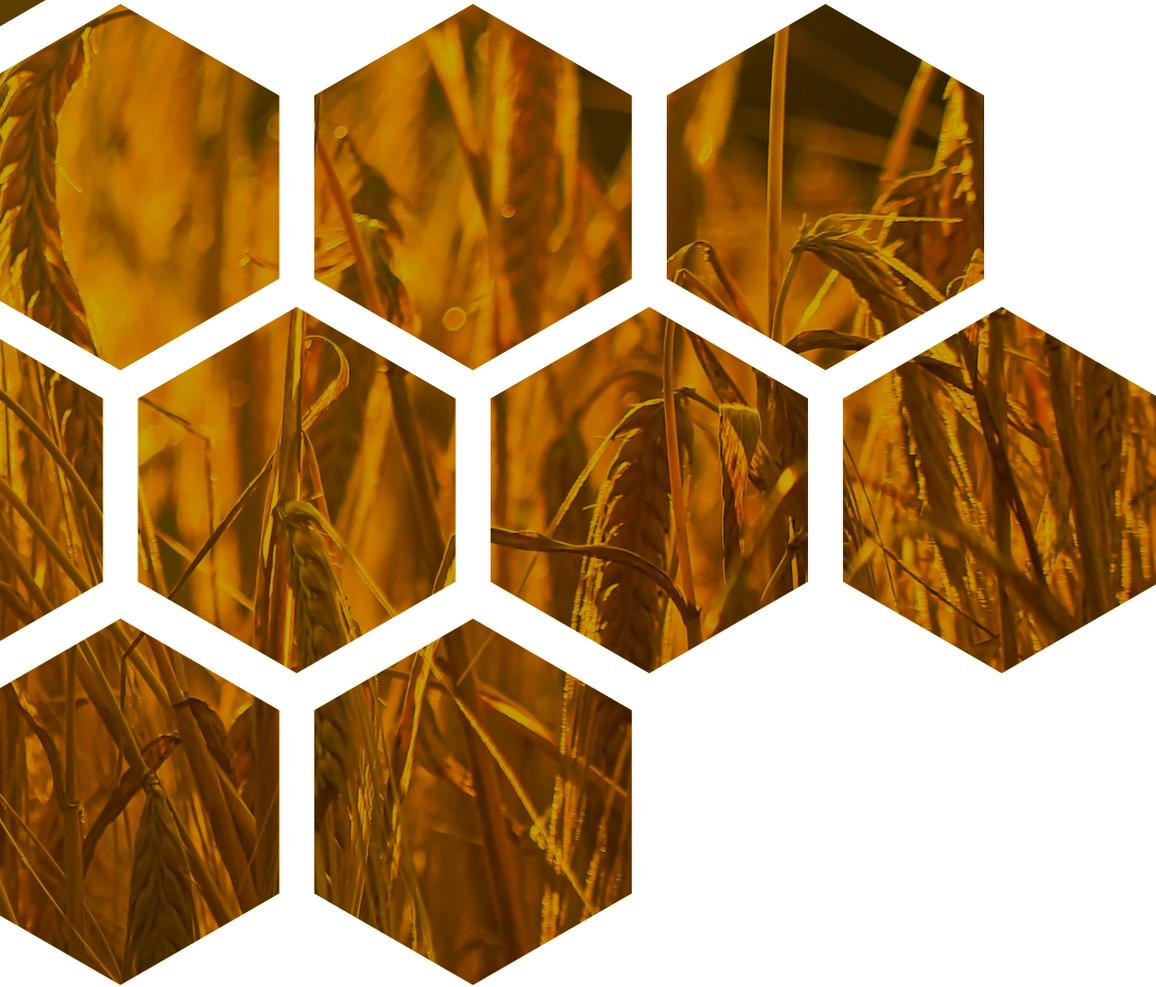


ANNUAL REPORT

# 2020/21



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## ABOUT US

The Saskatchewan Barley Development Commission (SaskBarley) was established in 2013 and is led by a producer-elected Board of Directors from across Saskatchewan. SaskBarley's purpose is to increase the production and value of barley for both the producer and consumer.

### VISION STATEMENT

To ensure barley is a long term, profitable and internationally competitive crop choice for Saskatchewan producers.

### MISSION STATEMENT

To identify, develop and support research, market development, and extension initiatives that ensure the long-term profitability and sustainability of barley for Saskatchewan producers.

### GUIDING PRINCIPLES

- Advocating on behalf of registered producers
- Maintaining and enhancing Saskatchewan's brand for quality
- Communicating best management practices for barley production
- Demonstrating transparency and good governance
- Building and sustaining collaborative relationships with organizations that share common objectives
- Identifying and leveraging available resources

## BOARD OF DIRECTORS 2020/21



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## CHAIR MESSAGE

This year was exceptionally challenging for many of us in the ag world, including on my own farm. But the challenges we collectively faced enabled our industry to come together to find ways to support farmers. The report that follows is a reflection of SaskBarley's activities from the past fiscal year, in which the good news story of record Canadian barley exports was tempered by the devastating drought of 2021.

In response to the challenges faced by producers, SaskBarley joined with several other Saskatchewan crop commissions to request that the members of the Western Grain Elevator Association (WGEA) eliminate administrative fees on contracts for 2021 without rolling them into arbitrary replacement costs. We believe this is a simple first step toward longer-term change, and one that will have an immediate impact. We were also involved in regular conversations with Minister Marit and the provincial government, requesting their support for our request. We are leveraging the momentum generated to date to push for greater changes, resulting in more equitable contracts in the future.

SaskBarley is also working with partner groups to advocate for Saskatchewan producers on a few other issues. First, we are requesting official export sales reporting, as our Board firmly believes that producers need timely marketing information now more than ever given the existing lack of transparency. We highlighted this need in our SaskBarley submission to the review of the Canada Grain Act, as well as our coalition submission with SaskWheat and the Agriculture Producers of Saskatchewan (APAS). We will continue to push this request through all available channels.

Another silver lining of this past year was our focus on agriculture research. In fiscal year 2020/21, 77% of SaskBarley's expenses went to research activities. Investing in research is one of our top priorities and over the past year we continued to ramp up our focus on projects that will directly benefit our industry. Earlier this year, we issued our own call for barley research proposals, which resulted in us investing in \$1 million in new research with direct benefits to Saskatchewan producers. This is especially important as we are unsure what federal investment in agriculture research will look like in the future. We plan to continue to grow our investments in this area in the years to come.

One example of our research investment to date paying off is the major uptick in acceptance of new malting varieties this past year. AAC Connect, CDC Bow and CDC Fraser are increasingly being used by domestic malting companies and

are also being accepted by many international customers. A reminder that the development of these varieties were backed with producer check-off dollars, which also supported their market acceptance.

We remained a major financial supporter and partner of the Canadian Malting Barley Technical Centre (CMBTC) throughout the past year. This association is integral to the value of Canadian barley and our strong involvement with them allows us to have major reach throughout our industry while maintaining a lean management structure.

Best of all, although new higher yielding barley varieties benefit the entire value chain, the biggest benefit goes to our producer stakeholders at the farm-gate. This in addition to the greatly improved agronomic characteristics of these new varieties.

Finally, our own Board is undergoing some substantial but positive changes this upcoming year. Three of our long-term, veteran directors time out on their Board terms, so in 2022, we will welcome three new Board members: Former SaskBarley Director Zenneth Faye of Foam Lake; Cody Glenn of Climax; and Maurice Berry of Carievale. These three bring decades of experience in the agriculture industry (including barley specifically) and in governance. I am honoured that these three individuals decided to run for our Board.

As I wrap up my first full year as Chair of the Board, I'm happy to report that I believe our industry continues to grow stronger. Adversity has provided direction into areas where we need to focus attention. We have also proven our ability to come together to support producers. I want to take this opportunity to thank you all for your continued investment in our industry.



**Matt Enns**  
Chair

## EXECUTIVE DIRECTOR MESSAGE

After almost eight years with SaskBarley, this role continues to be diverse and challenging. And this year was no exception. But overall, I have observed that we are moving in the right direction — building a strong future for the barley industry.

A few highlights from this past year include the addition of Mitchell Japp as Research and Extension Manager for SaskBarley. Mitchell entered with a full workload, as we also did the first-ever SaskBarley Call for Research. The purpose of this call was to stimulate high quality, barley-specific research and to increase the number of researchers working in barley. We also commissioned a report from Dr. Richard Gray at the University of Saskatchewan to determine the return on investment of barley check-off dollars for Saskatchewan producers. We were proud to report that, for every \$1 invested, \$26 is returned to producers through increased barley yields.

We are picking up momentum with the Canadian Barley Research Coalition (CBRC), an organization that SaskBarley was at the helm of creating last year. After signing long-term breeding agreements with the Crop Development Centre (CDC) and Agriculture and Agri-Food Canada (AAFC) last year, this year the CBRC began administering the National Barley Cluster, and will lead the development of the next barley cluster (CAP 2.0). Even more exciting is that earlier this year, CBRC partnered with the Brewing and Malting Research Institute (BMBRI) and was able to utilize the services of Gina Feist to manage the CBRC. She was later joined by Shelley Lagasse, who will coordinate and administer the multi-million dollar research portfolio of the National Barley Cluster.

