SASKATCHEWAN SEED GUIDE 2023

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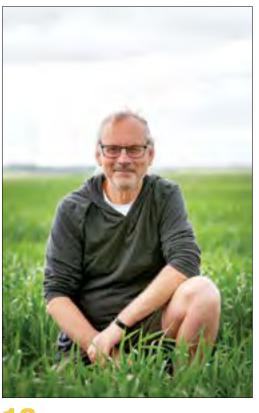
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ON THE COVER: Like many crops, peas went from 2021's drought conditions to too much moisture in 2022, increasing disease pressure. **See page 42.** | FILE PHOTO

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MIKE SHEWCHUK SSGA PRESIDENT

PRESIDENT'S MESSAGE

As another year wraps up, I sincerely hope this message finds you in good health.

As Seed Growers, we work under strict requirements to multiply new genetics from the world's greatest plant breeders. This multiplication lays the foundation for agriculture in Canada. It is a foundation built on quality and is something we are extremely proud of.

Over the past year, SaskSeed has been working more closely with provincial commissions and producer groups to build our relationship and strengthen communication so we can continue to work closely with our fellow farmers represented in these groups.

Our vision for the future is closer collaboration to accomplish goals within the seed industry that benefit agriculture

The future of plant breeding, and more specifically public plant breeding, continues to fall further into question. We want to see proactive solutions ensuring ongoing benefits to producers.

Seed Regulatory Modernization (SRM) has largely been at the forefront of discussions in the seed industry.

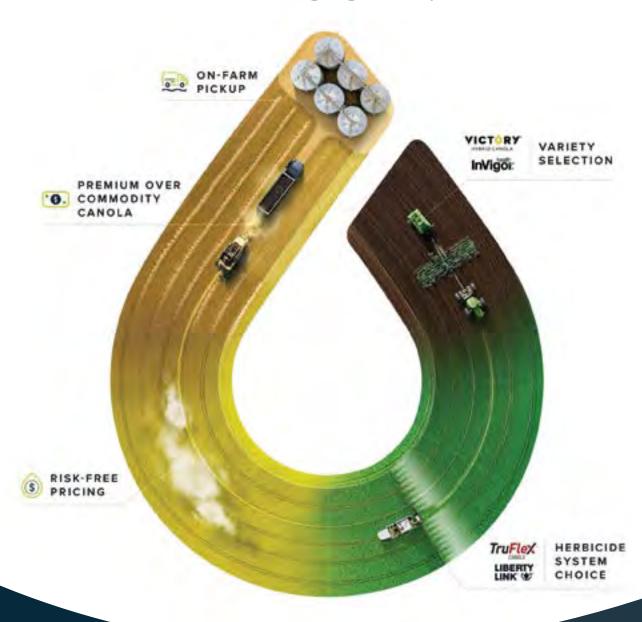
SaskSeed, along with our counterparts at the Canadian Seed Growers' Association (CSGA), have actively participated in several SRM task teams. We look forward to the recommendations from these task teams moving forward to public consultation before becoming regulation.

The Interactive SaskSeed Guide entered its second year in operation. We hope you have been able to make use of this tool for comparisons of the latest genetics. Check it out at www.saskseed.ca. We have also expanded our Twitter presence this year. Be sure to follow @saskseed for our latest updates!

It has been a pleasure serving as SSGA President. Wishing a safe and prosperous year to you and your families!



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WRESTLING WITH RENEWAL

Growers find creative solutions to rebuild post-disaster or keep their facilities current

BY MARY MACARTHUR I SPECIAL TO SASKSEED

AN AGING seed cleaning plant forced the Watson family to choose between getting out of the seed business or looking at building a new plant.

The family have been seed growers since the 1960s, but investing in a new seed plant was a big decision, said Mark Watson of Watson Seeds.

"It was getting to the point that if we wanted to stay in the seed business we needed to build a new cleaning plant or get out. It has been a pretty key part of our farm for a long time," said Watson, of Avonlea SK.

It took two years of planning before work began on the new building. They worked with seed equipment sales staff, toured other plants and spent hours discussing what they wanted from the new facility. Once they settled on an equipment company, they were put in touch with a general contractor who had built other seed cleaning facilities.

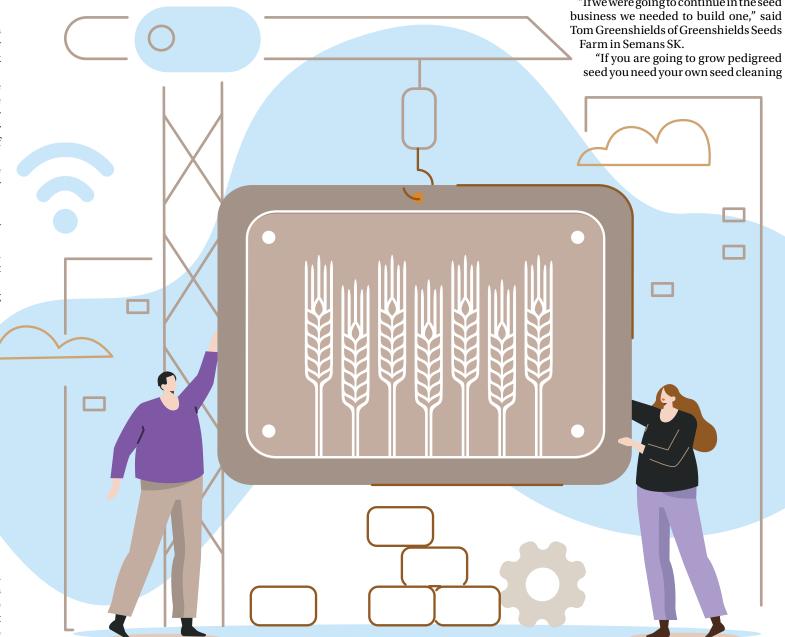
"We went through a lot of the planning so we were not making it up as we went along."

Once plans were finalized, they needed to plan when to tear down the existing seed plant. It needed to be late enough to finish the year's cleaning, yet early enough to get it built in time to clean the next year's crop.

"We made sure everything was lined up and ready to go and not searching to find some place to custom clean."

They broke ground in April as $soon\,as\,the\,snow\,melted.\,The\,plan$ was to be operating in early December, but because of some delays they started cleaning in February.

It has been four years since they started cleaning in the new plant and are pleased with the results. The cleaning capacity has doubled with room in the new building to twin the cleaning line or add different equipment in the future. They now also have the ability to clean pulse crops.



Since building the plant they have cleaned plenty of chickpeas for other producers. The new colour sorter has also been put to use to clean barley and wheat from oats.

"We are much more efficient."

After their seed cleaning plant burned down in 2015, the Greenshields family had to decide if they were going to continue in the seed cleaning business.

"If we were going to continue in the seed business we needed to build one," said Tom Greenshields of Greenshields Seeds

"If you are going to grow pedigreed

plant, cost-wise."

The old plant, built in 1958 on the CN line, was originally a seed cleaning coop. The family bought the plant in 1982 and operated it until it burned in 2015. Thenewplantisbeingbuiltontheirhome

The family began construction about one year ago and are building most of it themselves between seeding, harvest and other farm activities.

"A contractor would have been nice, but it was just cost. We already knew it was going to be quite an investment," said Greenshields, who estimates hiring a contractor would have doubled the cost, but the plant would have been operating sooner.

"It will cost substantially more than our old one did. It is expensive to build one nowadays," said Greenshields.

The new facility is "pretty standard" with a colour sorter, inside legs, more electronics, sensors, more capacity and room for future expansion, he said.

Nick Petruic chose a hybrid construction model for his new Petruic Seed

> Company seed cleaning plant, hiring out some jobs and doing others himself.

A contractor was hired to put up the building, do the cementwork and frame the office, but the family did the interior drywalling and other interior jobs they could handle. A contractor was hired to assemble the large equipment and put it in place.

While the old plant, rebuilt from the old Hearne, Sask., elevator, was still functioning, Petruic wanted to improve the flow of the plant. Built in 1979, it was designed for smaller trucks in a yard that was built for smaller equipment.

"As our cleaning was refined we addedpieces of machinery into that older one. It got to the point where we had no more room and had to decide if we were going to start brand new or add on," said Petruic of

The newplant, finished in January 2020, was built south of the main vard to allow for future expansion and allow large

trucks and grain to move easily in and out of the vard.

"Super Bs, they could fit in the yard but it was not ideal. We tried to put it in a spot with room for expansion. We didn't want to get tight again too soon."

One of the unique features of the plant was the installation of an easy dump leg to move the grain and pulses out of the plant as gently as possible.

Petruic said their seed plant is a lot like Disney World; it is never really done. Just like Disney, there will always be construction, additions, fixes and changes. One change he would make is to have the ability to move grain directly to the colour sorter without having to go through the other equipment before it gets there.

Skyler Anderson doesn't know if he would recommend building a seed cleaning plant in shipping containers, but it was what worked for him six years ago.

It all started with fusarium in their crop in 2016. The StarOuest Farms bought a colour sorter to clean out the fusariuminfected grain and wanted an inexpensive building to house the new colour

Using six containers placed two wide and three high, they crammed the cleaning equipment into the temporary facility and got to work.

"At the time it was a fraction of the cost of the building and we were crazy enough to try something," said Anderson of Star-Quest Farms in Hazlet SK.

"We were able to do it cheap enough that we paid for the colour sorter in the first vear."

The containers originally held a colour sorter, air screen, and length grader with legs poking out the roof of the containers to the outside bins. A year later the family became pedigreed seed growers and a gravity table was added.

"The idea was temporary for a few years, but then we started growing seed and it evolved from there."

Since then, the outside bins have been moved onto concrete pads and some concrete footings poured inside containers for the gravity table.

"I wouldn't do it again. There are some ongoing challenges. It was challenging building it and cramming everything into a small space. I think we did pretty good for what we had."



SEED GROWERS OFFER THEIR

top 5 TIPS WHEN PLANNING A NEW SEED FACILITY

BY MARY MACARTHUR I SPECIAL TO SASKSEED

updating a seed plant or building an entirely new facility is a major project that involves decisions you'll need to live with for a long time. We went to growers with fresh experience under their belts to find out what they learned.

Mark Watson, Watson Seeds, Avonlea, Sask.

- 1. Have a plan before construction begins. "We had a plan of what we wanted going into it. We made sure we had it designed to how we wanted and were not making it up as we went along."
- 2. Hire experts. We wanted to work with people who knew what they were doing. Hire or find experts in building design and seed plant design. The building was taller and bigger in footprint than if we decided to do it ourselves.
- 3. Build for the future. We looked at making sure we were set up so we could do all the seeds we want to do and have the ability to expand. We wanted to make sure we had flexibility to do lots of different types of cleaning. We grow lots of different varieties and didn't want to be restricted in the crops we grow because of the design of our plant. A colour sorter was key to cleaning grains that we couldn't with the old plant.
- **4. Use the experts.** We bought all the equipment from the same supplier for our cleaning machines and they gave us lots of support and training. The colour sorter can do so many things, but sometimes we don't have the knowledge to "change the recipe." The technician can

log onto the machine from a province or country away to help figure out any problems or change

help figure out any problems or change the settings. Once, when their normal technicians couldn't log in, an expert from Italy called to help to tinker with the colour sorter recipe.

5. Find the right location. The new seed plant is on the highest spot in the yard. They brought in thousands of yards of gravel to build it up even more. "We never have any trouble getting trucks in and out of the yard even when after heavy rainfalls."

Skyler Anderson, StarQuest Farms, Hazlet, Sask.

- 1. Don't think short term. Anderson built the plant in containers because of time and money. Six years later, if he had to do it again, he would put up a building with enough room to install a double cleaning line in the same building. "You think you should cheap out when you shouldn't."
- **2. Think carefully about design.** The containers were the right option at the time, but "they are definitely not" at this time six years later.
- 3. Buy the right equipment for the job. Pushed for time, Anderson said they settled on equipment that wasn't ideal. "It wasn't what we wanted or what we needed, but it was what was available on short notice. If I was to do it again, I wouldn't worry about the short-term needs. I would think about long term and take more time to design it." He also recommends buying a colour sorter, a key piece

of equipment for modern cleaning facilities. "If you are in the seed cleaning business, I wouldn't skip any pieces of equipment and only buy quality stuff."

- 4. Location is key. The cleaning plant is in town beside a grain elevator they own. A newer scale in the elevator has become integrated into the cleaning system. Key is the three-phase power next to the main power grid. "We brought in an electrical service that was four times too big. We will never run out of power. We put in a more-than-adequate electrical source for what we will ever need."
- **5. Hire experts.** They hired out the obvious jobs like electrical and concrete work, but Anderson thinks they should have hired out the welding work. "It wasn't above our skill level but it was time consuming."

Tom Greenshields, Greenshields Seeds Farm, Semans, Sask.

- **1. Colour sorter required.** While their plant is still under construction, they wish they had put a colour sorter in from the start. They will add a colour sorter once they have the facility in operation and know how everything works.
- 2. Don't build during COVID. The family estimates the costs of construction doubled from their original plan. The price of lumber doubled and the electrical codes changed increasing the price. Also increased in price was the steel stands for the machines and the spouting for equipment.

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3. Size is important. One of the best things the family did was to plan the building to have all legs inside the building with 28 ft. high ceiling. "When you are doing main-

- **4. Buy from one supplier.** While all the machines are not the same brand, they were bought from a single supplier. Supporting one supplier, the family received good information about the design and layout and capacity for each machine in the cleaning plant. "We bought from the same dealer. When the start-up comes, they help you."
- **5. Location is key**. The family chose to

The next

will the yard. "It is at the starting stages and as we grow it will grow."

Nick Petruic, Petruic Seed Company, Avonlea, Sask.

- 1. Do your homework. "We did our homework and got a lot of quotes and we pushed back. We took our time and didn't buy the first thing we found." Ask around the industry and find out what you need and don't settle for what is available.
- **2.** Three-phase power. "Three-phase power is expensive at the start, but it changes the motors needed while in operation. You don't need phase converters on everything. It makes things cheaper in the long run." The power company hooked onto the mainline on the highway and trenched it underground to the farm. "That has been pretty good."
- **3. Colour sorter required.** There is no other substitute for a colour sorter. "It helps

me feel confident with the product I turn out." An absolute must with a colour sorter is the need for it to have remote-view capabilities so that someone else can log on to help. "You need the service associated with it. People are experts for a reason, but you must have access to them. That piece of the plant was worth more than the whole plant combined but, if you can't use that, it is a waste of time."

- 4. Air quality. Good air quality is important. "People walk into our plant and believe how clean it is." Petruic said having enough air filtration makes the facility enjoyable to be in. "You can never get too much air - get extra."
- 5. Speed adjustment. Now that the plant is operation, Petruic wishes he had an under-bin conveyor with a variable frequency drive to control the speed of the conveyor. It works, but it would be nice to control the speed.

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>> continued from page 8

tenance, you are mainly inside."

- build the plant on their farm to have everything in the yard and handy. "For us it is easier with everything already in the yard." The area around the plant is large enough now, but if the plant expands, so



BETTER BREW DEMANDS THE BEST BARLEY

Delivering pure varieties protects Canada's reputation for premium malt barley

BY CALVIN DANIELS I SPECIAL TO SASKSEED

WHEN IT COMES TO malt barley, maintaining varietal purity is critical to meeting customer requirements and supporting Canada's premium value propo-

Premium malting barley and malted barley are based on high levels of varietal purity.

"This is a really important factor," said Peter Watts, managing director with the Canadian Malting Barley Technical

Watts explained that different varieties of malt barley "process at different rates in malt plants," so the industry has thresholds it expects when buying barley.

Varietal purity is critical to producing high-quality malt.

Each malting barley variety has very different barley quality and malting performance characteristics (e.g. different size kernels, varied rates of water absorption and differences in starch to sugar modification).

Maltsters processing malting barley that have low varietal purity will have difficulty in producing a consistent finished malt product.

"The malt industry has a 95 per cent purity threshold. It's pretty high, but I think it can be maintained," said Mitchell Japp, Research & Extension Manager with SaskBarley.

Canada is recognized as a premium

The malt industry has a 95 per cent purity threshold. It's pretty high, but I think it can be maintained.

MITCHELL JAPP | SASKBARLEY

producer and supplier of barley and malt to the global malting and brewing industries, but it takes effort to maintain that reputation.

In that regard Canadian producers have an important role in ensuring the barley they produce meets the industry standards.

The question is what producers can do to maintain varietal purity.

The best first step is to start with pedigreed, said Japp.

"Canada's pedigreed seed system helps ensure varietal purity through a rigorous system of checks in relation to planting and production, storage and transportation," says Todd Hyra, western business manager with SeCan.

"In addition, the 'Blue Tag' system includes field inspections by trained experts to identify and eliminate potential issues with varietal purity. Some seed growers are already using additional tools such as varietal identification using new technologies such as DNA, protein analysis or other varietal recognition techniques," says Hyra.

Canada's seed companies and seed growers work hard to protect varietal integrity through the strict employment of these protocols. Canada's Seeds Act prohibits the sale of seed by variety name by anyone other than a pedigreed seed grower because the "Blue Tag" is the only way to ensure variety purity. Additional limitations on the production and sale of seed under the Plant Breeders' Rights Act further discourages the sale of seed outside the pedigreed seed system.

"The keywith pedigreed seed is the ability to trace back to where it comes from," Hyra says. "That really provides that assurancethat, if something does gowrong, you can trace it back."

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THE CANADIAN MALTING BARLEY TECHNICAL CENTRE (CMBTC) RECOMMENDED LIST provides producers with an indication of which malting barley varieties have the greatest potential for selection and marketing. Each variety on the recommended list has been pilot scale tested at the CMBTC and all exhibit good malting and brewing characteristics. All varieties on the list are registered with the Canadian Food Inspection Agency (CFIA).¹

RECOMMENDED VARIETIES

VARIETY	SEED DISTRIBUTOR	MARKET COMMENTS	PRODUCTION
AAC Connect	CANTERRA SEEDS	Growing Demand	Increasing
CDC Fraser	SeCan	Growing Demand	Increasing
CDC Copeland	SeCan	Stable Demand	Decreasing
AAC Synergy	FP Genetics	Declining Demand	Stable

Check with your malting barley buyer prior to seeding for additional contracting opportunities including the following varieties: AC Metcalfe; CDC Bow (SeCan); Legacy; CDC Copper (FP Genetics); Bill Coors 100 (Stamp Seeds); CDC PlatinumStar; CDC GoldStar (CANTERRA SEEDS).

A list of all CGC designated malting barley varieties can be seen on the Canadian Grain Commission web site under "Variety Designation Lists".²

THE CMBTC AND **ITS MEMBERS** RECOMMEND

Talk with your malting or grain company representative, local elevator operators, or representative seed company about opportunities to grow and market malting barley in your area.

Use certified seed to ensure varietal purity, reduce incidence of disease and increase likelihood of selection for malt

Explore opportunities to **contract** production of malting barley varieties.

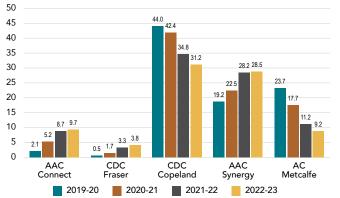
NEWLY REGISTERED VARIETIES

These newly registered varieties are undergoing seed propagation and commercial market development. Contact the seed distributor for opportunities to trial these promising new varieties.

VARIETY	SEED DISTRIBUTOR
CDC Churchill	SeCan
AB BrewNet	SeedNet
AAC Prairie	CANTERRA SEEDS

¹ The varieties on this recommended list are targeted primarily at western Canada and may not reflect malting barley varieties with the greatest potential for selection and marketing in eastern Canada.

SEEDED AREA BY MAJOR MALTING VARIETY % - W. CANADA



Distribution of malting barley varieties as a percentage (%) of area seeded with malting barley in western Canada in 2022. Source: CGC (based on data from provincial crop insurance agencies)

For inquiries please contact the CMBTC by email at cmbtc@cmbtc.com or call 204-984-4399.













² https://www.grainscanada.gc.ca/en/grain-quality/variety-lists/



» continued from page 14

"Traceability really provides that peace of mind. Once seed is used from outside the system, the chain of traceability is lost," Hyra added.

Jon White, a barley merchant with Viterra, said the systems are in place to protect markets.

For example, White said, in terms of quality control, Viterra has a system of testing for malting barley quality specifications, including varietal purity, which is "quite robust."

Headded, with a good understanding of what they have to market, they can do what is required before loading onto vessels to ensure a satisfied customer.

It is important purity is maintained because without that assurance markets could be lost, added Hyra.

"One of the cornerstones of Canada's premium value proposition is our ability to produce, source and deliver malting barley lots, with high levels of varietal purity, to malt processors, both domestically and in international markets."

Japp said it is understood many producers save seed from year-to-year.

Farmers can use farm-saved seed. Using good practices, producers can maintain varietal purity of farm-saved seed.

But, even for those who save seed, Japp said, they should look to grow pedigreed seed every few years to not only help maintain varietal purity, but to take advantage of varietal advancements.

"Historically the malting industry used a guideline of certified seed every second year," added Hyra. "This is rigorous but once grain is outside of the pedigreed seed process, the documentation trail is lost so the closer to pedigreed seed, the better the chance for purity. With certified seed, if you have an issue, you go back to your seed retailer. With farm-saved seed you are completely responsible."

When it comes to choosing a variety, Japp said while some varieties have been popular for years – CDC Copeland up to 20 years – new varieties do offer opportunities toward better yields and broader disease tolerances.

"It's good to consider refreshing (varieties)" he said, adding there are always varietal improvements being made. "... I



think the (new) varieties are there for the farmer . . . There are a lot of good reasons to change."

Certainly, maltster demand helps spur farm production and Japp said interest in some recent varieties is growing.

"Malt companies are transitioning to new varieties," he said.

A couple of the recent varieties attracting interest are CDC Fraser and AAC Connect; CDC Churchill, AB BrewNet and AAC Prairie are even newer options garnering attention as well (refer to the CMBTC 2022-2023 Recommended Malting Barley Varieties list).

Still, Japp said, Copeland remains popular as a variety both producers and maltsters are familiar with.

Since there are large quantities of Copeland grown and maltsters trust the variety, there is typically a ready market which makes it popular with farmers, said Japp.

"It's a large part of the malt program," he offered.

Japp said the industry is recognizing it probably needs to adopt new varieties – and what they offer in terms of improve-

ments - quicker.

"We need to do a better job. We need to turn over varieties faster," he said.

Turning over varieties faster may mean more than one variety grown on a farm at one time. That doesn't mean varietal purity can't be maintained if seed is saved year-to-year, it just means doing things to ensure the purity.

"It depends on how it's managed on the farm I think," said Japp.

For example, if a producer is growing multiple malt barley varieties, the potential for mixing causing varietal impurities is increased.

With that in mind, Japp said varietal purity starts with "good crop rotations."

The key step in that effort is not to grow a malt variety on land where barley has been grown for a couple of years and, of course, a longer break in barley being grown on the land is better.

"Make sure your rotation is really solid," he said, adding that greatly reduces the risk of impurities through volunteer plants.

It's also important to keep bins and equipment clean.

The bit of barley in the corners of a truck might not seem like much, but it can be a factor to decreasing varietal purity, said Japp.

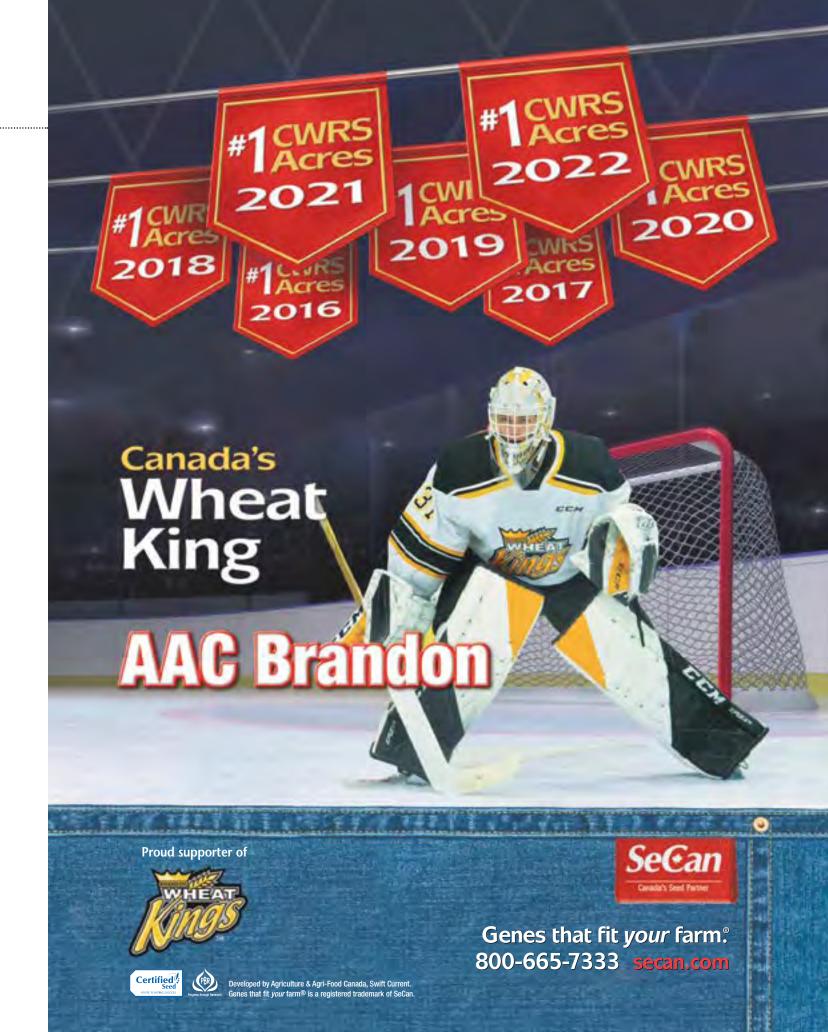
And, even if it does not impact a sample being sold, if that seed is kept for the next year, you are seeding at least some plants not of the same variety, and that can add up over a year or two, said Japp.

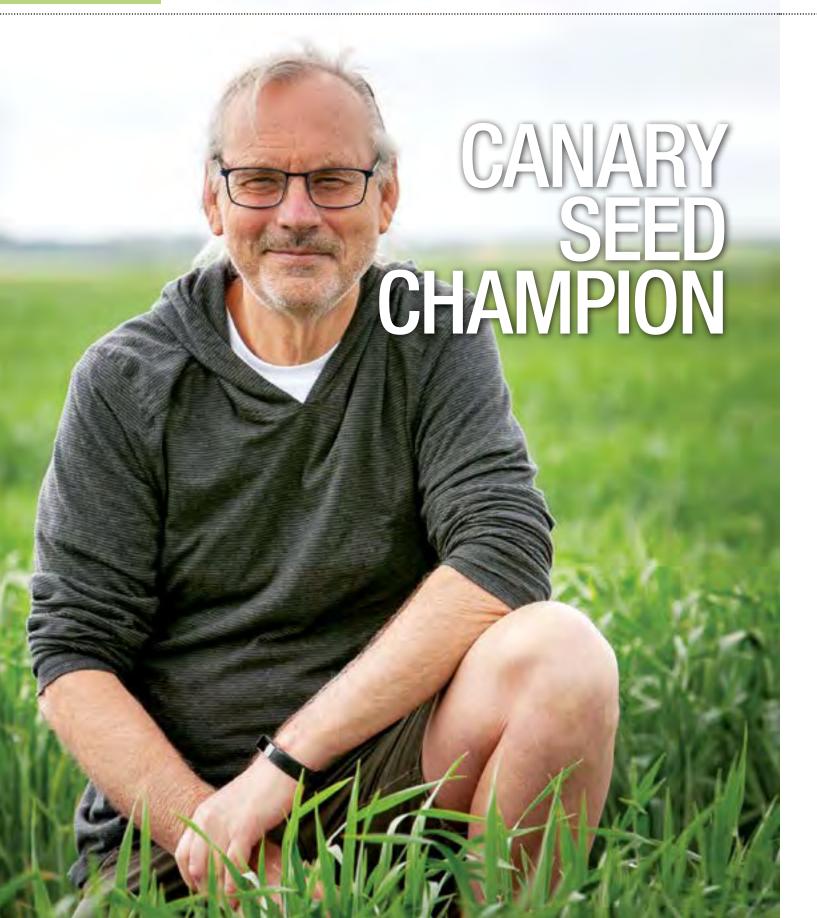
Cleaning the combines and trucks and bins are all good common practice to reducing the risk of varietal impurities.

Producers can also have a purity test done on their malt barley seed. Japp said it is also good practice to keep a good general sample of what you plant, even if it is pedigreed seed.

"It's something to go back on; so, get a good general sample of what went in the ground," he said, adding an ice cream pail full is enough to be tested should the need arise.

"While farmers may strive to limit contamination in their farm-saved seed, the importance of certified seed can't be understated," says Hyra. "The use of certified seed is a tried-and-true way to ensure varietal purity."





Pierre Hucl's lone work on canary seed varieties is delivering the promise of new market opportunities

BY MARY MACARTHUR I SPECIAL TO SASKSEED

A road trip from Saskatoon to Denver 36 years ago with distinguished plant breeders Al Slinkard and Bert Vandenberg was enough to plant the canary seed idea in the mind of Pierre Hucl, then a young grad student.

"People think there is this big master plan, but very often in plant breeding it is karma or timing. There was a captive audience," said Hucl, now one of the few canary seed plant breeders in the world and the only one in North America.

"It was a two-day drive and we talked about stuff. One of the things that came up was canary seed. Al Slinkard had broughtin some varieties from the States. We were talking about plant breeding and, if you were to do anything in canary seed, what would be the main trait you would look at? It was itchiness of the grain," said Hucl, a University of Saskatchewan professor and crop breeder at the Crop Development Centre.

Since beginning canary seed research a year after the trip, Hucl has developed several varieties of canary seed, eliminating the itchiness and improving yield.

It was Hucl's personal determination to improve canary seed — not an existing well-funded program — that moved research forward on the minor crop.

"There was no 'dropping in the lap.' I picked it up. It was actually quite a struggle to get funding to work on it," said Hucl, whose main line of research is spring wheat breeding.

"Initially it was zero funding. I just did it. I didn't get the first funding until 1994 and then I had gaps in funding after that. I bulldozed ahead and carried what I could on the side until we secured funding. Until 2008 it was pretty much up and down. There wasn't what I considered a proper breeding program, except for the last 15 years. When you try to run a breeding program on \$20,000 a year you don't get very far."

It took the formation of the Canary Seed Development Commission of Saskatchewan in 2006 with its \$1.75 per tonne checkoff directing about \$85,000 a year to Hucl's canary seed research.

Searching through existing canary seed varieties for a semi-dwarf gene to help reduce the plant's height is a difficult search. There are only about 50 to 60 varieties of canary seed in the world, mostly European varieties or harvested from the Middle East, where the plant grows wild. Many of the varieties in present gene banks were collected in the 1950s, with few varieties added since then.

"Many of these things haven't worked out, but we tried them anyway. The focus has been on yield and trying to reduce the crop height. The biggest progress is on the yield side. It still wants to be a forage grass. If you put it under certain growing conditions, it doesn't produce much seed at all."

Reducing the amount of straw in the plant while maintaining or increasing yield is a tricky balance for the plant breeder.

continued on page 18 >>

OPPOSITE PAGE: University of Saskatchewan seed breeder Pierre Hucl pursued canary seed development when no one else seemed interested. | U OF S CROP DEVELOPMENT CENTRE PHOTO

RIGHT: Canary seed flour can be used to make bread, cookies, cereals and pastas, while the whole seeds can be used in nutrition bars and sprinkled on hamburger buns in place of sesame seed. | FILE PHOTO





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Canary seed averages between 1,000 to 1,400 pounds per acre and, through sustained effort and a solid breeding program, Hucl believes yield could increase 30 percent, making more farmers take notice of the minor crop.

» continued from page 17

"The plant is very inefficient in terms of yield development. An awful lot of energy goes into producing straw."

In crops like beans or lentils, the harvest index, or the ratio of grain to above-ground biomass, is about 55 percent. In modern wheat the harvest index is about 40. In canary seed it is 15 to 20 percent and sometimes as low as eight percent.

Canary seed averages between 1,000 to 1,400 pounds per acre and, through sustained effort and a solid breeding program, Hucl believes yield could increase 30 percent, making more farmers take notice of the minor crop. According to Statistics Canada there were 263,000 acres grown in 2022, mostly in Saskatchewan.

Kevin Hursh, executive director of the commission, said new varieties developed by Hucl at the Crop Development Centre are improving each year and have kept canary seed in crop rotations.

"Pierre has made some excellent progress on canary seed varieties. The majority of what is grown is still the old itchy varieties because they still yield better, but he is continuing to close that yield gap. The newest CDC Lumio is only about 10 percent behind the old itchy variety Keet. He has other stuff in the pipeline and it looks like it will continue to narrow that gap," said Hursh.

Recently, canary seed achieved novel food approval for the glabrous, or non-itchy, canary seed in Canada and the US. There are hopes these new varieties will have a role in food production and a way to increase the number of acres of the crop beyond

the limits of the bird seed market.

"The only thing that could really change the acreage is a new market use, specifically human-food consumption," Hursh said. "The only way more acres could be justified is getting a brand-new use which would be human food."

To support this, the commission launched marketing resources online at alpistecanada.ca (alpiste is the Spanish word for dehulled canary seed). The site

includes names and profiles of Saskatchewan growers, where to get the product, technical information for food product manufacturers and recipes for the public.

"If we had another 100,000 acres ... we would be doing cartwheels if we had that kind of a market," Hursh said, explaining the commission is working with processors and some food brokers to develop food products from canary seed and eventually see their offerings on store shelves.

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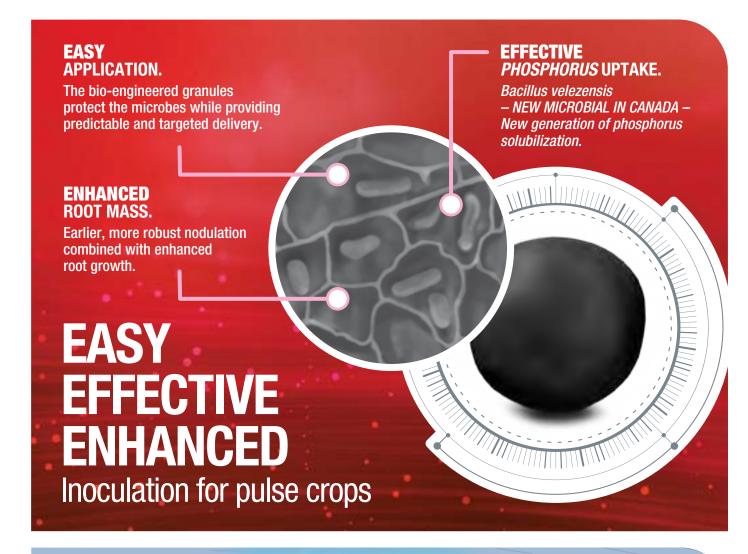














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MUSTARD MAKES A COMEBACK

With new varieties and strong prices, farmers are taking another look at the crop

BY MARY MACARTHUR I SPECIAL TO SASKSEED

NEW MUSTARD VARIETIES and higher prices are catching the eyes of farmers who have included mustard back in their crop rotation, said the executive director of SaskMustard.

"I have had growers say they are back growing mustard because we have new varieties. They are used to buying new varieties of wheat, barley, flax and canola. They say, 'You haven't launched a new mustard variety in 20 years, but now you are so I am going back into mustard.' The farmers are always looking for the newest, best thing," said Rick Mitzel.

For several years, prairie mustard acres hovered around 575,000 acres, but with poor prices, stagnant yields and no new varieties, farmers slowly switched their oilseed crop from mustard to canola and mustard acres dropped to under 300,000.

With new hybrid varieties that grow in non-traditional mustard-growing areas and higher prices, Mitzel estimates the mustard acres across the prairies jumped to between 475,000 and 500,000 in 2022.

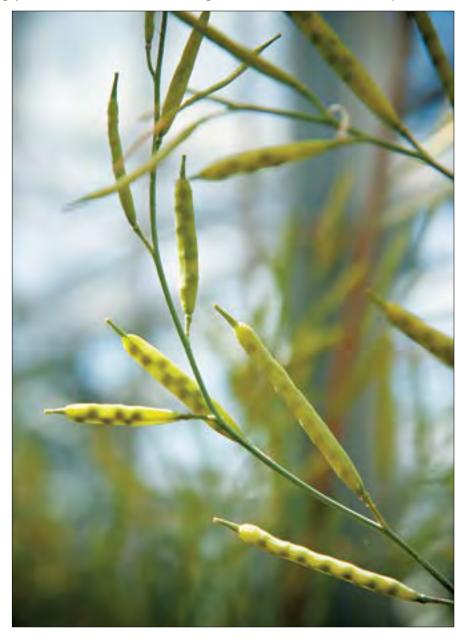
"In 2022, those market signals went out to farmers and the acres went up," said Mitzel, of Saskatoon.

Three years ago, mustard was trading for about 30 cents a pound, or about \$15 a bushel. The average yield for mustard is between 20 and 22 bushels an acre, about half that of canola.

In 2021, drought-affected mustard yielded only seven bushels per acre and, with very few bushels of mustard left in prairie grain bins, the world was suddenly short of mustard.

"All the mustard processors knew they had an issue and the price started to climb. Nowall three mustards are all over \$1 a pound, equal to \$50 a bushel," said Mitzel.

Prairie farmers grow three varieties of mustard. About half of the acres are yellow mustard which goes to the US for condiments and ends up in ballparks and football stadiums for hot dogs. Brown mustard accounts for about 40 percent of the acres, with most of the seed going to Europe. Oriental mustard is about 10 percent of the acres and is shipped to Japan.



A world-wide shortage of mustard was a wakeup call. "The drought was likely the best thing that happened," said Baine Fritzler of Sundwall Seed Service | FILE PHOTO

Mustard grower Baine Fritzler said the world-wide shortage of mustard was a wake-up call for mustard processors looking anywhere for mustard seed.

"The drought was likely the best thing that happened. If you had a yellow ball,

they would buy it," said Fritzter, of Sundwall Seed Service in Govan, Sask.

The new hybrid AAC Hybrid Brown 18 is also starting to attract attention from farmers. With 20 percent more yield, farmers are once again looking at mus-

tard as part of their crop rotation.

"We may have a success story on our hands," he said.

"This is year four and it has been fantastic and I think it will continue to grow. Once farmers grow it, they want more," said Fritzler, who sold out of his hybrid mustard seed to existing customers who want to grow it in 2023.

"Isold mine to repeat customers. I never put an ad in the paper. I just went down the list. Now the product sells itself."

Fritzler said mustard has never been a high-yielding crop and the price needs to be high for farmers to add it to their rotation.

"You don't brag about yield in the coffee shop. We operate on price."

The majority of mustard is grown in the brown-soil zone from the American border, north to Kindersley and west to Swift Current. The new varieties of oriental, yellow and brown are slowly making inroads into non-traditional mustard growing areas.

Fritzler has sold seed to farmers in non-traditional mustard growing areas like Nipawin, Kamsack and Dauphin MB. With 94 days to maturity, the hybrid brown varieties have a fit in the areas with a shorter-growing season.

Mitzel said it is hard to dramatically increase acres because mustard can only be grown on land that hasn't been seeded to canola within the past five years.



RICK MITZEL
EXECUTIVE DIRECTOR, SASK MUSTARD

"As we move forward and as we see how the hybrid performs in more moist areas, we're going to see mustard move into those areas on a limited scale. If you have been growing canola, you've got to have five years between canola and mustard. It is almost impossible for people to do."

Mitzel said he hopes mustard will become part of the crop rotation in the area around Outlook Sask., that will soon have 500,000 acres of irrigated land. A research trial there this summer at Outlook compared a high-yielding Liberty Link canola, which yielded 64 bushels per acre, to the AAC Hybrid Brown 18 which yielded 65 bushels per acre.

"There will be new irrigation acres coming on. If we can get mustard on those acres, that gives us a stable mustard supply. We'll keep our traditional mustard-growing areas. That is where our bread and butter is, but we want to capture some of these new irrigated acres to en-

sure we have world supply so we can continue to maintain our market share in the world."

During conversations with France's mustard processors, Mitzel said their preference is still to buy Canadian mustard because of its uniform size and quality.

"Their preference is to use Canadian mustard as long as we have it."

The shortage of mustard seed has everyone more aware of the need for farmers to keep growing mustard and that includes higher prices.

"The processors are taking this as an opportunity to still send signals to the market to keep growing mustard. The prices seem to be creeping up all the time, even right at harvest."

Bifang Cheng, the Saskatoon-based Agriculture Canada crop breeder, developed the hybrid mustard and continues to develop more mustard varieties.

Mitzel said farmers can expect more brown hybrid varieties in the next two to three years.

Work is being finalized by Cheng on a new oriental hybrid to be released in February, which will also give a 20 percent yield boost. A new composite yellow variety was released last year and there are no plans to replace it with a new variety soon.

"There are many moving parts going on in the background with mustard," Mitzel said.

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KEEPING THE PIPELINE FULL

Researchers are working on improved varieties to give Canada's farmers an edge

BY CALVIN DANIELS | SPECIAL TO SASKSEED

WHEN IT COMES TO varietal development one eye tends to focus on what is new and the other eye looks at what is on the horizon that might offer new opportunities.

Bronwyn Goodman with Agriculture and Agri-Food Canada (AAFC) said research is always focused on improving some aspect of a crop to help producers produce.

"Agriculture and Agri-Food Canada is committed to ensuring the sector has varieties withincreased yield and increased resistance to biotic and abiotic stresses, which means the focus on increasing yield remains as important as the focus on improving disease resistance, as well as improved tolerance to environmental factors such as salinity, heat and drought,"

he explained.

It's a case of taking a broad approach looking at varied traits which, if improved, will help production.

"As a whole, Canada wants to be a leader of highly innovative cultivars with high yield that are responsive to climate change," said Goodman.

"Yield increases are indeed a main, a high priority," offered Curtis Pozniak, Director at the Crop Development Centre (CDC), University of Saskatchewan. "But it is not our only selection target.

"New varieties must contain a 'package' of traits, so equal attention is placed particularly on disease resistance and resistance to various abiotic stresses. That resistance is key to ensuring new varieties perform well across a range of environments."

Pozniak said the majority of CDC efforts

are in the Canada Western Red Spring (CWRS) and Canada Western Amber Durum (CWAD) classes, with two spring wheat breeders, Pierre Hucl who focuses on the CWRS and Canada Northern Hard Red (CNHR) classes, and Pozniak himself who focuses on durum and Canada Prairie Spring Red (CPSR).

"Our programs focus on three broad areas – yield, resistance to biotic (diseases, insect pests) and abiotic (drought, heat) resistance, and end-use quality," said Pozniak. "Our main focus is to combine those traits to ensure growers have high-yielding varieties that are stable performers across a range of environments and that are marketable – that is, retain their grade and express traits in demand by buyers, millers, bakers and consumers."

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The focus is similar across all crops.

"As with wheat, it is about the package of traits," Pozniak said. "Most certainly in the pulse crops, breeding for disease resistance is a priority. Dr. Sabine Banniza is our pulse crop pathologist and is working closely with our pulse breeders to identify new sources of resistance to ascochyta blight and to breed that resistance into adapted, high yielding varieties.

"Our forage program is also focusing on improving salinity tolerance with the intent of improving performance on marginal lands not suitable for our crops."

At the CDC, there is also a small breeding effort in triticale.

"Our efforts there are to improve yield potential, reduce height and to develop varieties with improved ergot resistance," Pozniak said.

In terms of developing new varieties, he said they have to remember the crop growing region is rather diverse.

"Western Canada is a big place with

variable soil types, rainfall and heat patterns, and this too impacts the potential for diseases to develop," he said. "Thus it is important that we combine high yield potential with these various resistances to ensure success.

"Now often this means that plant breeding is a compromise.

"In my own breeding program, it is not usual to identify very high-yielding types. But in some cases these lines may be later maturing, may not have an adequate disease resistance package, or they may have lower grain protein concentration and quality. While these lines may not become varieties, they do serve as useful parents for developing new breeding populations for additional cycles of selection to recombine traits in hopes of achieving the most desirable package."

When it comes to canola, Doug Heath with SaskCanola said research is certainly "looking for different traits, including heat, drought and disease resistance, adding heat and drought tolerance are certainly traits of interest in regard to cli-

mate change."

With this work comes the added benefit of creating varieties which can be productive in areas where canola has not been traditionally grown.

On the cereals side, Canada has long prided itself on its hard red spring wheat, something supported with ongoing research.

"There are many projects Sask Wheat funds that are working on improving various aspects of hard red wheat, particularly the CWRS and CWAD classes, which are the most widely grown classes of wheat on the Prairies," said Dallas Carpenter with Sask Wheat.

Sask Wheat collaborates with other Prairie wheat commissions and the governments of Saskatchewan through the Agriculture Development Fund (ADF) and Alberta through the Agriculture Funding Consortium to fund research and variety development projects. In the 2021-2022 crop year, Sask Wheat committed over \$4.36 million to 46 projects, withmanymillionsmorebeing approved

by the other organizations mentioned.

There is also the Canadian Wheat Research Coalition (CWRC), which includes Sask Wheat, Alberta Wheat Commission, and Manitoba Crop Alliance. It administers the Canadian National Wheat Cluster (anational initiative worth nearly \$25 million over five years) and the Core Wheat Breeding Agreements with AAFC and the Universities of Saskatchewan, Alberta, and Manitoba, which total over \$37.7 million.

Wheat remains a key crop and investment is seen as critical, Carpenter said.

"The continued demand for CWRS and CWAD varieties, along with varieties of other classes of wheat and other crops, has led Sask Wheat to invest in the CDC's Plant Growth Facility," he said as an example. "Because of this farmer support, the CDC will have an enhanced facility to complement previously developed innovative breeding tools to speed up breeding and genomic selection and more precisely breed for specific traits and crop genetics."

So what is of particular note on the ho-

rizon for 2023, and beyond?

"Priorities of the Sustainable Canadian Agricultural Partnership (SCAP) will drive research direction and therefore, we can expect future research focus on climate change and environment, economic growth and development and sector resilience," Goodman suggested.

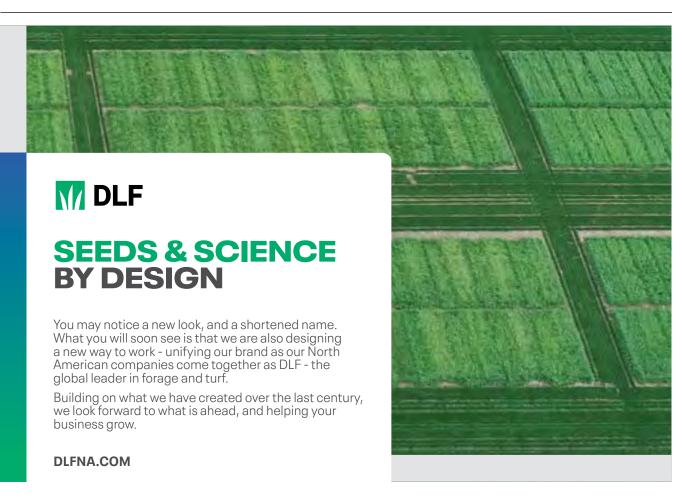
Of course, individual crop research focuses on different things.

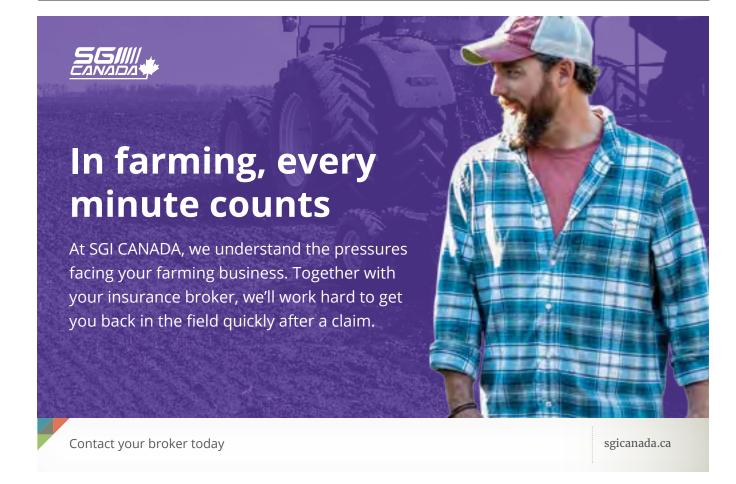
For example, "wheat science vision continues to influence the direction of wheat research, thus we are emphasizing foundational research of AAFC, increasing collaboration and partnership with the sector, and enhancing coordination at national and international levels," he said.

In general, CWRS continues to be the dominant type of wheat grown in Western Canada, and is thus very important for AAFC stakeholders. As a result, AAFC continues developing the variety of this class and ensure the sector has good varieties.

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Recent developments from AAFC are AAC Wheatland and AAC Starbuck which are seeing strong uptake, noted breeder Richard Cuthbert. AAC Brandon remains the top variety.

Other varieties are notable for specific traits such as AAC Hockley which has the best fusarium head blight (FHB) resistance AAFChas released and likely fastest variety to market – using DNA markers and doubled haploid technology, noted Cuthbert. It has a strong disease package and is just being launched commercially.

There is also interest in durum.

"Canadian durum wheat demand is strong in the global market in 2022," said AAFC Swift Current researcher Yuefeng Ruan. "Some countries importing Canadian durum experienced a hot and dry growing season which reduced their domestic durum production."

In durum, yield remains a primary development focus.

Increasing (durum) yield is a primary target in breeding; however, several factors impact yield including mainly diseases, pests and drought.

YUEFENG RUAN | AAFC SWIFT CURRENT RESEARCHER

"Increasing yield is a primary target in breeding; however, several factors impact yield including mainly diseases, pests and drought," Ruan explained.

"Besides that, quality traits are of great importance in the breeding work in order to satisfy farmers (good return), end-users and ultimately consumers. That's why yield is important but we need to keep in mind that increasing yield is associated with improving disease and pest resistance, quality traits, and environmental resiliency."

So what is new in durum?

AAC Antler is a newly released variety from the AAFC durum breeding program in 2022.

"It has FHB resistance comparable to AAC Schrader which is the first durum variety rated as 'intermediate' for FHB resistance," Ruan said. "AAC Antler is a combination of high yielding with high grain protein and semolina protein concentrations, shorter plant height than AAC Schrader with good strawstrength."

Ruan said producers can expect new varieties on the horizon.

"There are durum lines with continu-

ally improved grain yield and quality combining with improved disease and pestresistance especially FHB resistance in the breeding pipeline," he said.

In general though, is variety development still focused on yield increases? Or are we seeing more attention paid to traits such as disease resistance, drought and salinity tolerance?

"Yield is very important and remains the top performance consideration for most producers when they are selecting a variety," Carpenter said.

"However, the entire package of traits to address biotic and abiotic stressors is important to producers, as poorgrades due to pests, diseases, and environmental impacts can quickly eat away yield gains. In other words, yield reliability and stability are also important factors to consider."

The money that is invested in varietal research does pay dividends.

In March 2022, the CWRC, along with the Western Grains Research Foundation (WGRF), and the Saskatchewan Winter Cereals Development Commission (SWCDC), released a study that showed that western Canadian farmers have received nearly \$33 in return through varietal improvements for every dollar they invested in wheat breeding over the past 27 years, noted Carpenter. He added that the CWRC, WGRF, and SWCDC worked with Richard Gray at the U of S and Katarzyna Bolek-Callbeck from the Sask. Ministry of Agriculture to update previous studies that examined wheat farmers' return on investment (ROI) for wheat varietal development. Of interest, the study was yield-focused.

"Only yield improvements were considered in this study when calculating the benefits to farmers, to keep the estimate as conservative as possible," said Carpenter.

"Including other traits, such as improved insect and disease resistance, would have further increased ROI but are dependent on specific environmental conditions and are difficult to assess. Improvements in agronomic practices over

the same period were also not included in the final ROI estimates."

Still, research extends beyond yield improvement goals.

"Several projects underway, funded by Sask Wheat, are addressing resistance to diseases including leaf, stem and stripe rusts, leaf spot, common bunt, loose smut, and to insects including wheat stem sawfly and orange wheat blossom midge," said Carpenter.

"A notable project that is in the late stages right now, funded through the Canadian National Wheat Cluster, is being conducted by Dr. Richard Cuthbert of AAFC in Swift Current which is developing CWRS varieties for drought and heat stress resistance. The project also aims to combine FHB resistance, broadspectrum rust resistance, common bunt and loose smut resistance, and midge tolerance into semi-dwarf genotype cultivars that have high protein levels and

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are high yielding, as well as contribute to novel germplasm development of CWRS wheat for sustainable production of disease resistant high-quality export wheat."

Certainly today in Saskatchewan, the vast majority of crop acres are dedicated to canola and wheat which begs the question: Has that acreage domination led to a reduction of development work for other crops, oats, barley, pulses?

Rick Mitzel, Executive Director, Sask Mustard, said development continues in mustard.

"We have a lot of research going on for improving mustard yields, looking at herbicide tolerance, increasing disease resistance and looking at new uses for mustard," he explained, adding yield is only part of development. "We are doing work to develop clubroot resistance, saline tolerance and herbicide tolerance."

Pozniak said herbicide resistance is a traitwhich can be beneficial to producers.

"There is work continuing in several of our crops to breed in herbicide resistance," he said. "This is being done to provide growers with more options to rotate herbicides to manage, and hopefully minimize selection pressure for, herbicide resistant weeds.

"All of our herbicide resistance breeding work takes advantage of resistance that already exists in the gene pool."

The research is sometimes slower because of limitations in what is allowed. For example, when asked if research was moving into genetic engineering, Mitzel said these simply aren't tools they can use yet.

"Unfortunately we cannot use GM or CRISPR in mustard because so much of our mustard goes to Europe and they don't support either system so we are working in the areas that are approved in Europe," he explained.

One day that may change.

"CRIPSR technology is showing potential as a breeding tool and there are signals from regulatory agencies that the technology does not present any unique or identifiable food safety concerns as compared to other technologies of plant development," said Pozniak.

"In my own research program on durum wheat, we are examining the technology as a research tool to characterize how certain genes work within the durum wheat plant – a process we refer to as functional genomics. This approach is not yet being applied in our breeding programs per se but is a powerful research tool to help us decipher how certain genes work to provide expression of useful traits that can then be applied in breeding."

Carpenter said there is little appetite for CRISPR or GM in Canadian wheat research development.

"There is no movement by Canadian breeders that we are aware of currently to use these technologies directly for commercialization of wheat varieties," he said.

"The advancements made through the sequencing of the wheat genome have advanced marker-assisted selection as a breeding technique, creating a far greater degree of precision in selecting traits while accelerating the entire process."

Goodman said in the case of AAFC all crops remain of interest in terms of varietal development.

"AAFC is committed to supporting large acre and small acre crops, in order to provide the sector with options for sustainable diversified cropping systems," he said. "Large and small acreage crops receive support through successive agriculture policy frameworks, and other AAFC funding."

Goodman said it comes down to accessing research dollars from the correct sources.

All crops have access to different funding applications, such as the next policy framework, which is now referred to as SCAP, and formerly CAP and Growing Forward (I and II), he explained. Other funding partners such as WGRF, provincial funding such as ADF, and funding from industry stakeholders are all available for all crops.

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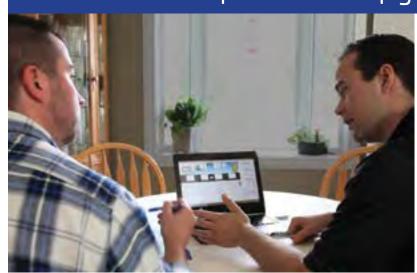


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Mitzel said they find dollars to help in mustard research.

"We do have access to public funds every year and we apply for programs as we need to utilize them and the funds can be used for both varietal development as well as developing traits," he said.

In terms of barley, the newest released line from AAFC program in 2022 is TR20270, a two-row covered general purpose barley licensed to SeCan.

"It combines good grain yield potential (three per cent higher than the generalpurpose check, CDC Austenson) with early maturity, good standability and good disease package including improved FHB resistance and lower DON accumulation," said Ana Badea. "With all these favourable traits and its wide adaptation to western Canada, TR20270 will offer a good production choice for barley growers across the Prairies."

More developments are on the horizon. "Depending on their performance dur-

We do have access to public funds every year and we apply for programs as we need to utilize them and the funds can be used for both varietal development as well as developing traits.

