SASKATCHEWAN SEED GUIDE 2022

Sask Seed

Saskatchewan Seed Growers' Association

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THE WESTERN PRODUCER
JANUARY 2022

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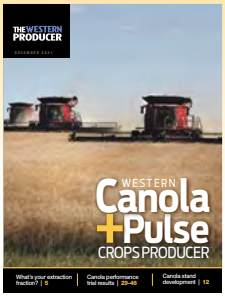

GROWER LISTINGS

The 2021 Canola Performance Trials results were unavailable at press time. Look for them in the *Western Canola + Pulse Crops Producer* inserted into *The Western Producer* in January, or online at producer.com.

ON THE COVER: AB Advantage forage barley is distributed through SeCan. | SASKSEED PHOTO

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Sask Seed
Saskatchewan Seed Growers' Association

MIKE SHEWCHUK
SSGA PRESIDENT

PRESIDENT'S MESSAGE

THE 2021 GROWING SEASON will no doubt be reflected upon as a very memorable one. Severe drought paired with record heat withered crops through much of Western Canada.

Extreme market volatility has elevated grain prices to levels largely unseen.

Supply shortages and shipping delays have also plagued agriculture, driving crop input prices substantially higher.

The coming year is shaping up to carry a higher amount of risk than usual.

There are many factors associated with this that are beyond our control.

As producers, it's important to focus on controlling the factors within our ability.

Seed selection should be priority No. 1, as seed is the only essential component to growing a crop.

The *SaskSeed Guide* serves as a tool to assist with selection.

As we prepare for the coming season, it is imperative to have seed supply in place earlier than usual, as certified seed supply is down significantly, due mainly to the provincial drought.

As Saskatchewan producers, we are fortunate to have a very robust slate of varieties available for planting.

The delivery of these varieties is supported by a strong seed certification system, which is the basis of our reputation for high quality Canadian grain.

As we move forward, genetics will play a much greater role in adapting and overcoming challenges such as disease and pests, as well as gaining efficiencies in water and nutrient use.

Pedigreed seed growers play an essential role in this system.

Great pride is taken delivering these world-class genetics from breeder to producer.

Seed growers adhere to strict standards throughout production to provide a quality product we are proud of: Certified Seed.

EARLIER THIS YEAR, SaskSeed is excited to have launched the Interactive SaskSeed Guide.

This new tool utilizes the thorough, unbiased data of our printed SaskSeed Guide into an electronic format.

The Interactive SaskSeed Guide features a search function based on criteria such as fusarium or lodging resistance to assist in variety selection.

The Interactive SaskSeed also embodies clickable features such as the variety name, which can then direct you to seed growers who carry the variety in your area.

Check out the new Interactive Seed Guide on our website **www.saskseed.ca**.

I wish you all the best in 2022!

As producers, it's important to focus on controlling the factors within our ability. Seed selection should be priority No. 1, as seed is the only essential component to growing a crop.

Bryan Harvey has developed a reputation as one of the most prolific barley breeders in the country. | UNIVERSITY OF SASKATCHEWAN DEPARTMENT OF PLANT SCIENCES PHOTO

HARVEY HONOURED FOR CONTRIBUTIONS TO AGRICULTURE … AND BEER

BY MARY MACARTHUR | SPECIAL TO SASKSEED

AFTER DEVELOPING more than 60 varieties of barley, many of them malting varieties, Bryan Harvey knows his beer.

On a hot, summer day, any cold beer will do. But in the winter, beside a fire, he savours the flavours and smells of more sophisticated beers.

"I think about that a lot. People don't realize this, but there's an enormous variation in beers and types and tastes," said Harvey, professor emeritus and former barley breeder from the University of Saskatchewan.

"It's a huge range there that most people are a bit oblivious to. We don't do a good enough job in the beer industry of pushing it at the level of sophistication that it really deserves."

"If you compare it to the wine industry, the range of tastes and styles and so on is much broader in beer than it is in wines, yet we don't take full advantage of that."

Over a 40-year career that spanned five decades, Harvey developed a reputation as one of the most prolific barley breeders in the country. And over the years, the barley varieties he developed were used to make boat-loads of top quality beer, consumed in Canada and around the world.

Harvey joined the University of Saskatchewan in 1966 and became an associate professor in 1969.

By 1975, he was a full professor and a few years later, he became assistant dean of the university's College of Agriculture, a position he held from 1980 to 1983.

He went on to serve as head of the Department of Crop Science and Plant Ecology and as director of the Crop Development Centre from 1983 to 1994.

He also served as chair of the Department of Horticulture Science from 1994 to 1999, before moving to the office of the vice-president of research where he served as coordinator of agriculture research from 1997 to 2002.

He later served as vice-president of research from 2002 to 2003, and as special advisor to the vice-president of research until his retirement in 2005.

Last November, Harvey was inducted into the Canadian Agriculture Hall of Fame. He was nominated in 2020, but due to COVID-19 restrictions, his formal induction didn't take place until late 2021.

Harrington and CDC Copeland, two of the most successful malting barley varieties Canadian farmers have ever grown, were developed by Harvey during his time at the University of Saskatchewan.

Except for some early work with canola pioneer Keith Downey, most of Harvey's research focused on barley. As Downey's first master's student graduate, Harvey developed research techniques still used in the industry today and worked out the inheritance of erucic acid content, one of the first steps in the development of canola.

"Some of the first varieties came right out of material that I worked with in Keith's lab at that time," said Harvey, also a member of the Order of Canada for his lifetime achievement in agriculture research.

Returning to the University of Saskatchewan after his graduate work, Harvey was given the responsibility for research in flax, oats and barley. The young researcher knew he needed to focus his energy on one crop, not three. He chose barley.

"I looked around to where I'd be likely to get the biggest bang for the buck in terms of returns and the importance of the crop at that time," Harvey said.

"I decided to focus on barley. It also helped that the brewing institute gave us some money to work on and the other crop commodities didn't have any money to give me."

During the 1960s, beer consumption around the world was increasing and improvements to malt barley varieties seemed a logical research step. Canada was not an important malt producer at the time and most of the barley grown was blue aleurone, six-row varieties with limited appeal to brewers.

"It seemed to me most of the growth in beer consumption was going to come outside North America, or elsewhere, where really the important ingredient was not six-row."

In Europe, the traditional malting profile was a two-row barley with low enzymes and an emphasis on the amount of alcohol that could be extracted from the barley without using adjuncts.

"I decided that if I was going to make any dent in the Canadian market and carve out a niche, what I had to do was try and combine the high enzymatic activity, which characterized the six-row types, with the higher extract of the European two-row malts. And that's basically what I did with Harrington."

"We sort of had the best of both worlds. It was still a bit of a tough row to hoe because it's a very traditional industry and God, it takes them forever to switch varieties."

Harrington, one of Harvey's most successful varieties, was released in 1981 and became the dominant Canadian malting variety for more than 20 years.

Its success was the result of its unique characteristics, but also a bit of luck. A worldwide malt barley shortage sent maltsters to Canada looking for any malt barley that was available. And in Canada, Harrington was a rising star.

"They were taking pretty much anything they could get and once they got Harrington into a malt house they could see it had a lot of very, very nice properties to it," said Harvey.

"The Canadian market was kind of a slower, more gradual process to get them to switch from six-row to two-row. Having that high enzyme level and the high extract combined was attractive to them. Once they tried it, they liked it and the switch was made."

At its peak, Harrington was grown on more than 60 percent of barley acres in Canada and more than 80 percent in Saskatchewan.

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CHALLENGES AHEAD FOR CANADIAN AGRICULTURE

BY MARY MACARTHUR
SPECIAL TO SASKSEED

AFTER SPENDING his entire career in agriculture predicting what plant varieties will be needed in the future, research scientist and plant breeder Bryan Harvey sees some challenging times ahead for Canadian agriculture.

The development of new, more productive varieties of grain has helped farmers around the world deliver high-quality, nutritious food. But it's something consumers take for granted.

"We in agriculture have done such a good job that people take cheap, nutritious, diverse food for granted," Harvey said recently.

"That's the problem, in my opinion, because they do just that — they take it for granted and they know very little about where their food comes from. They spend very little of their income on it compared to 50 years ago when they were spending a third of their income on it. Now, they spend about 10 percent of their income on it including going out to restaurants."

Inexpensive food is possible because of innovations in agriculture. But food security isn't a certainty for everyone around the world. Poverty and malnutrition impact millions of people around the world. Consumers in Canada should appreciate the safe food that's produced at home.

"We should never take it for granted and we need to do a better job of bragging about it in the industry."

Another area of concern Harvey sees is increased regulations that inhibit innovation. New powerful gene editing tools are key to innovation in grain breeding research and their use must not be blocked.

"How we handle that in Canada is very, very important," he said.

"There are no examples of this having any harmful effects whatsoever, yet there are those who want to treat it as if we're trying to poison the world. So we need to be very, very careful on how we do this."

In Europe, targets to reduce agricultural inputs have recently been announced. Those types of restrictions are the product of short-sighted thinking that will create even more food insecurity, Harvey said.

"Do they realize the harm that they would be doing to increase people starving because of reduced use of inputs?"

Access to labour in Canada is another area that may be a concern in the future, he said.

The shortage of farm workers will have an impact on many areas of agriculture, from horticulture to prairie grain farms.

"It's very, very difficult to get people to work on farms and to get and keep quality people. So our access to foreign workers is critical, yet we keep wanting to put roadblocks in that area and that's very much to our detriment.

"We've made lots of improvements in terms of machines to replace people, but there's still a lot of work that needs to be done by hand."

"And the only way you're going to do that is to have access to labour, otherwise the cost of food is going to go through the roof."

> *We should never take (safe food) for granted and we need to do a better job of bragging about it in the industry.*
>
> **BRYAN HARVEY** | PLANT BREEDER

During a career that spanned more than 40 years, Brian Harvey developed or co-developed more than 60 barley varieties, most with the help of colleague and fellow barley breeder Brian Rossnagel. | UNIVERSITY OF SASKATCHEWAN DEP'T OF PLANT SCIENCES PHOTO

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The development of CDC Copeland, which later dominated the brewing market, was originally developed to create a malt barley for southeast Asia and China markets, where brewers demanded a barley with high enzyme levels. The development of CDC Copeland also coincided with the rise of the craft and regional brewing industry, which didn't use adjuncts, but needed barley with high enzyme levels for their beer.

"That's what I set out to do was to put out an alternative profile there that had pretty good enzyme levels, but very good extract to it and a nice flavor profile and most importantly of all, had good performance in the field."

Since it was developed in the 1990s, prairie farmers have grown tens of millions of acres of CDC Copeland.

In 2021, it was still the most widely grown malting variety in Canada, commanding nearly one million insured acres on the prairies, or roughly 37 percent of the total malt barley acres sown in Western Canada.

Clearly, CDC Copeland was a winner among farmers, brewers and beer drinkers, alike.

As the developer or co-developer of more than 60 varieties of barley, Harvey doesn't have a concrete rule of how new varieties are named.

Most of his varieties are named after places or people. Harrington was named after Dr. J.B. Harington, a former barley breeder and department head at the University of Saskatchewan.

CDC Copeland was named after Bill Copeland, a farmer from Elrose, Sask., who let Harvey establish test plots on his west central Saskatchewan farm.

"He was very generous in allowing us to grow plots in his area. He put up with us. We are kind of a nuisance and put in plots in the corner of a field and the farmer has to go around them. And we tend to be messy.

"Anyway, he was very tolerant and very supportive. And as I say, I'm very, very good friends with him. So that's where the name Copeland came from," said Harvey.

"I remind him every once in a while and get him to buy me a beer."

Much of the work Harvey did to develop new barley varieties was done shoulder-to-shoulder with his barley research partner, Brian Rossnagel, who focused on feed and food barley research at the University of Saskatchewan's Crop Development Centre.

Together, Harvey and Rossnagel exchanged barley germplasm to control pests and increase yield and helped each other measure and assess cultivars in the field.

"A disease or a pest of barley doesn't care whether it's malt or feed. So that is why we shared a lot of common germplasm. The genes for yield are just as applicable to malting barley as feed barley. That's why we shared a lot of material and we always went through the field together, for years and years and years, scoring each other's materials. And so there's very much a team effort and a co-operative effort."

In the early years, getting new germplasm from around the world was important for the research and breeding activities that Harvey and Rossnagel were involved in. Through the research circle, they received small amounts of seed from people who wanted to share the germplasm with other researchers.

"We just got a permit to do that and the only problem was getting the person who owned the germplasm to give it," Harvey explained.

"Some people are very, very free with it. In most of my career, people took the attitude that everybody benefits from sharing, so you shared."

The exception to germplasm sharing among agriculture researchers was with China. Harvey got around that problem through their graduate students who wanted to come to Canada to study.

"So you would suggest, not too subtly, that they might want to bring some materials along to work on when they get to Saskatoon."

At one time, Harvey received a call from a border security officer in Vancouver about a student travelling from Tibet to Saskatoon with seeds in his suitcase. Harvey convinced the office that the seeds were for research and would be used safely in Saskatoon. Both seeds and student arrived safely in Saskatoon.

One of the largest changes in the industry since Harvey began his research work involves the tools used for plant breeding. Researchers now have an extensive knowledge and understanding of genetics.

"We can do things now that they wouldn't even dream of doing when I first started out. I mean, we can sequence whole genomes in a relatively short time and relatively cheaply now, and that has all developed in the last 20 years or so," he said.

"I would drool to have these kinds of tools when I started out."

What hasn't changed is the need for a researcher to look into the future and predict what the market will need in 10 or 15 years.

"That is what is relevant to the cross you're making today. That hasn't changed. What has changed is the tools and the accuracy with which you can select parents and complement the weaknesses and do a better job of screening the materials."

WINNING THE WAR AGAINST CLUBROOT

SPECIAL TO SASKSEED

THE YIELD-ROBBING clubroot pathogen continues to spread across the Prairies and has now been detected in most canola-growing areas of Western Canada.

But take heart, canola producers. Managing clubroot and minimizing its impact is possible.

It requires planning and persistence, but there's no reason that losses caused by the disease can't be controlled, say plant pathologists.

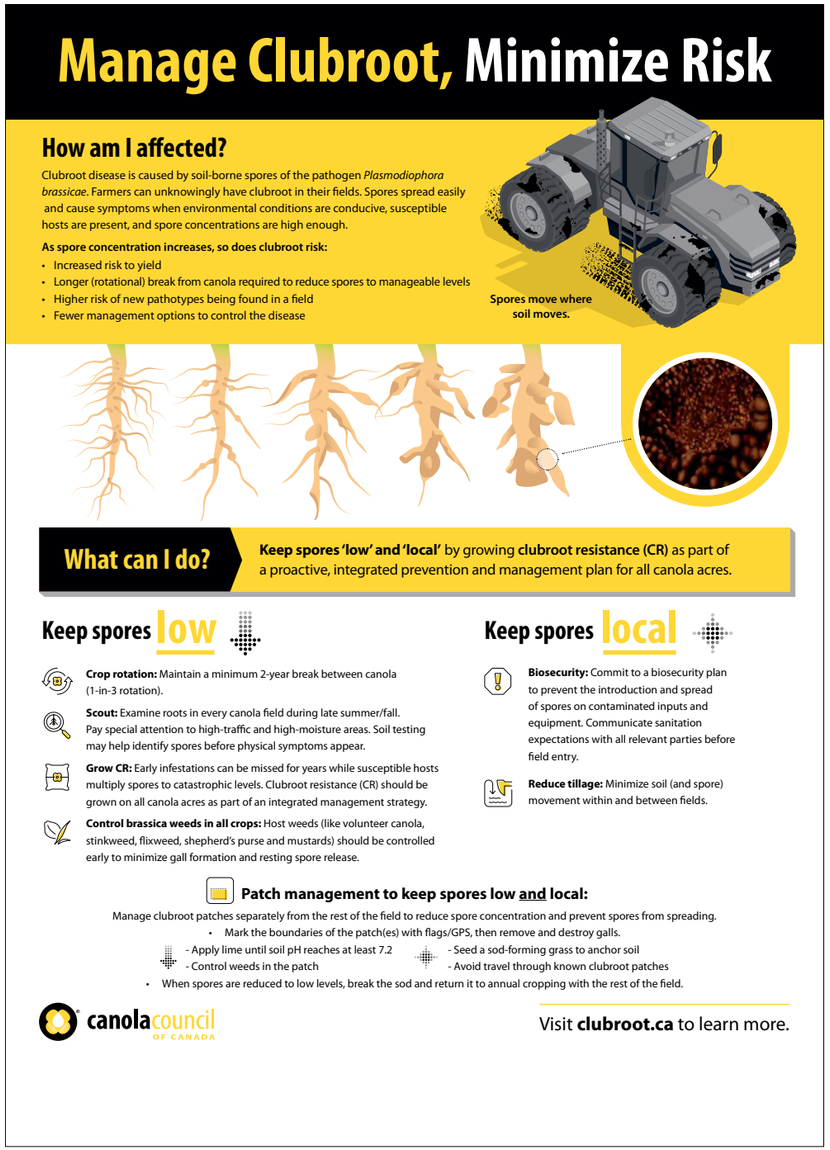
The first step is devising a management plan that includes committing to one-in-three-year canola rotations (at minimum) and planting clubroot-resistant seed varieties on all canola fields.

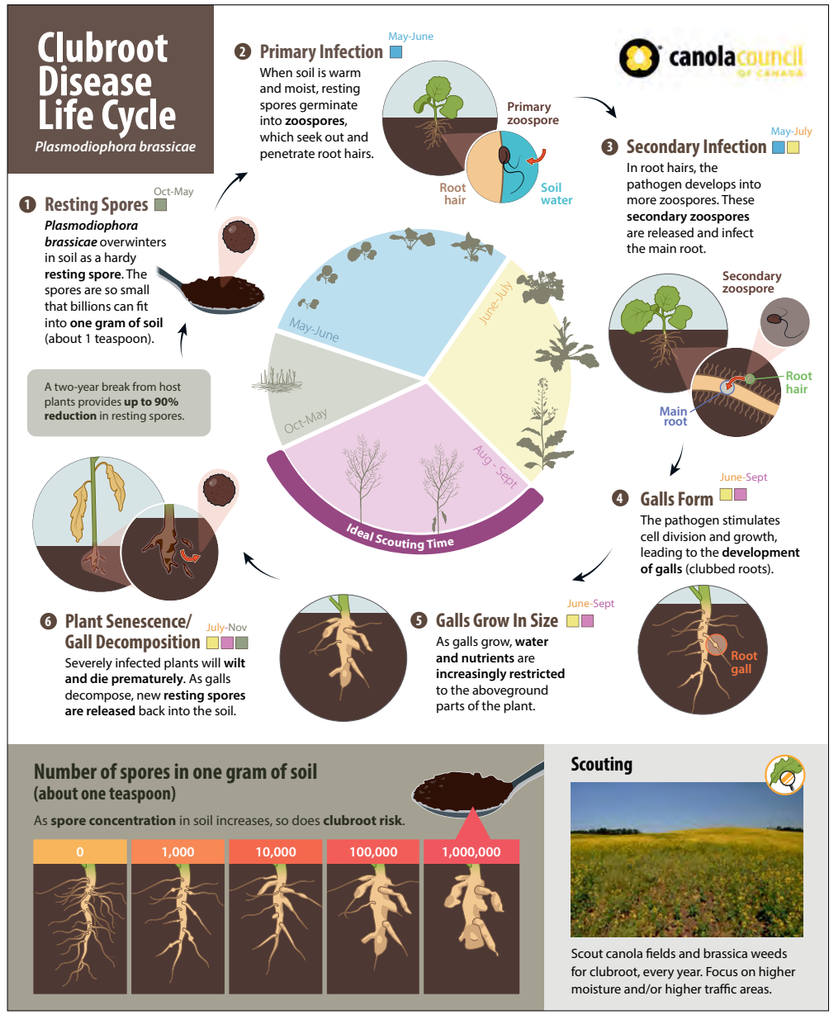
"Crop rotations, scouting, controlling brassica weeds and using clubroot resistance — those are all part of the effort to keep clubroot spore concentrations low," said Autumn Barnes, an agronomist and clubroot expert at the Canola Council of Canada.

"Should you be using clubroot resistance even if you don't see evidence of clubroot in your fields? The answer is yes."

"That's one of the things that we're really focusing on, is encouraging growers to use clubroot resistant varieties, in combination with other recommended management practices."

As plant pathologists learn more about clubroot, they've determined that the disease is not a standing target.





More than a dozen known pathotypes of clubroot have now been detected in the West.

Pathotype 3H is easily the most prevalent in Western Canada but others — including some resistance-breaking pathotypes — are becoming more common.

As different clubroot pathotypes begin to show up in more areas of Western Canada, the notion of planting clubroot resistant canola varieties on 100 percent of the acres is gaining support, said Barnes.

In fact, within just a few years, it is expected that all seed companies will offer only canola products that contain proven CR traits.

Farmers will be noticing a marked increase in the number of CR offerings in 2022 and beyond, Barnes said.

The rationale for using CR varieties is based on the fact that clubroot spores are extremely small. They can also spread easily and can be extremely hard to detect until elevated spore concentrations begin to cause visual symptoms in canola crops, such as root galls and unproductive areas within field where maturing plants are unable to utilize soil moisture and nutrients.

"We know that clubroot is hard to find as it arrives because it can take a while before spores build up to a level where they're causing physical symptoms," Barnes explained.

"So by growing clubroot resistant hybrids, we are actually helping to maintain low spore concentrations."

"If clubroot arrives in a new field and the first canola variety it finds is a clubroot susceptible variety, the spores will turn those canola roots into little multiplication factories. But if the first variety they come across is clubroot resistant, then automatically, you're ahead of the game. You're not going to see that crazy multiplication of spores."

Within the industry, consensus is building that clubroot resistant varieties should be used on 100 percent of planted canola acres.

"I think everybody agrees now that we're moving toward clubroot resistance in all canola hybrids going forward," Barnes said.

"In the next few years, all the seed companies will be transitioning that way."

Prevention, then stewardship

If using clubroot resistant canola varieties is a critical line of defence in preventing the spread of clubroot, then maintaining proper crop rotations should be viewed as the glue that holds the entire defensive strategy together.

Proper stewardship of the clubroot resistant genetics is also important.

"Everybody should be using clubroot resistance… but if we use CR varieties in tight canola rotations and we're not implementing any other biosecurity measures, we're going to lose those tools."

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"Those CR tools are a privilege and they're very valuable. So let's use them and let's make sure we're doing everything we can to protect them."

Other measures that can be used to fortify a farm's clubroot defences include regular scouting, controlling brassica weeds including volunteer canola, taking steps to reduce the movement of soil from one area to another, and controlling soil erosion, which can facilitate the spread of spores.

"This is a pest that moves with the soil, so anywhere that soil moves, the spores of clubroot can move as well," Barnes said.

At the farm level, growers should monitor their fields closely and watch for evidence of the disease.

One of the most common physical symptoms in a canola field is the presence of patches that appear to be less productive.

As clubroot galls develop and grow on the roots of maturing canola plants, the movement of water and nutrients from the soil to the plants becomes restricted.

Heavily infected areas typically contain canola plants that are stunted, and underdeveloped. Plants with root galls will typically begin to dry down earlier than the rest of the crop.

Infected areas are often found at the entrances to fields, where machinery enters and is unfolded.

Infected areas of a field can be managed separately to control the spread of the spores throughout a wider area.

For example, badly infected patches can be sown to perennial forages or grasses. This eliminates tillage of the infected area, lengthens the rotation and stabilizes the soil.

Over time, concentrations of clubroot spores can be significantly reduced.

It's believed that removing canola from the rotation for two full growing seasons will reduce soil-borne spore loads by close to 90 percent.

Together, by maintaining rotations, scouting, managing infected fields carefully and using CR varieties, growers can significantly reduce the financial impacts of clubroot and ensure that future productivity isn't compromised.

"If you have low spore concentrations already, that three-year rotation is perfect — it's great for keeping clubroot under wraps," Barnes said.

"But we're already seeing more and more problems with things like resistance breakdown in areas where there's a lot of canola grown and rotations are being shortened."

"In some areas where there's a lot of canola grown, clubroot spores have multiplied to the point where the spore concentration is so high, it's getting difficult to grow canola."

"That's why one of the most important management strategies for clubroot is to maintain at least a one-in-three year rotation."

KEEPING TABS ON CANOLA'S INVISIBLE ENEMY

SPECIAL TO SASKSEED

SASKATCHEWAN'S province-wide clubroot monitoring program continues to expand, providing more information about where the clubroot pathogen has been detected and how quickly it is spreading.

The program, which is conducted through collaboration between the Saskatchewan Ministry of Agriculture, Saskatchewan Canola Development Commission (SaskCanola), Saskatchewan Association of Rural Municipalities Plant Health Officers and Saskatchewan Crop Insurance Corporation, now consists of five components that provide a comprehensive overview of the disease, based on soil testing, tissue sampling and voluntary reporting of visual symptoms.

Alireza Akhavan, provincial specialist, plant disease with Saskatchewan Agriculture, said a new clubroot risk map based on 2021 disease survey results, will be published in early 2022.

The map is typically released in mid-January, during Saskatchewan's Crop Production Week events.

Dry soil conditions that were common across most of the province in 2021 were expected to help keep clubroot occurrence at reasonably low levels, added Akhavan.

But continued vigilance is encouraged, especially in known clubroot hotspots.

All canola growers should continue to adhere to one-in-three year canola rotations, Akhavan said.

The use of clubroot resistant canola varieties on 100 percent of canola acres is also strongly encouraged.

"We're still in pretty good shape in Saskatchewan, thanks to early detection of the pathogen as well as efforts to increase awareness (of the disease) and the adoption of good management practices in most parts," said Akhavan.