SaskBarley has also long been involved in providing input and guidance for the Barley Council of Canada (BCC) and this past year saw considerable re-organization for BCC. While work within the industry continues to determine the best path forward for a national voice for the entire value chain of the Canadian barley industry, the BCC relocated to Saskatoon last August, and is now in the capable hands of Interim Executive Director, Adele Buettner. As the Canadian barley industry evolves, the focus continues to be on building a strong sustainable future for all stakeholders in the barley value chain.

Throughout the last two years, we have heightened and broadened our digital communications program here at SaskBarley, in great part due to the restrictions on in-person events. This year we contracted Cole's Ag Communications to help us with these efforts and as a result, we have revamped our website, launched a monthly market report, a podcast and a magazine. We've also enhanced our monthly e-newsletter and agronomic information. If you're not already on our email list to receive all this valuable information, go to our website homepage now and sign up.

We have always valued the working relationships with the other provincial crop commissions but this past year has seen exceptional collaboration amongst the Saskatchewan groups. Difficult issues such as the 2021 drought, grain contracts, export sales reporting and work in the emerging policy area of a low carbon emissions economy has created the need for strong partnerships. The professionalism and expertise of the staff within the different groups is truly remarkable and SaskBarley will continue to collaborate on important issues that affect Saskatchewan producers.

On behalf of the staff of SaskBarley, we will continue delivering results for Saskatchewan barley producers.



**Jill McDonald**  
Executive Director

## NEW RESEARCH COMMITMENTS IN 2020/21

PROJECT TITLE	PRINCIPLE INVESTIGATOR	SASKBARLEY \$ COMMITTED	PROJECTED END DATE
Barley lodging — Getting to the root of the problem	Feurtado, Beattie	\$ 47,804	2023
Enhancing the in vitro selection toolbox to develop Fusarium head blight resistant doubled haploid wheat and barley	Foroud	\$ 104,291	2025
Solid fermentation of barley	Reaney	\$ 45,000	2023
Barley breeding in Canada — A path forward	Gray	\$ 23,000	2021
Soil Science Field Facility	Yates	\$ 100,000	2023
CMBTC wet chemistry lab	Watts	\$ 65,000	2022
Staying ahead of ever evolving cereal pathogens: management by early detection and genetic host resistance	Brar	\$ 138,000	2025
Phenotyping and genomic selection for improved barley deoxynivalenol (DON) resistance	Beattie	\$ 283,323	2026
Understanding auxinic herbicide resistance in kochia and staying ahead of what's next	Geddes	\$ 40,000	2025
Establishing a seed testing protocol and greenhouse/growth cabinet based disease evaluation method to improve disease management against bacterial leaf streak in barley	Kutcher	\$ 251,948	2024
Examining Fusarium growth and interactions with barley trichomes under the hull	Bakker	\$ 50,719	2023
Assessing the effects of blending CDC Clear hulless barley malt for beer production.	Li	\$ 90,600	2023
Western Canadian provincial malting barley variety field trials	Li	\$ 49,365	2022
Develop and understand resistance to FHB and leaf diseases of barley for western Canada	Xi	\$ 15,000	2024
Enhancing capacity of barley breeding programs in western Canada: establishing disease nurseries and selection of germplasm for pre-breeding	Brar	\$ 109,250	2022
Targeting mycotoxin resistance to control Fusarium head blight.	Brauer	\$ 48,500	2023
Improving abiotic stress tolerance and quality through genetic manipulation of Gamma Amino Butyric Acid (GABA) pathway in barley	Bhowmik	\$ 57,500	2022

## OVERVIEW OF NEW PROJECTS FUNDED IN 2020/21



*Fusarium head blight nursery in Brandon, MB, 2021.*

### **BREEDING IMPROVED DON RESISTANT BARLEY VARIETIES: IDENTIFYING NEW TOOLS TO BREED FOR DON RESISTANCE**

Fusarium head blight remains one of the most important diseases of barley. The primary economic consequence of FHB infection of barley is the presence of DON in the grain which can render barley grain unacceptable for malting and brewing (above 0.5 ppm), swine and dairy cattle feed (above 1.0 ppm) or beef cattle feed (above 5.0 ppm). Attempting to minimize FHB infection of a barley crop requires multiple strategies, with the best approach being a combination of agronomic practices and genetic resistance. Within the barley breeding community, breeding for FHB resistance has focused predominantly on resistance to DON accumulation in the grain.

The purpose of this project is to maintain our progress in breeding improved DON resistant barley varieties and to identify new tools to breed for DON resistance. This will be accomplished in three ways:

- Continued evaluation of new barley lines for DON resistance within the AAFC FHB nurseries established across Canada;
- Use of recently developed methods for in-house DON measurement which will ensure that all breeding lines are assessed for DON content in a timely manner;
- To create a genomic selection model for DON resistance that can be used to select better DON resistant barley lines more effectively.

Collectively, these activities will help the breeding of improved DON resistant varieties to alleviate the negative financial costs associated with high DON infection on barley and support the production of high-quality barley that western Canada has become known for.

### **IMPROVING DISEASE MANAGEMENT AGAINST BACTERIAL LEAF STREAK IN BARLEY**

Bacterial leaf streak (BLS), also called black

chaff when on the spikes, is an emerging disease that could become a major threat to cereal crops in Canada. The disease is caused by the bacterium *Xanthomonas translucens* that have become more prevalent in the prairie provinces due to favorable conditions. Fungicides do not work with bacteria and resistance levels to the disease in Canadian barley cultivars is unknown. The best way to avoid a BLS outbreak is to use clean seed but an integrated approach is the most sustainable way of managing the disease. The three-year work plan proposes to develop a seed testing protocol to detect the pathogenic bacteria on barley kernels. A rapid and accurate seed testing protocol to identify contaminated seed can aid in evaluating disease risk associated with a seed lot. This technology will have immediate application and will reduce production risks for farmers. A second objective is to establish a BLS disease evaluation method to test plants indoors (greenhouse/growth chambers) that will allow the screening of germplasm for sources of resistance to develop disease resistant commercial cultivars. Finally, our team also aims to determine the prevalence and virulence of the bacterium strains isolated from barley samples



across western Canada. These results will determine the prevalence of the pathogen and the predominant genotype(s) in the region indicating the extent of the problem to pathologists, agronomists, breeders, and farmers as well as other stakeholders of the barley value chain.

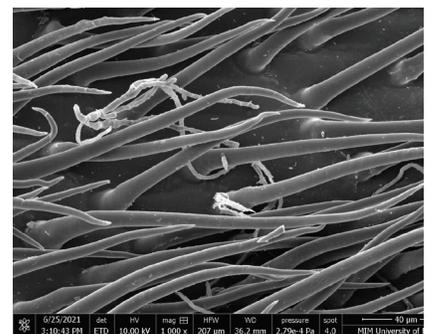
### EXAMINING FUSARIUM GROWTH AND INTERACTIONS WITH BARLEY TRICHOMES UNDER THE HULL

Improved traits in new barley cultivars are the best route to reducing the damage caused by fusarium head blight (FHB). In this project, we will be exploring whether new targets for improving barley can be found in micro-scale features of barley spikes, such as trichomes or the thickness of the seed coat and the hull. Trichomes are prickle or bump-like projections of plant cells. Trichomes are not currently a deliberate target of selection in barley

breeding programs, but they have been suggested to facilitate *Fusarium* infection by promoting the trapping of spores on the plant surface. Thicker seed coats or thicker hulls may also be more difficult for *Fusarium* to penetrate. This project will characterize these features for a wide range of barley varieties, and will indicate whether selection on such micro-scale floral traits could be useful for reducing infection by *Fusarium*.

### ASSESSING THE EFFECTS OF BLENDING CDC CLEAR HULLLESS BARLEY MALT FOR BEER PRODUCTION

Hullless barley malt offers significantly higher extract yield than malt produced from hulled barley, creating the potential for significant increases in brewing efficiencies and reduced raw material costs for brewers. The absence of hulls may also reduce negative flavour attributes and increase shelf-life stability. Hullless barley has higher test weight than hulled barley



leading to potential savings in transportation and storage for maltsters and brewers, and produces less brewers spent grains (BSG) per volume of beer production, with the opportunity to reduce costs associated with disposal of BSGs. However, malting and brewing with hullless barley presents several challenges for both maltsters and brewers. This research project aims to develop optimum malting protocols for hullless barley to realize its full quality potential and to gain a better understanding of the benefits of using hullless malt in a lauter tun during the brewing process. Assessment of the benefits of reducing

undesirable sensory attributes associated with barley hull/husk such as astringency linked to polyphenols and potential reductions in haze development to extend colloidal stability will be investigated.

Ultimately, the goal of this project is to enhance the viability and interest in using hullless barley malt in brewing formulations to take advantage of potentially high extract values, opportunities for improved sensory characteristics and shelf-life stability, as well as potential cost savings in malt and spent grain transport and storage. CDC Clear barley will be used to carry out this study. The results to be generated from this research will promote its utilization and pave the way for varietal uptake of other hullless barley lines currently in development.