RICK MITZEL | EXECUTIVE DIRECTOR, SASK MUSTARD

ing this past crop season, there is the potential to bring forward a new covered malting barley line and a purple hulless for food line that could be both released to producers in spring of 2023 (if they hold the promise)," Badea said.

Pozniak anticipates some promising new releases.

"We at the CDC are excited that in 2023 we will have several new varieties of pulse crops that we will likely be offering for tender," he said.

"Looking forward, we continue to

\$250K

make progress in FHB (fusarium head blight), resistance in spring and durum wheat, with several advanced breeding lines showing significant improvements.

"We are also very excited about a new forage variety developed by Dr. Bill Biligetu at the CDC. That variety is a hybrid wheatgrass that was selected for salt tolerance, seed yield, and reduced creeping growth habit in western Canada and shows excellent forage yields over commercial check varieties."

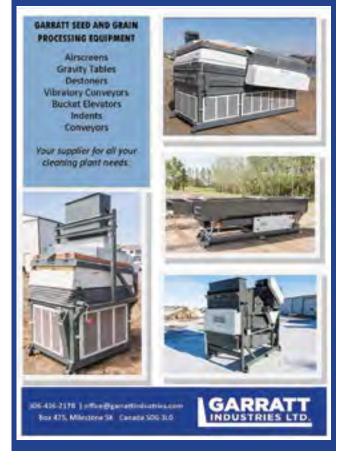


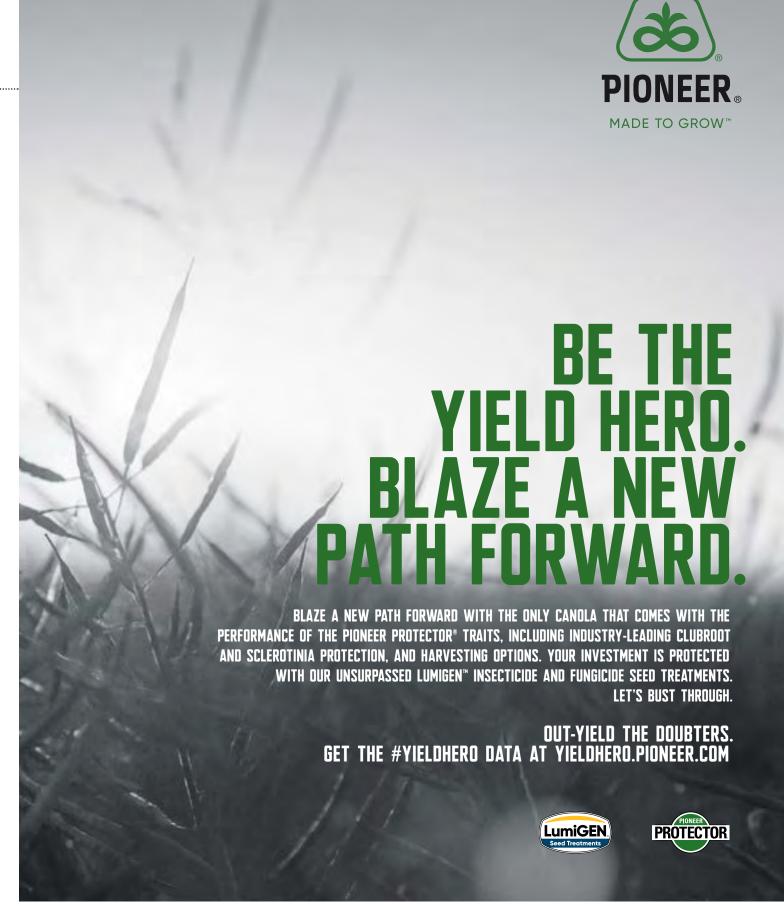
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Jim Latrace of LLSeeds donated 17 samples of different grains to be used by Agriculture in the Classroom. "Our kids are so separated from where their food comes. I want them to know we produce food and not just fields of crops," he says.

SEED MONEY

Growers lead the way to raise resources to give back their communities

BY MARY MACARTHUR I SPECIAL TO SASKSEED

What started as a \$2,500 donation from a seed company was the seed needed to bring a community together to rally around the local fire department, said the instigator of the project.

As a farmer, seed grower, former rural municipal councillor and the Climax Fire Department fire captain, Cody Glenn knewhow desperately the small volunteer fire department needed equipment.

Through his connection as a CANTER-RA Seed grower, the Southline AG owner recommended the Climax Fire Department receive \$2,500 through CANTER-RA's Rooted in the Prairies project.

The project supports local non-profit organizations nominated by the agriculture community across Western Canada. The winners of the Rooted in the Prairies project can use the donation for their specific project, or the money can be used as seed money for a larger project.

The \$2,500 donation was a welcome gift to the fire department, and Glenn rallied his community, local agriculture dealers and chemical companies to make additional donations and seeded 60 acres and



donated the profits to the fire department.

"Once the project came about, then we started having people donate toward the cause," said Glenn, of Climax SK.

Fertilizer, liquid fertilizer, seed, in-crop chemical, and burn-off chemical were all donated by retail partners on top of Southline AG's donation of equipment, labour and land for the 60-acre field project.

Sadly, in addition to drought, 80 percent of the 60-acre crop was written off by hail with little left to combine. Glenn used the average of his own durum crop as the amount donated to the project.

"As a seed grower, we had the option to amplifyour project. It allowed that \$2,500 to grow into \$11,000 in a very poor year. In a good year, that could have been up to \$50,000."

As important as the initial seed money was the awareness of the fire department's need for new equipment.

"Once the initiative was public, we saw support from people we didn't think would donate or even ask to donate. Many people who didn't know the fire department was struggling. You can see a synergy when you do something like this project.

Glenn hopes the awareness created by the project will attract more volunteers to the fire department that attends about 15 calls each year, mostly for prairie wildfires.

Glenn also plans to continue the project next year. It all started with the \$2,500 donation from CANTERRA.

Jim Latrace of LLSeeds wanted to raise awareness of agriculture in the province and has worked through the Agriculture in the Classroom project as a way he could help.

The farmer sorted through his seeds and donated 17 samples of different grains to the Agriculture in the Classroom project, organized by his neighbour.

"Our kids are so separated from where their food comes. I want them to know we produce food and not just fields of crops," said Latrace, who farms between Regina and Lumsden.

Latrace filled old peanut butter jars full of lentils, durum, barley, wheat, green and yellow peas, canaryseed, mustard, flax, canola and anything else he could find in his bins to show the students the food grown in his field.

"I have a gazillion different types of grain."

He also drove his sprayer to the school to show students some of the equipment farmers use.

Latrace doesn't believe one day of Agriculture in the Classroom will make the students farmers, but the interaction may twig their interest to want to learn more.

"Little kids coming to a farm doesn't teach them about farming, but they may say 'that was cool.' To me, it is a starting point more than a solution. Without the starting point, they never get to the point, wherever that is. It is something that grabs their attention. Ag in the Classroom is just a flashing neon sign that says you should look over here."

Darcy Booy said the \$2,500 CANTERRA's Rooted in the Prairies donation for the Glaslyn Rec Board project to upgrade lighting in the local rink expanded to more than \$10,000.

Booy's Je-Jo Farms is a CANTERRA shareholder and he knew his community would benefit from the donation. The money was donated directly to the rec board, with more money added by friends and family to honour Booy's dad, Jerry, a hockey player and volunteer.

Between the donation, the memorial fund for his father, and a donation from their own farm, about 60 percent of the \$17,000 needed for the lights was raised.

"In a small town, it is hard to keep facilities going. Having outside funding is a benefit. I want to see the rink stay open."

Spending time making ice in the rink, volunteering as a coach, or sitting on a board as a director are requirements for many small town and farm residents to ensure the clubs and facilities stay open. It also teaches children the importance of volunteers, said Booy.

"It teaches people, and passes the message on to the kids, that you don't have to be paid for everything you do. It shows that you are giving back."

Lynnell Pomedli with Seed Source said their \$2,500 donation from CANTERRA went directly to the Naicam Minor Sports Association for upgraded hockey nets and towards skills camps for the players.

Donations from projects like the Rooted in the Prairies are just one more way to keep the communities alive, said Pomedli.

"It is pretty huge. It keeps our smaller community alive and the doors open for kids in that community and it also gives them that foundation of skills you don't get from regular practices," she said.

"These donations make sure these organizations stay alive and the continued growth of the community. It keeps programs there longer. I like to see the kids having fun and like to come back. It is an opportunity for today's kids to have local hockey in their hometown."

These stories are just a few examples of Saskatchewan businesses helping Saskatchewan initiatives. From food banks through to youth and seniors' projects, seed growers are proud to support charitable initiatives in their communities. If you have a story to share, contact the SSGA Office at 306-786-6266 or info@saskseed.ca.







THE BUGS ARE ON THE MOVE

2022 saw insect pests show up beyond their usual haunts with appetites for crops they don't usually eat

BY MARY MACARTHUR I SPECIAL TO SASKSEED

LOOKING BACK ON the 2022 crop season, University of Saskatchewan entomologist and associate professor Sean Prager said the pest season could best be characterized as strange.

"This year was kind of hard. It was very strange. That is the formal diagnosis – it was very strange," said Prager, of Saskatoon.

Insects that don't normally show up appeared while other insects took a fancy to crops they don't normally eat.

"Lygus seems to be really huge this year, including in crops that you don't typically think they are a problem in."

Lygus bugs appeared on almost every crop this year. Prager doesn't know if the bugs' numbers are caused by new crop-

continued on page 36 >>

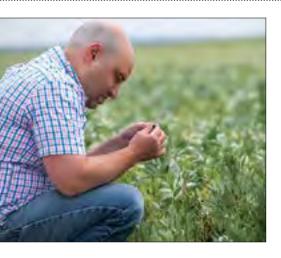


AAFC entomologist Tyler Wist (upper left) in his Saskatoon lab. U of S entomologist Sean Prager walks a faba bean field. While the crop is a favourite meal of lygus bugs, Prager said the pests are exhibiting "very strange" behaviour, showing up in almost every crop type. Four species of lygus bugs may occur in prairie fields; all are native to Canada: L. borealis, L. elisus, L. keltoni, and L. linolearis. The last two are most common. | AAFC, U OF S PHOTOS

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University of Saskatchewan entomologist Sean Prager examines a faba bean plant for signs of insect damage. | U OF S PHOTO

» continued from page 34

ping systems, crop acres or climate, but they appeared everywhere and in large numbers.

"I don't know if there will be a problem next year and we don't really know if it is the climate or the weather patterns or the strange year we had. It certainly was a particularly bad year. At least in some cropping systems, it seems to be an increasingly bad thing."

While lygus bugs prefer canola or alfalfa, the sight of lygus on faba beans is a head scratcher for Prager.

"We are not really sure what is happening. It could be the climate, because faba beans are not something lygus likes very much. They will eat a variety of crops, but fababeans are not even on its 'top 10' list."

Prager said that, as one of the last crops to harvest, lygus bugs may simply be migrating to faba beans because they are one of the last green crops in the field.

"We are hearing reports that, more generally, it is being seen in crops we wouldn't

expect to see it in, in addition to where it would traditionally be a pest. That could be bigger numbers, it could be weather conditions, or it could be something

What Prager does know is that the changing climate has changed the pests appearing in Saskatchewan crops.

"The stock answer is: if you have less harsh winters, then you don't get as many insects dving over winter and that is never a good thing. If you have hotter summers, you typically get more insects and they reproduce faster. If you have more or less moisture, you may get more or less insects."

Changing weather is such a concern that Prager applied for and received funds for a project to model the predictability of what insects aren't in Saskatchewan now, or aren't here often, and the likelihood they will expand into Saskatchewan.

"The idea is to look at things that you know might be a pest but don't live in Canada because we think the climate prevents it, or we have been lucky enough to not get here yet. The idea is to see how they will expand and how likely they are to expand. Then, combine ground-truth life-history data with fancy mathematical models," said Prager, whose staff will work with Agriculture Canada entomologist Tyler Wist on the project.

Wist said by using theoretical models, they can look at what pests have similar climates to Canada and could cause a lot of damage if they did come here, especially if the climate on the prairies continues to warm.

One example is the possible expansion of wheat stem sawfly, a pest that now is mostly in southern Alberta and Saskatchewan. If the climate is warmer, the pest could expand and cause millions of dollars of damage to wheat crops farther north, said Wist.

"We're just trying to get ahead of the pests," said Wist, who is also collaborating with entomologists from PEI on the pollen beetle, a pest of canola, only on the east coast.

"We want to know about the spread of pollen beetle and look for them here. It is not something we want attacking the flowers of canola."

With many of the pests migrating to Canada on winds, the entomologists keep their eye on American weather reports and the changes in weather caused by climate change.

"Many of our pests migrate on the wind. Climate change affects wind patterns and that is a problem. If you have different wind, you will get different migration," Prager said.

Prager belongs to American entomology chat groups who meet virtually every two weeks during the growing season and he gets a heads up on their problem pests and what could be headed north. Depending on the weather, they could come earlier and in larger populations, or never leave in the first

"If you have things that migrate and there is not severe weather, some may stay put and not migrate any more."

Lygus borealis (top) and Lygus linolearus are two lygus bug species found on the prairies. | AAFC PHOTOS

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NICE WEATHER WE'RE HAVING . . IF YOU'RE A BUG

Seasonal conditions together with climate change increase the impact of many pests

BY MARY MACARTHUR I SPECIAL TO SASKSEED

GRASSHOPPERS AREN'T NEW to Saskatchewan, but their numbers certainly grabbed attention in 2022, said an Agriculture Canada entomologist in Saskatoon.

"Grasshoppers were really making a resurgence. We haven't seen those guys in big populations for about 20 years," said Tyler Wist.

A combination of hot, dry weather throughout the summer, and dry spring conditions allowed grasshoppers to thrive across Saskatchewan, especially in the south.

"If it is hot and dry, it takes off their population controls. They're controlled very effectively by a lot (high levels) of fungus. Fungus does well under wetter conditions. In dry conditions, grasshoppers don't get infected – they do well. They like the hot temperatures. They like to bask in the sun," Wist said.

Whether grass hoppers are in large numbers again next year depends on the spring and the length of the mild weather this fall.

"If we have a wet spring, that will really knock down the grasshoppers' populations. A long fall, like in 2022, with nice conditions gives them plenty of opportunity to keep laying eggs. There could be a many eggs going into overwintering and coming out in the spring. It is really dependent on spring temperature and con-

ditions."
Wist said farmers looking for control have a couple options depending on the numbers of grasshoppers. A product called Eco Bran, from a company based near Saskatoon, is effective, especially if the grasshoppers are migrating from the ditches to the field.

"They eat the bait and take in the insecticide. You don't have to go out spraying. You lay it down in the areas where they come out, typically in ditches. They like coming from the edges of the field and moving in."

Flea beetles are usually big problems each year and Wist doesn't expect it will be different next season. Wist lost three fields of research canola plots to flea bee-

tle in 2022. He planted untreated canola in an attempt to attract flea beetles to the field, never expecting that the fields would be totally wiped out.

"The hot, dry weather combined with the flea beetle feeding is a death threat for canola. If you get enough bites from the flea beetles and then some hot dry weather, the plants just dry up. They get all crispy and disintegrated. Every year they are a big problem. This is why you can't buy canola without the insecticide seed treatment on. We know flea beetles will strike hard and fast and they are unpredictable too."

Wheat midge is often a problem, but is not always a perennial problem, depending on moisture levels in the spring. Wheat midge forecasts from Alberta and Saskatchewan are based on overwintering cocoons found in the field and are not always accurate if the weather changes.

Wheat midge was not forecast to be a problem in 2022; however, spring conditions were ideal for their emergence and success.

"The takeaway message from 2022 is: don't be complacent with wheat midge. If the conditions are right, they can roar out of nowhere. Don't turn your back on a wheat midge."

Lygus bug populations are also increasing and they seem to be everywhere and in all crops, said Wist.

"We've got lygus bugs. Their populations have been increasing again. They are generalists. You find them in canola. They really cause damage in faba beans because they leave black spots in pristine, white-looking seeds."

Entomologist Sean Prager said aphid numbers have become increasingly problematic in pulse crops.

"Every single year, they seem to be there



A plague of hoppers: "Grasshoppers were really making a resurgence. We haven't seen those guys in big populations for about 20 years," said AAFC entomologist Tyler Wist. | FILE PHOTO

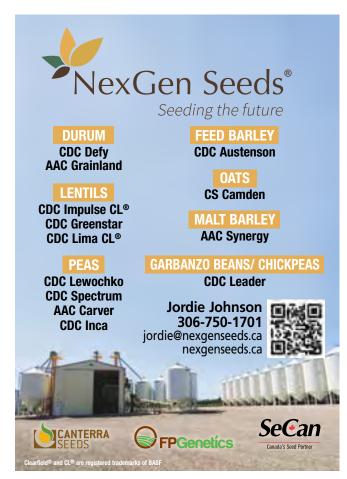
now. That is almost certainly a climate thing. There are just more and more of them. There is no question we are getting more aphids."

As part of the work at the University of Saskatchewan, Prager's team have developed economic threshold models for lentils and faba beans to know when the numbers are high enough to spray.

"For most years, you will have to spray."

Prager said they are also studying the migratory wind patterns for aster leafhopper, the vector for aster yellows disease that attacks canola and flax. New rapid diagnostic tools can allow scientists to test for the disease and alert farmers quickly if the leafhoppers are carrying the disease.





A long fall, like in 2022, with nice conditions gives them plenty of opportunity to keep laying eggs. There could be a many eggs going into overwintering and coming out in the spring. It is really dependent on spring temperature and conditions.

TYLER WIST | AGRICULTURE CANADA

THE VALUE OF VALIDATION

Monitoring the unpredictability of wheat midge populations

SPECIAL TO SASKSEED

WHEN DR. TYLER WIST joined Agriculture and Agri-Food Canada (AAFC) as a field crop entomologist in 2016, there wasn't a coordinated effort for monitoring wheat midge across the prairies. So as a new research scientist, one of his key roles was to protect the integrity of the wheat midge tolerance gene (Sm1) that's available to wheat growers in Western Canada.

Researchers have been working on wheat midge in Canada since the 1990s when populations of the insect pest were out of control. The widespread availability of midge tolerant wheat has provided a solid agronomic tool against the midge and an estimated 35 percent of wheat planted in Western Canada is midge tolerant. And yet, Wist is discovering how much there is still tolearn about wheat midge to controlits impact on wheat crop yields and quality.

Following up on forecasts

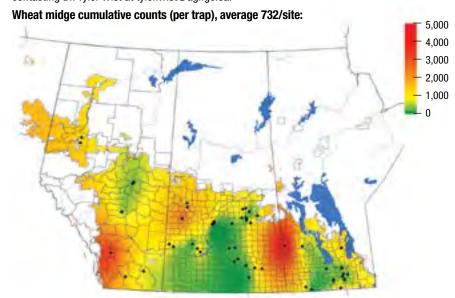
Every year, Alberta and Saskatchewan produce provincial midge forecasting maps to provide insight for growers before they make seed purchases in the spring. The maps are built on midge cocoon populations gathered from soil core samples in close to 300 field locations across each province. Manitoba doesn't produce an annual forecasting map.

Midge cocoons are counted and populations are mapped and colour coded from green (low risk) to red (high risk) for their potential for damaging midge emergence the next spring.

In 2021, Wist began coordinating Midge Busters – a collaborative field project with SeCan – to distribute pheromone traps and gather insight to help connect the dots between midge forecasts and actual midge emergence in the spring (see it on Twitter #midgebusters).

WHEAT MIDGE COUNTS IN WESTERN CANADA

The map shows the Midge Busters 2022 final counts on the Prairies. Growers can request pheromone traps and help monitor midge emergence as part of the Midge Busters project in 2023 by contacting Dr. Tyler Wist at tyler.wist@agr.gc.ca.



Source: Tyler Wist, AAFC

The project collects field data from pheromone traps that attract male midges and the corresponding crop stage when emergence happens at around 65 site collection locations in fields across Alberta, Saskatchewan and Manitoba. The data is used to follow up on forecasting predictions to determine if wheat midge emergence aligns with the susceptible stage of the wheat to cause economic damage. "The pheromone traps and crop staging provide critical validation to compare with the soil core forecast and AAFC emergence maps to see what's happening in real time," says Wist.

Green isn't always green

The midge forecast maps for 2022 were showing mostly green indicating low populations of overwintering cocoons collected from soil samples in fall 2021 – probably based on the exceptionally hot and dry summer in 2021. "So if you were a wheat grower, you might have looked at that and thought there isn't much risk of wheat midge."

And yet, that's not really how things played out. In 2022, there was a great deal

of unexpected unpredictability with midge populations.

"The data we collected in 2022 has actually raised more questions than answers about wheat midge, with more midges caught in 2022 on average compared to 2021," he says.

In 2022, in locations with adequate rainfall, they were finding male midges on traps in locations they wouldn't have expected if they just relied on the forecast maps showing green or low risk.

"The forecasts are a great measure of what could happen, but not always a measure of what will happen," says Wist.

For Wist, results from trapping and tracking wheat midge in 2022 showed how important it is to remain vigilant about the pest. "You can't turn your back on wheat midge, even if the forecast says you'll be okay. Why did we find midges when they weren't in the soil sample? Well, that's still a mystery."

It's all about the weather

When it comes to 2023, Wist can't make any predictions. Midge populations are all weather-dependant and he describes



A female wheat midge on wheat spike. | TYLER WIST PHOTO

them as a ticking time bomb in the soil. "Wheat midge can last up to 13 years in the soil and still be viable." There is much more to learn about this pest. Wist will be continuing the Midge Buster project, gathering valuable insights, and hopes to collect more data about the number of female wheat midges found on wheat heads.

Best practices still the best approach

Wist reminds growers that planting midge-tolerant wheat is the best agronomic practice against damage from the unpredictable pest. "If you don't plant midge tolerant wheat, and the population reaches the economic threshold of one female per five heads of wheat, the yield loss starts at 15 percent and goes up from there," says Wist.

Growing midge-tolerant wheat requires growers to sign a stewardship agreement to ensure the integrity of the technology – and ensures every bag contains a 10 percent refuge on non-resistant seed to reduce the likelihood of wheat midge developing resistance to the Sm1 gene.

"The Sm1 gene is the only single resistant gene that's used by breeders against wheat midge, and the only one available in wheat varieties in Canada," he says.







SCLEROTINIA PREVALENCE AND INCIDENCE IN 2022

LEFT: Verticillium stripe, a relative newcomer to Prairie canola fields, is now common in Manitoba. It can be identified by the papery stems it causes. | SUPPLIED PHOTO

CROP DISEASES ARE BACK

As moisture levels return to normal, so do disease pressures

BY MARY MACARTHUR | SPECIAL TO SASKSEED

A RETURN TO more normal moisture conditions in 2022 also meant a return to more crop disease pressures, said the province's plant disease specialist.

"Last growing season in Saskatchewan was conducive for disease occurrence, especially compared to the year before which was a really dry year," said Alireza Akhavan.

"All of a sudden, we got wet. Areas on the east side of the province were particularly wet and the situation was suitable for most diseases to show up. There were many diseases occurring and an array of diseases."

For the first time, verticillium stripe was frequently confirmed in canola fields in the eastern part of the province. The DNA for the soil-borne disease was found in the area in 2014, with the first confirmed sign of the pathogen that causes

yield loss in canola reported in 2021.

"We knew it was there somewhere, but we never confirmed the visible presence of it in canola before 2021. Last year we found it on the east side of the province. It is a big disease. It is not a minor disease. This changes the three big diseases of canola: blackleg, sclerotinia stem rot and clubroot, to four big diseases," he said.

The pathogen is easiest to see on swathed or harvested crops because the disease causes canola stems to shred and decompose. Early results of the afterswath survey showed the disease is well embedded in fields in the eastern part of the province.

"Fromwhatwe see, verticillium stripe is no longer a rare disease in eastern Saskatchewan. I found it myself in many fields."

While the disease is still relatively new on the Canadian prairies, it is now common in

Manitoba fields which reported verticillium in almost 40 percent of their fields during the growing season. Alberta also has some fields reported with verticillium.

Akhavan said there were no confirmed cases of verticillium stripe found from the general canola disease survey conducted before swathing. However, when staffreturned to the fields after swathing, the disease was found. The after-swath survey was targeted to the eastern part of Saskatchewan.

Research on the disease began in Saskatchewan in 2019 and Akhavan hopes more information will be available on varieties resistant to the disease and possible fungicides that are effective on the disease.

"At this time, there is no formally registered canola cultivar resistant to verticillium on the prairies. There is no fungicide registered to combat verticillium stripe."

Alireza said the number one question

he gets from farmers is how the new disease affects canola yields. Research from Europe shows fields infected with verticillium have a 15 to 20 percent yield loss. There is no current definitive Canadian data. Researchers are working on the development of a yield loss model for the Canadian prairie conditions.

"We are in a transition period. There are many research efforts across the three prairie provinces. Several companies have started to do resistance screening. The verticillium situation is quite scary."

While verticillium is the new canola disease, the other canola diseases haven't gone away. Hidden by dry conditions last year, sclerotinia was found in 60 percent of Saskatchewan fields with a six percent incidence (the number of plants in the field infected). Both Manitoba and Alberta reported similar infection rates.

Blackleg was found in 70 percent of Saskatchewan fields surveyed, with 11 percent incidence.

Pulse crops, especially lentils, were hard hit by anthracnose in 2022. The fungal disease was found in 80 percent of the crops surveyed, with a "very high" inci-

dence of 25 percent of the plants in the field infected with the disease.

"This is one of the very concerning situations we face. We know Canada is the world's leading exporter, with Saskatchewangrowers producing almost 90 percent of the Canadian lentils. At this time, we don't have resistance to anthracnose, the predominant race we have in Saskatchewan. I am worried our producers will become quite resourceless when it comes to combating anthracnose, which is the number one foliar disease on lentils."

Most fungal pathogens love moisture, including the anthracnose pathogen. Wet areas across the province, including the east side of the province, contributed to a higher disease incidence and severity than the previous year.

Other diseases found in the province included ergot in a variety of cereal crops and a "huge amount" of cereal leaf spot complex and septoria leaf blotch on field peas.

"Septoria leaf blotch on field peas is really normally seen only on the low level of canopy; this year, because we had plenty of rain and storms, we had cases where the whole plant was covered in septoria." Downy mildew showed up on different crops including field peas and quinoa.

The high frequency of fusarium head blight in cereal crops also created concern for Akhavan.

"We found higher levels this year. Last year we had 177 samples and only a couple were confirmed as positive. This year was a wetter year. Eighty percent of durum fields, 72 percent of wheat and 70 percent of barley fields had suspected FHB kernels."

Akhavan said weather played a big role in the amount of disease in fields this year. Any disease needs the right environment, a pathogen present, and a susceptible host. Farmers cannot control the environment or weather, so field scouting when the crop is in a susceptible growth stage can help to plan for disease management.

"Scouting gives the producer the opportunity to establish a good history for that specific land and scouting during the growing season is really valuable. When they have the history of the field and can identify the reason they lose yield, they can plan to tackle that."



DEVELOPING TRAITS FOR HEAT-AND DROUGHT-RESISTANT CANOLA

Hardy varieties can give producers a fighting chance in drought years

BY DOUG HEATH, SASKCANOLA SPECIAL TO SASKSEED

SOIL MOISTURE IS of course the biggest factor for canola yields in Saskatchewan. Drought resistance traits would not have helped growers during the prolonged and severe drought in 2021 because plants need water to grow. However, in the face of more temporary drought conditions, it may be possible to preserve canola yields with such traits. For this reason, SaskCanola has made investing in research related to heat and drought resistance canola a priority.

Drought has wide-sweeping impacts on canola production due to changes in disease, weeds, insect pest pressures and soil health. Diseases like verticillium stripe are more severe under hot and dry conditions. Weed surveys are also seeing impacts due to drought. For example, kochia joined the list of the top three weeds in Saskatchewan in 2021 (along with green foxtail and wild oats). As well, insect pests like grasshoppers proliferate in hot and dry conditions. Good soil health itself can provide drought tolerance since higher soil organic matter provides greater water holding capacity.

SaskCanola invests in research on behalf of canola growers to advance our industry and solve issues related to canola production. We are currently co-funding several projects that deal with yield maintenance under challenging climate conditions that may become more prevalent in the future.

An areathat Sask Canolain vests in is prebreeding trait development, and this includes projects on heat and drought tolerance. Some exciting upcoming trait development results are expected for the projects described below.

Research scientist Raju Soolanayakanahally (Agriculture and Agri-Food Canada) is evaluating the impacts of heat and drought during flowering on canola yield. This project will link drought resistance phenotypes with genomic data to determine potential genetic traits that



AAFC canola researcher Isobel Parkin is looking at root system architecture with the aim of creating drought-resistant varieties that can drive deeper and further into the soil in search of moisture. | D&M IMAGES FOR SASKCANOLA

can be used by plant breeders.

Isobel Parkin (Agriculture and Agri-Food Canada) is leading a project looking at root system architecture, including deeperrooting phenotypes and lines that have more secondary root branching. Under drier conditions, canolalines with optimal root architecture may deliver higher yields.

Much of a canola plant's water loss is through transpiration from the leaves. Mark Smith (Agriculture and Agri-Food Canada) is looking at modifying surface waxes for improved water retention and thus improved water use efficiency in order to improve yields. As well, SaskCanola is funding a field-testing study with Jitao Zou (National Research Council Canada) to evaluate a novel drought resistance gene family in canola.

Looking to the future, research led by Tim Dumonceaux (Agriculture and Agri-Food Canada) is evaluating changes in soil microbial communities that may enhance drought tolerance of canola. This could lead to future breeding efforts with canola lines with heritable traits that can recruit unique microbial communities for yield maintenance.

Similarly, work led by Sally Vail (Agriculture and Agri-Food Canada) is using high throughput phenotyping to compare canola line performance between dryland and irrigated sites to identify genetic determinants of drought resistance that could be brought forward into new canola varieties in the future.

Visit www.saskcanola.com/research-results for the latest updates on these and other projects.



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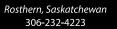


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Product Registration Number: 2022052S CAS-2021-39771



RESEARCH LOOKS TO EXPAND ALFALFA ACRES

SPECIAL TO SASKSEED

Saskatchewan Alfalfa Seed Producers Development Commission (SASPDC) continues to apply resources from the producer seed levy, matched by government agencies, to support research and development.

The aim is to support cultivation of alfalfa. This most important forage legume is highly valued on the Canadian prairies for its high nutritional value, high yield, perennial growth habit, and nitrogen fixing capabilities.

On the agronomy side, insect, disease and weed control are areas of research focus, along with soil fertility and minor use registration for alfalfa.

In crop development, the commission is backing research into new varieties and the benefits of including alfalfa in rotations.

Performance of mixed alfalfa, sainfoin and grass grazing stands are being explored, as well as how to best incorporate alfalfa into beef and dairy rations.

Research on the value of alfalfa in carbon sequestration is also a priority, in line with the Government of Canada's focus in this area.

An example of this research is development of a salt-tolerant alfalfa adapted to western Canada.

The goal is to allow alfalfa production to expand into the more than 15 million acres of agricultural land on the Prairies afflicted with excess salt levels.

This project, led by Bill Biligetu at the University of Saskatchewan, is aimed at improving tolerance from seedling to mature growth stage, without reducing the winter hardiness.

The SASPDC, together with Saskatchewan's Agriculture Development Fund (ADF) and the Saskatchewan Cattlemen's Association, is funding a five-year project at the U of S Crop Development Centre to develop new breeding lines by

evaluating major salt tolerant genes and molecular markers.

"Saskatchewan alfalfa seed producers are pleased to be able to participate in the co-funding of important forage research projects, including development of a salttolerant alfalfa cultivar adapted to western Canada," Saskatchewan Alfalfa Seed Producers Development Commission Director of Research Wayne Goerzen said.

He also noted that this research will benefit producers across the prairies.

Another research project is focusing on improving vigour of forage legumes such as alfalfa using automated image analysis technology.

Dr. Sean Asselin of AAFC Swift Current, in conjunction with Dr. Biligetu, is evaluating low cost, small computer modules called Raspberry Pi as a platform to develop and evaluate new ways to conduct plant breeding and identifying traits for genetic mapping.

Breeding new varieties often involves screening large diverse populations.

The goal of this research is to allow researchers to evaluate large numbers of seedlings quickly, reducing the time and labour needed for evaluation.

The project is focused on looking for evidence of seedling vigour – currently a slow, labour-intensive and expensive task.

Seedling vigour is a critical trait for stand establishment and a common target in breeding programs focusing on improved productivity in alfalfa and other forage crops.

The three-year Agriculture and Agri-Food Canada project is co-funded by SASPDC and the Saskatchewan ADF.

There are six to seven million acres in production in western Canada supporting alfalfa seed growers and leaf cutter beekeepers.

Their activities are also foundational to the beef and other livestock industry.

While leafcutter bees get a lot of credit, bumblebees and other native pollinators play a vital role in alfalfa seed and other forage seed crop production. | FILE PHOTO



FORAGE SEED OPPORTUNITIES SHOW POTENTIAL FOR GROWTH

BY MICHAEL ROBIN I SPECIAL TO SASKSEED

STRONG PRICES for some crops and government policies that favour cover crops add up to a favourable outlook for forage seed producers.

Growers enjoyed prices for red clover that were at a 40-year high, although supplies were limited, said Jo-Anne Relf-Eckstein, Executive Director of the Saskatchewan Forage Seed Development Commission. Likewise, alfalfa seed prices were very strong although this might drop in the upcoming year due to uncertainties in the US pelleting industry.

Saskatchewan growers also managed bring in a crop despite last year's drought. As most forage seed crops are perennials, the first year is critical to performance as the plants set seed in their second season.

"The 2022 yields reflect the 2021 establishment year," Relf-Eckstein said. "We were very lucky in 2022 that many of our crops made it through 2021. Even in the northeast part of the province, heat and dryness impacted the

seed bed establishment."

Relf-Eckstein said there is opportunity as governments encourage practices that help agriculture adapt to climate change. Saskatchewan forage seed growers can supply a growing demand for seed, particularly for nitrogen-fixing legumes such as red clover, both at home and in overseas markets such as Europe.

"Seed production of legume crops, such as red and alsike clover, will become very important for the Prairies as the demand for cover cropping to improve our soils grows," she said.

Serving this market also has the advantage of repeat customers, because, if farmers are only interested in the cover crop, they will come back year after year to buy new seed.

For farmers wondering how putting a forage crop into the rotation affects production, Relf-Eckstein said both research and grower experience showhowit works.

Where there is moisture to support it, such as in the northeast of the province, farmers sow canola and a forage seed crop, such as perennial ryegrass or fescues, in the same furrow. This gives good weed control plus the canola stubble catches snow for the forage seed crop in the second year. Likewise, cereals such as wheat and oats are combined with clover. Wheat and bromegrass in alternating rows is another strategy.

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Relf-Eckstein said reports show canola fields that yielded 50 bushels per acre under such a system. Research at the South East Research Farm at Redvers likewise showed no yield penalty for oats sown with perennial ryegrass.

One extra risk that forage seed growers must contend with is crop insurance, which is geared toward the bottom line of commodity production – yield. Typically, forage seed growers devote a quarter or half section to any given crop, and this doesn't add up to enough total acres to qualify under current crop insurance rules. There are other insurance options for forages and hay but there are still gaps. Relf-Eckstein said options with private insurers are being explored.



WORKING FOR WHEAT

Commission invests in varietal improvement, farmer outreach and government advocacy

BY DALLAS CARPENTER, SASK WHEAT SPECIAL TO SASKSEED

2022 WAS A busy year for Sask Wheat as the commission worked hard on the research, advocacy, and grower relations fronts to bring new opportunities and benefits to Saskatchewan's wheat producers.

Challenges posed by environmental stressors, pests, diseases and a potential shortage of inputs such as fertilizer or herbicides underscore the importance of Sask Wheat's core activity of funding re-

In 2021-2022, Sask Wheat committed over \$4.3 million to 44 projects. These projects will lead to new varieties and improved agronomic practices that will benefit producers and make growing wheat more productive and profitable in Saskatchewan.

IN 2021-2022, SASK WHEAT COMMITTED MORE THAN

TO 44 PROJECTS.

The true value of the investment wheat commissions make in wheat research on behalf of wheat producers was highlight-

ed by a report released in March 2022. which found that western Canadian wheat producers received nearly \$33 in return through varietal improvements specifically in yield for every dollar they invested in wheat breeding.

The report, undertaken by University of Saskatchewan economists Richard Gray and Katarzyna Bolek-Callbeck, quantified the benefits of wheat breeding investments by western Canadian producers over the past 27 years.

The report was funded by the Canadian Wheat Research Coalition (CWRC), of which Sask Wheat is a major partner. along with the Western Grains Research Foundation (WGRF) and the Saskatchewan Winter Cereals Development Commission (SWCDC).

We have undertaken a significant number of advocacy and policy initiatives over the past year, including working with our fellow Saskatchewan crop commissions on many issues as part of the SaskCrops organization.

Western Canadian wheat producers received nearly \$33 in return through varietal improvements specifically in yield for every dollar they invested in wheat breeding.

A substantial amount of work has gone into the area of greenhouse gas emissions, which is an increasing focus of the Government of Canada, as well as grain contracts, which especially impacted many Prairie producers following the drought of 2021.

Sask Wheat is a member of the Grain Growers of Canada, Cereals Canada, the Ag Transport Coalition, and the Agricultural Producers Association of Saskatchewan and we often work with other Prairie grain commissions to advocate on behalf of Saskatchewan wheat producers.

The ongoing COVID-19 restrictions continued to impact our grower extension activities.

In 2022, we focussed on delivering webinars, which we held four of in the new

We also continued with our agronomy podcast throughout the year.

Fortunately, we were able to welcome people in person to our Semi-Annual Meeting in Regina in June 2022, where Tom Wolf from Sprayers101 spoke.

We are planning to get out to Saskatchewan communities once again for Think Wheat meetings in early 2023.

Sask Wheat will continue our focus on strategic investments and advocacy initiatives in 2023, ensuring producers are well-represented and heard.



Feeding the World, Together













GETTING THE MOST FOR OAT GROWERS

Variety research, market development and government relations are top priorities

SASKATCHEWAN OAT DEVELOPMENT COMMISSION | SPECIAL TO SASKSEED

SASKOATS CONTINUES TO WORK to bring forward the grower voice to ensure dollars collected from growers are returned many times over with concrete benefits.

The commission has five main priorities: research, market development, advocacy, building partnerships, and communication with oat growers, consumers, the oat industry and governments.

In 2022, the oatharvest was a mixed bag across the province with some producers breaking oat yield records and others coming in lower than average, primarily due to a lack of moisture.

Many areas saw ripe seeds but green

straw, hurting yields and significantly slowing down harvest.

SaskOats, in coordination with the Prairie Oat Growers Association (POGA), encompassing the three Canadian Prairie provinces, is supporting nearly 30 projects with eight different funding partners.

Oat growers across Western Canada pay less than \$0.15 on every dollar of research and marketing projects thanks to the associations' ability to leverage funds. This has resulted in \$3.9 million of grower dollars compounded into \$28.1 million of funding.

These projects will lead to new varieties, improved agronomic practices, new markets and new products that will benefit producers and make growing oats more productive and profitable.

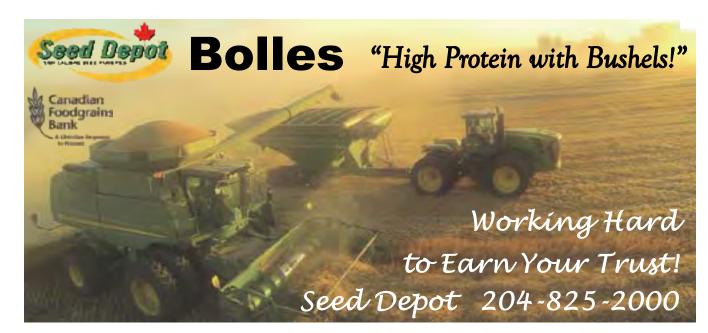
SaskOats has also undertaken a signifi-

cant number of advocacy and policy initiatives over the past year, including working with fellow Saskatchewan crop commissions on many issues as part of the SaskCrops organization.

A substantial amount of work has been done on the greenhouse gas emissions issue, which is an increasing focus of the Government of Canada.

In addition, SaskCrops has worked on improving grain contracts, which especially affected many Prairie producers following the drought of 2021.

SaskOats will continue focusing on increasing markets and addressing market barriers, funding research, working with all levels of Government to advocate on behalf of producers, and strive to increase the return on investment for those growing oats.



Beischer Family Seeds Boissevain Select Seeds Clearview Acres Ltd. Crow Lake Farm Ltd. Court Seeds Fisher Seeds Ltd. Friesen Seeds Ltd. Hulme Agra Products 20 20 20 21 21 22 23 24 26 26 27 27 28 20 20 20 20 20 20 20 20 20 20 20 20 20)4-746-8325)4-685-2627	MB Seeds Ltd. MGM Seed & Service Nickel Bros Pugh Seeds Ltd. Swan Valley Seeds Triple "S" Seed Ltd. Webster Seed Farm Willis Agro Ltd.	204-773-3854 204-746-4652 204-362-8986 204-773-6734 204-274-2179 204-734-2526 204-546-2590 306-645-4386 204-461-0386
Jeffries Seed Service 20)4-827-2102)4-566-2422	Willowdale Seeds	204-461-0386 204-801-0659



Wheat: Faller / Brandon / Wheatland / Starbuck / Bolles / Cardale / Prosper

Oats: Souris / Summit **Barley:** Conlon (sold out)

Flax: CDC Glas **Peas:** Chrome (limited supply) / Lewochko 52 2023 SASKSEED GUIDE

PUBLISHED BY THE WESTERN PRODUCER

HOW ARE SEED CERTIFICATION STANDARDS DEVELOPED?

THE CANADIAN Seed Growers' Association (CSGA) has been developing and maintaining seed varietal purity standards since the early 1900s. While most associate CSGA with seed crop certification, its standards development process is also a core function.

Guiding principles

The CSGA standards development process is guided by a set of core principles that helps ensure standards are sciencebased, transparent, accessible, and inclusive — from both a value chain participation and crop kind perspective.

Our principles:

- 1. Science based: Standards are based on scientific analysis of reliable research and data.
- 2. Multi-stakeholder participation: CG-SA standards are developed by the seed sector for the seed sector. Our independent committees include growers, companies, inspectors, analysts, end users and government representatives.
- 3. Transparent and accessible: The process for the development and maintenance of standards is clear. Standards are readily available to the seed sector.
- 4. Timely access: Standards are developed in a timely manner and suppot the competitiveness of the Canadian seed sector.
- 5. No crop kind left behind: The standards development process supports all crop kinds, including new, innovative and niche crops.
- 6. Consensus-based: Sector consultation is an essential element of standard development and maintenance.
- 7. Incorporate new technology: Technology is used to streamline and create new opportunities while upholding the integrity and credibility of the system.



The principles also ensure the standards development process is agile, able to meet the sector's needs and incorporates new technology. These core principles have helped ensure CSGA's standards are internationally recognized, set a strong foundation for our seed and grain sectors, and enable the Canadian quality advantage.

Who is involved?

CSGA standards are cooperatively developed by the Regulatory Services Committee, eight crop-specific working groups, ad hoc working groups when a broader approach is required, and stakeholder consultation.

• Board of Directors: responsible for final approvalofstandardsrecommendedby the regulatory services committee.

Our board is comprised of experienced grower directors, a science advisor and provincially appointed government ad-

• Regulatory Services Committee: Reviews recommendations from the working groups. Recommends standards to the Board of Directors for approval.

- Crop Specific Working Groups: Provide independent, crop-specific expert advice on regulatory and technical aspects related to standards development and maintenance. Our eight crop specific working groups are: canola, cereal, corn, forage & turf, hemp, mustard, pulses, and soybeans.
- Ad Hoc Working Groups: Formed when a broader or "deep dive" approach to standard development and maintenance is required, which may impact several crop kinds.

Our regulatory services committee and crop-specific working groups are comprised of technical experts, including seed growers, seed companies, variety developers, plant breeders, seed analysts, seed crop inspectors, the CFIA and provincial government representatives.

The importance of international harmonization

As a country that relies heavily on global trade, CSGA represents and supports Canada's interests at the Association of Official Seed Certification Agencies (AOSCA) and the Organization for Economic Cooperation and Development (OECD) Seed Schemes.

These two standards-setting organizations establish minimum standards for the varietal certification of seed. CSGA's standards meet or exceed these minimum standards, ensuring Canadian seed canaccessinternational markets and supporting Canada's quality advantage.

A continuous process

The CSGA's standards development process is evergreen. After adoption, CSGA continuously reviews its standards to help support Canadian competitiveness— especially when a standard for a new innovative niche crop kind is required.

For more information on CSGA's standards development process and how you can participate, please visit seed growers. ca/csga-standards-development.



CSGA Standards Development

As Canada's national seed crop certification authority, CSGA establishes and maintains seed crop certification standards for all agricultural crop kinds, except potatoes.

OUR PRINCIPLES

Science-Based

Standards are based on scientific analysis of reliable research and data.

Multi-Stakeholder Participation

CSGA standards are developed by the seed sector for the seed sector. Our independent committees include growers, companies, inspectors, analysts, end users and government representatives.

Transparent & Accessible

The process for the development and maintenance of standards is clear. Standards are readily available to the seed sector.



Standards are developed in a timely manner and support the competitiveness of the Canadian seed sector.

No Crop Kind Left Behind

The standards development process supports all crop kinds, including new, innovative, and niche crops.

Consensus-Based

Sector consultation is an essential element of standard development and maintenance.

Incorporate New Technology

Technology is used to streamline, create new opportunities while upholding the integrity and credibility of the system.

6 Circular 6

The Canadian Regulations and Procedures for Pedigreed Seed Crop Production (Circular 6) establishes the requirements a seed grower and a seed crop must meet for seed crop certification. CSGA has delegated authority under Canada's Seeds Act and Seed Regulations to establish standards for varietal purity and to determine the varietal purity of seed crops.

Accreditation

CSGA has been ISO 9001:2015 accredited since 2009a testament to CSGA's desire for continual improvement and quality control across the organization.

International Harmonization

Recognizing Canada's reliance on global trade, CSGA ensures Canada's standards are internationally harmonized and competitive. CSGA supports the Canadian Food Inspection Agency (CFIA) at the OECD Seed Schemes and represents Canada at AOSCA.

OUR PROCESS

COLLABORATE -

1 Strategic Need ...—[PARTICIPATE]

Any stakeholder may identify the need for a new or revised

3 Drafting

The Committee directs one of its Crop-Specific Working Groups, comprised of technical experts, to review the proposal, draft standards, and ensures alignment with international standards, fit for purpose and best management practices.

4 Review

CONTRIBUTE -

2 Evaluation

The proposal is reviewed by

CSGA's Regulatory Services

Committee (RSC) which

decides on a path forward.

The RSC reviews and approves the draft standard for public consultation.

6 Analysis

The Crop-Specific Working Groups and the RSC review feedback and revise the draft standard.

Stakeholders are invited to comment on the draft standard.

5 Consultation

Approval

The draft standard is submitted to the CSGA Board of Directors for approval. Subject to Board consensus, the standard is approved and becomes effective February 1

8 Publication

The new standard is included in CSGA's Circular 6 and a Notice of Change is posted to the CSGA website and circulated to stakeholders.

9 Maintenance

Standards are reviewed within three years of approval to determine if adjustments are required.



CONTINUOUS

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CSGA LEARN

SUPPORTING GROWERS IN SEED CROP CERTIFICATION

THE CANADIAN SEED GROWERS' Association (CSGA) has launched CSGA Learn, Canada's first online seed learning platform offering education resources for the seed sector.

From plant breeders, plot growers and seed growers to farmers, agriculture retailers and agronomists, passion and an eye for details are a must to succeed in the Canadian seed sector. You need to understand seed production, its standards, and best management practices. CSGA Learn was built by seed sector experts using the official Canadian National Occupational Standards for seed production to meet reallearning needs for everyone involved in our seed sector. CSGA Learn helps strengthen your understanding of what goes into the Certified blue tag and Can-

ada's reputation as a reliable supplier of 5. Pre-Inspection and Roguing 101 quality Certified seed.

With ten courses and four curated programs, CSGALearn can help you standout in the modern marketplace and take your seed skills and business est othe next level.Each course includes field crop photos, how-to videos, glossaries, reference links, best management practices, and practical advice from experienced seed growers.

CSGA Learn Courses

- 1. Introduction to the Canadian Seed Sector (offered free of charge)
- 2. Seed Certification Classes
- 3. Producing Foundation, Registered and Certified Seed Crops
- 4. Seed Crop Certification Process and Traceability

- 6. Plot Production
- 7. Harvest, Handling and Storage
- 8. Processing, Testing and Selling Seed
- 9. Building Your Team
- 10. Breeder Seed Production

CSGA Learn Programs

CSGA has grouped specific courses as curated learning programs based on your specific interests.

Introduction to Seed Production Program: Learn about the sector, seed production procedures, standards, and best management practices to help you succeed in your first years of production in the modern certified seed system.

Probation Plot Grower Program: We Shine a spotlight on seed plot production and roguing for those working towards a CSGA-Accredited Plot Grower status or anyone currently producing plots. Combining this voluntary program with infield experience will help you obtain a CSGA Plot Grower accreditation.

Experienced Seed Grower Program: Benchmark your skills and knowledge against best management practices from Canada's National Occupational Standards for seed production and distinguish yourself in the market. Completing this voluntary program, combined with their years of seed production experience, provides experienced seed growers with the new national CSGA-Accredited Seed Grower (ASG) recognition.

Plant Breeder Program: As a plant breeder, you are responsible for assuring Breeder seed is grown and processed to the highest standards, and we can help you! This program provides a concise learning tool and is a requirement for applicants to CSGA's Plant Breeder recognition.

Help Your Employees Understand Their Vital Role in The Canadian Seed Sector

From family farms where everyone pitches in to businesses with extensive employee teams supporting operations to those who contract seed production out to other producers, knowledgeable team members are essential to success.

CSGA Learn provides online learning options to take workplace training to the next level.

Managers can organize the learning of team members and track their progress. Enrolling in CSGA Learn provides a personal dashboard showing your completed courses and your progress in those you are currently taking. You can also view, download, and share completion certificates you have earned during your studies.

You play a vital role in the Canadian Seed Sector! Signup at csgalearn.catoday!



Course #1 is free!

Our Introduction to the **Canadian Seed Sector course** is offered free of charge to everyone who enrolls.

Learn more about:

- The difference between certified and non-certified seed
- The seed certification process, from variety development to the sale of Certified seed to commercial producers
- · The various seed certification classes
- And more!

STREAMLINING REGISTRATION OF NEW CROP VARIETIES

ADAPTED FROM SSGA SEED MATTERS

Is Canada's system for registering new crop varieties too onerous? It depends on who you ask.

Wheat, durum, barley, canola, flax, lentils, peas, mustard and oats undergo merit testing in Canada, with the entire seed industry value chain represented in registration decisions. Soybeans, many forages, sunflowers, canary seed and chickpeas enjoy a simpler system.

Brent Derkatch, director of the Pedigreed Seed Business Unit at CANTERRA Seeds, can compare first-hand between the Canadian and American systems through Meridian Seeds, their sister seed distribution company in the U.S. He says the Canadian system is slower, particularly for wheat.

"Milling wheat has three years of registration trials in Canada that aren't required in the U.S."

For other crops, registration trials are shorter. Peas and lentils, for instance need just two years of trials data.

Canadian merit testing involves three expert committees to review data from these extensive small plot trials to assess quality, disease and agronomy against one or more check varieties. While the Canadian Food Inspection Agency is responsible for variety registration, the Canadian Grain Commission handles grain grading.

The Canadian wheat classification system is a complicating factor.

American spring wheat has quality requirements, but Canada has many classes of spring wheat with the largest and highest value class being Canada Western Red Spring (CWRS). In recent years, some varieties initially registered as CWRS have been demoted to Canada Northern Hard Red (CNHR), which limits buyer interest and thereby producer uptake.

"We need a high degree of quality but I'd like to see the registration time shortened, simplified and more predictable," Derkatch says.

Long-time wheat breeder Rob Graf, recently retired from Agriculture and Agri-Food Canada at Lethbridge, acknowledges Canada's more stringent registration requirements, but doesn't think it



Canada's variety registration process particularly for wheat is slower and more onerous than that of the U.S. in part due to the many classes of wheat in the Canadian system. | FILE PHOTO

always translates into a significant delay.

"The U.S. has no registration system, but further testing is still typical. No one wants to go to market with a dog."

Grafalso notes Canadian seed distribution companies can get to market as quickly as in the U.S. by starting seed multiplication ahead of registration if they believe they have a winning variety.

Derkatch says this more aggressive approach rarely happens since there's no certainty of registration or preferred grain classification.

Another Canadian complication

Even if a new variety is developed through traditional methods, it might be considered as a Plant with Novel Trait in the Canadian system. Clearfield wheat, for example, went through the PNT process even though it wasn't genetically modified (GM).

In the U.S., as long as a crop is developed through regular plant breeding tech-

niques, it isn't subject to additional scrutiny. This means the new herbicide-tolerant wheat currently proceeding through the U.S. system will take much longer to reach Canadian farmers.

Possible improvements

Canadian wheat variety development became easier when kernel visual distinguishability was removed as a requirement about 15 years ago. With KVD, each class of wheat had to have a specific shape and size of kernel so inspectors could visually distinguish one class from another.

Now, producers declare the class of wheat they are delivering and wheat breeders have one less restriction to worry about. Wheat and durum breeder Curtis Pozniak says this widened the wheat crosses available and contributed to enhancing fusarium head blight resistance.

Pozniak is the head of the University of Saskatchewan's Crop Development Centre in Saskatoon. He's also a former chair of the Wheat Recommending Committee and spent time examining how to streamline variety registration and provide more predictability.

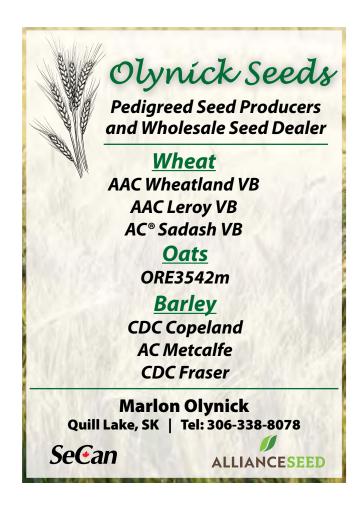
"I believe three years of registration testing for quality, disease and agronomy is really what we need for wheat and I believe our variety registration system provides a Canadian advantage."

However, he also believes the process can be streamlined.

With market classification important in western Canadian wheat, early quality assessments of upcoming lines as compared to check varieties could help define the market class in advance. Pozniak says testing for the Special Purpose class of wheat have been reduced to two years since quality requirements are not needed.

System change can be a slow, incremental process, but the goal is quality over quantity.

"Farmers don't want more varieties," Graf says. "They want better varieties."







Around the world, Canada is recognized as a trusted supplier of high-quality canola, cereals and pulses. Maintaining this reputation and protecting market access is vital to the success of our agriculture sector.

Jake Leguee, who grows canola, durum, lentils, peas and wheat near Fillmore, Sask., says that market access is something he takes seriously on his farm and tries to spread the message to others:

"What you do on your farm matters. That's what I try to tell neighbours and friends. You might think your individual fields are no big deal, but if your crop happens to be one of the samples taken at the export destination, and they detect residues greater than the maximum residue limit, now we all have a problem," says Leguee.

The maximum residue limit (MRL) is the maximum amount of pesticide residue that is allowed to remain on harvested grain and are primarily used for trade purposes – not to measure food safety. Since countries can set their own MRLs, Canadian crops must meet the MRLs set by the destination country to avoid trade disruptions. If no MRLs are listed for a product, the assumed limit is zero.

"Market access issues and residue limits can impact Canada's ability to sell grain," says Greg Bartley, Director, Crop Protection and Crop Quality at Pulse Canada. "The Keep It Clean initiative focuses on equipping farmers with tools they can use to make quick, informed decisions in the field to avoid unacceptable

residue levels."

Keep it Clean is a joint initiative of the Canola Council of Canada, Cereals Canada, Pulse Canada and the Prairie Oat Growers Association, providing growers and crop advisers with resources for growing market-ready crops.