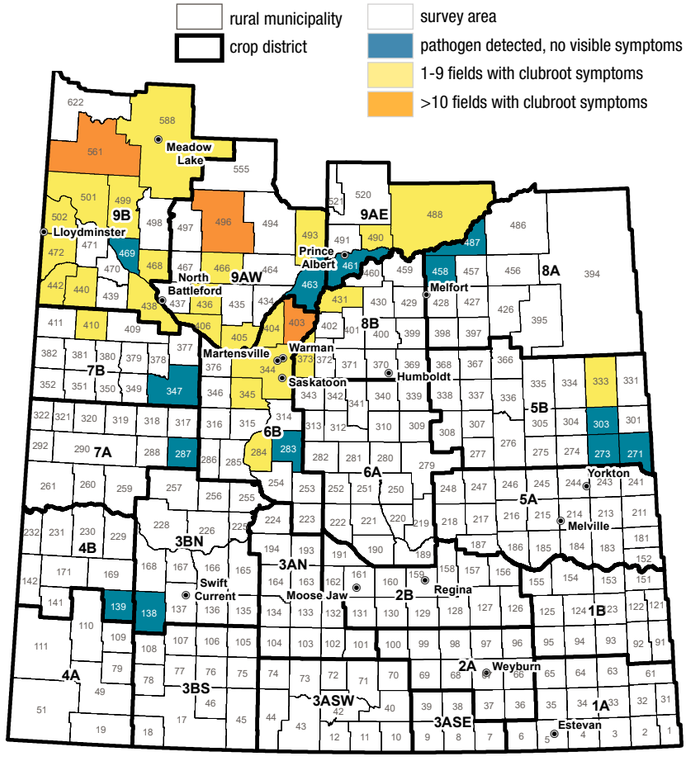
"In Saskatchewan, we also had the good fortune of having access to clubroot resistant varieties early on."

Saskatchewan's provincial clubroot monitoring program has been in place since 2017.

Over the past five years, the program has been expanded to provide greater insight and more comprehensive data collection strategies.

CLUBROOT IN SASKATCHEWAN

Testing from 2008 to 2020 shows the following distribution of clubroot in the province:



Source: Saskatchewan Agriculture

In 2021, the program consisted of five components:

- a permission-based **Canola Disease Survey** that aims to collect tissue samples and/or soil samples from 150 to 200 fields per year;
- a non-permission based **Clubroot Specific Monitoring in High Risk Areas** component that allows plant health officers (PHOs) to access fields in so called "high-risk areas" where the clubroot pathogen has been detected or where canola rotations are being pushed. More than 300 fields were surveyed through this component in 2021.
- a **Follow-Up Monitoring** component in which fields that have already tested positive for clubroot DNA are re-examined, along with adjacent fields that may be at risk due to their close proximity to a positive clubroot detection. Under this component of the program, canola tissue samples or soil samples were collected from 63 follow-up fields in 2021 as well as 63 adjacent fields.
- a **Raising Awareness of Clubroot** component, which aims to increase producer awareness of clubroot and encourage voluntary reporting of visual symptoms by growers and professional agronomists. According to Akhavan, voluntary reporting is responsible for producing the majority of positive detections in Saskatchewan. Producers who voluntarily submit soil samples or tissue samples under this component of the program receive lab analysis results at no cost.
- a **Voluntary On-Farm Soil Testing Program,** which encourages growers to submit soil samples which are analyzed for the presence and quantity of clubroot spores, at no cost to the grower. Lab analysis costs under this component of the program are covered by SaskCanola. In 2020, 231 soil samples were submitted through the Voluntary On-Farm Soil Testing Program. The number of samples received in 2021 had yet to be finalized as of late November but program organizers said they expect 2021 submissions to be lower, due to prevailing drought conditions throughout the growing season.

In a recent interview with *SaskSeed*, Akhavan said the provincial program has served the Saskatchewan canola industry well.

Through the first four years of monitoring, visible symptoms of the disease have been detected in 27 Saskatchewan municipalities and 75 individual fields.

An additional 13 RMs (29 fields) have produced positive DNA results based on soil sample submissions.

All told, just 104 Saskatchewan fields have produced positive results from tissue sample or soil samples since 2017.

This pales in comparison to Alberta's results, where more than 4,000 known cases have been detected. That number could increase exponentially if underestimated.

In addition, no resistance-breaking clubroot pathotypes had been detected in Saskatchewan as of November 2021.

This is good news for Saskatchewan growers because it means that planting any clubroot resistant canola hybrid will likely offer reasonably good protection against the disease and will help to keep overall spore loads in check.

So far, clubroot pathotypes 3H and 5L remain the most prevalent pathotypes in the province. Neither of those pathotypes is "resistance breaking."

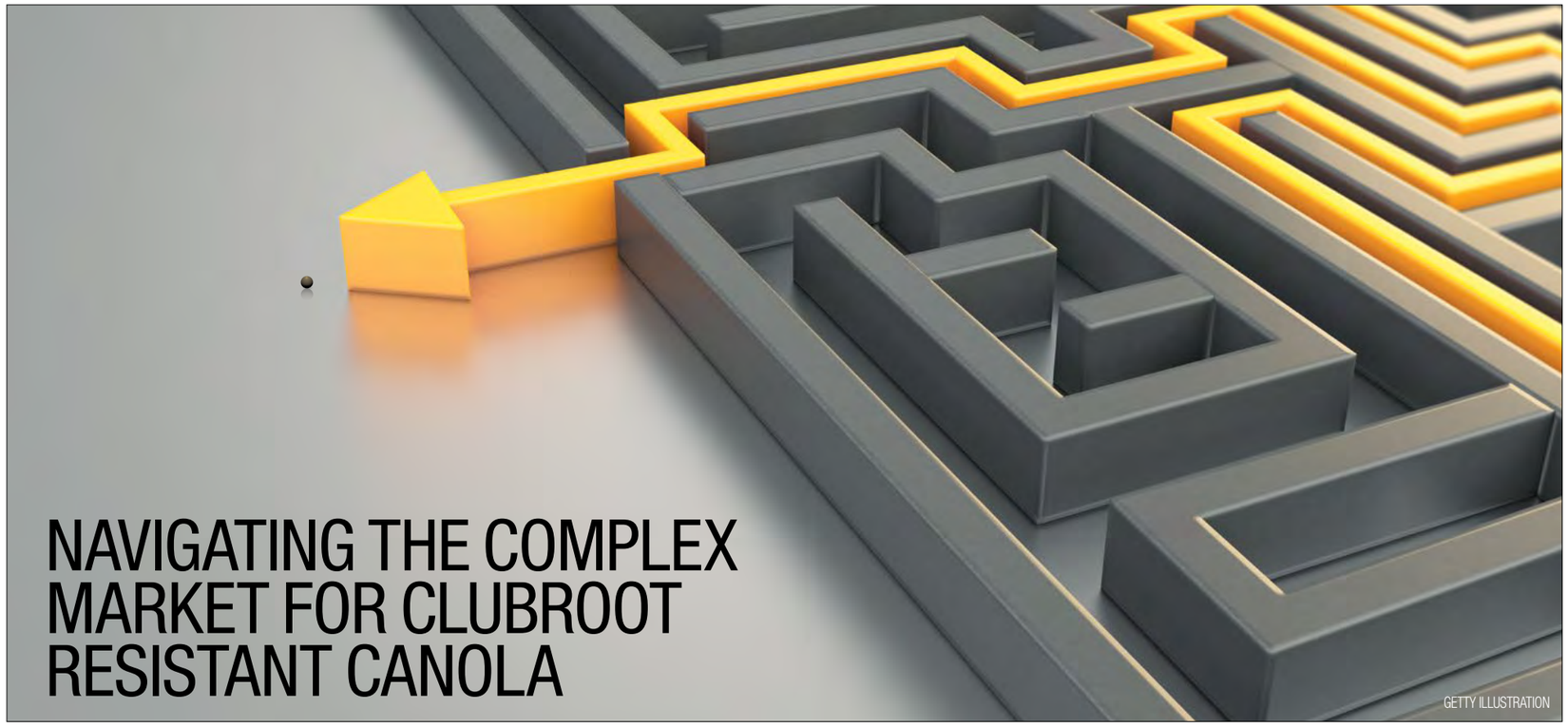
"In Saskatchewan, fortunately, we still haven't detected any pathotypes capable of breaking resistance, which is very good news compared to Alberta," Akhavan explained.

"Because we don't have any of those pathotypes that are able to break resistance, that means any resistant canola cultivar — either first generation or second generation — is useful."

However, the fact remains that we need resistant cultivars to be planted everywhere, regardless of whether clubroot has been detected nearby or not, Akhavan added.

"At this time, our message to all producers is to grow a resistant cultivar and continue to rotate (both your crops and varieties).

"No area of the province is safe from clubroot. The pathogen can show up anywhere."



NAVIGATING THE COMPLEX MARKET FOR CLUBROOT RESISTANT CANOLA

GETTY ILLUSTRATION

SPECIAL TO SASKSEED

IT'S NEVER EASY deciding which canola variety is best for your farm.

In addition to yield potential, a number of other factors must also be considered, such as days to maturity, harvestability and blackleg resistance.

And now, growers need also consider the risk of clubroot in their area and on their farms.

The industry is fortunate to have many offerings of clubroot resistant canola hybrids on the marketplace that are high yielding and well adapted to canola growing regions. This market continues to expand every year.

Clubroot, and the pathogen that causes it (plasmodiophora brassicae), is incredibly complex. It is no surprise then that the market for clubroot resistant canola hybrids is also complex and sometimes difficult to navigate.

As of now, there is not much standardization between different seed companies in the way their resistance is labelled.

The offerings from the industry are currently labeled in many different ways: CR1 – CR3, first generation, second generation, next generation, clubroot resistant, multi-genic clubroot resistance and enhanced clubroot resistance.

To obtain an "R" clubroot resistance label, the variety must at minimum show an index of disease less than 30 percent of the susceptible check variety.

There are a lot of unanswered research questions about the nature of the resistance genes at work and the nature of the pathogen itself.

Additionally, producers cannot practically determine which clubroot pathotypes are present in their own fields.

These realities force us to make some educated guesses in the way that clubroot resistance is deployed.

Understanding CR products

In the marketplace today, producers can basically choose between varieties that have resistance to the most common pathotypes, which we will refer to here as "base" resistance, or those that have additional resistance to less common pathotypes, referred to here as "expanded" resistance.

Base resistance products can be labelled as CR, R-rated for clubroot, CR1 or first generation or they may list the pathotypes that protection is offered against: 2F, 3H, 5I, 6M and 8N.

Varieties with base resistance all respond the same way to the same group of pathotypes. According to experts, growers can be confident that these products will behave the same way in all of their fields.

Less is understood about how different or similar the expanded resistance offerings are from one another. However, they are different from the base resistance sources.

"Until we know how these so-called next generation traits relate to each other, we really won't know which ones are the same and which ones are different," said one clubroot expert who spoke with SaskSeed.

"We can make some educated guesses, but we really need to organize the information a bit more clearly, so that farmers who are trying to manage resistance breaking pathotypes have better tools."

These expanded resistance products can often be found labelled with terms such as CR2, CR3, multigenic, 2nd generation, enhanced or with an expanded list of pathotypes controlled. These are pathotypes that are less common, often referred to as resistance breaking pathotypes.

It is important to understand that these expanded resistant varieties (ex. CR2) are not inherently superior to base resistant varieties (ex. 1st generation), or vice versa. They are also not likely to be resistant to every pathotype present in Western Canada.

Base resistance is likely to be the best option for most growers in Saskatchewan who do not have known resistance breaking pathotypes on or near their farms, and who have not been growing base resistance in tight rotation for multiple cycles.

As of late 2021, Saskatchewan's provincial clubroot monitoring programs had not detected any resistance-breaking pathotypes in the province.

The Canola Council of Canada has not reached a point yet where it is recommending that growers rotate their resistance sources.

Instead, the Council strongly recommends deploying clubroot resistance early in an integrated management approach to keep spore levels low and local. This includes a minimum two-year break from canola, controlling host weeds, reducing tillage, and scouting diligently.

"Base level resistance sources are going to give really good performance on the most common CR pathotypes," says Angela Brackenreed, agronomy specialist with the Canola Council of Canada.

"But farmers do need to remember that resistance does not mean immunity. We can see rapid genetic shifts, particularly with high spore concentrations."

Pursuing full coverage

Chad Koscielny, North American canola breeding lead with Corteva Agriscience, said adoption of clubroot resistant genetics by Western Canadian farmers has been increasing since the first CR canola varieties were introduced more than a decade ago.

According to Koscielny, more than 60 percent of the canola acres sown in Western Canada in 2021 were sown with CR hybrids, up from roughly 20 percent just three years earlier.

"It's really great to see growers adopting the use of clubroot resistance and … (to see) companies deploying more clubroot resistant products to ensure sustainability for our industry," said Koscielny, who spoke during an Ag In Motion online learning event last October.

Corteva decided in 2019 that it would no longer commercialize any hybrid canola varieties that did not offer some type of clubroot resistance.

"As a company, we only commercialize hybrids that are clubroot resistant …and I would suggest that it's going to be necessary to make sure it's (available in) all genetics in the near term."

During his presentation, Koscielny said growers should think of clubroot as a population of different pathotypes, any of which may or may not be present in specific growing region.

A single clubroot gall will typically contain many different pathotypes — with one being predominant — and concentrations and pathotype makeup can vary across the landscape, sometimes drastically.

Across the prairie provinces, pathotype 3H is by far the most common. It's believed that it is present in nearly 50 percent of the Western Canadian fields that tested positive last year.

But on a province-by-province basis, the most common pathotypes can differ and as demonstrated in Alberta, with selection pressure, the predominant pathotype can shift rapidly.

Koscielny said one of the questions that growers often ask is whether they should be rotating sources of clubroot resistance.

"If you're part of the 30-some percent of growers that has never grown clubroot resistant hybrids or is not currently growing clubroot resistant hybrids, then rotating CR sources is probably not necessary," he said.

"But if you're in some of those hotspot areas (where resistance breaking pathotypes have been detected) then you'll want to start thinking about different resistance sources …. Depending on where you're at, this question may be front of mind, or it my not pertain to you for a few more years."

Another question that farmers often ask is whether they should be using clubroot resistant varieties in areas where there are no visible symptoms of the disease.

"The answer is absolutely yes, 100 percent," said Koscielny.

"Go out and grow clubroot resistant hybrids because you're not going to see those spores when they arrive and you're not going to know when they come in."

HERBICIDE CARRYOVER: RISKS & CONSIDERATIONS

SPECIAL TO SASKSEED

HERBICIDE CARRYOVER becomes a concern after drought conditions because soil moisture largely dictates the rate of soil residual herbicide breakdown due to its influence on two of the major degradation mechanisms: microbial activity and chemical hydrolysis.

Although soil parameters such as pH and organic matter can also influence degradation, soil moisture is often the dominant factor.

Soil microbes are most active in moist soils (50-100 percent field capacity) so a decrease in microbial activity in response to dry soil conditions reduces the amount of herbicide degradation that would typically be expected.

Degradation through hydrolysis is also highly influenced by soil moisture because water breaks down herbicides by dividing the larger molecules into smaller, less active pieces.

The effect of drought conditions on soil temperature also influences the rate of herbicide degradation via microbial activity and chemical hydrolysis.

Microbial activity is dependent on soil temperature. It generally increases in warmer soils (up to 30C) and decreases in cold soils (below 10C).

Therefore, in-season accumulation of precipitation from June 1 to August 31 is often used to inform risk assessments of herbicide carryover and to guide recropping restrictions since the bulk of degradation through microbial activity will happen during these months and because microbial activity will drop off once soils begin to cool down in September and into the fall. *(See Figure 1.)*

Herbicide degradation via chemical hydrolysis will also occur more slowly at lower soil temperatures but continues to increase in a linear fashion with soil temperature, even past a point of inhibition to microbial activity.

Although microbial degradation is often the greatest contributor to herbicide breakdown, chemical hydrolysis may partially compensate for lower amounts of microbial activity during a drought where soil temperatures may be high.

Drought conditions may also influence the soil solution concentration and favour a temporal increase in the concentration of H+ ions in the soil solution (i.e. a decrease in pH).

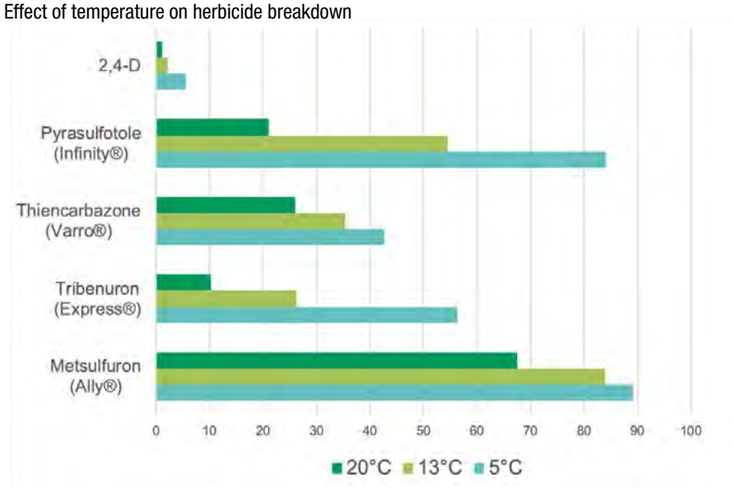
Depending on the specific herbicide's ability to persist under a given pH range, this effect may increase or decrease the degree of herbicide degradation via chemical hydrolysis.

Increased levels of degradation via photolysis pathways may also occur under drought conditions through increased temperatures (indirect photolysis) or increased sunlight exposure (direct photolysis).

However, it is important to note that photolysis is generally considered a minor mechanism of degradation for soil residual herbicides. It should not be expected that photolysis would override impacts of major degradation pathways such as through microbial degradation or chemical hydrolysis.

FIGURE 1:

Effect of temperature on herbicide breakdown



Source: Cessna, A. J., Knight, J. D., Ngombe, D., and Wolf T. M. (2017). Effect of temperature on the dissipation of seven herbicides in a biobed matrix. Canadian Journal of Soil Science.

Differences in residual herbicides degradation

In-season moisture and environmental conditions are the dominant factors influencing herbicide carryover, but not all herbicides break down in exactly the same way, even if they belong to the same herbicide group.

Within a specific herbicide group, some actives may have varying susceptibility to different degradation pathways and may have alternate interactions with soil properties.

For instance, mechanisms of breakdown and relative persistence differs among Group 2 herbicides depending on environmental and soil factors:

In imidazoline herbicides such as Ares, Odyssey, Quasar and Solo, breakdown is more rapid in high pH conditions and relies primarily on microbial activity for degradation.

In sulfonylurea herbicides such as Express, breakdown is quicker in low pH soils and utilizes chemical hydrolysis and indirect photolysis to supplement microbial degradation.

In flucarbazone herbicides such as Everest, degradation is slowed under low organic matter soils and when pH is high. Direct photolysis also plays a minor role in herbicide degradation.

And florasulam products such as PrePass utilize indirect photolysis as a degradation pathway and are much slower to break down under low soil temperatures.

In addition to precipitation levels after activation, soil parameters such as organic matter, texture classification, pH and soil zone are also considered when determining guidelines for recropping intervals.

Soil and environmental condition criteria are outlined on manufacturer labels to further guide instances of increased risk of herbicide carryover.

Impact of herbicide carryover

Potential yield reductions associated with herbicide carryover injury are difficult to predict.

Although there have been studies to assess yield impacts on sensitive crops, results may only be relevant to the specific environmental conditions during the period of research.

Some herbicide products may not have been tested in environmental conditions as extreme as what the province experienced during the 2021 growing season.

Environmental extremes may result in a higher risk of crop damage the following year but favourable environmental conditions during the 2022 growing season may also help crops withstand the stress of herbicide carryover injury and allow for a certain extent of crop recovery.

In-season precipitation accumulated after herbicide application generally provides the most reliable indicator of potential risk associated with herbicide carryover.

Herbicide carry-over risk maps generated by the Saskatchewan Ministry of Agriculture along with publicly accessible weather station data provide guidelines for regions potentially at increased risk for herbicide carryover. *(See Tables 1&2)*

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TABLE 1

Soil and environmental factors influencing risk of carryover and recommendations for re-cropping intervals of different active ingredients*

Flucarbazone	2	Batalium, Everest 3.0 AG, Sierra 3.0 AG, MPOWER Himalaya, Inferno Trio, MPOWER Himalaya Trio, Inferno Duo, MPOWER Himalaya Extra	Field pea may be grown in the grey-wooded, black, and dark brown soil zones the year following application providing the following conditions are met: soil pH must be below 7.5; organic matter must be above 4%; precipitation must be equal to or above 10-year average (minimum 100 mm within 60 days of application in year of application). Prolonged drought and/or cold temperatures within the year of application cropping season, as well as soils with both low organic matter (less than 2%) and high pH (greater than 7.5) may have decreased microbial activity and, therefore, flucarbazone degradation may be reduced. These factors must be consider when making rotational crop decisions. DO NOT plant crops other than those listed on the label in the year following application.
Imazapyr	2	Ares SN	If rainfall was less than 125 mm during the growing season (June 1 to August 31) the company recommends growing field peas, lentils, or Clearfiled (CL) wheat on CL canola stubble.
Imazethapyr/Imazamox	2	Odyssey NXT, Duet, MPOWER Ninja, Quasar, Pursuit 240, MPOWER Kamikaze, Phantom	Breakdown may be slowed or delayed by environmental conditions such as drought, excessive cold, and/or acid soils (pH less than 6.5) resulting in increased risk of injury to rotational crops. The most tolerant crops are CL canola and legume crops, then cereals. Contact manufacturer for additional information on re-cropping interval.
Metsulfuron	2	Ally	Add 12 months to standard label recommendations if less than 130 mm of rainfall in brown and dark brown soils or less than 250 mm rainfall in black or grey-wooded soils in any year following application .
Ethalfluralin	3	Edge MicroActiv	Thinning of crop may occur in areas that have received abnormally low amounts of precipitation or in crops that are emerging slowly.
Trifluralin	3	Treflan Liquid EC, Treflan MicroActiv, Rival, Bonanza	Damage to wheat can occur if crop is seeded into land that has been treated during the previous 21 months with trifluralin products and has received abnormally low amounts of precipitation.
Clopyralid	4	Akito, Curtail M, Eclipse Brands, Cirpreme XC, MPOWER Clobber M, Prestige Brands, Esteem, MPOWER Foxxy CM, MPOWER Clobber G, LontrelTM XC, ProminexTM, SpectrumTM	DO NOT seed to field peas or soybeans for at least 10 months following treatment. Very dry soil conditions following application (less than 140 mm from June 1 to August 31 AND less than 175 mm for the entire year) can result in a risk of injury to field peas or soybean grown in rotation. If severe drought conditions are experienced during the months of June to August inclusive in the year of application, delay seeding field peas an additional 12 months (22 months following application). Lentils and chickpeas are never recommended the year after the use of clopyralid. Contact the manufacturer for more information before seeding field peas following drought conditions in the previous year.
Dicamba	4	Engenia, Banvel, Oracle, XtendiMax, FeXapan, Disha 480	If applications are made after September 1, or if dry weather persists after application, crop injury may occur the following spring.
Sulfentrazone	14	Authority 480, Authority Supreme	Moisture is required for breakdown; therefore, for each year where in-season rainfall is extremely low, the re-cropping interval must be extended by a year and a field bioassay (conducted under normal moisture conditions) must indicate it is safe to plant a sensitive crop.
Quinclorac	4 + 26	Facet L, Clever, Ingenious, MasterLine Quinclorac	On low organic matter soils or under dry conditions, flax and lentils should not be grown until the third year after application.
Pyrasulfotole	27	Infinity, Infinity FX, Tundra	DO NOT plant field peas the season following application in the brown soil zone where organic matter content is below 2.5 percent and where soil pH is above 7.5.

* Saskatchewan Ministry of Agriculture. (2021). 2021 Guide to Crop Protection. https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/crop-guides-and-publications/guide-to-crop-protection Note: use this table as a guideline only. Always refer to the product manufacturer or label. If there is any uncertainty regarding these or other products, consult with each individual herbicide manufacturer. In response to the increased risk of imidazoline herbicide carryover as a result of the extreme drought and heat conditions experienced during the 2021 growing season, BASF, Adama, and Corteva have also announced further recropping restrictions in addition to current label recommendations.

TABLE 2

Summary of herbicide carryover risk warning issued by BASF and Adama

Dark brown, black, grey, or grey wooded soil zones, less than 125 mm of accumulated rainfall between June 1 and September 1, 2021	Solo ADV, Solo Ultra, or Viper ADV	2021	non-Clearfield Canola, Durum, Canary
	Odyssey NXT, Odyssey Ultra, or Odyssey Ultra NXT	2021	non-Clearfield Canola, Durum, Canary
		2020	non-Clearfield Canola
All soil zones, less than 125 mm of accumulated rainfall between date of application and August 31, 2021	Davai, Python	2021	non-Clearfield Canola
	Ares, Ares SN	2020	Spring Wheat, Barley, Canary, Field Corn, Oats, and Durum Wheat
Brown soil zone, less than 125 mm of accumulated rainfall between June 1 and September 1, 2021 AND less than 15 mm of rainfall in any of the months of June, July or August 2021 (regardless of total accumulated rainfall between June 1 and September 1st) All soil zones, experiencing severe drought (less than 125 mm of rainfall) during both the 2020 and 2021 growing seasons All soil zones, less than 140 mm of accumulated rainfall between June 1 and August 31, 2021	Quasar	2021	non-Clearfield Canola
	Ares, Ares SN Eclipse Brands, Cirpreme XC, Prestige Brands, Lontrel XC, Prominex, Spectrum	2021	non-Clearfield Canola, Oats, or Mustard
		2020	Peas, Soybean
Brown soil zone, less than 125 mm of accumulated rainfall between June 1 and September 1, 2021 AND less than 15 mm of rainfall in any of the months of June, July or August 2021 (regardless of total accumulated rainfall between June 1 and September 1, 2021)	Solo ADV, Solo Ultra, or Viper ADV	2021	non-Clearfield Canola, Durum, Canary
	Odyssey NXT, Odyssey Ultra, or Odyssey Ultra NXT	2020	non-Clearfield Canola, Durum, Canary

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However, localized field precipitation records are often more beneficial in assessing individual field risk because precipitation events within a season may be sporadic and variable across a relatively small distance. *(See Table 3.)*

Soil testing

It is possible to have soil samples sent to a lab to be tested for chemical residues.

However, this process is expensive and while it can confirm if a herbicide is present, it cannot provide sufficient information to accurately predict if crop injury will result based on levels extracted by test.

Just as detection of a chemical residue does not guarantee crop injury, certain herbicides may be active and initiate a crop injury response below the level of detection by the laboratory analysis.

In addition, soil testing for herbicide residues does not account for the interactions of the herbicide with soil properties and therefore cannot be used as an indicator of the bioavailability of that herbicide.

Residual carryover can also be highly variable across the field due to differences in soil properties at different landscape positions. These differences cannot be represented in the lab setting with traditional extraction methods.

Soil testing can provide additional information to assess herbicide carryover risk by revealing different soil properties that affect herbicide breakdown within a field.