### **WESTERN CANADIAN PROVINCIAL MALTING BARLEY VARIETY FIELD TRIALS**

Barley grain quality and yield potential are by controlled by barley genetics and influenced by agronomic practices (seeding time and rate, application of fertilizers, and pest control) and growing conditions such as soil moisture and fertility, temps, amount and distribution of the rainfalls etc. during growing season. In order to promote growth and utilization of newly registered malting barley varieties, we need to generate representative performance data for each of these newly registered Canadian barley varieties.

The main objectives of this project are: to produce representative barley samples by conducting field trials with new and the control malting barley varieties in multiple locations on the Prairies in multiple years; to generate comprehensive malting quality data that can be used to promote new Canadian barley varieties domestically and internationally; and to establish a reliable record of agronomy, disease, barley and malt quality for each of the new and emerging Canadian malting barley varieties.

The results will provide maltsters, brewers, grain companies, seed companies, producers, breeders and others who are involved in the Canadian malt barley value chain with an important dataset of annual crop quality by variety and by region, and the performance of new varieties compared with the controls, as well how defined environmental and agronomic condi-



*Western Canadian  
Provincial Malting  
Barley Variety Field  
Trials at Codette, SK,  
2021*

tions affect the grain quality. In addition, this project will provide key quality and performance indicators regarding new varieties to help malting barley buyers and end-users make informed decisions about which varieties meet their needs and the requirements of their customers domestically and internationally.

### **ENHANCING BARLEY BREEDING PROGRAMS IN WESTERN CANADA: ESTABLISHING DISEASE NURSERIES AND SELECTION OF GERmplasm FOR PRE- BREEDING**

FHB is one of the most challenging

disease for barley breeders in Saskatchewan and Canada and breeding for FHB resistance is more challenging than other diseases because of large influence of environment on the phenotype. To increase the genetic gain (improvement in performance each year) for FHB resistance breeding, screening of breeder's material at multi-site-years is required and this project will add an additional FHB screening nursery in Vancouver for three public barley breeding programs (CDC-Saskatoon, FCDC-Lacombe, AAFC-Brandon) in western Canada. Warm and humid coastal climate of Vancouver is not only good for FHB screening, it is hotspot of stripe rust in Canada which means we can screen breeder's material for FHB and stripe rust at the same time. The overall goal of this research is to strengthen the capacity of barley breeders to help them

deliver multi-disease resistant varieties to Saskatchewan and western Canadian growers.

### **TARGETING MYCOTOXIN RESISTANCE TO CONTROL FUSARIUM HEAD BLIGHT**

Fusarium head blight (FHB) is a fungal disease that causes significant economic losses for barley producers. Improving FHB resistance is complex because resistance is influenced by multi-layered plant defenses and by fungal attack on these defenses using secondary metabolites. We recently helped to discover the gramillin secondary metabolite and found that gramillin production is an essential attack strategy for the fungus to cause FHB in barley. Purified gramillin is also toxic to plants and causes watersoaking and cell death within hours of exposure (see image). A survey of Canadian barley varieties showed that gramillin resistance exists in some varieties with moderate FHB resistance. The goal of the current project is to understand gramillin resistance in barley and to enable transfer of gramillin resistance genes into elite barley varieties for the Canadian market. Our team uses a combination of molecular genetics and gene mapping to track gramillin resistance genes in Canadian barley varieties and find the plant defense responses that are targeted by gramillin.

### **IMPROVING BARLEY'S ABIOTIC STRESS TOLERANCE AND QUALITY**

Barley is a significant Canadian crop that has been seeded since 2016 on an average of 6.8 million acres and 2.8 million acres across Canada and Saskatchewan, respectively. This project involves the development of new barley genotypes by screening a diversity of barley germplasm for salinity tolerance and Gamma Aminobutyric acid (GABA) content, including Canadian varieties, breeding lines and landraces/wild barley accessions. This will allow us to understand if GABA plays a role in variation for salinity tolerance and identify possible sources to improve this trait in Canadian barley.

This project will also explore the capabilities of the CAS9/sgRNA based gene editing technology for manipulating abiotic

## **DID YOU KNOW?**

### **SaskBarley had representatives with these groups throughout 2020/21:**

- Barley Council of Canada
- Canadian Malting Barley Technical Centre
- Western Grains Research Foundation
- Brewing and Malting Barley Research Institute Technical Committee
- Sask Soil Conservation Association Carbon Advisory Committee
- Cereals Canada – Market Access Committee
- Prairie Recommending Committee for Oats and Barley

stress resistance gene targets and thereby building a foundation for transformative approaches to barley improvement. The mitigation of abiotic stress not only would increase barley yield for the producers but also add economic benefits to all stakeholders along the barley value chain.

The objectives of this project are to:

- Screen a diversity of barley germplasm, including Canadian varieties, breeding lines and landraces/wild barley accessions to understand variation for salinity tolerance and identify possible sources to improve this trait in Canadian barley
- Quantify the effects of salt on root growth and overall root system architecture in barley lines differing in salt tolerance,
- Understand if GABA plays a role in salinity tolerance in barley by monitoring changes in root GABA concentrations,
- Use CRISPR to create GABA-T null mutants and determine if this is a viable means to obtain enhanced salinity tolerance.

### **DEVELOPING THE NEW SOIL SCIENCE FIELD FACILITY AT THE DEPARTMENT OF SOIL SCIENCE**

Every farmer knows that when you are getting your equipment ready to go to the field or when something breaks down, there is nothing like having one building in your operation where you can place your tools at the ready, and where you can work on your equipment, day or night, rain or shine. The new Soil Science Field Facility will be that building for the Department of Soil Science. A place where all our researchers can go to share our collective tools, and where we can stage our trucks and process samples before and after we head to the field. Our new 10,000 sq ft, \$3.9 million facility will bring together all the operations presently being conducted at our three other facilities tucked away in different parts of the University campus, as well as provide us with additional needed space. The new facility is proposed to be located just as you enter the gates to the Crop Development Centre between the old 108th street road section and the present 108th street location in Saskatoon. Because of the generous support from the Saskatchewan Barley Development



*Crop Pathology and Genetics Lab students and staff rating barley stripe rust nursery on UBC Totem Farm.*

Commission, the new facility will provide us with the necessary capacity needed by the Department to continue field research operations for decades to come. This is truly an exciting time with planning currently well underway, and construction hoping to begin in the Fall of 2022.

### **DETERMINING ALCOHOL CONTENT LEVELS FOR A PRACTICAL FERMENTATION**

Few people know that Dr. Michael Ingledew, emeritus professor at the University of Saskatchewan, revolutionized ethanol fermentation technology. In hindsight his findings were simple: yeast fermentation of sugars to alcohol is

limited by the strain on the yeast; how the yeast was nourished; and the concentration of food (sugar) for the yeast to make alcohol. Dr. Ingledew used what he learned to develop a revolutionary strategy to coax fermentations from 4% to 5% alcohol by volume to 10, even 15% alcohol by volume in an industrial setting. This was helpful for the fuel ethanol businesses in Saskatchewan and worldwide as this huge increase in alcohol content in the fermentation saves massive amounts of energy during distillation, reduces water consumption, and allows the construction of much less expensive distilleries. With our research we wished to further extend the logic Dr. Ingledew developed and determine how high the alcohol content could be made in a practical fermentation. We surveyed 28 cultivars of barley, which

are rich in starch that can be converted to sugar for the yeast to consume. Before fermentation, the grain was milled and rapidly cooked in hot water. Enzymes were added to break down the starch to simpler sugars that nourish the yeast and are converted to ethanol. During fermentation, using less water helped to concentrate the sugar and our first goal was to produce the most concentrated sugar possible. The mixtures we fermented started off as almost solid, thicker than porridge. The next steps were to select and optimize barley, yeast, and added nutrients to see which produce the highest alcohol content. We were able to achieve a beer that was over 25% alcohol by volume. These fermentations were practical, and took only 3 days using a single strain of yeast.

### **MANAGING, CONTROLLING KOCHIA IN THE CANADIAN PRAIRIES**

Kochia is a problematic tumbleweed in the southern Canadian prairies, where it can cause significant crop yield losses. Evolved resistance to group 2, 4, and 9 herbicides limits the chemical options available for kochia control in several field crops, while unique biological characteristics allow this weed to thrive when exposed to drought, heat, or salinity. This project aims to further our understanding of auxinic (group 4) herbicide resistance in kochia, establish proactive surveillance for new types of herbicide resistance, and develop new tools and strategies to manage kochia in small grain cereal crops like barley and wheat. Research completed so far identified variable cross-resistance to the synthetic auxin herbicides dicamba and fluroxypyr in Canadian kochia populations (Geddes et al. 2021a).