This information is summarized in 5 Simple Tips that farmers can use to help keep their crops ready for market:

Tip #1 Use Acceptable Pesticides Only

Pesticide use is an important part of protecting your investment but using unacceptable pesticides can put your investment at risk. Only apply pesticides registered in Canada for use on your crop that are acceptable to both domestic and export markets. Before making application decisions for the growing season ahead, talk to your grain buyer and refer to Keep it Clean's annual Product Advisory for a list of product/crop combinations that may create market risk.

Tip #2 Always Read and Follow the Label

Always follow the label for application rate, timing, and pre-harvest interval (PHI). Improper or off-label use of pesticides is illegal and may result in unacceptable residues that can put market access at risk for all.

Tip #3 Manage Disease Pressures

Diseases like blackleg in canola and fu-

sarium head blight (FHB) in cereals may create market risk. An integrated disease management plan is important to maintain yield and profitability and can help protect Canada's reputation as a supplier of high-quality crops.

Store Your Crop Properly

Proper storage helps maintain crop quality and keeps the bulk free of harmful cross-contaminants. For example, Ochratoxin A (OTA) can be a market access risk as different countries have different maximum allowable limits of OTA in grain. Another example is malathion, which can be used to treat cereals and other non-oilseed grains in bins that have been contaminated with insects but must be kept out of canola bins as canola found with malathion residues is unacceptable for export customers.

Tip #5 Deliver What You Declare

When you sign the mandatory Declaration of Eligibility affidavit at the elevator, you are making a legal assertion that your crop is the variety and/or class you have designated and that it was not treated with the crop input products specified in the declaration. For canola, it is important not to seed de-registered varieties or deliver them to an elevator or grain handler.

Keep it Clean offers a variety of tools and resources to help farmers follow these 5 Simple Tips to grow market-ready canola,

You might think your individual fields are no big deal, but if your crop happens to be one of the samples taken at the export destination, and they detect residues greater than the maximum residue limit, now we all have a problem.

JAKE LEGUEE | PRODUCER, FILLMORE, SASK.



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cereal and pulse crops. These include:

- Product Advisory that outlines market considerations and categorizations of specific crop protection products.
- Pre-harvest Glyphosate Staging Guide to determine when grain moisture is less than 30% in crops and provides helpful tips around glyphosate application to help growers avoid unacceptable residues in the grain.
- Spray to Swath Interval Calculator which helps canola and pulse growers

calculate the Pre-Harvest Interval (PHI). PHI is the minimum number of days that must pass between spraying a crop protection product and cutting your crop either by swathing or straight-cutting. The Calculator can also be used to find a crop protection product that suits your timeline for cutting the crop.

For these tools and more resources to grow market-ready crops, visit keepitclean.ca. Connect with Keep it Clean on Twitter at

@KICCanada, or by signing up for their free newsletter on their website.

Keep it Clean continually updates their website to highlight the most upto-date information and resources for Canadian growers to protect their investments and keep markets open for all. If you have specific questions about the acceptable use of pesticides and the best ways to keep your crops ready for market, you can find contact information on Keep it Clean's contact page.





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A stronger economy

Canada's seed industry employs close to 60,000 people. Using pedigreed seed creates employment and contributes to a sector worth tens of billions of dollars annually.

Clean seed

Certified seed is grown and processed under stringent production requirements with strict limits prohibiting the presence weeds and seeds from other crop kinds.

Varietal purity Certified seed uses strictly monitored quality management systems to maximize varietal purity. This ensures that you get the specific variety you want. The presence of other seed varieties and off-types are guaranteed to be minimized.

Guaranteed quality assurance

Inspections conducted in the field and at the processing plant ensure that all quality assurance requirements have been met and documented. Your seed is what you expect it to be, allowing you to back up your assurances to others.

Access to new opportunities

Many end-users and food processors require specific varieties for their products. Using Certified seed on your farm can open the door to new marketing opportunities and greater sales by providing officially recognized proof of your parent seed varietal identity.

Traceability

Food safety and traceability are important considerations in agriculture. You can only be sure of your product if you know its origins. Certified seed is the key to that knowledge. Production of certified seed is carefully controlled under a quality assurance system right from the beginning. Using Certified seed will allow you to capitalize on traceability measures.



REASONS TO USE **CERTIFIED SEED**

There are many reasons to use certified seed. It's the starting point of a successful crop as well as an important risk management tool. Here are the top 10 reasons why you should use certified seed on Your farm. SPECIAL TO SASKSEED

Access to premium markets

9

Certified seed is the only input that can get you more than just higher yields. It can be your ticket to premium markets like tofu soybeans or high stability canola and other identity-preserved (IP) markets.

8

Maximize other inputs

You want the best genetics and the cleanest fields to make the most of your input dollars. Planting certified seed means you're not wasting time — and the investment — on seed that won't reliably produce a top crop.

Substance behind your word

The blue tag is proof you used Certified seed to maintain the traits of the crop. It's your assurance that what you are delivering is what you say it is.



New genetics

Traits such as higher yield potential, better pest resistance, enhanced drought tolerance, herbicide tolerance, and more are delivered to farmers through certified seed. Years of research and development went into these traits and can only be accessed reliably through Certified seed.

CERTIFIED SEED: IT'S ALL ABOUT **QUALITY ASSURANCE**

SPECIAL TO SASKSEED

WHAT IS THE Canadian Seed Growers' Association (CSGA) and what does it do? For many farmers in Canada, the answers to those two questions are clear.

But to others, familiarity with the CSGA is limited. Perhaps they've heard of the association. But they may not fully understand the organization's critically important role in supporting the production of high quality pedigreed seed across the country.

The CSGA represents 4,500 seed growers across Canada.

Its key role is to provide standards for crop certification, according to Canada's Seeds Act and Regulations.

When farmers buy certified seed, they aren't just buying seed, they are buying an assurance of quality and purity.

It takes several generations for new pedigreed seed varieties to be come available for commercial production.

The process begins with registered plant breeders at public breeding institutions and private research companies, where the breeder selects desirable traits for new variety development.

It typically takes several years for the plant breeder to assemble enough breeder seed to begin seed multiplication.

The seed is increased over a regulated number of years, depending on whether the crop is self pollinated or open-pollinated.

Open-pollinated crops are available after fewer years to reduce cross-pollination with nearby off-type varieties.

Certified seed is the last generation, and is available to producers for commercial grain production.

All classes of pedigreed seed are strictly regulated to ensure seed purity is maintained, until it reaches commercial growers.

Seed purity is critically important to the pedigreed seed industry and is maintained with the help of a quality assurance system that is administered and upheld by



CSGA, in collaboration with the Canadian FoodInspectionAgencyandothergroups. Seed purity refers to sample quality

with respect to weed seeds, inert material (gravel, chaff, fungal bodies, etc.) and the number of off-type seeds, as defined by the Canada Food Inspection Agency.

Varietal purity of 99 percent must be maintained to be classified as pedigreed seed.

To comply with this stringent quality requirement, there are three stages of pedigreed seed crop production that a successful certified grower must follow.

The first stage is crop production.

During production of pedigreed seed, the land used by pedigreed seed growers must be free from off-type varieties and similar crop types.

As well, pre-determined isolation distances must be maintained.

Minimum isolation distances vary from crop to crop and are in place to reduce the chances of varietal contamination through cross-pollination or other

The pedigreed seed crop must be free of prohibited noxious weeds, as outlined in the Weed Seeds Order of the Seeds Act.

The crop must also be free of disease and must be inspected by a licensed seed crop inspector before harvest begins.

If the crop passes inspection, the grower will be issued a crop certificate from

To ensure varietal purity and eliminate potential contaminants, seed growers often spend much of their time roguing pedigreed seed crops.

This usually involves walking through the crop, row by row, and manually removing contaminants and off-types by hand.

The second stage in the process is seed storage.

Pedigreed seed growers must carefully harvest, handle, condition, and store the grain to ensure that seed purity and qualitv is maintained.

Equipment and storage facilities must be thoroughly cleaned, and seed from each field should be stored separately to avoid commingling.

The third stage is grading and inspection.

Grading involves germination testing and overall evaluation of seed lot quality and an assessment of the number of weed seeds and off-type varieties in the harvested seed.

Producers who buy certified seed for planting on their commercial grain farms often ask whether the certified

seed they are buying contains seedborne diseases.

The only diseases specified in The Seeds Act are true loose smut in barley and the presence of ergot or sclerotial bodies.

Common seed-borne diseases such as ascochyta in pulses, anthracnose in lentils, fusarium in cereals, and blackleg in canola are not regulated by the Act, and thus it is buyer-beware for these diseases.

Farmers who buy certified seed are therefore encouraged to ask the seed grower whether a seed disease analysis was conducted by a commercial seed testing laboratory.

If a seed disease analysis was conduct-

ed, seed buyers can request a copy of the lab report.

Disease-free seed is always recommended for planting.

The presence of weed seeds is another area of potential concern for pedigreed seed growers and seed buyers.

Certified seed is not guaranteed to be free of weed seeds although reputable seed growers will make every effort to ensure the seed they are selling is clean and weed-free.

Upon request, seed dealers must provide buyers with a certificate of analysis

continued on page 64 >>





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» continued from page 63

outlining the species and number of weed seeds present.

At the Breeder, Select and Foundation levels of pedigreed production, there is almost zero tolerance for any weed seed content. Tolerance levels are slightly higher in the Registered and Certified seed classes.

There are also varying tolerances for the presence of different crop types.

Large seeded crops such as corn, beans and cereals typically have lower tolerances than small seeded crops such as forages, turfgrass or vegetables.

For all crop types, there is zero tolerance for the presence of prohibited noxious weed seeds as outlined in Weed Seeds Order, regardless of the seed's class or pedigree.

In some cases, there may be confusion about noxious weeds that are covered by the Seeds Act (Canada) and noxious weeds that are covered under the Noxious Weeds Act (Saskatchewan).

The weeds covered under these two acts are not the same.

The Seeds Act is administered federally and needs to reflect the needs of the entire country, whereas the Noxious Weeds Act applies to Saskatchewan only.

While many weeds are named as noxious in both Acts, there are some weeds that are found in one Act and not the other.

When buying certified seed, be sure to request a certificate of analysis from suppliers of certified seed to check for noxious weeds that are important to Saskatchewan under the category of other weeds, so that new noxious weeds are not being introduced to land that is clean and free of noxious weed species.

Growers who buy certified seed should always look for the recognizable blue tag when buying certified seed.

The blue tag is an assurance of quality

and purity.

When a pedigreed seed crop has successfully passed crop inspection, a CSGA crop certificate is issued, and the resultant certified seed is labeled with an official blue certified tag.

When a producer buys certified seed, it should have an official blue tag, pedigreed documentation (provided from the seller) and a copy of the mechanical purity.

Germination analysis should also be provided.

The widespread usage of genetically modified crops in Canada has caused some exportmarkets to implement a zero tolerance policy for GM seed. However, it is difficult to maintain varietal purity in open pollinated crops like canola.

The current varietal purity standard for certified canola seed is 99.75 per cent.

This means that in a seeding rate of 100 plants per square metre, one GM canola plant may be found.





Food Processors

products

Food processors who use grains

oilseeds and pulses grown from

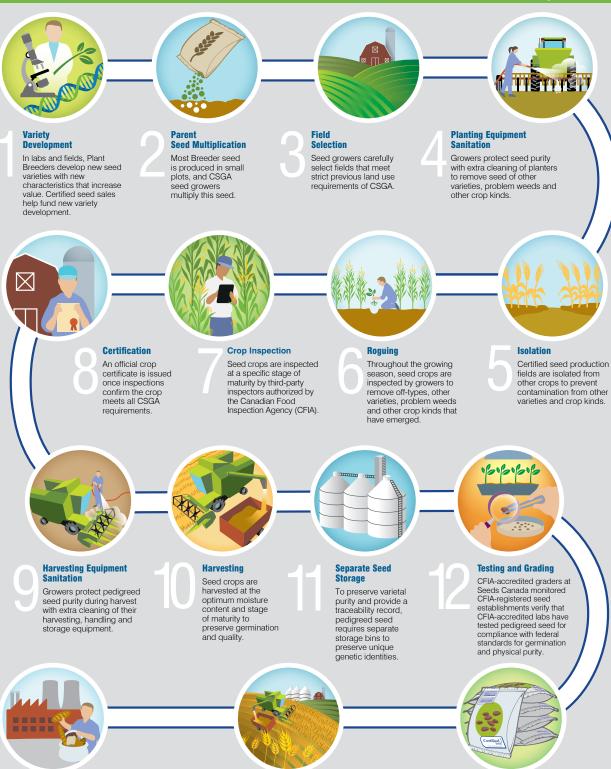
Certified seed get assurances of

specific characteristics to ensure consistent, high-quality food

traceability and reliable variety-

How is **Certified Seed** Produced?

vww.seedgrowers.ca



The Canadian Seed Growers' Association (CSGA) represents seed growers and provides leadership as the organization that certifies the pedigreed seed crop of all agricultural crops in Canada except potatoes.

Certified seed is labelled with a

variety name on an official blue

Certified

Certified seed tag or a Bulk

Pedigreed Seed Statement

Certified seed is planted by farmers

to produce large commercia

and forages

crops of grains, oilseeds, pulses

Plant Breeders' Rights Fast Facts

Plant Breeders' Rights **Fast Facts**

Understanding your obligations

As of **February 27, 2015**, all new PBR-protected varieties will be protected under the new legislation that conforms to the UPOV 1991 convention, bringing Canada in line with the rest of the world, and opening opportunities for increased investment to make new varieties available to Canadian farmers. It brings opportunity, but it also brings new obligations for the value chain.

	91	PR Progress through Research
Are all varieties protected under the same <i>Plant Breeders' Rights</i> (PBR) Act?	As of February 27, 2015, all new varieties submitted for PBR are protected under the new legislation. These varieties carry the PBR 91 symbol.	All varieties granted protection under the PBR prior to February 27, 2015 continue under the original <i>Act</i> . These varieties carry the original PBR symbol.
Breeders' rights		
What are breeders' rights?	Breeders' rights are now expanded under the new <i>PBR Act</i> . Authorization from the breeder is required to produce, reproduce, sell, clean/condition, stock, import or export seed of PBR-protected varieties.	Authorization from the breeder is required to sell, or produce for sale, seed of PBR-protected varieties.
Can breeders be compensated on harvested grain?	Yes, if seed was obtained and used illegally or without the authorization of the breeder, the breeder can choose to seek compensation for lost royalty revenue, lost markets and for court costs on delivered grain produced from that seed.	No





Farmers'	nrivii	PUP
I di li Ci 3		

Can farmers save seed?	Yes, the "Farmers' Privilege" is entrenched in the legislation. It allows farmers to produce PBR 91-protected varieties for use as seed on their farms.	It is not spelled out in the legislation, but it is not prohibited.		
Can farmers clean grain from PBR-protected varieties for use as seed on their farm?	Yes	Yes		
Can farmers sell or advertise for sale seed they have produced from grain of PBR-protected varieties?	No	No		
Can farmers exchange seed they have produced from grain of PBR-protected varieties?	No	No		
Seed conditioners' and Grain buyers' responsibilities				
Can seed conditioners clean seed of a PBR-protected variety for purposes of propagation?	Yes, if the seed was obtained legally (i.e. certified seed was purchased) and if farm-saved seed will only be used on the farmer's own land.	Yes		
seed of a PBR-protected variety	was purchased) and if farm-saved seed will only be	Yes No		

Want to learn more about Plant Breeders' Rights? Visit seeds-canada.ca





Prairie Grain Development Committee

The Prairie Grain Development Committee (PGDC) facilitates the exchange of information relevant to the development and commercialization of improved cultivars of grain crops for the Canadian prairies. In 2022, the committee recommended the following lines for registration:

Prairie Recommending Committee for Wheat, Rye and Triticale:

CROP TYPE	NAME	CLASS	DEVELOPER
Wheat	AAC Dutton VB (BW1094)	Canada Western Red Spring (CWRS)	Santosh Kumar – AAFC Brandon
Wheat	BW1106	Canada Western Red Spring (CWRS)	Syngenta Canada Inc.
Wheat	DT1020	Canada Western Amber Durum (CWAD)	Curtis Pozniak — Crop Development Centre, University of Saskatchewan
Wheat	DT2010	Canada Western Amber Durum (CWAD)	Yuefeng Ruan — AAFC Swift Current
Wheat	AAC Antler (DT2015)	Canada Western Amber Durum (CWAD)	Yuefeng Ruan – AAFC Swift Current
Wheat	GP250	Canada Western Special Purpose Spring (CWSPS)	Dean Spaner – University of Alberta
Wheat	HW409	Canada Western Hard White Wheat Spring (CWHWS)	Richard Cuthbert – AAFC Swift Current
Wheat	PT5008	Canada Western Red Spring (CWRS)	Pierre Hucl – Crop Development Centre, University of Saskatchewan
Wheat	AAC Hassler (PT496)	Canada Western Red Spring (CWRS)	Santosh Kumar – AAFC Brandon
Wheat	PT661	Canada Western Red Spring (CWRS)	Syngenta Canada Inc.
Wheat	SWS484	Canada Western Soft White Spring (CWSWS)	Harpinder Randhawa — AAFC Lethbridge
Wheat	AAC Overdrive (W614)	Canada Western Red Winter (CWRW)	Rob Graf and Harwinder Sidhu – AAFC Lethbridge
Fall Rye	KWS Receptor		KWS Cereals Canada
Fall Rye	KWS Sandor		KWS Cereals Canada
Spring Triticale	T290		Mazen Aljarrah – Olds College Field Crop Development Centre

Prairie Recommending Committee for Oat and Barley:

CROP TYPE	NAME	CLASS	DEVELOPED
		CLASS	DEVELOPER
Hulless Oats	H0T602	Spring, Hulless Oat, Food and Milling	Jim Dyck — Oat Advantage, Vesper Sparrow Prairie Research Inc.
Hulless Oats	H0T603	Spring, Hulless Oat, Food and Milling	Jim Dyck — Oat Advantage, Vesper Sparrow Prairie Research Inc.
Hulled Oats	OT2134	Spring, Hulled Oat, Milling	Kirby T. Nilsen and Jennifer Mitchell-Fetch (retired) — AAFC Brandon
Hulled Oats	OT2138	Spring, Hulled Oat, Milling	Kirby T. Nilsen and Jennifer Mitchell-Fetch (retired) — AAFC Brandon
Hulled Oats	OT7104	Spring, Hulled Oat, Milling	Kirby T. Nilsen and Jennifer Mitchell-Fetch (retired) — AAFC Brandon
Two-row Hulless Barley	HB20144	Two-row, Spring, Hulless Barley, Food	A. Badea and J.R. Tucker – AAFC Brandon
Two-row Hulled Barley	FB20601	Two-row, Spring, Hulled Barley, General Purpose & Forage	Y. Kabeta, P. Juskiw, F. Capettini, J. Nyachiro, L. Oatway, S. Waterman, M. Oro — Olds Field Crop Development Centre and T.K. Turkington — AAFC Lacombe
Two-row Hulled Barley	TR13235	Two-row, Spring, Hulled Barley, Malting (Identified as a non-glycosidic nitrile (non-GN) line)	Badea, J.R. Tucker, and W.G. Legge (retired) – AAFC Brandon
Two-row Hulled Barley	TR19655	Two-row, Spring, Hulled Barley, Malting	P.E. Juskiw, F. Capettini, J.M. Nyachiro, Y.A. Kabeta, L. Oatway, K. Xi – Olds College Field Crop Development Centre, T.K. Turkington – AAFC Lacombe, and D. Westling, J. Bowness, M. Oro – Olds College Field Crop Development Centre
Two-row Hulled Barley	TR20270	Two-row, Spring, Hulled Barley, General Purpose	A. Badea, J.R. Tucker, T.G. Jr. Fetch and W.G. Legge (retired) — AAFC Brandon
Two-row Hulled Barley	TR20273	Two-row, Spring, Hulled Barley, General Purpose	A. Badea, J.R. Tucker, and W.G. Legge (retired) — AAFC Brandon
Two-row Hulled Barley	TR 20761	Two-row, Spring, Hulled Barley, General Purpose	Jim Anderson – Nutrien Ag Solutions and Michael McKay – Highland Specialty Grains

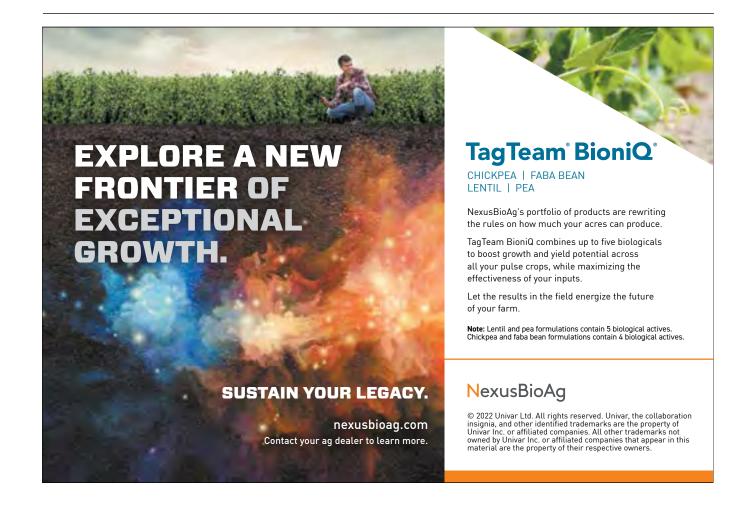
Prairie Recommending Committee for Oilseeds:

CROP TYPE	NAME	CLASS	DEVELOPER
Flax	FP2591	Brown Seed	Bunyamin Tar'an — Crop Development Centre, University of Saskatchewan

Prairie Recommending Committee for Pulse and Special Crops:

CROP TYPE	NAME	CLASS	DEVELOPER
Dry bean	5177CBB-3-2	Navy	Kirstin Bett — Crop Development Centre, University of Saskatchewan
Dry bean	5429CBB-9-3	Carioca	Kirstin Bett — Crop Development Centre, University of Saskatchewan
Dry bean	5501CBB-3-2	Black	Kirstin Bett — Crop Development Centre, University of Saskatchewan
Dry bean	Lyra (14164)	Great Northern	Provita Inc., Kelley Bean Company, and ADM
Dry bean	Mystic (17454)	Pinto	ADM Seedwest
Dry bean	Cabernet	Kidney	Bayer Crop Science
Dry bean	Clouseau	Kidney	Bayer Crop Science
Dry bean	Red Rover	Kidney	Bayer Crop Science
Dry bean	Krimson	Cranberry	Treasure Valley Seed Company
Lentil	6935-3	Extra Small Red	Bert Vandenberg – Crop Development Centre, University of Saskatchewan
Lentil	7005-3	Medium Red	Bert Vandenberg – Crop Development Centre, University of Saskatchewan
Lentil	7333-2-4	French Green	Bert Vandenberg – Crop Development Centre, University of Saskatchewan
Lentil	CDC 6928-4	Small Red	Saskatchewan Pulse Growers
Lentil	CDC 6928-5	Extra Small Red	Saskatchewan Pulse Growers
Lentil	CDC 6956-6	Small Red	Saskatchewan Pulse Growers
Lentil	CDC 6964-4	Small Green	Saskatchewan Pulse Growers
Lentil	CDC 7014-1	Medium Red	Saskatchewan Pulse Growers
Lentil	CDC 7026-13Y	Spanish Brown	Saskatchewan Pulse Growers

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CANADIAN FOOD INSPECTION AGENCY

VARIETY REGISTRATION REPORT

The list that follows contains the names and details of crop varieties registered by the Canadian Food Inspection Agency's Variety Registration Office between Nov. 15, 2021 and Nov. 15, 2022.

CROP KIND	VARIETY NAME	CANADIAN REPRESENTATIVE	TYPE OF REGISTRATION	REGIONS	TRANS- GENE	EXPERIMENTAL NAME	REGISTRATION Date	EXPIRY DATE
Alfalfa	55H96	Pioneer Hi-Bred Production	National			SW5502Z, SW1502Z, 15ZZP02, W14ZZP1	2021-12-10	
Alfalfa	Dominator II	Quality Seeds	National			AFX164030	2022-01-21	
Alfalfa	Stealth III	Quality Seeds	National			AFX135019	2022-01-21	
Alfalfa	54Q16	Pioneer Hi-Bred Production	National			0	2022-01-28	
Barley, two-row, spring	TR17255	AAFC	National			TR17255, BM0850-029	2021-11-26	
Barley, two-row, spring	Bighorn	Nutrien Ag Solutions	National			TR18748, H0516-388	2022-03-25	
Barley, two-row, spring	Cantu	Nutrien Ag Solutions	National			TR18747, H0516-373	2022-03-25	
Barley, two-row, spring	Ibex	Nutrien Ag Solutions	National			TR18749, H0516-350	2022-03-25	
Barley, two-row, spring	Dublin	Céréla	National			CL009-004.017	2022-03-25	
Barley, six-row, spring	PSL Kerns	Céréla	National			0S14-16.32	2022-03-25	
Bean, pinto	ND Palomino	CANTERRA Seeds	National			SF103-8	2021-11-19	
Bean, navy	CDC Whitetrack	University Of Saskatchewan	National			4910CBB-2	2022-01-21	
Canola, spring, brassica napus, hybrid	CP22T1C	Monsanto Canada ULC (Bayer Crop Science Canada)	National		Y	X19W94263	2022-01-21	
Canola, spring, brassica napus, hybrid	NC355TF	Nuseed	National		Y	NC1903TF	2022-01-21	
Canola, spring, brassica napus, hybrid	NC471TF	Nuseed	National		Y	NC1904TF	2022-01-21	
Canola, spring, brassica napus, hybrid	BY 5105CL	DL Seeds	National		N	DL1853CL	2022-03-25	
Canola, spring, brassica napus, hybrid	BY 6207TF	DL Seeds	National		Y	DL187300	2022-03-25	
Canola, spring, brassica napus, hybrid	CS2700 CL	DL Seeds	National		Y	DL191740CL	2022-03-25	
Canola, spring, brassica napus, hybrid	V25-3T	Cargill	National		Y	19TH2533	2022-03-25	
Canola, spring, brassica napus, hybrid	V25-5T	Cargill	National		Y	19TH2314	2022-03-25	
Canola, spring, brassica napus, hybrid	BY 7102LL	DL Seeds	Interim		Y	DL192375LL	2022-01-21	2025-01-21
Canola, spring, brassica napus, hybrid	PV 781 TCM	Nutrien Ag Solutions	Interim		Y	PS-FHF 19-51010	2022-03-25	2025-03-25
Canola, spring, brassica napus, hybrid	H5501	Cargill	Interim		Y	20TH5001	2022-03-25	2025-03-25
Canola, spring, brassica napus, hybrid	H5508	Cargill	Interim		Y	20TH5508	2022-03-25	2025-03-25
Canola, spring, brassica napus, hybrid	H4389	Cargill	Interim		Y	20TH4389	2022-03-25	2025-03-25
Clover, red, double cut	Evolve	DLF Pickseed Canada	National			RC9806	2021-11-19	
Clover, red, double cut	Redkin	DLF Pickseed Canada	National			RC0702	2021-11-19	
Oat,spring	AAC Zip	AAFC	National			OA1584-3	2022-03-11	

			TYPE OF		TRANS-	EXPERIMENTAL	REGISTRATION
CROP KIND	VARIETY NAME	CANADIAN REPRESENTATIVE	REGISTRATION	REGIONS	GENE	NAME	DATE EXPIRY DATE
Orchardgrass	Captur	DLF Pickseed Canada	National				2021-12-03
Pea, field, yellow	AAC Planet	AAFC	National			P0936-3913	2022-01-21
Pea, field, yellow	CDC Citrine	University Of Saskatchewan	National			CDC 5296-2	2022-03-25
Pea, field, green	CDC Huskie	University Of Saskatchewan	National			CDC5360-4	2022-03-25
Potato (tuber)	LaChipper	Bon Accord Elite Seed Potato Centre	National			L91-78	2022-01-21
Potato (tuber)	AAC Arctic	AAFC	National			F11056 (AR2016-16)	2022-02-18
Potato (tuber)	AAC Blaze	AAFC	National			F11046 (AR2016-15)	2022-02-18
Potato (tuber)	AAC Crimson Tide	AAFC	National			F13050 (AR2018-11)	2022-02-18
Potato (tuber)	AAC Midnight	AAFC	National			F13085 (AR2018-15)	2022-02-18
Potato (tuber)	AAC Red Berry	AAFC	National			F09078 (AR2014-13)	2022-02-18
Potato (tuber)	AAC Red Fox	AAFC	National			F09038 (AR2014-11)	2022-02-18
Potato (tuber)	Prince	Parkland Seed Potatoes	National			SW 08-1984	2022-03-11
Ryegrass, annual	Yolande	DLF Pickseed Canada	National			LMD PX2107	2021-11-26
Soybean, oilseed	50B4BX08-02	Pioneer Hi-Bred Production	National		Υ	16MA30030-32-05	2021-12-03
Soybean, oilseed	PS 0011 XRN	Monsanto Canada (Bayer Crop Science Canada)	National		Υ	FLT118A2-CODNN	2021-12-03
Soybean, oilseed	P12T94E	Pioneer Hi-Bred Production	National		Υ	5011AX05-02	2021-12-10
Soybean, oilseed	5010AX07-02	Pioneer Hi-Bred Production	National		Υ	15MB60494-18-04	2021-12-17
Soybean, oilseed	ND21008GT20	Secan Association	National		Υ	ND14-6120	2022-01-21
Soybean, oilseed	Mystic	Sevita International	National			SVX-4003	2022-03-11
Soybean, oilseed	PS 2322 XFN	Monsanto Canada (Bayer Crop Science Canada)	National		Υ	BN2416D1-T1LNN	2022-03-25
Soybean, oilseed	Alinova	Sevita International	National			SVX-4005-1P	2022-03-25
Soybean, oilseed	SVX-4005-2P	Sevita International	National			SVX-4005-2P	2022-03-25
Sunflower, hybrid, non-oilseed	CP432E	Winfield	National			'09RM0532	2021-12-17
Sunflower, hybrid, non-oilseed	CP455E	Winfield	National			'09RH0933	2021-12-17
Timothy	Valor	DLF Pickseed Canada	National			IS-PHP 6	2021-12-03
Tobacco, flue-cured	CTH251	Canadian Tobacco Research Foundation	National			(none)	2021-12-10
Wheat, spring	AAC Westlock	AAFC	Regional	BC, AB, SK, MB		HY2090, WB25597	2021-12-03
Wheat, spring	Evora	Céréla	Regional	QC		CLB08-067, 011, CFB2101, C1M21450	2021-12-10
Wheat, spring	Donalda	University Of Alberta	Regional	BC, AB, SK, MB		BW5065, Entry 8 Parkland B 2017, UAW1131*F8SSD080	2022-01-28
Wheat, spring	Redcliff	University Of Alberta	Regional	BC, AB, SK, MB		PT793, Entry 18 Parkland B 2017, UAW1267*F7MBK78	2022-02-18
Wheat, spring	Arvida	Céréla	Regional	QC		CLB08-72, 012	2022-02-18
Wheat, spring	Peribonka	Céréla	Regional	QC		CLB08-008, 008	2022-02-18
Wheat, winter	AAC Coldfront	AAFC	Regional	BC, AB, SK, MB		W601, LR535	2022-02-25
Wheat, spring	Arona	Céréla	Regional	QC		CLB08-034, 040	2022-03-11
Wheat, winter	Algonkin	Semican International (Seed)	Regional			07SH21.24	2022-03-25



AGRICULTURE CANADA 2022 VARIETY REQUEST FOR PROPOSALS

Agriculture and Agri-Food Canada (AAFC) would like to thank the companies that submitted proposals to commercialize pedigreed seed of AAFC varieties under the 2022 Request for Proposal. Based upon company profile, marketing and production strategy, financial offer, and investment our evaluation committee has selected the following proposals:

Variety	Company (Awarded License Rights)
BW1094 Canada Western Red Spring Wheat	SeCan Association
DT2015 Canada Western Amber Durum Wheat	SeCan Association
PT495 Canada Western Red Spring Wheat	FP Genetics Inc.
PT496 Canada Western Red Spring Wheat	FP Genetics Inc.
TR20270 Two-Row General Purpose Barley	SeCan Association
W614 Canada Western Red Winter Wheat	SeCan Association

No proposals were received/accepted for the following lines and those varieties will be offered again through the 2023 Results of Request for Proposals process.

DT2010 Canada Western Amber Durum Wheat HB20144 Two-Row Hulless Food Barley

HW409 Canada Western Hard White Spring Wheat LRC07-4495 Sainfoin

0T2138 Oat

TR20273 Two-Row General Purpose Barley

SWS484 Canada Western Soft White Spring Wheat

APPENDIX OF VARIETIES

BW1094 Canada Western Red Spring Wheat

BW1094 Canada Western Red Spring Wheat, developed at the Brandon Research and Development Centre.

BW1094 is an awned, hollow stemmed, spring wheat line derived from a cross of BE29A-31-2(BW486)/Cardale.

Three years (2019-2021) of testing on 28 site years, BW1094 was 10%, 6%, and 1% higher yielding than Carberry, Unity, and AAC Viewfield respectively.

BW1094 matured a day earlier than AAC Viewfield and Carberry. BW1094 is semi-dwarf with height and lodging similar to Carberry.

BW1094 had test weight similar to Unity. The kernel weight was similar to Glenn. BW1094 had protein content similar to Unity.

BW1094 expressed moderately resistant to resistant reaction to fusarium head blight.

Over three years of testing (2019-2021), BW1094 expressed resistant to moderately resistant reactions to FHB at Carman and Morden.

BW1094 was resistant to the prevalent races of leaf, stem and stripe rusts.

BW1094 had moderately resistant to resistant reaction to common bunt. BW1094 is also resistant to wheat midge.

BW1094 was deemed acceptable for the CWRS class based on end-use quality data over three years (2019-2021).

DT2010 Canada Western Amber Durum Wheat

DT2010 Canada Western Amber Durum Wheat, developed at the Swift Current Research and Development Centre, Swift Current, Sask.

DT2010 has the unique combination of resistance to Orange Wheat Blossom Midge (OWBM) with high grain yield, strongerstrawthan all checks, shortplant height shorter than Strongfield, improved FHB resistance, higher yellow pigment than all checks, and low grain cadmium content.

DT2010 was selected from the cross A0463&AV013/A0537-AG03//DT839.

In three years of registration testing, grain yield of DT2010 was higher than the

mean of the checks.

Averaged over 28 station years across two soil zones, DT2010 yielded 1.9% more than Brigade (the highestyielding check), 7.1% more than AAC Cabri and 6.4% more than Strongfield.

Grain protein concentration of DT2010 was slightly higher than AAC Cabri.

Straw strength of DT2010 was stronger than all checks. Plant height of DT2010 was shorter than Strongfield. Time to maturity and kernel size of DT2010 were similar to AAC Cabri and within the range of the checks.

Testweight of DT2010 was similar to Brigade. DT2010 expressed resistance to leaf rust, stem rust, stripe rust and common bunt while expressing a range of resistant to susceptible reaction to loose smut.

DT2010 also demonstrated moderate resistance to Ug99 stem rust.

Averaged over testing years and nurseries, DT2010 expressed overall intermediate resistance to fusarium head blight symptom, and moderately susceptible response to deoxynivalenol (DON).

DT2010 had low grain cadmium con-



centration similar to Strongfield, and its quality profile met the requirements of the CWAD class with higher total yellow pigment than all checks.

DT2015 Canada Western Amber Durum Wheat

DT2015 Canada Western Amber Durum Wheat, developed at the Swift Current Research and Development Centre, Swift Current, Sask.

DT2015 has FHB resistance comparable to the bread wheat cultivar AAC Viewfield, and AAC Schrader which are rated intermediate for FHB resistance.

DT2015 is a combination of high yielding with high wheat protein and semolina protein concentrations slightly higher than Strongfield, shorter plant height than AAC Schrader with good straw strength and low grain cadmium content.

DT2015 was selected from the cross CDC Dynamic/DT858//Transcend.

In three years of registration testing, DT2015 yielded more than the mean of the check cultivars.

Averaged over 28 station years across two soilzones, DT2015 yielded 3.4% more than AAC Cabri and 2.7% more than Strongfield.

Grain protein concentration of DT2015 was the same as Strongfield.

Time to maturity of DT2015 was similar to AAC Cabri and within the range of the checks. Test weight of DT2015 was higher than all checks. Plant height of DT2015 was shorter than AAC Cabri.

Lodging resistance of 2015 was stronger than Strongfield.

DT2015 kernel size was slightly smaller than AAC Cabri.

DT2015 expressed resistance to leaf rust, stem rust, stripe rust and common bunt while expressing moderate resistance to susceptible to loose smut.

DT2015 also demonstrated moderate resistance to Ug99 stem rust.

DT2015 expressed a comparable level of resistance to FHB as the bread wheat cultivar AAC Viewfield which is used as a check in registration trials of CWRS, and AAC Schrader.

AAC Viewfield and AAC Schrader are assigned an overall intermediate FHB resistance rating.

DT2015 had low grain cadmium concentration similar to Strongfield, and its quality profile met the requirements of the CWAD class with slightly higher wheat protein and semolina protein concentrations than Strongfield on average.

HB20144 Two-Row Hulless Food Barley

HB20144 Two-Row Hulless Food Barley, developed at the Brandon Research and Development Centre, Brandon, Man.

HB20144 is a promising two-row, hulles for food barley line developed from the cross Merlin/H303 made at AAFC-Brandon using conventional breeding methods with early generations handled by a modified bulk method.

Widely adapted to western Canada, it combines good yield potential (approaching CDC McGwire and higher than the other hulless for food checks) with higher kernel weight (higher than all three hulless for food checks) and higher beta-glucan (higher than CDC McGwire and CDC Rattan but lower than CDC Fibar).

HB20144 has a good combination of disease resistance including resistance to surface smuts, moderate resistance to scald and loose smut and intermediate resistance to spot blotch and moderately susceptible to stem rust, net-form and spot-form net blotch.

This combination of good agronomic performance and high beta-glucan makes HB20144 suitable for production in western Canada with potential for food applications.

HW409 Canada Western Hard White Spring Wheat

HW409 Canada Western Hard White Spring Wheat, developed at the Swift Current Research and Development Centre, Swift Current, Sask.

HW409 is a white seeded orange wheat blossom midge (OWBM) tolerant semidwarf wheat line with very high grain yield, strong straw and desirable partial waxy endosperm.

HW409 is targeted to the Canada Western Hard White Spring (CWHWS) market class.

Grain yield of HW409 averaged over 32 site years in the Hard White Wheat Registration Trial (2019-21) was 11% higher than the mean of the checks and 4.3% higher than the highest yielding check, AAC Cirrus.

Plant height of HW409 was 12 cm shorter than AAC Cirrus with similar strong straw.

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APPENDIX OF VARIETIES (continued)

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Kernel size of HW409 was larger than all check cultivars.

The FHB response under epidemic nursery conditions has been similar to CWHWS check cultivars with ratings of moderately resistant to moderately susceptible.

HW409 expresses resistance to prevalent races of leaf rust, and stem rust. Resistance to stripe rust and common bunt has been intermediate to resistant/moderately resistant. Excellent amylograph peak viscosity has been noted which indicates partial waxy endosperm, a desirable trait for international markets.

HW409 has also been noted to possess improvements for falling number, wheat and flour protein, and extensograph length.

Based on the data generated for HW409, it would be a benefit to farmers in many prairie regions prone to OWBM infestations

LRC07-4495 Sainfoin

LRC07-4495 Sainfoin, developed at the Lethbridge Research and Development Centre, Lethbridge, Alta.

LRC07-4495 sainfoin (Onobrychis viciifoila subsp. viciifolia) was derived from a forage test which was seeded in 2009 in the foothills region of southern Alta.

The soil pH at the experimental site was 5.2 and 5.5 at 0-15 cm, and 16-30 cm depths respectively.

In 2013, 236 plants were selected that comprised 13 parents: 9.3% of Eski, 8.5% of Delaney, 8.1% of Nova, 6.8% of Melrose, 7.2% of Shoshone, 2.1% of LRC-3401, 6.4% of LRC-3432, 9.7% of LRC-3519, 11.4% of LRC05-3900, 7.6% of LRC05-3901, 5.9% of LRC05-3902, and 8.1% of LRC-4012.

The selected plants were transplanted to an isolated crossing nursery at Lethbridge, allowed to open pollinate and seeds were harvested in bulk.

This synthetic population of LRC07-4495 outyielded Nova (sainfoin check) by 29% and beaver (alfalfa check) by 68% at acidic soil of foothills, Alta.

LRC07-4495 consistently yielded higher at Lethbridge, Alta. (10%), Saskatoon, Sask. (9%), and Creston, B.C. (14%) than Nova.

LRC07-4495 flowers 5 days earlier and taller (87 vs 83 cm) compared to Nova. Seed (with pods) are larger than Nova (21 gvs. 19 g 1000 seeds-1).

Although it can be grown for hay and pasture by itself at any location, LRC07-4495 has tolerance to acidic soil.

To our knowledge, it is the first acid tolerant sainfoin cultivar.

0T2138 Oat

OT2138 Oat, developed at the Brandon Research and Development Centre, Brandon, Man.

OT2138 is high yielding white hulled oat with high test weight and an excellent disease package, intermediate plant height and good lodging resistance.

It is adapted to growing environments across western Canada. Maturity is similar to Summit and AC Morgan. It has very good test weight, plumps and very low thins with a high groat percentage. OT2138 has good protein (16.7%), and a high beta-glucan content (5.3%) that exceeds the range of the checks.

It has moderate oil content that is within range of the checks.

Disease reactions indicate OT2138 is resistant to smut, moderately resistant to barley yellow dwarfvirus, moderately resistant to oat crown rust and intermediate to oat stem rust.

Low DON levels indicate it has an intermediate response to fusarium head blight.

PT496 Canada Western Red Spring Wheat

PT496 Canada Western Red Spring Wheat, developed at the Brandon Research and Development Centre, Brandon, Man.

PT496 is an awned hollow stemmed spring wheat derived from a cross of PT584 (CDC Titanium) and BW947 (Thorsby).

Three years (2019-2021) of testing on 33 site years, PT496 was 6% higher yielding than Carberry and Parata. PT496 had 0.2% higher protein than Carberry.

PT496 matured 4 days earlier than Carberry and had similar maturity to Parata.
PT496 is similar in height as Glenn.
PT496 has test weight similar to Parata.
PT496 has been rated intermediate re-

sistant to FHB over three years of testing at Morden and Carmen FHB inoculated testing nurseries.

PT496 reactions to other diseases are: leaf rust (R), stem rust (MR), stripe rust (R), and common bunt (MS). Quality suitable for CWRS class based on two years data (2019-2021).

TR20270 Two-Row General Purpose Barley

TR20270 Two-Row General Purpose Barley, developed at the Brandon Research and Development Centre, Brandon, Man.

TR20270 is a promising two-row, hulled, general purpose barley line developed from the cross TR11219/CDC Kindersley made at AAFC-Brandon using conventional breeding methods with early generations handled by a modified bulk method.

Widely adapted to western Canada, it combines goodyield potential (3% higher than the general purpose check, CDC Austenson) with good standability (lodging score slightly lower than CDC Austenson), plumpness higher than CDC Austenson, test weight and kernel thins lower than CDC Austenson, and kernel weight and grain protein similar to CDC Austenson.

TR20270 has a good combination of disease resistance including resistance to the stem rust and loose and surface smuts, moderate resistance to FHB, intermediate resistance to net-form net blotch, spot-form net blotch and spot blotch and susceptible to scald.

With its good yield potential, standability and improved FHB resistance, TR20270 will offer a good production choice for barley growers across the Prairies

TR20273 Two-Row General Purpose Barley

TR20273 Two-Row General Purpose Barley, developed at the Brandon Research and Development Centre, Brandon, Man.

TR20273 is a two-row, hulled general purpose barley line developed from the cross AAC Synergy/BM0406-115 made at AAFC-Brandon using conventional breeding methods with early genera-

tions handled by a modified bulk method and initial selection done in the stem rust nursery at AAFC-Brandon.

Widely adapted to western Canada, it combines relatively similar yield potential to the general purpose check (4% lower than CDC Austenson) with shorter stature and good standability (lodging score lower than CDC Austenson), test weight lower than CDC Austenson and kernel weight, plumpness and protein content similar to CDC Austenson.

TR20273 has an average combination of disease resistance including resistance to the stem rust Rpg1 and loose and surface smuts, moderate resistance netform net blotch, moderate to intermediate resistance to Ug99 variants of stem rust, intermediate resistance to spotform net blotch and spot blotch and moderately susceptible to FHB and scald.

With its good standability and improved stem rust resistance, TR20273 could offer a good production choice for the barley growers across the Prairies especially in case of a stem rust outbreak.

PT495 Canada Western Red Spring Wheat

PT496 Canada Western Red Spring Wheat, developed at the Brandon Research and Development Centre, Brandon, Man.

PT496 is an awned hollow stemmed spring wheat derived from a cross of PT584 (CDC Titanium) and BW947 (Thorsby).

Three years (2019-2021) of testing on 33 site years, PT496 was 6% higher yielding than Carberry and Parata.

PT496 had 0.2% higher protein than Carberry.

PT496 matured 4 days earlier than Carberry and had similar maturity to Parata.
PT496 is similar in height as Glenn.
PT496 has test weight similar to Parata.

PT496 has been rated intermediate resistant to FHB over three years of testing at Morden and Carmen FHB inoculated testing nurseries.

PT496 reactions to other diseases are: leaf rust (R), stem rust (MR), stripe rust (R), and common bunt (MS).

Quality suitable for CWRS class based on two years data (2019-2021).

SWS484 Canada Western Soft White Spring Wheat

SWS484 Canada Western Soft White Spring Wheat, developed at the Lethbridge Research and Development Centre, Lethbridge, Alta.

SWS484 is a candidate cultivar for the CWSWS wheat class.

It is of medium tall stature, with an awned spike and a hollow stem.

Based on three years of evaluation in the Western Soft White Spring Wheat Registration trials (2019-2021), SWS484 yielded significantly higher than all the check cultivars.

Over 30 test sites, SWS484 yielded 4% higher than AC Andrew, 7% higher than AAC Indus and 9% higher than Sadash.

On average, SWS484 yielded 6771 kg/ha, as compared to 6524 kg/ha for AC Andrew, 6623 kg/ha for AAC Indus and 6204 kg/ha for Sadash.

The grain yield of SWS484 was significantly higher than AC Andrew (+6%), AAC Indus (+8%) and Sadash (+12%) under dry land environments.

Over the three years of evaluation, SWS484 matured in 104 days, making it similar to AC Andrew. It was 3.2 cm taller than AC Andrew and 3.0 cm taller than Sadash.

SWS484 had excellent straw strength, with a lodging score of 3.1, which is similar to Sadash.

SWS484 had improved test weight (79.1 kg/hl) over AC Andrew (77.1 kg/hl) and Sadash (78.5 kg/hl). The kernel weight of SWS484 was 1.0 mg larger than AC Andrew and 0.5 mg smaller than Sadash.

SWS484 exhibited good levels of resistance to both stripe and stem rusts and was intermediate in resistance to leaf

SWS484 had intermediate to moderately susceptible reaction to fusarium head blight which was improvement over checks.

Like other cultivars in this wheat class, SWS484 was susceptible to common bunt

It was resistant to orange wheat blossom midge.

SWS484 had improved flour yield over checks. Other quality characteristics were within the range of the checks.

W614 Canada Western Red Winter Wheat

W614 Canada Western Red Winter Wheat, developed at the Lethbridge Research and Development Centre, Lethbridge, Alta.

W614 is a broadly adapted hard red winter wheat line proposed for the Canada Western Red Winter (CWRW) class.

W614 combines high grain yield and cold tolerance, early maturity, short stature, strong straw, and exceptional disease resistance.

Based on data from 32 environments collected over three years (2019–2021), W614 had higher grain yield than all of the CWRW checks (CDC Buteo +9%, AAC Vortex +3%, Moats +7%, AAC Elevate +4%) and was equal to the highest yielding CWSP checks.

Winter survival of W614 (87%) was higher than all of the checks except AAC Vortex (89%).

W614 was earlier maturing (213.0 d) than all of the CWRW checks, being 1.3 days earlier than AAC Elevate, the earliest maturing check.

W614 would provide an early maturing, disease resistant CWRW option for producers where harvest timing and/or extension of the harvest period are important considerations.

Indirect comparisons suggest that W614 is 4 to 5 days earlier maturing than AAC Wildfire, currently the most popular winter wheat cultivar in western Canada.

W614 was shorter (73 cm) than all of the checks (77 to 82 cm).

Lodging resistance of W614 (2.1) was equal to AAC Vortex, the best check.

The test weight (79.2 kg/hL) and seed weight (28.9 mg) of W614 were slightly lower than checks.

W614 had higher grain protein concentration (12.7%) than all of the checks except AAC Vortex (12.9%).

W614 expressed R reactions to stem and stripe rust; R-MR and MR reactions to leaf rust; FHB tolerance best described as MR; and common bunt ratings of R and MR.

W614 had grain protein concentration (12.7%) that was higher than all of the checks except AAC Vortex (12.9%).

W614 was deemed suitable for the CWRW class in 2019 and 2020 (2021 data not yet available).

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PROPOSED LIST OF VARIETY REGISTRATION CANCELLATIONS

The Canadian Food Inspection Agency in consultation with the Canadian Grain Commission has adopted a protocol for the cancellation of variety registrations upon request of the variety's Canadian representative and breeder.

Under this new, extended protocol, a three-year notification of cancellation period will apply to varieties of all crop kinds except hybrid canola and rapeseed. Hybrid canola and rapeseed will require a one year notification period.

This timeline enables the Canadian representative and breeder to ensure that seed stocks of the variety have been cleared from the market and that growers have been dulynotified, well in advance, in order to clear seed stocks in farmers' operations.

This will help farmers to plan for the future and minimize any financial risk to their businesses. Notifications will be posted August 1st in each calendar year and the notification period is from that date forward.

The CFIA and CGC are committed to communicating to farmers well before varieties are cancelled.

Standardizing the period of cancellation will help to prevent financial risk to farmers by avoiding the planting of vari-

eties of field crops, which will no longer be registered for sale in Canada.

Variety registration cancellation for cause, such as non-compliance, fraud or loss of varietal integrity, is not part of this policy and remains an enforcement tool available to the registrar of the CFIA's Variety Registration Office.

The CFIA publishes the Proposed List of Variety Registration Cancellations with the date of cancellation.

The list is revised annually on Aug. 1, and released by the VRO. The CGC revises their Variety Designation Lists throughout the year as changes occur.

Crop kind	Variety	Reg.#	Date Registered	Date Posted	Date of cancellation
Spring oat	Athabasca	1834	1978-04-14	2018-08-01	2021-08-01
Spring oat	Cascade	1920	1979-04-09	2018-08-01	2021-08-01
Spring oat	Manic	1942	1979-10-10	2018-08-01	2021-08-01
Spring oat	Dumont	2250	1982-05-20	2018-08-01	2021-08-01
Spring oat	Riel	2535	1985-05-10	2018-08-01	2021-08-01
Spring oat	Marion	2544	1985-06-05	2018-08-01	2021-08-01
Spring oat	Capital	2848	1987-06-03	2018-08-01	2021-08-01
Spring oat	Condesa	3017	1988-12-09	2018-08-01	2021-08-01
Spring oat	AC Stewart	3384	1991-03-05	2018-08-01	2021-08-01
Spring oat	AC Hunter	3587	1992-04-21	2018-08-01	2021-08-01
Hulless spring oat	AC Belmont	3649	1992-08-14	2018-08-01	2021-08-01
Hulless spring oat	AC Baton	3963	1994-06-01	2018-08-01	2021-08-01
Spring oat	AC Francis	4382	1996-08-09	2018-08-01	2021-08-01
Oilseed flax	AC Watson	4441	1997-01-07	2018-08-01	2021-08-01
Perennial ryegrass	Rosalin	4606	1997-06-12	2018-08-01	2021-08-01
Oilseed flax	AC Carnduff	4713	1998-03-13	2018-08-01	2021-08-01
Spring oat	Kaufmann	5373	2001-11-22	2018-08-01	2021-08-01

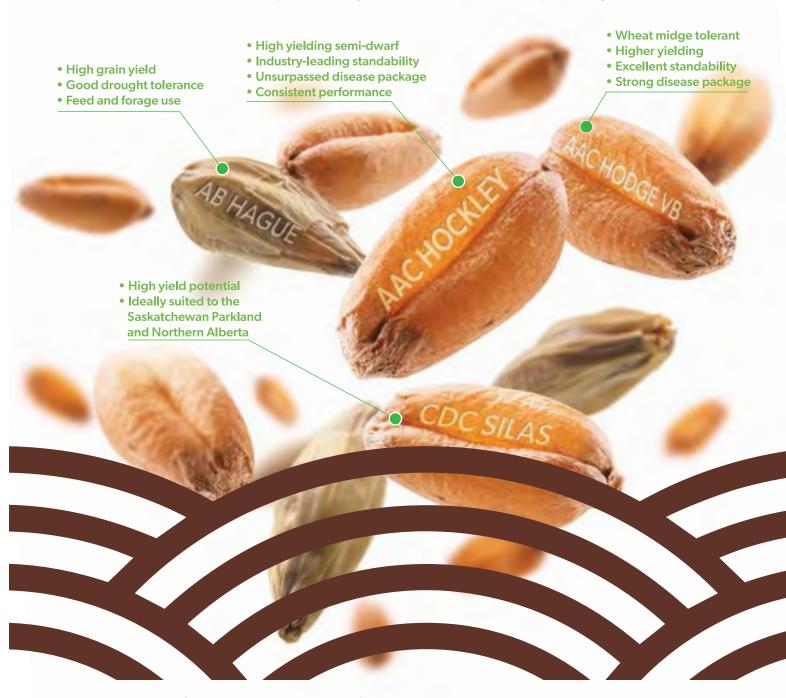








HEADING YOUR WAY IN 2023 New CWRS - AAC Hockley | AAC Hodge VB | CDC Silas | Feed Barley - AB Hague | Torbellino



Your seeding advantage is about to get bigger and better.

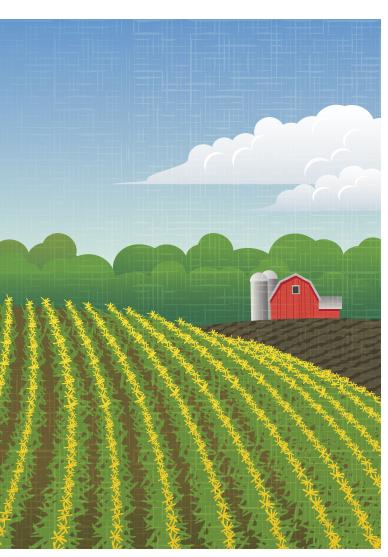
The top **NEW** genetics in Western Canada are heading your way in **2023.**

New CWRS Varieties - AAC Hockley | AAC Hodge VB | CDC Silas New Feed Barley - AB Hague | Torbellino



Find your Local Cereal Seed Expert and our 2023 Seed Guide at fpgenetics.ca

2022 INSURED COMMERCIAL ACRES



This report is prepared annually by the Canadian Grain Commission. Seeded area figures reflect insured commercial grain production only. Pedigreed seed production is excluded. Classification of varieties according to their class is based on the Canadian Grain Commission's lists of designated varieties. Variety names shown in this report were based on data keyed from different sources. The CGC has validated and corrected the data as much as possible using official sources. If discrepancies are found, please contact the Canadian Grain Commission. For further information, contact the CGC at 1-800-853-6705.