Analysis of soil texture, soil organic matter, and pH can help identify relative risk between fields if soil characteristics are categorically different across regions of the farm.

Because individual fields cannot be considered a homogenous unit, site-specific soil sampling protocols may be needed to better understand variability.

Unless two fields distinctly represent two contrasting soil types, it will be difficult to use a single soil sample to represent the characteristics of the entire field.

Even then, general soil testing can help inform relative risk of herbicide carryover but cannot predict it and its extent entirely. Areas with higher organic matter are generally at a lower risk for herbicide carryover.

Soil organic matter acts as a buffer by increasing binding capacity for herbicides in the soil, keeping them away from plant roots. Additionally, soils with higher organic matter generally have higher microbial activity and better water holding capacity activity to assist with herbicide breakdown.

Soil texture can also be used to determine herbicide carryover risk.

Lighter or sandier soils have less binding or adsorption capacity, which significantly increases the risk of herbicide carryover.

Herbicide carryover risk increases as organic matter and clay content decrease. Soil pH can also be used to identify herbicide carryover risk.

Bioassays

Field bioassays are often recommended on herbicide labels as a method of evaluating possible herbicide carryover tolerance of sensitive rotational crops.

These in-field test strips provide a preview of the rotational crop's growth and development in the field with suspected herbicide carryover.

Because landscape variability impacts herbicide carryover, field bioassays need to be large enough to indicate crop response representative of the entire field.

Insights gained from field bioassays are generally not timely enough to inform a cropping decision until the second season after application.

Plant bioassays can be used as a shortcut to growing rotational crops out in the field.

This method involves bringing soil from the field into a greenhouse and growing out susceptible plants in pots to evaluate if they will be impacted by herbicide carryover.

Similar to soil testing for residue levels, plant bioassays may not be a reliable indicator of crop response in the field due to soil sampling limitations and underrepresentation of field variability.

A control, with soil collected from or strips planted into an untreated area of the field, should ideally be included in both bioassay methods as it provides a reference for subtle differences in visual injury.

However, this is not always possible and presents a major limitation for using them to consistently predict injury. Bioassays can help provide insights into the impact of herbicide residues present in the soil.

Neither methodology is foolproof nor should they be used in isolation to make recropping decisions.

Mitigating herbicide carry-over risks

Crop rotation serves as the most significant tool to mitigate risk in fields anticipating a high level of herbicide carryover.

Although large changes to a crop rotation can be a challenge, it is important to consider substituting highly sensitive crops for lower risk alternatives that still have agronomic suitability.

For instance, pulse crops have the highest tolerance to imidazoline-based herbicide residues.

Chickpeas, faba beans, field peas, and lentils can all be grown safely the year following imidazoline applications that were made according to label directions.

However, care should be taken to avoid back-to-back seasons of pulses to mitigate risks associated with disease, soil erosion, and weed management.

After pulse crops, cereals exhibit the next best tolerance to residual carryover of imidazoline-based herbicides.

However, tolerance among cereal species is not equal as spring wheat is substantially more tolerant to imidazoline residues than oats, canaryseed, durum, and barley.

Oilseed crops are generally the most sensitive to imidazoline herbicide injury, and among them, mustard and canola rank the highest for sensitivity, followed by flax.

With the exception of tolerance gained through CL crops, differences in varietal tolerance within a specific crop type have not been identified.

Crop injury caused by the carryover of residual herbicides can be further aggravated by other abiotic and biotic stresses imposed on the crop.

Aside from rotation, there is no single agronomic intervention that can fully eliminate herbicide injury.

However, following the best management practices for the crop to ensure its vigorous establishment and growth is important, as it limits additional stress factors imposed on the crop.

Increasing seeding rates to achieve higher than optimal plant population targets is not recommended because most active ingredients associated with residual herbicide injury do not act as a germination inhibitor.

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TABLE 3

Herbicide carryover risk based on in-season precipitation (June 1 to August 31, 2021) received at Environment Canada weather stations:

Brown Soil Zone							
Assiniboia Airport	72	33.7	32.6	100.5	166.8	Normal	Typical Use
Coronach	11	55.8	21.7	79.2	156.7	Normal	Typical Use
Eastend	49	7.1	37.4	33.3	77.8	Very High	Restricted
Kindersley Airport	290	36.8	16.2	76.0	129.0	Moderate	Typical Use
Leader Airport	231	33.3	18.6	30.4	82.3	Very High	Restricted
Lucky Lake	225	22.8	12.9	50.3	86.0	Very High	Restricted
Mankota	45	21.2	23.3	63.9	108.4	High	Restricted
Maple Creek	111	15.8	29.0	20.3	65.1	Extreme	Restricted
Rockglen	12	21.8	6.3	59.3	87.4	Very High	Restricted
Swift Current	137	26.8	36.6	53.5	116.9	High	Restricted
Swift Current Airport	137	27.2	40.8	48.2	116.2	High	Restricted
Val Marie	17	28.8	43.6	49.0	121.4	High	Restricted
Dark Brown Soil Zone							
Bratt's Lake	129	60.2	5.8	113.1	179.1	Normal	Typical Use
Elbow	254	37.9	23.3	79.4	140.6	Moderate	Typical Use
Estevan	5	75.8	41.5	27.5	144.8	Moderate	Typical Use
Indian Head AAFC	156	62.9	51.2	99.4	213.5	Normal	Typical Use
Last Mountain	250	23.7	12.1	67.8	103.6	High	Restricted
Moose Jaw, CFB	161	77.1	5.5	157.5	240.1	Normal	Typical Use
Outlook	284	12.7	1.5	37.7	51.9	Extreme	Restricted
Regina	159	79.5	27.3	105.3	212.1	Normal	Typical Use
Rosetown Airport	288	10.9	11.0	36.6	58.5	Extreme	Restricted
Saskatoon	344	41.7	17.7	38.4	97.8	Very High	Restricted
Scott AAFC	380	43.8	10.4	51.3	105.5	High	Restricted
Watrous	312	26.2	9.4	100.1	135.7	Moderate	Typical Use
Weyburn	67	58.1	28.1	69.3	155.5	Normal	Typical Use
Yellow Grass North	98	62.9	33.0	71.1	167.0	Normal	Typical Use
Black-Grey Soil Zone							
Broadview	154	70.5	19.9	55.4	145.8	Moderate	Typical Use
Hudson Bay	394	45.3	14.7	53.6	113.6	High	Restricted
Jimmy Lake	494	61.0	1.0	13.0	75.0	Extreme	Restricted
Loon Lake	561	52.4	3.9	7.1	63.4	Extreme	Restricted
Meadow Lake Airport	588	35.6	17.8	39.6	93.0	Very High	Restricted
Melfort	429	37.6	0.2	69.3	107.1	High	Restricted
Nipawin	487	42.5	1.3	53.2	97.0	Very High	Restricted
Nipawin Airport	487	15.8	4.8	55.4	76.0	Very High	Restricted
North Battleford	437	45.0	10.7	34.2	89.9	Very High	Restricted
North Battleford Airport	437	47.6	11.2	5.4	64.2	Extreme	Restricted
Pilger	400	25.8	1.4	79.0	106.2	High	Restricted
Prince Albert Airport	461	29.5	0.4	13.0	42.9	Extreme	Restricted
Prince Albert Glass Field	461	70.5	5.2	60.8	136.5	Moderate	Typical Use
Spiritwood	496	92.2	29.2	50.9	172.3	Normal	Typical Use
Waseca	471	38.2	22.8	46.3	107.3	High	Restricted
Wynyard	308	38.7	15.2	57.9	111.8	High	Restricted
Yorkton	244	59.8	33.9	66.7	160.4	Normal	Standard
Yorkton Airport	244	18.1	35.2	69.7	123.0	High	Restricted

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In fact, herbicide carryover injuries are most likely to reveal themselves after a rainfall event that allows an active ingredient to be washed into the root zone once it has been desorbed from soil particles.

Although it is still important to target plant populations optimal for specific crops, inflating stand densities will not increase the crop's tolerance to herbicide residues and may be a costly way to end up with a higher number of injured plants across the field.

Delayed seeding may be another strategy to help buffer negative crop responses associated with herbicide carryover.

Establishment in cold soils can be stressful on crops and a reduced growth rate is often observed which can exacerbate the impacts of herbicide carryover injury.

Furthermore, delays in seeding to allow for crops to germinate in warm soils can also provide a wider window for herbicide degradation, especially if moisture from spring snowmelt or rainfall has been received and microbial activity is increasing in response to improvements in soil moisture and temperature.

Due to cool soils in the spring, herbicide breakdown will be negligible until soils are warmer than 5C to 7C.

Although delayed seeding can be helpful, it is not a standalone strategy that can guarantee full protection against herbicide carryover injury.

There is no precise recommendation for how much additional time or moisture is needed in the spring if in-season herbicide degradation was expected to be below average.

Compounding herbicide carryover

Clearfield crops including lentils or wheat can safely be recropped on fields with Imidazoline herbicide carryover. However, when growing CL tolerant crops on land that has been impacted by Imi herbicide carryover, the crop should be managed conventionally without the use of Imi herbicides in-crop.

Applying Imi products, such as Ares on CL tolerant crops is common practice, however in the case of carryover, it can lead to crop damage and a further increase of herbicide residue in the soil.

Research conducted in the early 2000s found that under some environmental conditions, "back-to-back" application of residual Group 2 herbicides could result in additive or synergistic injury.

This can occur with persistent Group 2 herbicides such as imazethapyr and sulfosulfuron. This is known as herbicide stacking.

Some Group 2 residual herbicides can accumulate in the soil over multiple growing seasons if herbicide breakdown is slowed, and can result in significant damages to sensitive crops. As mentioned earlier, not all Group 2 herbicides have the same residual properties.

In addition, small amounts of different residual herbicides can accumulate over several growing seasons to contribute to the injury of a sensitive crop.

Areas where drier conditions have been observed over multiple seasons are at a higher risk for herbicide stacking, which occurs when multiple applications of residual herbicides from the same group are sprayed in rotation.

Group 2 herbicides are more likely to carry over at levels that can damage plants because they can maintain herbicidal activity at low doses.

This is a concern because unfortunately, there are areas of the province that have seen repeated drought conditions for more than one year.

Growers in these areas need to be especially aware of possible carryover from previous years and take herbicides applied in the past into consideration also when planning for next year.

To see these areas, view Saskatchewan Agriculture's Herbicide Carryover Risk Maps from 2021.

Producer takeaways

- Herbicides are primarily broken down by adequate moisture, temperature, and time. Most of Saskatchewan did not meet these conditions in 2021. There are other factors that play a small role in herbicide breakdown.
- Some herbicides are known to pose a greater carryover risk than others, but many have not been tested under environmental conditions as extreme as those that were experienced in the 2021 season.
- Group 2 herbicides in the Imidazoline family, such as imazamox and imazethapyr, pose a high risk for herbicide carryover. Imazamox and imazethapyr are found in herbicides commonly sprayed on pulses and CL tolerant crops. Products such as Solo, Odyssey, Viper, Davai, Python, Quasar and Ares are all examples of herbicides that contain imazamox, imazethapyr, or a combination. See product labels or product manufacturers for more details. Be aware of potentially sensitive recropping options such as durum wheat, canaryseed, and canola. Some chemical manufacturers have made label changes following the extreme heat and drought of 2021.
- Tools are available to help determine herbicide carryover risk but they must be used together, not independently of each other.
- There are ways to help decrease herbicide carryover risk. Crop rotation, herbicide rotations, and certain agronomic practices can help but will not completely eliminate risk.

EDITOR'S NOTE: This article was reprinted with permission from Saskatchewan Pulse Growers, SaskCanola and SaskWheat.

INTERCROPPING FOR SEED GROWERS? THE DICKENS YOU SAY!

BY MARY MACARTHUR | SPECIAL TO SASKSEED

AFTER FIVE YEARS growing flax and large green lentils together as an intercrop, Saskatchewan seed grower Brennan Wiens will always grow the two crops in combination.

"Since doing it, I tell my customers who buy my green lentil seed to seriously consider intercropping with flax. I won't do it any other way any more. It works great," said Wiens of Herschel, Sask.

"I think it is a valuable tool."

Intercropping is defined as seeding multiple crop types on the same land with the intent of separating and marketing the crops individually.

Lana Shaw, research manager with the South East Research Farm and a leading expert on intercropping, says the practice is gaining momentum.

"I think intercropping is gradually becoming seen as more acceptable among mainstream conversations," said Shaw, of Redvers, Sask.

"It is just starting to be seen as less fringe and more of another tool in the tool box."

Over the past four years, intercrop acres reported to Saskatchewan Crop Insurance Corporation range from 25,000 acres in 2021 to 72,000 acres in 2019.

While Wiens has only grown a flax-large green lentil combination, the mix of canola and peas, oats and peas, and chickpeas and flax are combinations that have been reported to crop insurance.

Wiens believes the flax plants in his flax-lentil mix act as a trellis for the lentils, preventing the lentils from falling over and becoming diseased and difficult to harvest.

"Since I started intercropping, I haven't had a green lentil failure on account of disease and quality disaster," he said.

"The flax does prop up the plants and keeps air flow potential through the canopy, instead of the lentils falling over flat."

Both Shaw and Wiens cited seed cleaning and separation as one of the main barriers to expanded intercropping acreage. For Wiens, a pedigreed seed producer, cleaning the seed isn't an issue because he has the seed cleaning equipment already in place. The cleaned flax is simply sold as another crop.

A pea-lentil-mustard intercrop can help with pea harvestability and the seeds are easily separated. | PHOTO COURTESY OF LANA SHAW

"If you have the ability to separate and sell both commodities, it makes sense. What's valuable to me about the dual crop is the higher probability of having good quality green lentils."

Grain separators and newer cleaning technologies allow crops to be cleaned at a relatively low cost, said Shaw. For 25 cents to 50 cents a bushel, growing the two crops together is paid for by the increased yield, lower fertilizer and herbicide application or reduced dockage.

"There is substantial dockage to haul grain to the elevator and not getting paid."

The benefits of intercropping seem to be more apparent in pulse crops that may be more susceptible to lodging and disease.

"Chickpea and flax is the spearhead for a really highly functional intercrop. There are so many advantages to growing chickpeas with flax. For maturity, quality of grain and disease reduction," said Shaw.

Chickpeas, a highly indeterminate crop, will often continue to flower into September. When planted with flax, the chickpeas mature more evenly.

"It evens out the variability across the field, which is important for quality of seed, reducing the amount of green seeds that are in the chickpeas. It reduces ascochyta blight, which we don't really understand, but it is documented over multiple site years in replicated trials. Maturity issues and disease issues are what makes chickpeas a risky crop to (grow). The flax helps with that. It is one of the easiest ones to implement and see fairly obvious advantages."

The combination of pea-canola and pea-oat are also beneficial, she said.

When it comes to harvest management, one of the best tricks is to have suitable partner crops and ensure that seed size won't be a problem during separation.

It's also important to pair crops that mature at approximately the same time. Having one crop mature much earlier than the other can cause headaches and financial losses.

"It is one of the trickier aspects of intercropping, but sometimes there are advantages as far as a reduction in lodging," Shaw said.

"A farmer may rather deal with those kinds of challenges than trying to scrape peas off the ground ...."

Wiens said the combination of flax and large green lentils seems to hasten the maturity of the large green lentils. He believes the flax competes for nutrients and moisture with the lentils and encourages the lentils to mature more quickly and more consistently.

continued on page 26 »

Producer interest in intercropping is gradually growing. Intercrop acres reported to Saskatchewan Crop Insurance Corp. (SCIC) range from 25,000 acres in 2021 to 72,000 acres in 2019. Here, visitors to the South East Research Farm view a chickpea-flax intercrop trial. | PHOTO COURTESY OF LANA SHAW

» continued from page 24

"In two of my last five years, my green lentils have been mature (at the same time) or sooner than my red lentils. Before, this was unheard of. I was always waiting for my green lentils to ripen and there is always that much more risk for getting them off in good quality," he said.

"The flax benefits from the nitrogen nodules on the lentil and the extra moisture consumed by the flax plant stresses the lentils into setting seed and maturing."

Shaw is on a committee with farmers and Saskatchewan Crop Insurance officials looking for practical insurance solutions for intercropping.

She has shared the research from the South East Research Farm with crop insurance officials. Crop insurance has some of their own historical data as well.

In an email, Tessa Krofchek with Saskatchewan Crop Insurance said some options being explored and discussed are "weather derivative programs, where insurance would be based on weather parameters at local weather stations, such as precipitation and/or temperature…."

"There is enough potential benefit that we can figure out logistics, seeding rates and variety. Those are details as long as we get the premise — and the premise is holding up that it improves our biodiversity in our agriculture.

LANA SHAW | RESEARCH MANAGER, SOUTH EAST RESEARCH FARM

A variety of yield-based program options are being discussed.

"Weather-based programs have the advantage of being adaptable to a wide variety of intercrop mixes," Krofchek said in her email.

"A yield-based program requires detailed information on the expected yields of each different intercrop mix and an indication of yield variability to determine premium rates."

This type of detailed information is currently only available for a very small number of intercrop mixes for which most research and SCIC monitoring data was collected."

While farmers may be interested in growing intercrops, they may want to consider crop insurance implications and wait for a more definitive coverage programs.

Farmers can now insure intercrop fields under the crop insurance's diversification option. But they can't intercrop any more than 30 percent of a farm's acres. It will only pay out an intercrop field if there is a payout in the rest of the farm's acres.

Shaw said until more information is gathered, the number of intercrop acres insured will continue to be low.

"It seems relatively expensive for the amount of real risk coverage that they have. You just need enough of a data set to be able to properly insure people," she said.

"There is still a growing interest, but it needs crop insurance programs that are giving people the risk management they need, and that is not something that is in place right now. Working with crop insurance to develop a program for 2023: That is a missing piece that will enable a lot of people to get involved."

Wiens doesn't insure his flax-large green lentils as an intercrop. Instead, he insures as a large green lentil crop, alone.

"Right now, my yield is 90 percent lentils and 10 percent flax. I just insure it as lentils. It is way more straightforward than to get it insured as an intercrop. I understand I am accepting the risk if I grow a 50/50 lentil flax mix, I am not going to get insured for any yield loss as a result of the flax. That is an acceptable yield loss risk for me."

As a pedigreed seed grower, Wiens has toyed with the idea of seeding a mix of flax and red lentils, but is limited in the number of other combinations he can try under Circular 6 rules.

Large greens grown for pedigreed status are inspected when his lentils are in flower, as per standards applied by the Canadian Seed Growers' Association (CSGA).

CSGA will permit both crops in an intercrop mix to be certified, but both partner crops would be treated separately for certification, meaning two separate seed crop inspections and two different inspection applications.

Shaw believes her work with intercrops is will continue for many years. As more is learned, new research questions will emerge that need to be answered.

"I have hit a stream of gold here and there are so many questions and nuances of all of this," she said.

"There are enough good indications this is a highly biologically functional and we are creating even more diverse crop ecosystems that combat some of the problems we currently have in agriculture."

"I see enough potential in that to figure out some of the nuts and bolts and practical problems. There is enough potential benefit that we can figure out logistics, seeding rates and variety. Those are details as long as we get the premise — and the premise is holding up that it improves our biodiversity in our agriculture."

A Pea-oat combination is one that could be grown successfully by pedigreed seed growers. | PHOTO BY LANA SHAW

INTERCROPPING 101 FOR SEED GROWERS

WITH THE GROWING INTEREST in intercropping comes an interest in intercropping pedigreed seed, said an official with the Canadian Seed Growers' Association (CSGA).

Each year, Gail Harris gets calls from a few pedigreed seed producers who wonder if they can intercrop pedigreed seed and receive a certificate for one or both crops.

The answer is yes.

"I get a handful of calls at most in any given year," said Harris, manager of standards with CSGA in Ottawa.

"In some cases, both crops are for pedigreed seed. In other cases, one of the two crops is for pedigreed seed. If both crops are for pedigreed seed, although they are in the same field, they would essentially be considered two different fields in that there would be two separate applications for certification, two separate (and) distinct inspections and two crop certificates," said Harris.

The key for pedigreed seed growers is to make sure the crops grown together can be separated.

There are rules that dictate how many plants that produce "difficult to separate" seeds may present be in an inspected field. These rules apply to crops such as barley in wheat, peas in chickpeas or other crop types that have similar-sized seeds.

Harris said it's also important is to ensure the inspector can inspect both crops at the correct stage of growth.

"If crop A is for seed, but is completely covered by crop B when crop A is at the right stage of growth for inspection, the inspector would not be able to do the inspection and therefore CSGA would not be able to issue a crop certificate."

Each pedigreed seed producer has a relationship with their seed inspector, Harris said. When growing intercropped crops, it is important the farmer let the inspector know the best time for inspecting the crop.

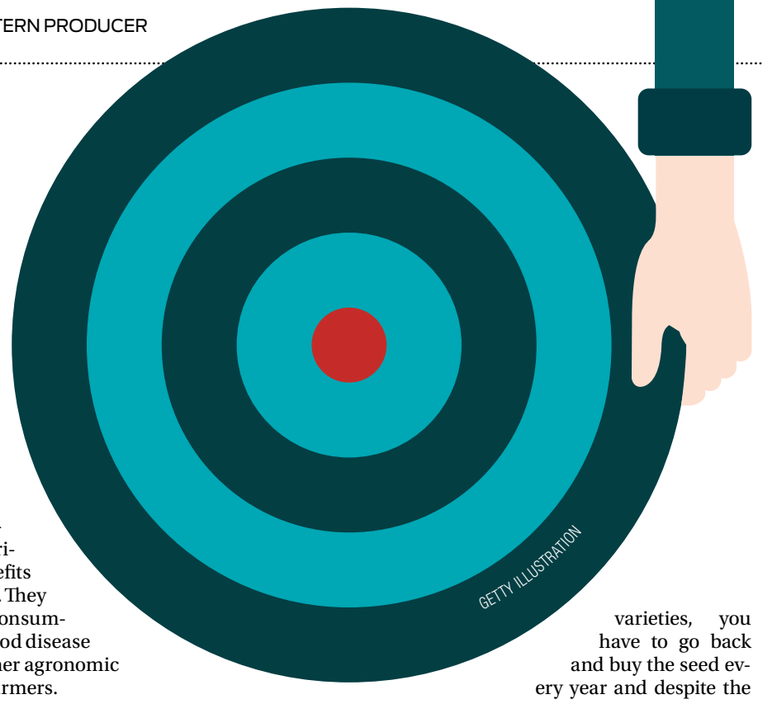
"They also need to be able to manage harvesting both crops and / or separating the seed / grain after harvest depending on the combination of crops," she said.

For more information on intercropping pedigreed seed crops, contact the CSGA at 1-613-236-0497.

— MacArthur

WHY HYBRID WHEAT REMAINS AN ELUSIVE TARGET

BY MARY MACARTHUR | SPECIAL TO SASKSEED


GETTY ILLUSTRATION

WHILE HYBRID WHEAT remains elusive, it hasn't been forgotten or abandoned by breeders and seed companies.

In June, BASF announced Ideltis, a hybrid wheat line that the company says will provide farmers with "higher and more stable performance in yield and quality."

However, farmers don't need to clean out a bin for hybrid wheat seed any time soon.

Ideltis seed isn't expected to be released until later in the decade, said an email from Garth Hodges, BASF's VP North America Business Management, Seeds.

"We are still in the early stages of our hybrid wheat program, but we are seeing encouraging improvement and progress," Hodges wrote. "We remain committed to launching Ideltis hybrid wheat seed later this decade."

In Canada, BASF is one of the only companies working on hybrid wheat research. Their work is centred in Saskatoon and is part of the company's global research program.

"Efforts here focus on meeting the expectations of the entire wheat value chain including expected yield, quality and disease resistance for the local growing area," wrote Hodges.

Bayer worked on initial hybrid wheat research, but with the acquisition of Monsanto, all the hybrid wheat research activities were divested to BASF.

Claire Wooding, communications lead for Syngenta said in 2018 they "paused" their hybrid wheat research in Canada.

"Globally there is traction" with hybrid wheat research, Wooding said.

But how new varieties are brought forward in Canada has caused the company to touch the brakes on hybrid wheat research.

"We have so different a system of how we bring products to market," she said.

Hybridization of wheat has been tried for years.

In the 1990s, it was a focus of a lot of research money. In the 1960s, China, the largest wheat producer in the world, looked at hybrid wheat as a component of its food security.

Retired barley breeder Bryan Harvey is skeptical hybrid wheat will be seen in fields anytime soon.

For a hybrid to be successful, the offspring must have more vigour than its parents. And doesn't happen often in wheat.

"To be honest, in wheat, we don't see a whole lot of hybrid vigor," Harvey said.

"Any improvements seen in the offspring can easily be fixed through standard breeding programs so the improvements are self perpetuating."

One of the biggest challenges with hybrid wheat is that the increase in yield needs to be large enough to encourage farmers to buy the seed, and not use farm-saved seed.

"Farmers are simply not going to buy it unless you really get value for money and they're not close. I have yet to see a system in wheat that's convinced me that it's going to be viable," said Harvey.

New wheat varieties, either hybrid or traditionally bred wheat varieties, must offer benefits beyond increased yield. They must be accepted by consumers and millers, have good disease resistance and offer other agronomic properties desired by farmers.

Hodges said their hybrid wheat research is still in the early stages, but has demonstrated "encouraging improvement and progress."

"As we evaluate the performance of our breeding each year and as we get closer to the commercialization of Ideltis, we will be able to share more information regarding trial results of our chosen launch hybrids," he said.

For researchers, part of the problem has been years of evolution of wheat, said Harvey.

"All of the floral mechanisms evolved over centuries and centuries to be self pollinated. So what that means is that in order to get a good set when you're creating hybrid seed, you're fighting against that because you want it to cross-pollinate, not self-pollinate."

Wheat pollen is generally heavy and doesn't fly, it simply drops. When you have a hybrid with a female and a male line, you have to find efficient ways to cross pollinate the males and females and end up with only female seeds.

Despite the roadblocks and difficulties involved in breeding hybrid wheat, Harvey said once the first variety is developed, the financial benefits for the developer will be enormous.

"The reason they're putting so much money into it is that by the nature of hybrid varieties, you have to go back and buy the seed every year and despite the fact it is not quite as dominant as it used to be, wheat is still a very widely grown crop."

In Canada more than 15 million acres of wheat are grown annually. Providing even half the seed for those acres is a substantial market.

"That's why anybody in the seed business, particularly the private sector, (sees) that's a good target to aim for … that's why it is worth putting a lot of money in it."