For example, 28% of the kochia populations collected during a 2017 survey of Alberta were resistant to at least one synthetic auxin herbicide. However, 15% were resistant to dicamba only, 9% were resistant to fluroxypyr only, and only 4% were cross-resistant to both dicamba and fluroxypyr (Geddes et al. 2021b). These results suggest that kochia populations resistant to one synthetic auxin active ingredient may be susceptible to

another. The mechanism(s) conferring auxinic resistance in Canadian kochia populations remain unknown and are the focus of ongoing research. Together, these activities will provide farmers and agricultural industry with knowledge of auxinic herbicide resistance in kochia, how to mitigate the spread of these biotypes, and help identify new tools for kochia control.

### **DEVELOP FUSARIUM HEAD BLIGHT RESISTANT WHEAT AND BARLEY FOR PRODUCERS IN WESTERN CANADA**

Fusarium head blight (FHB) is a destructive disease of barley and wheat caused by a group of *Fusarium* species that produce harmful mycotoxins, such as deoxynivalenol (DON). DON is not only responsible for significant yield damage, but also represents a food safety threat. Furthermore, DON interferes with some downstream processes with negative impacts for the malting and brewing industries. Emergent *Fusarium* strains in North America are more aggressive and produce more DON. Genetic surveys show that they now represent the majority of the Canadian *Fusarium graminearum* population. Wheat is the most widely FHB-affected crop and suffers the largest damage; barley is the next most affected crop, where 6-row barley is nearly as susceptible as wheat. Billions of dollars in damage have been incurred in FHB outbreaks especially in Eastern Canada, although incidence and impact have been on the rise in Alberta and Saskatchewan. Our objectives are to assist breeding programs in the development of fusarium head blight resistant wheat and barley for producers in western Canada. We are using a method that employs high selection pressure for the development of bread wheat and barley lines with high levels of disease resistance. In this project we will continue to generate FHB resistant germplasm, but will also develop a mutagenized population which can be used in breeding programs, provide a genetic resource for marker development, and to identify novel resistance and susceptibility genes.

## **SaskBarley sponsored the following initiatives in 2020/21:**

- Farm & Food Care Saskatchewan
- Canadian Food Focus
- Ag in the Classroom
- AgriARM research sites
- CropSphere 2021
- Top Notch producer meetings
- Grade School
- Malt Academy – Saskatchewan

**DID YOU KNOW?**

### **GETTING TO THE ROOT OF THE BARLEY LODGING PROBLEM**

Lodging and mechanical failure of the stem or root system is a significant issue in barley leading to yield reductions and economic losses for Canadian producers. Development of barley varieties with improved lodging resistance is thus a high breeding priority. Overall, the main goal of the project is to associate root and stem structure traits to lodging observed in the field to identify preferred traits for increased standability. The initial phase of the project will assess 12 barley genotypes (relevant to western Canadian production) in field experiments for lodging and traits associated to standability including stem strength and root anchorage strength. Field experiments will also explore root architecture through excavations of the crown root system. In parallel with the field experiments, the 12 barley genotypes will be thoroughly characterized by root phenotyping approaches, include innovative 2- and 3-dimensional imaging approaches, in indoor growth facilities to assess root system architecture (RSA) traits. The subsequent phase of the project will assess RSA in a diverse set of 200 barley genotypes to identify variation in root traits that may be used to further improve lodging resistance. The final output from the project will be root and stem traits promoting robust standability which can be readily applied in

barley cultivar development to select for new breeding lines with the utmost lodging resistance. Project progress to date has been positive, for example, wider seminal root angles, which predict root system width and root plate spread, have been identified in Prairie cultivars and consistently associate with lodging resistance.

### **STAYING AHEAD OF EVER EVOLVING CEREAL PATHOGENS**

Crop pathogens are smarter than researchers and they evolve at a much faster rate. This poses a challenge for breeders and pathologists to breed for disease resistance. This project aims at understanding changes in pathogen populations of wheat and barley in near real-time (~3 days) using modern, cutting-edge portable handheld genome sequencers. The barley pathogen on our radar is net blotch, one of the most devastating leaf spotting pathogens in Saskatchewan and western Canada. Not only rapid pathogen characterization but our ultimate goal is to find resistant sources to some of the most devastating pathogen strains. The rapid, near real-time characterization of pathogen populations from the Prairies will help us come up with better management options.



# ADVOCACY HIGHLIGHTS 2020/21

## SUPPORTING FARMERS THROUGH THE DROUGHT

In summer 2021, we joined with several other Saskatchewan farm organizations to urge the members of the Western Grain Elevator Association (WGEA) to work with farmers and eliminate administration fees and reduce penalties, without rolling them into arbitrary replacement costs, for the 2021/22 growing season.

Many Saskatchewan farmers were facing challenge this year, caused by the extreme drought, heat and wind throughout the crop year, which significantly reduced harvestable grain and substantially increased commodity prices. Yields across the Prairies were well below their crop insurance coverage, making farmers unable to deliver on even modest grain contracts.

Going forward, we will continue to work with partners APAS, SaskCanola, SaskFlax, SaskOats, Saskatchewan Pulse Growers and Sask-Wheat to advocate for farmers who are facing challenges from extreme weather this year on and long-term solutions to unpredictable weather challenges.

## CODE OF PRACTICE

In 2020/21, we provided feedback to the Canadian Roundtable for Sustainable Crops (CRSC) on its draft Code of Practice, a tool the committee is developing to showcase to consumers and buyers of Canadian agriculture products that our crops are sustainably produced.

Earlier this year, we issued a statement indicating that we did not support the draft as it was written and issued criteria to be incorporated into the Code development going forward, chiefly that the tool should deliver value to producers that choose to adopt it.

We continue to follow the development of the Code and are committed to serving as the voice of Saskatchewan barley farmers in its development.

## EXPORT SALES REPORTING PROGRAM

After hearing from our members at our 2021 AGM, we joined with several other Saskatchewan producer groups to call for the creation of an Export Sales Reporting Program. Specifically, we are requesting that the Canadian Grain Commission create a daily and weekly Export Sales Reporting Program.

Collectively, we believe that improving market transparency is a key issue for producers and that recent market disruptions, changes in trade patterns, and lagging information on supply and demand dispositions have only further showcased the need for timely marketing information to maximize returns and improve profitability.

We will continue to advocate for producers on this important issue going forward.



## CARBON EMISSIONS REDUCTION RESPONSE

Throughout the past year, we continued to advocate on behalf of Saskatchewan farmers in the area of carbon policy.

To guide and further the conversation, SaskBarley developed an emissions reduction policy for the board to evaluate their involvement in this area, based on the following principles: 1) Agriculture is part of the climate change solution; 2) Policies must prioritize farmers' competitiveness and sustainability; 3) Emission reduction strategies must align with increased profitability for farmers; 4) Farmer input and involvement are a necessity and policies must be science-based, value chain inclusive and incorporate cross-border impacts.

Specifically over the past year we were asking for Saskatchewan barley producers to be recognized and compensated for carbon sequestered from conservation practices, including zero-till and continuous cropping.

We joined with a number of Saskatchewan groups, including other crop commissions, to push this messaging to federal and provincial governments and to encourage Saskatchewan farmers to participate in government consultations on the federally proposed Greenhouse Gas (GHG) Offset Credit System regulations. We also participated in consultations on the development of the Saskatchewan Greenhouse Gas (GHG) Offset Program and Offset Protocol.

In response, we were advised by both federal and provincial governments that zero-till will not be eligible for carbon offset credits within a regulated offset system in Saskatchewan. Governments have told us that an activity is no longer eligible for offset credit once it passes a threshold of 40% adoption and zero till is widely practiced in Saskatchewan with a 75% adoption rate.

Despite this, we will continue to advocate on behalf of farmers for recognition that agriculture is part of the solution.



## PARTNER UPDATES



### BARLEY COUNCIL OF CANADA

The Barley Council of Canada (BCC), established in 2013, works on behalf of the Canadian barley value chain to ensure long-term profitability and sustainable growth for all its members. The BCC members, representing agriculture, research, and industry from Alberta through to the Atlantic provinces, appreciate the value of a national organization dedicated to the success of the entire barley chain. BCC focuses on four key areas: barley research, market development/support, market access and communications.

In 2020/21, SaskBarley membership dues contributed toward funding BCC operations and initiatives including the development of the National Barley Research Strategy, the administration and coordination of the National Barley Cluster and advocating on barley-related policy issues at a national level.

BCC worked closely with the Brewing and Malting Barley Research Institute (BMBRI) on the development and delivery of the National Barley Research Strategy, a first for the Canadian barley industry. The objectives of the National Barley Research Strategy were to:

- Identify and quantify the research areas of the highest importance to the barley industry
- Enhance communication and collaboration between scientists and barley research funders
- Increase research funding efficiency by avoiding unnecessary duplication and investing in critically important work with the highest returns
- Influence government and other funding organizations' investment in barley research
- Refine and enhance research targets developed under the Getting to Growth plan

The National Barley Research Strategy identified seven key barley research themes. Each research theme was discussed and research priorities identified to support and advance the industry. Finally, quantifiable research targets were developed around the research themes to measure the impact of the industry's research investments. The National Research Strategy can be found here: <https://barleyresearch.ca/research/>

The management of the current \$10.5 million National Barley Cluster was a considerable undertaking in 2020/21 given the wide-reaching effects of COVID restrictions. Amended project timelines and budgets throughout the year allowed researchers to adjust their projects and still make progress. As we look to the completion of the current National Cluster at the end of March 2023, our multi-faceted Knowledge and Technology Transfer plan will aim to communicate progress and results from that research, incorporating a variety of print, social media, virtual and in-person events over the next year and a half.