BY CROP TYPE:

TOTAL INSURED COMMERCIAL ACRES

ALL CROPS	B.C.		ALTA.		SASK.		MAN		TOTAL	
SEEDED AREA	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%
Canola	95,731	1	5,271,567	28	10,575,382	55	3,209,775	17	19,152,455	100
Wheat	68,104		5,439,866	35	6,998,405	46	2,826,402	18	15,332,777	100
Barley	39,853	1	2,626,360	52	2,043,115	40	377,702	7	5,087,030	100
Amber durum			860,957	17	4,211,202	83	2,699		5,074,858	100
Lentils			449,807	13	3,122,670	87	1,003		3,573,480	100
Peas	25,741	1	1,037,032	40	1,363,545	52	172,294	7	2,598,612	100
0ats	37,574	2	459,173	20	1,123,749	49	665,281	29	2,285,777	100
Soybeans			150		18,215	2	815,354	98	833,719	100
Flaxseed			97,177	16	467,339	77	44,961	7	609,477	100
Mustard			133,422	29	318,409	70	3,259	1	455,090	100
Corn			12,773	4			313,516	96	326,289	100
Rye	441		49,496	25	34,607	17	117,275	58	201,819	100
Canary seed			3,224	2	175,499	96	4,990	3	183,713	100
Chickpeas			20,662	13	134,506	87			155,168	100
Beans			51,590	35	1,503	1	95,864	64	148,957	100
Sunflower			1,237	2	632	1	74,997	98	76,866	100
Triticale			28,002	64	13,684	31	1,876	4	43,562	100
Fababeans			27,549	66	14,219	34			41,768	100
Pea beans							20,318	100	20,318	100
Buckwheat							2,834	100	2,834	100
Total	267,444		16,570,044		30,616,681		8,750,400		56,204,569	

WHEAT VARIETIES BY CLASS:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

ALL WHEAT	B.C.		ALTA.		SASK.		MAN. TOTAL				
SEEDED AREA	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%	
CWRS	43,553		4,296,828	22	5,883,162	31	2,570,312	13	12,793,855	67	
CWAD			859,963	4	3,708,156	19	1,689		4,569,808	24	
CPS	1,317		677,829	4	137,705	1	67,849		884,700	5	
CWSWS			210,392	1	112,101	1			322,493	2	
CNHR	688		78,242		39,060		122,389	1	240,379	1	
CWRW			116,205	1	34,532		51,128		201,865	1	
CWSP	5,857		46,901		104,855	1	1,806		159,419	1	
CWHWS			5,195		6,652				11,847		
Total	51,415		6,291,555	33	10,026,223	52	2,815,173	15	19,184,366	100	

WHEAT VARIETIES BY CLASS: INSURED

COMMERCIAL ACRES, NON-DESIGNATED VARIETIES

ALL WHEAT	B.C.		ALTA.		SASK.		MAN	. TOTAL		
SEEDED AREA	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%
OAC Amber					3,647				3,647	
SY Valda							760		760	
Pelissier			320						320	
BW 5045			301						301	
Garnet			136						136	
SY Manners			130						130	
CS11200104-11			101						101	
AC 2000			80						80	
Not specified	16,689	1	8,200	1	1,179,737	96	13,168	1	1,217,794	100
Total	16,689	1	9.268	1	1.183.384	97	13.928	1	1.223.269	100

NON-MALTING BARLEY: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

SEEDED AREA		%	ACRES	%	ACRES		ACRES		ACRES	%
CDC Austenson	4,970		478,363		381,197	14	121,366	5	985,896	
Brahma	5,451		216,099	8	2,024				223,574	
Oreana			142,654	5	18,425	1	700		161,779	
Claymore			71,765	3	57,841	2	9,796		139,402	
Canmore			103,892	4	2,969		14,502	1	121,363	
CDC Maverick			38,355	1	72,958	3	4,084		115,397	
Conlon			44,473	2	2,615		51,994	2	99,082	
Champion			62,569	2	21,267	1	721		84,557	
Xena			69,782	3	7,481				77,263	
CDC Coalition			66,544	3					66,544	
Esma			51,463	2	1,945		6,274		59,682	
Altorado			36,018	1	13,773	1	2,534		52,325	
CDC Cowboy			19,694	1	22,263	1			41,957	
AB Cattlelac			18,094	1	11,329		2,539		31,962	
AB Advantage			19,989	1	11,451				31,440	
AC Rosser			1,916		5,577				7,493	
CDC Thompson			6,700						6,700	
Sundre			3,436		2,680				6,116	
Ponoka			5,809						5,809	
Seebe			5,567						5,567	
Amisk			5,470						5,470	
CDC Trey			5,399						5,399	
Gadsby			3,713		1,060				4,773	
Goldstar					3,750				3,750	
AB Wrangler			2,134		1,265				3,399	
CDC Mcgwire					2,546		549		3,095	
AB Hague			1,547		1,461				3,008	
Alston			2,682						2,682	
AC Ranger			575		1,463				2,038	
AB Tofield			1,846						1,846	
AC Albright	1,435		290						1,725	
Falcon			1,420						1,420	
AC Oxbow					1,394				1,394	
AB Prime			1,374						1,374	
CDC Helgason			1,176						1,176	
Chigwell			1,102						1,102	
Kws Kellie			1,083						1,083	
Muskwa			1,036						1,036	
AC Lacombe			1,012						1,012	
CDC Bold			399		534				933	
0tal	858		50						908	
LG Diablo			889						889	
Manley			120		765				885	
CDC Aurora Nijo			832						832	
Stander			754						754	
Vivar			747						747	
Stockford			146		548				694	
Ascension							685		685	
Busby			673						673	
CDC Dolly			8		628				636	
Bedford							585		585	
Bonanza					568				568	
Breton			551						551	
CDC Earl			515						515	
CDC Stratus			487						487	
CDC Mindon			333						333	
Condor			270						270	
CDC Select			170						170	
Trochu			164						164	

NON-MALT SEEDED AREA	B.C. Acres	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
CDC Renegade	HOILES	/6	160	/0	AUNLO	/0	AUNES	/6	160	/0
CDC Alamo			155						155	
Olli			145						145	
Duke			135						135	
Formosa			131						131	
SR18524			125						125	
CDC Sisler			115						115	
Bridge			90						90	
B 1215			85						85	
CDC Carter			52						52	
OAC21			25						25	
Leduc			22						22	
TR19268			6						6	
TR13606			5						5	
CDC Durango			5						5	
Kasota			2						2	
Not Specified	2,660		3,230		249,648	9	10,997		266,535	10
Total	15,374	1	1,506,637	57	901,425	34	227,326	9	2,650,762	100

MALTING BARLEY:

MALT BARLEY SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
CDC Copeland	6,018	<i></i>	324,977	13	409,573	17	19,830	1	760,398	_
AAC Synergy	3,073		291,770	12	363,004	15	39,466	2	697,313	29
AAC Connect	6,855		86,454	4	105,570	4	38,354	2	237,233	10
AC Metcalfe	2,878		99,212	4	108,699	4	13,541	1	224,330	9
Sirish	4,597		175,712	7	2,263		1,655		184,227	8
CDC Fraser			27,032	1	55,851	2	9,369		92,252	4
Legacy			8,649		37,613	2	1,003		47,265	2
CDC Bow			24,018	1	17,341	1	2,964		44,323	2
CDC Copper	1,058		24,461	1	5,326		1,106		31,951	1
CDC Churchill			13,122	1	8,373		1,104		22,599	1
Newdale			2,032		9,848		8,304		20,184	1
Cerveza			13,953	1	2,415		918		17,286	1
Bill Coors 100			13,916	1	888				14,804	1
Celebration					3,939		7,619		11,558	
Bentley			6,424		475				6,899	
CDC Meredith			2,154		4,658				6,812	
Tradition							4,495		4,495	
CDC Platinumstar					3,562				3,562	
AB Brewnet			2,070						2,070	
CDC Clear					1,514				1,514	
CDC Kindersley			1,003						1,003	
CDC Polarstar					778				778	
Robust							648		648	
Merit 16			540						540	
CDC Anderson			529						529	
CDC Yorkton			480						480	
Lowe			346						346	
Harrington			240						240	
AAC Goldman			205						205	
CDC Clyde			155						155	
CDC Battleford			117						117	
Lacey			87						87	
Torbellino			65						65	
Total	24,479	1	1,119,723	46	1,141,690	47	150,376	6	2,436,268	100

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2022 INSURED COMMERCIAL ACRES (CONTINUED)

CWAD DURUM: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CWAD	ALTA.	ا ا	SASK.		MAN.		TOTAL	
SEEDED AREA	ACRES	%	ACRES	%	ACRES	%	ACRES	%
Transcend	181,167	4	1,298,828	28	HORLE	/0	1,479,995	
CDC Precision	72,507	2	676,833	15	1,119		750,459	16
AAC Stronghold	244,566	5	111,613	2	,		356,179	8
Brigade	53,659	1	289,755	6			343,414	8
CDC Alloy	60,277	1	265,413	6			325,690	7
AAC Spitfire	41,286	1	267,543	6			308,829	7
AAC Grainland	29,877	1	135,634	3			165,511	4
Strongfield	57,380	1	90,819	2			148,199	3
AAC Congress	25,578	1	98,302	2			123,880	3
CDC Fortitude	35,021	1	59,433	1			94,454	2
CDC Defy	2,890		66,287	1			69,177	2
CDC Credence			52,380	1			52,380	1
CDC Dynamic	1,005		48,774	1			49,779	1
AAC Succeed	6,510		36,637	1	570		43,717	1
CDC Verona	4,321		35,009	1			39,330	1
AAC Raymore	14,866		18,901				33,767	1
CDC Flare	4,561		20,514				25,075	1
AC Navigator	320		22,221				22,541	

CWAD	ALTA.		SASK.		MAN.		TOTAL	
SEEDED AREA	ACRES	%	ACRES	%	ACRES	%	ACRES	%
Commander			21,567				21,567	
AAC Donlow	4,034		13,822				17,856	
Eurostar			16,721				16,721	
Enterprise	4,317		10,101				14,418	
CDC Carbide			13,019				13,019	
Kyle	744		11,137				11,881	
AAC Current	628		10,323				10,951	
AAC Goldnet	8,790						8,790	
AC Avonlea	1,983		3,309				5,292	
AAC Cabri	10		4,603				4,613	
AAC Marchwell			4,074				4,074	
CDC Vivid	2,644		1,375				4,019	
CDC Desire			3,209				3,209	
Sceptre	838						838	
CDC Covert	137						137	
AAC Schrader	47						47	
Total	859,963	19	3,708,156	81	1,689		4,569,808	100

Sources: Sask Crop Insurance, Alberta Ag Financial Services Corp., Manitoba Agricultural Services Corporation, BC Crop Insurance



2022 INSURED COMMERCIAL ACRES (CONTINUED)

OATS: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

OATS	B.C.		ALTA.		SASK.		MAN.		TOTAL	
SEEDED AREA	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%
CS Camden	1,570		63,286	3	348,377	15	183,022	8	596,255	26
AC Morgan	17,988	1	233,844	10	162,418	7	3,290		417,540	18
Summit			165		63,587	3	221,211	10	284,963	12
CDC Arborg	4,992		36,780	2	176,209	8	54,106	2	272,087	12
Not Specified	4,610		1,035		135,775	6	20,976	1	162,396	7
CDC Endure			828		32,939	1	67,450	3	101,217	4
ORE3542M	647		8,355		11,058		43,328	2	63,388	3
CDC Ruffian			2,249		51,379	2			53,628	2
CDC Haymaker			10,547		16,922	1	10,954		38,423	2
AC Mustang	7,767		22,677	1	3,430				33,874	1
Triactor					32,703	1			32,703	1
CDC So-I			13,998	1	13,364	1	3,821		31,183	1
Derby			18,243	1	6,992				25,235	1
CDC Nasser			15,307	1	4,411				19,718	1
Souris			47		7,858		11,475	1	19,380	1
ORE3541M			1,992		1,837		12,186	1	16,015	1
CDC Dancer			1,200		13,164	1			14,364	1
CDC Baler			7,561		4,298		1,572		13,431	1
Pinnacle			100		5,089		7,170		12,359	1
AAC Douglas			590				9,749		10,339	
CDC Minstrel			539		8,555				9,094	
Leggett					6,338		2,612		8,950	
Calibre			3,745		2,460				6,205	
Douglas							5,648		5,648	
CDC Orrin					5,632				5,632	
CDC Morrison			160		3,953		1,040		5,153	
Waldern			3,350				1		3,350	
CDC Boyer			355		2,355				2,710	
Grizzly			2,394		,				2,394	
Cascade			1,771						1,771	
Furlong			,				1,734		1,734	

OATS Seeded Area	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
SW Betania					1,700				1,700	
Canmore			1,253						1,253	
Triple Crown							1,211		1,211	
AC Assiniboia							1,125		1,125	
Haywire							1,000		1,000	
CDC Weaver					946				946	
ORE 6251M			828						828	
CDC Big Brown			674						674	
AC Juniper			624						624	
Forage							601		601	
7600m			528						528	
Victory			487						487	
CDC Norseman			472						472	
Lu			451						451	
AC Medallion			445						445	
AAC Bullet			346						346	
Harmon			343						343	
Pendek 99			261						261	
Rodney			252						252	
Murphy			246						246	
Bradley			225						225	
CDC Seabiscuit			163						163	
Foothill			125						125	
AC Hunter			70						70	
Stride			67						67	
AAC Oravena			50						50	
Athabasca			45						45	
Gehl			42						42	
Jasper			30						30	
Random			28						28	
Total	37.574	2	459,173	20	1,123,749	49	665.281	29	2,285,777	10

RYE:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

Hazlet 7,778 4 10,671 5 48,520 24 66,969 33 KWS Trebiano 1,518 1 551 18,562 9 20,631 10 KWS Bono 3,869 2 725 12,054 6 16,648 8 KWS Gatano 1,443 1 4,403 2 8,962 4 14,808 7 KWS Serafino 14,138 7 14,138 7 14,138 7 Frima 1,454 1 508 4,225 2 6,187 3 KWS Propower 4,768 2 4,768 2 4,768 2 Danko 3,644 2 3,644 2 3,644 2 3,644 2 KWS Progas 2,517 1 1,323 1 2,886 1 KWS Progas 2,517 1 2,517 1 2,517 1 Musketeer 1,678 1 1,678 1	DVE					0.1.01/				TOTAL	
KWS Trebiano 1,518 1 551 18,562 9 20,631 10 KWS Bono 3,869 2 725 12,054 6 16,648 8 KWS Gatano 1,443 1 4,403 2 8,962 4 14,808 7 KWS Daniello 6,727 3 7,183 4 13,910 7 Prima 1,454 1 508 4,225 2 6,187 3 KWS Propower 4,768 2 4,768 2 4,768 2 Danko 3,644 2 3,644 2 3,644 2 3,644 2 KWS Progas 2,517 1 1 1,323 1 2,886 1 KWS Progas 2,517 1 2 2,517 1 AC Rifle 875 998 1,873 1 Musketeer 1,678 1 767 767 Gazelle 528 528 <th></th> <th></th> <th>%</th> <th></th> <th>%</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>%</th>			%		%						%
KWS Bono 3,869 2 725 12,054 6 16,648 8 KWS Gatano 1,443 1 4,403 2 8,962 4 14,808 7 KWS Serafino 14,138 7 14,138 7 141,138 7 KWS Daniello 6,727 3 7,183 4 13,910 7 Prima 1,454 1 508 4,225 2 6,187 3 KWS Propower 4,768 2 4,768 2 4,768 2 Danko 1,563 1 1,323 1 2,866 1 KWS Progas 2,517 1 2,517 1 2,517 1 AC Rifle 875 998 1,873 1 Musketeer 1,678 1 767 767 Gazelle 528 528 528 Brasetto 20 503 523 Cougar 100 100 100 <	Hazlet			7,778	4	10,671	5	48,520	24	66,969	33
KWS Gatano 1,443 1 4,403 2 8,962 4 14,808 7 KWS Serafino 14,138 7 14,138 7 14,138 7 KWS Daniello 6,727 3 7,183 4 13,910 7 Prima 1,454 1 508 4,225 2 6,187 3 KWS Propower 4,768 2 4,768 2 4,768 2 Danko 3,644 2 3,644 2 3,644 2 3,644 2 AC Remington 1,563 1 1,323 1 2,886 1 KWS Progas 2,517 1 2,517 1 2,517 1 AC Rifle 875 998 1,873 1 Musketeer 1,678 1 767 767 Gazelle 528 528 528 Brasetto 20 503 523 Cougar 100 100	KWS Trebiano			1,518	1	551		18,562	9	20,631	10
KWS Serafino 14,138 7 14,138 7 14,138 7 14,138 7 14,138 7 14,138 7 14,138 7 14,138 7 14,138 7 14,138 7 14,138 7 14,138 7 14,138 7 14,138 7 14 13,130 7 14 14,138 7 14 15,132 14,138 7 14 14,138 7 14 14,223 14,228 24 14,138 7 14 14,223 14,238 24 24 24,618 24 24 24,618 24 24 24,618 24 24 24,618 24 24 24,628 24 24 24,628 24 24 24,628 24 24 24,628 24 24 24,628 24 24 24,628 24 24 24,628 24 24 24,628 24 24 24,628 24 24,238 24 24	KWS Bono			3,869	2	725		12,054	6	16,648	8
KWS Daniello 6,727 3 7,183 4 13,910 7 Prima 1,454 1 508 4,225 2 6,187 3 KWS Propower 4,768 2 4,768 2 4,768 2 Danko 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 2,517 1 3,644 2 2,517 1 3,644 2 2,517 1 3,644 2 2,517 1 3,644 2 3,644 2 2,517 1 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 2 3,644 3,644 3,644 3,644 3,644 3	KWS Gatano			1,443	1	4,403	2	8,962	4	14,808	7
Prima 1,454 1 508 4,225 2 6,187 3 KWS Propower 4,768 2 4,768 2 4,768 2 Danko 3,644 2 3,644 2 3,644 2 AC Remington 1,563 1 1,323 1 2,886 1 KWS Progas 2,517 1 2,517 1 AC Rifle 875 998 1,873 1 Musketeer 1,678 1 1 1,678 1 Guttino 767	KWS Serafino			14,138	7					14,138	7
KWS Propower 4,768 2 4,768 2 4,768 2 Danko 1,563 1 1,323 1 2,866 1 KWS Progas 2,517 1 2,517 1 AC Rifle 875 998 1,873 1 Musketeer 1,678 1 1 1,678 1 Guttino 767 767 767 767 767 Gazelle 528 528 528 528 528 528 528 523	KWS Daniello			6,727	3			7,183	4	13,910	7
Danko 1,563 1 3,644 2 3,644 3,644 3,644 3,644 3,644 3,644 3,644 3,644 3,644 3,644 3,644 3,644 3,	Prima			1,454	1	508		4,225	2	6,187	3
AC Remington 1,563 1 1,323 1 2,886 1 KWS Progas 2,517 1 2,517 1 AC Rifle 875 998 1,873 1 Musketeer 1,678 1 1,678 1 Guttino 767 767 767 Gazelle 528 528 528 Brasetto 20 503 523 Cougar 100 100 100 Not Specified 441 1,048 1 17,221 9 10,534 5 29,244 14	KWS Propower			4,768	2					4,768	2
KWS Progas 2,517 1 2,517 1 AC Rifle 875 998 1,873 1 Musketeer 1,678 1 1,678 1 Guttino 767 767 767 Gazelle 528 528 528 Brasetto 20 503 523 Cougar 100 100 100 Not Specified 441 1,048 1 17,221 9 10,534 5 29,244 14	Danko							3,644	2	3,644	2
AC Rifle 875 998 1,873 1 Musketeer 1,678 1 1,678 1 Guttino 767 767 767 Gazelle 528 528 528 Brasetto 20 503 523 Cougar 100 100 100 Not Specified 441 1,048 1 17,221 9 10,534 5 29,244 14	AC Remington			1,563	1			1,323	1	2,886	1
Musketeer 1,678 1 1 1,678 1 Guttino 767 767 767 Gazelle 528 528 528 Brasetto 20 503 523 Cougar 100 100 100 Not Specified 441 1,048 1 17,221 9 10,534 5 29,244 14	KWS Progas			2,517	1					2,517	1
Guttino 767 767 Gazelle 528 528 Brasetto 20 503 523 Cougar 100 100 100 Not Specified 441 1,048 1 17,221 9 10,534 5 29,244 14	AC Rifle			875				998		1,873	1
Gazelle 528 528 528 Brasetto 20 503 523 Cougar 100 100 100 Not Specified 441 1,048 1 17,221 9 10,534 5 29,244 14	Musketeer			1,678	1					1,678	1
Brasetto 20 503 523 Cougar 100 503 523 Not Specified 441 1,048 1 17,221 9 10,534 5 29,244 14	Guttino							767		767	
Cougar 100<	Gazelle					528				528	
Not Specified 441 1,048 1 17,221 9 10,534 5 29,244 14	Brasetto			20				503		523	
	Cougar			100						100	
Total 441 49,496 25 34,607 17 117,275 58 201,819 100	Not Specified	441		1,048	1	17,221	9	10,534	5	29,244	14
	Total	441		49,496	25	34,607	17	117,275	58	201,819	100

CWSWS WHEAT:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CWSWS	ALTA.		SASK.		TOTAL.	
SEEDED AREA	ACRES	%	ACRES	%	ACRES	%
Sadash	109,788	34	50,098	16	159,886	50
AC Andrew	31,939	10	53,110	16	85,049	26
AAC Paramount	33,575	10	6,679	2	40,254	12
AC Chiffon	30,559	9	2,214	1	32,773	10
AC Indus	4,531	1			4,531	1
Total	210,392	65	112,101	35	322,493	100

CWHWS WHEAT:

CWHWS	ALTA	١.	SAS	K.	TOTA	L.
SEEDED AREA	ACRES	%	ACRES	%	ACRES	%
AAC Cirrus	1,081	9	3,522	30	4,603	39
AAC Iceberg	3,572	30			3,572	30
AAC Whitefox			3,130	26	3,130	26
Snowbird	542	5			542	5
Total	5,195	44	6,652	56	11,847	100

2022 INSURED COMMERCIAL ACRES (CONTINUED)

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CRWS WHEAT: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

				_						
CWRS Seeded Area	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
AAC Brandon	6,539		1,303,694	10	1,684,888	13	1,152,303	9	4,147,424	32
AAC Viewfield	7,995		836,010	7	782,572	6	204,663	2	1,831,240	14
AAC Starbuck			48,151		541,738	4	532,674	4	1,122,563	9
AAC Wheatland			367,441	3	441,524	3	238,383	2	1,047,348	8
CDC Landmark	2,984		69,847	1	580,321	5	20,390		673,542	5
AAC Elie			367,788	3	116,969	1	62,181		546,938	4
AAC Redberry	3,205		227,708	2	209,896	2	104,298	1	545,107	4
AAC Alida			11,141		329,039	3	1,998		342,178	3
AAC Leroy			64,395	1	177,032	1	42,666		284,093	2
Stettler	2,120		165,918	1	9,095				177,133	1
CDC Plentiful			52,402		111,109	1	5,424		168,935	1
CDC Go	6,829		141,414	1	3,010		2,513		153,766	1
CDC Hughes			35,205		115,530	1	1,881		152,616	1
CDC Abound			129,079	1	15,805				144,884	1
Carberry			55,974		74,185	1	6,958		137,117	1
Cardale			4,957		100,516	1	28,077		133,550	1
CDC Utmost			35,635		59,823				95,458	1
AAC Cameron			158		85,603	1	2,854		88,615	1
CDC Stanley	1,659		39,433		36,127		4,518		81,737	1
Bolles			1,650		11,574		61,805		75,029	1
CDC Titanium			10,336		61,872				72,208	1
AAC Tisdale	4,048		8,725		35,098		13,475		61,346	
CDC Ortona			40,116		15,897		1,224		57,237	
Glenn			15,664		29,465		6,596		51,725	
Parata	4,539		30,096		4,864				39,499	
AAC Connery	1,710		28,461		8,412		613		39,196	
SY Cast			20,995		3,150		10,209		34,354	
Shaw			9,641		24,129				33,770	
SY Gabbro			13,802		3,122		15,052		31,976	
AAC Jatharia			140		30,207				30,347	
AC Barrie			2,065		24,851		1,886		28,802	
Superb			12,149		14,450		635		27,234	
SY Torach			1,280		10,986		11,036		23,302	
Thorsby			22,928						22,928	
CDC Vr Morris			550		19,216		3,100		22,866	
CDC Adamant			7,343		12,672				20,015	
AAC Russell			5,689		9,948		816		16,453	
AAC Redstar	250		13,699				1,604		15,553	
AC Intrepid	1,675		6,179		6,636				14,490	
CDC Succession CLPlus			3,534		10,480				14,014	
CDC Skrush			8,045		4,437		748		13,230	
Daybreak							12,797		12,797	

CWRS SEEDED AREA	B.C. Acres	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	. %
AAC Hockley			3,977				8,384		12,361	
AC Splendor			6,738		4,291				11,029	
AAC Magnet			2,989		5,405		1,462		9,856	
Go Early			9,665						9,665	
CDC Pilar Clplus			3,519		5,570				9,089	
AAC Hodge			1,463		2,000		5,028		8,491	
Waskada			72		8,157				8,229	
Jake			8,188						8,188	
Goodeve			597		7,347				7,944	
AAC Prevail			317		6,550				6,867	
WR859 CL			1,342		5,501				6,843	
CDC Imagine			3,716		2,381				6,097	
Ellerslie			5,211		695				5,906	
5604HR CL			1,767		2,530		1,493		5,790	
AC Elsa			3,712		1,560				5,272	
AC Cadillac			3,570		876				4,446	
CDC Bradwell			234		3,491				3,725	
Rednet			1,796		1,022				2,818	
AAC Warman			1,983		670				2,653	
CDC Bounty			305		1,859				2,164	
Laura			646		1,464				2,110	
CDC Teal			1,507		545				2,052	
AAC Bailey			2,015						2,015	
Roblin			1,934						1,934	
SY Obsidian			1,881						1,881	
CDC Silas			546		1,233				1,779	
Prodigy			145		1,500				1,645	
SY Sovite					1,609				1,609	
AAC Broadacres			1,454		,				1,454	
CDC Alsask			1,452						1,452	
Zealand			1,179						1,179	
5602HR			771						771	
Coleman			695						695	
Fieldstar					658				658	
SY Manness							568		568	
SY Crossite			565						565	
Tracker			385						385	
CDC Thrive			382						382	
Sheba			305						305	
Infinity			273						273	
AAC W1876			65						65	
Noor			30						30	
Total	43,553			34	5,883,162	46	2.570.312	20		100



2022 INSURED COMMERCIAL ACRES (CONTINUED)

CNHR WHEAT:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CNHR	B.C.		ALTA.		SASK.		MAN.		TOTAL	
SEEDED AREA	ACRES	%	ACRES	%	ACRES	%	ACRES	%	ACRES	%
Faller					9,193	4	91,850	38	101,043	42
AC Foremost			57,992	24	858				58,850	24
Prosper							21,462	9	21,462	9
Conquer					9,306	4			9,306	4
AAC Redwater	688		4,727	2	425		730		6,570	3
Oslo			5,711	2					5,711	2
Muchmore			5,306	2					5,306	2
Vesper					5,260	2			5,260	2
5605HR CL			1,205	1	3,250	1			4,455	2
Shelly							4,172	2	4,172	2
Harvest			633		891		1,384	1	2,908	1
AC Domain							2,791	1	2,791	1
Lillian			474		2,111	1			2,585	1
Columbus			547		1,730	1			2,277	1
AC Eatonia					2,195	1			2,195	1
AC Crystal			634		1,532	1			2,166	1
Elgin Nd					1,293	1			1,293	1
Mckenzie					602				602	
CDC Cordon Clplus			428						428	
5603HR					414				414	
Pembina			210						210	
AC Taber			157						157	
AC Michael			80						80	
Katepwa			76						76	
Park			62						62	
Total	688		78,242	33	39,060	16	122,389	51	240,379	100

TRITICALE:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

TRITICALE	ALTA.		SASK.		MAN.		TOTAL	
SEEDED AREA	ACRES	%	ACRES	%	ACRES	%	ACRES	%
Tyndal	4,731	11	544	1			5,275	12
Bunker	3,548	8	1,103	3			4,651	11
AAC delight	4,055	9	502	1			4,557	10
Pronghorn	1,739	4	1,520	3			3,259	7
Luoma	2,984	7					2,984	7
Sunray	2,447	6					2,447	6
AB stampeder	2,152	5					2,152	5
Taza	552	1	1,021	2			1,573	4
Brevis	1,323	3					1,323	3
Surge	982	2					982	2
Metzger	890	2					890	2
Bobcat	483	1					483	1
AC ultima	320	1					320	1
AC alta	228	1					228	1
Traction	157						157	
Gainer	102						102	
Banjo	80						80	
Fridge	80						80	
Bumper	6						6	
Not specified	1,143	3	8,994	21	1,876	4	12,013	28
Total	28,002	64	13,684	31	1,876	4	43,562	100

CPSR WHEAT:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

B.C. RES %	359,304 124,688 83,567 12,972 31,459	% 41 14 9 1	SASK. ACRES 67,614 22,061 28,047	% 8 2	MAN ACRES 7,751 47,856	% 1 5	TOTAL ACRES 435,986 194,605 83,567	% 49 22
	359,304 124,688 83,567 12,972 31,459	41 14 9 1	67,614 22,061 28,047	8 2	7,751	1	435,986 194,605	49 22
317	124,688 83,567 12,972 31,459	14 9 1	22,061	2	,		194,605	22
	83,567 12,972 31,459	9	28,047		47,856	5		
	12,972 31,459	1	,	3			83,567	0
	31,459		,	3				9
		4					41,019	5
	2 171		5,927	1			37,386	4
	3,171		13,239	2	12,242	1	28,652	3
	17,453	2					17,453	2
	10,812	1					10,812	1
	7,485	1	817				8,302	1
	8,153	1					8,153	1
	7,146	1					7,146	1
	4,679	1					4,679	1
	2,535						2,535	
	2,176						2,176	
	2,095						2,095	
	134						134	
317	677,829	77	137,705	16	67,849	8	884,700	100
	317	7,485 8,153 7,146 4,679 2,535 2,176 2,095	7,485 1 8,153 1 7,146 1 4,679 1 2,535 2,176 2,095 134	7,485 1 817 8,153 1 7,146 1 4,679 1 2,535 2,176 2,095 134	7,485 1 817 8,302 8,153 1 8,153 7,146 1 7,146 4,679 1 4,679 2,535 2,535 2,176 2,095 2,095 134			

CWRW WHEAT:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CWRW	ALTA		SAS	K.	MAN		TOTAL	
SEEDED AREA	ACRES	%	ACRES	%	ACRES	%	ACRES	%
AAC Wildfire	79,751	40	16,088	8	14,694	7	110,533	55
Emerson	608		5,181	3	18,794	9	24,583	12
AAC Gateway	11,995	6			8,378	4	20,373	10
AAC Goldrush	2,809	1	5,950	3	4,950	2	13,709	7
AAC Elevate	6,439	3			3,017	1	9,456	5
Moats	4,672	2	4,603	2			9,275	5
AAC Network	4,372	2					4,372	2
CDC Buteo	365		2,710	1	1,295	1	4,370	2
Radiant	3,234	2					3,234	2
AC Readymade	828						828	
CDC Osprey	387						387	
Norstar	320						320	
AC Tempest	238						238	
Flourish	187						187	
Total	116,205	58	34,532	17	51,128	25	201,865	100

CWSP WHEAT:

CWSP SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Pasteur			19,438	12	73,169	46	1,806	1	94,413	59
AAC Awesome	5,190	3	16,846	11	13,940	9			35,976	23
Sparrow			2,055	1	11,193	7			13,248	8
Alderon			3,874	2	2,571	2			6,445	4
Pintail	667		3,327	2					3,994	3
AAC Innova			664		1,968	1			2,632	2
WPB Whistler					2,014	1			2,014	1
CDC NRG003			697						697	
Total	5,857	4	46,901	29	104,855	66	1,806	1	159,419	100



2022 INSURED COMMERCIAL ACRES (CONTINUED)

BEANS:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

BEANS	ALTA.	SASK.	MAN.	TOTAL
SEEDED AREA	ACRES	ACRES	ACRES	ACRES
AAAC Y073	2,779			2,779
AAC Black Diamond 2	352			352
AAC Expedition	1,002			1,002
AAC Explorer	130			130
AAC Tundra	75			75
AAC Whitehorse	7,607			7,607
AAC Whitestar	610			610
AAC Y012	6,623			6,623
AAC Y015	437			437
AC Black Diamond	2,816			2,816
AC Redbond	2,402			2,402
Beryl			1,026	1,026
Big Red			986	986
Black Tails			5,040	5,040
CDC Blackstrap			4,717	4,717
CDC Sol	145			145
CDC Starburst	1,359			1,359
CDC White Mountain	111			111
CDC Wm-2		622		622
Chianti			656	656
Crimson			1,371	1,371
Eclipse			11,036	11,036
Etna	130			130
Hime	221			221
Island	17,555			17,555
Medicine Hat	628			628
Myasi	650			650
ND Palamino			1,091	1,091
Otebo	269		,	269
Pink Panther			1,776	1,776
Red Hawk			768	768
Resolute	3,323			3,323
SV6139GR	.,		2,978	2,978
Vibrant			37,267	37,267
Winchester	252		,,	252
Windbreaker	75		20,739	20,814
Not Specified	2,039	881	6,413	9,333
Total	51,590	1,503	95,864	148,957

FABABEANS:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

FABABEANS	ALTA.	SASK.	MAN.	TOTAL
SEEDED AREA	ACRES	ACRES	ACRES	ACRES
219-16	1,380			1,380
CDC Snowdrop	790			790
Fabelle	8,861			8,861
FB9-4		676		676
Navi		428		428
Snowbird	16,378	11,751		28,129
Victus	140			140
Not Specified		1,364		1,364
Total	27,549	14,219	0	41,768

CANOLA:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CANOLA	B.C.	ALTA.	SASK.	MAN.	TOTAL
SEEDED AREA	ACRES	ACRES	ACRES	ACRES	ACRES
501			5,489		5,489
1604			834		834
1918			968		968
2030			8,418		8,418
2153			0.104	887	887
2463		500	2,124		2,124
2573		568	775		568
3640	caa		775		775
4300 5440	632	365	703		632
8570		605	703		1,068 605
8571		320			320
08H0004		1,181			1,181
1018 RR		89			89
1020 RR		151			151
1022 RR		1,143		1,354	2,497
1024 RR		160		2,001	160
1026 RR		888	9,472	2,484	12,844
1028 RR		57,766	146,294	61,036	265,096
1852 H		160		,	160
2026 CL		623			623
2028 CL		10,949	27,284	7,348	45,581
23-38		,	1,797	,	1,797
3010 M			28,236		28,236
3156M D			1,181		1,181
32-75		260			260
34-55		1,004			1,004
357 RR			4,528		4,528
4157 RR		11,667			11,667
4166 RR		842	7,712		8,554
4187 RR		2,606			2,606
41P55		150			150
43 E03		2,800	451		3,251
4362 RR		238			238
43A56		97			97
43H57		430			430
4414 RR		245			245
4434 RR		540			540
44A53		200			200
44H44		115,235			115,235
44H44	2,085	000	65,236	7,409	74,730
458 RR		620			620
45A54		130	0.000		130
45CM36		597	2,226		2,823
45CM39		62,731	00.000	21 271	62,731
45CM39 45CM44			99,688 3,414	21,371	121,059 3,414
45CS40	460	55,620	36,008	1,224	93,312
45H22	400	154	30,008	1,224	154
45H25		740			740
45H26		395			395
45H29		285	505		790
45H32		155	303		155
45H33		1,155	3,451		4,606
45H35		1,100	3,022		3,022
45H37	1,511	17,542	7,008		26,061
701107	1,511	17,572	7,000		20,001

2022 INSURED COMMERCIAL ACRES (CONTINUED)

CANOLA Seeded Area	B.C. ACRES	ALTA. ACRES	SASK. Acres	MAN. ACRES	TOTAL ACRES	CANOLA SEEDED AREA	B.C. ACRES	ALTA. ACRES	SASK. ACRES	MAN. Acres	TOTAL Acres
45H42		44,820	71,624	4,746	121,190	AC Sunbeam		232			232
45H72		234			234	ACS-C29		21			21
45H73		72			72	B1030N		10,406	18,295	12,189	40,890
45H75			3,212		3,212	B2030MN		14,380	5,675	11,721	31,776
45H76		640			640	B3010M		165,076	35,182	10,498	210,756
45M35		34,141	86,488	3,191	123,820	B3011		15,617	8,895	2,850	27,362
45M38			1,900	.,	1,900	B3012		1,873	3,481	3,454	8,808
45\$56		370	,		370	BY 5125 CL		7,733	23,102	10,181	41,016
46A65		440			440	BY 6204 TF		54,684	82,539	11,688	148,911
46A76			1,566		1,566	BY 6207 TF		28,415	29,305	2,995	60,715
46H70		80	1,000		80	BY 6211 TF		1,989	26,834	2,858	31,681
46H75		300	3,788	1,490	5,578	CP19R1C		278	20,00	2,000	278
46M35		300	1,452	1,430	1,452	CP20R3C		9,662	4,841		14,503
505 Hyola RR			7,673		7,673	CP21T3P		1,136	11,497	5,906	18,539
5063 BX SW			1,065		1,065	CS 4000 LL		68,793	11,437	3,300	68,793
		AGE	1,005						2.050		
5505 CL		485	1 202		485	CS2000		9,236	3,050	1 107	12,286
5525 CL		894	1,362		2,256	CS2100		6,379	22,665	1,187	30,231
5535 CL			2,706		2,706	CS2200 CL		265	3,895	5.050	4,160
5545 CL			1,219		1,219	CS2300	010	2,764	35,779	5,953	44,496
580PV GC			800		800	CS2400	918	194	1,066		2,178
581PV GC			8,918		8,918	CS2500 CL		676	7,236	1,767	9,679
585PV GC			10,174		10,174	CS2600 CR-T	3,554	163,314	53,905	2,864	223,637
591PV GCS			3,555		3,555	CS3000 TF		42,979	11,849	4,829	59,657
6040 RR			650		650	CS4000 LL	1,303		51,954	21,771	75,028
6044 RR		215			215	D3153		500			500
6045 CL		330			330	D3155C		100	2,098		2,198
6056 CR		143			143	D3156M		2,115			2,115
6060 RR		692	1,508		2,200	D3157C		6,610	12,147	2,302	21,059
6074 RR		1,497	30,523	2,522	34,542	D3158CM		9,454	21,187	4,125	34,766
6076 CR		53,316	2,566		55,882	DKC65-95		716			716
6080 RR			1,692		1,692	DKLL 81 BL		120			120
6086 CR		160			160	DKLL 81 BL			2,467		2,467
6090 RR		15,972	48,548	4,664	69,184	DKLL 82 SC		71,495	119,592	144,380	335,467
624 RR		202	814	,	1,016	DKLL 83 SC		5,394	16,007	26,966	48,367
6802 SW			556		556	DKLL 84 CRSC		10,091	5,447	5,352	20,890
71-40 CL		62			62	DKTF 92 SC		6,442	5,414	.,	11,856
71-45 RR		177			177	DKTF 93 SC	3,551	22,165	24,913	5,089	55,718
72-65 RR		171			171	DKTF 95 HL	0,001	22,100	7,933	1,655	9,588
73-15 RR		626			626	DKTF 96 SC	1,445	74,536	92,066	48,383	216,430
73-45 RR		770			770	DKTF 97 CRSC	1,445	140,801	32,310	19,026	192,137
73-45 RR		770	566		566	DKTF 99 SC		30,933	97,107	29,345	157,385
73-45 RR 73-55 RR		129	300		129	DKTF94CR		1,735	1,855	23,343	3,590
		878								2 202	
73-65 RR					878	DKTF98 CR		287,700	29,533	2,283	319,516
73-67 RR		145			145	DKTFL 95 HL	0.000	1,707	40.001	07.005	1,707
73-75 RR		1,025	410		1,025	DKTFLL 21 SC	3,336	46,561	46,231	27,995	124,123
74-44 BL		1,928	412		2,340	DKTFLL 22 CRSC		17,358	8,646	3,505	29,509
74-47 CR		78			78	Early One		2,186			2,186
74-54 RR		328	1,745		2,073	Evolve		5,541	21,474	1,097	28,112
75-42 CR		110,892	7,166		118,058	Hyhear 1		1,390			1,390
75-45 RR	8,005	23,555	7,072		38,632	Hyhear 3		6,612	804		7,416
75-65 RR		35,214	51,670	2,579	89,463	Hyhear2			3,613		3,613
83S01 RR			1,427		1,427	IMC 204		186			186
84S00 LL			1,185		1,185	L 601 P		250			250
84S01 LL		605			605	L130		422	5,472	1,513	7,407
93H01 RR		35	1,022		1,057	L135C		93	3,678		3,771
997 RR		1,767	,		1,767	L140P		85	10,257		10,342

2022 INSURED COMMERCIAL ACRES (CONTINUED)

CANOLA	B.C.	ALTA.	SASK.	MAN.	TOTAL
SEEDED AREA	ACRES	ACRES	ACRES	ACRES	ACRES
L150			2,385		2,385
L154		285		947	1,232
L156H			1,828		1,828
L160S		185			185
L230		1,838	13,556		15,394
L233P	30,168	334,141			364,309
L233P			1,868,297	754,931	2,623,228
L234PC	5,414	233,996	108,541	37,357	385,308
L241C	2,565	142,404	10,959	891	156,819
L252		38,036	134,252	23,854	196,142
L255 PC		114,606	223,538	163,671	501,815
L258HPC		82,963	408,563	67,332	558,858
L261		230			230
L340PC	5,005	553,067			558,072
L340PC			1,917,067	800,361	2,717,428
L343PC	3,625	332,634	115,905	51,966	504,130
L345PC	2,733	524,362	1,148,570	185,073	1,860,738
L352C		3,513	3,540		7,053
L356PC		78,308	311,007	150,547	539,862
L357P		37,057	289,082	173,943	500,082
LBD612RR		70	3,726		3,796
LR250		410			410
LR344PC		23,356	48,809	13,425	85,590
Millennium 03		280			280
NC355TF		385	1,055		1,440
NC471TF			840		840
NC527CRTF		3,251			3,251
NEX 720		95			95
NEX 828 CL		463			463
NX4-104 RR		251			251
P501L		24,583	43,381	9,372	77,336
P502CL		425	1.393	,	1.818
P503G			436		436
P505MSL		85,246	88,571	61,239	235,056
P506ML	635	57,815	100,906	18,922	178,278
P508MCL		4,999	61,050	40,890	106,939
P509L		34,974	42,669	4,075	81,718
P607CL		3,520	5,037	8.617	17,174
P612L		8,767	8,917	-,	17,684
PV 200 CL		4,371	0,017	7,814	12,185
PV 200 CL		.,0.1	16.209	,,011	16,209
PV 280 CLC			9,550	1,508	11,058

CANOLA SEEDED AREA	B.C. ACRES	ALTA. ACRES	SASK. ACRES	MAN. ACRES	TOTAL ACRES
PV 530 G	AURES	302	547	AGRES	849
PV 533 G		302	1,057		1,057
PV 540 G		2,879	16,052		18,931
PV 560 GM		4,853	10,032	3,232	8,085
PV 580 GC		1,305		3,232	1,305
PV 581 GC		47,622			47,622
PV 585 GC		58,957			58,957
PV 590 GCS		721			721
PV 591 GCS		4,536			4,536
PV 660 LCM		36,251	46,843	9,806	92,900
PV 680 LCW				6,074	76,916
PV 680 LC	1,314	41,848 63,002	28,994 40,478	0,074	104,794
PV 760 TM	1,712	21,201	21,447	4,319	48,679
PV 760 TWI PV 761 TM	1,/12				,
		20,081	115,983	3,732	139,796
PV 780 TC		54,074	19,367	1,972	75,413
PV 781 TCM		928	4,935		5,863
SP 621 RR		200	883		883
SW Spirit River		300			300
SW Wizzard		567	550		567
SY4135			559		559
SY4157		000	1,384		1,384
Synergy		608	2,795		3,403
UA Alfagold		8,276			8,276
UA Bountygold		605			605
UA Countrygold		20	05.005		20
V1030			25,285		25,285
V12-1			1,181		1,181
V12-3		10.500	774	1.004	774
V14-1		10,562	40,485	1,394	52,441
V14-1			40.405	1,394	1,394
V14-1		140	40,485		40,485
V2010		140			140
V2030		329	200		329
V22-1		100	630		630
V24-1		430	3,992		4,422
V25-1T		1,285	14,026	1,558	16,869
V25-3T		41,750	51,489	2,824	96,063
V25-5T		21,224	51,736	2,467	75,427
V33-1 CL			4,080		4,080
VT 530 G			782		782
Not specified	15,760	51,702	1,230,831	37,630	1,335,923
Total:	95,731	5,271,437	10,601,483	3,211,169	19,179,820

2022 INSURED COMMERCIAL ACRES (CONTINUED)

CORN:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CORN	ALTA.	SASK.	MAN.	TOTAL
SEEDED AREA	ACRES	ACRES	ACRES	ACRES
2123 VT2P RIB			1,284	1,284
2288VT2P			596	596
A3939 GR RIB			565	565
A3993G2 RIB			776	776
A4646G2 RIB			706	706
A4939G2 RIB			3,528	3,528
DKC21-36RIB			9,543	9,543
DKC24-06RIB			12,923	12,923
DKC26-40			747	747
DKC29-89RIB			9,508	9,508
DKC31-85RIB			14,353	14,353
DKC33-37RIB			6,667	6,667
DKC33-78RIB			3,543	3,543
DKC35-37RIB			1,268	1,268
DKC35-88RIB			1,528	1,528
E49K32 R			1,170	1,170
MZ 1544DBR			1,553	1,553
MZ 1688 DBR			1,669	1,669
NK 7837			555	555
NS 271			1,237	1,237
P6909R			910	910
P7211AM			44,959	44,959
P7211HR			19,710	19,710
P7417AM			12,633	12,633
P7417R			4,717	4,717
P7455R			24,893	24,893
P7527AM			24,953	24,953
P7574AM			808	808
P7844AM			7,442	7,442
P7861AM			9,274	9,274
P7861R			4,218	4,218
P7958AM			10,237	10,237
P8407AM			2,703	2,703
P8537AM			781	781
P8588AM			9,972	9,972
PS 2320RR			767	767
PV 60172RR			778	778
PV 61180 RIB			1,951	1,951
PV 61276 RIB			4,972	4,972
TH 6875 VT2P			3,441	3,441
TH 6977 VT2P			9,241	9,241
TH 6982 VT2P			2,554	2,554
TH 7677 VT2P RIB			620	620
TH4072 RR			1,527	1,527
TH6072 VT2P			2,807	2,807
TH6079 VT2P			2,101	2,101
TH6182 VT2P			1,805	1,805
TH6278 VT2P			9,120	9,120
TH7578 VT2P			648	648
Not specified			19,255	19,255
Total			313,516	313,516
Iutai			313,310	313,310

CHICKPEAS:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CHICKPEAS	ALTA.	SASK.	TOTAL
SEEDED AREA	ACRES	ACRES	ACRES
Amit (B 90)	826	4,608	5,434
CDC Consul		3,362	3,362
CDC Diva	320		320
CDC Frontier		2,182	2,182
CDC Lancer		1,855	1,855
CDC Leader	640	88,209	88,849
CDC Orion	17,730	15,947	33,677
CDC Palmer	667		667
Myles		919	919
Not Specified	479	17,424	17,903
Total	20,662	134,506	155,168

MUSTARD:

INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

MUSTARD SEEDED AREA	ALTA. ACRES	SASK. ACRES	MAN. ACRES	TOTAL ACRES
AAC Adagio	4,993	1,235	AUNES	6,228
AAC Brown 18	2,733	24,276		27,009
AAC Yellow 80	2,820	7,549		10,369
AC Pennant	6,705	7,684		14,389
Ace	335			335
Amigo	210			210
Andante	80,260	86,314	1,519	168,093
Centennial Brown	18,363			18,363
Centennial Brown		82,079		82,079
Cutlass	420	26,053		26,473
Forge	11,602	13,375		24,977
Not apecified	4,981	69,844	1,740	76,565
Total	133,422	318,409	3,259	455,090

SUNFLOWERS:

SUNFLOWERS	ALTA.	SASK.	MAN.	TOTAL
SEEDED AREA	ACRES	ACRES	ACRES	ACRES
6946	483		3,503	3,986
63A21	594			594
CP432E			4,839	4,839
N4H302 E			2,373	2,373
N4HM354			6,812	6,812
P63HE501			1,208	1,208
P63HE60			24,229	24,229
P63M80			4,700	4,700
P63ME80			14,644	14,644
Talon		632	8,918	9,550
Not Specified	160		3,771	3,931
Total	1,237	632	74,997	76,866

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2022 INSURED COMMERCIAL ACRES (CONTINUED)

FLAX: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

FLAX	ALTA.	SASK.	MAN.	TOTAL
SEEDED AREA	ACRES	ACRES	ACRES	ACRES
AAC Bravo	5,007	12,633	2,739	20,379
AAC Bright		813		813
AAC Marvelous	4,074	6,520	1,179	11,773
AAC Prairie Sunshine	162			162
AC Lightning		531		531
CDC Bethune	3,631		2,296	5,927
CDC Buryu		1,599		1,599
CDC Dorado	6,024	5,022	705	11,751
CDC Glas	33,622	166,285	17,532	217,439
CDC Gold	681	1,007		1,688
CDC Kernen	114			114
CDC Neela	5,465	13,489	1,856	20,810
CDC Plava	2,660		605	3,265
CDC Rowland	16,383	16,223	7,717	40,323
CDC Sanctuary	1,748	10,267		12,015
CDC Sorrel	9,688	49,422	3,720	62,830
Flanders		874		874
Hanley	1,256			1,256
Mcgregor	190			190
Norlin	375		625	1,000
Omega		10,166	580	10,746
Prairie Blue	190			190
Prairie Sapphire	2,186	1,535		3,721
Prairie Thunder		3,334		3,334
Topaz	125	7,629		7,754
Vimy		8,532		8,532
VT50	820	6,925		7,745
Westlin 60	368	907		1,275
Westlin 70		3,956		3,956
Westlin 71	709	3,900	580	5,189
Westlin 72	1,689	8,903	1,191	11,783
Not Specified	10	82,534	3,636	86,180
Total	97,177	423,006	44,961	565,144

NOTE: The flax table duplicated and lentils printing. This version corrects the omission.

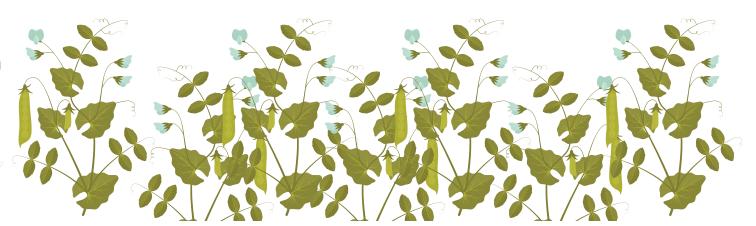
LENTILS:INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

LENTILS	ALTA.	SASK.	MAN.	TOTAL
SEEDED AREA	ACRES	ACRES	ACRES	ACRES
Beluga		1,072		1,072
CDC Blaze		4,253		4,253
CDC Dazil	13,633	99,831		113,464
CDC Greenland	618	131,053		131,671
CDC Greenstar	27,751	191,113		218,864
CDC Iberina		1,769		1,769
CDC Imax	9,151	11,359		20,510
CDC Imigreen CL		2,652		2,652
CDC Impact	3,223	27,915		31,138
CDC Impala		1,719		1,719
CDC Imperial	280			280
CDC Impower	7,036	41,642		48,678
CDC Impress		3,500		3,500
CDC Improve	15,957	14,242		30,199
CDC Impulse	100,848	515,060		615,908
CDC Imvincible	270	177,988		178,258
CDC Kermit	310	25,392		25,702
CDC KR-2		4,725		4,725
CDC Lima	40,038	93,226		133,264
CDC Marble		3,252		3,252
CDC Maxim	124,049	715,713		839,762
CDC Nimble	960			960
CDC Peridot	317			317
CDC Peridot CL		6,793		6,793
CDC Proclaim	95,682	415,085	975	511,742
CDC Redberry		3,277		3,277
CDC Redwing		1,863		1,863
CDC Richlea	885			885
CDC Richlea		2,674		2,674
CDC Rouleau		1,903		1,903
CDC SB-4		726		726
CDC Simmie	5,880	71,112		76,992
CDC Sovereign	.,	970		970
CDC Viceroy		15,226		15,226
Crimson	1,000	17,844		18,844
Eston	_,	25,846		25,846
IBC 479 CL		1,248		1,248
Indianhead		500		500
Laird	1,494	7,750		9,244
Nimble	1,107	50,480		50,480
Redmoon		86,143		86,143
Not Specified	425	345,754	28	346,207
Total	449,807	3,122,670	1,003	3,573,480
10001	770,007	0,122,070	1,000	0,070,700

2022 INSURED COMMERCIAL ACRES (CONTINUED)

PEAS Seeded Area	B.C. Acres	ALTA. ACRES	SASK. ACRES	MAN. ACRES	TOTAL ACRES
4010		600	1,883	2,566	5,049
AAC Aberdeen		672	5,013		5,685
AAC Ardill		30,926	65,062		95,988
AAC Barrhead	1,445	4,832			6,27
AAC Carver	11,336	186,277	109,721	45,956	353,290
AAC Chrome		87,668			87,668
AAC Chrome				50,667	50,66
AAC Chrome			72,013		72,01
AAC Comfort		1,209			1,20
AAC Delhi		2,003			2,00
AAC Delhi				1,574	1,57
AAC Lacombe		14,198			14,19
AAC Lacombe				2,431	2,43
AAC Lacombe			3,998		3,99
AAC Liscard		1,065			1,06
AAC Liscard			1,674		1,67
AAC Peace River		1,905			1,90
AAC Peace River	942				94
AAC Profit		6,518			6,51
AAC Profit				7,905	7,90
AAC Profit			15,045		15,04
AAC Radius		15			1
Abarth		1,168	7,577	9,902	18,64
AC Julius		35	,	,	3.
Agassiz		313	663		97
Banner		1,984			1,98
Cabot SW			800		80
Carneval		1.281	2.091		3,37
Carrera		295	,		29
CDC Acer		2,767	6,163		8,93
CDC Amarillo	179	28,473	105,101	7,068	140,82
CDC Blazer		2,862	9,655		12,51
CDC Bronco		,	3,054		3,05
CDC Canary		25,719	9,765		35,48
CDC Dakota			2,356		2,35
CDC Forest		13,475	46,470	690	60,63
CDC Golden		2,260	26,290		28,55
CDC Greenwater		1,130	17,395		18,52
CDC Horizon		243	,		24
CDC Hornet		285	930		1,21
CDC Inca		47,321	121,569	4,591	173,48

PEAS SEEDED AREA	B.C. ACRES	ALTA. ACRES	SASK. ACRES	MAN. ACRES	TOTAL ACRES
CDC Leroy		198			198
CDC Lewochko		15,742	22,517	23,023	61,282
CDC Limerick		22,743	30,850		53,593
CDC Meadow	9,472	381,068	230,615	8,075	629,230
CDC Minuet		10			10
CDC Mosaic		6,419	20,860		27,279
CDC Mozart			465		465
CDC Patrick		70	573		643
CDC Pluto			720		720
CDC Prosper		80	616		696
CDC Raezer	1,448	9,156	29,407		40,011
CDC Saffron		52,697	16,517		69,214
CDC Sage		57	1,135		1,192
CDC Spectrum		30,345	88,341	1,458	120,144
CDC Spruce		3,678	20,477	,	24,155
CDC Striker		11,454	13,053		24,507
CDC Tetris		723	,		723
CDC Tollefson			505		505
CDC Treasure		960	3,670		4,630
Cooper		80	.,.		80
Croma		1,636	441	748	2,825
Delta		,	2,633		2,633
DL Lacross		402	,		402
DS-Admiral		522	1,926		2.448
Eclipse		863	3,970		4,833
Espace		605	1,271		1,876
Garde		2,210	,		2,210
LAN 2032		138			138
Livioletta				898	898
LN4228		8,966			8,966
Olivin		130			130
Pearl		146			146
Profi		872			872
Scuba		0,2	585		585
Sorento		154	000		154
Sw Marquee		104	423		423
Sw Midas		735	120		735
Swing		95			95
Thunderbird		7,384			7,384
Not specified	920	9,195	237,687	4,742	252,544
Total	25,741	1,037,032	1,363,545	172,294	2,598,612
1041	23,741	1,007,002	1,000,040	112,234	2,000,012



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2022 INSURED COMMERCIAL ACRES (CONTINUED)

SOYBEANS: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

SOYBEANS SEEDER AREA	ALTA.	SASK.	MAN.	TOTAL
SEEDED AREA	ACRES	ACRES	ACRES	ACRES
23-60 RY 24-10 RY			612	612
25-10 RY			2,807	2,807
			8,666	8,666
AAC Edward			638	638
Akras R2			11,500	11,500
Amirani R2			5,293	5,293
Astro R2			2,175	2,175
B00071RX			971	971
B0012RX			6,006	6,006
B003-29			1,793	1,793
B0041RX			5,636	5,636
B0051RX			1,055	1,055
B0061E			612	612
Barker R2X			2,140	2,140
Bourke R2X			13,258	13,258
CP000521X			2,546	2,546
CP000621WPX			1,541	1,541
CP005WPRX			4,977	4,977
DKB 0008-87			901	901
DKB00-99			585	585
DKB0003-24			1,027	1,027
DKB0005-44			1,225	1,225
DKB0008-87 RR2X			2,436	2,436
DKB0009-89			5,022	5,022
DKB002-32		748	18,347	19,095
DKB003-29 RR2X			6,423	6,423
DKB005-52			30,653	30,653
DKB006-80			1,015	1,015
DKB008-48			12,414	12,414
DKB008-81			3,708	3,708
Elmo E3			2,141	2,141
Foote R2			585	585
Fresco R2X			1,565	1,565
Hart R2X			2,182	2,182
HS 006RYS24			644	644
Kudo R2X			3,241	3,241
Liska			3,764	3,764
LS 001XT			2,725	2,725
LS 0036RR			3,846	3,846
LS 006R22			545	545
LS 0078RR			820	820
LS 007XT			1,636	1,636
Mahony R2		1,016	2,440	3,456
Major R2X			717	717
Mako R2X			716	716
Mani R2X			2,948	2,948
Mao R2X			4,016	4,016
Maya			2,355	2,355
Merino R2X			641	641
Merritt R2X			674	674
Mikado R2X			674	674
NSC Arden RR2X			1,036	1,036
NSC Cartier			4,156	4,156
NSC Coulee RR			938	938
NSC Dauphin RR2X			5,658	5,658
NSC Gladstone RR2Y			2,804	2,804
NSC Holland RR2X			13,196	13,196

SOYBEANS	ALTA.	SASK.	MAN.	TOTAL
SEEDED AREA	ACRES	ACRES	ACRES	ACRES
NSC Redvers RR2X			2,508	2,508
NSC Richer RR2Y			1,350	1,350
NSC Sperling RR2Y			20,379	20,379
NSC Warren RR		7,204	9,906	17,110
NSC Watson RR2Y			3,029	3,029
NSC Winkler RR2X			17,222	17,222
OAC Prudence			4,679	4,679
P001A48X			30,021	30,021
P001T34R			1,565	1,565
P003A97X RR2X			12,811	12,811
P005A27X			8,127	8,127
P005A83X			9,755	9,755
P006A37X			45,385	45,385
P006T46R			740	740
P006T78R			794	794
P00A49X			9,300	
				9,300
P00A75X			2,090	2,090
PS 0027 RR			9,891	9,891
PV 15S0009 R2X			1,340	1,340
PV 16S004 R2X			5,487	5,487
PV 22S002 R2X			4,474	4,474
Reynolds			797	797
RX Acron			1,059	1,059
S0007B-7X			898	898
S0009-F2X			3,422	3,422
S0009-M2			29,719	29,719
S001-D8X		3,292	47,765	51,057
S003-R5X			7,946	7,946
S003-Z4X			20,085	20,085
S005-C9X			6,556	6,556
S006-M4X			530	530
S007-A2XS			30,840	30,840
S007-Y4		799	100,502	101,301
S01-K8		700	557	557
SI 001XTN			18,985	18,985
SI 00221XTN			969	969
SI 00321XT			740	740
*: * * * * * * * * * * * * * * * * * *				
SI 007XTN			14,757	14,757
Siberia			1,084	1,084
Sunna R2X			4,400	4,400
TH 32004 R2Y			1,381	1,381
TH 33006R2Y			840	840
TH 81007 R2XN			3,733	3,733
TH 87000 R2X			1,134	1,134
TH 87003 R2X			21,550	21,550
TH 88005 R2X			1,904	1,904
TH 88007 R2X			5,936	5,936
TH 89004 R2X			11,439	11,439
TH82005 R2X			1,107	1,107
TH82006 R2X			1,171	1,171
TH89004 R2X		455		455
TH89009 R2XN		,,,,	1,389	1,389
TORRO R2			1,849	1,849
XB0006A17X			661	661
Young R2X			3,076	3,076
Not Specified	150	4,701		
			43,075	47,926
Total	150	18,215	815,354	833,719

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chutes, and an overall capacity of 1,525 cubic feet.