Corn hybrids, first developed almost a century ago, have dramatically increased corn yields and are now the norm.

But it's unlikely a small yield increase will entice farmers to switch from traditional to hybrid wheat varieties.

In the past, seed companies involved in wheat hybridization have indicated that a yield bump of at least 10 to 15 percent over non-hybrid varieties would be required in order to ensure market support.

Is that likely to happen soon? Only time and continued investment by seed development companies will tell.

"The use of hybrid technology allows plant breeders to choose the best traits from two parent seeds and produce an offspring that contains the positive characteristics of both parents," wrote Hodges.

"Combined with the recommended agronomic practices, hybrid wheat should give farmers more opportunities to grow wheat more profitably, while balancing economic, societal and environmental sustainability."

READY, SET … E-LEARN

CSGA launching new online professional development program for seed growers

SPECIAL TO SASKSEED

THE CANADIAN Seed Growers Association is launching a new online eLearning program for pedigreed seed growers and others who are interested in learning more about how pedigreed seed is grown in Canada.

The online program aims to support seed growers and others in furthering their knowledge of the Canadian seed sector and certified seed crop production.

"I'm really pleased with how the learning courses are coming together," said Caroline Lafontaine, CSGA's chief operating officer.

"Content was developed and underwent extensive review by sector experts, so we're very confident in the robustness of each course and the value the program will bring to people throughout the seed growing community."

Launching in early 2022, "CSGA Learn" will be Canada's first online seed learning program, offering education resources for the seed sector.

In a recent email to SaskSeed, CSGA said a total of 10 courses will be offered, each focusing on a specific aspect of the seed system.

The courses will include field crop photos, how-to videos, glossaries, reference links and practical advice from experienced seed growers.

Certificates of achievement will be provided to e-learning participants upon completion of each online course.

New digital badges will be offered to individuals with CSGA recognitions — for example, Plot Grower, Plant Breeder and Accredited Seed Grower — allowing for easy sharing, digital promotion and validation of accomplishments.

Four programs will be offered, each comprised of a collection of courses.

- The **New Grower Program** is an introductory program to help the next generation of innovative farmers to carry on Canada's reputation for premium quality seed production. The program will support the success of new seed growers and seed professionals just starting out in a seed business and in their first years of seed production.
- The **Plot Probation Program** will increase the knowledge and skill levels of those working towards becoming a CSGA Accredited Plot Grower. This program includes essential rogueing and seed plot production information. The voluntary completion of this program helps experienced seed growers obtain accreditation from CSGA in combination with successful production of probation plots.
- The **Accredited Seed Grower (ASG) Program** will help experienced growers benchmark their seed production knowledge and skills against best management practices, certification requirements and sector standards. Completion of this program, along with two years of successful pedigreed seed crop production, allows applicants with the new ASG accreditation an opportunity to use the "ASG" acronym in their online business credentials.
- The **Plant Breeder Program** is designed for plant breeders to learn the requirements for producing breeder seed in Canada. This is highly recommended for individuals applying to CSGA for Plant Breeder recognition.

Based on Canada's National Occupational Standards (NOS) for seed production, each of the 10 courses within the new eLearning platform focuses on a particular aspect of the seed system.

An NOS describes the acceptable skills and knowledge required of seed production professionals in the areas of core knowledge, transferable competencies and technical skills.

Learners can enrol in individual eLearning courses or in the entire program, and can work through the material when it's convenient for them.

Lafontaine said the CSGA's eLearning Program offers the sector what it has been asking for — professional development opportunities for seed growers and sector stakeholders.

The program offers consistent content, up-to-date information on seed production and best management practices.

"In our 2017 Strategic Plan, we identified the need for better professional development tools to help our members succeed in seed crop production, so it's really exciting to see our eLearning program getting so close to completion," said Lafontaine.

"I think our members, and the sector, will be impressed with what they see when we launch."

EDITOR'S NOTE: This article, with minor edits, was reprinted with permission from the Canadian Seed Growers' Association (CSGA).

TOUGH CROPPING DECISIONS FOR SOME GROWERS IN 2022

SPECIAL TO SASKSEED

CLARK BRENZIL, provincial weed specialist with Saskatchewan Agriculture, is offering some straight-up advice to the province's cereal grain, pulse crop and oilseed producers heading into the 2022 planting season.

"I think the biggest thing that producers need to focus on this year is making conservative cropping decisions," says Brenzil, who has been monitoring herbicide carryover risk for the past 20 years or more.

"I don't envy the decisions that producers will have to make (in 2022) but for sure, they should be in close consultation with their agronomists and chemical reps — that would be the message of the day."

Brenzil has been involved in preparing provincial herbicide carryover risk maps for the province since the early 2000s. At the time, widespread drought conditions resulted in an elevated risk of crop injury caused by herbicide residues that did not break down as quickly as expected.

In particular, 2002 was a year where residual herbicide levels were higher than normal across much of the province, forcing growers to make some difficult cropping decisions in order to avoid crop injury.

But according to Brenzil, the risk of crop injury caused by herbicide carryover has never been greater than it is heading into the spring of 2022.

"This year's risk is significant in the sense that … there are very few areas of the province that aren't facing a risk of some kind," Brenzil said.

"And we've also got a really big area — all down the west side of Saskatchewan — that's at pretty significant risk of herbicides carrying over."

Saskatchewan crops that appeared to be in good shape until mid-June of 2021 took a sudden turn for the worse due to high temperatures and low topsoil moisture reserves. | FILE PHOTO

The issue of herbicide carryover injury — and what to plant in the spring of 2022 — has been on the minds of Saskatchewan producers for some time.

In late September, chemical manufacturer BASF issued an urgent statement, encouraging growers to take extra care when making cropping decisions for the following year.

For Saskatchewan growers who farm in brown, dark brown, black, grey or grey wooded soil zones and received fewer than five inches (125 mm) of rainfall between June 1 and Sept. 1 of 2021, and for growers in the brown soil zone where less than 15 mm of rain was received in any of the months of June, July or August, regardless of how much total accumulated rainfall was received during that time, BASF recommended the following:

- If Solo ADV, Solo Ultra, or Viper ADV was applied in 2021, the field should NOT be planted to canola, durum wheat, or canary seed in 2022;
- If Odyssey NXT, Odyssey Ultra or Odyssey Ultra NXT was applied in 2021, the field should NOT be planted to durum wheat, or canary seed in 2022. (Note that canola is already restricted until the second year after application on the label), and;
- If Odyssey NXT, Odyssey Ultra or Odyssey Ultra NXT was applied in 2020, then the field should NOT be planted to canola in 2022.

According to BASF, extreme risk of crop injury means that the company will not be supporting production of canola, durum and canaryseed as follow crops in the 2022 season if BASF cropping recommendations are not followed.

It should also be noted that other chemical manufacturers have issued similar warnings, due to the heightened risk of herbicide carry-over injury entering 2022.

Growers are encouraged to speak with their agronomists and chemical reps to ensure that risk is mitigated and cropping decisions are supported.

Tough decisions ahead

It's always difficult to learn that certain cropping options have essentially been taken off the table, especially in a period of historically high commodity prices.

But according to Brenzil, producers who ignore the warnings of herbicide carryover injury could be in for a world of hurt.

In general, the risk of crop injury has never been greater, at least not in the past 20 years.

In addition to risking an outright crop failure, growers could also be jeopardizing crop insurance coverage if Saskatchewan Crop Insurance Corporation determines that recropping restrictions were ignored or if the producer has a history of making poor agronomic decisions that might increase their risk of crop failure.

Producers need to keep in mind that herbicide injury is not an 'insurable cause of loss'. So, if the loss that someone experiences stands out as greater than the surrounding area, and herbicide injury is present, SCIC may reserve the right to limit the pay-out on that claim to the surrounding area average, rather than the whole loss.

"If growers have had a long history of making poor agronomic decisions, the level of tolerance (at SCIC) may not be great," suggested Brenzil.

"But if they're (making management decisions) this year just to get through but normally they have made reasonable agronomic choices, then I think that crop insurance will evaluate the situation as what was the best of bad options."

Either way, it's lining up for many, to be a season of heightened risk and fewer fail-safe cropping options.

For commercial grain growers — and especially for pedigreed seed growers who must already adhere to additional land use criteria when making their cropping plans — extra care should be taken and the heightened risk assessed carefully.

In some cases, planting back-to-back cereals or pulses of the same crop type or variety (normally considered a recipe for disaster due to heightened disease risk) may be viewed as a relatively reasonable cropping strategy, to avoid herbicide carry-over risk and take advantage of any potential residual fertility that remains unused from 2021.

Blame it on the rain

In a recent interview with SaskSeed, Brenzil described the heightened risk level in 2022 as the result of inadequate rainfall and soil moisture over the past year or more.

For herbicides to predictably breakdown to the point where they no longer pose an atypical risk in subsequent crop years, chemicals generally need three things: warm soil conditions, ample moisture and time.

For most herbicides, breakdown is caused by soil microbial activity, which increases in warm soil temperatures that have good levels of soil moisture.

Some herbicides including products in the SU class of Group 2 herbicides, break down through another pathway called chemical hydrolysis, but for the most part, microbial activity is the key to chemical breakdown.

In 2021, soil temperatures were conducive to good microbial activity, but the other important ingredient — moisture — was negligible.

"If we look at our rainfall from last season, it's not a real optimistic outlook for herbicides breaking down the way we would normally expect them to break down," Brenzil said.

"We had lots of heat, but we didn't have the moisture present … so as a result we've got some herbicide (residues) that are going to be a significant factor for farmers making decisions about the rotation."

Assessing risk in 2022

Assessing herbicide carryover risk on an individual farm or an individual field can be very difficult.

There are many reasons for this.

For starters, all chemicals do not breakdown at the same rate. Even within the same herbicide groups — different active ingredients break down at different rates. For example, some are more persistent than others and require much more time to break down adequately while others bind tightly to the soil, making them less bioavailable to cultivated crops.

In addition, there are no proven and reliable methods that can allow a grower to accurately determine risk.

Soil samples can provide information on the type of chemical that is present in the soil and can even return results that are measured in parts per billion.

But in most cases, even quantifying the presence of chemical molecules in a soil sample is not enough to assess risk adequately. That's because soil properties such as pH levels, soil organic matter and clay content also play a large role in determining overall risk.

Generally speaking, lighter sandier soils with low organic content that have a higher level of chemical residues will be at a higher risk of crop injury, than heavy clay soils that have a higher level of organic matter.

Unfortunately, companies that used to offer bench bioassays to assess the risk of crop injury have largely gotten out of the business, for economic and business risk management reasons.

Bench bioassays that were available in the past were delicate and difficult to conduct and produced a fairly high proportion of false negatives and false positives.

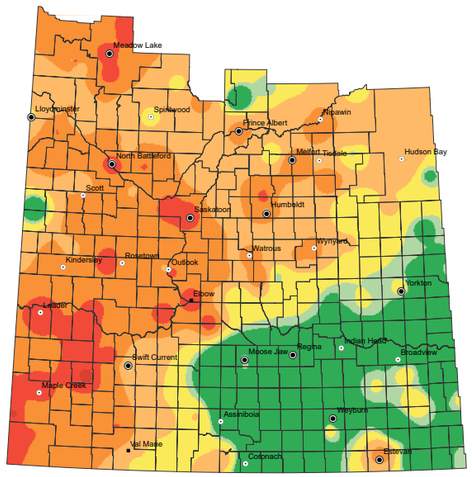
This resulted in increased liabilities for the company when growers made cropping choices based on lab bioassay results.

continued on next page »

HERBICIDE CARRYOVER RISK LEVEL

Herbicide carryover risk level based on precipitation from June 1 - Aug. 30, 2021:

	Extreme	(< 50 mm)
	Serious	(< 75 mm)
	Very High	(< 100 mm)
	High	(< 125 mm)
	Moderate	(< 150 mm)
	Uncertain	(< 160 mm)
	Normal	(> 160 mm)



In season rainfall following the application of a residual herbicide is the most important factor in the breakdown of herbicides in the soil. Less than normal rainfall can result in residual herbicides remaining in the soil at higher levels than expected and increase the potential for herbicide injury to more sensitive crops registered for planting the following year(s). Check the Guide to Crop Protection for a list of residual herbicides and always read the label for specific recropping instructions. Keep rainfall records for each field in order to determine localized risk and follow label.

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On top of that, the commercial demand for bench bioassays was hit and miss, based on prevailing environmental conditions.

In years of average or high rainfall, demand for the services was low. In years of less-than-average or low rainfall, demand would often increase dramatically, placing pressure on company resources.

Today, growers are left with a few important sources of information on which to assess risk and make their cropping decisions, including Saskatchewan's provincial guide to crop protection products, label instructions on herbicides, bulletins, warnings and advisories issued by chemical manufacturers, and herbicide carryover risk maps prepared and published by Sask. Agriculture.

Products to watch

Although every chemical presents its own level of risk, there are some chemicals that are typically thought to carry a higher risk of injury in a year or years that follow a drought.

In areas that show a higher risk of carryover injury, growers should be particularly mindful of the risks posed by Group 2 imidazoline products, Group 2 herbicides that use the active ingredients flucarbazone or metsulfuron, Group 4 clopyralid and Group 27 pyrasulfotole, including Infinity and Infinity FX. Some of these have quantified the risks of dry conditions and others less so.

For a complete list of recommended recropping intervals and carry-over risk warnings, refer to the article on page 18 of this year's *Saskatchewan Seed Guide.*

Previous applications of Group 3 products could also pose a heightened risk in 2022, as could some newer products whose properties and persistence in the soil are not yet well understood, such as Group 13 clomazone products (Command).

Navigating the risks

Brenzil agreed that it can be difficult and frustrating to assess risk and make informed cropping choices that minimize the risk of crop injury or crop failure.

In addition to dealing with uncertain risk levels in specific production areas or on individual farms, growers are dealing with a large number of products that have different properties.

With that in mind, Brenzil offered the following pieces of advice to growers as they plan their 2022 rotations:

- **Know your active ingredients**

"The first thing I'd recommend is understand your active ingredients," Brenzil said.

"Don't get too reliant on the brand names that are the flash and dash of the industry. Focus on the active ingredients that you've put down and if you're using generics, know how the generics relate to the proprietary products in terms of rate and the amount of active ingredient that actually goes down."

According to Brenzil, the *Saskatchewan Guide to Crop Protection* contains about 350 brand names of chemicals, enough to intimidate the most knowledgeable producer.

But if producers focus on active ingredients only, the list of products to become familiar with is reduced to 50 or 60, many of which are range and pasture products or desiccants.

- **Follow label directions and manufacturer warnings**

As difficult as it may be to take certain crops out of the rotation, growers should pay close attention to manufacturer recommendations.

Extraordinary advisories and bulletins issued by chemical manufacturers are an indication that they are anticipating a heightened risk of crop injury.

Growers who ignore those warning may do so at their own peril.

"Producers definitely should pay attention to the recropping restrictions that are on product labels ... or if you get a company like BASF coming out and saying 'OK, we're changing our position on this,' then you need to sit up and pay attention," Brenzil said.

"The company is trying to do their due diligence and alert producers to a problem for next year, so if a producer chooses to ignore those warnings, they could be in for a world of hurt."

Care should also be taken when using generics. In some cases, customer support offered by companies that sell generics is either not as robust as that offered by companies that sell proprietary products or is altogether non-existent.

Companies that market generics may not be equipped or inclined to issue warnings to growers in years when herbicide injury risk is elevated.

- **Make responsible and conservative cropping choices in 2022**

That might be a tough pill to swallow when commodity prices are so high, but dealing with restricted rotational choices at seeding time is always better than dealing with a crop failure later in the year.

"I would suggest that the best solution for producers is to be as conservative as they can possibly be in terms of crop choices (for 2022)," Brenzil said.

Know what products you've used on a field-by-field basis, pay attention to recommended recropping intervals and restrictions and avoid decisions that could result in unnecessary risk.

Growers should also remember that some products could pose a multi-year cropping risk, especially in areas that have experienced back-to-back seasons of lower than normal rainfall.

Herbicide carry-over injury often becomes evident in periods following a significant rainfall, when soil moisture enters the root zone and makes residual herbicide molecules more bioavailable to a potentially sensitive crop.

Experience and past production history is also an important indicator.

"As a general rule of thumb, if you had a really nice lush, healthy looking crop (last year), you're probably not going to have a lot of problems with carry-over," Brenzil said.

"But if you had a crop that was drought stressed, then yes, that's a good signal that you could have herbicide carry-over issues the following year."

PEDIGREED SEED SUPPLIES STRETCHED TO THE MAX

SPECIAL TO SASKSEED

MESSAGE TO Saskatchewan grain growers: If you still haven't sourced your pedigreed seed for the 2022 planting season, you might want to add that task to your list of urgent New Year's resolutions.

Sourcing pedigreed seed anywhere in Saskatchewan — regardless of the crop type or variety — is expected to be unusually difficult this winter, given short supplies and high prices that were being offered for commercial grain late in 2021.

Extremely competitive cash bids for commercial grain of almost any kind were expected to lure larger-than-usual amounts of pedigreed seed into commercial grain markets this winter, according to some industry observers.

Also contributing to a potential shortfall of pedigreed seed is the fact that yields for all Saskatchewan crops — pedigreed or commercial — were well below normal in 2021.

> Source your seed as soon as possible to avoid disappointment.

Drought-stricken growers in some of Saskatchewan's hardest hit areas had little if any grain to harvest last fall.

In addition, growers who are scrambling to fill 2021 production contracts may also be tempted to use carryover seed supplies to meet their contractual obligations and avoid non-fulfillment penalties.

All together, those factors point to a pedigreed seed supply that could, in some cases, come up short of meeting demand.

"Across the board (last year) we saw very widespread drought, and if not drought, there was the record amounts of heat that really had an impact on this year's crop, including pedigreed seed," said Mike Shewchuk, a pedigreed seed grower from Blaine Lake, Sask., and president of the Saskatchewan Seed Growers' Association.

"As a result, we're seeing a real reduction in basically all crops kinds for seed availability," he continued.

"It's putting real strain on what's available out there for seed supply. It's definitely low."

In a recent interview with *SaskSeed*, Shewchuk said it's hard to know exactly how much pedigreed seed will be available this spring and which crop types will be in shortest supply.

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Based on conversations with other seed growers around the province, Shewchuk suggested that supplies of pedigreed wheat seed might be a bit more plentiful than pedigreed supplies of other crop kinds.

"When you look at crops like barley, peas, oats and flax, I think those are the ones that are going to be really hard hit," he said.

It's also unclear what impact historically high commercial grain prices will have on pedigreed seed supplies," Shewchuk said during an interview late last year.

"With flax, for example, the commercial prices that are available at the elevator are pretty astronomical ...."

In mid-November cash prices for commercial flax were in the $40 to $50 per bushel range at many Saskatchewan locations.

"That's potentially going to take quite a bit of the pedigreed seed that's out there and push it into a commercial market," Shewchuk suggested.

"Time will tell what we have left by spring but already it's a bit concerning."

Throughout Saskatchewan and Western Canada, yields for most crops varied significantly last fall.

For that reason, it's likely that growers looking for certified seed will have to source their product from different regions and over longer distances.

"I think we'll see a lot of seed moving around the province," Shewchuk said.

For pedigreed seed growers, the decision on how to price pedigreed seed supplies also requires careful consideration.

Seed distribution companies routinely send out suggested retail or wholesale price lists, but at the end of the day, seed growers are free to set their own prices for pedigreed product, based on what the market will bear.

Pedigreed seed growers typically use commercial grain prices as a base or guide when setting pedigreed seed prices.

On top of current cash prices for commercial grain, pedigreed seed growers will add a premium to compensate for seed royalties, cleaning and conditioning costs, lab analysis, inspection fees, cleanout losses and other extraordinary costs such as seed association fees, inventory management, record keeping and so on.

As prices for commercial grain increase, prices for pedigreed seed can be expected to rise as well.

But in a year like 2021, establishing a price point for pedigreed seed becomes more challenging than ever.

"Last November, we were seeing commercial flax prices in the $40 to $50 range. Normally, we would never even dream of charging that for pedigreed flax seed," Shewchuk said.

"So it's a bit of a gamble. If you take a booking for pedigreed flax seed at $60 a bushel, and you defer payment until spring, what happens if the (buyer) backs out?"

"If the commercial price for flax drops back down to $20 and you're left holding that seed, that's a lot of money left on the table, especially when you could have sold it (in November) for $49 a bushel."

On his own farm, Shewchuk said he started receiving calls about bulk seed orders earlier than ever last year.

Some producers started inquiring about 2022 seed supplies in July of 2021. Since then, sales and calls have been unusually brisk.

Shewchuk's message to grain growers who need to replenish their seed supplies for 2022 planting? Source your seed as soon as possible to avoid disappointment.

"I hate to ring the alarm bells but it's pretty concerning what's out there," he said.

"Talking to other people across the province, there's lack of almost everything everywhere. Obviously there were pockets that were better off than others, but I don't think those areas (with better yields) will have enough extra seed to fill the void that we're anticipating.

"In some instances, supplies will fall short of demand."

> *Across the board (last year) we saw very widespread drought, and if not drought, there was the record amounts of heat that really had an impact on this year's crop, including pedigreed seed.*
>
> **MIKE SHEWCHUK** | SSGA PRESIDENT


GETTY ILLUSTRATION

PEDIGREED SEED ACREAGE DROPS FOR FIFTH STRAIGHT YEAR

NATIONAL PEDIGREED SEED ACREAGE

CROP TYPE	2017	2018	2019	2020	2021
Alfalfa	81,573	69,650	55,354	42,732	41,002
Barley	93,440	98,298	132,956	129,190	135,444
Bean	4,163	3,436	4,938	4,574	4,578
Birdsfoot Trefoil	2,872	2,337	3,209	2,247	2,391
Bromegrass	10,750	7,425	7,767	7,206	6,290
Buckwheat	1,352	867	958	933	1,382
Canarygrass	1,624	2,150	230	1,312	2,856
Canola	59,263	72,951	53,917	65,654	64,981
Chickpea	3,207	5,209	2,861	3,070	4,473
Clover	6,243	4,596	4,443	4,330	4,093
Fababean	6,331	4,424	6,513	9,820	14,859
Fescue	18,675	13,457	14,193	16,991	18,375
Flax	21,341	21,200	26,398	23,224	31,649
Hemp	13,373	5,193	6,995	4,763	5,559
Hybrid corn	18,224	15,297	17,787	16,224	16,258
Lentil	35,390	23,776	26,040	38,802	35,403
Mustard	1,443	4,247	2,369	2,049	1,942
Oats	48,919	50,809	74,019	77,306	78,794
Peas	85,565	94,044	105,713	100,925	96,372
Rye	3,581	2,758	4,909	5,518	6,794
Ryegrass	19,204	16,104	24,672	19,418	17,158
Soybeans	402,254	401,033	318,249	277,142	266,335
Timothy	37,177	26,284	25,413	29,816	29,857
Triticale	1,650	3,340	6,848	5,836	2,269
Wheat	366,009	378,429	358,812	368,944	358,311
Wheatgrass	6,387	6,146	6,715	7,135	4,856
Minor crops	3,221	1,511	1,609	1,386	1,591
Total	**1,353,231**	**1,334,971**	**1,293,887**	**1,266,547**	**1,253,872**

SPECIAL TO SASKSEED

CANADA'S ANNUAL pedigreed seed acreage fell for a fifth consecutive year in 2021, according to data supplied by the Canadian Seed Growers' Association.

Inspected pedigreed seed acreage across Canada was listed at just a hair over 1.25 million acres in 2021, down from nearly 1.27 million acres in 2020 and 1.29 million acres in 2019.

The 2021 figure was Canada's lowest level of pedigreed seed production since 2014, when CSGA members had 1.17 million pedigreed seed acres inspected for certification.

On a year-over-year basis, only four provinces saw an increase in pedigreed seed acreage in 2021.

Saskatchewan seed growers had more than 341,360 acres inspected last year, up marginally from the 340,621 acres inspected in 2020.

Manitoba seed growers had 319,491 acres inspected in 2021, up from 305,484 acres a year earlier.

British Columbia's acreage increased to 5,561 acres in 2021, up from 4,705 acres in 2020.

New Brunswick seed growers saw their inspected acres increase to 3,566 acres in 2021, up from 2,908 acres in 2020.

All other provinces saw declining pedigreed seed acreages in 2021. The biggest year-over-year reduction was recorded in Alberta, where CSGA members had 335,669 acres inspected last year, compared to nearly 354,000 in 2020.

On a crop-by-crop basis, there were also winners and losers.

Inspected barley acres rose by roughly 6,000 acres in 2021 to more than 135,000 acres across Canada.

Inspected fababean acres rose sharply to nearly 15,000 acres nationally, up from less than 10,000 acres in 2020.

Inspected flax acres also saw a significant increase, jumping from 23,224 acres in 2020 to 31,649 acres in 2021, a year-over-year increase of nearly 36 percent.

On a national basis, the largest year-over-year declines were in wheat, (down more than 10,000 acres in 2021 to 358,311 acres) lentils (down more than 3,000 acres to 35,403 acres in 2021) and peas (down roughly 4,500 acres in 2021 to 96,372 acres).

In Saskatchewan specifically, inspected barley acreage jumped 18 percent year-over-year to 52,852 acres, inspected canaryseed acreage more than doubled to 2,856 acres, inspected chickpea acreage rose 72 percent to 3,422 acres and inspected flax acreage jumped 30 percent to 17,922 acres.

Saskatchewan's biggest declines came in peas (down 15 percent to 42,277 acres), soybeans (down 61 percent to 1,011 acres), lentils (down 16 percent to 28,901 acres) and wheat (down 4.5 percent to 127,213 acres).

The Canadian Seed Growers' Association releases a pedigreed seed acreage and membership report each year.

The 2021 report, released last November, listed CSGA's total national membership at 3,113 members, unchanged from 2020.

In 2016, national membership was listed at 3,537 members. Saskatchewan's CSGA membership was listed at 496 members last year, up slightly from 485 members in 2020.