During 2020/21, BCC engaged in a comprehensive review of the organization's mandate and approach to making the most efficient use of its resources to advance the interests of the integrated barley value chain. Because the national organization represents a diverse membership and addresses a range of issues, BCC continues to pursue efficiencies, opportunities and collaborative efforts that best serve interests of stakeholders.

In August, the BCC office relocated to Saskatoon and the board, industry representatives, and management look forward to the continued evolution of BCC to drive a strong national voice for the entire Canadian barley industry.



### CANADIAN BARLEY RESEARCH COALITION

The newly incorporated Canadian Barley Research Coalition (CBRC) is a national not-for-profit organization with a focus on improving profitability and competitiveness for Western Canadian barley through long-term research investments.

CBRC's first order of business was to ensure the continuity of producer funding for breeding new barley varieties. In 2020 CBRC signed five-year core barley breeding agreements with Agriculture and Agri-Food Canada (AAFC) and the University of Saskatchewan's Crop Development Centre (CDC), valued at \$1.5 M and \$2.7 M over five years, respectively. New varieties enhance the profitability of growing barley through their higher yields, better lodging, improved disease resistance and end use quality traits. In July 2021 the inaugural CBRC Barley Committee meeting was held virtually to review the progress in the barley breeding programs and to provide value chain feedback.

In 2021 the National Barley Research Strategy, an initiative led by the Barley Council of Canada and the Brewing and Malting Barley Research Institute, was finalized and is currently available on the CBRC website. The strategy includes several components: research priorities for different barley sectors (e.g. feed, malting & brewing, food, industrial uses); a "catalogue" of current barley research and development activities in Canada; sources of funding for breeding and research; and a directory of barley research expertise in Canada.

The coming year is shaping up to be very busy for CBRC. We will lead the development and administration of the next Barley Cluster under the Canadian Agriculture Partnership (CAP) program. The Barley Cluster provides a significant portion of all research dollars dedicated to barley (currently \$10 million over five years), making it essential to the profitability and sustainability of the industry. Planning for the next Barley Cluster has begun with plans for a call for Letters of Intent. Funding decisions and submission of the next Barley Cluster will be due at the end of 2022.



## CANADIAN MALTING BARLEY TECHNICAL CENTRE

The global barley industry registered a significant milestone in 2020/21 — a record trade volume of 36.1 million tonnes (USDA).

The strong trade volumes were driven primarily by China, which imported a record 12 million tonnes, breaking its previous record of 9.9 million tonnes of imports in 2014/15. About 30% of China's barley imports in 2020/21 were destined for the malting and brewing industries, similar to previous years in terms of volume of roughly 3-3.5 million tonnes, with the surge in imports driven by demand for feed barley from China's livestock sector.

With a healthy barley crop of 10.7 million tonnes in 2020, Canada capitalized on the demand from China, exporting over 3.7 million tonnes of barley from August 2020 through July of 2021, the largest program since 1990. With Australia out of the Chinese market due to prohibitive import duties, another milestone was reached with Canada exporting a record 1.6 million tonnes of malting barley. Canada's malt processing industry also had a good export program of 556,728 tonnes of malt, up 5% from the previous year, despite challenges facing the global brewing industry due to the pandemic.

The banner year for Canada in terms of exports was felt at the CMBTC. During the marketing season, a record 62 cargo quality evaluations (CQCs) were performed, analyzing samples for quality parameters including protein, germination energy and plump kernels. Samples were also processed in the CMBTC's 50-kilogram pilot malting system to evaluate malting performance and finished malt quality. The CQC reports are a pillar of Canada's value proposition, helping customers optimize the performance of Canadian malting barley, and supporting the premiums earned over

other origins in the global market-place.

The 2020/21 marketing year also saw the transition to newer malting barley varieties advance as testing and acceptance of the promising slate of new cultivars broadens among end uses. Today AAC Synergy is generally accepted by malting and brewing companies at home and abroad, while varieties such as AAC Connect, CDC Bow and CDC Fraser are increasingly being tested and accepted by both domestic and international end-users, gradually replacing stalwart, internationally recognized varieties such as AC Metcalfe and CDC Copeland. In 2020/21, the CMBTC facilitated production trials in China using new variety CDC Fraser, with promising results. Producers continue to play a vital role in this transition as there must be supply to drive uptake by end-users.

Each year, the CMBTC releases a list of recommended malting varieties, providing guidance to producers on which varieties have demonstrated agronomic and end-use quality characteristics, and which are in demand in the market place. The current transition to new malting barley varieties is encouraging and a testament to the concerted promotional efforts on the part of Canada's barley sector.

The rise in demand for feed barley is also impacting Canada's barley industry, supporting prices and ultimately produc-

tion. Canada itself is one of the largest feed barley markets in the world, with the livestock sector using some 6 million annually. Only a handful of countries in the world use this much feed barley domestically. With feed barley exports flirting with 1 million tonnes in both 2018/19 and 2019/20, followed by nearly 2 million tonnes sold for export in 2020/21, its clear there will be demand for Canadian feed barley in the future. This bodes well for the entire sector, as a large demand base allows producers to grow barley knowing there are marketing options.

Despite the good news from the past year, the 2021 summer drought has created significant challenges for the entire value chain. Production, supply and quality challenges, not to mention historically high prices, will characterize the 2021 harvest and marketing year. However, the long-term trajectory of Canada's barley industry is positive.

## 2021 SCHOLARSHIP RECIPIENTS

Each year, SaskBarley offers scholarships as an investment in promising university students who are carrying out university-level research focused on barley. The scholarship program also encourages and supports new research to benefit Canadian barley. Meet our 2021 recipients!

### JANICE FAJARDO

M.SC. STUDENT AT  
THE UNIVERSITY OF  
MANITOBA



### FINDING PRACTICAL APPROACHES TO FUSARIUM MITIGATION

In malting barley, fusarium head blight (FHB) has led to economic impacts due to lowering of grain quality associated with mycotoxin contamination. FHB is caused by several species of *Fusarium*, with *Fusarium graminearum* as the predominant causal agent. Two relevant aspects of *Fusarium* growth on barley during malting are defensive plant compounds such as phenolic acids, and the presence of other microbial colonizers. The functional modifications that occur to the grain during malting influence the composition of both the phenolic acids that are released, and the microbes in barley.

My work investigates interactions between phenolic acids that are produced by barley, some members of the microbial community that inhabits malting barley, and *Fusarium* in malting. The integrated effects of phenolic acids and the microbial community of barley are poorly understood; thus, one of my goals is to assess these aspects in more detail by evaluating *Fusarium* growth and mycotoxin production during malting, and how these outcomes are impacted by the presence of a competing microbe, the presence of phenolic acids, and the presence of both the microbe and phenolic acids. These studies will provide detailed insights that may form the basis for practical approaches to the mitigation of *Fusarium*.

### MICHAEL TAYLOR

M.SC. STUDENT AT  
THE UNIVERSITY OF  
SASKATCHEWAN



### LODGING: THE GREAT FALL OF BARLEY

The project goal is to get to the root of the lodging problem in barley. This consists of two main investigations. The first is imaging of the barley root system in both 2D and 3D systems. These images then have detailed root trait data extracted and the influence of these traits on lodging is then examined. The other part of the project consists of collecting field data such as stem strength, anchorage failure, imaging stem cross-sections and more, with a similar goal to the root imaging – to find their relationship and influence to lodging.

This project has three main goals, first to assess barley root system architecture in 2D and 3D hydroponic systems. The second goal is to examine both root and stem characteristics in relation to lodging resistance in the field and lastly, which of these traits and systems have the most influence on lodging resistance. The overarching goal of the project is to give barley breeders the tools and potentially even breeding targets to assess lines more easily for lodging resistance.