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SASKATCHEWAN PEDIGREED SEED GROWERS

2023 Directory of Crop Varieties: This list was prepared by the Canadian Seed Growers' Association (CSGA) and the Saskatchewan Seed Growers' Association (SSGA). It includes varieties eligible for sale in Canada and seed crops issued certificates as of Nov. 15, 2022. CSGA and SSGA assume no responsibility for errors or omissions. The pedigreed class code is listed after the grower's phone number. S = Select; F = Foundation; R = Registered; C = Certified. Seed varieties with additional certification requirements (ACRs) are denoted by a single asterisk (*) after the variety name. Carry-over seed is seed derived from pedigreed seed crops that were issued crop certificates prior to 2022. Carry-over seed is denoted by two asterisks (**) following the pedigreed class code. The data in this listing includes all pedigreed seed crops that have successfully received, or are in the process of receiving, seed crop certification from the CSGA in 2022. Fields that were declined pedigreed status are not included in this listing. Data in this list is provided for informational purposes only. The CSGA and SSGA are not liable for omitted or incorrect seed listings. Users of this list agree to use the data at their own risk and agree to fully indemnify CSGA and SSGA from all losses, damages, liability, judgments, costs and expenses. When purchasing seed, CSGA strongly recommends asking for official seed certification tags as your proof of CSGA certification. A copy of the mechanical purity and germination analysis test certificate should also be made available to you.

ALFALFA						
AC BRADOR						
DSV Northstar Ltd.	Neepawa	204-476-5241				С
ALGONQUIN						
Aitken's Alfalfa Seeds	Eyebrow	306-759-7801				С
J&J Marchildon Farm	Zenon Park	306-812-8419				С
Le Bras, Mart & Evan	Arborfield	306-812-8414				С
DAKOTA						
DSV Northstar Ltd.	Neepawa	204-476-5241				С
GIBRALTAR						
DLF Canada Inc.	Winnipeg	204-633-0088				С
INSTINCT						
DLF Canada Inc.	Winnipeg	204-633-0088				С
TH2						
DSV Northstar Ltd.	Neepawa	204-476-5241				С
VISION	·					
DLF Canada Inc.	Winnipeg	204-633-0088				С
BARLEY	1.0					
AAC CONNECT (TWO ROW)						
Denis Seed Farms	St. Denis	306-222-9689			R	
		306-222-9689			ĸ	С
Dutton Farms Partnership	Paynton	306-542-4235				C
Fedoruk Seeds Ltd.	Kamsack					·
Foundation Seeds	Saskatoon	306-222-0666			R	_
Frederick Seeds	Watson	306-287-3977				C
Greenleaf Seeds Ltd.	Tisdale	306-873-4261			_	C
Hetland Seeds Ltd.	Naicam	306-874-7813			R	
Je-Jo Farms Ltd.	Glaslyn	306-342-7789				C
Lung Seeds Ltd.	Lake Lenore	306-231-7012			R	
McArthur Ag Ventures	Watrous	306-230-9853				C
Seed Source Inc.	Archerwill	306-323-4402			R	
Tez Seeds Inc.	Elrose	306-378-7635			R	C
Wiens Seed Partnership	Herschel	306-831-6352			R	
Yauck, Kevin Rodney	Govan	306-725-7429		F	R	
AAC SYNERGY (TWO ROW)						
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S	F	R	C
B4 Seed Ltd.	Melfort	306-921-9424	S	F		C
Berscheid Brothers Seeds	Lake Lenore	306-368-2602			R	C
Charabin Seed Farm	North Battleford	306-445-2939	S	F		C
Condie Seed	Regina	306-569-7333				C
Denis Seed Farms	St. Denis	306-222-9689			R	
Ferndale Seed Farms Ltd.	Rocanville	306-435-6631				C
Fraser Farms Ltd.	Pambrun	306-741-0475				С
Frederick Seeds	Watson	306-287-3977			R	С
Gregoire Seed Farms Ltd.	North Battleford	306-441-7851				C
Hanmer Seeds Ltd.	Govan	306-484-4327				С
Hetland Seeds Ltd.	Naicam	306-874-7813				C
	Balcarres	306-331-8168				C
Hvndman Seed Farms Ltd.						
Hyndman Seed Farms Ltd. KTS Farms Ltd.	Limerick	306-263-4944	S	F		С

LLSeeds.ca	Lumsden	306-530-8433			R		
McDougall Acres Limited	Moose Jaw	306-693-3649				С	
McArthur Ag Ventures	Watrous	306-230-9853				С	
Midland Seed Farms Inc.	Kuroki	306-327-7270			R	С	
Nexgen Seeds Ltd.	Swift Current	306-750-1701				С	
Northland Seeds Inc.	Margo	306-338-7727				С	
Ostafie, Robert	Canora	306-563-6244				С	
Petruic Seed Company Inc.	Avonlea	306-868-2240				С	
Sayers Seed Cleaning Ltd.	Delmas	306-481-7686				С	
Simpson Farms Joint Venture	Moose Jaw	306-693-9402			R		
Smith, Wayne D.	Limerick	306-263-4944				С	
Tomtene Seed Farm	Birch Hills	306-749-3447			R		
Webster Seed Farm	Welwyn	306-435-7148			R		
Wiens Seed Partnership	Herschel	306-831-6352				С	
Wilfing Farms Ltd.	Meadow Lake	306-236-7797				С	
AB ADVANTAGE (SIX ROW)							
Ardell Seeds Ltd.	Vanscoy	306-668-4415			R	С	
DR Huber Farms Ltd.	Landis	306-658-4200				С	
Toman Agventures Inc.	Guernsey	306-365-8386				С	
Trawin Seeds	Melfort	306-752-4060				С	
AB CATTLELAC (SIX ROW)							
Bodnaryk Family Farm	Rhein	306-620-6599				С	
Penner, David & Braden	Norquay	306-594-7897				С	
AB HAGUE (TWO ROW)							
Eskdale Acres Inc.	Leross	306-795-7208	S		R		
Fraser Farms Ltd.	Pambrun	306-741-0475			R		
Frederick Seeds	Watson	306-287-3977			R		
Fritzler, Baine A. & Adam A.	Govan	306-725-7908		F	R		
Girodat Seeds Ltd.	Shaunavon	306-297-7837			R	С	
Sayers Seed Cleaning Ltd.	Delmas	306-481-7686			R		
Seed Farm 23	Porcupine Plain	306-814-7705			R		
Van Burck Seeds Ltd.	Star City	306-863-4377	S	F	R		
Wilfing Farms Ltd.	Meadow Lake	306-236-7797			R		
AB WRANGLER (TWO ROW)							
Girodat Seeds Ltd.	Shaunavon	306-297-7837				С	
Southline AG Services	Climax	306-293-7525			R	С	
AC METCALFE (TWO ROW)							
Olynick Seeds	Quill Lake	306-338-8078				С	,
CDC AUSTENSON (TWO ROW))						
Buziak Seed Farm	Mayfair	306-441-7253		R	С		
Ennis Seeds	Glenavon	306-429-2793				С	
Eskdale Acres Inc.	Leross	306-795-7493				С	
Fedoruk Seeds Ltd.	Kamsack	306-542-4235				С	
Foster, Mark	Nipawin	306-873-7376		F			
Fraser Farms Ltd.	Pambrun	306-741-0475				С	
Frederick Seeds	Watson	306-287-3977			R	С	
Mannanah Seeds	Sturgis	306-547-7432				С	
Marcotte, Raymond W.	Kinistino	306-864-2948				С	
Nexgen Seeds Ltd.	Swift Current					C	
3							
Ostafie, Robert	Canora	306-563-6244				С	



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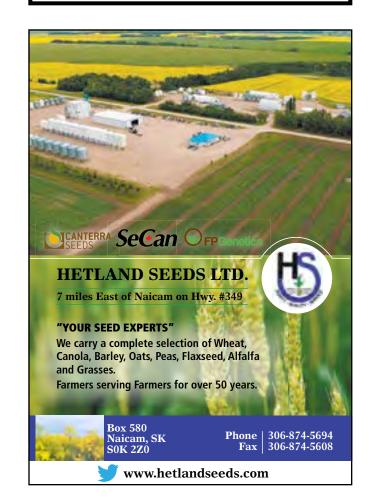
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Rempel Seeds Inc.	Nipawin	306-862-3573		F	R		
Rugg Seed Farm	Elstow	306-257-3638				С	
Seidle Seed Farm	Medstead	306-883-7102	S		R	C	
Van Burck Seeds Ltd.	Star City	306-863-4377	S	F		C	
Wilfing Farms Ltd.	Meadow Lake	306-236-7797				C	
Woroschuk, Andrew	Calder	306-742-4682			R		
CDC BOW (TWO ROW)							
Lakeside Seeds	Wynyard	306-554-2078		F		С	
Seed Farm 23	Porcupine Plain	306-814-7705				С	*
Wakefield Seeds	Maidstone	780-872-2394			R		
CDC CHURCHILL (TWO ROW)	Maiustone	100-012-2394			n		
Bodnaryk Family Farm	Rhein	306-620-6599			R		
Dutton Farms Partnership	Paynton	306-441-9299			.,	С	
Fedoruk Seeds Ltd.	Kamsack	306-542-4235		F		Ĭ	*
Foundation Seeds	Saskatoon	306-222-0666	s	F			
	North			•		_	
Gregoire Seed Farms Ltd.	Battleford	306-441-7851	S			С	
Heavin, Milton Russell	Melfort	306-921-6440			R	C	
Je-Jo Farms Ltd.	Glaslyn	306-342-7789				C	
Lung Seeds Ltd.	Lake Lenore	306-231-7012				С	
McArthur Ag Ventures	Watrous	306-230-9853				С	
Medernach, Louis J., Kim L. & Kyle	Cudworth	306-256-3991			R		
Ostafie, Robert	Canora	306-563-6244				C	
Rempel Seeds Inc.	Nipawin	306-862-3573				С	
Rugg Seed Farm	Elstow	306-257-3638			R		
Starlotte Seeds Ltd.	Naicam	306-380-6216				С	
Starquest Farms Ltd.	Hazlet	306-741-6827				С	
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687	S	F	R	С	
Wakefield Seeds	Maidstone	780-872-2394				c	
Youzwa, Donald	Nipawin	306-862-7678				C	
CDC COPELAND (TWO ROW)							
Blumer Seed Farm	Dinsmore	306-460-7744				С	
Eskdale Acres Inc.	Leross	306-795-7493			R	Ī	
Frederick Seeds	Watson	306-287-3977			R	С	
G & G Edmunds Farms Ltd.	Tisdale	306-873-4780			R	c	
G&R Seeds	Osler	306-222-2967			١,	c	*
Hetland Seeds Ltd.	Naicam	306-874-7813				c	
Midland Seed Farms Inc.	Kuroki					C	
		306-327-7270				C	*
Olynick Seeds	Quill Lake	306-338-8078		_		L	_
Ostafie, Robert	Canora	306-563-6244		F		_	
Red Rider Enterprises	Foam Lake	306-269-0228			_	С	
Rugg Seed Farm	Elstow	306-257-3638			R		
Sandercock, Eric M.	Balcarres	306-332-8177			R	_	
Seidle Seed Farm	Medstead	306-883-7102			R	C	
Shewchuk Seeds	Blaine Lake	306-290-7816				C	
Starlotte Seeds Ltd.	Naicam	306-380-6216				С	
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687			R		
Wiens Seed Partnership	Herschel	306-831-6352			R		*
CDC COPPER (TWO ROW)				_	_		
Van Burck Seeds Ltd.	Star City	306-863-4377	S	F	R		
Wilfing Farms Ltd.	Meadow Lake	306-236-7797			R		
CDC FRASER (TWO ROW)							
Berscheid Brothers Seeds	Lake Lenore	306-368-2602			R		
Eskdale Acres Inc.	Leross	306-795-7493			R		
Fenton Seed Farm Ltd.	Tisdale	306-873-7543	S			С	
Fraser Farms Ltd.	Pambrun	306-741-0475				С	
Frederick Seeds	Watson	306-287-3977			R	С	
G & G Edmunds Farms Ltd.	Tisdale	306-873-4780				C	
Hetland Seeds Ltd.	Naicam	306-874-7813				C	
Laforge, Troy	Swift Current	306-773-0924				С	
Luck, Lorne C.	Tisdale	306-873-8882			R		
Lung Seeds Ltd.	Lake Lenore	306-231-7012			R	С	
Medernach, Louis J., Kim L. & Kyle	Cudworth	306-256-3991			R		
Midland Seed Farms Inc.	Kuroki	306-327-7270			R	С	
Olynick Seeds	Quill Lake	306-338-8078				C	*
Prairieview Seeds	Wadena	306-338-8087				C	
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CDC CIBO							
	A	204 222 4402				_	
Seed Source Inc.	Archerwill	306-323-4402				С	
Wiens Seed Partnership	Herschel	306-831-6352				С	
CDC LUMIO							
Condie Seed	Regina	306-569-7333			R		
Frederick Seeds	Watson	306-287-3977				С	**
Herle Seed Farm Ltd.	Wilkie	306-843-7696			R		
lag Farms Ltd.	Prelate	306-628-8127				С	
Lung Seeds Ltd.	Lake Lenore	306-231-7012				c	
_	Avonlea					C	
Petruic Seed Company Inc.		306-868-2240				L	
Simpson Farms Joint Venture	Moose Jaw	306-693-9402			R		
Tez Seeds Inc.	Elrose	306-378-7635				С	
Wiens Seed Partnership	Herschel	306-831-6352			R	С	
CHICKPEA							
CDC KALA (DESI)							Т
Simpson Farms Joint Venture	Moose Jaw	306-693-9402	S	F			
•	Moose Jaw	300-093-9402	3	г			
CDC LANCER (KABULI)							
Fraser Farms Ltd.	Pambrun	306-741-0475	S	F	R	С	
Petruic Seed Company Inc.	Avonlea	306-868-2240	S	F	R		
Printz Family Seeds	Gravelbourg	306-380-7769			R		
Reisner, Cecil & Barry	Limerick	306-642-8666				С	
CDC LEADER (KABULI)						Ĭ	
Watson Seeds Ltd.	Avonlea	306-868-4402	S	F	R	С	
	Avontea	306-868-4402	3	r	K	L	
CDC ORION (KABULI)							
McDougall Acres Limited	Moose Jaw	306-693-3649				С	
CDC ORKNEY (KABULI)							
Fraser Farms Ltd.	Pambrun	306-741-0475	S	F	R		
LLSeeds.ca	Lumsden	306-530-8433			R		
			c	-	R		
Printz Family Seeds	Gravelbourg	306-380-7769	S	F			
Reisner, Cecil & Barry	Limerick	306-642-8666	S	F	R		
Simpson Farms Joint Venture	Moose Jaw	306-693-9402			R		
Tez Seeds Inc.	Elrose	306-378-7635			R		
Watson Seeds Ltd.	Avonlea	306-868-4402	S	F	R		
CDC PASQUA (KABULI)							
McDougall Acres Limited	Moose Jaw	306-693-3649	S	F			
Printz Family Seeds	Gravelbourg	306-380-7769	S				
Reisner, Cecil & Barry	Limerick	306-642-8666	S	F	R		
•				F			
Simpson Farms Joint Venture	Moose Jaw	306-693-9402	S	r	R		
Watson Seeds Ltd.	Avonlea	306-868-4402	S				
CDC PEARL (KABULI)							
McDougall Acres Limited	Moose Jaw	306-693-3649	S	F	R		
CLOVER							
ALTASWEDE (RED)							
DLF Canada Inc.	Winnipeg	204-633-0088				С	
DAWN (ALSIKE)							
DLF Canada Inc.	Winnipeg	204-633-0088				С	
NORGOLD (SWEET)						Ĭ	
*	Cackataaa	206 270 6627				_	
Robertson, Albert James	Saskatoon	306-270-6627				С	
FABA BEAN							
219-16 (LOW TANNIN)							
Robertson, Albert James	Saskatoon	306-270-6627		F			
Veikle, Jason	Cut Knife	306-398-7780		F			
* L.IN(C. 183VII				1		_	
· ·	Maidstone	780-872-2394		_		С	
Wakefield Seeds	Davida.	306-567-4613		F			
Wakefield Seeds Willner Agri Ltd.	Davidson	300 301 4013					
Wakefield Seeds	Davidson	300 301 4013					
Wakefield Seeds Willner Agri Ltd.	Davidson Paynton	306-441-9299	S				
Wakefield Seeds Willner Agri Ltd. CDC 1142 (LOW TANNIN)			S S				
Wakefield Seeds Willner Agri Ltd. CDC 1142 (LOW TANNIN) Dutton Farms Partnership Meier, Garry L.	Paynton Ridgedale	306-441-9299 306-873-7652	S				
Wakefield Seeds Willner Agri Ltd. CDC 1142 (LOW TANNIN) Dutton Farms Partnership Meier, Garry L. South Seeds	Paynton Ridgedale Melfort	306-441-9299 306-873-7652 306-752-9840	S S				
Wakefield Seeds Willner Agri Ltd. CDC 1142 (LOW TANNIN) Dutton Farms Partnership Meier, Garry L. South Seeds Van Burck Seeds Ltd.	Paynton Ridgedale Melfort Star City	306-441-9299 306-873-7652 306-752-9840 306-863-4377	\$ \$ \$				
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FESCUE	risuate	300-8/3-4201			ĸ	·	
LAURA (MEADOW)							
DLF Canada Inc.	Winnipeg	204-633-0088			R		
SAVORY (TALL)	1.0						
DLF Canada Inc.	Winnipeg	204-633-0088				С	
SENU (MEADOW)							
DLF Canada Inc.	Winnipeg	204-633-0088				C	
SUEDE(TALL)							
DLF Canada Inc.	Winnipeg	204-633-0088		F			
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Donkers, Aaron	Nipawin	306-276-8029				С	
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Hyndman Seed Farms Ltd. Palmier Seed Farms	Balcarres Lafleche	306-331-8168 306-472-7824				C	
AAC BRIGHT	Laiteche	300-472-7624				·	
Nakonechny Seeds	Ruthilda	306-932-7771	S	F			
Ostafie, Robert	Canora	306-563-6244	,	•	R		
Tomtene Seed Farm	Birch Hills	306-749-3447				С	
Van Burck Seeds Ltd.	Star City	306-863-4377	S	F	R		
AAC MARVELOUS							
Eskdale Acres Inc.	Leross	306-795-7208				C	
Eskdale Acres Inc.	Leross	306-795-7493				С	
KTS Farms Ltd.	Limerick	306-263-4944			R	C	
Sayers Seed Cleaning Ltd.	Delmas	306-481-7686				С	
Seed Farm 23	Porcupine Plain	306-814-7705			R		
CDC GLAS							
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Allan, John Richard	Corning	306-457-7310				C	*
Ardell Seeds Ltd.	Vanscoy	306-668-4415				C	*
Dutton Farms Partnership	Paynton	306-441-9299				С	*
G & G Edmunds Farms Ltd.	Tisdale	306-873-4780				С	*
Gaertner Seeds	Tisdale North	306-873-4936			R		
Gregoire Seed Farms Ltd.	Battleford	306-441-7851				С	*
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Shewchuk Seeds	Blaine Lake	306-290-7816 306-921-8594				C	*
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Gregoire Seed Farms Ltd.	North Battleford	306-441-7851		F			
Ostafie, Robert	Canora	306-563-6244		F			
Seed Source Inc.	Archerwill	306-323-4402	S	F			
Willner Agri Ltd.	Davidson	306-567-4613	S	F			
CDC NEELA							
Nichols, Shae	Moose Jaw	306-631-5064			R		
Simpson Farms Joint Venture	Moose Jaw	306-693-9402			R		
CDC ROWLAND							
Ardell Seeds Ltd.	Vanscoy	306-668-4415			R		
Berscheid Brothers Seeds	Lake Lenore	306-368-2602			R		
Big Dog Seeds Inc.	Oxbow	306-483-7738		F		_	
Blumer Seed Farm	Dinsmore North	306-460-7744				С	
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Condie Seed	Regina	306-569-7333			R		
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Greenleaf Seeds Ltd.	Tisdale	306-873-4261				С	
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Thomas & Callie							
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Lakeside Seeds	Wynyard	306-554-2078	S	F	R	_	
Lung Seeds Ltd.	Lake Lenore	306-231-7012				С	
McDougall Acres Limited	Moose Jaw	306-693-3649			R	С	
Nakonechny Seeds	Ruthilda	306-932-7771			R		
Osiowy, Bruce M.	Abernethy	306-924-4217			R		
Ostafie, Robert	Canora	306-563-6244			R		
R. & R. Allan Farms	Corning	306-736-7262				С	
Reisner, Cecil & Barry	Limerick	306-642-8666			R	С	
Rugg Seed Farm	Elstow	306-257-3638	S	F		С	
Seed Source Inc.	Archerwill	306-323-4402				С	
Shewchuk Seeds	Blaine Lake	306-290-7816				С	
Tebbutt, Gregg & Blake D.	Nipawin	306-862-9730			R		
Tez Seeds Inc.	Elrose	306-378-7635				С	
Trawin Seeds	Melfort	306-752-4060	S				
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687			R		
Veikle Seeds Ltd.	Cut Knife	306-398-7713	S				
Watson Seeds Ltd.	Avonlea	306-868-4402	S	F	R	С	
Willner Agri Ltd.	Davidson	306-567-4613	S	F	R		
Yauck, Kevin Rodney	Govan	306-725-7429	S	F	R		
CDC SORREL							
Willner Agri Ltd.	Davidson	306-567-4613				С	*
Prairie Thunder							
Sunset Road Seeds	Richard	306-220-8876				С	
HEMP							
FINOLA							
	Cto Acatho	204-823-2898				С	
Fresh Hemp Foods Ltd.	Ste. Agathe	204-023-2090				·	
HEMPNUT		204 540 0000			_		
Benson, Thomas	Regina	306-540-9339			R		
Navgaea Consulting Inc.	Saskatoon	306-713-8056			R		
VEGA							
VEGA Fresh Hemp Foods Ltd.	Ste. Agathe	204-823-2898				С	
VEGA	Ste. Agathe	204-823-2898				С	
VEGA Fresh Hemp Foods Ltd.	Ste. Agathe	204-823-2898				С	
VEGA Fresh Hemp Foods Ltd. LENTIL		204-823-2898	S	F		С	
VEGA Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED)	Landis		S	F		С	
VEGA Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade	Landis		s	F		С	
Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE	Landis EN) Regina	306-658-4755	S	F			
Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed	Landis EN) Regina	306-658-4755 306-569-7333	S	F	R	С	
Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed Nexgen Seeds Ltd.	Landis EN) Regina Swift Current	306-658-4755 306-569-7333 306-750-1701	S	F	R	C	
Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed Nexgen Seeds Ltd. Printz Family Seeds Simpson Farms Joint Venture	Landis EN) Regina Swift Current Gravelbourg	306-658-4755 306-569-7333 306-750-1701 306-380-7769	S	F	R	С С С	
Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed Nexgen Seeds Ltd. Printz Family Seeds Simpson Farms Joint Venture CDC GRIMM (LARGE GREEN)	Landis EN) Regina Swift Current Gravelbourg Moose Jaw	306-658-4755 306-569-7333 306-750-1701 306-380-7769 306-693-9402	S	F	R	С С С	
Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed Nexgen Seeds Ltd. Printz Family Seeds Simpson Farms Joint Venture CDC GRIMM (LARGE GREEN) Ardell Seeds Ltd.	Landis EN) Regina Swift Current Gravelbourg Moose Jaw Vanscoy	306-658-4755 306-569-7333 306-750-1701 306-380-7769 306-693-9402 306-668-4415		F	R	С С С	
Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed Nexgen Seeds Ltd. Printz Family Seeds Simpson Farms Joint Venture CDC GRIMM (LARGE GREEN) Ardell Seeds Ltd. Condie Seed	Landis EN) Regina Swift Current Gravelbourg Moose Jaw Vanscoy Regina	306-658-4755 306-569-7333 306-750-1701 306-380-7769 306-693-9402 306-668-4415 306-569-7333	S		R	С С С	
Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed Nexgen Seeds Ltd. Printz Family Seeds Simpson Farms Joint Venture CDC GRIMM (LARGE GREEN) Ardell Seeds Ltd. Condie Seed McDougall Acres Limited	Regina Swift Current Gravelbourg Moose Jaw Vanscoy Regina Moose Jaw	306-658-4755 306-569-7333 306-750-1701 306-380-7769 306-693-9402 306-668-4415 306-569-7333 306-693-3649	S	F	R	С С С	
Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed Nexgen Seeds Ltd. Printz Family Seeds Simpson Farms Joint Venture CDC GRIMM (LARGE GREEN) Ardell Seeds Ltd. Condie Seed McDougall Acres Limited Petruic Seed Company Inc.	Regina Swift Current Gravelbourg Moose Jaw Vanscoy Regina Moose Jaw Avonlea	306-658-4755 306-569-7333 306-750-1701 306-380-7769 306-693-9402 306-668-4415 306-569-7333 306-693-3649 306-868-2240	S S S	F	R	С С С	
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Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed Nexgen Seeds Ltd. Printz Family Seeds Simpson Farms Joint Venture CDC GRIMM (LARGE GREEN) Ardell Seeds Ltd. Condie Seed McDougall Acres Limited Petruic Seed Company Inc. Printz Family Seeds Reisner, Cecil & Barry Simpson Farms Joint Venture	Regina Swift Current Gravelbourg Moose Jaw Vanscoy Regina Moose Jaw Avonlea Gravelbourg Limerick Moose Jaw	306-658-4755 306-569-7333 306-750-1701 306-380-7769 306-693-9402 306-668-4415 306-569-7333 306-693-3649 306-868-2240 306-380-7769 306-642-8666 306-693-9402	S S S S S	F F F		С С С	
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Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed Nexgen Seeds Ltd. Printz Family Seeds Simpson Farms Joint Venture CDC GRIMM (LARGE GREEN) Ardell Seeds Ltd. Condie Seed McDougall Acres Limited Petruic Seed Company Inc. Printz Family Seeds Reisner, Cecil & Barry Simpson Farms Joint Venture Watson Seeds Ltd. Wiens Seed Partnership	Regina Swift Current Gravelbourg Moose Jaw Vanscoy Regina Moose Jaw Avonlea Gravelbourg Limerick Moose Jaw	306-658-4755 306-569-7333 306-750-1701 306-380-7769 306-693-9402 306-668-4415 306-569-7333 306-693-3649 306-868-2240 306-380-7769 306-642-8666 306-693-9402	S S S S S	F F F	R	С С С	
Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed Nexgen Seeds Ltd. Printz Family Seeds Simpson Farms Joint Venture CDC GRIMM (LARGE GREEN) Ardell Seeds Ltd. Condie Seed McDougall Acres Limited Petruic Seed Company Inc. Printz Family Seeds Reisner, Cecil & Barry Simpson Farms Joint Venture Watson Seeds Ltd. Wiens Seed Partnership CDC IMPULSE (SMALL RED)	Landis Regina Swift Current Gravelbourg Moose Jaw Vanscoy Regina Moose Jaw Avonlea Gravelbourg Limerick Moose Jaw Avonlea Herschel	306-658-4755 306-569-7333 306-750-1701 306-380-7769 306-693-9402 306-668-4415 306-569-7333 306-693-3649 306-868-2240 306-380-7769 306-642-8666 306-693-9402 306-868-4402 306-831-6352	S	F F F F	R	C C C	
Fresh Hemp Foods Ltd. LENTIL CDC CARMINE (SMALL RED) Robinson, Oren A., Marlene & Wade CDC GREENSTAR (LARGE GRE Condie Seed Nexgen Seeds Ltd. Printz Family Seeds Simpson Farms Joint Venture CDC GRIMM (LARGE GREEN) Ardell Seeds Ltd. Condie Seed McDougall Acres Limited Petruic Seed Company Inc. Printz Family Seeds Reisner, Cecil & Barry Simpson Farms Joint Venture Watson Seeds Ltd. Wiens Seed Partnership CDC IMPULSE (SMALL RED) Craswell Seeds Ltd.	Landis EN) Regina Swift Current Gravelbourg Moose Jaw Vanscoy Regina Moose Jaw Avonlea Gravelbourg Limerick Moose Jaw Avonlea Herschel	306-658-4755 306-569-7333 306-750-1701 306-380-7769 306-693-9402 306-668-4415 306-569-7333 306-693-3649 306-868-2240 306-380-7769 306-642-8666 306-693-9402 306-868-4402 306-831-6352 306-725-3236	S	F F F F F F	R R	С С С	
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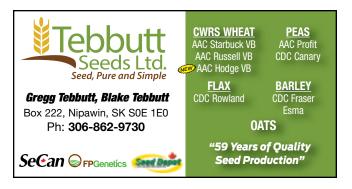
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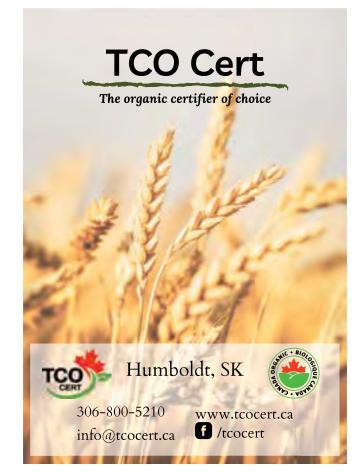
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Melfort	306-921-8594	S	F	R	Ĭ
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Watson	306-287-3977			R	С
Tisdale	306-873-4261			R	
Naicam	306-874-7813				С
Wadena	306.338.2391	c	F		
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Delmas	306-472-7824				C
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Midland Seed Farms Inc.	Kuroki	306-327-7270				С	
Nexgen Seeds Ltd.		306-750-1701				C	
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South Seeds	Melfort	306-752-9840		F		С	
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Sunset Road Seeds	Richard	306-220-8876			"	С	
WD Andres Farms Ltd.	Hepburn	306-947-7720				c	
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Cornerstone Seed	Welwyn	306-434-7436				С	
KYRON	wetwyn	300-434-7430				٠	
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AAC BEYOND (YELLOW) Condie Seed Cornerstone Seed Greenleaf Seeds Ltd. Seed Source Inc. AAC CARVER (YELLOW) Condie Seed Cornerstone Seed Fedoruk Seeds Ltd. Gerry Farms Inc. Greenleaf Seeds Ltd. Je-Jo Farms Ltd. Nexgen Seeds Ltd. Townview Seeds Ltimited AAC CHROME (YELLOW) Condie Seed Craswell Seeds Ltd. Fedoruk Seeds Ltd. Ferndale Seed Farms Ltd. Freser Farms Ltd. Freser Farms Ltd. Fraser Farms Ltd. KTS Farms Ltd. KTS Farms Ltd. Lindgren Seeds McDougall Acres Limited McArthur Ag Ventures Midland Seed Farms Inc. Riviere Ag Seeds Ltd.	Regina Welwyn Tisdale Archerwill Regina Welwyn Kamsack Creelman Tisdale Glaslyn Swift Current Richmound Regina Strasbourg Kamsack Rocanville Pambrun Watson Balcarres Prelate Limerick Norquay Moose Jaw Watrous	306-569-7333 306-434-7436 306-873-4261 306-323-4402 306-569-7333 306-434-7436 306-542-4235 306-457-7720 306-873-4261 306-342-7789 306-750-1701 306-661-7649 306-569-7333 306-725-3236 306-542-4235 306-435-6631 306-741-0475 306-287-3977 306-331-8168 306-628-8127 306-263-4944 306-594-7644 306-693-3649 306-230-9853	s s s	F	R R R R		





Robert G. Ostafie (306) 563-6244

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Nokomis, SK

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CUSTOM SEED CLEANING **& TREATMENT**

Varieties available this year: HARD RED OATS SPRING WHEAT AAC HODGE VB AAC ARBORG AAC HOCKLEY

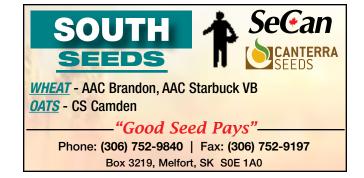
AAC STARBUCK VB PEAS AAC WHEATLAND VB AAC CHROME



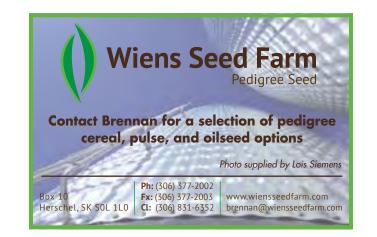












Robertson, Albert James	Saskatoon	306-270-6627		F			
Seed Source Inc.	Archerwill	306-323-4402	S				
Wiens Seed Partnership	Herschel	306-831-6352	S	F			
CDC INCA (YELLOW)							
Foundation Seeds	Saskatoon	306-222-0666				С	
McDougall Acres Limited	Moose Jaw	306-693-3649				С	
McArthur Ag Ventures	Watrous	306-230-9853				С	
Nexgen Seeds Ltd.	Swift Current	306-750-1701				С	
Ostafie, Brendan	Canora	306-563-6244			R		
R. & R. Allan Farms	Corning	306-736-7262				С	
	Limerick						
Reisner, Cecil & Barry		306-642-8666				С	
Rugg Seed Farm	Elstow	306-257-3638				С	
Veikle Seeds Ltd.	Cut Knife	306-398-7713			R		
Wiens Seed Partnership	Herschel	306-831-6352			R		
CDC JASPER (FORAGE)							
	V	206 542 4225			_		**
Fedoruk Seeds Ltd.	Kamsack	306-542-4235			R		^^
CDC LEWOCHKO (YELLOW)							
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S	F	R		
Big Dog Seeds Inc.	Oxbow	306-483-7738			R		
Condie Seed	Regina	306-569-7333			•	С	
	-	306-625-7919					
Cote Seed Farms	Cadillac					С	
Denis Seed Farms	St. Denis	306-222-9689				С	
DR Huber Farms Ltd.	Landis	306-658-4200				С	
Edwards Farm Co. Ltd.	Nokomis	306-528-2140		F			
Fenton Seed Farm Ltd.	Tisdale	306-873-7543				С	
Fraser Agro Ltd.	Yarbo	306-745-3830				С	
Fritzler, Baine A. & Adam A.	Govan	306-725-7908			R		
Greenleaf Seeds Ltd.	Tisdale	306-873-4261				С	
Lakeside Seeds	Wynyard	306-554-2078	S	F	R		
Mannanah Seeds	Sturgis	306-547-7432				С	
	Cudworth	306-256-3991				c	
Medernach, Louis J., Kim L. & Kyle						-	
Nexgen Seeds Ltd.	Swift Current	306-750-1701				С	
Rugg Seed Farm	Elstow	306-257-3638	S			С	
Seed Farm 23	Porcupine	306-814-7705				С	
Seed Farm 25	Plain	300-614-7703				·	
Tomtene Seed Farm	Birch Hills	306-749-3447			R		
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687			R	С	
Trowell, Kenneth & Larry & Nathan	Saltcoats Avonlea	306-744-2687	ς			C	
Watson Seeds Ltd.	Saltcoats Avonlea	306-744-2687 306-868-4402	S		R R	C C	
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Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd.			S				
Watson Seeds Ltd. CDC LIMERICK (GREEN)	Avonlea	306-868-4402	S		R	C	
Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd.	Avonlea	306-868-4402	s		R	C	
Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd. CDC MOSAIC (MAPLE) G&R Seeds	Avonlea Cut Knife	306-868-4402 306-398-7713			R R	C	
Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd. CDC MOSAIC (MAPLE) G&R Seeds CDC RIDER (GREEN)	Avonlea Cut Knife Osler	306-868-4402 306-398-7713 306-222-2967	s		R R	C	
Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd. CDC MOSAIC (MAPLE) G&R Seeds CDC RIDER (GREEN) Berscheid Brothers Seeds	Avonlea Cut Knife	306-868-4402 306-398-7713			R R	C	
Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd. CDC MOSAIC (MAPLE) G&R Seeds CDC RIDER (GREEN) Berscheid Brothers Seeds Greenshields, Grant, Charlotte,	Avonlea Cut Knife Osler	306-868-4402 306-398-7713 306-222-2967	s		R R	C	
Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd. CDC MOSAIC (MAPLE) G&R Seeds CDC RIDER (GREEN) Berscheid Brothers Seeds	Avonlea Cut Knife Osler Lake Lenore Semans	306-868-4402 306-398-7713 306-222-2967 306-368-2602	s s		R R	C	
Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd. CDC MOSAIC (MAPLE) G&R Seeds CDC RIDER (GREEN) Berscheid Brothers Seeds Greenshields, Grant, Charlotte, Thomas & Callie	Avonlea Cut Knife Osler Lake Lenore Semans North	306-868-4402 306-398-7713 306-222-2967 306-368-2602 306-746-7336	s s s		R R	C	
Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd. CDC MOSAIC (MAPLE) G&R Seeds CDC RIDER (GREEN) Berscheid Brothers Seeds Greenshields, Grant, Charlotte,	Avonlea Cut Knife Osler Lake Lenore Semans	306-868-4402 306-398-7713 306-222-2967 306-368-2602 306-746-7336 306-441-7851	s s s		R R	C	
Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd. CDC MOSAIC (MAPLE) G&R Seeds CDC RIDER (GREEN) Berscheid Brothers Seeds Greenshields, Grant, Charlotte, Thomas & Callie	Avonlea Cut Knife Osler Lake Lenore Semans North	306-868-4402 306-398-7713 306-222-2967 306-368-2602 306-746-7336	s s s		R R	C	
Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd. CDC MOSAIC (MAPLE) G&R Seeds CDC RIDER (GREEN) Berscheid Brothers Seeds Greenshields, Grant, Charlotte, Thomas & Callie Gregoire Seed Farms Ltd.	Avonlea Cut Knife Osler Lake Lenore Semans North Battleford	306-868-4402 306-398-7713 306-222-2967 306-368-2602 306-746-7336 306-441-7851	s s s		R R	C	
Watson Seeds Ltd. CDC LIMERICK (GREEN) Veikle Seeds Ltd. CDC MOSAIC (MAPLE) G&R Seeds CDC RIDER (GREEN) Berscheid Brothers Seeds Greenshields, Grant, Charlotte, Thomas & Callie Gregoire Seed Farms Ltd. Robertson, Albert James Starlotte Seeds Ltd.	Avonlea Cut Knife Osler Lake Lenore Semans North Battleford Saskatoon Naicam	306-868-4402 306-398-7713 306-222-2967 306-368-2602 306-746-7336 306-441-7851 306-270-6627 306-380-6216	S S S S S S		R R	C	
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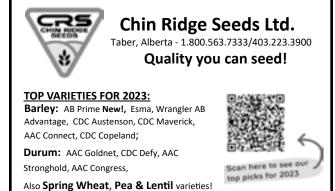


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Midland Seed Farms Inc.	Kuroki	306-327-7270			R	С	
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Varieties of Grain Crops 2023

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Symbols and Abbreviations Used:

- § Variety may not be described in 2024
- --- Insufficient test data to describe

na = Not applicable

- Applied for PBR protection at time of printing (UPOV'91)
- Plant Breeders' Rights (UPOV'78) at time of printing
- Plant Breeders' Rights (UPOV'91) at time of printing
 VUA Variety Use Agreement in effect

Relative Maturity: VE = Very Early, E = Early, M = Medium, L = Late, VL = Very Late

Agronomic Rating: VG = Very Good, G = Good, F = Fair, P = Poor, VP = Very Poor

Disease Resistance: R = Resistant, MR = Moderately Resistant, I = Intermediate Resistance, MS = Moderately Susceptible, S = Susceptible

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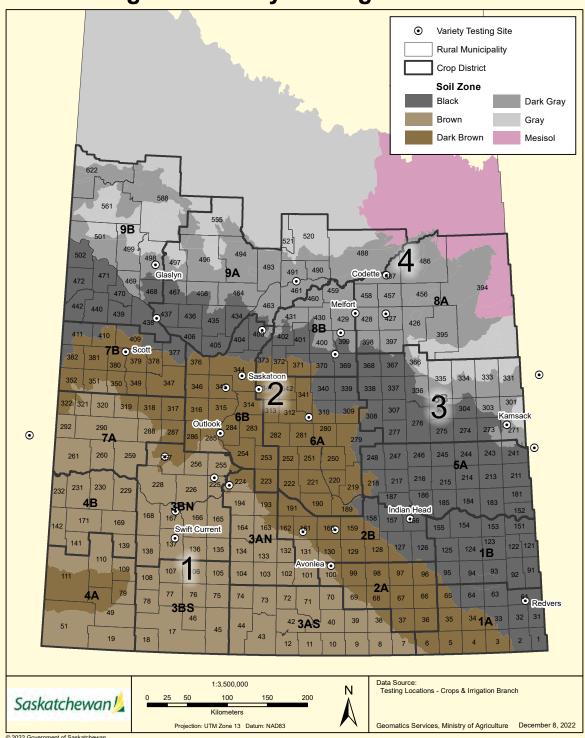
Accessing Public Release Varieties

Breeder seed of public release varieties is available to anyone (including producers and seed growers) for multiplication, increase and marketing. There are no royalties or seed marketing agency fees attached to use or sale of seed produced from breeder seed of public release varieties. While subsequent seed production may be Pedigreed, this is the buyer's choice and the buyer may increase the seed of public release varieties in any way they wish (only pedigreed seed can be sold by variety name, for most major crop kinds). To purchase breeder seed of public release varieties, contact the breeding institution listed in the Breeding Institution and Seed Distributors listings on pages VR37 to VR39.

Legal Disclaimer

This guide is for informational purposes only. The information presented is based on aggregated data and observations, but significant individual variations may occur due to conditions such as farm management practices, climate, soil type and geographical location. While reasonable care was exercised in the preparation of the guide, no guarantees or warranties regarding the accuracy, reliability or completeness of the information are given. This guide may not reflect the newest information available and may not be regularly updated. It is the sole responsibility of the user to evaluate the accuracy and appropriateness of the information.

Regional Variety Testing Locations



The cropland of Saskatchewan has been divided into four areas based roughly on agro-climatic conditions. Crop yields can vary from area to area. In choosing a variety, producers will want to consider the yield data in combination with marketing and agronomic factors. Area 1: Drought is a definite hazard and high winds are common. Sawfly outbreaks often occur in this area. Cereal rust may be a problem in the southeastern section.

Area 2: Drought and sawfly may be problems in the western and central sections of the area. Cereal rust may be a problem in the south-

Area 3: Sawfly can also be a problem. Drought is not as likely to be a problem in this area, particularly in the east. Cereal rust may occur in the eastern portion. The frost-free period can be fairly short in the northern section.

Area 4: Rainfall is usually adequate for crop production. However, early fall frosts and wet harvest conditions are frequent problems. **Note About Dividing Lines:**

The dividing lines do not represent distinct changes over a short distance. The change from one area to another is gradual.

Regional Variety Testing in Saskatchewan relies on support from many organizations, including:





















The Saskatchewan Advisory Council on Grain Crops (SACGC) and the Saskatchewan Variety Performance Group (SVPG) coordinate, supervise and review the collection, analysis and reporting of information in this booklet. Membership consists of representatives from:

- Ministry of AgricultureSeed Companies
- · Saskatchewan Seed Growers' Association
- Crop Commissions

- Agriculture and Agri-Food Canada
- Crop Development Centre
- University of Saskatchewan
- Saskatchewan Crop Insurance Corporation

SACGC and SVPG gratefully acknowledge the contributions of all individuals and organizations involved in the generation and publication of this information.

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Testing Varieties in Saskatchewan

By The Ministry of Agriculture

Regional testing of crop varieties is conducted to provide producers with information on the agronomic performance of varieties under different agro-climatic conditions. Saskatchewan producers will continue to have the opportunity to evaluate the newest grain crop varieties and their suitability for production in different regions of the province. Many funders contribute to variety testing in Saskatchewan.

The Ministry of Agriculture provides \$100,000 toward a testing program that is based on industry-government partnership. Technical and in-kind support is also provided by Agriculture and Agri-Food Canada, Saskatchewan Crop Insurance Corporation and The Western Producer, publisher of the 2023 SaskSeed® Guide.

The Saskatchewan Variety Performance Group (SVPG) administers the program for spring cereals, fall rye and flax. SVPG is composed of representatives from the seed industry, producers, breeders and government agencies. The Saskatchewan Seed Growers' Association administers the funds for SVPG. Crop coordinators manage the data and provide expertise for their respective crops. An entry fee system is used, in which variety owners or companies with the distribution rights to a particular variety pay a portion of the cost of having the variety tested. The Saskatchewan Seed Growers' Association, Saskatchewan Wheat Development Commission, Saskatchewan Barley Development Commission, Saskatchewan Oat Development Commission, SaskFlax and Saskatchewan Cattlemen's Association collectively provide more than \$100,000 to the core program. Supplementary funds enhance the core program.

Grower dollars at work testing varieties of grain crops across Saskatchewan. Variety results are reviewed and approved by SACGC to ensure information published is based on sound scientific principles.

Saskatchewan Pulse Growers (SPG) funds the pulse and soybean regional variety trials for Saskatchewan growers. For the 2022 trials, this funding was approximately \$323,000 which is partially off-set by entry fees for varieties entered into the trials. SPG collaborates with 14 research organizations at 23 locations to conduct the trials, including the Crop Development Centre at the University of Saskatchewan, Agriculture and Agri-Food Canada research stations, provincial AgriARM sites, the Canada-Saskatchewan Irrigation Diversification Centre, New Era Ag Research, Chinook Applied Research Association, Parkland Crop Diversification Foundation, SM Ag Research, Palliser Triangle Research, Discovery Ag Research and the Conservation Learning Cen-

Canola Performance Trials represent the next generation in variety evaluation for Western Canadian canola growers. The three Prairie canola grower groups - Alberta Canola Producers Commission, Saskatchewan Canola Development Commission (SaskCanola) and the Manitoba Canola Growers Association fund the program.

The results from all variety trials of all crop kinds tested are reviewed by the Saskatchewan Advisory Council on Grain Crops (SAC-GC), which also updates disease and other agronomic information and approves the data prior to inclusion in this publication.

Relative yield of varieties

Trials are conducted using uniform protocols and standard check varieties. Data is collected from as many sites as are available and statistically analyzed. Results in this publication are aggregated over a number of years and on an area basis for most crops.

Grain yield is a function of genetic and non-genetic factors. Variety trials are designed to measure yield differences due to genetic causes. It is important to minimize variability due to non-genetic factors such as moisture, temperature, transpiration, weeds, diseases and other pests. Experimental design uses replication (repeated plantings of the varieties) and randomization (the position of the varieties within the test is assigned by chance) to estimate the precision with which the genetic factors can be measured.

Relative yield is the yield of one variety expressed as a percentage of the check variety. Yields obtained in these trials are not identical to those obtained in commercial production. However, the relative ranking of these varieties compared to the check variety, obtained over a number of years at several locations. would remain the same regardless of whether the grain yield was measured in small plots or large-scale fields. Relative yield is the best estimate of expected yield advantage in the areas indicated.

What Are Plant Breeders' Rights?

By The Ministry of Agriculture

The goal of the Plant Breeders' Rights (PBR) legislation is to encourage investment and innovation in the crops sector. There are many ways to accomplish this, but the International Union for the Protection of New Varieties of Plants (UPOV)-based PBR balances the interests of the farmer and the breeder. This gives the farmer fair access to the use of purchased seed and the breeder can expect a royalty from every farmer buying seed of the breeder's variety.

PBR protection helps ensure that companies and institutions that invest in plant breeding can keep reasonable control of their varieties and secure fair compensation for their efforts. Some of the benefits of PBR include:

- · Access to new and improved plant varieties and improving the bottom line for producers. Enhanced protection under the revised PBR Act will encourage the introduction of new varieties from other countries (once registered in Canada), as well as stimulate investments in variety development in Canada.
- · Farmers may save seed for use on their own farms if the original seed was obtained legitimately. However, seed may not be sold for sowing, without the consent of the breeder.

Plant breeders' rights are a form of intellectual property rights that allow plant breeders to protect new varieties of plants. When plant breeders' rights are granted, the breeder gets exclusive rights in relation to propagating material (e.g. seed) of their new plant variety. Sale, trade, exchange, or any other UPOV is the International Union for the Protection of New Varieties of Plants. To be a member, a country must have legislation that aligns with a ratified UPOV convention. There are 78 UPOV member countries. 61 of which have ratified UP-OV'91-compliant legislation.

transfer of the seed for propagation purposes is prohibited by law without the written permission of the breeder or their agent.

Varieties protected by PBR are identified with one of two logos. Varieties protected prior to Feb. 27, 2015, are identified by:



and those protected on or after Feb. 27, 2015, are identified by:



Varieties previously protected by PBR remain under the same rules as before. Varieties protected since Feb. 27, 2015, are protected under the new PBR Act.

The new PBR Act provides additional mechanisms for the breeder to seek compensation for the unauthorized use of protected varieties. It has always been illegal to sell PBR-protected seed without the consent of the breeder. Now, it is also illegal to purchase seed without the consent of the breeder, meaning both the seller and purchaser can be liable if the seed sale is not approved. The best way to ensure that the seed is being purchased legally is to purchase certified seed. Producers should look for the blue certified seed tag and keep it in their records as long as they grow grain derived from that original seed purchase.

Canada's initial PBR Act facilitated access to new and improved varieties for farmers. With the updated PBR Act, farmers will benefit from even greater access to new or improved crop varieties and breeders will be better able to protect the investments in the development of new varieties.

For more information, visit www.seeds-canada.ca or contact the PBR Office at pbr.pov@inspection.gc.ca.

Plant Breeders' Rights status can change throughout the year. Significant efforts are taken to ensure the correct logo is applied at the and/or changes to PBR status.

Considerations For New Variety Selection

There are various factors to consider when selecting a new variety and it all depends on what your main priority is. Some factors to consider include:

- Market Identify your target market and make sure the variety selected matches the specifications and quality expected by your buyers, such as seed size, colour, functionality and other attributes.
- Maturity Identify realistic expectations on maturity needed to achieve optimum yield and quality in your region.
- Disease resistance Select varieties with better resistance for high-risk areas or fields. Resistance helps with disease management, but may or may not reduce the reliance on fungicide application.
- Herbicide tolerance Consider the weeds or volunteers that may be present in the field to determine if herbicide-tolerant options are a good choice.
- Seed size If seed size does not affect the market choice, then consider the seeding costs of the variety. Smaller-seeded varieties are usually cheaper to seed and have fewer production issues with plugging seeding equipment and other operations. Faba beans are a good example where seed size may be an important consideration.
- Crop growth habit and other physiological factors Factors such as growth habit (determinate or indeterminate), plant height, standability, harvest management and quality parameters such as resistance to sprouting, seed coat breakage and bleaching.
- Yield This is often the highest priority, as it directly relates to the ultimate goal of net return. In some cases, the advantages and higher performance of new varieties may not necessarily translate into higher yield, due to environment or management practices. If all other factors have been considered, then use yield potential as the deciding factor.

time of printing this guide. The PBR Office maintains an online database (www.inspection.gc.ca) that can be accessed to verify accuracy

A Variety Use Agreement (VUA) will be applied to specific varieties as determined by plant breeders and their seed distributors. When producers purchase a VUA variety and then divert some of that grain at harvest for seed use and plant it the following spring, they will declare that use in the VUA Platform and will then be invoiced a Variety Use Fee for use of the variety. This royalty

VARIETY USE AGREEMENT

fee, which is set at the time of certified seed purchase, will be invoiced to the producer every year that farm saved seed of the VUA variety is grown.

Varieties with a VUA will be designated in this guide with VUA symbol following entry in the data tables. The VUA platform is managed by Seeds Canada. For more information, visit:

www.seeds-canada.ca/variety-use-agreement.

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Seed Quality and Seeding Rates Are Crucial to a Good Plant Stand

By The Ministry of Agriculture

Seed quality and seeding rates are important for establishing good plant stands and unlike the weather, are two factors we can control. Plant population sets the stage for the yield potential of a crop. Research has shown that each crop has an optimum plant density range that producers should target when seeding their crop. Rates may be adjusted depending on the conditions in the field, date of seeding, weed pressure, seed-placed fertilizer and other pressures that may affect emergence or plant stand.