SASKATCHEWAN PEDIGREED SEED ACREAGE

CROP KIND	2017	2018	2019	2020	2021
Alfalfa	16,401	14,008	13,714	12,513	14,278
Barley	30,047	31,794	47,136	44,640	52,852
Bean	887	329	54	575	339
Birdsfoot Trefoil	100	100	100	130	170
Bromegrass	3,358	2,454	2,497	2,647	2,362
Canarygrass	1,509	2,115	55	1,312	2,856
Canola (hybrid)	240	18	121	20	0
Chickpea	1,388	2,583	1,445	1,985	3,422
Clover	2,018	2,755	2,312	1,878	2,376
Fababean	4,540	1,884	2,734	4,902	5,836
Fescue	456	1,155	1,840	2,416	5,298
Flax	12,622	12,630	13,656	13,786	17,922
Hemp	4,051	1,727	2,969	932	566
Lentil	29,767	21,389	22,752	34,512	28,901
Mustard	494	1,595	880	657	557
Oat	14,088	10,756	19,605	20,192	20,745
Peas	37,668	42,401	51,659	49,769	42,277
Rye	440	196	773	589	865
Ryegrass	1,065	1,970	2,331	1,957	2,293
Soybean	17,454	17,138	4,343	2,592	1,011
Timothy	4,355	3,545	4,209	6,427	6,620
Triticale	335	997	1,269	532	616
Wheat	144,338	149,181	131,585	133,313	127,213
Wheatgrass	1,270	1,470	1,349	1,946	1,563
Other crops	1,633	94	680	400	423
Total	**330,473**	**324,284**	**330,067**	**340,621**	**341,360**

WHO YOU GONNA CALL? MIDGE BUSTERS!

SPECIAL TO SASKSEED

THE 2021 FORECAST in Saskatchewan called for wheat midge in abundance. But what the annual prediction couldn't take into account is what Mother Nature had in store.

"Wheat midge is really tied to rain. Areas that received enough spring rain to kickstart development had wheat midge emergence and a really good correlation with the forecasting data," said Tyler Wist, research scientist of field crop entomology with Agriculture and Agri-Food Canada in Saskatoon, Sask.

Drought conditions throughout much of the Prairies, however, left much of the predicted midge population dormant in the soil.

"If the rains don't come, the midge doesn't come up out of the ground," said Wist.

A surprising development in some areas was a second flush of the pest later in the season.

"Second flushes can sometimes happen after another big rain event," he said.

"It's like some of them just don't start developing until after a second hit of moisture. It's a mechanism that we need to further explore."

There is also work to be done to better monitor wheat midge emergence and 'ground truth' the annual forecast maps.

"There is no coordinated monitoring of actual wheat midge emergence to know if the maps and models are giving good predictions," said Wist.

"With SeCan, I conceived of a network of pheromone traps in their member fields that would have the growers and their agronomists reporting in real time during the 2021 season."

Pheromone traps were distributed to volunteers (seed growers, independent agronomists and SeCan staff) across the Prairies and the initiative was dubbed 'Midge Busters.'

The traps used in the Midge Busters initiative were placed in wheat fields and insect counts were done twice per week for one month.

Participants entered their trap catches in an online platform so everyone could immediately see counts from other areas. Midge enthusiasts could follow along on Twitter under the #midgebuster hashtag.

"Ultimately, 67 fields were monitored with results showing midge in all traps with an average count of 50," said Todd Hyra, SeCan Business Manager Western Canada.

"Some traps had very low numbers, while others were as high as 1,350 midge per count.

"The emergence rates will be correlated with rainfall data to help improve prediction models for the future."

Hyra said the take-home message for many was the complexity of monitoring an insect that can come in multiple flushes.

"It also reinforced the efficiency and convenience of growing midge tolerant wheat as an effective and sustainable solution to a pest that has plagued growers for decades," he added.

So, what should growers expect in 2022?

Will fields that expected high midge pressure in 2021 but missed a timely spring rain see a larger number of dormant midge to emerge in 2022?

Wist can't say for certain.

"We'll know better when we see the forecast maps," he said, referring to the maps that are typically released in January.

Researchers collect soil samples in fall that are the basis for the forecast.

"They pull the overwintering cocoons of the wheat midge out of the ground and open them up to see if they've been parasitized by *Macroglenes penetrans,*" explained Wist.

The beneficial parasitoid helps to keep the midge population in check.

"When a midge is parasitized it doesn't go onto the map because it's not viable."

While growers await the maps, they can protect their wheat yields and quality by planting Midge Tolerant Wheat and following stewardship protocols to keep the technology viable for the future.

Wist said the Midge Busters initiative has given him a wealth of information that will help his team validate models and future predications. He is eager to build on the knowledge for next year.

"Stay tuned for Midge Busters II in 2022," he said.

EDITOR'S NOTE: This article was submitted by Karen Lewis on behalf of the Midge Tolerant Wheat Stewardship Team.

OPPOSITE PAGE: *Macroglenes penetrans,* a parasitoid of wheat midge, helps to keep numbers in check. Another way to control the pest is to plant a midge-tolerant varietal wheat blend and follow stewardship protocols. | AAFC SASKATOON KVAVRA PHOTO

LEFT: In 2021, SeCan members in Saskatchewan participated in a program called Midge Busters, which was aimed at monitoring wheat midge numbers in wheat fields around the province. Pictured here is *Sitodiplosis mosellana,* the orange blossom wheat midge. | GILLES SAN MARTIN PHOTO

INTERACTIVE TOOL MAKES SEED SEARCHING EASIER

SPECIAL TO SASKSEED

LOOKING FOR a pedigreed seed variety that's perfectly suited for your farm?

If you are, the Saskatchewan Seed Growers' Association has a new tool that will make your search a whole lot easier.

In 2021, the SSGA launched its new Interactive SaskSeed Guide, an online resource that allows seed buyers to search for pedigreed seed by variety name or by crop type, using specific search criteria such as yield potential, resistance to lodging, resistance to sprouting or resistance to disease.

The Interactive SaskSeed Guide can be accessed online at www.saskseed.ca.

The guide is designed to allow seed buyers to find pedigreed seed supplies that meet their specific needs.

Growers who know what variety they are looking can simply type the variety name into the search engine and click the tab labeled "Find Seed."

Within seconds, the guide will return a complete list of Saskatchewan-based pedigreed seed growers who have supplies of the desired variety, as well as their location and contact information.

Some seed growers' names are also hyperlinked to email addresses or websites, allowing buyers to learn more about the supplier and to contact the seed grower by email or web-based forms.

A search for CDC Copeland, for example, returns the names and hometowns of more than 20 seed growers, from Medstead in the north, to Swift Current in the south.

For best results, users searching for a specific variety should be sure to enter the entire variety name, including prefixes such as CDC, SY, AC or AAC.

For growers who are unsure what variety they want, the Interactive SaskSeed Guide offers another way to search, using a combination of crop type, seed characteristics and performance criteria.

For example, growers who are seeking a CWRS wheat variety with midge tolerance, good (G) resistance to lodging and an intermediate (I) rating to fusarium headblight can enter their criteria in the appropriate fields and click on the button labeled "Run Report."

The Interactive SaskSeed Guide will instantly produce a list of CWRS wheat varieties that meet the specified parameters.

Clicking on any variety name within the list quickly identifies seed growers who carry supplies of that variety.

Criteria that can be used in a wheat search include yield (percent yield relative to check varieties), protein content, disease resistance, lodging ratings, midge tolerance and stem solidness, among others.

The Interactive SaskSeed Guide draws on large database of information, including data that is also contained in the printed SaskSeed Guide.

Digital information that supports the Interactive SaskSeed Guide will be updated regularly, ensuring that search results produce relevant, up-to-date listings.

SSGA officials say the online guide is particularly useful when searching for new crop varieties with enhanced agronomic characteristics. It is also mobile friendly, meaning seed searches can be conducted on the go, from any location that offers mobile connectivity.

If you haven't used this new resource yet, take a look when you have a minute or two to spare.

Finding the best pedigreed seed for your farm doesn't have to be like searching for a needle in a haystack.

With the Interactive SaskSeed Guide, it's as easy as click and call.

AAC BRANDON STILL TOPS IN CWRS CLASS

SPECIAL TO SASKSEED

ONCE AGAIN in 2021, Canada Western Red Spring wheat variety AAC Brandon was the most widely grown wheat variety in Western Canada.

For the sixth year in a row, AAC Brandon was planted on more insured fields than any other variety in the CWRS class, according to insured acreage data compiled by the Canadian Grain Commission.

The Agriculture and Agri-Food Canada variety was planted on nearly 3.9 million acres in 2021.

A year earlier, in 2020, AAC Brandon's insured acreage across the West was 4.75 million acres.

The decline in acreage from 2020 to 2021 (nearly 850,000 acres less) represents a year-over-year reduction of almost 18 percent.

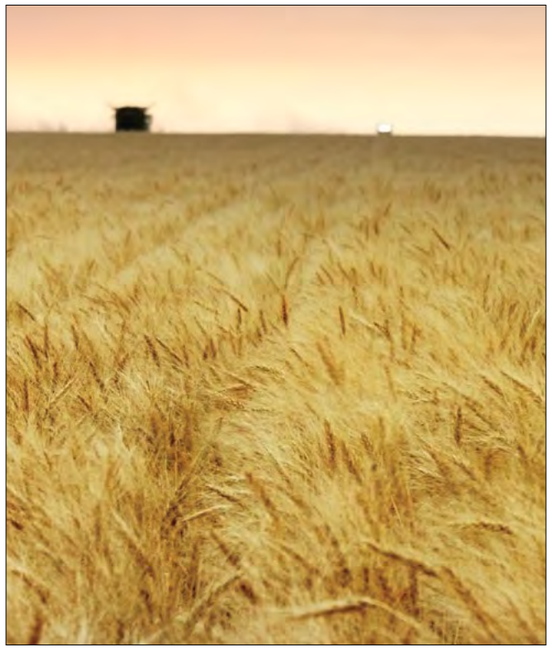
Nonetheless, AAC Brandon easily retained its crown as the most popular CWRS variety grown in the West, commanding more than 1.4 million insured acres in Saskatchewan, roughly 1.3 million acres in Alberta, and more than 1.1 million acres in Manitoba, according to figures in the CGC's annual insured acres report.

All told, AAC Brandon accounted for roughly 38 percent of all insured CWRS acres grown in Western Canada last year.

The second most popular CWRS variety in the West was AAC Viewfield, which was planted on more than 1.4 million insured acres.

Other top CWRS varieties in 2021 included CDC Landmark (approximately 736,000 insured acres across the West), AAC Elie (more than 515,000 acres) and AAC Redberry (roughly 492,000 acres).

The full insured acreage report can be viewed in this edition of the SaskSeed Guide, beginning on Page 100.



AAC Brandon has been shown to yield well with limited rainfall. This crop was at Pasqua, Sask. | WES WOODS PHOTO

SASKATCHEWAN'S TOP INSURED CWRS VARIETIES

CWRS WHEAT	2017	2018	2019	2020	2021
AAC Brandon	814,524	1,602,675	2,131,224	1,734,986	1,435,541
AAC Viewfield	1,241	33,321	199,170	431,049	634,326
CDC Landmark	6,114	252,686	706,731	771,219	523,710
AAC Alida	0	0	5,762	121,152	261,027
AAC Redberry	0	11,792	42,344	138,555	175,339
AAC Wheatland	0	0	0	1,866	127,869
AAC Starbuck	0	0	0	2,158	127,279
AAC Elie	106,262	206,736	223,478	162,305	115,514
CDC Plentiful	328,867	354,832	291,200	161,437	112,260
CDC Hughes	615	38,375	83,542	105,869	99,884

Source: Canadian Grain Commission / Saskatchewan Crop Insurance Corp.

In its first year of commercial release, AAC Brandon was grown on 325,000 insured acres across the Prairies, making it the 19th most popular CWRS variety grown in the West.

The following year, in 2016, AAC Brandon's total prairie acreage skyrocketed to more than 1.16 million acres, propelling the high-yielding variety to first place overall in just its second year of commercial production.

AAC Brandon's rapid uptake continued after that, with total insured acreage in Western Canada increasing to 2.28 million acres in 2017, 4.1 million acres in 2018, and nearly 5.3 million acres in 2019.

In a 2020 interview with SaskSeed, Todd Hyra, SeCan's business manager for Western Canada, said Brandon's strong performance over a wide range of growing conditions resonated with Prairie wheat producers.

The variety was a solid performer in 2015 and 2016 under relatively wet conditions, he said.

It also did well in subsequent years that were marked by above average temperatures during the growing season and limited moisture.

"It has just been a rock solid performer," Hyra said. "It's the consistency across environments and over the years.

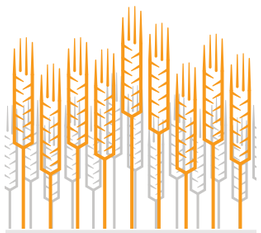
"The combination of short strong straw, yield consistency, disease protection with the MR rating for fusarium and that overall ease of management really makes it what it is."

continued on page 48 »

AAC BRANDON ACCOUNTED FOR ABOUT

38%

of all insured CWRS acres grown in Western Canada last year.



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Hyra said the timing of AAC Brandon's commercial release was one of the factors that allowed it to quickly become the most widely grown CWRS variety in the West.

At the time, there were a number of other high-yielding CWRS varieties available, but growers were beginning to recognize the merits of CWRS varieties that were short in stature, produced less straw and were easier to push through the combine during the busy harvest season.

Another variety, CWRS check Carberry, had already re-calibrated growers' expectations surrounding straw management and had illustrated how beneficial speed of harvest can be in terms of saving time and reducing wear and tear on harvest machinery.

When SeCan acquired the distribution rights for AAC Brandon, seed growers and commercial grain producers were eagerly awaiting a new, short-strawed variety that could push the yield envelope to the next level.

"At the time, there was a tonne of interest in short, strong-strawed varieties ... and everyone was waiting for a replacement for Carberry," Hyra said.

"There were a lot of SeCan seed grower members that had AAC Brandon in their portfolios ... and based on their experience with the variety during multiplication, it was a very easy variety for them to recommend to their customers."

Hyra also acknowledged the stringent selection process employed by former AAFC wheat breeder Ron DePauw as a key factor behind the variety's success.

"In his time at the Swift Current breeding facility at AAFC, he (DePauw) put a great deal of emphasis on selecting strong products," Hyra said.

"The ruthlessness that he used in his selection process was quite remarkable and I've really gained an appreciation for that since he's become our science advisor at SeCan."

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Although AAC Brandon has enjoyed a prolonged run as Western Canada's dominant CWRS variety, other promising varieties that have recently made their debut in the commercial seed market are gaining favour among growers.

In 2021, for example, CWRS varieties such as AAC Starbuck, AAC Wheatland and AAC Alida gained significant acreage, placing seventh, eighth and ninth respectively in terms of total insured plantings.

AAC Starbuck's insured plantings across the West amounted to nearly 400,000 acres last year, a significant increase over the 7,000 AAC Starbuck acres planted in Western Canada just a year earlier in 2020.

Saskatchewan pedigreed seed growers work hard to ensure the latest and most promising varieties are made widely available to the province's commercial grain growers.

AAC Wheatland acreage also rose sharply, jumping from 10,000 insured acres across the West in 2020, up to 332,000 acres in 2021.

AAC Alida acreage jumped from 143,000 acres in 2020 to more than 271,000 acres in 2021, a year-over-year increase of nearly 90 percent.

In the CWAD class, Transcend was once again the most dominant durum variety grown in Saskatchewan, commanding more than 1.16 million insured commercial acres in 2021.

Transcend, distributed by FP Genetics, has been the province's most popular CWAD variety for the past six years.

In 2021, it was planted on 30 percent of insured durum acres in Saskatchewan.

The second most popular CWAD variety in Saskatchewan, CDC Precision, was planted on about 454,000 insured acres in 2021 CDC Precision is distributed by Alliance Seed.

Saskatchewan pedigreed seed growers work hard to ensure the latest and most promising varieties are made widely available to the province's commercial grain growers.

To learn more about new commercial releases and exciting new seed products that are currently being multiplied for commercial distribution, speak to a pedigreed seed grower in your area.

AAC SYNERGY ACREAGE EDGES UP

SPECIAL TO SASKSEED

AN INCREASING number of barley growers in Saskatchewan are hitching their wagons to some new rising stars in the designated malt barley class.

According to statistics from the Canadian Grain Commission, insured commercial plantings of malt barley variety AAC Synergy rose 75 percent in Saskatchewan last year.

That made AAC Synergy the second most widely grown malting variety in the province in 2021. Only CDC Copeland commanded more malt barley acres in the province.

AAC Synergy, distributed through the Syngenta network, has been gaining Western Canadian acreage for several years now.

In 2020, it became the second most popular malting variety grown in Western Canada, displacing long-time incumbent AAC Metcalfe.

In Saskatchewan, AAC Synergy finally leapfrogged over AC Metcalfe in 2021, commanding 17 percent of total insured malt barley plantings in the province, compared to AC Metcalfe's six percent (173,880 insured acres).

CDC Copeland commanded the largest insured acreage in the province, with more than 578,00 acres planted in the province (21 percent of total insured acreage).

AAC Synergy's steady rise in popularity among Saskatchewan growers is a cause for celebration among producers and the malting barley industry in general.

Stakeholders in the industry have been patiently waiting for signals that the malting and brewing industries are transitioning away from old-school favourites and toward newer barley varieties that offer higher on-farm yields and improved agronomic properties.

APPROXIMATELY

31%

of the insured malting barley acres grown in Saskatchewan last year were sown to AAC Synergy.

CDC COPELAND ACCOUNTED FOR NEARLY

39%

of all insured malt barley acres in Saskatchewan in 2021.

In addition to AAC Synergy, other newer varieties such as AAC Connect (Canterra) and CDC Fraser (SeCan) and CDC Bow (SeCan) are also gaining ground.

Saskatchewan's insured commercial plantings of AAC Connect more than doubled last year, jumping to 107,000 acres in 2021 up from 40,000 acres a year earlier.

CDC Fraser, meanwhile, saw insured commercial acres in Saskatchewan jump to more than 56,000 acres in 2021, up from 12,000 or so in 2020. That represents an astounding year-over-year increase of 365 percent.

The acceptance of new and agronomically improved malt barley varieties is a top priority for the Canadian barley industry.

The industry has been relying heavily on two malt barley varieties — AC Metcalfe and CDC Copeland — for the past 15 years or so.

"We've been a little bit of a victim of our own success with those two varieties. We're having difficulty getting end users to accept newer varieties," the CMBTC told SaskSeed in a 2020 interview.

On the surface, the decision by malt barley producers to grow newer barley varieties that offer higher yields, better standability and improved disease resistance would seem like a no-brainer.

However, the economic benefits of growing new and agronomically improved malt barley varieties are muted if there isn't a reliable market for the grain.

In recent years, barley industry stakeholders launched an initiative aimed at ensuring a more rapid adoption of new barley varieties by the malting and brewing industries.

Organizations including the CMBTC and the Brewing and Malting Barley Research Institute have been working directly with some of Canada's largest malting companies as well as other stakeholder groups in the Canadian barley industry.

The intent is to nurture an open conversation about which new and improved malt barley varieties look promising from a malting and brewing perspective, and which varieties are most likely to be adopted.

Increased acreage of varieties such as AAC Synergy, AAC Connect and CDC Fraser are an indication that those efforts are beginning to pay dividends.

SASKATCHEWAN'S TOP INSURED BARLEY VARIETIES

MALT BARLEY	2017	2018	2019	2020	2021
CDC Copeland	436,896	501,344	601,317	555,671	578,838
AAC Synergy	53,067	84,721	212,275	266,647	464,384
AC Metcalfe	442,188	453,494	417,271	276,043	173,880
AAC Connect	0	3,507	20,304	40,309	107,024
CDC Fraser	0	0	3,905	12,133	56,516
Legacy	54,398	59,894	48,341	37,343	37,562
CDC Bow	970	3,614	18,967	22,952	36,172
Newdale	16,391	20,464	16,312	11,556	14,739
CDC Platinum Star	7,478	14,946	18,327	11,393	4,749
Celebration	3,893	4,970	6,637	3,845	4,289

Source: Canadian Grain Commission / Saskatchewan Crop Insurance Corp.

CDC COPELAND HEADS LIST OF RECOMMENDED MALTING BARLEY VARIETIES

SPECIAL TO SASKSEED


FILE PHOTO

THE CANADIAN Malting Barley Technical Centre has issued its list of recommended malting barley varieties for the 2022-23 marketing year.

The list identifies varieties that hold the most promise for producers in terms of selection by maltsters and marketability in the 2022-23 crop year based on current acceptance in the market place.

All of the varieties on the list have been pilot tested at the CMBTC and each variety exhibits very good malting and brewing characteristics.

Topping this year's list of recommended varieties is CDC Copeland, a widely-grown variety with established demand in the brewing industry, and AAC Synergy, a two-row that has been gaining traction among brewers and Western Canadian growers.

Seed for CDC Copeland is distributed in Canada by SeCan members. AAC Synergy is distributed through Syngenta and FP Genetics distribution networks.

Rounding out the list of recommended varieties in 2022-23 is:

- AC Metcalfe, a SeCan variety listed with declining demand;
- AAC Connect, a Canterra Seeds variety with established demand;
- CDC Fraser, a SeCan variety with growing demand, and;
- CDC Bow, a SeCan variety with growing demand.

According to CMBTC, limited contract production opportunities may also available for barley varieties Bentley (Canterra), Celebration (Canterra), CDC PlatinumStar (Canterra), CDC GoldStar (Canterra), Legacy (FP Genetics), Newdale (FP Genetics) and Cerveza (Mastin Seeds).

To gain international acceptance of new malt barley varieties and to facilitate uptake, the CMBTC works with international customers who conduct production trials in their brewing facilities.

The domestic malting industry in Canada has also been testing a number of new and promising barley varieties over the past several years, with positive results.

Recently developed varieties that are undergoing seed propagation and commercial market development include CDC Churchill (SeCan), CDC Copper (FP Genetics) and AB BrewNet (SeedNet).

Producers are encouraged to speak with their local malting barley buyers to discuss which varieties are best suited for production and selection in their region.

The CMBTC recommends that malt barley growers have a production contract, particularly when growing new malting barley varieties.

In its blog, which can be viewed on-line at https://cmbtc.com, the Canadian Malt Barley Technical Centre called 2021 one of the worst growing seasons in recent memory for Western Canadian malt barley production.

"By all accounts, 2021 was one of the worst growing seasons in a generation with dismal results in terms of both the quantity and quality of this year's barley crop in Western Canada," the CMBTC said.

In Saskatchewan, average malt barley yields based on estimates from Statistics Canada and the province of Saskatchewan were in the range of 34 to 35.1 bushels per acre in 2021.

Entering 2021, the province's five-year average for malt barley yields was 67.4 bushels per acre, according to StatsCan.

Growers in Alberta fared slightly better with average 2021 yields estimated at 49.6 bushels per acre, or 69 percent of the five-year average, according to StatsCan.

However, the Alberta government in its Oct. 5 report pegged provincial yields at 42.5 bushels, more than seven bushels an acre below Statistics Canada's estimate.

Statistics Canada was scheduled to release its final production report on Dec. 3.

Across Canada, total 2021 barley production was estimated by StatCan at a disappointing 7.141 million tonnes.

With the potential for both yields and harvested area to drop in StatCan's final Dec. 3 production report, the industry was bracing for total Canadian barley output to drop below seven million tonnes in 2021, the CMBTC said.

Malt barley quality was also impacted by the hot, dry growing season across Western Canada.

The CMBTC said the 2021 barley crop was characterized by "very high protein content, reduced plump kernels and generally greater heterogeneity in the kernel size, as well as lower test weight."

"While the protein levels are virtually unprecedented, averaging above 14 percent, in the early-tested barley that the industry has received, plumpness and test weights have not proven to be as bad as one might have predicted, given the extraordinarily dry and hot growing conditions this past summer," the CMBTC added.

"This suggests that a combination of newer varieties, with apparent improved capacity to adapt and tolerate drought conditions, and modern production practices, appear to have mitigated at least some of the impact of the drought, which may have been much worse 20 years ago."

Rainfall in late August, just as barley crops were being harvested or were nearing harvest, also impacted the quality of this year's crop.

This further reduced the potential supply of top-quality malting barley in Western Canada.

Some barley that was in the swath or even standing in the field, started to germinate resulting in significant pre-harvest sprout damage, CMBTC said.

When malting barley sprouts, it triggers an increase in alpha-amylase, an enzyme that breaks down starch in the barley kernel.

Malting barley can still be used when there is a small amount of post harvest sprout damage, but if too much sprouting occurs, the barley cannot be used by maltsters.

"In other years, when quality challenges arise, the malting industry would typically be able to rely in part on the carry-in stocks from the previous growing season to blend and mitigate the worst impacts for at least the first portion of the marketing season," the CMBTC said in its November 2021 blog.

"However, with record low carry-out stocks ... coming into 2021 after the largest export program over 25 years, there (was) very little 2020 crop left to blend...."

"The end result is that there simply isn't enough quality malting barley to supply Canada's malting industry in the 2021-22 marketing year."

CMBTC said the domestic malting industry will select barley that normally wouldn't be considered for processing.

Maltsters might also be forced to employ extraordinarily sophisticated and precise approaches to evaluate and process barley, and to look at innovative techniques in manufacturing and blending to achieve the best possible malt products under the circumstances, the Centre said.

Ultimately, malt processors may have to reduce their production and sales programs. In some cases, Canadian maltsters might resort to using imported malting barley.

Quality characteristics of the 2021 malting barley crop will make for an extremely challenging year for maltsters and brewers, CMBTC said.

"All told, (2021) will be one of the most difficult years Canada's barley value chain has ever seen."

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]

VARIETIES RECOMMENDED

VARIETY	TYPE	MARKET COMMENTS	SEED DISTRIBUTOR
CDC Copeland	2 Row	Established Demand	SeCan
AAC Synergy	2 Row	Established Demand	Syngenta/FP Genetics
AC Metcalfe	2 Row	Declining Demand	SeCan
AAC Connect	2 Row	Established Demand	CANTERRA SEEDS
CDC Fraser	2 Row	Growing Demand	SeCan
CDC Bow	2 Row	Growing Demand	SeCan

In addition to the varieties listed, there are also contracting opportunities for the following:

- **Bentley**, **Celebration, CDC PlatinumStar, CDC GoldStar** (CANTERRA SEEDS)
- **Legacy**, **Newdale** (FP Genetics)
- **Cerveza** (Mastin Seeds)

Varieties on the recommended list are ordered to reflect estimated quantities selected in the previous year.

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	TYPE	SEED DISTRIBUTOR
CDC Churchill	2 Row	SeCan
CDC Copper	2 Row	FP Genetics
AB BrewNet	2 Row	SeedNet

THE CMBTC AND ITS MEMBERS RECOMMEND

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

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

Explore opportunities to contract production of malting barley varieties in your area.