### ANURADHA JAYATHISSA

PHD STUDENT AT  
THE UNIVERSITY OF  
MANITOBA



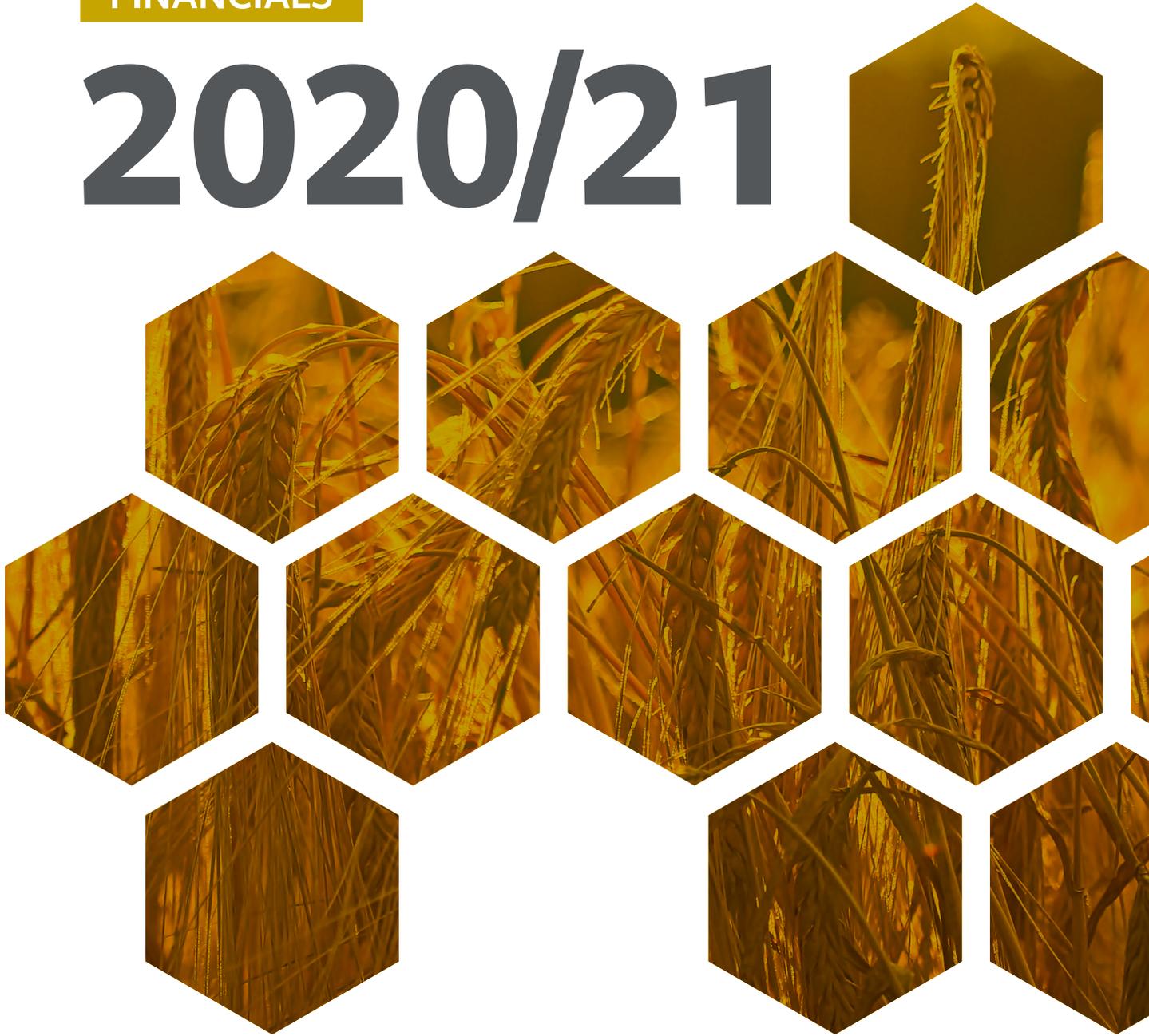
### LINKING MALT QUALITY DEFECTS WITH TRAITS OF FUSARIUM GRAMINEARUM

Fusarium head blight (FHB), caused by *Fusarium graminearum*, is a devastating disease of barley resulting in significant losses for the malting and brewing industry. The malting process creates conditions that favour new fungal growth and new production of mycotoxins after harvest, which contributes negative qualities to the finished malt. For my project, the impacts of several strains of *Fusarium* on malt quality will be assessed, as certain *Fusarium* strains possess a range of traits related to malt quality issues.

My goal is to provide an improved understanding of which traits enable *Fusarium* species to succeed within the malt microbiome, thereby negatively impacting malt quality. I will also be investigating *Fusarium* hydrophobins, which are small, secreted proteins produced by the fungus during malting. Hydrophobins are the main inducers of primary beer gushing which can directly influence the beer quality. In this study, I am hoping to explore the variability in *Fusarium* hydrophobins due to amino acid sequence differences among several *Fusarium* strains, and how the relative abilities of these variants to induce beer gushing. We expect that results from this project will lead to improve management of *Fusarium*-related quality issues that plague the malting industry.

FINANCIALS

2020/21



# SASKATCHEWAN BARLEY DEVELOPMENT COMMISSION FINANCIAL STATEMENTS

*For the year ended July 31, 2021*

## MANAGEMENT'S RESPONSIBILITY FOR FINANCIAL REPORTING

The financial statements of Saskatchewan Barley Development Commission have been prepared in accordance with Canadian accounting standards for not-for-profit organizations. When alternative accounting methods exist, management has chosen those it deems most appropriate in the circumstances. These statements include certain amounts based on management's estimates and judgments. Management has determined such amounts based on a reasonable basis in order to ensure that the financial statements are presented fairly in all material respects.

The integrity and reliability of Saskatchewan Barley Development Commission's reporting systems are achieved through the use of formal policies and procedures, the careful selection of employees and an appropriate division of responsibilities. These systems are designed to provide reasonable assurance that the financial information is reliable and accurate.

The Board of Directors is responsible for ensuring that management fulfills its responsibility for financial reporting and is ultimately responsible for reviewing and approving the financial statements. The Board carries out this responsibility principally through its Audit Committee. The Audit Committee is appointed by the Board and meets periodically with management and the producers' auditors to review significant accounting, reporting and internal control matters. Following its review of the financial statements and discussions with the auditors, the Audit Committee reports to the Board of Directors prior to its approval of the financial statements. The Committee also considers, for review by the Board and approval by the producers, the engagement or re-appointment of the external auditors.

The financial statements have been audited on behalf of the producers by Lingard + Dreger LLP, in accordance with Canadian accounting standards for not-for-profit organizations.



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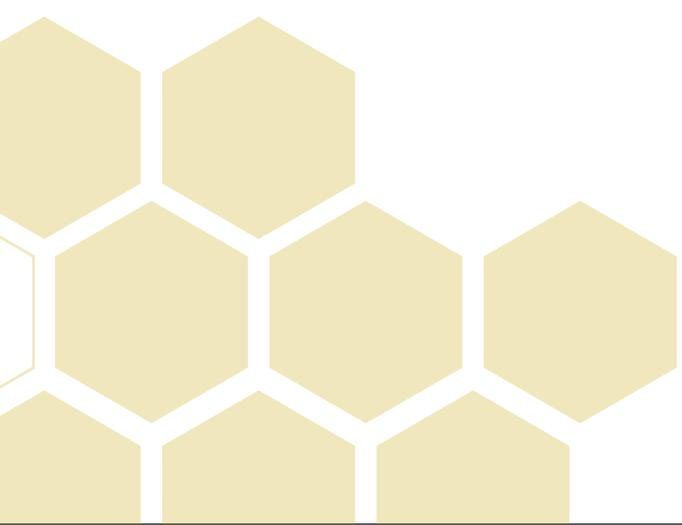
Management



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Management

December 16, 2021



## INDEPENDENT AUDITOR'S REPORT

To the Directors of Saskatchewan Barley Development Commission

### Qualified Opinion

We have audited the financial statements of Saskatchewan Barley Development Commission (the Commission), which comprise the statement of financial position as at July 31, 2021, and the statements of operations, changes in net assets and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, except for the possible effects of the matter described in the Basis for Qualified Opinion section of our report, the accompanying financial statements present fairly, in all material respects, the financial position of the Commission as at July 31, 2021, and the results of its operations and cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

### Basis for Qualified Opinion

The commission collects a levy from Saskatchewan producers through buyers of barley, the completeness of which is not susceptible of satisfactory audit verification. It was not practical for us to verify whether all buyers of barley produced in Saskatchewan have collected and remitted the required levy to the commission. Accordingly, our verification of these revenues was limited to the amounts recorded in the records of the commission. Therefore, we were not able to determine whether any adjustments might be necessary to revenue, excess of revenues over expenses and cash flows from operations for year ended July 31, 2021, current assets as at July 31, 2021 and July 31, 2020, and net assets at both the beginning and end of the July 31, 2021 and July 31, 2020 years. The audit opinion on the financial statements for the year ended July 31, 2020 was modified accordingly because of the possible effects of this limitation in scope.

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Commission in accordance with ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our qualified audit opinion.

### Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Commission's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Commission or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Commission's financial reporting process.

## Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Commission's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Commission's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Commission to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Saskatoon, Saskatchewan  
December 16, 2021

*Lingard + Dreger*

Chartered Professional Accountants

**SASKATCHEWAN BARLEY DEVELOPMENT COMMISSION**

**Statement of Financial Position**

As at July 31, 2021

	2021	2020
<b>ASSETS</b>		
<b>CURRENT</b>		
Cash and equivalents	\$ 3,875,561	\$ 2,722,701
Short-term investments (Note 3)	1,885,374	1,303,752
Accounts receivable (Note 4)	86,298	240,468
Prepaid expenses	185,935	299,938
	6,033,168	4,566,859
LONG-TERM INVESTMENTS (Note 3)	1,001,389	1,802,772
	\$ 7,034,557	\$ 6,369,631
<b>LIABILITIES</b>		
<b>CURRENT</b>		
Accounts payable and accrued liabilities (Note 5)	\$ 467,486	\$ 353,940
<b>NET ASSETS</b>		
<b>UNRESTRICTED</b>	4,567,071	4,215,691
<b>INTERNALLY RESTRICTED (Note 6)</b>	2,000,000	1,800,000
	6,567,071	6,015,691
	\$ 7,034,557	\$ 6,369,631

Commitments (Note 7)

APPROVED ON BEHALF OF THE BOARD

  
 \_\_\_\_\_  
 Director

  
 \_\_\_\_\_  
 Director

See notes to the financials statements

**SASKATCHEWAN BARLEY DEVELOPMENT COMMISSION**

**Statement of Operations**

For the year ended July 31, 2021

	Budget (Note 11) 2021	2021	2020
<b>REVENUE</b>			
Producer check-off fees (Note 8)	\$ 2,900,000	<b>\$ 3,680,587</b>	\$ 3,412,621
Refunds	(290,000)	<b>(324,245)</b>	(326,369)
	2,610,000	<b>3,356,342</b>	3,086,252
Grants	-	-	7,092
Investment income	60,000	<b>97,656</b>	36,021
Interest income	4,000	<b>62,988</b>	76,432
Other	-	<b>200</b>	400
Unrealized gain (loss) on investments	-	<b>104,938</b>	(43,643)
	2,674,000	<b>3,622,124</b>	3,162,554
<b>EXPENSES</b>			
Research projects	1,634,115	<b>2,243,509</b>	960,963
Research administration	170,000	<b>122,703</b>	5,690
Market development	355,915	<b>292,010</b>	271,951
Communications and advocacy	216,000	<b>108,133</b>	89,126
Service contracts	172,000	<b>181,513</b>	157,572
Board of directors	81,000	<b>45,018</b>	60,286
Election	-	-	35,113
General and administrative	48,700	<b>77,858</b>	67,175
	2,677,730	<b>3,070,744</b>	1,647,876
<b>EXCESS (DEFICIENCY) OF REVENUE OVER EXPENSES FOR THE YEAR</b>	\$ (3,730)	<b>\$ 551,380</b>	\$ 1,514,678

See notes to the financials statements

**SASKATCHEWAN BARLEY DEVELOPMENT COMMISSION**

**Statement of Changes in Net Assets**

*For the year ended July 31, 2021*

	Unrestricted	Restricted	2021	2020
<b>NET ASSETS</b> — BEGINNING OF YEAR	\$ 4,215,691	\$ 1,800,000	<b>\$ 6,015,691</b>	\$ 4,501,013
Excess of revenue over expenses for the year	551,380	-	<b>551,380</b>	1,514,678
Transfers (Note 6)	(200,000)	200,000	-	-
<b>NET ASSETS - END OF YEAR</b>	<b>\$ 4,567,071</b>	<b>\$ 2,000,000</b>	<b>\$ 6,567,071</b>	<b>\$ 6,015,691</b>

*See notes to the financial statements*

**SASKATCHEWAN BARLEY DEVELOPMENT COMMISSION**

**Statement of Cash Flows**

*For the year ended July 31, 2021*

	2021	2020
<b>OPERATING ACTIVITIES</b>		
Excess of revenue over expenses for the year	\$ 551,380	\$ 1,514,678
Items not affecting cash:		
Gain (loss) on disposition of investments	(63,432)	2,203
Unrealized (gain) loss on investments	(104,938)	43,643
	<b>383,010</b>	1,560,524
Changes in non-cash working capital		
Accounts receivable	154,170	(81,564)
Prepaid expenses	114,003	29,286
Accounts payable and accrued liabilities	113,545	119,837
	<b>381,718</b>	67,559
Cash flow from operating activities	<b>764,728</b>	1,628,083
<b>INVESTING ACTIVITIES</b>		
Proceeds on disposition of investments	1,010,767	1,095,938
Purchase of investments	(539,751)	(1,311,385)
Reinvested interest	(82,884)	(44,502)
Cash flow from (used by) investing activities	<b>388,132</b>	(259,949)
<b>INCREASE IN CASH FLOW</b>	<b>1,152,860</b>	1,368,134
<b>CASH — BEGINNING OF YEAR</b>	<b>2,722,701</b>	1,354,567
<b>CASH — END OF YEAR</b>	<b>\$ 3,875,561</b>	\$ 2,722,701
<b>CASH CONSISTS OF:</b>		
Cash and equivalents	<b>\$ 3,875,561</b>	\$ 2,722,701

See notes to the financials statements

## SASKATCHEWAN BARLEY DEVELOPMENT COMMISSION

# Notes to the Financial Statements

For the year ended July 31, 2021

### 1. Authority

The Saskatchewan Barley Development Commission (“the Commission”) was established on June 7, 2013, pursuant to The Saskatchewan Barley Development Plan Regulations (“Regulations”), under the authority of The Agri-Food Act, 2004. The mandate of the Commission is to invest grower’s check-off dollars in research and market development initiatives that contribute to profitable and sustainable barley production in Saskatchewan.

### 2. Summary of Significant Accounting Policies

The financial statements were prepared in accordance with Canadian accounting standards for not-for-profit organizations in Part III of the CPA Canada Handbook and include the following significant accounting policies:

#### CASH AND CASH EQUIVALENTS

Cash and cash equivalents consist of balances with banks and short-term investments with maturities of three months or less.

#### REVENUE RECOGNITION

Producer check-off fees are recognized upon receipt of the Buyer’s report. Refunds are recognized when refund applications are received from producers and the requested refund has been agreed to check-off records.

The Commission follows the deferral method of accounting for contributions, which include government funding and grants. Restricted contributions are recognized as revenue in the year in which the related expenses are incurred or restrictions met. Unspent amounts are included in deferred contributions. Unrestricted contributions are recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured.

Interest revenue is recognized as earned on a time proportion basis.

investment and other revenue is recognized when earned.

#### INCOME TAXES

The Commission qualifies as a tax exempt organization under section 149 of the Income Tax Act.

#### USE OF ESTIMATES

The preparation of financial statements in conformity with Canadian accounting standards for not-forprofit organizations requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and reported amount of revenue and expenses during the reporting period. Actual results could differ from these estimates.

Significant estimates include, but are not limited to, the valuation of accounts payable and accruals for certain revenues and expenses.

#### ADMINISTRATION CONTRACT EXPENSE

Administration contract expense is a fee charged by the Agriculture Council of Saskatchewan Inc. (“ACS”), to the Commission for administering the check-off fee program. The fee includes a charge for time spent by ACS staff and a share of ACS’s overhead costs. The expense is recognized as the service is received.

## 2. Summary of Significant Accounting Policies (continued)

### FINANCIAL INSTRUMENTS

The Commission initially measures its financial assets and financial liabilities at fair value. It subsequently measures all its financial assets and financial liabilities at amortized cost, except for investments in debt and equity instruments that are quoted in an active market, which are measured at fair value. Changes in fair value are recognized in the statements of operations in the period incurred.

Financial assets subsequently measured at amortized cost include cash, and accounts receivable. Financial liabilities subsequently measured at amortized cost include accounts payable and accrued liabilities. The fair value of the cash, accounts receivable, and accounts payable and accrued liabilities approximates their carrying value due to their short-term nature.

### CONTRIBUTIONS IN-KIND

Contributions in-kind are recorded at fair value for goods or services only when a fair value can be reasonably estimated and when the goods or services are used in the normal course of operations and would otherwise have been purchased.

### FOREIGN CURRENCY TRANSLATION

At the transaction date, each asset, liability, revenue or expense arising from a foreign currency transaction of the Commission is translated into Canadian dollars using the exchange rate at that date. At each balance sheet date, monetary items denominated in a foreign currency are adjusted to reflect the exchange rate in effect at the balance sheet date. Exchange gains or losses of the Commission that arise on translation or settlement of foreign currency-denominated monetary items are included in the determination of excess of revenue over expenses for the year.