Determining the quality of the seed starts with a seed test prior to buying seed or seeding the crop. Sending a seed sample to a qualified lab can provide information on germination, vigour, diseases present, purity and thousand kernel weight (TKW). All of these factors help inform growers of whether the seed is suitable for planting and influence seeding rates for that seed lot. Germination tells us how many seeds are expected to germinate and vigour gives an indication of how well the seedlings will thrive under stressful conditions. TKW provides the seed size, which is vital when calculating seeding rates to target optimum plant populations. Average TKW for varieties are listed in the Varieties of Grain Crops, but individual seed lots can vary tremendously. Having the actual TKW for the seed lot being grown is important for the accuracy of seeding rates.

Changes in the canola seed industry require you to pay closer attention to seeding rates, or to change how you approach seeding. Companies are selling seed based on categories of seed size, represented by thousand seed weight (TSW).

Crop	Target Plant Population (per m²)	Target Plant Population (per ft²)	TKW (grams)
Wheat – hard red spring	250	24	31 – 38
Wheat - CPS	250	24	39 – 50
Durum	210 – 250	20 – 24	41 – 45
Wheat - SWS	210 – 250	20 – 24	34 – 36
Barley – 2 row	210 – 250	20 – 24	40 – 50
Barley – 6 row	210 – 250	20 – 24	30 – 45
Oat	350	35	30 – 45
Triticale – spring	310	29	42 – 48
Brown and Oriental Mustard	70 – 120	7 – 11	2 – 3
Yellow Mustard	70 – 120	7 – 11	5 – 6.5
Canola	60 – 100	6 – 9	2.5 – 7.5
Flax	300 - 400	30 – 40	5 – 6.5
Pea	85	8	125 – 300
Faba bean	45	4	350 – 425
Lentil	130	12	30 – 80
Chickpea	44	4	220 – 450
Soybean ¹	44 – 57	4 – 5	n/a
Canary seed ²	n/a	n/a	6 – 7
Camelina	210	20	1 – 1.8
Hemp (green)	100 – 125	10 – 12	12 – 18
Hemp (fibre)	300 – 375	30 – 35	12 – 18
Quinoa ²	n/a	n/a	2.8

¹ Soybeans are seeded based on seeds per acre and it is recommended to target 200,000 seeds per acre with air drills and 180,000 seeds per acre with planters. The soybean emergence rates are higher with planters than airdrills due to airflow causing some damage to sensitive seeds.

The majority of canola seed today falls into a TSW range of 4.0 to 5.9g. The TSW is currently listed on a bag, but each bag is equal weight and price; thus, the number of seeds between bags with different TSWs might be inconsistent. Bag weights will differ between each TSW category, but the number of seeds per bag will be much more consistent across TSW tion and vigor remain consistent bag weight. note is that accordingly to ment (and poseeds per bag will be much more consistent)

across TSWs listed on the bags; germination and vigour will not differ. Pricing should remain consistent, as well, regardless of bag weight. The important consideration to note is that seeding rate must be adjusted accordingly to achieve consistent establishment (and plant stand density) across any of the TSWs

Calculating Seeding Rates

Thousand kernel weight (TKW), germination rate and target plant populations are needed when calculating the seeding rate. Crops and varieties can vary significantly in seed size, especially pulses and not knowing your TKW could mean seeding too heavily and spending more on seed than needed, or seeding too lightly and limiting yield potential. Emergence rate is more difficult to estimate, as it is dependent on germination and environmental conditions.

Expected seedling survival is typically five to 20 per cent less than the germination rate with pulses and cereals — more under ideal conditions and less under adverse conditions. For canola, expected survival rates range from 40 to 60 per cent. Factors to take into account when determining the expected seedling survival are seeding date, soil temperature, moisture and texture, as well as seed quality and possible soil-borne diseases and insect pressures. The amount of seed-placed fertilizer and the seeding depth are factors that can also affect seedling survival. The formula below should be used to determine the target seeding rate:

Seeding Rate kilograms per hectare (kg/ha) =

(target population per square metre x TKW* in grams)

% field emergence or survival (in whole number, i.e. 85)

To convert to pounds per acre, multiply the seeding rate (in kg/ha) by 0.89 *TKW = Thousand Kernel Weight

For example: With **CDC Amarillo** yellow peas, the target plant population is 85 plants/m². A seed lot with TKW of 235 grams and germination at 98 per cent under good emergence conditions (using 88 per cent emergence, which is 10 per cent less than the germination rate) would have a target seeding rate of: 85 x 235 / 88 = 227 kg/ha, or 202 lbs./ac. or 3.4 bu./ac.

Interpreting Seed Test Results

By Jason Danielson, Discovery Seed Labs

Seed testing can give an indication of how fit your seed is for planting. Tests should be done for germination, vigour and disease. This package of tests can help you better understand how suitable seed will be for spring.

The germination test will give you an indication of the percentage of seeds that will grow in an ideal growth environment. The vigour test indicates the percentage of seed that will grow in adverse conditions. Even though the vigour assay is not standardized between seed labs, the results should be indicative of the seed's fitness when grown in harsher conditions. Combining the information from the germination and vigour tests will give you a good snapshot of the fitness of your seed.

Ideally, the germination rate from your sample should be higher than 85 per cent. The vigour should be close to the germination value; but if there is variation, it should be no greater than 10 percentage points. A large difference could be an indication of issues in the seed, especially if storage conditions over the winter months are not ideal.

Challenging harvest conditions can decrease the viability of the crop for seed. A germination test in the fall may not be representative of the germination in the spring, after several months of storage. A fall germination test can be helpful in determining seed needs for the upcoming year. A germination test closer to spring is recommended to ensure the seed remains sound for spring planting.

Grain dryers can be used on crops intended for seed, but the grain dryer must be kept at temperatures safe for the seed. High temperatures in grain dryers can reduce germination. For more information on grain drying and storage, visit www.saskatchewan.ca and search "drying grain."

If forced to use seed with a lower germination rate, you will have to increase the seeding rate to reach your target plants per square foot. Keep in mind that you cannot just increase the seeding amount by the percentage you are off from 100 per cent as not all of the seeds you are adding to the increased seeding rate will germinate.

A seeding rate calculator can be a helpful tool to determine the correct seeding rate.

Significant time between when your test was completed and when seeding will occur can result in your germination and vigour values dropping. You can retest your seed in the spring to determine if germination has changed from the initial test in the fall.

When performing your own germination tests, it can be challenging to determine if a seed has germinated and is healthy, versus a seed that develops weak roots that won't grow into a plant. Other issues such as fresh and hard seeds, in addition to seed dormancy, can lead to inaccurate results. A certified seed analyst is trained to conduct seed tests.

There are different diseases of interest depending on the crop that you are seeding. For cereals, the main diseases to test for are *Cochliobolus sativus* (root rot), *Ustilago nuda* (smut) and *Fusarium* (root rot) — both *Fusarium graminearum* and total. Although *F. graminearum* is not the most aggressive *Fusarium* species for seedling blight, any areas that have not had fusarium head blight (FHB) caused by *F. graminearum* should avoid introducing it. The *Fusarium* total reported on the seed test includes *F. graminearum*.

For pulses, the diseases of interest are Ascochyta (leaf blight), Anthracnose, Botrytis (grey mould) and Sclerotinia (white mould). The amount of disease pressure during the last growing season will determine what you will likely have available for quality of seed.

A good practice is to always use the best seed you can source. In good years you should look for seed with little to no presence of disease. In challenging years when the disease is higher, it is important to still source the best seed available and be sure to use seed with good germination.

When using seed with high disease and low germination, more seed is needed to achieve the target plants per square foot. Increasing the seeding rate increases the amount of disease inoculum that you are adding to your soil. A seed treatment can be a good investment in a variety of scenarios, including when using seed with higher disease levels.

Soil Germination Test

It is important to communicate if the crop intended for seed has been treated with pre-harvest glyphosate. Otherwise, the seed will be tested in a normal germination test and the glyphosate may adversely affect germination. This adds an additional cost because the sample will have to be retested for germination. If there is a possibility of glyphosate on the seed, a soil germination test should be requested to "tie up" any glyphosate that might be on the outside of the seed so it does not have adverse effects when the seed is germinating.

Some crop desiccants are registered for use on crops intended for seed production. Glyphosate is not a desiccant. Glyphosate is not recommended for any crop that is to be used for seed. Glyphosate at pre-harvest can cause germination and possibly vigour problems if the herbicide was applied before the seed was fully mature. Crops sprayed with pre-harvest glyphosate may germinate, but the seedling could be stunted and deformed. Crops treated prematurely are off-label and have the potential to threaten export markets.

Seed Samples

The quantity of seed tested is minuscule compared to the size of the seed lot that it represents. Improper sampling is the greatest source of error in seed testing. Make certain the sample is representative of the entire seed lot. To collect a representative sample, gather more seed than needed for a given test. Hand sample or use a probe so that all areas of the seed lot are represented. If the seed is in a bin, sample it from the top, centre, sides and bottom. Do not take your seed sample from beside the bin door. It might be more appropriate to collect subsamples as the seed is being transferred from a truck or bin. After collecting the seed, thoroughly mix it.

Regardless of how accurately the technical work is, the results can only show the quality of the sample submitted for analysis. Consequently, every effort must be made to ensure the samples sent to the analyst accurately represent the composition of the lot in question.

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² Target plant stands are not well established for Canary seed and quinoa. Canary seed target 35 to 45 kg/ha (500 to 750 seeds/m²). Quinoa target 10 kg/ha (10 lbs./ac.).

Seed Quality and Seed-Borne Diseases

By The Ministry of Agriculture

Use of seed from cereal crops infected with Fusarium species may result in poor emergence. Such seed should be treated with a registered fungicide before planting. Use of infected seed may introduce Fusarium diseases into unaffected areas. Tolerance for Fusarium vary with species. Refer to the Ministry of Agriculture publication Seed Quality and Seed-Borne Diseases of Cereal Crops for more information.

Smuts that attack wheat, barley, oat and rye can be controlled by seed treatment. If seed from a crop in which bunt or smut was observed must be used for seed, seed should be tested and seed treatment should be considered. If the presence of smut is uncertain, varieties rated susceptible (S) should be treated every year, those rated moderately susceptible (MS) every second year and those rated intermediate resistance (I) every third year.

Only systemic fungicides will control true loose smut of barley and wheat and stem smut of rye. Pathogens causing the other types of smut (covered, false loose, oat smut and bunt) are carried on the outside of the seed and can be controlled by non-systemic seed treatments.

The virulent form of blackleg of canola is widespread in Saskatchewan. Seed treatment with a recommended fungicide can reduce the level of disease. Use of canola seed commercially coated with an appropriate seed treatment is a convenient alternative to on-farm seed treatment.

Pulse growers should use seed that has been tested for seed-borne diseases such as ascochyta, anthracnose and botrytis. Tolerances for seed infection vary with the pulse crop, the disease, weather conditions of the region and the availability of a seed treatment. If infection of the crop from sources other than seed is likely, using seed with low infection levels becomes less important. In regions with frequent rainfall and high humidity, tolerances will be lower.

For ascochyta blight of lentil, use of seed with up to five per cent seed infection is acceptable in the Brown and Dark Brown Soil Zones, but zero per cent is desirable in the Black Soil Zone. A seed treatment for ascochyta-infected lentil seed is available and is recommended if seed infection levels approach five per cent. In pea, up to 10 per cent seed infection with ascochyta is acceptable.

In chickpea, zero per cent ascochyta seed infection is recommended because of the high rate of transmission of the disease from the seed to the emerging seedlings and its highly destructive nature. Refer to Saskatchewan Agriculture's publication Seed Quality and Guidelines for Seed-Borne Diseases of Pulse Crops.

Handle delicate seeds (i.e. pulses) with care, as seed coats are susceptible to damage—run augers full and slow and watch fan speeds on airseeders. Use a seed treatment if seeds have a high level of disease, show signs of mechanical damage, or the forecast is for wet, cool environmental conditions that may delay emergence. Kabuli chickpeas must have seed treatment or reduced emergence will occur.

Root rots can include a complex of pathogens such as *Fusarium spp.*, *Rhizoctonia solani*, or *Pythium spp.* and more recently, *Aphanomyces euteiches*. There is no indication of differences in susceptibility between varieties or crops for most of the root rot pathogens, with the exception of *Aphanomyces*. Currently all pea and lentil varieties are susceptible to *Aphanomyces* root rot. Current faba bean and chickpea varieties have partial resistance and along with soybean,

Seed-Borne and Seedling Diseases and Actions to Minimize Impact

		<u> </u>	
Crop	Disease Pathogen	Economic Threshold	Action If Over Threshold
Field Peas Lentils	Aphanomyces euteiches (Root Rot)	Soil-borne only	Consider seed treatment if disease history is present
Field Peas	Ascochyta complex	10% on seed	Use seed treatment
	Acceptate lentin	5% on seed	Use seed treatment
Lantila	Ascochyta lentis	10% on seed	Do not use seed
Lentils	Stemphylium botryosum	May be detected on seed tests	Unknown
	Colletotrichum lentis (Anthracnose)	May be detected on seed tests	Not considered high risk of seed to seedling transmission
Chickpeas	Ascochyta rabiei	0.3% on seed	Do not use seed
Faba Beans	Colletotrichum sp. (Anthracnose) Seed rot/damping off: Fusarium, Pythium, Rhizoctonia	Unknown	Consider seed treatment if disease history
Soybeans	Seed rot/damping off: Fusarium, Pythium, Rhizoctonia, Phamapsis, Phytophythora	Unknown	Consider seed treatment if disease history
Field Peas	Seed rot/seeding blight (pathogens unspecified)	Unknown	Use seed treatment
Chickpeas	Seed rot/damping off: Botrytis + Fusarium	10% on seed	Use seed treatment
Lentils	Seed rot/damping off: Rhizoctonia, Botrytis, Fusarium, Pythium	Soil-borne only	Consider seed treatment if disease history and/or will be seeding under cool, moist soil conditions

Source: Seed Quality and Guidelines for Seed-Borne Diseases of Pulse Crops, Ministry of Agriculture

could be considered other nitrogen-fixing crops that have resistance to *Aphanomyces*.

With soybeans, the best management practices for *Phytophthora* stem rot include selecting varieties with genetic resistance and using a seed treatment that is labeled for control.

Wireworms that attack all grain crops, pea leaf weevil in pea and faba beans and flea beetles that attack canola and mustard can be controlled by seed treatments containing secticides.

The degree of control with seed treatments depends on five factors:

- . active ingredients
- 2. rate of application
- seed- and soil-borne fungal diseases or insects present
- 4. environmental conditions
- quality of seed coverage.

Check individual product labels for specifics.

Adequate coverage is important to ensure each seed is protected and the seeds are completely covered (especially important with contact type seed treatments).

Read the label carefully before using any seed treatment. Information on their use and recommended rates is found in the Ministry of Agriculture publication *Guide to Crop Protection*. Carryover stocks of treated seed should be tested for germination before planting. Treated seed must not be delivered to an elevator or used for feed.

Plant Disease Resistance

By The Ministry of Agriculture

Resistance to the most important diseases in Western Canada is assessed in most crops as part of the variety registration process. The methods used to assess resistance in each crop are different. In some cases, spores of the pathogen are applied to plants in the greenhouse or in the field. In other cases, assessment is based on naturally occurring infection in the field. Each variety for the applicable crops is rated on a five-point scale of Resistant (R), Moderately Resistant (MR), Intermediate Resistance (I), Moderately Susceptible (MS) and Susceptible (S).

Because of variation in disease levels from year to year, each new variety is assigned a rating relative to a few existing varieties that serve as disease level standards or checks. Varieties differ in resistance because of differences in their genetic makeup and/or differences in the genetic makeup of the pathogen that causes the disease. However, the

genetic makeup of a pathogen can change over time and can enable the pathogen to overcome the resistance in a variety. In such cases, a variety with good resistance can quickly display poor resistance to a particular disease. Unfortunately, because not all varieties are tested side-by-side every year, the ratings of older varieties may be less reliable.

Preserving the efficacy of disease resistance genes in current crop varieties is the most economical method of plant disease control. Disease resistance can be prolonged with good agronomic and integrated pest management practices. Crop type, variety and fungicide rotation are important methods of preserving the effectiveness of disease resistance genes and fungicides. Disease resistance genes usually become ineffective due to short rotations and the prolonged use of one crop variety on a large acreage.

A number of factors can affect the level of disease symptoms observed at a given location in a given year. Environmental conditions such as moisture and temperature, the genetic makeup of both the variety and the pathogen and the amount of the pathogen present can all affect the level of disease. Although a variety with Intermediate (I) resistance can show disease symptoms under favourable conditions, a Susceptible (S) variety would have much more disease under the same conditions.

For example, ascochyta blight of chickpea is a very aggressive fungal disease. It can completely kill Susceptible (S) varieties within two weeks of symptoms first appearing. Chickpea varieties currently grown commercially in Saskatchewan have Intermediate (I) ascochyta blight ratings. This resistance weakens as plant development nears the flowering stage.

Fusarium-Damaged Kernels

By The Ministry of Agriculture

Fusarium head blight has become more common in Saskatchewan. Producers will find out the level of fusarium-damaged kernels (FDK) and perhaps DON (deoxynivalenol) on their grain from the elevator. However, *Fusarium* infection levels are needed to determine seed quality.

FDK does not provide the whole story regarding *Fusarium* infection. FDK is a measure of grain quality, not seed quality. Seed can be infected by *Fusarium* even when FDK are not present.

Fusarium spp. can infect the plant at different stages of the kernel development. Early infection may lead to an aborted floret, while later infection may leave spores on the kernel without showing visual symptoms. Tombstone kernels (FDK) are infected between those extremes.

Because there is no correlation between FDK and *Fusarium* infection of the seed, FDK cannot be used to predict *Fusarium* infection levels. A disease test is needed to determine if seed has *Fusarium* spores on it that could cause seedling blight or root rot.

Fusarium infection on the seed can sometimes be managed with a seed treatment. Fusarium graminearum is a particularly aggressive form of fusarium head blight, so recommendations are to prevent its introduction into new areas.

Seed treatments are used to manage seedling blights caused by *Fusarium spp*. The primary source of fusarium head blight infection is infected residue. Seed is not considered a contributing factor to fusarium head blight. In areas where *F. graminearum* is not established, seed with more than five per cent *F. graminearum* is not recommended for planting. Seed with two to five per cent *F. graminearum* should be treated with an appropriate seed treatment.

F. graminearum now has a wide distribution in Saskatchewan, so, for most producers, a seed treatment should be used when total Fusarium species is greater than 10 per cent.

If seed is tested early in winter, germination should be retested again in the spring, especially if disease is present. Germination can decrease during storage.

For more information, refer to the Ministry of Agriculture publication Seed Quality and Seed-Borne Diseases of Cereal Crops.

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Relative Maturity

By The Ministry of Agriculture

Ratings

Maturity is measured from seeding to physiological maturity, which is the stage at which the crop is at the appropriate ripeness for swathing. The actual number of days to reach maturity depends on local climatic conditions and to some extent, on management practices.

Some of the tables in this booklet express the relative maturity in days while others use a five-category scale: VE, E, M, L and VL (very early, early, medium, late, very late). The limits for each category can vary from crop to crop. In barley, for example, AAC Synergy would be M, with L and E varieties plus or minus one to two day and VL and VE varieties beyond this range.

Comparisons

The relative maturity of varieties of different crops is important when making plans for seeding.

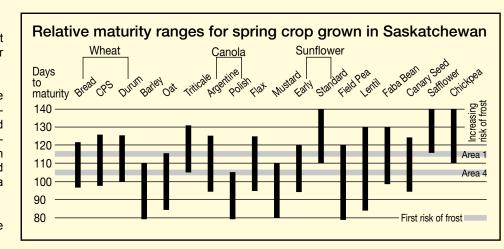
The chart on the right compares the relative maturity ranges for crops grown in Saskatchewan. Within each crop there are early and late maturing varieties. Whether a crop matures before the first killing frost depends on seeding date, management practices and environmental factors. Not all crops have a wide area of adaptation.

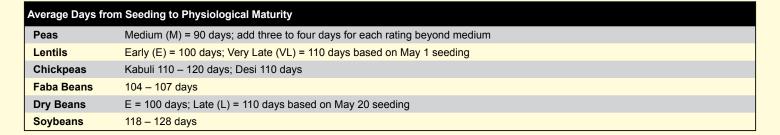
It is noted that climatic conditions can cause a wide variability in crop maturity.

Understanding Soybean Maturity Ratings

Soybean maturity ratings are currently based on three approaches: corn heat units, maturity groupings and days to maturity. The preferred ways to measure soybean maturities are through maturity group classifications or days to maturity. The maturity group (MG) rating system classifies soybean varieties from MG 000 in northern areas to MG IX in southern areas of North America, based on latitude ranges and photoperiod sensitivity. Each MG region covers one or two degrees of latitude, or about 200 to 300 km from north to south. For Saskatchewan, soybeans are most suited with 00 and 000 MG. Each MG can have subgroupings with a zero to nine decimal number following the

group (or zone) number and these decimal places equate to slight increases in maturity. In the 00 maturity ratings, a subgroup of 00.1 would be earlier maturing than 00.9. Note that these MG ratings are not entirely standardized between seed companies. Check with your seed supplier to better understand MG ratings. Days to maturity is a direct measure of the days each variety takes to reach physiological maturity and is averaged across locations. The lower the number, the earlier-maturing the variety was across the sites tested. This value is obtained through the Regional Variety Testing Program and is an independent rating. Growers are advised to use all maturity information available to choose appropriate varieties for their area.





Irrigated Variety Performance

Due to the limited testing for irrigation production many of the crop commodities grown under intensive irrigation do not meet the qualifications necessary for inclusion into the provincial Varieties of Grain Crops. However, the Irrigation Crop Diversification Corp (ICDC) does conduct variety evaluations under irrigation for all commonly grown irrigated crops. Results of these trials are summarized annually into a publication entitled "Crop Varieties for Irrigation" which can be found at www.irrigationsaskatchewan.com/icdc under ICDC Publications.

General Seed Facts

By The Ministry of Agriculture

Pedigreed Seed

Use certified seed regularly. This assures that the seed has high genetic purity and high germination and is relatively free from weeds and other crop seeds.

Re-Use of Hybrid Seed

Seed grown from a hybrid variety (regardless of crop or variety) should not be re-used, since a 20 to 25 per cent yield reduction can occur in the next generation. This reduction is due to loss of hybrid vigour and possible occurrence of male-sterile plants. Lack of uniformity for maturity and quality traits can also occur.

Seed Cleaning

Seed should be cleaned carefully to remove weed seeds, trash, small or broken kernels, ergot and sclerotia. Not all seed-cleaning plants are equipped to clean grain to acceptable seed standards.

Crop Rotation

Seeding into stubble of the same crop kind will increase disease risk, particularly in higher rainfall areas. Residue of infected crops may harbour disease pathogens. Maintain a diverse crop rotation.

Ergot

Ergot attacks all varieties of rye, triticale, wheat and barley, as well as most common grass species. Oat is rarely attacked and all broadleaf species are immune. Grain containing 0.1 per cent ergot is considered poisonous and should not be used for food. Refer to the Ministry of Agriculture publication *Ergot of Cereals and Grasses*.

Damp and Frozen Seed

Seed that is stored damp or tough may be low in germination and may lack adequate vigour. Grain that will be used for seed should

be dried, if necessary, soon after harvest. The drying temperature should be below 37 C for batch driers and 43 C for recirculating and continuous driers. Ensuring the grain is dried at a low temperature will help to maintain a viable embryo and germination rates. Frozen grain should always be tested for germination by a seed-testing laboratory before planting. Such grain will frequently produce a high percentage of abnormal seedlings.

Wheat Midge

All wheat classes, including durum and triticale, are susceptible to wheat midge. Producers in infested areas should be prepared to spray fields with recommended insecticides if necessary, unless varieties are midge-tolerant. Consider the use of midge-tolerant varieties. Refer to the Ministry of Agriculture publication Wheat Midge - Overview and Control Methods.

Seeding Guidelines

Crop	Recommended Minimum Average Soil Temperature at Seeding Depth (C)	Estimated Seeding Dates for Saskatchewan	Recommended Seeding Depth (cm/in)
Peas	5	Mid-April to Mid-May	3 – 8 / (1.2 – 3.2)
Lentils	5	Mid-April to May	2.5 – 7.5 / (1 – 3)
Chickpeas—Kabuli	7	Prior to May 25	3.5 – 6 / (1.5 – 2.5)
Chickpeas—Desi	10	Prior to May 25	3.5 – 6 / (1.5 – 2.5)
Faba Beans	3 - 5	Mid-April to Mid-May	5.1 – 7.6 / (2 – 3)
Dry Beans	12	May 25 to June 5	5 – 6 / (2 – 2.5)
Soybeans	10	May 10 to May 25	1.9 – 3.8 / (.75 – 1.5)

Source: Ministry of Agriculture

Safe Rates of Seed-Placed Fertilizer

By The Ministry of Agriculture

Phosphorus (P) is an important plant nutrient. Phosphorus promotes the development of extensive root systems and vigorous seedlings. Encouraging vigorous root growth is an important step in promoting good nodule development and nitrogen fixation for all legumes and growth of all crops. It also plays an important role in promoting earlier and more uniform maturity in all crops. Maximum safe rates of actual seed-placed phosphate fertilizer vary by crop and are based on knife openers with a one-inch spread, nine-inch row spacing and good to excellent soil moisture. For wider rows and/or narrower seed spread behind the

opener, or under dry conditions, the maximum safe rates would be lower. These recommendations are based on monoammonium phosphate (11-52-0), which has a relatively low salt index and should not be used for other fertilizers. The table at right summarizes the maximum safe rates of seed-placed phosphorus (P_2O_5) fertilizer in narrow row systems based on knife openers with a one-inch spread, nine-inch row spacing and good to excellent soil moisture. Wider row spacing and/or narrower seed spread openers would have reduced tolerance and safe rates should be adjusted lower.

Crop	Actual P ₂ O ₅ (lbs./ac.)
Cereals	50
Canola	25
Canary seed	30
Flax	15
Pea	15
Faba Bean	40
Lentil	20
Mustard	20
Chickpea	20
Soybean	20
Dry Bean	30

^{*} Source: Guidelines for Safe Rates of Fertilizer Placed with the Seed, Ministry of Agriculture

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CEREAL CROPS

Wheat

Main Characteristics of Varieties

Category	Years	Yield	d (%)	Pro-					istanc						Stem	Rel.		Volume	Ht.
and Variety	Tested1				Lodg-	- Sprout-	- Stem	Leaf	Stripe	Loose	Bunt	Leaf	FHB		-Solid- ness²	Maturit (days)		Wt. ³ (kg/hL)	(cm)
		1 & 2	3 & 4	. (70)	ing	ing	Rust	Rust	Rust	Smut	Dunt	Spot	טווו	11033	11033	(days)	(IIIg)	(Rg/IIL)	
CWRS⁴	Rela	tive to	AAC Br	randon											Rel	ative to A	AAC Bra	andon	
AAC Brandon ®	6	100	100	14.3	G	Р	R	R	MR	MR	S	1	MR	Υ	Н	101	35.9	80.6	81
CDC Adamant VB⁵ @	5	99	103	+0.1	Р	F	R	I	MS	S	S	MS	I	Υ	SS	-2	-2.2	0.1	+4
AAC Alida VB⁵ ⊕	5	98	98	+0.1	VG	VG	R	R	MR	R	ı	MS	MR	Υ	Н	0	+1.2	0.2	+7
Bolles @	4	93	93	+1.0	VG	F	MR	R	MR		S		I	Υ	Н	0	+0.5	-1.4	+1
SY Brawn VB ⁵ ©	4	97	103	+0.1	F	G	MR	R	I		MR		I	Υ	Н	-2	-3.4	-1.5	+9
AAC Broadacres VB ⁵ @	3	103	102	-0.3	VG	F	R	R	MR		R		ı	Υ	Н	0	+1.6	0.0	+4
AAC Cameron VB ⁵ @	5	103	110	-0.3	F	F	MR	MR	S	S	R	- 1	- 1	Υ	Н	-2	+2.4	-0.6	+17
Carberry @	6	94	94	+0.3	VG	F	MR	R	MR	MR	R	MS	MR	Υ	Н	0	-0.4	-0.2	0
Cardale ®	5	93	96	+0.1	F	G	R	R	S	ı	MR	MS	MR	Υ	Н	-1	-2.0	-1.3	+4
SY Cast ©	4	98	100	+0.2	VG	G	R	R	R		R		l .	Y	Н	-1	-0.3	-0.9	+1
SY Chert VB ⁵ @ §	5	93	99	-0.1	G	F	R	R	R	R	R	MS		Y	Н	-1	-1.0	-0.8	+7
AAC Connery ®	5	97	93	+0.5	VG	G	R	MR	R	MR		l	MR	N	Н	-2	-0.5	-1.0	+4
SY Crossite ©	4	101	103	-0.3	F	G	R	R	R		MS		MR	Y	Н	0	+1.2	-0.8	+9
Daybreak VUA	3	99	101	-0.3	F	F	R	MR	MR		S			Y	H	-1	+2.4	0.7	+6
SY Donald VB ⁵ ©	3	103	104	-0.3	F	G	ı	ı	I		MS		MR	Y	Н	-2	-3.5	0.6	+8
AAC Dutton VB ⁵ ©	1	101	106	-0.4	G		R	R	MR		R		MR	Y	Н	-1	-1.2	-0.4	+3
AAC Elie 🕲	5 4	99 94	99 97	+0.0	G VG	F F	R R	R MR	MR		S		i	Y N	Н	0 -2	-0.7 -3.2	-0.1	-2 +8
Ellerslie SY Gabbro \$\partial \\$	5	100	99	-0.1 +0.4	VG	F	MR	R	R	 R	ە 1	MS	MR	Y	H	-2 -1	+2.6	-2.6 -0.4	+7
AAC Hassler ©	1	101	101	+0.4	F		MR	R	R		MS		IVIIX	Y	H	-1 -5	-1.3	-1.6	+7
AAC Hockley ©	3	100	105	+0.1	VG	G	MR	R	R		R		MR	Y	Н	0	-1.4	0.7	+1
AAC Hodge VB ⁵ ©	3	102	109	-0.3	G	F	R	R	R		R		MR	Y	Н	-1	-1.1	0.3	+7
CDC Hughes VB ⁵ @	5	98	101	0.0	G	G	R	MR	ı	MR	MS	ī	I	Y	SS	-1	+1.6	0.1	+2
Jake 9	4	86	94	+0.9	F	F	R	MR	R		MR		MS	Y	Н	-3	-3.1	-0.8	+8
CDC Landmark VB ⁵ @	5	103	105	0.0	G	G	R	MS	MR	MR	MS	1	I	Y	SS	-1	+0.6	0.6	+4
AAC LeRoy VB ⁵ @	4	99	104	-0.2	F	G	MR	MR	MR		1	MS	MR	Υ	Н	-1	-0.2	0.3	+6
AAC Magnet @	4	92	98	+0.3	VG	F	R	R	ı		S	MS	MR	Υ	Н	-1	+1.3	-1.2	+6
SY Manness ©	3	94	101	-0.1	VG	G	R	R	ı		S		ı	Υ	Н	-1	-4.7	-0.8	-1
SY Obsidian @	4	94	96	-0.1	VG	F	MR	R	MR	R	MS	- 1	MS	Υ	Н	-1	+0.8	-0.2	+4
CDC Ortona @	5	94	98	-0.1	G	G	R	R	R		S		- 1	N	Н	-3	-5.0	-2.0	+8
Parata §	5	91	92	+0.4	F	F	R	MR	MR	MR	S	- 1	- 1	Υ	Н	-3	-2.6	-0.2	+9
CDC Pilar CLPlus O	4	98	97	-0.3	VG	G	MR	R	MS		MR		I	Υ	Н	-1	-0.7	-0.6	-3
AAC Redberry @	5	99	100	0.0	F	VG	R	R	R	R	- 1	MS	- 1	Υ	Н	-3	-1.5	0.7	+6
Rednet @	4	92	97	+0.3	F	F	R	R	R		S		MR	Υ	Н	-1	-1.0	0.0	+14
AAC Redstar 🛭	3	92	104	-0.1	F	G	R	MR	MR		MR		MR	Υ	Н	-2	-0.2	-1.3	+8
AAC Russell VB ⁵ @	4	97	102	0.0	G	F	MR	R	R		MR		MR	Υ	Н	0	+1.7	-0.1	+4
Sheba @	3	95	96	-0.7	G	G	R	R	R		MR		I	N	Н	-1	-3.3	-0.6	+7
CDC Silas O	3	100	100		F	F	MR	R	I		MS		I	Υ	Н	-1	-1.4	-1.1	+3
CDC SKRush ©	4	100		-0.2	G	Р	MR	R	MR		ı		MR	Υ	Н	-1	-3.5	-0.9	+7
SY Sovite @ §	5	93			F	F	MR	R	R	R	MS	MR	MR	Y	Н	0	+1.8	-0.3	+7
CDC Stanley ®	6	98		+0.1	G	VG	R	MR	I	MR	S	ı	MS	N	Н	-1	-3.1	-1.8	+12
AAC Starbuck VB ⁵ @	5	104	108	-0.2	F	F	- 1	MR	MR	MR	S	S	MR	Y	Н	0	0.0	0.4	+2
Stettler @	6	100	99	+0.5	F	G	MR	MS	MR	R	MR	MS	MS	Y	H	0	-1.0	-0.5	+8
CDC Succession CLPlus VB5 ©		98	97	-0.1	VG	G	MR	MR	١	-	S	-	MS	Y	Н	0	+2.5	-0.9	+3
AAC Tisdale @	5	95	98	+0.8	F	F	R	R	S	MR	MR	MS	MR	Y	Н	-2	+0.2	-0.6	+8
CDC Titanium VB ⁵ @	5	98		+0.8	P	Р	 	R	R	MS	l MC	MS	MR	Y	Н	-2	+0.4	-0.4	+10
SY Torach @ §	5	91	97		VG	P	MR	R	MS	R	MS	MS	MR	Y	Н	-1	-4.1	-0.3	0
Tracker CDC Utmost VB⁵	4 6	89	96 106	+0.2	F	G	R	R	R		S		I MS	N N	H	-2	-4.5 -1.4	-2.2 -1.6	+6 +11
AAC Viewfield @	5	102	106	-0.3	F G	G G	MR R	R MR	l R	MS S	MR	I		N Y	H	-2 0	-1.4 -2.1	-1.6 0.7	+11
AAC Viewlield @ AAC Warman VB ⁵ @ §	5 5	105 95	99	0.0	P	F	R	R	MS	MR	S	ı	I MR	Y	Н	-1	-2.1	0.7	-3 +13
AAC warman VB ⁵ @ §	5 5	104	105	-0.2	VG	G	R	R	MS I	MR R	MR	S	MR	Ϋ́Υ	H	-1 0	-1.8 -0.5	0.0	+13
AND WITEGUATION VD- W	J	104	103	-0.2	٧G	G	17	17	- 1		IVIT	3		ı	П	U	-0.5	0.1	72

Wheat (cont'd)

Category	Years	Yield	d (%)	Pro-				Resi	stance	: To				Head	Stem	Rel. Ma-	Seed	Vol- ume	Ht.
and Variety	Tested ¹		Area 3 & 4	tein (%)	Lodg- ing	Sprout- ing	- Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB	Awned- ness	Solid- ness ²	turity (days)	Wt. (mg)	Wt. ³ (kg/hL)	(cm)
CPSR ⁴	Relat	ive to A	AC Brar	ndon												- Relativ	re to AA	C Brand	on
Accelerate VUA	4	103	109	-1.1	G	F	R	R	R		S		I	Υ	Н	-1	-4.3	-0.7	-3
AAC Crossfield @ §	5	105	105	-1.3	F	Р	MR	R	R	ı	S	I	I	Υ	Н	-1	+1.3	-1.9	+1
AAC Foray VB⁵ ©	5	104	108	-1.5	F	Р	MR	R	- 1	MS	1	MS	- 1	Υ	Н	0	+7.0	-1.6	+6
Forefront	2	106	105	-1.1	VG	F	R	R	R		1		MS	Υ	Н	+1	+4.7	-1.2	-2
AAC Penhold @	5	101	100	-0.7	VG	VG	MR	R	MR	- 1	R	I	MR	Υ	Н	-2	+4.2	-0.4	-9
AAC Perform ©	1	113	113	-1.5	VG		R	R	MR		ı		MS	Υ	Н	+1	+0.6	-1.8	+3
CDC Reign @	4	100	106	-0.6	G	VG	MR	R	- 1		S		- 1	Υ	Н	+1	-1.5	-0.6	+3
AAC Rimbey VB⁵ ©	2	108	109	-1.8	F	VG	R	R	R		I		ı	Υ	Н	-1	+5.5	-2.0	-1
SY Rorke @	3	105	108	-1.4	F	F	R	R	S		MS		I	Υ	Н	0	-2.8	-0.6	0
SY Rowyn 🛭	5	95	99	-0.9	F	F	R	R	MR	ı	S	ı	MR	Υ	Н	-1	-5.0	-0.6	-4
AAC Westlock 3	1	111	105	-1.4	G		R	R	R		R		MR	Υ	Н	0	+5.5	-1.2	0
CWSWS⁴																			
AC Andrew	5	122	129	-3.0	VG	Р	MR	MS	- 1	S	S		Т	Υ	Н	+1	+0.1	-3.2	+1
AAC Chiffon VB⁵ ©	5	125	125	-3.4	Р	VP	S	ı	MR	S	S		S	Υ	Н	+2	+1.5	-3.6	+12
AAC Paramount VB ⁵ @	5	122	122	-3.3	VG	Р	- 1	ı	R	MR	S		MS	Υ	Н	+1	+0.7	-2.8	+8
Sadash VB⁵ ⊛	5	129	131	-3.7	VG	Р	MR	ı	R	- 1	S		S	Υ	Н	0	-0.7	-2.7	+4
CWSP ⁴																			
Alderon	5	126	121	-3.0	VG	F	MR	R	MR		MS	ı	MS	N	Н	+4	+0.1	-7.4	-5
AAC Awesome VB ⁵ @	5	125	126	-3.1	F	Р	R	MR	R	ı	ı	1	ı	Υ	Н	+1	+4.2	-1.6	+8
Pasteur	5	112	118	-2.0	VG	G	MR	R	MR	MS	S	ı	ı	N	Н	+ 2	+0.3	-1.2	+5
Sparrow VB⁵	5	124	125	-2.6	VG	G	MR	R	MR		ı	ı	MR	N	Н	+4	-0.2	-4.3	+1
WPB Whistler 🍪	3	106	120	-2.9	VG	G	R	R	R		-1		MS	N	Н	+3	+1.5	-4.7	-3
CWHWS⁴																			
AAC Tomkins 😊	3	97	96	+0.2	G	G	MR	R	MS		MR		I	Υ	Н	-1	-0.5	-1.6	+3
AAC Whitehead VB5 3	3	104	111	-0.4	G	G	R	R	MR		R		I	Υ	Н	-1	+1.9	-2.1	+3

¹Years tested indicates years tested in Saskatchewan regional trials. Grain yield analysis includes up to three years of data from registration testing at sites in Saskatchewan. ² H = Hollow; SS = Semi-solid; S = Solid.

Varietal Blend Components

Midge Tolerant Variety	Refuge Variety	Crop Kind	Midge Tolerant Variety	Refuge Variety	Crop Kind
AAC Succeed	CDC Alloy	Durum	CDC Landmark	AAC Viewfield	Wheat
AAC Weyburn	CDC Precision	Durum	AAC Leroy	AAC Redberry	Wheat
CDC Adamant	CDC Bradwell	Wheat	AAC Paramount	AC Andrew	Wheat
AAC Alida	AAC Brandon	Wheat	AAC Rimbey	AAC Penhold	Wheat
AAC Awesome	AC Andrew	Wheat	AAC Russell	AAC Brandon	Wheat
SY Brawn	SY Cast	Wheat	Sadash	AC Andrew	Wheat
AAC Broadacres	AAC Brandon	Wheat	Sparrow	Alderon	Wheat
AAC Cameron	Carberry	Wheat	AAC Starbuck	AAC Brandon	Wheat
SY Chert	SY Sovite	Wheat	CDC Succsssion CLPlus	CDC Pilar CLPlus	Wheat
AAC Chiffon	AC Andrew	Wheat	CDC Titanium	Stettler	Wheat
SY Donald	AAC Redberry	Wheat	CDC Utmost	Harvest	Wheat
AAC Dutton	AAC Brandon	Wheat	AAC Warman	AAC Tisdale	Wheat
AAC Foray	AAC Penhold	Wheat	AAC Wheatland	AAC Brandon	Wheat
AAC Hodge	AAC Hockley	Wheat	AAC Whitehead	AAC Tomkins	Wheat
CDC Hughes	Cardale	Wheat			

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³ Multiply by 0.8 = lbs./bu.
4 Includes direct and indirect comparisons with AAC Brandon.
5 VB = varietal blend. Information on refuge varieties on page VR13.

Durum Wheat

		Y	'ield (%	ó)	Pro-				Resis	stance	To				Head	Stem	Rel.	Seed	Vol-	
Category and Variety	Years Tested ¹		Area 3 & 4	_	tein (%)	Lodg- ing	Sprout- ing	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB	Awned-	Solid- ness ³	Ma- turity (days)	Wt. (mg)	ume Wt.⁴ (kg/hL)	Ht. (cm)
CWAD		Rela	tive to	Strongfi	eld												Rela	tive to S	Strongfie	eld
Strongfield @	6	100	100	100	14.4	Р	F	R	R	MR	R	MR	-1	S	Υ	Н	102	43	79.7	88
CDC Alloy @	5	107	109	107	-0.4	F	F	MR	R	R	ı	R	MS	MS	Υ	Н	+1	-0.6	+0.8	+3
AAC Antler ©	1	109	108		-0.2	F		R	R	R		R		MS^6	Υ	Н	+1	-2.0	+0.8	+2
Brigade 💩	5	106	113	110	-0.9	F	F	R	R	MR	S	R	I	MS^6	Υ	Н	+2	+0.6	+0.4	+7
AAC Congress @	5	109	107	113	-0.5	Р	F	MR	R	R	MR	R	MS	MS	Υ	Н	+1	-0.8	+0.5	+2
CDC Covert @	4	109	108	110	-0.5	G	G	R	R	R		R		S	Υ	Н	+1	-4.6	+0.3	-1
CDC Credence @	5	108	110	102	-0.7	F	F	MR	R	MR	MR	R	ı	MS ⁶	Υ	Н	+1	-0.7	0.0	+7
CDC Defy @	4	112	112	113	-0.9	G	F	MR	R	ı		R		MS ⁶	Υ	Н	0	-3.2	+1.3	+4
AAC Donlow @	4	112	107	111	-0.7	F	G	R	R	R		R		MS ⁶	Υ	Н	+1	-3.3	+1.0	0
CDC Dynamic @	5	105	106	110	+0.1	F	G	MR	R	MR	ı	R	ı	MS	Υ	Н	0	-1.0	+0.6	+1
CDC Evident 3	1	115	113		-0.7	F		R	R	R		R		MS	Υ	Н	+1	-1.2	0.0	+2
CDC Flare	5	102	103	108	-0.3	VG	F	MR	R	S	R	R	ı	MS	Υ	Н	0	+0.5	-0.9	-1
CDC Fortitude @	5	104	103	98	-0.2	F	F	MR	R	R	MS	R	MS	MS	Υ	S	+1	-1.3	+0.2	-2
AAC GoldNet @	4	109	110	112	-0.3	G	G	MR	R	R		R		S	Υ	Н	+1	-3.2	+0.7	+3
AAC Grainland @	5	105	108	104	-0.3	F	G	MR	R	R	R	R	MS	MS	Υ	S	+1	-0.5	-0.6	+1
CDC Precision @	6	106	109	107	-0.4	G	F	MR	R	R	MS	R	MS	MS	Υ	Н	+1	-0.8	+0.9	+2
AAC Schrader 3	2	107	106		-0.4	F	F	R	R	R		MR		- 1	Υ	Н	+1	-1.0	+0.5	+5
AAC Spitfire @	5	108	110	111	-0.4	G	F	R	R	R	MS	R	MS	S	Υ	Н	0	0.0	-0.1	-2
AAC Stronghold @	5	101	100	112	-0.3	VG	G	R	R	MR	R	- 1	- 1	MS	Υ	S	+2	+0.8	+0.6	-3
AAC Succeed VB ⁵ @	5	106	108	105	-0.2	F	F	MR	R	ı	R	R	MS	MS	Υ	Н	0	+1.6	-0.5	+2
Transcend @	5	102	105	93	-0.2	F	G	R	R	R	S	R	I	MS ⁶	Υ	Н	+1	-1.1	+0.1	+7
CDC Vantta O	2	108	96		-0.8	G	G	ı	R	R		R		MS	Υ	Н	+3	-1.1	+0.9	-8
CDC Verona @	5	102	106	103	-0.2	G	F	R	R	R	MS	R	MS	MS	Υ	Н	+1	-0.7	-0.1	+2
AAC Weyburn VB⁵ €	3	111	109		-1.1	F	G	MR	R	R		R		MS	Y	S	+2	+0.4	-0.3	0

1 Years tested indicates years tested in Saskatchewan regional trials. Grain yield analysis includes up to three years of data from registration testing at sites in Saskatchewan. ² For further information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at www.irrigationsaskatchewan.com/icdc.

³H = Hollow; SS = Semi-solid; S = Solid.

4 Multiply by 0.8 = lbs./bu.

⁵ VB = varietal blend. Information on refuge varieties on page VR13.

⁶ These varieties generally express lower Fusarium Head Blight symptoms compared to other MS rated cultivars.

ADDITIONAL INFORMATION

Producers are strongly encouraged to use a combination of the Canadian Food Inspection Agency's List of Registered Varieties www.inspection.gc.ca and the Canadian Grains Commission's Variety Designation Lists www.grainscanada.gc.ca to determine the registration and grade eligibility status of varieties.

Grain yield, protein content, time to maturity, seed weight, volume weight and plant height of all varieties of common wheat and durum wheat are compared to AAC Brandon and Strongfield, respectively. In 2022, the spring wheat and durum varieties supported for registration since 2017 were grown in replicated trials at up to 16 locations. Years tested indicates number of years variety was assessed in regional testing; however, grain yield analysis includes data collected during registration testing at sites in Saskatchewan.

Most varieties have been rated for their relative resistance to pre-harvest sprouting. Under wet post-maturity conditions vari-

eties rated poor have a reduced ability to retain high Hagberg Falling Number values relative to those rated good or very good. Varieties with high test weight retain grade better under adverse harvest weather than those with low test weight. During wet harvest weather, grades drop more rapidly due to sprouting in swathed than in standing crops.

New races of leaf rust and stripe rust continue to evolve. Therefore, the rust resistance in varieties may change from year to year. The Varieties of Grain Crops contains the most up-to-date information on rust resistance in current varieties. Early seeding may minimize risk of crop losses for varieties sown in southeastern Saskatchewan that are rated poor or very poor to leaf rust. Field scouting throughout the growing season is encouraged so that timely corrective action can be undertaken if required.

All varieties are at least moderately resistant to shattering. All varieties have moderate resistance to common root rot.

Seed of varieties rated moderately susceptible and susceptible for bunt and loose smut should be treated with a recommended fungicide. Please refer to the General Seed Facts section of this booklet or the most recent Guide to Crop Protection.

All wheat and durum varieties exhibit similar susceptibility to ergot infestation.

Varietal Blend (VB) designated varieties possess the same Sm1 gene, which confers tolerance to Orange Wheat Blossom Midge. To manage against the build-up of midge resistance to the Sm1 gene, an interspersed refuge is used commercially. These varieties are not immune to wheat midge and can suffer some midge damage when high midge infestation levels occur. More information on midge tolerant wheat cultivars and interspersed refuge can be found at www.midgetolerantwheat.ca.

WHEAT ADDITIONAL INFORMATION (CONT'D)

(CWRS)

CDC Adamant VB, CDC Hughes VB, and CDC Landmark VB, have partially solid stems which may provide protection against the wheat stem sawfly.

Seed of new variety CDC Succession CLPlus VB is expected to be available in limited quantities fall 2023. Seed of new varieties AAC Dutton VB and AAC Hassler is expected to be available in limited quantities fall 2024.

CDC Succession CLPlus VB and CDC Pilar CLPlus are tolerant to the CLEAR-FIELD® herbicides Adrenalin SC and Altitude FX.

CANADA PRAIRIE SPRING RED (CPSR)

Seed of new varieties AAC Perform and **AAC Rimbev VB** is expected to be available in limited quantities fall 2023. Seed of new variety AAC Westlock is expected to be available in limited quantities fall 2024.

CANADA WESTERN HARD WHITE **SPRING (CWHWS)**

Varieties in the Hard White market class are intended for whole wheat bread and yellow alkaline noodle markets.

CANADA WESTERN RED SPRING CANADA WESTERN SOFT WHITE **SPRING (CWSWS)**

Soft white spring wheat may be used as a feedstock in the production of ethanol. Soft white spring wheat varieties are susceptible to pre-harvest sprouting. The leaf spot pathogens that affect other wheat classes also affect soft white cultivars and therefore recommendations for leaf spot control are

CANADA WESTERN SPECIAL PURPOSE (CWSP) SPRING

Varieties in the Special Purpose market class have no defined quality attributes and may have specific end-uses. Most varieties are intended for ethanol and livestock feed purposes. Producers are encouraged to contact the variety distributor or developer regarding uses of these varieties.

CANADA WESTERN AMBER DURUM (CWAD)

CDC Fortitude, AAC Grainland, AAC Stronghold and AAC Weyburn VB have a solid stem which can provide protection against the wheat stem sawfly.

CDC Flare is tolerant to the CLEARFIELD® herbicides Adrenalin SC and Altitude FX.

Seed of new varieties AAC Schrader and CDC Vantta is expected to be available in limited quantities fall 2023. Seed of new varieties AAC Antler and AAC Evident is expected to be available in limited quantities

CWAD varieties are generally more susceptible than CWRS varieties to Fusarium Head Blight. Growing varieties with improved resistance is recommended to reduce infection and disease propagule production as part of an integrated management strategy. AAC Schrader is the first CWAD variety rated as intermediate to fusarium head blight (FHB). Mycotoxin (DON) production by FHB fungi is generally lower for CDC Defy, AAC Donlow and Transcend.

All durum varieties are susceptible to two new races of loose smut.

Triticale

Main Characteristics of Varieties

	Years	Yield	(%)		Seed	Height	Maturity			Re	sistance ⁻	То		
Variety	Tested	Area 1 & 2	Area 3	Weight (kg/hL)	Weight (mg)	(cm)	(days)	Lodging	Stem Rust	Leaf Rust	Bunt	Root Rot	Ergot	FHB
Spring Habit			R	elative to	AC Ultima									
AC Ultima	20	100	100	72.7	43.3	101	104	G	R	R	R	- 1	MS	- 1
Brevis	14	110	111	+3.1	-0.5	-7	+1	VG	R	R	R		I	1
Bunker 🕲	4	92	97	+3.0	+1.1	+5	+1	G	MR	R	R	- 1	- 1	MR
AAC Delight @	8	104	104	+0.6	+4.2	-2	+2	VG	R	R	R		I	I
Pronghorn	20	98	100	-0.3	+0.5	+7	+2	G	MR	R	R	- 1	- 1	MR
Sunray	11	104	103	-1.2	-0.4	-1	+1	G	R	R	R		MR	MS
Taza 🕲	9	103	97	-0.8	+0.5	+6	+2	G	R	R	R		ı	S
Tyndal ⊛	9	98	101	+0.8	-1.2	-6	0	G	R	R	R			MS
Winter Habit			Re	lative to P	ika									
Pika	6	100	100	68		125	Е	F						
Luoma 🕸	5	100	96	-1		+1	L	F						
Metzger	5	96	101	-1		-14	E	G						

ADDITIONAL INFORMATION

Spring triticale matures two to four days later than AC Andrew CWSWS wheat; therefore it should be planted as early as possible. Newer triticale varieties yield two to 10 per cent higher than AC Andrew. Susceptibility to fusarium head blight is at least as great in triticale as in wheat. AC Ultima has an improved Hagberg Falling Number. **Brevis** has

shorter and stronger straw. AAC Delight, Tyndal and Bunker are spring forage types and along with Taza, have reduced awns.

Winter triticale has winter hardiness equal to that of winter wheat. Luoma and Metzger have reduced awns. Metzger is shorter with stronger straw.

All triticale cultivars are susceptible to ergot infection and similar in reaction. Severe infestation of ergot can occur in any of the available cultivars if environmental conditions are favourable. **Sunray** represents an improvement in ergot resistance.

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Winter Wheat

Main Characteristics of Varieties

0-1	V	Yield	d (%)	Duratain	\ACircle a			Resista	ance To			Head	Matricita	Seed	Volume	l latada
Category and Variety	Years Tested ¹	Area 1 & 2	Area 3 & 4	Protein (%)	Winter Survival	Lodg- ing	Stem Rust	Leaf Rust	Stripe Rust	Bunt	FHB	Awned- ness	Maturity Rating	Weight (mg)	Wt.² (kg/hL)	Height (cm)
CWRW ³		- Relativ	e to CD	C Buteo -	-								Rel	ative to C	DC Bute	0
CDC Buteo	24	100	100	12.3	VG	F	- 1	- 1	S	S	MR	Υ	М	32.4	80.9	90
AAC Coldfront ©	4	114	117	+0.1	VG	VG	R	MR	R	S	- 1	Υ	L	-0.1	-0.5	-7
AAC Elevate	12	107	102	-0.5	G	VG	MR	1	S	MR	1	Υ	М	+4.0	-2.5	-8
Emerson @	15	100	95	+0.4	G	VG	R	1	MR	S	R	Υ	М	-4.1	-0.9	-4
AAC Gateway 🕸	14	97	98	+0.7	F	VG	MR	1	MR	S	1	Υ	М	-0.7	-1.6	-14
AAC Goldrush @	10	104	107	+0.3	VG	VG	MR	R	- 1	S	I	Υ	M	+1.3	-2.1	-5
Moats @	16	103	101	+0.4	G	F	R	MR	MR	MS	S	Υ	M	-0.6	-0.8	+1
AAC Network 3	7	101	102	+0.4	G	G	R	MR	R	MR	I	Υ	L	-1.7	-1.9	-14
Radiant @	22	102	102	-0.3	VG	VG	S	S	S	S	S	Υ	L	+1.5	-1.9	-1
AAC Vortex 3	6	97	106	+0.3	VG	VG	R	R	R	S	MR	Υ	M	+1.5	-1.2	-6
AAC Wildfire @	11	111	115	-0.1	VG	G	S	- 1	MR	MR	MR	Υ	VL	+3.5	-1.3	-5
CW Experimental ³																
AAC Icefield @	10	100	98	-0.9	F	G	R	MR	MR	S	T	Υ	М	-1.3	-1.6	-10
CWSP ³																
Pintail	15	108	111	-1.7	VG	F	MS	MS	MR	S	S	N	M	-4.3	-4.3	-2

¹Registration trial data used to supplement regional trial data

ADDITIONAL INFORMATION

Winter wheat can be grown successfully in most areas if seeded into standing stubble within the optimal seeding date period (generally before Sept. 15) and if there is adequate snowfall.

Winter wheat will often escape fusarium head blight (FHB) and orange wheat blossom midge damage if recommended seeding dates are followed.

For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at

www.irrigationsaskatchewan.com/icdc.

CANADA WESTERN RED WINTER (CWRW)

AAC Coldfront is a new variety with very good winter survival and lodging resistance, resistance to stem and stripe rust, moderate resistance to leaf rust, and intermediate resistance to FHB.

AAC Vortex is a new variety with very good winter survival and lodging resistance, resistance to all rusts and moderate resistance to FHB.

Radiant and AAC Elevate have tolerance to the wheat curl mite vector that transmits Wheat Streak Mosaic Virus. To preserve the effectiveness of this wheat curl mite tolerance gene, agronomic practices that eliminate the "green bridge" of plant material that provides a reservoir for the mite should be followed whenever possible.

AAC Wildfire expresses tolerance to some biotypes of the Russian wheat aphid.

Radiant and **AAC Wildfire** express bronze chaff at maturity.

CANADA WESTERN EXPERIMENTAL

AAC Icefield is a hard white winter wheat that is eligible for experimental grades un-

der an Identity Preserved system to facilitate market research. **AAC Icefield** expresses high milling yield of bright-white, low-ash flour with good gluten strength at lower protein concentrations that may be of interest in some niche markets. For more information, contact the distributor.