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

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

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Canada

CSGA 2.0: PLANNING FOR THE FUTURE

SPECIAL TO SASKSEED

THERE'S A VERY GOOD CHANCE that 2020-21 will stand out as the year of greatest change in the Canadian Seed Growers' Association's long and storied history.

From the membership's decision not to amalgamate as Seeds Canada in August 2020 to the development and presentation of the CSGA 2.0 Business Plan, CSGA is pushing forward with new energy and focus, and is poised to strengthen its position as a global leader in the seed sector.

Through much hard work and dedication of many stakeholders, CSGA has developed a clear, comprehensive and inclusive business plan in response to the pressures for change in Canada's seed system.

The entire business plan can be downloaded at seedgrowers.ca.

With seven priority areas, it is important to understand how each priority was identified, and how these priorities are critical to the association's continued success.

To develop the CSGA 2.0 Business Plan, the association's board of directors created six subcommittees. Each subcommittee centered on a specific theme.

The themes included Seed Policy and Seed Regulatory Modernization (Theme 1), CSGA 2.0 Modernization (Theme 2), Government and Public Relations (Theme 3), Target Operating Model (Theme 4), Organizational Planning, Priorities, and Budget (Theme 5), and National-Branch Agreements (Theme 6).

The subcommittees included growers from eastern and western Canada, seed company representatives, plant breeders, provincial advisors and CSGA staff.

Each group was tasked with taking a deep dive into specific topics, and identifying ways to further improve the association.

Jonathan Nyborg, CSGA past president, chaired the Target Operating Model subcommittee and the CSGA 2.0 Steering Committee, which gathered the input from all the subcommittees to develop the final plan.

The input gathered confirmed that CSGA was on the right track in its role within the seed certification system and that growers and stakeholders want CSGA to maintain that role.

The findings also indicated that the association would need to continue the modernization of processes, systems and regulations to empower itself to better serve the Canadian seed certification system in the future.

The following is a summary of what the subcommittee chairs had to say about the development of the plan.

Priority 1: Seed policy & seed regulatory modernization

With the Canadian Food Inspection Agency's (CFIA) Seed Regulatory Modernization review already underway, the Canadian Seed Growers' Association envisions a modern and agile seed certification system.

The seed certification system is a critical part of the agricultural value chain, delivering high-quality, trustworthy seed that underpins Canadian agriculture. The CSGA 2.0 Business Plan offers 14 recommendations for the future of that system as the CFIA works toward the modernization of the Seeds Regulations.

In many ways, the seed policy priority area is the most critical, since effective and meaningful seed policy is at the core of CSGA's mission to deliver a flexible, responsible seed certification system.

"One thing we all recognized is just how complex the system is," said Scott Horner, CSGA board member and chair of the Seed Policy and Seed Regulatory Modernization Subcommittee.

"With the volume of topics to review, analyze and come to a consensus on, it was interesting to see how we all had some assumptions about how the system works, then found those assumptions weren't always entirely accurate."

Horner said it was challenging work to review seed policy with an eye to updating it. With so much history and so many layers, changing one small item could unintentionally affect many other related aspects of that policy.

In-depth discussions with seed growers, plant breeders, provincial advisors and company representatives on regulatory modernization resulted in the set of CSGA Seed Regulatory Modernization (SRM) recommendations, which can be accessed at seedgrowers.ca/seed-regulatory-modernization.

Some recommendations pertain to industry leadership and developing a renewed partnership with government.

GETTY ILLUSTRATION

> *With the volume of topics to review, analyze and come to a consensus on, it was interesting to see how we all had some assumptions about how the system works, then found those assumptions weren't always entirely accurate.*
>
> **SCOTT HORNER** | CSGA BOARD MEMBER

For example, it is recommended that the CFIA should continue to be ultimately responsible for the seed certification program and that the CSGA's delegated authority should be expanded to include certification of Foundation, Registered and Certified seed.

The Seeds Regulations should also recognize CSGA to establish technical requirements for seed certification in Canada.

Pertaining to digitalized services, it is recommended that the seed certification system should be digital end-to-end, to facilitate single-window access to seed regulatory services.

With regard to seed varieties, it is recommended that variety registration should be maintained and that the CFIA should continue to be responsible for variety registration in Canada.

It is also recommended that Schedule III to the Seeds Regulations should be incorporated by reference and updated, with the CFIA as the responsible authority, and that the current requirements concerning the use of variety names should continue.

The CSGA should administer the Variety Profile Platform in support of enhanced transparency for the agri-food system.

And, regarding Seed Quality Assurance, it is recommended that Part IV of the Seeds Regulations should be incorporated by reference, that common seed of cereals, pulses, and oilseeds should be subject to strengthened regulation and meet minimum standards for purity and germination, and that common seed of small seeded agricultural crop kinds should be sampled, tested, and graded by people authorized to do so, as is currently done for pedigreed seed.

And finally, regarding CFIA commitments, it is recommended that the CFIA should increase its investment in science support for the Seed Program, commit to continued engagement in international standards development organizations, and commit to succession planning to ensure that appropriate and adequate human resources are available.

Priority 2: Digital business model

Priority 2 is the delivery of a digital end-to-end certification system and the creation of value-producing opportunities with digital technologies.

Chairing the CSGA 2.0 Modernization Subcommittee, board member Glenn Logan was excited about what was possible for CSGA.

"I've always had an interest in change and better ways of doing things," he said.

With so much business done online today, the digitization of CSGA makes sense.

The association is well on its way to achieving a digital end-to-end certification system as the last of its paper forms (crop certificates) has now moved to digital.

From enhanced traceability to electronic seed marketing platforms, CSGA continues to develop the digital business model value proposition for stakeholders in the seed certification system.

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"What can we do better or differently than we've done before?" asked Logan.

Discussion groups within the subcommittee were established by purposefully choosing people with varied points of view. This provided a constructive look at the seed sector and direction on how to move forward.

According to Logan, consulting with growers was the key to developing the plan.

"I would like CSGA members to know that we're still listening to them," Logan said. "We want to do what's in their best interests and make their lives better. I'm excited about our future."

Priority 3: Professional development

CSGA is committed to supporting the training, learning and professional development of seed growers and sector stakeholders through a voluntary eLearning Professional Development Program.

Professional development has been a priority for CSGA since 2017, and much work has gone into improving educational opportunities for members and stakeholders.

This commitment is formalized in CSGA 2.0, and the eLearning program is scheduled to launch this year.

One of the key messages heard repeatedly through the CSGA 2.0 subcommittees is that there is a continued need for specialized seed knowledge, professionalism and expertise to succeed in Canada's seed sector.

CSGA's creation and provision of quality eLearning seed courses supports the professional development of seed growers and sector stakeholders through consistent content, up-to-date seed production information and best management practices.

This professional development platform will further users' knowledge of certified seed crop production and the Canadian seed sector.

Priority 4: Governance

Bringing more voices to the table and enabling more grassroots participation are key priorities for the CSGA as it sharpens its focus and on good governance practices that are aligned with business needs.

CSGA examined its existing governance structures, its committee frameworks and its capacity to determine if these structures were fit for purpose.

In this area, seven recommendations were developed to ensure that CSGA improves communication and inclusivity, to ensure all seed stakeholders are engaged in the next generation seed certification system.

The recommendations, listed on Page 9 of the CSGA 2.0 Business Plan, include a greater voice for regional branches, the inclusion of branch-nominated seed growers as committee members, the development of a multi-stakeholder advisory committee, and various other strategies to ensure CSGA's governance runs efficiently.

> *We spoke with some adamant 'No to Amalgamation' voters, hard 'Yes' voters, and everyone in between. We kept hearing: 'We don't want to lose our voice.' So, we had to determine: What is that voice?*
>
> **ANDRÉ LUSSIER** | CSGA BOARD MEMBER

Priority 5: Government and stakeholder relations

The CSGA is looking for ways to work even closer with a wider range of government and value chain partners.

Board member and chair of the Government and Public Relations Subcommittee, André Lussier, was responsible for leading the group to identify CSGA's voice, where it comes from, and what it should advocate for.

Lussier, like all the other subcommittee chairs, sought a broad spectrum of opinions. "We had to make sure we had all voices there," he said.

"We spoke with some adamant 'No to Amalgamation' voters, hard 'Yes' voters, and everyone in between. We kept hearing: 'We don't want to lose our voice.' So, we had to determine: What is that voice?"

CSGA's primary mandate is regulatory, not political. While seed growers don't want to lose their voice, the subcommittee confirmed through consultations that CSGA is first and foremost a steward of the seed certification system. The association works with sector partners to represent grower interests and to advocate on issues.

Lussier said the four resolutions for this priority area (See Page 10 of the CSGA 2.0 Business Plan) reflect the balance between the association's neutrality, as mandated by its regulatory duties, and its advocacy functions through agriculture partners and CSGA branches.

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The committee agreed on all the points throughout the discussion process.

"We had consensus from the beginning," Lussier said.

"I was surprised that everyone agreed on the path forward. It's great to know we've laid out the right plan for CSGA."

Priority 6: National-Branch coordination

Priority 6 deals with communication, joint work planning and finding ways to share resources and do things more efficiently.

Heading up the Inter-Branch Coordination Subcommittee was Saskatchewan board member Roy Klym.

"Originally, this committee was formed to help coordinate Seed Synergy efforts," Klym said. "But once it was formed, it was very effective at bringing together the national organization with the provincial branches."

Perhaps the most seminal relationship for CSGA is the one between the national body and regional branches.

It hasn't always been a smooth relationship, so in recognizing the value of more formalized and structured avenues for communication, the Inter-Branch Coordinating Committee has proven its worth.

"The committee is now a standing committee, part of the policy and planning area," said Klym. "Regional associations will help plan the direction of the national organization."

Klym said the subcommittee had some very frank and open discussions about the national-branch relationship — how it could be improved and how it could be more efficient.

This preceded the development of a framework for cooperation, harmonization and resource sharing.

With CSGA senior staff assisting, committee members including branch executive directors and branch presidents, have come together for one common good — the betterment of CSGA, its branches and the Canadian seed sector as a whole.

Priority 7: Promoting the value of certified seed

It's important to tell the Canadian agriculture industry about the value that Certified seed and the pedigreed seed system bring to Canada. And, it's important to drive interest in Certified seed.

This priority area was developed with input from all subcommittees and with the recognition that Certified seed provides a net benefit to Canadian farmers, Canadian agriculture and the Canadian agri-food system.

Make your voice heard – get involved

The Canadian Seed Growers Association reminds its members that CSGA 2.0 is a living document that is meant to flex and evolve. People need to get involved and be part of that evolution.

"The value and importance of engagement can't be understated," said Horner.

"CSGA leadership is genuine about wanting input. Growers have so much valuable experience. Share it."

A vital element of the CSGA 2.0 Business Plan is transparency.

"We're trying to make this organization better, not just for board members or branch boards, but for the entire membership, every stakeholder and Canadian agriculture at large," added Nyborg.

"Express your opinions. Be part of it."

The CSGA 2.0 vision includes a greater leadership role for the association within the Canadian seed system.

This involves working even harder to ensure a deep understanding of all seed stakeholders' views, which will lead to solid decisions that benefit Canadians.

CSGA is ready to lead and steward an even more robust world-class seed system.

EDITOR'S NOTE: This article was reprinted with permission from the Canadian Seed Growers' Association (CSGA). The article originally appeared in the Spring / Summer 2021 edition of Seed to Succeed, the official publication of the CSGA.

> *We're trying to make this organization better, not just for board members or branch boards, but for the entire membership, every stakeholder and Canadian agriculture at large. Express your opinions. Be part of it.*
>
> **JONATHAN NYBORG** | CSGA PAST PRESIDENT

DIGITAL CROP CERTIFICATES MARK NEW ERA OF SEED CERTIFICATION

SPECIAL TO SASKSEED


GETTY ILLUSTRATION

CSGA's new digital seed certificates were introduced last year. Growers who need help transitioning to the new digital certificates are encouraged to contact the association. | CSGA IMAGE

GET READY to go digital.

Canadian seed growers are taking another huge step forward in efforts to move from a system of paper-based documentation into the world of digital information.

Last year, the Canadian Seed Growers' Association (CSGA) rolled out its new digital crop certificates.

With a modern, streamlined look, the new digital certificates are available in SeedCert, CSGA's end-to-end digital platform designed for those who work in the seed certification system.

A replacement for the hardcopy certificates that pedigreed seed growers have been using for decades, the new digital certificates allow users to manage their certificates directly within the SeedCert platform.

According to the CSGA, the digital certificates offer much more than the paper version ever could.

In addition to reducing the administrative burden of the old paper system, the digital certificates also allow better access to the certification process, which leads to greater clarity, accountability and confidence in Canada's seed certification system.

And for those who value tradition, the new digital certificates can still be printed on salmon-coloured paper.

"Digital certificates will help increase the integrity of our system and provide a foundational piece for future growth," said CSGA executive director Doug Miller.

"The future is digital, and this tool will help unlock new value opportunities for growers, stakeholders and the value chain."

The introduction of digital crop certificates is more than just a step forward in CSGA's plan for modernization. It also marks the beginning of the transition toward a single-window seed certification system, one that reduces inefficiencies and increases seed system effectiveness.

The new digital crop certificates create a centralized repository where related documentation and new digital tools can be found.

"As we look toward future improvements, we are aiming to provide a voluntary seed grading report and pedigreed seed declaration that is integrated with the digital certificate," said Miller.

This allows for information to be added just once and be accessible."

Information is linked through a unique, secure QR code on each crop certificate, centralizing all information related to the crop in question. Updates to the certificate can be added automatically.

From seed growers to registered seed establishments (RSEs) to seed companies and retailers, everyone within the seed value chain can see and exchange information regarding that crop, easily and quickly.

The digital certificates will provide the checks and balances that a modern traceability system needs to ensure transparency and accountability and increased system integrity.

"CSGA doesn't operate in a silo," said Miller.

"We understand that our members work with other information systems, so we have built digital certificates to integrate them into their systems easily."

For instance, a grower or seed retailer can extract a data file from the digital certificate that can be easily downloaded into their database.

CSGA is also ready to help anyone who wants to know more about digital crop certificates, how they work and how to make the most out of the information they contain.

CSGA staff will support seed growers and clients in the transition to digital certificates.

Support will also be offered through "how-to" videos, like the one available at bit.ly/3Dnol9u.

More resources will also be made available in the future.

While Miller has led CSGA's digital change initiatives in the past, the work is now being done by next generation of CSGA leaders.

"As I transition to the executive director's role, I am confident in the next generation of leadership at CSGA," he said.

"Our team has a strong understanding of the Canadian seed certification system, and the digital mindset and skills to make it happen."

Miller said CSGA continues to be an early adopter of new technology — specifically as it relates to the association's vision for an end-to-end digital platform for the seed sector.

CSGA's "digital-first" mindset positions the association as a global leader by incorporating new technology into its systems.

"Other countries are starting to explore these technologies, and Canada will be a good example of how these tools can come together to create a more resilient and agile seed system," Miller said.

The new digital certificate will improve processes for members and assignees in several ways, including:

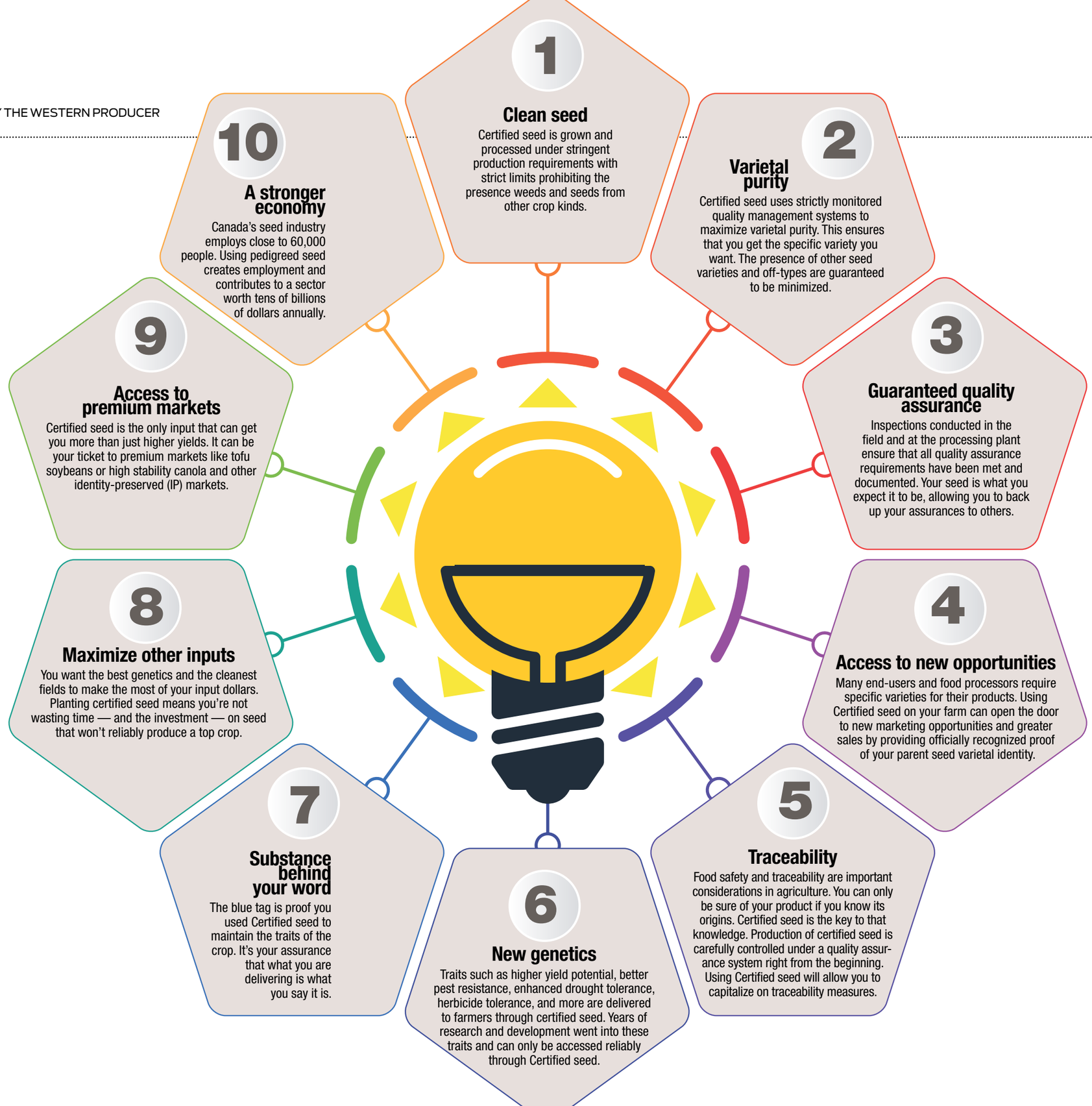
- Streamlining a laborious paper process, resulting in less administrative burden;
- Reducing the risk of transcription errors;
- Providing easy electronic shareability;
- Enhancing traceability and verification via scanning a QR code that automatically displays all certificate updates;
- Providing clarity to the certification process, and;
- Increasing overall integrity of the seed system with more accurate data.

CSGA members who have any questions about using digital crop certificates, are encouraged to contact CSGA via email at support@seedgrowers.ca or by phone at 613-236-0497, ext. 8804.

EDITOR'S NOTE: This article was reprinted with permission from the Canadian Seed Growers' Association (CSGA).

TOP 10 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



CERTIFIED SEED: IT'S ALL ABOUT QUALITY ASSURANCE

SPECIAL TO SASKSEED

WHAT IS THE Canadian Seed Growers' Association 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 become 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 Food Inspection Agency and other groups.

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 means.

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 CSGA.

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 quality 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 seed-borne 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.

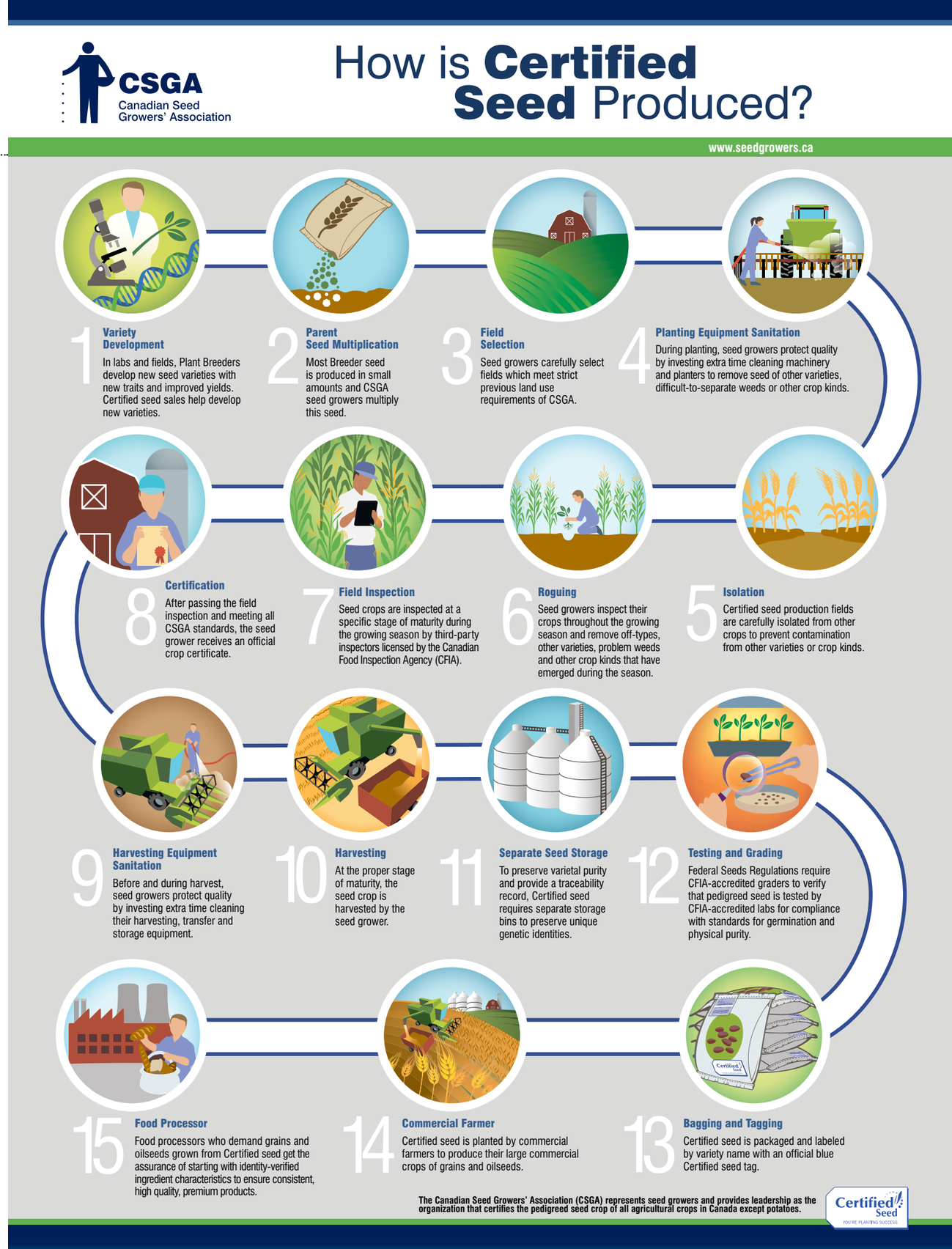
Farmers who buy certified seed are therefore encouraged to ask the seed grower whether a seed disease analysis was conducted by a commercial seed testing laboratory.

If a seed disease analysis was conducted, 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.

continued on page 68 »



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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 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 export markets 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.

How is **Certified Seed** Produced?

1 Variety Development

In laboratories and fields, Plant Breeders work diligently for many years to develop new seed varieties with improved genetics. For farmers, this means improved yields due to better lodging resistance, drought tolerance or insect and disease resistance. For food processors, this relates to innovative characteristics. A portion of the Certified seed sales is reinvested in research to develop new and innovative seed varieties.

2 Parent Seed Multiplication

Breeder seed is usually produced in small amounts, so CSGA seed growers multiply the seed. Accredited CSGA plot growers choose a seed variety to produce in their elite parent seed plots. They reproduce this small amount of seed in accordance with rigorous production certification standards that ensure varietal purity and freedom from impurities. Their Select or Foundation class seed provides the parent seed for other seed growers to produce Registered and Certified class seed crops.

Breeder & Select Plots > Foundation & Registered Seed > Certified Seed > Commercial Grains & Oilseeds

The investment in additional production time means Certified seed growers are committed to producing a proven, quality product.

3 Field Selection

Seed growers carefully select the field in which to produce their crop. Seed growers are required to follow stringent CSGA regulations for previous land use to prevent contamination from other varieties and difficult-to-separate weeds or other crop kinds in their Certified seed crops.

4 Planting Equipment Sanitation

During planting, seed growers protect quality by investing extra time cleaning machinery to ensure no seed of other varieties, difficult-to-separate weeds or other crop kinds are mixed with the seed. When growers change varieties, the entire planter is cleaned to remove all seed of the previous variety.

5 Isolation

Certified seed production fields are carefully isolated from other crops to prevent contamination from other varieties or difficult-to-separate other crop kinds. Seed crop kinds with different types of pollination risks have different isolation requirements. The isolation distance required by CSGA also varies depending on the crop kind in the neighboring field.

6 Roguing

To preserve the purity of Certified seed crops, seed growers inspect their crops throughout the growing season and remove other varieties, off-types, weeds and other crop kinds that have emerged during the season.

7 Field Inspection

Seed crops are inspected at a specific stage of maturity during the growing season by third-party inspectors licensed by the Canadian Food Inspection Agency (CFIA). Inspectors verify isolation distances, previous land use history and parent seed identity. They also complete representative counts throughout the seed field to report impurities such as off-types and other varieties and difficult-to-separate weeds and other crop kinds.

8 Certification

After crop inspection, the inspection report is appraised by the Canadian Seed Growers' Association (CSGA). The CSGA assures the crop has been produced in compliance with its standards. After passing field inspection and meeting CSGA standards, the seed grower receives the official crop certificate that is required for CFIA-Registered Seed Establishments to label seed with official blue Certified tags.

9 Harvesting Equipment Sanitation

Before and during harvest, seed growers protect quality by investing extra time cleaning their harvesting equipment. This prevents common seed, weed or other crop seeds getting mixed with the Certified seed at harvest. When seed growers change fields to harvest a different variety, the entire combine is cleaned to remove all seed of the previous variety harvested.

10 Harvesting

At the proper stage of maturity, the Certified seed crop is harvested by the seed grower.