## 3. Investments

	Maturity	2021 Market value	Yield	2020 Market value
<b>Short-term</b>				
Term deposits (cost 2021 - \$870,216; 2020 - \$394,780)	1 year	\$ 874,100	2.10% - 2.39%	\$ 398,666
Equity instruments (cost 2021 - \$922,764; 2020 - \$977,157)	-	1,011,274	-	905,086
		1,885,374		1,303,752
<b>Long-term</b>				
Term deposits (cost 2021 - \$981,309; 2020 - \$1,727,051)	2 - 31 years	1,001,389	1.75% - 5.85%	1,802,772
		\$ 2,886,763		\$ 3,106,524

#### 4. Accounts Receivable

The accounts receivable balance consists of the following:

	2021	2020
Levies receivable	\$ 86,298	\$ 240,468

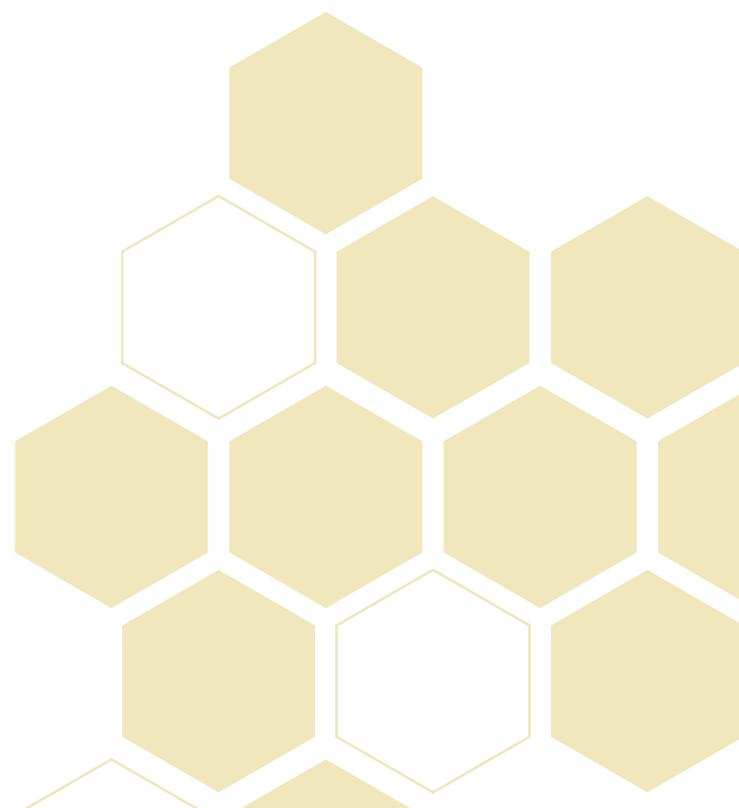
#### 5. Accounts Payable and Accrued Liabilities

The accounts payable and accrued liabilities balance consists of the following:

	2021	2020
Levy refunds payable	\$ 323,551	\$ 316,356
Trade payables	143,935	37,584
	\$ 467,486	\$ 353,940

#### 6. Internally Restricted Net Assets

The Commission has internally restricted net assets totalling \$2,000,000 as a reserve in the event that the Commission is disbanded or there are other unforeseen circumstances. Any income earned or changes in fair value arising from these assets are recognized in unrestricted net assets. During the year the Board authorized a contribution of \$200,000 to the internally restricted net assets (2020 - \$nil).



## 7. Commitments

### (a) Service contracts:

The Agriculture Council of Saskatchewan Inc. charged the Commission \$45,013 (2020 - \$34,197) for administering the check-off fee program and the business activities of the Commission. During the year the Commission entered into a contract with ACS for administering the check-off fee program and the business activities of the Commission. The Commission agreed to pay a minimum of \$43,661 for levy collection activities for the period August 1, 2021 to July 31, 2022.

The Commission entered into contracts with several corporations and contractors for rent, management and consulting services. Annual payments due in the next year are as follows:

Year ending July 31:	
2022	\$ 336,303
2023	\$ 282,327
2024	\$ 114,042

### (b) Research:

The Commission is committed to funding research and development projects over several years to benefit the barley industry. Annual payments due in each of the next five years are as follows:

Year ending July 31:	
2022	\$1,808,616
2023	\$ 1,216,172
2024	\$ 831,860
2025	\$ 479,259
2026	\$ 14,169
	\$ 4,350,076

## 8. Producer Check-Off Fees

Under the Regulations, each buyer of barley is required to remit to the Commission a check-off fee of \$1.06/tonne (2020 - \$1.06/tonne) of barley marketed upon final settlement to producers. Producers can request a refund of check-off fees paid from August 1 to July 31 by submitting a refund application by August 31 of the following fiscal year.

## 9. Related Party Transactions

During the year ended July 31, 2021 members of the Commission's elected Board of Directors received payments for per diems and expenses of \$34,222 (2020 - \$52,016). All related party transactions are measured at carrying amounts.

## 10. Financial Instruments

The Commission as part of its operations carries a number of financial instruments. It is management's opinion that the Commission is not exposed to significant interest, currency or credit risks arising from these financial instruments except as otherwise disclosed.

### *CREDIT RISK*

The Commission is exposed to credit risk from potential non-payment of accounts receivable. Most of the accounts receivable were collected shortly after year-end. As at July 31, 2021 the largest four customers accounted for 50.13% (2020 - 56.31%) of accounts receivable.

### *INTEREST RATE RISK*

Interest rate risk is the risk that the value of a financial instrument might be adversely affected by a change in the interest rates. Changes in market interest rates may have an effect on the cash flows associated with some financial assets and liabilities, known as cash flow risk, and on the fair value of other financial assets or liabilities, known as price risk. The Commission is exposed to interest rate risk on its fixed income investments.

### *CURRENCY RISK*

Currency risk is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. The Commission is subject to the risk of foreign exchange fluctuations on certain amounts held in foreign currencies and included on the balance sheet in their Canadian dollar equivalent.

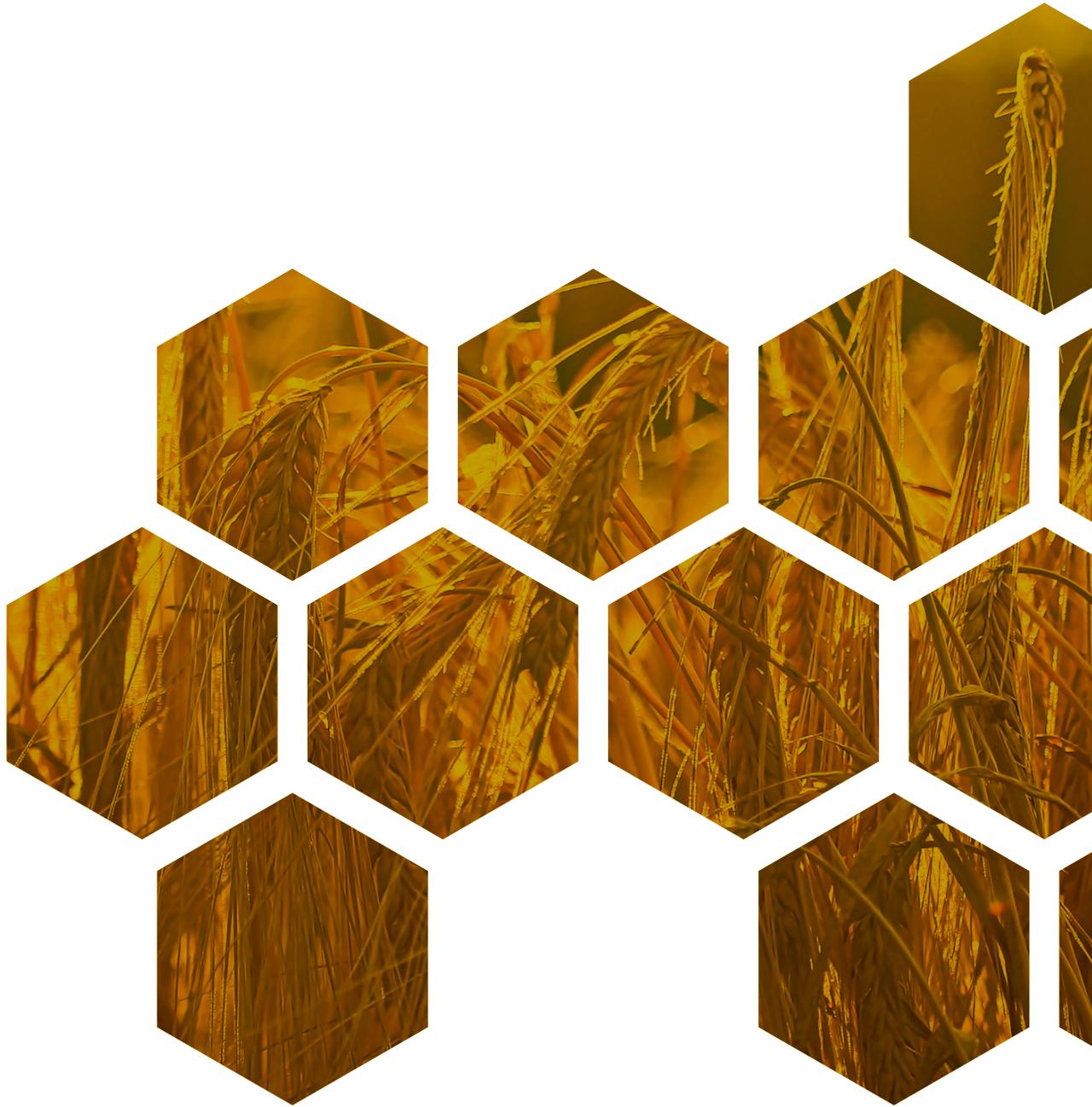
### *MARKET RISK*

Market risk is the risk that financial instrument fair values will fluctuate due to changes in market prices. The significant market risks to which the Commission is exposed are currency risk, interest rate risk and other price risk related to investments.

## 11. Budget

The Board approved the 2020/2021 fiscal year budget at the meeting on August 6, 2020. The budget figures included in the accompanying financial statements are unaudited.





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