CANADA WESTERN SPECIAL PURPOSE (CWSP)

Varieties in the Special Purpose market class have no defined quality attributes and may have specific end uses. Most varieties are intended for ethanol and livestock feed purposes. Producers are encouraged to contact the variety distributor or developer regarding specialty uses of these varieties.

The awnless head of **Pintail** may improve palatability when harvested for forage or silage.

Fall Rye

Main Characteristics of Varieties

Variety	Years Tested	Yield Area 1 & 2	I (%) Area 3 & 4	Protein (%)	Winter Survival	Re	esistance ⁻ Shatter- ing	To¹ Ergot² (%)	Heading Date ³ (days)	Maturity⁴ (days)	Seed Weight (mg)	Volume Weight⁵ (kg/hL)	Height (cm)	Falling Number (sec.)
Open-Pollinated	-	Relative	to Hazlet	-							Relative	to Hazlet		
Hazlet	19	100	100	11.3	VG	G	VG	1.2	Jun 9	Aug 2	36.5	73.2	100	182
Danko	4	102	94	+0.6	VG	VG			-2	-2	-3.7	+0.5	0	
Prima	19	91	96	+0.3	VG	G	F	-0.3	-1	-3	-5.2	-0.8	+11	+48
Hybrid Varieties														
KWS Bono	10	125	127	-1.0	VG	VG		0.0	+1	0	-4.7	-0.3	-12	+104
Brasetto	6	113	122	-0.9	VG	G		0.0	0	+1	-3.5	-1.7	-10	+107
KWS Daniello §	7	118	117	-0.6	VG	VG		-0.1	0	0	-4.2	-1.3	-9	+120
KWS Gatano ©	7	121	123	-1.0	G	G		0.0	0	+1	-5.5	-0.4	-12	+106
KWS Receptor	3	127	137	-0.8	VG	VG		0.0	0	-1	-6.3	-0.1	-10	+104
KWS Sandor	3	120	129	-1.0	VG	VG		-0.3	0	-1	-5.9	-0.8	-9	+110
KWS Serafino 3	6	123	128	-0.9	VG	VG		-0.2	0	0	-4.8	-0.8	-9	+135
KWS Trebiano O	6	120	125	-0.7	VG	VG		-0.3	0	0	-1.9	-0.6	-7	+123

¹Ratings: VG = Very Good; G = Good; F = Fair.

ADDITIONAL INFORMATION

Fall rye is much more cold tolerant than winter wheat or winter triticale, with field survival being approximately 30 to 100 per cent better than winter wheat for current fall rye varieties.

A major factor in marketing rye grain into the milling market is sprouting. This is generally measured using the Hagberg falling number test and is measured in seconds. Typically, a falling number of 180 seconds or greater is preferred by the rye milling market. Falling number is heavily influenced by moisture

around harvest time and producers must make sure rye is harvested in a timely manner, similar to wheat crops. There is considerable variation in fall rye varieties for falling number; this must be considered if the milling market is the targeted end-user for rye grain.

Very little recent information on shattering in rye has been obtained, as it has not been observed in field trials recently, thus no information is available for recently released varieties. For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at

www.irrigationsaskatchewan.com/icdc.

<u>Forage Rye</u>

KWS Propower is a hybrid fall rye variety that is suited for silage use. Similarly, **KWS Progas** is a hybrid fall rye made for the forage producer (silage or grazing).

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² Multiply by 0.8 = lbs./bu.

³ Includes direct and indirect comparisons with **CDC Buteo**.

² Ergot bodies in grain as per cent of total weight during registration testing. All varieties are susceptible to ergot. Current testing does not suitably differentiate genetically controlled resistance to ergot infection (varietal differences) from other factors such as weather, crop development stage, inoculum load and management.

³ Flowering typically occurs seven to 14 days after heading, depending on weather conditions.

⁴ Wet and cool conditions can prolong maturity beyond these dates.

⁵ Multiply by 0.8 = lbs./bu.

Malting Barley

Main Characteristics of Varieties

Category ¹	Years	2 or 6		Yi (% AAC	eld Synergy)	Relative				- Resis	tance T	Го				
and Variety	Tested ²	Row	Awns³	Area 1 & 2	Area 3 & 4	Maturity ⁴	Lodg- ing		Spotted Net Blotch ⁵	Spot Blotch	Scald		Other Smuts	Root Rot	Stem Rust	
Malting Acceptance: I	Recomme	nded														
AAC Synergy @	7	2	R	100	100	М	F	MR	R	R	S	S	I	I	MR	T
AAC Connect @	7	2	R	99	95	М	G	I	MR	MR	S	S	R	MS	MR	MR
CDC Copeland	7	2	R	92	93	М	F	1	1	S	MS	MS	ı	I	MR	- 1
CDC Fraser 🛭	7	2	R	100	98	М	G	MR	R	R	MS	R	R	MS	MR	I
Malting Acceptance: I	n Develop	ment o	r Limited	Deman	d											
CDC Bow @	7	2	R	94	93	М	VG	S	MR	- 1	MS	S	- 1	MS	MR	ı
AB BrewNet 3	6	2	R	97	100	L	G	MS	1	MS	ı	MS	MR		MR	MR
CDC Churchill 0	7	2	R	105	104	М	G	MR	MR	I	S	MS	MR		MR	MS
CDC Copper @	7	2	R	104	100	М	G	MR	MR	1	MR	I	MR		- 1	MS
CDC Goldstar ⁶ @	7	2	R	99	95	М	G	1	MR	I	S	I	R	S	MR	MS
Legacy	6	6	S	90	85	M	G	S	MR	MR	MS	1	MR	MR	MR	MS
AC Metcalfe	7	2	R	87	86	М	F	S	1	- 1	MS	R	I	- 1	MR	- 1
CDC PlatinumStar ⁶ ⊕	7	2	R	94	88	М	F	1	MR	S	S	S	R	S	- 1	MR
AAC Prairie 🛭	4	2	R	97	98	М	F	MR	1	I	MS	S	MR		MR	I
Other ⁷																
AAC Goldman @	7	2	R	95	94	М	G	I	R	I	- 1	S	I		I	MR
Torbellino	3	2	R	98	94	М	G	MS	MS	MS	1	MS	R		MS	S

ADDITIONAL INFORMATION

Growers are reminded that the malting and brewing industry is cautious about using new varieties. The Canadian Malting Barley Technical Centre prepares a list of recommended varieties annually. The recommended list is available on page VR20.

Varietal purity is critical to producing high-quality malt. Malting and grain companies require a minimum 95 per cent varietal purity specification on malting barley deliv-

Growers are cautioned that most malting varieties, especially two-row barley, are more susceptible to sprouting.

Harvesting grain over 16 per cent moisture malting varieties. Final acceptance is givand then using aeration bins for drying can lead to sprouting and embryo death. Seed with reduced germination is undesirable for seed or malting.

For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at

www.irrigationsaskatchewan.com/icdc.

Lines Tested for Malting and Brewing Quality

Small-scale tests are a good measure of malting potential, but are not sufficient to determine the commercial acceptability of

en only after two years of successful plant scale evaluation. Several carload lots of barley are malted and brewed. The beer is then given the ultimate test—a taste panel. This process normally takes a minimum of three years, since a crop grown in one year will be malted in January-February, brewed in May-June and aged and tasted in October-November of the following year.

Feed and Food Barley

Main Characteristics of Varieties

Category	Years	2 or 6		(0/ 4 4 0	eld Synergy)	Relative				Resi	stance	То				
and Variety	Tested ¹	Row	Awns ²	Area 1 & 2	Area 3 & 4	Maturity ³	Lodg- ing	Netted Net Blotch ⁴	Spotted Net Blotch ⁴	Spot Blotch	Scald		Other Smuts	Root Rot	Stem Rust	FHE
Hulled																
Altorado @	7	2	R	104	99	М	G	S	MR	S	S	MR	MR	MR	MR	ı
CDC Austenson @	7	2	R	102	103	М	G	MS	R	MR	S	S	R	ı	I	- 1
Bighorn O	5	2	R	116	107	М	F	I	l l	- 1	S	I	R		- 1	- 1
Brahma 🕸	7	2	R	100	99	М	G	S	I	S	MS	MS	R	MR	MR	- 1
Canmore @	7	2	R	96	99	L	G	MS	MR	1	MR	R	R	ı	MS	- 1
Cantu O	5	2	R	110	106	L	G	1	I	I	S	I	R		R	- 1
Claymore @	7	2	R	103	98	L	VG	S	1	I	S	S	R	I	MR	MR
CDC Cowboy @	6	2	R	85	89	L	F	1	MR	I	MS	MS	MR	I	MR	MR
CDC Durango 3	4	2	R	109	108	М	VG	MR	MS	I	MS	S	R		I	I
AB Hague 3	5	2	R	102	100	L	G	1	I	I	ı	MR	R		MR	MR
Ibex O	5	2	R	108	105	М	G	1	1	I	S	S	R		R	I
AAC Lariat O	3	2	R	108	104	М	G	R	MR	1	S	R	R		R	MS
CDC Maverick ®	6	2	S	79	83	М	F	1	MR	1	MS	S	R	I	MR	MR
Oreana @	7	2	R	98	93	L	VG	S	MR	1	S	S	R	- 1	1	S
RGT Planet ® VUA	2	2	R	109	100	М	G									
AB Prime 3	4	2	R	108	103	М	G	MR	I	1	I	S	R		R	I
CDC Renegade O	3	2	S	109	104	М	F	1	MR	MS	S	MS	MR		MR	MR
Sirish @	7	2	R	95	91	М	VG	MS	MS	MS	MR	S	R		S	MS
AB Wrangler 3	6	2	R	104	101	М	F	1	1	MR	MS	MS	MR		R	MR
AB Advantage @	7	6	S	103	100	VL	VG	MS	I	ı	ı	MR	ı		ı	S
Amisk @ §	7	6	SS	97	98	М	G	1	MR	MR	- 1	S	MS	MS	MR	S
AB Cattlelac @	7	6	SS	100	100	L	VG	MS	MR	R	- 1	- 1	R		1	S
AC Rosser §	11	6	S	101	99	М	G	I	MR	MR	S	MS	MR	MR	MR	S
AB Tofield O	5	6	S	109	107	L	G	MS	I	I	I		MR		R	S
Hulless																
CDC Clear ⊗	7	2	R	78	89	L	G	MS	R	I	MS	R	R	I	MR	MR
CDC McGwire 💩	8	2	R	84	83	М	G	I	MR	I	I	MS	MR	MR	I	MR
Hulled varieties being	tested fo	or adapt	ability in	Western	n Canada											
Esma 3 VUA	3	2	R	110	102	М	G									
KWS Kellie O VUA	3	2	R	113	102	L	G									

¹ Registration and regional trials in Saskatchewan.

ADDITIONAL INFORMATION

Most available varieties are susceptible to one or more types of smut. Therefore, seed of susceptible varieties should be treated with a registered fungicide on a regular ba-

Two-row barley varieties are generally more resistant to shattering than six-row varieties.

Forage Barley

AB Advantage, AB Cattlelac, AB Tofield and **AC Ranger** are six-row forage varieties. AB Haque, CDC Cowboy, CDC Maverick and CDC Renegade are two-row forage varieties.

Hulless

In hulless varieties the hull is left in the field; therefore, comparable yields are nine to 12 per cent lower. Hulless seed is more susceptible to damage than hulled seed, so handling should be minimized.

CDC Ascent, CDC Fibar, CDC Marlina, CDC Rattan and CDC Valdres are tworow, high beta-glucan, waxy starch varieties. CDC Hilose is a two-row, high beta-glucan, high amylose starch variety. CDC Carter, CDC McGwire and Roseland are two-row, normal starch varieties.

<u>Irrigation</u>

Disease resistance, straw strength and maturity are more critical when barley is grown under irrigation. Growers should select early, strong-strawed, disease-resistant varieties. For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at

www.irrigationsaskatchewan.com/icdc.

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² Registration and regional trials in Saskatchewan.

³ R = Rough; S = Smooth.

⁴ Relative maturity of the check **AAC Synergy** is M (on average, 94 days from seeding to swathing ripeness).

⁵ There are two forms of net blotch, netted (Pyrenophora teres f. teres) and spotted (Pyrenophora teres f. maculata). Generally, in Saskatchewan, the netted form is more prevalent.

⁶ CDC PlatinumStar and CDC Goldstar are available only through a closed loop Identity Preserved program offered by Prairie Malt Limited/Sapporo Breweries and their agents.

⁷ Although not on the CMBTC list, a malting barley market may exist for these varieties.

² R = Rough; S = Smooth; SS = Semi-Smooth.

³ Relative maturity of the check, **AAC Synergy**, is M (on average, 94 days from seeding to swathing ripeness).

⁴ There are two forms of net blotch: netted (Pyrenophora teres f. teres) and spotted (Pyrenophora teres f. maculata). Generally, in Saskatchewan, the netted form is more prevalent



THE CANADIAN MALTING BARLEY TECHNICAL CENTRE (CMBTC) RECOMMENDED LIST provides producers with an indication of which malting barley varieties have the greatest potential for selection and marketing. Each variety on the recommended list has been pilot scale tested at the CMBTC and all exhibit good malting and brewing characteristics. All varieties on the list are registered with the Canadian Food Inspection Agency (CFIA).¹

RECOMMENDED VARIETIES

VARIETY	SEED DISTRIBUTOR	MARKET COMMENTS	PRODUCTION
AAC Connect	CANTERRA SEEDS	Growing Demand	Increasing
CDC Fraser	SeCan	Growing Demand	Increasing
CDC Copeland	SeCan	Stable Demand	Decreasing
AAC Synergy	FP Genetics	Declining Demand	Stable

Check with your malting barley buyer prior to seeding for additional contracting opportunities including the following varieties: AC Metcalfe; CDC Bow (SeCan); Legacy; CDC Copper (FP Genetics); Bill Coors 100 (Stamp Seeds); CDC PlatinumStar; CDC GoldStar (CANTERRA SEEDS).

A list of all CGC designated malting barley varieties can be seen on the Canadian Grain Commission web site under "Variety Designation Lists".²

THE CMBTC AND ITS MEMBERS RECOMMEND

Talk with your malting or grain company representative, local elevator operators, or representative seed company about

opportunities to grow and market malting barley in your area.

Use certified seed to ensure varietal purity, reduce incidence of disease and increase likelihood of selection for malt.

Explore opportunities to **contract production** of malting barley varieties.

NEWLY REGISTERED VARIETIES IN DEVELOPMENT

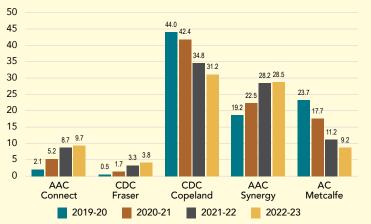
These newly registered varieties are undergoing seed propagation and commercial market development. Contact the seed distributor for opportunities to trial these promising new varieties.

VARIETY	SEED DISTRIBUTOR
CDC Churchill	SeCan
AB BrewNet	SeedNet
AAC Prairie	CANTERRA SEEDS

¹ The varieties on this recommended list are targeted primarily at western Canada and may not reflect malting barley varieties with the greatest potential for selection and marketing in eastern Canada.

² https://www.grainscanada.gc.ca/en/grain-quality/variety-lists/

SEEDED AREA BY MAJOR MALTING VARIETY % - W. CANADA



Distribution of malting barley varieties as a percentage (%) of area seeded with malting barley in western Canada in 2022. Source: CGC (based on data from provincial crop insurance agencies).

For inquiries please contact the CMBTC by email at cmbtc@cmbtc.com or call 204-984-4399.





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Oat

Main Characteristics of Varieties

			eld	Test	2/		2/				- Resista	ance To	
Variety	Years Tested ¹	(% CS C Area 1 & 2	Camden) Area 3 & 4	Weight (g/0.5L)	% Hull	Hull Colour	% Plump	Relative Maturity ²	Height (cm)	Lodging	Stem Rust	Crown Rust	Smu
CS Camden @	7	100	100	242	24.3	White	82	L	94	VG	S	MS	- 1
CDC Anson O	3	102	100	243	20.7	White	90	М	85	VG	S	MR	R
CDC Arborg @	7	105	106	250	20.1	White	85	М	108	VG	S	1	R
CDC Boyer	7	88	90	232	23.3	White	85	М	105	G	I	1	MS
CDC Dancer §	7	88	88	253	19.8	White	86	М	103	G	- 1	1	R
Derby	7	87	92	247	22.9	White	79	М	107	G	S	S	MS
AAC Douglas ©	6	102	100	245	20.7	White	81	М	98	G	I	MR	R
CDC Endure @	7	106	105	245	21.2	White	89	М	102	VG	S	MR	R
CDC Haymaker @	5	82	85	225	24.9	White	87	VL	111	G	S	S	MR
CDC Minstrel @	7	95	97	245	21.0	White	92	L	98	VG	I	MS	R
AC Morgan	7	100	102	236	25.1	White	82	L	101	VG	S	S	I
CDC Morrison 💩	7	91	86	248	24.4	Yellow	83	L	95	VG	I	MS	R
CDC Nasser	7	98	97	233	21.8	White	79	VL	106	G	MS	S	R
CDC Norseman @	7	95	95	241	20.0	White	81	М	102	G	S	MR	MS
ORe3542M ₪	7	97	92	247	22.5	White	95	L	93	VG	S	R	R
ORe Level48 @	4	92	89	250	20.5	White	89	L	95	VG	I	MR	R
ORe Level50 🛭	4	90	88	248	21.5	White	93	L	98	VG	S	R	R
CDC Ruffian ⊛	7	101	97	247	20.4	White	88	L	95	G	S	1	R
Souris 💩	7	97	93	253	21.5	White	72	М	98	VG	MR	MS	R
Summit ⊛	7	93	95	256	21.6	White	81	M	94	G	ı	1	R
Triactor 💩	7	103	108	240	22.8	White	80	L	99	G	S	MR	- 1
AAC Wesley 🍪	4	98	99	246	20.9	White	85	М	91	G	I	MS	R
Varieties being teste					20.5	\		M	05	0		В	_
Akina @ §	5	102	100	242	22.5	White		M	95	G		R	R
Alka 🔮 §	5	105	101	247	22.8	White		L	95	G	S	I	R
Kalio 🍪	2	97	96	249	21.8	White		M	91	G	S	MR	R
Kara @ §	5	102	100	247	23.2	White		M	88	G		MR	MR
Kyron 🛭	3	105	102	244	23.7	White		M	98	G	S	MR	R

¹ Registration and regional trials in Saskatchewan.

ADDITIONAL INFORMATION

Although disease pressure is lower in eastern Saskatchewan than in Manitoba, crown rust races capable of attacking most varieties, except those with an MR or R rating, are increasing in southeast Saskatchewan. Early seeding will reduce the likelihood of severe infection.

Producers growing oats for the milling market are advised to check the "approved" varieties list available from the various oat millers.

For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at

www.irrigationsaskatchewan.com/icdc.

Feed Oat

CDC SO-I and **CDC Nasser** are specialty feed oat varieties with higher digestible energy for cattle.

Forage Oat

CDC Baler, CDC Haymaker and Murphy are forage oat varieties available for annual forage production in Saskatchewan.

Hulless Oat

AC Gwen is a hulless variety available for production in Saskatchewan. The hull is part of normal oat yield, thus hulless types yield less. They are difficult to handle and store and should be stored at less than 12 per cent moisture.

False Oats or Fatuoids

False wild oats, or fatuoids, are off-types within common oat fields that have an appearance similar to wild oat, most notably a prominent, dark awn and increased hairiness at the base of each floret. They are thought to result from the infrequent cross-pollination between common oat (*Avena sativa*) and true wild oat (*Avena fatua*). As such, their presence will likely be observed more often in fields planted from farm-saved seed. They have been reported within fields of common oat at rates up to one per cent and occur within all oat varieties.

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² Maturity rating L = 98 days.

Canary Seed

Main Characteristics of Varieties

Variety	Туре	Years Tested	Yield ¹ (%)	Days to Heading	Days to Maturity Relative to C	Height (cm) CDC Bastia	Test Weight (kg/hL) ²	Seed Weight (g/1000)
CDC Bastia	glabrous	16	100	55	98	99	70.7	8.0
CDC Calvi @	glabrous	12	106	+1	+3	+4	+0.6	+0.3
CDC Cibo @	glabrous	12	107	0	0	-9	-0.5	+0.2
CDC Lumio O	glabrous	8	117	+2	+1	+2	-0.5	+0.4
Cantate	hairy	16	115	0	+3	-3	-7.3	+0.6
Keet	hairy	16	127	+3	+3	+4	-6.1	-0.3

¹ Yield data not collected by Area, 2007-2022.

ADDITIONAL INFORMATION

The seed of annual canary grass, more commonly called Canary seed, is used as food for caged and wild birds. **Keet** pedigreed seed has not been produced in recent years.

Seed hulls of CDC Bastia, CDC Calvi, CDC Cibo and CDC Lumio do not have the small sharp hairs that cause irritation when Canary seed is threshed and handled and are called glabrous. CDC Cibo is yellow-seeded while the other varieties produce brown seed.

Glabrous varieties that have been dehulled are approved for human consumption in Canada and the United States, but markets are currently limited.

Canary seed plants have a dense, shallow root system and growing the crop on sandy soils is not recommended. Canary seed may be grown successfully on stubble, providing adequate moisture is available for rapid germination and emergence. The recom-

mended seeding rate is 34 kg/ha (30 lb./ac.) with germination greater than 85 per cent. Reduced emergence might be expected if Canary seed is seeded below five cm depth.

Canary seed is subject to damage by English grain aphid and bird cherry oat aphid. Aphid populations build up rapidly on leaves and stems, inside the boot and panicles of the plant in July and August and may require an insecticide application to prevent yield loss. Information from the United States indicates that infestations of 10 to 20 aphids on 50 per cent of the stems prior to soft dough stage may cause enough damage to warrant insecticide application. The aphids often hide in the dense head of the Canary seed plant. Damage may occur at populations below these levels.

Canary seed leaf mottle is a foliar disease that can cause yield losses. Leaf mottle is caused by a fungus, *Septoria triseti*, that only affects Canary seed. The disease is in-

conspicuous at early stages because there is little visual contrast between healthy and diseased leaf area. Stubble-borne inoculum is the source of infection, thus crop rotation is key in limiting the severity of leaf mottle.

In recent years Fusarium spp., particularly F. graminearum, were commonly found in a majority of the Saskatchewan Canary seed fields surveyed. The average incidence within fields was generally low (three to four per cent). In most instances there were no obvious infection symptoms and seed plating was required to detect the fungus. In some cases an orange discoloration arising from fusarium infection is visible on the infected panicles in the field.

Canary seed is resistant to shattering. It may be straight-combined or swathed when fully mature. For more information on Canary seed, consult the Ministry of Agriculture publication *Canaryseed*.

OTHER CROPS

BUCKWHEAT

Buckwheat is sensitive to high temperatures and dry weather conditions in the blossom stage, which can reduce seed set and yields. New self-pollinated varieties are being released. Buckwheat is very susceptible to frost at all stages of growth. Delayed seeding is advisable to avoid spring frost.

CARAWAY

Caraway is a biennial spice crop, producing seed in the second year and sometimes in the third year. Seedlings are small, slow in developing and compete poorly with weeds. The crop is usually swathed because of its indeterminate growth habit and seed shattering.

SAFFLOWER

Safflower is an annual oilseed or birdseed crop that can be grown successfully in the Brown Soil Zone. Safflower must be sown early (late-April).

Saffire matures in about 120 days. Seed should be planted shallow but into a firm, moist seedbed at about 30 kg/ha (27 lb./ac.). Saffire has moderate resistance to sclerotinia head rot and alternaria leaf spot. Contract production is advised.

CORIANDER

Coriander is an annual spice crop. Seedlings are small, slow to develop and compete poorly with weeds. The large seeded type is earli-

er maturing than the small seeded type. **CDC Major** is a large-seeded variety and **CDC Minor** is a small-seeded variety. The crop is usually straight-cut to avoid wind damage in swaths. For more information, consult the Ministry of Agriculture publication *Coriander*.

FENUGREEK

Fenugreek is a leguminous spice crop adapted to dryland conditions in the Dark Brown and Brown Soil Zones. The crop should be seeded early to avoid yield and quality loss from fall frost. Contract production is advisable, as markets are limited.

Quinoa

Quinoa (Chenopodium quinoa) is a long season (95 to 120 days to maturity) broadleaf pseudocereal that can be grown on a wide range of soil types. Early in the growing season, it is sensitive to excessive moisture. Though guinoa can tolerate and grow in dry areas, it yields higher in higher moisture areas and under irrigation. Quinoa is frost-tolerant both as a seedling and at maturity. Seeding mid-May, around May 15th, into a well-prepared seedbed is considered best practice due to the long growing season required by the crop. Quinoa can be direct seeded at a 1.5 cm (0.5 in.), though at least one tillage pass prior to planting is preferred for even emergence.

With sufficient moisture, quinoa is tolerant to high temperatures and is resistant to lodging. Quinoa has an indeterminant growth habit. Heights will vary depending on fertility and environmental conditions, but average about 100 cm tall. Quinoa should be straight cut at maturity.

Quinoa is grown exclusively under total production contract, with the seed marketed as whole seed, as ingredients and in value-added markets.

NQ94PT is a golden seeded variety with high seed yield and uniform, medium/late maturity. NQ Red is a red-seeded quinoa

variety with high seed yield and medium maturity. NQ20W® is a white seed quinoa variety with high yields and early maturity. NQ20BL® is a black seeded variety with late maturity and high yield.

For more information on quinoa, contact NorQuin at 1-855-778-4662 or *www.quinoa.com.*

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² Multiply by 0.8 = lbs./bu.

PULSE CROPS

Lentil

Main Characteristics of Varieties

	1 to object of all	V	Yie	eld : Maxim)	11-1-64	D 4	NA - to collect	Resist	ance To	0101	0-4-4-4	0 1 \ \ \ \ - 1 - 1 \
Variety	Herbicide Tolerance ¹	Years Tested ²	Area 1 & 2	Area 3 & 4	(cm)	Flower	Maturity Rating ³	Ascochyta Blight	Anthracnose Race 1	Seed Coat Colour	Cotyledon Colour	Seed Weigh (g/1000)
Small Red												
CDC Maxim	CL	17	100	100	34	51	E/M	MR	MR	gray	red	40
CDC Carmine @ §		11	111	106	34	54	E/M	MR	MR	gray	red	40
CDC Dazil	CL	13	97	92	33	53	E/M	MR	1	gray	red	35
CDC Impulse 🛭	CL	13	108	102	37	52	E/M	MR	MR	gray	red	44
CDC Karim 🛭	CL	5	102	100	35	55	E/M	MR	MR	gray	red	39
CDC Nimble @	CL	9	108	107	35	52	E/M	MR	MR	gray	red	38
CDC Proclaim 🛭	CL	12	106	102	34	51	E/M	MR	MR	gray	red	40
CDC Redmoon @		12	114	106	33	52	E/M	MR	MR	gray	red	41
CDC Simmie 0	CL	8	107	102	34	53	E/M	MR	MR	gray	red	39
Extra Small Red												
CDC Impala	CL	13	84	82	30	51	Е	MR	MR	gray	red	31
Large Red												
CDC KR-2 @	CL	11	104	90	37	52	М	MR	MR	gray	red	55
CDC Sublime O	CL	7	118	110	38	54	E/M	MR	MR	green	red	53
Small Green										-		
CDC Imvincible	CL	14	94	81	33	49	Е	MR	MR	green	yellow	34
CDC Jimini 🛭	CL	7	108	99	36	50	E/M			green	yellow	38
CDC Kermit ®		13	106	97	36	49	E/M	MR	MR	green	yellow	34
CDC Viceroy		6	97	98	34	49	Е	MR	MR	green	yellow	33
Medium Green												
CDC Imigreen	CL	11	78	71	44	50	М	MR	S	green	yellow	57
CDC Impress	CL	7	87	71	34	50	М	MR	MS	green	yellow	52
Large Green												
CDC Greenland		19	89	70	38	52	M/L	MR	S	green	yellow	64
CDC Greenstar		14	99	83	40	52	M/L	MR	1	green	yellow	73
CDC Grimm ©	CL	8	94	84	40	55	M/L	MR	MR	green	yellow	75
CDC Impower	CL	12	82	68	41	52	M/L	MR	S	green	yellow	64
CDC Lima @	CL	10	93	90	35	51	M/L	MR	S	green	yellow	74
French Green												
CDC Marble		13	103	96	36	49	Е	MR	I	green marble	yellow	34
CDC Peridot	CL	8	84	94	37	48	Е	I	MS	green marble	yellow	38
CDC Pilgrim 6	CL	6	98	93	35	52	E/M			green marble	green	33
Green Cotyledon												
CDC Imerald 3	CL	6	90	87	35	53	E/M			green	green	54
CDC QG-3 @	CL	7	92	66	38	53	E/M	ı	MR	green	green	46
CDC QG-4 @	CL	9	93	91	36	53	E/M	1	MR	green marble	green	33
Spanish Brown												
CDC SB-3 @	CL	8	90	87	35	51	Е	I	MR	gray dotted	yellow	38
CDC SB-4 @	CL	8	103	101	34	53	E/M	ı	MR	gray dotted	vellow	41

¹ CL indicates Clearfield® tolerant variety.

Lentil (cont'd)

Main Characteristics of Varieties

ADDITIONAL INFORMATION

Seed supplies may be limited for recently released varieties such as CDC Simmie, CDC Sublime, CDC Jimini, CDC Pilgrim and CDC Imerald.

Types of Lentils

Small red lentils are the most popular class grown in Saskatchewan. Large red lentils have red cotyledons with a much larger seed size than small red lentils.

Green lentils are classified by seed size, with the small greens sometimes referred to as

Eston-type and the large greens referred to as Laird-type. They have green seed coats with a yellow cotyledon. The large green types represent the highest share of green lentil acres.

French green lentils have a green-marbled seed coat with yellow cotyledons. Seed size is small, most similar to small red lentils. French green lentils retain their shape better than small reds or greens upon cooking. **CDC Marble** has a slightly lighter colour pattern than other French green varieties.

Green cotyledon lentils have a green or marbled seed coat with green cotyledons and a small-to-medium seed size.

Spanish brown lentils have a grey-dotted seed coat with yellow cotyledons. This market class is sold primarily into Spain. Seed size is small, most similar to small reds.

Chickpea

Main Characteristics of Varieties

Variety	Years		eld Amit)	Ascochyta	Height	Days to	Maturity	Seed Weight	Seed	Seed or Seed Coat	Tolerance to Solo ADV
varioty	Tested	Area 1	Area 2	Blight ¹	(cm)	Flower	Matarity	(g/1000)	Shape ²	Colour ³	(imazamox) herbicide
Kabuli											
Amit (B-90)	21	100	100	4.4	47	56	L	258	Ro	В	no
CDC Alma §	12	92	91	6.0	41	53	L	363	RH	В	yes
CDC Frontier	20	107	104	4.5	45	55	L	350	RH	В	no
CDC Lancer 0	4	112	105	4.9	41	52	М	350	RH	В	yes
CDC Leader	17	107	104	4.5	41	54	М	390	RH	В	no
CDC Luna §	18	98	100	5.7	40	53	ML	368	RH	В	no
CDC Orion	16	105	102	5.6	43	50	L	428	RH	В	no
CDC Orkney ©	4	111	109	4.8	44	53	ML	355	RH	В	yes
CDC Palmer 🛭	11	105	100	4.9	42	52	ML	415	RH	В	no
Desi											
CDC Consul	14	111	108	4.0	46	53	М	299	Р	LT	no
CDC Cory	13	112	106	4.3	47	56	М	268	A/P	Т	yes
CDC Kala O	4	100	92	4.4	41	52	E	235	Α	BL	yes

Ascochyta Blight at pod filling period: 0-9 scale; 0 = no symptom; 9 = plants are completely blighted. Scores 4-6 are considered intermediate resistance.

ADDITIONAL INFORMATION

Please refer to the 2023 SaskSeed® Guide for pedigreed seed availability. For more details on production, consult the Growing Pulses section of the Saskatchewan Pulse Growers webpage (www.saskpulse.com).

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² Co-op and Regional Trials in Saskatchewan since 2006. Comparisons to the check variety, small red lentil **CDC Maxim**.

³ Normal maturity range in days based on May 1 seeding is E = 100, VL = 110 but maturity can be much earlier in dry years, much later in cool wet years. See page VR10 for more information on maturity range in lentil.

² Seed shape: A = angular; P = plump; RH = Ram-head; Ro = Round.

³ Seed or seed coat colour: B = beige; BL = black; LT = light tan; T = tan.

Field Pea

Main Characteristics of Varieties

	Years	Y	/ield (%))	Protein	Relative	I oda-	Vine			R	esistan	ce To			See
Variety	Test- ed ¹	1, 2 & South 3	North 3 & 4	Irriga- tion²	(%)	Maturity	ing ³	Length (cm)	MB ⁴	Powdery Mildew	Fusarium Root Rot	SCB⁵	Bleach- ing	SCD ⁶	Gree- ness ⁷	Weig (g/100
'ellow		Relativ	e to CD	C Amari	llo											
DC Amarillo	14	100	100	100	23.0	M	3.5	85	4.5	R	MR	F	na	F	G	230
∖barth ७	7	93	90	92	-0.1	E	3.5	75	5.0	R	ı	F	na	G	G	280
AAC Aberdeen 🛭	4	108	103		-1.1	M	3.5	85	4.5	R	- 1	F	na	F	G	250
AAC Ardill	10	102	99	91	-1.5	M	3.5	85	4.5	R	MR	G	na	G	G	230
AC Beyond O	4	107	108		+0.3	E	4.5	80	5.0	R	MR	F	na	F	G	220
CDC Canary 🛭	10	99	100		+0.1	E	3.5	85	4.5	R	ı	G	na	F	F	230
AC Carver 🛭	7	102	100		-1.3	Е	4.0	85	5.0	R	- 1	G	na	F	G	240
AC Chrome @	7	106	104		-1.0	M	4.5	75	4.5	R	ı	G	na	G	G	240
DC Citrine O	5	109	109		+0.3	M	4.0	85	4.0	R	MR	G	na	G	G	220
AAC Delhi @ §	5	103	101		+0.7	M	4.5	80	5.0	R	ı		na	F	F	290
DC Golden	10	92	83	90	+0.7	Е	4.5	75	5.0	R	ı	G	na	G	G	230
DC Hickie O	6	108	107		+0.5	М	3.5	85	4.5	R	MR	G	na	G	G	230
CDC Inca 🛭	11	104	101	104	-0.6	М	4.0	85	4.5	R	I	G	na	G	F	230
AC Julius O	4	110	108		+0.4	Е	4.0	85	4.5	R	MR	G	na	G	G	210
AC Lacombe @ §	9	97	99	101	-0.7	М	3.5	85	5.0	R	ı	F	na	F	F	250
DC Lewochko 🗈	9	103	104		+0.9	М	3.5	90	4.5	R	ı	G	na	G	G	230
DC Meadow	12	93	90	91	-0.5	Е	4.0	85	5.0	R	I	G	na	G	G	220
AC Profit ®	6	103	109		+0.8	М	4.5	90	4.5	R	I	F	na	G	G	230
DC Saffron	12	98	92	93	-0.3	Е	4.0	80	4.5	R	ı	G	na	F	G	250
DC Spectrum @	11	105	103		+0.7	М	3.5	85	4.5	R	ı	G	na	G	F	240
DC Tollefson ©	6	108	108		-0.3	М	3.0	90	4.0	R	MR	G	na	G	G	240
Green																
Blueman §	6	94	90		+0.5	М	4.5	85	4.5	R	- 1	na	F	F	na	220
CDC Forest @	10	102	102		0.0	M	4.0	85	4.5	R	I	G	F	G	na	230
CDC Greenwater	11	99	93	89	-0.9	M	3.5	90	4.0	R	MR	F	G	F	na	230
DC Huskie O	5	109	108		-0.8	M	3.5	85	4.0	R	MR	G	G	G	na	220
CDC Limerick	14	95	91	91	+2.9	М	4.0	85	4.5	R	- 1	G	G	G	na	210
DC Raezer	12	82	80	95	-0.1	Е	3.5	80	5.0	R	MR	G	G	G	na	220
CDC Rider O	6	101	99		-0.3	М	3.0	85	4.5	R	MR	G	G	G	na	230
CDC Spruce @	12	96	98		+0.3	М	4.0	85	4.5	R	ı	F	G	F	na	240
DC Striker	12	82	81	84	+1.9	М	3.5	80	4.5	S	MR	VG	G	G	na	240
Red																
Redbat 8 @ §	6	92	85		+1.0	М	5.0	85	5.0	R		G		G		200
Redbat 88 @ §	5	91	92		+0.3	М	4.5	90	4.5	R		G		G		190
/laple																
DC Acer §	3	84	73			М	6.5	60	5.0	R		G		VG		170
CDC Blazer @	6	100	102		+1.9	М	5.0	80	5.0	R		G		VG		190
AC Liscard §	7	89	89		-0.8	М	4.0	85	5.0	R		G		VG		200
AC Lorlie	2	99	100		-0.6	М	4.0	85	4.5	R		G		VG		240
DC Mosaic	4	81	74	58		М	4.0	85	4.5	R		G		VG		180
un																
DC Dakota	11	100	98	95	+1.7	М	3.5	85	4.5	R		G		VG		205
orage ⁸																
L Delicious VUA	3	68	66		+1.4	L	7.5	110	5.0	S		G		F		200
L Goldeye VUA	2	72	66		+1.8	L	8.0	115	5.0	S		G		F	G	145
•	4	88	78	63	+2.2	M	4.0	100	4.5	R		G		G	G	170
DC Horizon																
CDC Horizon CDC Jasper	5	85	85		+2.0	М	4.5	105	4.5	R		G		G	G	180

¹ Co-op and regional trials in Saskatchewan.

Field Pea (cont'd)

Main Characteristics of Varieties

ADDITIONAL INFORMATION

For detailed production information, consult www.saskpulse.com/growing-pulses. The relative maturity of the check variety CDC Amarillo is M (Medium), which is on average, 95 days from seeding to swathing ripe-

Types of Peas Grown in Saskatchewan

Yellow peas are the most widely grown peas in Saskatchewan, followed by green peas and then specialty types such as dun, maple, marrowfat and forage peas. Most varieties have white flowers and are suitable for human con-

varieties have a semi-leafless leaf type with tendrils instead of leaflets, which help provide better standability. Marrowfat varieties have large, blocky, green seeds and are used in specialty snack food markets in Asia. They have white flowers and non-pigmented seed coats. Forage peas are grown for biomass, typically in mixture with barley, oat or triticale, which on average produce four to five tonnes per acre of forage dry matter, similar to that of forage barley, but with greater protein concentration. Red peas have red cotyledons. Market development is still underway. sumption or livestock feed markets. Nearly all Maple peas have purple flowers, pigmented

seed coats with mottled pattern and yellow cotyledons. They are sold as whole seeds mixed with millets and other seeds into domestic bird seed markets internationally. The pigmented seed coats provide natural protection to various root rot diseases and so are typically quick to emerge with good stand establishment. Dun peas have purple flowers, pigmented seed coats (without a mottled pattern) and yellow cotyledons. They are dehulled and sold in human consumption markets similar to yellow pea varieties.

Dry BeanMain Characteristics of Varieties

Main Characterist	ics or varieti							
Variety	Years Tested ¹		eld Blackstrap) Dryland	Days to Flower	Maturity Rating³	% Pod Clearance⁴	Seed Weight (g/1000)	Growth Habit⁵
Black								
CDC Blackstrap @	13	100	100	53	M	85	195	II
CDC Jet	8	94	87	58	L	85	170	II
CDC Superjet	7	98	92	58	L	85	170	II
Pinto								
Island	7	101	98	55	М	79	355	Ш
Medicine Hat ⊛	5	107	99	58	M	72	360	II
CDC WM-2	7	93	87	52	M	79	365	II
CDC WM-3 @	4	91	83	52	M	78	360	II
Navy								
Bolt	6	88	88	58	L	82	190	Ш
Portage	7	84	81	52	M	85	175	II
AAC Shock	3	86	96	51	M	89	186	II
CDC Whitetrack O	3	91	84	56	M	77	174	II
Small Red								
AC Redbond	3	98	82	51	M	65	290	II
flor de junio								
CDC Ray ₪	6	113	107	56	L	70	300	III
Yellow								
CDC Sunburst @	4	99	90	54	М	78	427	I

¹ Co-op and regional trials grown in narrow rows. Since 2002 CDC Pintium had been the check variety. In 2019 CDC Blackstrap became the new check, Lines that did not have sufficient direct comparison data to CDC Blackstrap were adjusted based on relative performance to CDC Pintium.

ADDITIONAL INFORMATION

Please refer to the 2023 SaskSeed® Guide for pedigreed seed availability. For more details on production, consult the Growing Pulses section of the Saskatchewan Pulse Growers webpage (www.saskpulse.com).

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² For further information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at www.irrigationsaskatchewan.com/icdc.

³ Lodging score (1-9) where 1 = completely upright, 9 = completely lodged.

⁴ Mycosphaerella blight score (1-9) 1 = no disease, 9 = completely blighted.

⁵ Seed Coat Breakage.

⁶ Seed Coat Dimpling: VG = 0-5 per cent; G = 6-20 per cent; F = 21-50 per cent.

⁷ Greenness: Good = 0-15 per cent; Fair = 16-40 per cent.

⁸ Forage dry matter biomass, as per cent of check **40-10** (100), **CDC Jasper** (111), **CDC Horizon** (108).

² For further information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at www.irrigationsaskatchewan.com/icdc.

³ Maturity ratings based on E = 100 days; L = 110 days for May 20 planting to swathing maturity. See page VR10 for more information.

⁴ Pod clearance: percentage of pods that completely clear the cutterbar at time of swathing (~four cm).

⁵ Growth habit: I = Determinate bush; II = Indeterminate bush; III = Indeterminate vine.

Soybean (Herbicide-Tolerant)

Main Characteristics of Varieties

Variety	Canadian Marketing Agent	Company Maturity Grouping¹	Type ²	Hilum Colour³	Years Tested	Yield South Relati	4 (%) North ve to TH 3300	Days to Maturity⁵ 03R2Y
TH 33003R2Y	Thunder Seeds	00.3	RR2	BR	8	100	100	0
P0007A73X	Corteva (Pioneer)	000.7	RR2X	BR	2		75	-10
Amirani R2 0	Elite BrettYoung	000.5	RR2	IY	4	84	90	-7
BY Rundle XT 3	BrettYoung	000.5	RR2X	BL	2	88	91	-7
NSC Dauphin RR2X	NorthStar Genetics	8.000	RR2X	IY	2		82	-7
Fresco R2X	Prograin	000.7	RR2X	BL	3		96	-6
Mynarski R2X	SeCan	000.5	R2X	BR	3		92	-6
NSC Watson RR2Y	NorthStar Genetics	8.000	RR2Y	IY	8	98	98	-6
PV 27s0005 R2X	Nutrien (Proven Seeds)	000.5	RR2X	BL	2		90	-6
S0009-M2	Syngenta	000.4	RR2Y	IY	7	99	104	-6
PV 24s0008 R2X	Nutrien (Proven Seeds)	8.000	RR2X	BL	2		93	-5
S001-D8X	Syngenta	0.01	RR2X	ΙΥ	3	103	106	-5
S003-R5X	Syngenta	0.03	RR2X	ΙΥ	2	112		-5
Wolf R2X	Maizex Seeds	000.7	R2X	BL	2	100	103	-5
CP000621WPX	Winfield United	000.6	RR2X	Y/BL	2	97		-4
NSC Arden RR2X	NorthStar Genetics	00.1	RR2X	BL	2	103		-4
Pikas R2X	Maizex Seeds	000.9	R2X	BL	2	92		-4
DKB0008-87	Bayer CropScience	000.8	RR2X	BL	2		101	-3
Major R2X	SeCan	00.2	R2X	BR	2		95	-3
P001A48X	Corteva (Pioneer)	00.1	RR2X	TN	3		100	-3
PV 28s001 R2X	Nutrien (Proven Seeds)	00.1	RR2X	BL	2	102	98	-3
PV 15s0009 R2X	Nutrien (Proven Seeds)	000.9	RR2X	BL	4		97	-2
S0009-F2X	Syngenta	000.9	RR2X	BR	3		100	-2
S003-Z4X	Syngenta	00.3	RR2X	BF	4	109		-2
SI 001XTN	Sevita International	00.1	RR2X	BL	3	99		-2
Young R2X	SeCan	000.9	R2X	BL	3		100	-2
DKB0009-89	Bayer CropScience	000.9	RR2X	BL	5		94	- <u>-</u> 2
TH89004 R2X	Thunder Seeds	000.9	RR2X	BR	2	91	34	-1 -1
DKB002-32	Bayer CropScience	00.2	RR2X	BR	3	100		0
Hart R2X	SeCan	00.2	R2X	BL	3	100		0
	SeCan	00.4	RR2	BL	8	106	107	0
Mahony R2			RR2X	GR	-			-
P003A97X	Corteva (Pioneer)	00.3		BR	3	98 99		0
P005A27X	Corteva (Pioneer)	00.5	RR2X		4			0
P005A83X	Corteva (Pioneer)	00.5	RR2X	BL	2	96		
P006A37X	Corteva (Pioneer)	00.6	RR2X	BR	2	108		0
PV 22s002 R2X	Nutrien (Proven Seeds)	00.2	RR2X	BL	3	101	99	0
S005-C9X	Syngenta	0.05	RR2X	BL	2	107	407	0
S007-Y4	Syngenta	00.7	RR2Y	IY	7	110	107	0
Sunna R2X	Elite BrettYoung	00.3	RR2X	GR	5	104		0
TH 87003 R2X	Thunder Seeds	00.3	RR2X	BL	3	98	102	0
Akras R2	Elite BrettYoung	00.3	RR2	BL	8	107	111	+1
PV 16s004 R2X	Nutrien (Proven Seeds)	00.4	RR2X	BL	3	94		+1

Maturity Groups are assigned by individual companies to assist growers select varieties suitable for their area; growers should not rely on only one source of information for iudaina maturity

Soybean (Conventional)

Main Characteristics of Varieties

Variety	Canadian Marketing Agent	Company Maturity Grouping¹	Type ²	Hilum Colour³	Years Tested	Yield⁴ (%) Relative to C	Days to Maturity⁵ AC Prudence
OAC Prudence	SeCan	00.3	Con	Υ	5	100	0
TH 33003R2Y	Thunder Seeds	8.000	HT check		7	102	+1
NSC Watson RR2Y	NorthStar Genetics	00.3	HT check		7	105	-5
AAC Edward @	SeCan	00.4	Con	Υ	4	106	-5
Siberia	Prograin	00.2	Con	IY	4	113	-2
AAC Halli @	Interlake.org Inc.	000.9	Con	Υ	3	100	-1
Maxus	Prograin	00.3	Con	IY	3	91	0
Liska	Prograin	00.6	Con	IY	3	97	+1
Maya 🛭	Prograin	8.00	Con	ΙΥ	2	89	+2

¹ Maturity Groups are assigned by individual companies to assist growers select varieties suitable for their area; growers should not rely on only one source of information for judging

ADDITIONAL INFORMATION

The soybean variety trial is coordinated by Saskatchewan Pulse Growers. Typical onfarm yields are 25 to 38 bu./ac. Soybean is not native to the Canadian Prairies and must be inoculated with soybean inoculant that contains Bradyrhizobium japonicum bacteria.

For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at

www.irrigationsaskatchewan.com/icdc.

Soybean Seeding Tips

Calculate soybean seeding rates based on number of seeds per acre. Soybeans are sold by units of 140,000 seeds.

To obtain the desired plant stand, be aware that increased seed coat damage can occur with soybeans when seeded with drills versus planters.

Higher seeding rates with drills can assist with reaching target plant populations. Soybeans require warm soils (10 C) for optimum germination and emergence. Trash management to encourage some blackening of the soil can be advantageous to speed soil warming.

Soybeans are sensitive to late spring frosts once the growing point is above ground. Delay seeding until at least May 10 or later if conditions remain cool. Soybeans are sensitive to cold water at the time of germination. Seed when there is a warming trend in the forecast and a low risk of cold rainwater until after soybeans have germinated.

Soybeans are susceptible to several seed and seedling diseases, so seed treatments should be considered.

Soybeans are prone to iron chlorosis, particularly when grown on saturated soils, soils high in calcium carbonates or on soils with salinity problems. Choose your fields and soybean varieties accordingly.

The maximum amount of phosphate plus potassium fertilizer that can be safely placed with the seed is 20 lbs./ac. Amounts higher than 20 lbs./ac. should be banded.

Pre-emergence herbicides should be considered as part of the weed control program. Soybeans are poor competitors with weeds, so keeping soybean fields free of weeds from emergence through early growth may enhance vield.

Inoculants and Nitrogen Fixation with Pulses and Soybeans

Inoculants contain the nitrogen-fixing Rhizo- seed treatments first, allow the seed to dry. tions. Single inoculant applications are efbium species necessary to ensure nodulation and nitrogen fixation. Rhizobium species are specific to each pulse crop. Pea, lentil and faba bean inoculants contain the same Rhizobium species, but the individual strain of that species (similar to varieties of crops) may be more effective on one crop or another. Make sure to use the right inoculant for each crop.

Handling Inoculants

Inoculants are products that contain living organisms and should be handled accordingly. Avoid exposure to direct sunlight, heat or freeze-thaw conditions. Consider application method when using in combination with seed treatments, as fungicides can impact Rhizobia survival. For best results, apply then apply the inoculant if using seed-applied products (sequential application). Read inoculant and seed treatment labels for more information on seed compatibility.

Inoculant formulations consist of seed-applied technologies such as liquids, peats and powders, as well as granular formulafective for peas, lentils, chickpeas and faba beans. For soybeans, it is recommended to use a double inoculation strategy such as a seed-applied product in combination with a granular formation, on land where soybeans are being grown for the first time. To date, no benefit of double inoculation on other pulse crops has been identified.

Rhizobium Species Required for Effective Nodulation of Pulse Crops								
Peas, Lentils, Faba Beans	Rhizobium leguminosarum							
Chickpeas	Rhizobium ciceri							
Dry Beans	Rhizobium phaseoli							
Soybeans	Bradyrhizobium japonicum							

Source: Inoculant Options for Pulse Crops, Saskatchewan Pulse Growers

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² All varieties in this table are Roundup Ready or Roundup Ready Xtend type. RR2/RR2Y indicates Genuity® Roundup Ready 2 Yield® soybean variety; R2X/RR2X indicates Roundup Ready 2 Xtend® soybean variety. RR1 indicates Roundup Ready 1 technology. Other varieties are commercially available. For complete list of commercial varieties see Seed Manitoba 2023 (www.seedmb.ca).

³ Hillum is the point where seed attaches to the pod. BF = Buff; BL = Black; BR = Brown; GR = Grey; Y=Yellow; IY = Imperfect Yellow; TN = Tan.

Eight year mean yield of the check variety TH 33003R2Y was 40 bu./ac.: 45 bu./ac. in 2022; 39 bu./ac. in 2021; 29 bu./ac. in 2020; 32 bu./ac. in 2019; 34 bu./ac. in 2018; 46 bu./ac. in 2017; 45 bu./ac. in 2016 and 49 bu./ac. in 2015. Typical on-farm yields are 25-38 bu./ac.

Days to maturity indicates days from seeding to 95 per cent mature pods. Only sites which reached maturity prior to a killing frost were used for calculating days to maturity. Moist growing seasons result in delayed maturity. Data is from Saskatchewan sites from 2016 - 2022 (Note: not all varieties entered into trial each year). Average days to maturity for TH 33003R2Y is +/- 118 days.

² Varieties tested in this trial are conventional (con) soybean varieties and do not have tolerance to glyphosate. Two glyphosate tolerant varieties are included as check varieties only. ³ Hilum is the point where seed attaches to the pod. IY = Imperfect Yellow, Y = Yellow.

⁴ Mean yield of the check variety **OAC Prudence** in 2022 was 35 bu./ac. Typical dryland on-farm yields are 25-38 bu./ac.

⁵ Average days to maturity for **OAC Prudence** in 2022 was 113 days.

Faba Bean

Main Characteristics of Varieties

Variety	Years Tested	Low Vicine / Convicine	Yield	Height (cm)	Lodging ³	Maturity (days)	Seed Weight (g/1000)
Coloured Flower (normal	tannin)		(% Fabelle1)				
Fabelle @	10	Yes	100	104	2.4	105	533
Allison O	3	Yes	103	104		106	507
FB9-4 §	9	No	87	95	3.7	104	680
CDC SSNS-1 §	10	No	86	109	3.4	105	335
Taboar §	5	No	91	110	3.7	107	480
Victus ≎	6	Yes	95	101	2.8	105	444
White Flower (low tannin))		(% Navi²)				
Navi 0	5	Yes	100	94	3.2	111	401
Imposa §	4	No	105	99	2.4	107	695
DL Nevado 🌣	4	Yes	95	98	1.0	109	425
Snowbird §	14	No	101	95	3.0	104	448
CDC Snowdrop §	9	No	89	97	2.8	104	325
Tabasco §	5	No	96	93	1.9	106	496
DL Tesoro O VUA §	5	No	102	90	3.8	110	511
219-16 ⊕ §	9	No	102	94	3.6	106	328

¹ Long-term average yield of 5124 kg/ha or 76 bu./ac.

ADDITIONAL INFORMATION

Faba bean regional trials began in 2006 to accommodate growing interest in this crop as a nitrogen-fixing high protein food and feed grain in moist areas. White-flowered types are zero tannin. All coloured flower types have seed coats that contain tannins and may be suitable for export food markets if seed size and quality match customer demand. Maturity ratings are based on days until swathing maturity but will vary depending on seeding date. Low vicine white flower types have expanding demand in the plant-based protein extraction industry.

Plant breeders in the faba bean industry are moving rapidly to eliminate the antinutritional compounds vicine and convicine (vc) through the introduction of a gene in new varieties that reduces vc by 99 per cent. Vicine-convicine causes rapid onset of anemia in a small percentage of the human population. Low vc status may become mandatory as soon as possible for faba beans that enter food and feed systems.

Faba bean is a partly outcrossing (four to 84 per cent under local conditions) through insect pollination (various bee species). Isolation from other varieties is necessary to maintain varietal purity, especially for flower colour and most importantly, for maintaining low vc status in future. For seed production, isolations of two km or more are recom-

mended at this time to maintain variety purity for low vc status and flower colour. Commercial producers who intend to save their seed should follow similar isolation practices.

Seeding Tips for Faba Bean

Calculate seeding rates based on actual thousand kernel weight of your seed as seed size of faba beans can vary tremendously from lot to lot.

Tannin and zero-tannin faba bean types should be separated by up to 500 m to prevent cross pollination.

Faba beans have a high requirement for phosphorus (P) and can tolerate up to 40 lbs./ac. of seed-placed phosphorus (P_2O_5).

Seed as early as possible as faba beans have good tolerance to spring frosts and are later maturing. Seed into moisture, as the large seeds require adequate moisture to germinate.

Use seed treatment with low tannin types of faba beans.

Seeding large-seeded faba beans can be difficult due to plugging and growers may experience difficulty reaching the targeted seeding rates. A study conducted by the Prairie Agricultural Machinery Institute has

identified the following tips and tricks for seeding large-seed faba beans:

- To reach high seeding rates, consider metering from multiple tanks or changing augers/rollers.
- To minimize plugging:
 - Slow down.
 - Increase clearance from metering rollers or augers to the metering housings.
 - Ensure there are no tight radiuses or sags in the distribution hoses.
 - Eliminate flow obstructions, such as screws, in the distribution hoses.
 - Ensure hose clamps are not overtightened, resulting in hose restrictions.
 - Use openers with large-diameter seed openings and minimal change in seed flow direction or seed tube shape.
 - Avoid sharp turns with the drill.

Please refer to the 2023 SaskSeed® Guide for pedigreed seed availability. For more details on production, consult the Growing Pulses section of the Saskatchewan Pulse Growers webpage (www.saskpulse.com).