11 Separate Seed Storage

To preserve varietal purity and provide a traceability record from where the seed was grown all the way to the consumer's table, Certified seed is the first link of an identity preserved (IP) system chain which requires a separate storage bin and records for each variety to preserve its unique genetic identity.

12 Testing and Grading

Federal Seeds Regulations require pedigreed seed sold in Canada to be tested for compliance with official grade standards for germination and physical purity by CFIA-accredited labs and graders and labeled by CFIA-registered seed establishments. The federal standards for germination and physical purity of Certified seed are much higher than common grade seed, which assures a higher quality product. Federal Seeds Regulations prohibit common grade seed from being sold by variety name. Common grade seed is from a crop which has not been certified by the CSGA.

13 Bagging and Tagging

After receiving the official CSGA crop certificate and a certificate of analysis from a CFIA-accredited lab, which verifies compliance with seed germination and physical purity standards in federal Seeds Regulations, Certified seed is packaged and labeled by variety name with an official blue Certified seed tag by a CFIA-registered seed establishment. Only then is the seed designated as Certified seed; only then can agricultural field crop seed be sold by variety name.

14 Commercial Farmer

Certified seed is sold to commercial farmers to plant their large commercial crops of grain and oilseeds. Commercial farmers are choosing Certified seed of a specific variety to get the latest innovation, increased yields, improved disease and lodging resistance. Many commercial farmers work closely with food processors to deliver specific varieties of grains and oilseeds under an identity preservation programs.

15 Food Processor

Food processors who demand grains and oilseeds grown from Certified seed get the assurance of starting with identity-verified ingredient characteristics to ensure consistent, high quality, premium products. They also get documented traceability of their food products right back to the field where the Certified seed was produced. Certified seed is the foundation of quality foods and a promise they can market specific varietal characteristics to today's health conscious and food savvy consumers. Ask for grains and oilseeds grown from Certified seed from your grain handler, miller, crusher, ingredient supplier or food manufacturer.

Plant Breeders' Rights
Fast Facts

Understanding the changes **and 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	PBR – Progress through Research
Are all varieties protected under the same *Plant Breeders' Rights (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 *Act*. These varieties carry the original PBR symbol.
Breeders' rights		
What are **breeders'** rights?	Breeders' rights are now expanded under the new PBR *Act*. 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, including for lost royalty revenue; lost markets; and for court costs; on delivered grain produced from that seed.	No

Plant Breeders' Rights
Fast Facts

	91	PBR – Progress through Research
Farmers' privilege		
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
Do **seed conditioners** have certain responsibilities when cleaning farm-saved seed of a PBR-protected variety?	Yes, expanded breeders' rights mean that cleaners may be liable for breaches of the breeder's right. They should take precautions to ensure the seed they are cleaning was obtained legally, and that farm-saved seed that they clean will only be used on the farm of the farmer who has brought it in for cleaning.	No
Do **grain buyers** have certain responsibilities when handling PBR-protected varieties?	Yes, the harvested material provisions mean that grain buyers may be liable for breaches of the breeder's right. They should be aware of the varieties that are protected under the new legislation and be satisfied that the seed used to produce that grain was legally obtained.	No

Want to learn more about Plant Breeders' Rights?
Visit **pbrfacts.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 2021, the committee recommended the following lines for registration:

BARLEY

FB485 — This two-row, hulled forage barley line was developed by P.E. Juskiw and F. Capettini at the Field Crop Development Centre, Olds College, Olds, Alta. It was supported for registration by the Prairie Recommending Committee for Oats and Barley (PRCOB) and recommended by the Prairie Grain Development Committee (PGDC) in February 2021.

FB487 — This two-row, hulless forage barley line was developed by J.M. Nyachiro at the Field Crop Development Centre. It was supported for registration by the Prairie Recommending Committee for Oats and Barley (PRCOB) and recommended by the PGDC in February 2021.

TR13235 — This two-row, hulled malting barley line is described by its developer as a non-glycosidic nitrile (non-GN) line. It was developed by A. Badea at Agriculture and Agri-Food Canada's Brandon Research and Development Centre at Brandon, Manitoba. It was supported for registration by the PRCOB and recommended by the PGDC in February 2021.

TR18257 — This two-row, hulled malting barley line was developed by A. Badea at Agriculture and Agri-Food Canada's Brandon Research and Development Centre. It was supported for registration by the PRCOB and recommended by the PGDC in February 2021.

TR18258 — This two-row, hulled malting barley line was developed by A. Badea at Agriculture and Agri-Food Canada's Brandon Research and Development Centre. It was supported for registration by the PRCOB and recommended by the PGDC in February 2021.

TR19175 — This two-row, hulled general purpose barley line was developed by breeder A.D. Beattie at the Crop Development Centre, University of Saskatchewan. It was supported for registration by the PRCOB and recommended by the PGDC in Februrary 2021.

TR19268– This two-row, hulled general purpose barley line was developed by A. Badea at Agriculture and Agri-Food Canada's Brandon Research and Development Centre. It was supported for registration by the PRCOB and recommended by the PGDC in February 2021.

TR19758 — This two-row, hulled general purpose barley line was developed by J. Anderson and M. McKay at Nutrien Ag Solutions / Highland Specialty Grains. It was supported for registration by the PRCOB and recommended by the PGDC in February 2021.

BEANS

ANDROMEDA (13151) — This great northern bean was developed through ProVita, Inc.'s great northern breeding program under a contract with Kelley Bean Company and ADM - Edible Bean Specialties Inc. It was supported for Canadian registration by the Prairie Recommending Committee for Pulses and Special Crops (PRCPSC) and recommended by the PGDC in February 2021.

EPIC (09430) — This dark red kidney bean was developed for Trinity Genetics, LLC through ProVita, Inc.'s dark red kidney breeding program. It was supported for Canadian registration by the PRCPSC and recommended by the PGDC in February 2021.

GLEAM (14455) — This pinto bean was developed in the United States through ProVita, Inc.'s pinto breeding program under a contract with AmeriSeed LLC. It was supported for Canadian registration by the PRCPSC and recommended by the PGDC in February 2021.

ND PALAMINO — This slow darkening pinto bean was jointly released in the United States in 2016 by the North Dakota Agricultural Experiment Station and the USDA-ARS. It was supported for Canadian registration by the PRCPSC and recommended by the PGDC in February 2021.

RAMPART (09434) — This red kidney bean was supported for Canadian registration by the PRCPSC and recommended by the PGDC in February 2021.

VALIANT (08077) — This navy bean was developed through ProVita, Inc.'s navy breeding program. It was supported for Canadian registration by the PRCPSC and recommended by the PGDC in February 2021.

VIRGO (13172) — This great northern bean was developed through ProVita, Inc.'s great northern breeding program under a contract with Kelley Bean Company and ADM - Edible Bean Specialties, Inc. It was supported for Canadian registration by the PRCPSC and recommended by the PGDC in February 2021.

FABABEANS

DL18.7602 — This is a low tannin, low vicine / convicine fababean line. It was supported by the PRCPSC and recommended by the PGDC in February 2021.

1020-1-18 — This is a tannin fababean line with low vicine/convicine. It was supported by the PRCPSC and recommended by the PGDC in February 2021.

1089-1-2 — This is a low tannin, low vicine/convicine fababean line. It was supported by the PRCPSC and recommended by the PGDC in February 2021.

LG CARTOUCHE — This is a tannin fababean line with low vicine/convicine. It was supported by the PRCPSC and recommended by the PGDC in February 2021.

LENTILS

5912-13FG — This is a French green lentil line. It was supported by the PRCPSC and recommended by the PGDC in February 2021.

6795-12 — This is a small green lentil line. It was supported by the PRCPSC and recommended by the PGDC in February 2021.

6802-14 — This is a small red lentil line. It was supported by the PRCPSC and recommended by the PGDC in February 2021.

OATS

OT2129 — This milling oat line was developed by Kirby Nilsen and J. Mitchell Fetch at Agriculture and Agri-Food Canada's Brandon Research and Development Centre at Brandon, Manitoba. It was supported for registration by the Prairie Recommending Committee for Oats and Barley (PRCOB) and recommended by the PGDC in February 2021.

OT3112 — This milling oat line was developed by A.D. Beattie at the Crop Development Centre, University of Saskatchewan. It was supported for registration by the PRCOB and recommended by the PGDC in February 2021.

PEAS

CDC 5517-7 — This yellow field pea line was developed by breeder Tom Warkentin at the Crop Development Centre (CDC), based at the University of Saskatchewan. It was supported for registration by the Prairie Recommending Committee for Pulses & Special Crops (PRCPSC) and recommended by the PGDC in February 2021.

CDC 5523-7 — This green field pea line was developed by breeder Tom Warkentin at the Crop Development Centre (CDC), based at the University of Saskatchewan. It was supported for registration by the PRCPSC and recommended by the PGDC in February 2021.

CDC 5633-2 — This yellow field pea line was developed by breeder Tom Warkentin at the Crop Development Centre (CDC), based at the University of Saskatchewan. It was supported for registration by the PRCPSC and recommended by the PGDC in February 2021.

P0936-3913 — This semi-leafless, powdery mildew resistant yellow pea line was developed at the Lacombe Research and Development Centre, Lacombe, Alta. It was supported for registration by the PRCPSC and recommended by the PGDC in February 2021.

TRITICALE

WT0023 — This winter triticale line was developed at the Field Crop Development Centre. It was supported for registration by the Prairie Recommending Committee for Wheat, Rye and Triticale (PRCWRT) and recommended by the PGDC in February 2021.

WT0027 — This winter triticale line was developed / sponsored by at Seed-Link Inc. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

WHEAT

BW1085 — This Canada Western Red Spring (CWRS) wheat line was developed at the Crop Development Centre (CDC) at the University of Saskatchewan. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

BW5062 — This CWRS wheat line was developed at the CDC at the University of Saskatchewan. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

BW5065 — This CWRS wheat line was developed at the University of Alberta in Edmonton, Alta. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

PT495 — This CWRS wheat line was developed by Agriculture and Agri-Food Canada in Brandon, Man. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

PT789 — This CWRS wheat line was developed at the University of Alberta in Edmonton, Alta. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

PT793 — This CWRS wheat line was developed at the University of Alberta in Edmonton, Alta. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

PT5003 — This CWRS wheat line was developed by the CDC at the University of Saskatchewan. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

HY2090 — This Canada Prairie Spring Red (CPSR) wheat line was developed by Agriculture and Agri-Food Canada at Lethbridge, Alta. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

HY2095 — This Canada Prairie Spring Red (CPSR) wheat line was developed by Agriculture and Agri-Food Canada at Swift Current, Sask. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

HY2096 — This Canada Prairie Spring Red (CPSR) wheat line was developed by Agriculture and Agri-Food Canada at Swift Current, Sask. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

GP233 — This Canada Western Special Purpose (CWSP) wheat line was developed by the CDC at the University of Saskatchewan. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021. Varieties registered as Canada Western Special Purpose are not required to meet the strict quality requirements of milling classes. Generally, varieties in this class are not appropriate for milling because of their high starch and low protein content, which affects end-use characteristics of the grain. Varieties in the CWSP wheat class are typically high-yielding. Due to the combination of high starch and low protein, they are most suitable for uses such as ethanol production or animal feed.

continued on next page »

PGDC VARIETY REGISTRATION RECOMMENDATIONS (CON'T)

Varieties within this class may look similar to varieties within other classes of wheat.

DT1012 — This Canada Western Amber Durum (CWAD) wheat line was developed by the CDC at the University of Saskatchewan. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

DT1014 — This CWAD wheat line was developed by the CDC at the University of Saskatchewan. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

DT2005 — This CWAD wheat line was developed by Agriculture and Agri-Food Canada at Swift Current, Sask. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

DT2009 — This CWAD wheat line was developed by Agriculture and Agri-Food Canada at Swift Current, Sask. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

W601 — This Canada Western Red Winter (CWRW) wheat line was developed by Agriculture and Agri-Food Canada at Lethbridge, Alta. It was supported for registration by the PRCWRT and recommended by the PGDC in February 2021.

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. 1, 2020 and Nov. 15, 2021.

CROP	VARIETY	CANADIAN REPRESENTATIVE	TYPE OF REGISTRATION	REGIONS	EXPERIMENTAL NAME	TRANS-GENE	EXPIRY DATE
Alfalfa	450HVX.RR	Gold Medal Seeds Ltd. (Forage Genetics International)	National		FG H0415C4115	2020-11-27	
Alfalfa	B40S1	Corteva Agriscience, DowDuPont (Ex Dow Agrosciences)	National		AFXH143147	2021-04-30	
Alfalfa	HVX MegaTron	Gold Medal Seeds Ltd. (Forage Genetics International)	National		FG H0415A3144	2020-11-27	
Alfalfa	Rustung	Gold Medal Seeds Ltd. (Forage Genetics International)	National		FG C0415C3364	2021-02-12	
Alfalfa	SW4618S	Union Forage	National		(none)	2021-04-01	
Barley, two-row, spring	AB Hague	Field Crop Development Centre, Alberta Agriculture & Forestry	National		TR18647, FB 494, T07041002003	2021-01-15	
Barley, two-row, spring	AB Prime	Field Crop Development Centre, Alberta Agriculture & Forestry	National		TR18645, J08046022	2021-01-29	
Barley, six-row, spring	Ariber	Cerela Inc.	National		OS14-10, 29	2021-01-29	
Barley, two-row, spring	Bill Coors 100	Molsoncoors	National		PoP08-150-031, Moravian 150	2020-11-06	
Barley, two-row, spring	CDC Renegade	Crop Development Centre, University Of Saskatchewan	National		FB209, SB140071	2021-03-19	
Barley, two-row, spring	KWS Coralie	SeCan Association	National		SC18-022RB	2021-04-09	
Barley, two-row, spring	LCS Calypso	SeCan Association	Interim		LN10246/SC18-012WB	2021-04-30	2024-04-30
Barley, six-row, spring	Massy	Cerela Inc.	National		OS15-908	2021-01-29	
Barley, two-row, spring	SU Ruzena	SeCan Association	Interim		AC 09/274/10, SC18-002WB	2021-03-19	2024-03-19
Barley, two-row, spring	Torbellino	Syngenta Canada Inc.	National		SY 412-329, TR16929	2020-11-20	
Barley, two-row, spring	TR14617	Field Crop Development Centre, Alberta Agriculture & Forestry	National		TR14617, J03028003	2021-03-26	
Bean, black	BlackBeard	Western Harvest Bean	National		14506	2021-02-26	
Bean, red kidney	Epic	ADM-Seedwest (Paul Paget)	National		9430	2021-05-28	
Bean, pinto	Gleam	ADM-Seedwest (Paul Paget)	National		14455	2021-05-28	
Bean, cranberry	Meccearly	Hensall District Co-Op, Inc.	National		OL 415, McEarly	2020-12-22	
Bean, navy	OAC Award	University Of Guelph	National		ACUG 18-5	2021-04-30	
Bean, navy	OAC Charm	University Of Guelph	National		ACUG 18-3	2021-04-23	
Bean, navy	OAC Equinox	University Of Guelph	National		ACUG 18-4	2021-04-30	
Bean, navy	OAC Firebrand	University Of Guelph	National		ACUG 18-L1	2021-04-23	
Bean, navy	OAC Fusion	University Of Guelph	National		ACUG 16-3	2021-02-05	
Bean, navy	OAC Iceberg	University Of Guelph	National		ACUG 18-W1	2021-04-23	
Bean, navy	OAC Marker	University Of Guelph	National		ACUG 18-1	2021-04-23	
Bean, red kidney	Rampart	ADM-Seedwest (Paul Paget)	National		9434	2021-05-28	
Bean, red kidney	Red Dawn	Western Harvest Bean	National		9363	2021-05-28	
Bean, black	Spectre	Western Harvest Bean	National		14497	2021-02-19	
Bean, navy	Valiant	ADM-Seedwest (Paul Paget)	National		8077	2021-04-09	
Bean, great northern	Virgo	ADM-Seedwest (Paul Paget)	National		13172	2021-05-28	
Bromegrass, meadow	MacBeth	Quality Seeds Ltd.	National		MT95Mb-1	2021-03-26	
Canola, spring, brassica napus, hybrid	18GG0453L	Corteva Agriscience, DowDuPont (Ex Dow Agrosciences)	National		18GG4053L	2021-04-23	
Canola, spring, brassica napus, hybrid	18GG0488L	Corteva Agriscience, DowDuPont (Ex Dow Agrosciences)	National		18GG0488L	2021-04-23	
Canola, spring, brassica napus, hybrid	18GG0955R	Corteva Agriscience, DowDuPont (Ex Dow Agrosciences)	National		18GG0955R	2021-04-23	
Canola, spring, brassica napus, hybrid	18GN0694L	Corteva Agriscience, DowDuPont (Ex Dow Agrosciences)	National		18GN0694L	2021-04-23	

CROP	VARIETY	CANADIAN REPRESENTATIVE	TYPE OF REGISTRATION	REGIONS	EXPERIMENTAL NAME	TRANS-GENE	EXPIRY DATE
Canola, spring, brassica napus, hybrid	18GN0695L	Corteva Agriscience, DowDuPont (Ex Dow Agrosciences)	National		18GN0695L	2021-04-23	
Canola, spring, brassica napus, hybrid	19GG0885L	Corteva Agriscience, DowDuPont (Ex Dow Agrosciences)	National		19GG0885L	2021-04-23	
Canola, spring, brassica napus, hybrid	19GS23181	Corteva Agriscience, DowDuPont (Ex Dow Agrosciences)	National		19GS23181	2021-04-23	
Canola, spring, brassica napus, hybrid	19GS2321I	Corteva Agriscience, DowDuPont (Ex Dow Agrosciences)	National		19GS2321I	2021-05-28	
Canola, spring, brassica napus, hybrid	BY 6211TF	Monsanto Canada Ulc (Bayer CropScience Canada)	Interim		X18E93353	2021-02-12	2024-02-12
Canola, spring, brassica napus, hybrid	DKLL 81 BL	Monsanto Canada Ulc (Bayer CropScience Canada)	National		H32418G3	2021-04-09	
Canola, spring, brassica napus, hybrid	DKTF 95 HL	Monsanto Canada Ulc (Bayer CropScience Canada)	Interim		X19V94379	2021-02-12	2024-02-12
Canola, spring, brassica napus, hybrid	DKTF 96 SC	Monsanto Canada Ulc (Bayer CropScience Canada)	National		X17W10238	2021-04-09	
Canola, spring, brassica napus, hybrid	DKTF 99 SC	Monsanto Canada Ulc (Bayer CropScience Canada)	National		X18W93357	2021-04-09	
Canola, spring, brassica napus, hybrid	NC527CRTF	Nuseed (Formerly Seeds 2000)	Interim		NC2005TF	2021-04-09	2024-04-09
Canola, spring, brassica napus, hybrid	PV 585 GC	Nutrien Ag Solutions Inc.	National		PS-FCA 15-4001	2020-12-22	
Clover, red, double cut	Freedom!MR	Union Forage	National		(none)	2020-11-27	
Clover, red, double cut	Global	Imperial Seed (1979) Ltd.	National		RVP3142B, RKL 183	2021-04-01	
Clover, red, double cut	Robust III	Imperial Seed (1979) Ltd.	National		(none)	2021-04-01	

VARIETY REGISTRATION REPORT (CONTINUED)

CROP	VARIETY	CANADIAN REPRESENTATIVE	TYPE OF REGISTRATION	REGIONS	EXPERIMENTAL NAME	TRANS-GENE	EXPIRY DATE
Fababean	Victus	DI Seeds Inc.	National		RLS 57301	2021-02-26	
Fescue, tall	Bronson	Richardson Seed, A Division Of Terralink Horticulture Inc.	National		(none)	2021-01-22	
Fescue, meadow	Driftless	Union Forage	National		BAR FPF32, BAR FP32, FPF32	2020-11-13	
Fescue, tall	Palatine	General Seed Company	National		(none)	2021-04-09	
Fescue, tall	Silky SL	Quality Seeds Ltd.	National		TF0705SL	2021-03-19	
Fescue, meadow	Tored	BrettYoung Seeds Ltd.	National		SW AS3072	2020-11-13	
Flax, oilseed	CDC Kernen	Crop Development Centre, University Of Saskatchewan	National		FP2573, F14187	2021-03-26	
Flax, oilseed	OMEGA	Corbo Agro Ltd	National		none	2021-04-16	
Lupin, blue	Boregine	Koralta Agri-Business Inc.	National		BO 1201/01	2021-02-12	
Sweet white lupin	Dieta	International Bio Ventures Limited	National		(none)	2020-12-11	
Oat,spring	AAC Excellence	Office Of Intellectual Property And Commercialization (AAFC)	National		OA1415-2	2020-11-13	
Oat,spring	AAC Reid	Office Of Intellectual Property And Commercialization (AAFC)	National		OA1444-4	2020-11-13	
Oat,spring	AAC Stature	Office Of Intellectual Property And Commercialization (AAFC)	National		OA1453-2	2020-11-13	
Oat,spring	Alise	Cerela Inc.	National		PGR-N13-090, 263-PX05-18-29.1	2020-11-20	
Oat, spring, hulless	Bolero	Semican International (Seed)	National		14ANS01	2021-03-19	
Oat,spring	Mistral	Cerela Inc.	National		PGR-N13-138	2021-03-19	
Oat, spring, hulless	Nitro	Semican International (Seed)	National		15ANS06	2021-02-12	
Orchardgrass	Diceros	Imperial Seed (1979) Ltd.	National		DG 0025, KL 126	2021-01-08	
Pea, field, yellow	AAC Beyond	Office Of Intellectual Property And Commercialization (AAFC)	National		P0938-4055	2021-02-05	
Pea, field, marrow fat	AAC Greenrich	Office Of Intellectual Property And Commercialization (AAFC)	National		P0841-119	2021-02-05	
Pea, field, yellow	AAC Julius	Office Of Intellectual Property And Commercialization (AAFC)	National		P0937-4006	2021-02-05	
Pea, field, maple	AAC Liscard	Office Of Intellectual Property And Commercialization (AAFC)	National		P0609-08	2021-02-05	
Pea, field, maple	AAC Lorlie	Office Of Intellectual Property And Commercialization (AAFC)	National		P0846-13	2021-02-05	
Pea, field, marrow fat	AAC Olive	Office Of Intellectual Property And Commercialization (AAFC)	National		P0717-05	2021-02-05	
Pea, field, orange	AAC Oriole	Office Of Intellectual Property And Commercialization (AAFC)	National		MP1882	2021-02-05	
Pea, field, yellow	CDC Hickie	Crop Development Centre, University Of Saskatchewan	National		CDC 4900-13	2021-02-12	
Pea, field, green	CDC Rider	Crop Development Centre, University Of Saskatchewan	National		CDC 4506-4	2021-02-12	
Pea, field, yellow	CDC Tollefson	Crop Development Centre, University Of Saskatchewan	National		CDC 4947-2	2021-02-12	
Potato (tuber)	AAC Blue Sapphire	Office Of Intellectual Property And Commercialization (AAFC)	National		F10097, 2015-13	2021-02-19	
Potato (tuber)	AAC Eastern Russet	Office Of Intellectual Property And Commercialization (AAFC)	National		F12022, AR2017-07	2021-02-19	
Potato (tuber)	AAC Odyssey	Office Of Intellectual Property And Commercialization (AAFC)	National		F10090, AR2015-12	2021-02-19	
Potato (tuber)	AAC Santa Margarita	Office Of Intellectual Property And Commercialization (AAFC)	National		CV07366-2, AR2014-05	2021-02-19	
Potato (tuber)	AAC Shirley	Office Of Intellectual Property And Commercialization (AAFC)	National		CV05239-1, AR2014-04	2021-02-19	
Potato (tuber)	Allison	Hzpc Americas Corp.	National		HZD 06-1249	2021-04-01	
Potato (tuber)	Ashley	Hzpc Americas Corp.	National		HZC 07-1356	2021-04-01	
Potato (tuber)	Auburn Glow	Tuberosum Technologies Inc.	National		TT-12-055/2013-02	2021-03-19	
Potato (tuber)	C099076-6R	Real Potatoes Ltd.	National		C099076-6R	2021-04-01	
Potato (tuber)	Elevate	Robert Potter Consulting	National		Z6	2021-05-07	
Potato (tuber)	Frisian Gold	Tuberosum Technologies Inc.	National		FOB2007-147-072	2021-01-08	
Potato (tuber)	Lucera	Real Potatoes Ltd.	National		KWS 06-547	2021-04-01	
Potato (tuber)	Sunred	Hzpc Americas Corp.	National		HZD 04-684	2021-04-01	
Potato (tuber)	TT-11-010/2012-01	Tuberosum Technologies Inc.	National		TT-11-010/2012-01	2021-02-19	
Soybean, oilseed	003-R5X	Syngenta Canada Inc.	National		X003095X, CW1760277	2021-03-19	
Soybean, oilseed	07-A7E3	Syngenta Canada Inc.	National		PE 0610, 15MB60182-83-01	2021-03-26	
Soybean, oilseed	14-W6E3	Syngenta Canada Inc.	National		X13014E3, CL1920396	2021-03-26	
Soybean, oilseed	19-Y5E3	Syngenta Canada Inc.	National		PE 1901, 16MD20081-16-04	2021-03-19	
Soybean, oilseed	5002BM01-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518412	2021-04-23	
Soybean, oilseed	5003BM01-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518148	2021-04-23	
Soybean, oilseed	5004BA01-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518166	2021-04-23	
Soybean, oilseed	5006BM01-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518146	2021-04-23	
Soybean, oilseed	5006BR01-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518437	2021-04-16	
Soybean, oilseed	5009BA01-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518423	2021-04-23	
Soybean, oilseed	5016BR01-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518201	2021-04-16	
Soybean, oilseed	5017BR01-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518322	2021-04-16	
Soybean, oilseed	5019BR01-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518269	2021-04-30	
Soybean, oilseed	5019BR02-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518179	2021-04-16	
Soybean, oilseed	5019BR03-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126517973	2021-04-16	
Soybean, oilseed	5021BF02-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126517989	2021-06-04	
Soybean, oilseed	5021BF03-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518375	2021-06-04	
Soybean, oilseed	5026BD02-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518017	2021-06-04	
Soybean, oilseed	5031BB02-02	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		PW126518034	2021-06-04	
Soybean, oilseed	50B7A001-01	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		50B7A001-01	2021-01-22	
Soybean, oilseed	Amino R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MS0419B2-C0DNN	2021-04-16	
Soybean, oilseed	B0012RX	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		50B1BM02-09	2021-02-26	
Soybean, oilseed	B0051RX	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		50B5BM01-09	2021-02-26	
Soybean, oilseed	Badger R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKZ319B5-C0DNN	2021-05-28	
Soybean, oilseed	Barton	Sevita International	National		SVX20T1S19	2021-05-21	
Soybean, oilseed	Briggs R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKT11B3-C0DNN	2021-04-09	
Soybean, oilseed	C4M21438 XT	Monsanto Canada Ulc (Bayer CropScience Canada)	National		RM1219A9-C0DNN	2021-04-09	
Soybean, oilseed	C4M21449 XT	Monsanto Canada Ulc (Bayer CropScience Canada)	National		RM1619A5-C0DNN	2021-04-09	
Soybean, oilseed	CL1941244	Syngenta Canada Inc.	National		CL1941244, X01002XF	2021-06-04	
Soybean, oilseed	CL1941256	Syngenta Canada Inc.	National		X07007XF, CL1941256	2021-06-04	