OILSEED CROPS

Flax

Main Characteristics of Varieties

	Years			eld¹)C Glas)		Relative	Seed		Resistance ⁻	Го
Variety	Tested	Areas 1 & 2	Area 3 South	Area 3 North & 4	Irrigation ²	Maturity ³	Size⁴	Lodging	Powdery Mildew	Fusarium Wilt
Brown Seed										
CDC Glas 💩	11	100	100	100	100	0	М	VG	MR	MR
CDC Bethune	15	94	95	96	103	-1	М	G	MR	MR
AAC Bravo ®	5	98	99	96	98	+1	L	G	MR	MR
CDC Buryu @	5	93	100	95	93	0	М	G	MR	MR
CDC Kernen @	5	99	102	104	99	+1	L	G	MR	MR
AAC Marvelous @	5	101	104	101	104	+1	M	G	MR	MR
CDC Neela @	5	101	94	96	98	0	М	G	MR	MR
CDC Plava 🛭	5	94	98	94	96	-3	M	G		MR
Prairie Grande	3	85	89	89	98	-3	M	VG	MR	MR
Prairie Sapphire ®	6	99	90	94	99	0	M	G	MR	MR
AAC Prairie Sunshine	5	95	96	100	97	+2	M	G		MR
Prairie Thunder ®	3	88	94	92	102	-3	М	VG	MR	R
CDC Rowland @	6	101	106	104	103	+3	L	G	MR	MR
CDC Sanctuary 💩	5	98	88	91	101	+1	М	F	MR	MR
CDC Sorrel ®	4	91	89	93	101	0	L	G	MR	MR
Topaz 🗓	5	94	103	97	98	-1	М	G	MR	MR
WestLin 60 ₪	5	90	90	90	94	-2	M	G		MR
WestLin 71 ⊎	5	94	96	93	98	-1	S	VG	MR	MR
WestLin 72 @	5	97	101	99	101	+2	S	VG	MR	MR
Yellow Seed										
AAC Bright @	5	92	93	97	95	+1	М	G	MR	MR
CDC Dorado @	5	85	89	87	89	-2	М	G	MR	MR
VT50 (NuLin 50) ⊗	5	95	98	95	100	+1	S	VG		MR

¹ Data from Regional and Co-op yield trials.

ADDITIONAL INFORMATION

All cultivar descriptions other than yield are based on data from the Linseed Co-operative Tests. All cultivars are immune to rust. Frozen flax should be analyzed by a feed-testing laboratory to determine if it is free of prussic acid before using it as a livestock feed.

Camelina

Camelina, also known as false flax, is a short-season crucifer oilseed that can be grown on a wide range of soil types. It is well adapted to dryland conditions and does not tolerate excessive soil moisture. Camelina seed is fairly small (1.0 - 1.8 g/1000 seed)and requires shallow seeding. Reduced emergence may be expected when camelina is seeded deeper than ½ inch. Camelina plants are resistant to blackleg disease and flea beetles and possess good shatter resistance. Camelina may be straight-combined at full maturity or swathed when pods have turned color from green to yellow. Camelina is grown almost exclusively under contract; both camelina oil and meal are marketed for food, feed and industrial applications. Crop

insurance is available for camelina crops grown in Saskatchewan. For more information on camelina, consult the Saskatchewan Agriculture publication, *Camelina*.

SES0787LS ⊕ (Cypress™) is a spring-type camelina cultivar that combines high seed yield, high seed oil content, resistance to downy mildew, improved shatter resistance as well as improved seed size (on average 30 per cent and up to 50 per cent larger than seed of AAC 10CS0048). Its natural height is medium to tall or on average, 85 cm; it flowers after about 46 days and generally reaches maturity, depending on weather conditions, in 85 to 105 days after seeding. In trials conducted from 2015 to 2020 in

western Canada, **SES0787LS** yielded, on average, 42 bu/ac.

SES1154HR ② (NewGold™) is the first spring-type camelina cultivar with resistance to thifensulfuron-methyl, a Group 2 herbicide. SES1154HR is agronomically similar to SES0787LS and therefore is high yielding, has high seed oil content and is resistant to downy mildew disease. On average, it's seed size is 30 per cent to 50 per cent larger than that of AAC 10CS0048 camelina.

Under Saskatchewan growing conditions, these two cultivars would yield from 35 to 40 bu./ac. on fallow and 25 to 35 bu./ac. on stubble.

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² Long term average yield of 4032 kg/ha or 60 bu./ac.

³ Lodging score (1-9) where 1 = completely upright, 9 = completely lodged.

² For further information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at www.irrigationsaskatchewan.com/icdc.

³ The relative maturity of the check **CDC Glas** is L (on average 101 days from seeding to swathing ripeness).

⁴ Seed size: S = Small; M = Medium; L = Large

Mustard

Main Characteristics of Varieties

Type and Variety	Site	Yield ¹	Plant Height	Hydroxylbenzyl Glucosinolate	Allyl Glucosinolate	Mucilage ² (cS*ml/g	Fixed Oil	Protein	Seed Weight	Maturity	Resist White	ance to Rust³
Type and Tailety	Years	(%)	(cm)	(μmol/g seed)	(mg/g seed)	seed)	(%)	(%)	(g/1000)	(days)	2a	2v
Open-Pollinated Yellow					Relative	to Andante						
Andante	45	100	112	143	na	82.4	28.1	35.5	5.7	84	R	R
AAC Adagio @	29	102	-9	-4	na	+14.4	+2.0	-2.5	-0.6	+10	R	R
AC Pennant	124	99	-16	+5	na	-37.7	+1.4	-1.2	-0.0	+8	R	R
AAC Yellow 80 3	45	109	+2	-3	na	+3.7	+0.8	-0.4	-0.1	0	R	R
Open-Pollinated Brown					Relative to	Centennial E	Brown					
Centennial Brown	47	100	123	na	11.0	na	35.6	30.5	3.0	85	S	S
Amigo	21	93	-14	na	+2.9	na	-2.9	+0.2	-0.3	+13	R	S
AAC Brown 120	22	112	+2	na	+1.0	na	+1.7	-0.7	+0.7	+9	R	R
Hybrid Brown					Relative to	Centennial I	Brown					
AAC Brown 18 @	47	119	+3	na	-0.5	na	+1.6	-1.3	-0.1	0	R	S
Open-Pollinated Oriental					Relativ	e to Cutlas	s					
Cutlass	117	100	115	na	11.6	na	41.0	29.1	2.8	91	R	S
Forge	117	97	+10	na	+0.6	na	-2.1	+0.5	-0.2	+1	S	S
AAC Oriental 200 @	22	106	+9	na	+0.1	na	-4.0	+0.9	-0.1	+1	R	S
AC Vulcan	117	98	+1	na	+0.8	na	-0.4	+0.4	+0.1	0	R	S

¹ Yield data not collected by area.

ADDITIONAL INFORMATION

Three types of mustard are grown in Western Canada: yellow (*Sinapis alba*) and brown and oriental (*Brassica juncea*). Mustard is typically grown under contract, where the contractor specifies the variety to be grown to meet industry specifications for product quality. All mustard varieties have good resistance to blackleg disease and mature, on average, in 91 to 98 days.

A unique feature of yellow mustard is high mucilage content. Mucilage is valued by the mustard industry as a stabilizer in prepared food products. **AAC Yellow 80** is a composite variety registered in September, 2020.

Brown mustard is grown primarily for the Dijon mustard market. **AAC Brown 120** and **AAC Brown 18** were registered in September 2017 and August 2018, respectively. **AAC Brown 120** is not available commercially. **AAC Brown 18** is a hybrid variety. Growers are required to buy new seed for the hybrid variety **AAC Brown 18** every year.

Varieties of all crop types included in the tables of the *Varieties of Grain Crops* in the *2023 SaskSeed® Guide* are reflective of current varieties in the marketplace that have been tested in our trials. A comprehensive database of all registered varieties for each crop kind requiring variety registration can be found at *www.inspection.gc.ca*.

Understanding Clubroot Resistance and the Classification System

By Sask Canola

For growers farming in areas where clubroot has been detected, or growers who are concerned about clubroot, the following management tips are recommended:

- Extend crop rotations to a minimum three-year rotation, including at least a two-year break between susceptible crops, even when resistant varieties are utilized.
- Grow clubroot-resistant varieties early, before clubroot symptoms are seen or the pathogen is detected.
- Control volunteers and Brassica weeds in all crops.
- Scout canola crops by examining roots for the presence of swollen root tissue (known as galls). Focus scouting efforts on field entrances, low areas and suspicious patches.
- Consider DNA-based soil testing to help detect the pathogen, even when there are no visible symptoms or in fields with other crops (such as wheat or barley).
- Minimize soil movement between fields by minimizing tillage and implementing biosecurity practices.

Clubroot-resistant canola varieties are key tools used to delay clubroot establishment and manage clubroot disease on the farm. However, to prevent rapid genetic shifts in clubroot populations and subsequent loss of effective resistance in clubroot-resistant varieties, this valuable resource must be used judiciously in an integrated management approach. An integrated approach includes practicing a diverse crop rotation – ideally two years between susceptible crops in infested areas – while effectively managing

weeds, sanitizing equipment and minimizing soil movement. This allows for reduction of soil inoculum levels and minimizes the risk of selecting for clubroot pathotypes that can overcome current resistant (R) varieties.

Clubroot resistance in a variety should be substantiated through standard testing procedures outlined in the Western Canada Canola/Rapeseed Recommending Committee (WCC/RRC) guidelines and protocols. Varieties are compared to the susceptible check variety for clubroot infection and are assigned resistant (R), intermediate (I) or susceptible (S) ratings.

Resistant (R) ratings indicate less than 30 per cent infection compared to susceptible checks in disease tests. It is important to remember that resistant (R) varieties are not immune, but highly restrict the development of clubroot symptoms in fields with low-to-moderate disease pressure from resting spores in the soil. Under heavy pressure in severely infested fields, a resistant (R) variety can show significant root galling but may develop fewer and smaller galls than a susceptible variety. Under these heavy pressure situations and with frequent use of clubroot-resistant varieties, clubroot populations rapidly evolve to overcome the genetic resistance. To delay this shift in clubroot strains and loss of clubroot-resistant variety efficacy, clubroot-resistant varieties should not be grown in short rotations.

Intermediate (I) ratings indicate between 30 and 50 per cent infection compared to susceptible checks in disease tests. This rating will mainly be used for adding rating labels

to the base resistant (R) label in multiple resistance gene varieties to specify moderate resistance against certain new strains. Varieties with additional intermediate (I) labels can provide marginally better disease protection on fields with presence of new corresponding strains but should not be grown in fields where resistance to predominant strains has been widely defeated.

If there is no clubroot label on a variety, assume it is susceptible to clubroot. An extreme buildup of spores can occur very quickly when susceptible varieties are grown in short rotation on slightly infected fields. Susceptible varieties should not be grown in clubroot-infected fields, or those at higher risk of becoming infected.

A base (R) resistance label requires that the variety is resistant to the predominant clubroot strains or pathotypes in Western Canada. Additional ratings can be appended to the base (R) label to describe resistance to specific uncommon or new pathotypes. To date, no clubroot-resistant varieties, including new varieties with multiple resistance genes, are resistant to all of the clubroot pathotypes detected in Western Canada.

Careful scouting in all host crops, including (R) rated canola crops, is extremely important to help detect early infestations. Waiting to use (R) varieties until significant infestations have developed will result in high soil spore loads and increase the probability for pathogen shifts, which can rapidly defeat variety resistance.

Visit www.clubroot.ca to learn more.

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² Mucilage in yellow mustard is a measurement of viscosity of aqueous extracts from seed.

³ Varieties are rated S (Susceptible) or R (Resistant) to White Rust strains.

Canola (Small-Scale Straight Cut Trials)

Main Characteristics of Varieties

	ensucs or varieties	Ov	erall Avera	age ¹	Lone	Season	Zone ¹	Mid	Season 2	Zone ¹	Sho	rt Season	Zone ¹	
Variety1	Distributor		16 location	•		5 location			(8 location	ıs)		(3 location	าร)	Diseas
(B. napus)	Distributor	Yield² (%)	Maturity (days)	Lodg- ing³	Yield² (%)	Maturity (days)	Lodg- ing³	Yield² (%)	Maturity (days)	Lodg- ing³	Yield² (%)	Maturity (days)	Lodg- ing³	Tolerand
Roundup Ready														
45CM39⁵	Pioneer Hi-Bred	100	94	2.9	100	87	2.9	100	96	2.9	100	100	3.4	BL/CR
D3158CM	BREVANT seeds	98	93	2.7	96	87	2.6	98	95	2.6	100	98	3.3	BL/CF
LSD (%)9		11			12			10			11			
Liberty Link														
L340PC ⁶	InVigor	100	94	2.1	100	88	2.1	100	94	1.9	100	99	2.4	BL/CR
B3010M	BREVANT seeds	87	94	2.2	89	100	2.7	86	95	2.0	86	89	2.2	BL/CR
CS4000 LL	CANTERRA SEEDS	95	93	2.7	95	87	2.5	94	94	2.7	96	99	3.3	BL/CF
OKLL 82 SC	DEKALB	87	94	2.3	89	88	1.9	86	95	2.3	86	99	3.1	BL
OKTFLL 21 SC ⁸	DEKALB	87	93	2.7	88	87	2.4	89	94	2.7	83	99	3.5	BL
_343PC	InVigor	98	94	2.3	95	88	2.3	99	95	2.0	99	99	2.8	BL/CF
_345PC	InVigor	101	94	2.6	102	88	2.6	100	95	2.4	102	99	2.9	BL/CF
_356PC	InVigor	100	94	2.2	98	88	2.1	101	95	1.9	102	99	2.8	BL/CF
P505MSL	Pioneer Hi-Bred	95	95	2.5	96	89	2.5	92	96	2.3	98	100	3.0	BL/CR/
P506ML	Pioneer Hi-Bred	91	93	2.6	93	88	2.4	89	94	2.3	94	99	3.3	BL/CF
-SD (%)9		10			13			9			9			
TruFlex														
CS2600 CR-T ⁷	CANTERRA SEEDS	100	92	3.1	100	85	3.3	100	94	2.8	100	97	3.5	BL/CF
BY 6211TF	BrettYoung	98	94	2.6	97	86	2.8	97	96	2.3	101	99	3.5	BL
CP21T3P	WinField United-CROPLAN	95	95	2.7	95	87	3.1	97	97	2.2	92	99	3.5	BL
CS3000 TF	CANTERRA SEEDS	102	93	2.7	101	86	2.9	103	95	2.5	102	98	2.9	BL/CF
CS3100 TF	CANTERRA SEEDS	92	96	2.1	80	89	2.6	94	99	1.6	102	101	2.5	BL/CF
OKTF 97 CRSC	DEKALB	97	93	2.6	95	85	2.7	96	95	2.3	102	97	3.5	BL
DKTF 99 SC	DEKALB	101	93	2.8	101	86	3.3	102	95	2.4	98	98	3.3	BL
PV 761 TM	Proven Seed	96	95	2.3	96	87	2.8	98	97	1.9	91	100	3.0	BL
_SD (%) ⁹	manco Triale grown acrose Prairie	10			9			10			11			

¹ From Canola Performance Trials grown across Prairie provinces, 2022.

ADDITIONAL INFORMATION

Variety descriptions summarize the performance of varieties tested in the 2022 Canola Performance Trials. Data was provided by the Canola Performance Trials Committee. For more information visit www.canolaperformancetrials.ca.

resistant (R) rating for blackleg. Lesions and yield loss can still occur, based on the level of inoculum and blackleg pathotype in the field, in combination with environmental conditions conducive for disease development.

All varieties listed in the two canola tables have a Clubroot is a long-lived disease in the soil that can

impact canola performance. Using clubroot-resistant varieties early, before clubroot symptoms are seen or the pathogens are detected, is highly recommended as a risk mitigation tool. Soil testing is necessary to know for sure if fields have the clubroot pathogen present, which can give an early indication of risk prior to finding galls in the fields.

Least Significant Difference

When comparing average zone yields for varieties in the small plot data, the least significant difference is about six to 21 per cent. If variety A yielded 95 per cent of the check and variety B yielded 101 per cent of the check, they would be considered statistically the same. This is based on a confidence level that significant differences would occur by chance less than five per cent of the time. In the small plot design used, varieties were grouped by herbicide system, which means that the least significant difference shown strictly applies to comparisons between varieties of the same herbicide system.

More importantly, comparisons between varieties within the same herbicide system reveal only genetic differences, whereas variety comparisons between herbicide systems compare the net effect of both genetic and herbicide effects (weed control and crop tolerance).

Where can you get the Canola Performance Trial results?

Results are available through an online interactive tool at www.canolaperformancetrials.ca. The interactive tool allows growers to explore many agronomic factors and to search for trial data in specific geographic areas near their farming operations. Details on management, operations and environmental data for each individual site are reported online. The online tool has an economic calculator that includes the costs associated with growing the selected variety to assist growers in determining potential profitability. Data is also available in booklet form and will be distributed through various publications or can be obtained from a local agri-retailer.

Canola (Small-Scale Standard [Swathed] Trials)

Main Characteristics of Varieties

			erall Aver			Season			Season 2			t Season		
Variety ¹	Distributor		16 locatio			5 location			(8 location			3 location		Disease
(B. napus)		Yield ² (%)	Maturity (days)	Lodg- ing³	Yield² (%)	Maturity (days)	Lodg- ing ³	Yield ² (%)	Maturity (days)	Lodg- ing ³	Yield² (%)	Maturity (days)	Lodg- ing³	Tolerance
		(70)	(ddy5)	1119	(70)	(ddy5)	"ig	(70)	(ddy5)	ıı ığ	(70)	(ddy5)	ıı ığ	
Roundup Ready														
45CM39 ⁵	Pioneer Hi-Bred	100	92	2.6	100	86	2.5	100	93	2.5	100	99	3.3	BL/CR
1028 RR ¹⁰	BREVANT seeds	92	94	2.4	94	88	2.6	92	95	1.8	88	99	3.1	BL/CR
45H42	Pioneer Hi-Bred	99	93	2.5	100	87	2.5	95	94	2.2	104	98	3.1	BL/CR
LSD (%)9		12			11			13			10			
Liberty Link														
L340PC ⁶	InVigor	100	92	1.9	100	84	1.9	100	93	1.8	100	97	2.1	BL/CR
B3011	BREVANT seeds	87	92	2.4	87	84	2.3	83	94	2.1	93	98	2.9	BL/CR
CP21L3C	WinField United - CROPLAN	95	92	1.9	93	85	1.8	94	93	1.9	98	97	2.4	BL/CR
P501L	Pioneer Hi-Bred	93	92	2.0	98	85	2.1	88	93	1.8	95	98	2.4	BL/CR
LSD (%)9		10			12			9			9			
TruFlex														
CS2600 CR-T7	CANTERRA SEEDS	100	90	3.6	100	84	3.9	100	91	3.2	100	95	4.0	BL/CR
BY 6207TF	BrettYoung	91	95	1.7	90	89	1.8	94	97	1.6	90	100	2.0	BL/CR
DKTF 98 CR	DEKALB	97	90	2.9	94	84	3.1	100	92	2.6	96	95	3.5	BL/CR
LSD (%)9		13			12			14			10			
Clearfield														
BY 5125CL8	BrettYoung	100	91	2.7	100	88	2.8	100	94	2.5				BL/CR
B2030MN	BREVANT seeds	108	90	2.7	111	88	3.0	105	91	2.4				BL/CR
CS2500 CL	CANTERRA SEEDS	103	89	2.7	100	86	3.1	105	91	2.3				BL
CS2700 CL	CANTERRA SEEDS	99	91	2.3	105	89	2.8	94	93	1.8				BL/CR
P508MCL	Pioneer Hi-Bred	113	88	2.9	107	86	3.1	119	89	2.7				BL
P607CL	Pioneer Hi-Bred	114	90	2.5	113	87	3.0	115	92	2.0				BL/CR
PV 280 CLC	Proven Seed	117	88	2.5	112	87	2.7	120	90	2.4				BL/CR
LSD (%)9		14			15			13						

¹ From Canola Performance Trials grown across Prairie provinces, 2022.

Sunflower

Main Characteristics of Hybrids

Hybrid	Herbicide Tolerance	Years Tested	Yield (% 63A21)	Average Maturity (days)	Harvest Moisture (%)
Oilseed (Early M	aturing)				
63A21 §		9	100	109	18.6
AC Sierra ¹		9	67	105	15.7
Oilseed (Late M	aturing)				
Cobalt II	Clearfield®	3	76	115	30.4
Talon	ExpressSun®	2	92	113	30.1

Varieties not appearing in this table will require more than 125 days to reach maturity.

¹ AC Sierra is open pollinated and not a hybrid.

ADDITIONAL INFORMATION

Sunflower requires 105-125 days to mature, depending on the cultivar and the growing season. Oilseed sunflower has been grown in the Dark Brown and Black Soil Zones in southeastern Saskatchewan. Harvest moisture is a good indication of how quickly these hybrids will be ready to combine in the field. The EM varieties are adapted to

production in most areas of Saskatchewan. **AC Sierra** is open pollinated and not a hybrid.

The Saskatchewan Sunflower Committee has been conducting trials in Saskatchewan for the purpose of registration and demonstration since 1983. Sunflowers no longer require three years of yield

testing to be sold in Saskatchewan. Saskatchewan Sunflower Committee will publish results from each year. For the complete data set, please contact Sherri Roberts with Saskatchewan Agriculture at sherri.roberts@gov.sk.ca or 306-848-2856.

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² Comparisons based on per cent of check should only be made within a herbicide system

³ Lodging is measured on the degree of lean to the lower stem of the plant on a 1 to 5 scale (1=erect, 5=flat).

⁴ Indicates genetic disease resistance with an "R" or resistant rating to BL = Blackleg, CR = Clubroot and improved tolerance to sclerotinia "S", as based on variety descriptions submitted to CFIA.

⁵ Average yield (bu./ac.) of the check 45CM39 for long season zone, mid season zone and short season zone in 2022 was 58, 61 and 64, respectively.

⁶ Average yield (bu./ac.) of the check **L340PC** for long season zone, mid season zone and short season zone in 2022 was 58, 70 and 67, respectively.

Average yield (bu./ac.) of the check CS2600 CR-T for long season zone, mid season zone and short season zone in 2022 was 55, 63 and 67, respectively.

⁸ Indicates varieties with glyphosate and glufosinate herbicide tolerance. Visit www.canolaperformancetrials.ca for more details.

⁹ LSD = least significant difference (five per cent level) within herbicide system.

² Comparisons based on per cent of check should only be made within a herbicide system.

³ Lodging is measured on the degree of lean to the lower stem of the plant on a 1 to 5 scale (1=erect, 5=flat).

⁴ Indicates genetic disease resistance with an "R" or resistant rating to BL = Blackleg and CR = Clubroot as based on variety descriptions submitted to CFIA.

⁵ Average yield (bu./ac.) of the check **49CM39** for long season zone, mid season zone and short season zone in 2022 was 51, 61 and 65, respectively.

⁶ Average yield (bu./ac.) of the check **L340PC** for long season zone, mid season zone and short season zone in 2022 was 53, 69 and 66, respectively.

⁷ Average yield (bu./ac.) of the check **CS2600 CR-T** for long season zone, mid season zone and short season zone in 2022 was 53, 59 and 64, respectively.

⁸ Average yield (bu./ac.) of the check **BY 5125CL** for long season zone and mid season zone in 2022 was 47 and 55, respectively.

⁹ LSD = least significant difference (five per cent level) within herbicide system.

¹⁰ Indicates varieties with glyphosate and glufosinate herbicide tolerance. Visit www.canolaperformancetrials.ca for more details.

FORAGE CROPS

Annual Forages

Main Characteristics of Varieties

Maniah 1	Cita Vanna	Days to	Lodging	Forage DM			Nutrition	nal Data ³		
Variety ¹	Site Years	Heading	Score ²	Yield (kg/ha)	CP (%)	ADF (%)	NDF (%)	TDN (%)	Ca (%)	P (%)
Barley										
AB Advantage 🛭	12	59	2	7941	9.7	30.4	49.3	66.2	0.29	0.19
Altorado ⊕	8	60	1	7435	9.4	26.6	45.5	70.3	0.22	0.20
CDC Austenson @	12	61	1	7517	9.8	29.6	49.6	67.0	0.22	0.18
AB Cattlelac @	12	60	1	7284	9.3	28.7	49.0	67.9	0.30	0.18
Claymore ⊕	8	60	1	7225	9.6	28.6	47.4	68.1	0.27	0.20
CDC Copeland	12	62	1	7610	9.0	30.3	50.2	66.3	0.28	0.17
AB Prime 😂	8	59	1	7337	10.1	27.5	46.6	69.3	0.22	0.20
CDC Renegade 🏻	12	59	2	7841	9.7	27.7	45.3	69.0	0.21	0.19
Stockford	8	61	1	6562	9.5	28.7	47.3	68.0	0.31	0.20
AB Wrangler 🏻	12	61	1	6958	9.7	26.5	45.9	70.3	0.24	0.19
Oat										
CDC Arborg @	12	56	1	7767	10.0	32.8	52.8	63.6	0.22	0.19
CDC Baler	12	59	2	8085	9.5	35.7	58.1	60.5	0.23	0.18
CDC Haymaker 🛭	12	61	1	8044	9.6	35.2	58.5	61.0	0.24	0.18
Wheat										
AC Andrew	12	55	1	7594	9.7	29.9	48.4	60.2	0.12	0.18
AAC Awesome VB4 @	12	58	1	9313	8.6	31.4	50.3	65.1	0.11	0.17
AAC Chiffon VB⁴	12	57	1	8869	8.3	30.6	49.1	66.5	0.10	0.17
AAC Innova 🛭	12	58	1	7824	9.6	31.5	51.0	57.8	0.14	0.18
Triticale										
AB Stampeder ©	12	54	1	8241	9.7	29.3	49.6	67.4	0.14	0.18

triticale harvested at soft dough stage

ADDITIONAL INFORMATION

For information on more annual forage varieties please refer to the table and interim report on the Wheatlands Conservation Inc. website at www.wheatlandconservation.ca/research. This

project is funded through the Saskatchewan Ministry of Agriculture Strategic Field Program and includes some of the more common annual forage types and a few forage mixtures. The

three-year project was completed in 2022 and a final report will be available in 2023.

Perennial Forages

Variety trials for select forage perennials varieties were initiated in 2017. The project compared new varieties of economically important grass and legume species against check varieties. The goal was to provide reliable and independent regional performance information for Saskatchewan producers,

seed companies and plant breeders. Plots were seeded at Swift Current (Brown Soil Zone), Saskatoon (Dark Brown Soil Zone), Melfort (Black Soil Zone) and Scott (Dark Brown Soil Zone) in the spring of 2017 and data was collected from 2018 to 2020. Forty-eight forage entries of grasses and le-

gumes (including check varieties) were assessed for hay yield and nutritive value. A full report is available within the Completed Projects section of the Saskatchewan Forage Council website.

Breeding Institutions and Seed Distributors of Varieties Listed in this Publication

CDC Lumio O

U of S - CDC

CANTERRA SEEDS

Crop Kind, Class & Variety Breeding Institution Distributor Crop Kind, Class & Variety Breeding Institution WHEAT Canada Western Red Spring CDC Adamant VB @ U of S - CDC FP Genetics AAC Alida VB @ AAFC (Swift Current) SeCan Members Bolles @ U of Minnesota Seed Depot AAC Brandon @ AAFC (Swift Current) SeCan Members SY Brawn VB @ Syngenta Seeds Canada Inc. Proven Seed/Nutrien Ag Solutions AAC Broadacres VB @ AAFC (Swift Current) Proven Seed/Nutrien Ag Solutions AAC Cameron VB @ AAFC (Brandon) CANTERRA SEEDS Carberry @ AAFC (Swift Current) SeCan Members Cardale @ AAFC (Winnipeg) Seed Depot SY Cast O Syngenta Seeds Canada Inc. Proven Seed/Nutrien Ag Solutions SY Chert VB @ § Syngenta Seeds Canada Inc. Syngenta Canada AAC Connery @ AAFC (Swift Current) **CANTERRA SEEDS** Syngenta Seeds Canada Inc. SY Crossite O FP Genetics Daybreak O VUA **CANTERRA SEEDS** LCRC - Limagrain Canada SY Donald VB @ Syngenta Seeds Canada Inc. AAC Dutton VB @ AAFC (Brandon) SeCan Members AAC Elie 💩 AAFC (Swift Current) Alliance Seed Ellerslie 🛭 U of Alberta SeCan Members SY Gabbro @ § Syngenta Seeds Canada Inc. Richardson Intl AAC Hassler O AAFC (Brandon) FP Genetics AAC Hockley © AAFC (Swift Current) FP Genetics AAC Hodge VB 0 AAFC (Brandon) FP Genetics CDC Hughes VB @ U of S - CDC Proven Seed/Nutrien Ag Solutions U of Alberta CANTERRA SEEDS Jake 🗈 CDC Landmark VB @ U of S - CDC FP Genetics Alliance Seed AAC LeRoy VB @ AAFC (Brandon) AAC Magnet @ FP Genetics AAFC (Brandon) SY Manness © Syngenta Seeds Canada Inc. FP Genetics SY Obsidian @ Syngenta Seeds Canada Inc. Richardson Intl CDC Ortona @ U of S - CDC Proven Seed/Nutrien Ag Solutions U of Alberta Parata @ § SeCan Members CDC Pilar Cl Plus @ U of S - CDC Proven Seed/Nutrien Ag Solutions AAC Redberry AAFC (Swift Current) Alliance Seed U of Alberta Rednet @ SeedNet Inc. AAC Redstar @ AAFC (Brandon) SeCan Members AAC Russell VB @ AAFC (Swift Current) FP Genetics / Proven Seed Sheha @ U of Alberta Penwest Seeds CDC Silas @ U of S - CDC FP Genetics CDC SKRush @ U of S - CDC SeCan Members SY Sovite @ § Syngenta Seeds Canada Inc. Richardson Intl CDC Stanley @ U of S - CDC Proven Seed/Nutrien Ag Solutions AAC Starbuck VB @ AAFC (Swift Current) SeCan Members Stettler @ AAFC (Swift Current) SeCan Members CDC Succession CLPlus VB U of S - CDC Proven Seed/Nutrien Ag Solutions AAC Tisdale @ AAFC (Swift Current SeCan Members CDC Titanium VB @ U of S - CDC Proven Seed/Nutrien Ag Solutions SY Torach @ § Syngenta Seeds Canada Inc. Alliance Seed Tracker @ U of Alberta CANTERRA SEEDS CDC Utmost VB @ U of S - CDC FP Genetics AAC Viewfield @ AAFC (Swift Current) FP Genetics AAC Warman VB @ § AAFC (Brandon) SeCan Members AAC Wheatland VB @ AAFC (Swift Current) SeCan Members Canada Western Special Purpose SeCan Members AAC Awesome VB @ SeCan Members AAFC (Lethbridge) AAFC (Lethbridge) AAC Innova @ Alliance Seed Pasteur Wiersum Plant Breeding SeCan Members Sparrow VB KWS-UK SeCan Members WPB Whistler 0 Wiersum Plant Breeding SeCan Members Canada Prairie Spring Red Accelerate O VUA LCRC - Limagrain Canada CANTERRA SEEDS AAC Crossfield @ § AAFC (Winnipeg) **CANTERRA SEEDS** AAC Foray VB @ AAFC (Winnipeg) SeCan Members Forefront U of Alberta Penwest Seeds AAC Penhold @ AAFC (Swift Current) SeCan Members AAC Perform © AAFC (Lethbridge) Alliance Seed CDC Reign @ U of S - CDC FP Genetics AAC Rimbey VB @ AAFC (Swift Current) SeCan Members SY Rorke @ Proven Seed/Nutrien Ag Solutions Syngenta Seeds Canada Inc. SY Rowyn @ Syngenta Seeds Canada Inc. Alliance Seed AAC Westlock @ AAFC (Lethbridge) SeCan Members Canada Western Hard White Spring FP Genetics AAC Tomkins @ AAFC (Swift Current) AAC Whitehead VB @ FP Genetics AAFC (Lethbridge) Canada Western Soft White Spring SeCan Members AC Andrew AAFC (Lethbridge AAC Chiffon VB ® AAFC (Lethbridge) SeedNet Inc. AAC Paramount VB @ AAFC (Lethbridge) SeCan Members SeCan Members Sadash VB @ AAFC (Lethbridge)

Crop Kind, Class & Va	ariety Breeding Institution	Distributor
WHEAT (CONT'D)		
Canada Western Amber	Durum	
CDC Alloy @	U of S - CDC	FP Genetics
AAC Antler O	AAFC (Swift Current)	SeCan Members
Brigade @	AAFC (Swift Current)	Proven Seed/Nutrien Ag Solutions
AAC Congress @	AAFC (Swift Current)	CANTERRA SEEDS
CDC Covert @	U of S - CDC	Proven Seed/Nutrien Ag Solutions
CDC Credence @	U of S - CDC	CANTERRA SEEDS
CDC Defy @	U of S - CDC	SeCan Members
AAC Donlow @	AAFC (Swift Current)	CANTERRA SEEDS
CDC Dynamic @	U of S - CDC	Proven Seed/Nutrien Ag Solutions
CDC Evident © CDC Flare	U of S - CDC U of S - CDC	Alliance Seed
CDC Flate CDC Fortitude @	U of S - CDC	Proven Seed/Nutrien Ag Solutions Proven Seed/Nutrien Ag Solutions
AAC GoldNet @	AAFC (Swift Current)	SeedNet Inc.
AAC Grainland @	AAFC (Swift Current)	SeCan Members
CDC Precision @	U of S - CDC	Alliance Seed
AAC Schrader ©	AAFC (Swift Current)	FP Genetics
AAC Spitfire @	AAFC (Swift Current)	SeCan Members
Strongfield @	AAFC (Swift Current)	SeCan Members
AAC Stronghold @	AAFC (Swift Current)	SeCan Members
AAC Succeed VB @	AAFC (Swift Current)	FP Genetics
Transcend @	AAFC (Swift Current)	FP Genetics
CDC Vantta O	U of S - CDC	SeCan Members
CDC Verona @	U of S - CDC	Alliance Seed
AAC Weyburn VB 3	AAFC (Swift Current)	Alliance Seed
WINTER WHEAT		
Canada Western Red W	inter	
CDC Buteo	U of S - CDC	SeCan Members
AAC Coldfront ©	AAFC (Lethbridge)	SeCan Members
AAC Elevate @	AAFC (Lethbridge)	SeCan Members
Emerson @	AAFC (Lethbridge)	CANTERRA SEEDS
AAC Gateway @	AAFC (Lethbridge)	Seed Depot
AAC Goldrush ®	AAFC (Lethbridge)	FP Genetics
Moats ®	U of S - CDC	SeCan Members
AAC Network ©	AAFC (Lethbridge)	SeedNet Inc.
Radiant ®	AAFC (Lethbridge)	CANTERRA SEEDS
AAC Vortex 3 AAC Wildfire 9	AAFC (Lethbridge) AAFC (Lethbridge)	Alliance Seed SeCan Members
Canada Western Experi		ocour members
AAC Icefield @	AAFC (Lethbridge)	FP Genetics
Canada Western Specia		
Pintail	FCDC (Lacombe)	Mastin Seeds
TRITICALE		
Spring Habit		
Brevis	AAFC (Swift Current)	Wagon Wheel Seed Corp
Bunker 💩	FCDC (Lacombe)	FP Genetics
AAC Delight @	AAFC (Lethbridge)	Fabian Seed Farms
Pronghorn	FCDC (Lacombe)	Progressive Seeds
AB Stampeder ©	FCDC (Lacombe)	Solick Seeds
Sunray	AAFC (Lethbridge)	SeedNet Inc.
Taza ®	FCDC (Lacombe)	Solick Seeds
Tyndal ⊛ AC Ultima	FCDC (Lacombe)	SeCan Members FP Genetics
Winter Habit	AAFC (Swift Current)	FF Genetics
Luoma ®	FCDC (Lacombe)	Corns Brothers Farms
Metzger	FCDC (Lacombe)	Haney Farm Ltd.
Pika	FCDC (Lacombe)	Progressive Seeds
DVE		
RYE Open-Pollinated		
Hazlet	AAFC (Swift Current)	SeCan Members
Danko	Danko Plant Breeders Ltd	FP Genetics
Prima	AAFC (Swift Current)	SeCan Members
Hybrid Varieties		
KWS Bono	KWS Lochow GMBH	FP Genetics
Brasetto	KWS Lochow GMBH	FP Genetics
KWS Daniello §	KWS Lochow GMBH	SeedNet Inc.
KWS Gatano 6	KWS Lochow GMBH	FP Genetics
KWS Receptor	KWS Lochow GMBH	KWS Cereals Canada
KWS Sandor	KWS Lochow GMBH	KWS Cereals Canada
KWS Serafino ©	KWS Lochow GMBH	SeedNet Inc.
KWS Trebiano ©	KWS Lochow GMBH	FP Genetics
Forage KWS Progas	KWS Lochow GMBH	FP Genetics
	KWO LUCIOW GIVIBR	
KWS Propower 😂	KWS Lochow GMRH	SeedNet Inc.
KWS Propower ©	KWS Lochow GMBH	SeedNet Inc.
CANARY SEED		
CANARY SEED CDC Bastia	U of S - CDC	Public release U of S - CDC
CANARY SEED CDC Bastia CDC Calvi @	U of S - CDC U of S - CDC	Public release U of S - CDC CANTERRA SEEDS
CANARY SEED CDC Bastia CDC Calvi ⊕ Cantate	U of S - CDC U of S - CDC J. Joordans Zaadhandel BV	Public release U of S - CDC CANTERRA SEEDS Hansen Seeds
CANARY SEED CDC Bastia CDC Calvi @	U of S - CDC U of S - CDC	Public release U of S - CDC CANTERRA SEEDS

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² Lodging Score: 1 = upright to 9 = flat

³ CP = crude protein; ADF = acid detergent fiber; NDF = neutral detergent fiber; TDN = total digestible nutrient; Ca = calcium; P = phosphorus. The values are based on dry matter

⁴ VB = varietal blend. Information on refuge varieties on page VR13.

Crop Kind, Class & Varie	ty Breeding Institution	Distributor	Crop Kind, Class & Varie	ty Breeding Institution	Distributor
BARLEY			OAT		
Malting Two-Row		_	Hulled		
CDC Bow @	U of S - CDC	SeCan Members	Akina @ §	Lantmannen SW Seed	Elite Seeds
AB BrewNet ©	FCDC (Lacombe)	SeedNet Inc.	Alka 🔮 §	Lantmannen SW Seed	Elite Seeds
CDC Churchill ©	U of S - CDC	SeCan Members	CDC Anson ©	U of S - CDC	FP Genetics
AAC Connect @	AAFC (Brandon)	CANTERRA SEEDS	CDC Arborg @	U of S - CDC	FP Genetics
CDC Copeland	U of S - CDC	SeCan Members	CDC Boyer	U of S - CDC	SeCan Members
CDC Copper @	U of S - CDC	FP Genetics	CS Camden @	Lantmannen SW Seed	CANTERRA SEEDS
CDC Fraser @	U of S - CDC	SeCan Members	CDC Dancer §	U of S - CDC	FP Genetics
AAC Goldman @	AAFC (Brandon)	Elite Seeds	Derby	U of S - CDC	Mastin Seeds
		CANTERRA SEEDS	-		
CDC Goldstar @	U of S - CDC/Sapporo/PML		AAC Douglas 🏵	AAFC (Brandon)	SeCan Members
AC Metcalfe	AAFC (Brandon)	SeCan Members	CDC Endure @	U of S - CDC	Alliance Seed
CDC PlatinumStar	U of S - CDC/Sapporo/PML	CANTERRA SEEDS	Kalio 😂	Lantmannen SW Seed	CANTERRA SEEDS
AAC Prairie O	AAFC (Brandon)	CANTERRA SEEDS	Kara @ §	Lantmannen SW Seed	Elite Seeds
AAC Synergy @	AAFC (Brandon)	FP Genetics	Kyron ⊕	Lantmannen SW Seed	CANTERRA SEEDS
Torbellino	Syngenta Seeds Canada Inc.	FP Genetics	CDC Minstrel @	U of S - CDC	FP Genetics
Malting Six-Row			AC Morgan	AAFC (Lacombe)	SeCan Members
Legacy	Busch Ag Res. Inc.	Proven Seed/FP Genetics	CDC Morrison @	U of S - CDC	CANTERRA SEEDS
Hulled - Feed Two-Row			CDC Nasser	U of S - CDC	T&L Seeds
Altorado @	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions	CDC Norseman @	U of S - CDC	SeCan Members
CDC Austenson ®	U of S - CDC	SeCan Members	ORe3542M @		SeCan Members
				Oat Advantage	
Bighorn ©	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions	ORe Level48 @	Oat Advantage	Seed Depot
Brahma 💩	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions	ORe Level50 @	Oat Advantage	Seed Depot
Canmore @	FCDC (Lacombe)	CANTERRA SEEDS	CDC Ruffian ®	U of S - CDC	FP Genetics
Cantu 😂	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions	CDC SO-I @	U of S - CDC	T&L Seeds
Claymore @	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions	Souris @	NDSU	Seed Depot
CDC Durango 😉	U of S - CDC	SeCan Members	Summit @	AAFC (Winnipeg)	FP Genetics
Esma 🕹 VUA	Ackermann Saatzucht	SeCan Members	Triactor @	Lantmannen SW Seed	CANTERRA SEEDS
lbex 0	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions	AAC Wesley ©	AAFC (Brandon)	FP Genetics
KWS Kellie O VUA	KWS-GMBH	Secan Members	Hulless	7 t ti 0 (2 tanaon)	
AAC Lariat ©		CANTERRA SEEDS	AC Gwen	AAEC (Minnings)	SeCan Members
Oreana 0	AAFC (Brandon)			AAFC (Winnipeg)	Secan Members
	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions	Forage	11 (0.000	
RGT Planet @ VUA	RAGT	SeCan Members	CDC Baler	U of S - CDC	FP Genetics
AB Prime O	FCDC (Lacombe)	SeedNet Inc.	CDC Haymaker ₪	U of S - CDC	SeCan Members
Sirish @	Syngenta Seeds Canada Inc.	FP Genetics	Murphy	AAFC (Lacombe)	SeCan Members
AB Wrangler 🛭	FCDC (Lacombe)	CANTERRA SEEDS			
Hulled - Feed Six-Row			FLAX		
Amisk § @	FCDC (Lacombe)	SeCan Members	Brown Seed		
AC Rosser §	AAFC (Brandon)	SeCan Members	CDC Bethune	U of S - CDC	SeCan Members
Hulless - Food, Malting, Fee			AAC Bravo @	AAFC (Morden)	FP Genetics
CDC Ascent @	U of S - CDC	SeCan Members	CDC Buryu @	U of S - CDC	SeCan Members
CDC Carter	U of S - CDC	SeCan Members	CDC Glas @	U of S - CDC	SeCan Members
CDC Clear @	U of S - CDC	SeCan Members	CDC Kernen @	U of S - CDC	SeCan Members
CDC Fibar ®	U of S - CDC	Tomtene Seeds	AAC Marvelous @	AAFC (Morden)	FP Genetics
CDC Hilose @	U of S - CDC	Tomtene Seeds	CDC Neela @	U of S - CDC	CANTERRA SEEDS
CDC Marlina @	U of S - CDC	Tomtene Seeds	CDC Plava @	U of S - CDC	SeCan Members
CDC McGwire @	U of S - CDC	SeCan Members	Prairie Grande	AAFC (Morden)	SeCan Members
CDC Rattan @	U of S - CDC	Tomtene Seeds	Prairie Sapphire	AAFC (Morden)	Alliance Seed
Roseland	AAFC (Brandon)	Wayfinder Farms	AAC Prairie Sunshine	AAFC (Morden)	SeCan Members
CDC Valdres O	U of S - CDC	Tomtene Seeds	Prairie Thunder ®	AAFC (Morden)	CANTERRA SEEDS
Forage			CDC Rowland @	U of S - CDC	SeCan Members
AB Advantage @	FCDC (Lacombe)	SeCan Members	CDC Sanctuary ®	U of S - CDC	SeCan Members
AB Cattlelac @	FCDC (Lacombe)	Alliance Seed	CDC Sorrel &	U of S - CDC	SeCan Members
CDC Cowboy ®	U of S - CDC	SeCan Members	Topaz @	Nutrien Ag Solutions	Alliance Seed
AB Hague ©	FCDC (Lacombe)	FP Genetics	WestLin 60 ข	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions
					· ·
CDC Maverick ®	U of S - CDC	SeCan Members	WestLin 71 @	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions
AC Ranger	AAFC (Brandon)	FP Genetics	WestLin 72 @	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions
CDC Renegade ©	U of S - CDC	SeCan Members	Yellow Seed	1150 (11)	
Stockford	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions	AAC Bright @	AAFC (Morden)	SeCan Members
AB Tofield O	FCDC (Lacombe)	SeCan Members	CDC Dorado @	U of S - CDC	SeedNet Inc.
			VT50 ⊜	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions
CAMELINA					
SES0787LS @ (Cypress)	Smart Earth Camelina Corp.	Smart Earth Camelina Corp.	MUSTARD		
SES1154HR @ (NewGold)	Smart Earth Camelina Corp.	Smart Earth Camelina Corp.	Brown		_
, ,	•	·	Amigo	AAFC (Saskatoon)	Mustard 21 Canada Inc.
SUNFLOWER			AAC Brown 18 @	AAFC (Saskatoon)	Mustard 21 Canada Inc.
Cobalt II	Nuseed Americas	Nuseed Americas	AAC Brown 120	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AC Sierra	AAFC (Saskatoon)	AAFC (Indian Head)	Centennial Brown	AAFC (Saskatoon)	Mustard 21 Canada Inc.
	,	,		AAI C (Saskalooli)	Mustaru 21 Cariaua IIIC.
Talon	Nuseed Americas	Nuseed Americas	Oriental	AAEC (Sockatoon)	Mustard 21 Canada Is-
63A21 §	Pioneer Hi-Bred	Pioneer Hi-Bred	Cutlass	AAFC (Saskatoon)	Mustard 21 Canada Inc.
CUINGA			Forge	Colman's of Norwich	Proven Seed/Nutrien Ag Solutions
QUINOA			AAC Oriental 200 @	AAFC (Saskatoon)	Mustard 21 Canada Inc.
NQ Red 🛭	NorQuin	NorQuin	AC Vulcan	AAFC (Saskatoon)	Mustard 21 Canada Inc.
NQ94PT ⊗	NorQuin	NorQuin	Yellow		
NQ20W O	NorQuin	NorQuin	AAC Adagio @	AAFC (Saskatoon)	Mustard 21 Canada Inc.
NQ20BL 😂	NorQuin	NorQuin	Andante	AAFC (Saskatoon)	Mustard 21 Canada Inc.
			AC Pennant	AAFC (Saskatoon)	Mustard 21 Canada Inc.
			AAC Yellow 80 ©	AAFC (Saskatoon)	Mustard 21 Canada Inc.
				- ()	
			SAFFLOWER		
			Saffire	AAEC (Lothbridge)	Jerry Kubic (AP)
			Janne	AAFC (Lethbridge)	Jerry Kubic (AB)
			CANOLA		
			CANOLA	205	
			see tables on page VR34 - VI	K35	

Small Red CDC Carmine @ § U of S - CDC Sask. Pulse Growers CDC Dazil U of S - CDC Sask. Pulse Growers U of S - CDC CDC Impulse @ Sask, Pulse Growers CDC Karim @ U of S - CDC Sask. Pulse Growers CDC Maxim U of S - CDC Sask. Pulse Growers CDC Nimble @ U of S - CDC Sask. Pulse Growers CDC Proclaim @ U of S - CDC Sask. Pulse Growers CDC Redmoon @ U of S - CDC Sask. Pulse Growers CDC Simmie 0 U of S - CDC Sask. Pulse Growers Extra Small Red CDC Impala U of S - CDC Sask. Pulse Growers Large Red CDC KR-2 @ U of S - CDC Sask. Pulse Growers CDC Sublime © U of S - CDC Sask. Pulse Growers Small Green CDC Imvincible U of S - CDC Sask, Pulse Growers CDC .limini @ U of S - CDC Sask Pulse Growers CDC Kermit @ U of S - CDC Sask. Pulse Growers CDC Viceroy U of S - CDC Sask. Pulse Growers Medium Green U of S - CDC CDC Imigreen Sask, Pulse Growers CDC Impress U of S - CDC Sask. Pulse Growers Large Green CDC Greenland U of S - CDC Sask. Pulse Growers CDC Greenstar U of S - CDC Sask. Pulse Growers CDC Grimm O U of S - CDC Sask. Pulse Growers CDC Impower U of S - CDC Sask. Pulse Growers CDC Lima @ U of S - CDC Sask. Pulse Growers French Green CDC Marble U of S - CDC Sask. Pulse Growers CDC Peridot U of S - CDC Sask. Pulse Growers Sask. Pulse Growers CDC Pilgrim 0 U of S - CDC Green Cotyledon CDC Imerald © U of S - CDC Sask, Pulse Growers CDC QG-3 @ U of S - CDC Sask. Pulse Growers CDC QG-4 @ U of S - CDC Sask. Pulse Growers Spanish Brown U of S - CDC Sask. Pulse Growers CDC SB-3 @ CDC SB-4 @ U of S - CDC Sask. Pulse Growers DRY BEAN Black
CDC Blackstrap @ U of S - CDC Sask, Pulse Growers U of S - CDC CDC Jet Sask, Pulse Growers CDC Superjet U of S - CDC Sask. Pulse Growers Pinto Island AAFC (Lethbridge) Viterra Inc. Medicine Hat @ Seminis Vegetable Seeds CANTERRA SEEDS CDC WM - 2 U of S - CDC Sask. Pulse Growers CDC WM - 3 @ U of S - CDC Sask. Pulse Growers Navy U of Guelph Hensell District Co-op AAFC (Morden) CANTERRA SEEDS Portage AAFC / U of Guelph Hensell District Co-op AAC Shock CDC Whitetrack O U of S - CDC McDougall Acres Small Red AC Redbond AAFC (Lethbridge) Viterra Inc. flor de junio U of S - CDC CDC Ray @ Rudy Agro Yellow CDC Sunburst @ U of S - CDC Rudy Agro SOYBEAN see tables on page VR28 - VR29 Abbreviations Used in this List

Crop Kind, Class & Variety Breeding Institution

Distributor

Agriculture Canada (Agriculture and Agri-Food Canada) Agriculture Canada (Agriculture and Agri-Food Canada) AAC AAFC Agriculture and Agri-Food Canada CDC Crop Development Centre CPS Crop Production Services FCDC Field Crop Development Centre NDSU North Dakota State University Ontario Agricultural College OAC RAGT Rouergue Auvergne Gévaudan Tarnais SY Syngenta Seeds Canada Inc. University U of S University of Saskatchewan United States Department of Agriculture

The distributors listed in this table have distribution rights for the variety within Saskatchewan. Those distribution rights may be different outside of Saskatchewan and/or Western Canada.

FIELD PEA		
Yellow		
Abarth @	Limagrain, Netherlands	FP Genetics
AAC Aberdeen @	AAFC (Lacombe)	Alliance Seed
CDC Amarillo	U of S - CDC	Sask. Pulse Growers
AAC Ardill	AAFC	Wagon Wheel Seed Corp.
AAC Beyond ©	AAFC	CANTERRA SEEDS
CDC Canary @	U of S - CDC	Sask. Pulse Growers
AAC Carver @ AAC Chrome @	AAFC (Lacombo)	CANTERRA SEEDS FP Genetics
CDC Citrine ©	AAFC (Lacombe) U of S - CDC	Sask. Pulse Growers
AAC Delhi @ §	AAFC	SeedNet Inc.
CDC Golden	U of S - CDC	Sask. Pulse Growers
CDC Hickie O	U of S - CDC	Sask. Pulse Growers
CDC Inca @	U of S - CDC	Sask. Pulse Growers
AAC Julius 3	AAFC	FP Genetics
AAC Lacombe @ §	AAFC	SeedNet Inc.
CDC Lewochko @	U of S - CDC	Sask. Pulse Growers
CDC Meadow	U of S - CDC	Sask. Pulse Growers
AAC Profit @	AAFC	FP Genetics
CDC Saffron	U of S - CDC	Sask. Pulse Growers
CDC Spectrum © CDC Tollefson €	U of S - CDC U of S - CDC	Sask. Pulse Growers Sask. Pulse Growers
Green	0 01 3 - CDC	Sask. Fulse Glowers
Blueman §	DL Seeds Inc.	SeedNet Inc.
CDC Forest @	U of S - CDC	Sask. Pulse Growers
CDC Greenwater	U of S - CDC	Sask. Pulse Growers
CDC Huskie 3	U of S - CDC	Sask. Pulse Growers
CDC Limerick	U of S - CDC	Sask. Pulse Growers
CDC Raezer	U of S - CDC	Sask. Pulse Growers
CDC Rider ©	U of S - CDC	Sask. Pulse Growers
CDC Spruce @	U of S - CDC	Sask. Pulse Growers
CDC Striker	U of S - CDC	Sask. Pulse Growers
Red Redbat 8 @ §	U of S - CDC	Sask, Pulse Growers
Redbat 88 @ §	U of S - CDC	Sask. Pulse Growers
Maple	0 0. 0 020	Caom r alco Cromero
CDC Acer §	U of S - CDC	Sask. Pulse Growers
CDC Blazer @	U of S - CDC	Sask. Pulse Growers
AAC Liscard §	AAFC	Wagon Wheel Seed Corp.
AAC Lorlie	AAFC	Wagon Wheel Seed Corp.
CDC Mosaic	U of S - CDC	Sask. Pulse Growers
Dun ODO Delector	H-40, 0D0	Ocale Bules Occurre
CDC Dakota	U of S - CDC	Sask. Pulse Growers
DL Delicious © VUA	DL Seeds Inc.	FP Genetics
DL Goldeye O VUA	DL Seeds Inc.	Riddell Seed Co.
CDC Horizon	U of S - CDC	Sask. Pulse Growers
CDC Jasper @	U of S - CDC	Sask. Pulse Growers
DL Lacross	DL Seeds Inc.	SeedNet Inc.
CHICKPEA		
Kabuli		
CDC Alma §	U of S - CDC	Sask. Pulse Growers
Amit (B-90)	ARO Volcani Centre	AGT Foods Canada
CDC Frontier	U of S - CDC	Sask. Pulse Growers
CDC Lancer CDC Leader	U of S - CDC U of S - CDC	Sask. Pulse Growers Sask. Pulse Growers
CDC Luna §	U of S - CDC	Sask. Pulse Growers
CDC Orion	U of S - CDC	Sask. Pulse Growers
CDC Orkney ©	U of S - CDC	Sask. Pulse Growers
CDC Palmer @	U of S - CDC	Sask. Pulse Growers
Desi		
CDC Consul	U of S - CDC	Sask. Pulse Growers
CDC Cory	U of S - CDC	Sask. Pulse Growers
CDC Kala O	U of S - CDC	Sask. Pulse Growers
EARA REAN		
FABA BEAN Coloured Flower (normal tanni	n)	
Colouieu i lower (Horrilai tanni	11)	

Crop Kind, Class & Variety Breeding Institution

Distributor

FABA BEAN							
Coloured Flower (normal tannin)							
Allison O	DL Seeds Inc.	Prairie Fava					
Fabelle @	DL Seeds Inc.	SeedNet Inc.					
FB9-4 §	U of S - CDC	Sask. Pulse Growers					
CDC SSNS-1 §	U of S - CDC	Meier Brothers					
Taboar §	Globe Seeds - Netherland	Terramax					
Victus O	DL Seeds Inc.	Valesco Genetics					
White Flower (low tannin)							
Imposa §	Limagrain Nederland	Cyre Seed Farms					
Navi 😂	AGri Obtentions	KGB Meier Farms					
DL Nevado 🏻	DL Seeds Inc.	Stamp Seeds					
Snowbird §	Limagrain Nederland	Lindholm Seeds					
CDC Snowdrop §	U of S - CDC	Sask. Pulse Growers					
Tabasco §	DL Seeds Inc.	Riddell Seed Co.					
DL Tesoro O VUA §	DL Seeds Inc.	Riddell Seed Co.					
219-16 @ §	U of S - CDC	Sask. Pulse Growers					

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regulatorymodernization, we're seeking input to help us build a secure, streamlined seed system. Watch for details about upcoming consultations with federal task teams.

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Our Seed Matters newsletter keeps our

membersinformedabout important business issues and initiatives and activities of the SSGA along with up-todate information for the successful production of pedigreed seed.

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