VARIETY REGISTRATION REPORT (CONTINUED)

CROP	VARIETY	CANADIAN REPRESENTATIVE	TYPE OF REGISTRATION	REGIONS	EXPERIMENTAL NAME	TRANS-GENE	EXPIRY DATE
Soybean, oilseed	CL1941547	Syngenta Canada Inc.	National		X17017XF, CL1941547	2021-06-04	
Soybean, oilseed	Cobra R2X	Syngenta Canada Inc.	National		EE1762072, GS0372X, X3087X	2021-05-21	
Soybean, oilseed	Cohen R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		BN2419A7-C0DNN	2021-04-09	
Soybean, oilseed	CP000521X	Syngenta Canada Inc.	National		GS000913X, CW1760013-2, X0009097X	2021-04-16	
Soybean, oilseed	CP00621X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKZ619A1-C0DNN	2021-04-09	
Soybean, oilseed	CP0321X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKZ119A4-C0DNN	2021-04-09	
Soybean, oilseed	CP0921X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MK0819B3-C0DNN	2021-04-09	
Soybean, oilseed	CP1121E	Winfield Solution Llc (A Land O'lakes Company)	National		PEC 1121, 16MA30030-41-06	2021-05-28	
Soybean, oilseed	CP1221X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		RM1319A6-C0DNN	2021-04-09	
Soybean, oilseed	CP1521E	Winfield Solution Llc (A Land O'lakes Company)	National		PE 1501, 04230926	2021-05-28	
Soybean, oilseed	CP1621E	Winfield Solution Llc (A Land O'lakes Company)	National		PEC 1601, 16MD30092-04-04	2021-05-28	
Soybean, oilseed	CP1821E	Winfield Solution Llc (A Land O'lakes Company)	National		PEC 1801, 16MQ90084-05-01	2021-05-28	
Soybean, oilseed	CP1921E	Winfield Solution Llc (A Land O'lakes Company)	National		PE 1911, 16MD30142-15-02	2021-05-28	
Soybean, oilseed	CW1760018-1	Syngenta Canada Inc.	National		X0008099X	2021-05-28	
Soybean, oilseed	CW1760842	Syngenta Canada Inc.	National		X008089X	2021-05-21	
Soybean, oilseed	DKB0005-03	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKT219A4-C0DNN	2021-04-01	
Soybean, oilseed	DKB006-80	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKZ219A5-C0DNN	2021-04-01	
Soybean, oilseed	DKB06-76	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MK0719A6-F0DNN	2021-04-01	
Soybean, oilseed	DKB07-23	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MK0619B9-C0DNN	2021-05-21	
Soybean, oilseed	DKB11-73	Monsanto Canada Ulc (Bayer CropScience Canada)	National		RM1019A8-C0DNN	2021-04-01	
Soybean, oilseed	DKB17-59XF	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MK1315A2-T2LNN	2021-04-09	
Soybean, oilseed	DKB21-30XF	Monsanto Canada Ulc (Bayer CropScience Canada)	National		EV1912A3-T2LNN	2021-03-26	
Soybean, oilseed	DKB21-39	Monsanto Canada Ulc (Bayer CropScience Canada)	National		RM2119B3-C0DNN	2021-04-09	
Soybean, oilseed	DKB24-35	Monsanto Canada Ulc (Bayer CropScience Canada)	National		EV2316D2-D0DNN	2021-04-09	
Soybean, oilseed	DKB25-17XF	Monsanto Canada Ulc (Bayer CropScience Canada)	National		BN2416D6-T6LNN	2021-04-09	
Soybean, oilseed	DKB25-93	Monsanto Canada Ulc (Bayer CropScience Canada)	National		BN2519A1-C0DNN	2021-04-09	
Soybean, oilseed	DKB29-08	Monsanto Canada Ulc (Bayer CropScience Canada)	National		BN2919B1-C0DNN	2021-04-09	
Soybean, oilseed	DKB32-12XF	Monsanto Canada Ulc (Bayer CropScience Canada)	National		AK2914J8-T3LNN	2021-04-09	
Soybean, oilseed	Dunham	Sevita International	National		SVX19T0S8	2021-05-21	
Soybean, oilseed	Emilio E3	Semences Prograin Inc.	National		PE 0301, 16MA20005-15-04	2021-05-14	
Soybean, oilseed	Evo E3	Sevita International	National		SV175069Z-01-06-11	2021-05-21	
Soybean, oilseed	EXP0321XRN	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MK0519B6-C0DNN	2021-05-21	
Soybean, oilseed	EXP2521XFN	Syngenta Canada Inc.	National		X25025XF, GS2527XF, CL1943627	2021-06-04	
Soybean, oilseed	Finch	Sevita International	National		SVX20T0S14	2021-05-21	
Soybean, oilseed	Forto	Sevita International	National		CER11-77.B.54	2021-05-21	
Soybean, oilseed	Gecko R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKT119B2-C0DNN	2021-04-09	
Soybean, oilseed	Grizzly R2X	Syngenta Canada Inc.	National		EW1860673, GS0273X, X02088X	2021-05-28	
Soybean, oilseed	GS1700XF	Syngenta Canada Inc.	National		X16015XF, CL1942000	2021-06-04	
Soybean, oilseed	Harvey E3	SeCan Association	National		PEC0702, 15MA30124-62-03	2021-04-01	
Soybean, oilseed	Keith XF	Syngenta Canada Inc.	National		X16014XF, GS1586XF, CL1941886	2021-06-04	
Soybean, oilseed	Larose E3	SeCan Association	National		PEC 0902, 16MA30348-02-03	2021-04-16	
Soybean, oilseed	Merino R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKZ519A2-C0DNN	2021-04-16	
Soybean, oilseed	NSC Dauphin RR2X	Syngenta Canada Inc.	National		X008098X, GS00813X, CW1760013-1	2021-02-19	
Soybean, oilseed	NSC EXP001LX	Syngenta Canada Inc.	National		X001096X, GS00118X, CW1760018-2	2021-05-07	
Soybean, oilseed	NSC EXP001PX	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKT119A6-C0DNN	2021-04-16	
Soybean, oilseed	NSC EXP003PX	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKZ419A7-C0DNN	2021-04-16	

VARIETY REGISTRATION REPORT (CONTINUED)

CROP	VARIETY	CANADIAN REPRESENTATIVE	TYPE OF REGISTRATION	REGIONS	EXPERIMENTAL NAME	TRANS-GENE	EXPIRY DATE
Soybean, oilseed	NSC Holland RR2X	Syngenta Canada Inc.	National		CW1760068, GS00568X, CW1760068	2021-02-19	
Soybean, oilseed	OAC Aberdeen	University Of Guelph	National		OAC 17-85C-SCN	2021-04-23	
Soybean, oilseed	OAC Almond	University Of Guelph	National		OAC 15-11C	2021-04-23	
Soybean, oilseed	OAC Attika	University Of Guelph	National		OAC 15-13C	2021-04-23	
Soybean, oilseed	Odessa	Sevita International	National		SVX20T1S16	2021-05-21	
Soybean, oilseed	Orr R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MK0819C7-C0DNN	2021-04-01	
Soybean, oilseed	P03A11X	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		5003BM09-09	2021-04-16	
Soybean, oilseed	P03T87E	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		5003BR08-02	2021-04-16	
Soybean, oilseed	P06A48X	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		5006BA04-09	2021-03-26	
Soybean, oilseed	P13A89X	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		5013BF07-09	2021-06-04	
Soybean, oilseed	P17A51X	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		5017BF06-09	2021-03-26	
Soybean, oilseed	P20A22X	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		5020BP05-09	2021-03-26	
Soybean, oilseed	P25A68X	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		5025BF10-09	2021-06-04	
Soybean, oilseed	P26A34X	Pioneer Hi-Bred Production Ltd. (A DuPont Company)	National		5026BN08-09	2021-04-30	
Soybean, oilseed	Panther XF	Monsanto Canada Ulc (Bayer CropScience Canada)	National		RM2114A8-T0LNN	2021-03-26	
Soybean, oilseed	Park E3	SeCan Association	National		PEC 0801, 15MA20086-17-03	2021-04-01	
Soybean, oilseed	Pico R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MK0719C6-F0DNN	2021-04-23	
Soybean, oilseed	Pikas R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKT219A5-C0DNN	2021-04-09	
Soybean, oilseed	Primo	Sevita International	National		CER10-11.97	2021-05-21	
Soybean, oilseed	PV EXP 21-S1	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKT319A1-C0DNN	2021-04-09	
Soybean, oilseed	PV EXP 21-S2	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKT119A9-C0DNN	2021-04-09	
Soybean, oilseed	PV EXP 21-S3	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKT119A1-C0DNN	2021-04-09	
Soybean, oilseed	PV EXP 21-S4	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKZ319A4-C0DNN	2021-04-16	
Soybean, oilseed	PV EXP21-S5	Syngenta Canada Inc.	National		X005094X, GS00576X, CW1760276	2021-05-07	
Soybean, oilseed	Ramage XF	Syngenta Canada Inc.	National		X05004XF, GS0455XF, CL1941366	2021-06-04	
Soybean, oilseed	Ranger R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		RM1919A1-C0DNN	2021-04-16	
Soybean, oilseed	S03-P4	Syngenta Canada Inc.	National		EE1803165, XC0308	2021-02-05	
Soybean, oilseed	Seabrook R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MK0819C5-F0DNN	2021-04-16	
Soybean, oilseed	Shaw R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MK0619B6-C0DNN	2021-05-21	
Soybean, oilseed	SI 00221XTN	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKT119A4-C0DNN	2021-04-09	
Soybean, oilseed	SI 00319XT	Semences Prograin Inc.	National		CBZ517C3-C0DNN	2020-12-01	
Soybean, oilseed	SI 00321XT	Syngenta Canada Inc.	National		X009091X, GS00524X, EE1762224	2021-05-07	
Soybean, oilseed	SI 00520XTN	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKZ318A2-C0DNN	2020-11-06	
Soybean, oilseed	SI 0921XTN	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MK0819A3-F0DNN	2021-04-16	
Soybean, oilseed	SI 2121XTN	Monsanto Canada Ulc (Bayer CropScience Canada)	National		RM2019A9-C0DNN	2021-04-09	
Soybean, oilseed	SI 2321E3N	Sevita International	National		PEC 2301, 16MD20499-07-04	2021-05-14	
Soybean, oilseed	Supreme XF	Monsanto Canada Ulc (Bayer CropScience Canada)	National		FN2913D2-T2LNN	2021-04-09	
Soybean, oilseed	TH82005 R2X	Monsanto Canada Ulc (Bayer CropScience Canada)	National		MKZ419A2-C0DNN	2021-04-16	
Soybean, oilseed	TH82006 R2X	Syngenta Canada Inc.	National		CW1860859	2021-06-04	
Soybean, oilseed	Viper R2X	Syngenta Canada Inc.	National		EE1861244, GS0844X, X08080X	2021-05-28	
Timothy	Rasant	Imperial Seed (1979) Ltd.	National		(none)	2021-01-22	
Triticale, winter	AB Provider	Field Crop Development Centre, Alberta Agriculture & Forestry	Regional	BC, AB, SK, MB	WT0009, 06D013002	2021-02-19	
Wheat, winter	12w932-349	University Of Guelph	Regional	ON	12w932-349	2021-03-26	
Wheat, spring	AAC Hockley	Office Of Intellectual Property And Commercialization (AAFC)	Regional	BC, AB, SK, MB	BW5044	2020-11-20	
Wheat, spring	AAC Tomkins	Office Of Intellectual Property And Commercialization (AAFC)	Regional	BC, AB, SK, MB	HW402, H1161, BC004	2020-11-20	
Wheat, durum	AAC Weyburn	Office Of Intellectual Property And Commercialization (AAFC)	Regional	BC, AB, SK, MB	DT897, A1150-APK03	2020-11-20	
Wheat, spring	AAC Whitehead	Office Of Intellectual Property And Commercialization (AAFC)	Regional	BC, AB, SK, MB	HW506, W13798	2021-01-29	
Wheat, spring	Alban	Cerela Inc.	Regional	QC	BS15-15, 02	2021-03-19	
Wheat, winter	Brundage 96	Premier Pacific Seeds Ltd	Interim regional	BC: Fraser Valley, Vancouver, regional districts of southwestern B.C. and Vancouver Island	(none)	2021-01-29	2024-01-29
Wheat, spring	CDC Pilar CLPlus	Crop Development Centre, University Of Saskatchewan	Regional	BC, AB, SK, MB	PT598, IR14176	2021-04-16	
Wheat, spring	CDC Succession CLPlus	Crop Development Centre, University Of Saskatchewan	Regional	BC, AB, SK, MB	BW5031, IR14145	2021-04-23	
Wheat, spring	Forefront	Field Crop Development Centre, Alberta Agriculture & Forestry	Regional	BC, AB, SK, MB	HY2082, Entry 27 HWY B 2016, UAW1219*f5MBK08	2021-04-23	
Wheat, winter	Kaseberg	Premier Pacific Seeds Ltd	Interim regional	BC: Fraser Valley, Vancouver, regional districts of southwestern B.C. and Vancouver Island	(none)	2021-01-29	2024-01-29
Wheat, winter	Madsen	Premier Pacific Seeds Ltd	Interim regional	BC: Fraser Valley, Vancouver, regional districts of southwestern B.C. and Vancouver Island	(none)	2021-01-29	2024-01-29
Wheat, spring	Minestro	Cerela Inc.	Regional	QC	BS15-24,13	2021-01-29	
Wheat, spring	Sirlaurier	Cerela Inc.	Regional	QC	BS15-14, 24	2021-01-29	
Wheat, spring	Starlite	Cerela Inc.	Regional	QC	BS15-912	2021-03-05	
Wheat, spring	Yamaska	Semican International (Seed)	Regional	QC	12SW508.33	2021-05-21	

AGRICULTURE CANADA 2021 VARIETY REQUEST FOR PROPOSALS

Agriculture and Agri-Food Canada would like to thank the companies that submitted proposals to commercialize pedigreed seed of AAFC varieties under the 2021 Request for Proposal. Based upon marketing and production strategies, marketing experience, and financial offer our evaluation committee has selected the following proposals:

Variety	Company (Awarded License Rights)
DT2009 Canada Western Amber Durum Wheat	FP Genetics Inc.
HY2090 Canada Prairie Spring Wheat	SeCan Association
HY2095 Canada Prairie Spring Wheat	SeCan Association
OT18-01 Conventional Soybean	CanGro Genetics Inc.
P0936-3913 Pea	SeedNet Inc.
TR19268 Feed Barley	Canterra Seeds
W601 Canada Western Red Winter Wheat	SeCan Association

No proposals were received/accepted for the following lines:

Varieties marked with an asterisk will be offered again through the 2022 Results of Request for Proposals process:

*	AW774sh-84 Canada Eastern Red Spring Wheat
	CH2730-60 Six-Row Spring Barley
	CH2909n-162-95 Two-Row Hulless Spring Barley
	CR10875-6-2 Cranberry Bean
*	DT2005 Canada Western Amber Durum Wheat
	EC0410.1.7 Eastern Hard Red Spring Wheat
*	HY2096 Canada Prairie Spring Red Wheat
*	OA1598-1 Oat
*	OA1610-6 Oat
*	OA1613-5 Oat
	OB2717-60-2 Two-Row Feed Spring Barley
	OT15-05 Natto Soybean
	OX-192 Tofu Soybean
*	OX-201 Tofu Soybean
	PT492 Canada Western Red Spring Wheat
*	PT495 Canada Western Red Spring Wheat
	S09-27C Navy Bean
*	TR13235 Two-Row Malting Barley
*	TR18257 Two-Row Malting Barley
*	TR18258 Two-Row Malting Barley
	TR18262 Two-Row Feed Barley
*	U9-26-32 Canada Eastern Hard Red Winter Wheat

APPENDIX OF VARIETIES

AW774sh-84 Canada Eastern Red Spring Wheat

AW774sh-84 Canada Eastern Red Spring Wheat was developed at the Ottawa Research and Development Centre, Ottawa, Ont.

It is an awned, hollow strawed, hard red spring wheat line that over two years of testing in Ontario has yielded on average one percent more than the mean of the checks Easton and Ventry, with yields similar to Ventry in Areas II/IV and III, and significantly higher than Ventry in Area V.

AW774sh-84 is similar to Easton, with similar average height, slightly lower grain protein, slightly higher thousand kernel weight, and a similar test weight. AW774sh-84 has average FHB resistance. AW774sh-84 shows infection indices and DON scores similar to Easton and AC Carberry.

Two-year-average scores for powdery mildew were better than Easton and AC Carberry; leaf septoria scores similar to Easton, and low leaf rust scores, but slightly higher than the checks.

In comparison to the check varieties AC Carberry and Ventry, AW774sh-84 has been flagged for lower grain and flour protein.

AW774sh-84 does not appear to have other major defects, with good falling number, overall good rheological characteristics and acceptable baking scores.

Farinograph testing shows AW774sh-84 to have slightly lower water absorption and a stability score that is lower than the mean of the checks, but higher than AC Carberry.

CH2730-60 Six-Row Spring Barley

CH2730-60 Six-Row Spring Barley was developed at the Ottawa Research and Development Centre, Ottawa, Ont.

CH2730-60 is a six-row spring feed barley derived from Encore/Chevron//Encore/3/Encore/Peatland//Encore. Chevron and Peatland are source of FHB tolerance.

Encore was high yielding and well adapted cultivar in eastern Canada.

CH2730-60 was selected with the modified bulk breeding method. CH2730-60 had similar grain yield as checks in the Quebec Two-Row Barley Registration and Recommendation Test, 2017-2019.

CH2730-60 had higher in test weight than all checks. CH2730-60 was moderately susceptible to fusarium head blight and DON accumulation across two locations over two years in artificial fusarium inoculation nursery.

CH2909n-162-95 Two-Row Hulless Spring Barley

CH2902n-162-95 Two-Row Hulless Spring Barley was developed at the Ottawa Research and Development Centre, Ottawa, Ont.

CH2909n-162-95 is a two-row hulless spring barley derived from a cross between CDC Rattan and CDC Fibar.

It was selected with the modified bulk breeding method.

CH2909n-162-95 yielded similar to check cultivar AAC Starbuck in the Maritime Two-Row Barley Registration and Recommendation Test, 2017-2019.

CH2909n-162-95 had 24 percent higher beta-glucan content and 117 percent higher protein content than CDC Rattan.

It had similar test weight as check, AAC Starbuck. CH2909n-162-95 was shorter in height and matured two days earlier than AAC Starbuck. CH2909n-162-95 was adapted to eastern Canada.

CR10875-6-2 Cranberry Bean

CR10875-6-2 Cranberry Bean was developed at the Morden Research and Development Centre, Morden, Man.

CR10875-6-2 is a high yielding cranberry bean line with an upright, determinate bush growth habit, good lodging resistance, good seed quality and disease resistance.

In the Long Season Wide Row Dry Bean Cooperative Registration Trials over 16 station-years, the average yield of CR10875-6-2 was 152 percent of Etna.

The seed size of CR10875-6-2 was similar to Etna. The average maturity of CR10875-6-2 was two days later than Etna. CR10875-6-2 was resistant to anthracnose race 73, while Etna was susceptible.

CR10875-6-2 and Etna had similar resistance to white mould. CR10875-6-2 was susceptible to common bacterial blight, same as Etna. The canning and cooking quality of CR10875-6-2 was acceptable, which was similar to Etna.

DT2005 Canada Western Amber Durum Wheat

DT2005 Canada Western Amber Durum Wheat was developed at the Swift Current Research and Development Centre, Swift Current, Sask.

DT2005 combines higher grain yield than the checks with FHB resistance similar to Brigade, excellent total yellow pigment and pasta b*, and low grain cadmium content.

DT2005 was selected from the cross AAC Spitfire/CDC Alloy. In three years of registration testing, grain yield of DT2005 was 2.8 percent higher than Brigade, the highest yielding check, across soil zones, and 3.8 percent higher than Brigade in the major durum growing area (Zone 2).

Grain protein concentration of DT2005 was within the range of the checks.

Time to maturity of DT2005 was within the range of the checks and similar to AAC Cabri.

Straw strength of DT2005 was similar to Brigade, the strongest strawed check. Plant height of DT2005 was the same as AAC Cabri.

Test weight of DT2005 was higher than all checks. DT2005 kernel size was larger than AAC Cabri.

DT2005 expressed resistance to leaf rust, stem rust, stripe rust and common bunt while expressing a variable reaction of resistant to susceptible to loose smut.

DT2005 also demonstrated moderate resistance to Ug99 stem rust.

Fusarium head blight response of DT2005 was similar to Brigade, one of the most FHB resistant cultivars.

DT2005 had low grain cadmium concentration similar to Brigade, and its quality profile met the requirements of the CWAD class with noted excellence in total yellow pigment and pasta b*.

DT2009 Canada Western Amber Durum Wheat

DT2009 Canada Western Amber Durum Wheat was developed at the Swift Current Research and Development Centre, Swift Current, Sask.

It has FHB resistance superior to other durum cultivars and comparable to the bread wheat cultivar AAC Viewfield which is rated intermediate for FHB resistance.

DT2009 is a combination of high yielding with high wheat protein and semolina protein concentrations equal to Strongfield, strong straw equal to Brigade, plant height similar to AAC Cabri and low grain cadmium content.

DT2009 was selected from the cross AAC Congress/Transcend.

In three years of registration testing, DT2009 yielded similar to the highest yielding check Brigade.

Averaged over 28 station years, grain yield of DT2009 was 0.8 percent less than Brigade.

While averaged over 22 station years in the major durum growing area (Zone 2), DT2009 yielded 0.8 percent more than Brigade.

Grain protein concentration of DT2009 was similar to Strongfield and significantly higher than Brigade.

Time to maturity, plant height and test weight of DT2009 were similar to AAC Cabri and within the range of the checks.

Straw strength of DT2009 was the same as Brigade, the strongest strawed check.

Kernel size of DT2009 was within the range of the checks and larger than AAC Cabri.

DT2009 expressed resistance to leaf rust, stem rust and stripe rust while expressing resistance to intermediate resistance to common bunt, and resistance to moderately susceptible to loose smut.

DT2009 also demonstrated moderate resistance to Ug99 stem rust.

DT2009 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.

AAC Viewfield is assigned an overall intermediate FHB resistance rating.

DT2009 had low grain cadmium concentration similar to Strongfield, and its quality profile met the requirements of the CWAD class with the same wheat protein and semolina protein concentrations as Strongfield on average.

HY2090 Canada Prairie Spring Wheat

HY2090 Canada Prairie Spring Red Wheat was developed at the Lethbridge Research and Development Centre, Lethbridge, Alta.

It is a candidate cultivar for the CPSR wheat class.

It is of semi-dwarf stature, with an awned spike and a hollow stem.

Based on evaluation in the High Yield Wheat Registration Trial (2018-2020), HY2090 yielded significantly higher than AAC Penhold (+6%), Carberry (+18%), and was similar to AAC Foray (+1%).

Relative to the highest yielding check over 40 test sites, HY2090 was equal or higher yielding in all zones and yielded 5697 kg/ha, as compared to 5623 kg/ha for AAC Foray.

Over the three years of evaluation, HY2090 matured in 101 days making it similar to AAC Foray (101 days).

HY2090 (80 cm) was six cm shorter than AAC Foray and had straw strength similar to AAC Foray, with a lodging score of 2.9.

The protein content of HY2090 was equal to that of AAC Foray and the test weight of HY2090 (79.3 kg/hL) was higher than AAC Foray.

The thousand kernel weight

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APPENDIX OF VARIETIES (continued)

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of HY2090 was 44.2 mg making it similar in size to AAC Penhold and CDC Terrain.

HY2090 exhibited excellent levels of resistance to leaf rust, stripe rust, stem rust and common bunt and was moderately resistant to fusarium head blight.

HY2090 had lower DON accumulation and FHB severity as compared to checks cultivars. HY2090 is a non-Sm1 carrier and is thus midge susceptible.

In two years of testing in Njoro, Kenya, HY2090 showed immunity to the prevalent races of Ug99 and its variants.

HY2095 Canada Prairie Spring Wheat

HY2095 Canada Prairie Spring Red Wheat was developed at the Swift Current Research and Development Centre, Swift Current, Sask.

It is an orange wheat blossom midge (OWBM) tolerant semidwarf wheat line with very high grain yield and excellent stripe rust resistance.

HY2095 is targeted to the Canada Prairie Spring Red (CPSR) market class.

Grain yield of HY2095 averaged over 40 site years in the High Yield Wheat C test (2018-20), was nine percent higher than AAC Penhold.

Plant height of HY2095 is similar to Carberry and resists lodging like AAC Foray.

The FHB response under epidemic nursery conditions has been similar to AAC Penhold.

HY2095 expresses resistance to prevalent races of stripe rust, leaf rust, and stem rust.

Common bunt resistance has been rated as intermediate (three years) to moderately susceptible (one year).

HY2095 has been noted to express intermediate resistance to Ug99 and variants of stem rust.

Excellent amylograph peak viscosity and improved flour milling characteristics have been noted as well as stronger functionality of the gluten.

Based on the data generated for HY2095, it would be a benefit to farmers in the traditional CPS red production areas prone to stripe rust epidemics and OWBM infestations.

HY2096 Canada Prairie Spring Wheat

HY2096 Canada Prairie Spring Red Wheat was developed at the Swift Current Research and Development Centre, Swift Current, Sask.

HY2096 is an orange wheat blossom midge (OWBM) tolerant semidwarf wheat line with high grain yield, very strong straw, improved fusarium head blight resistance and excellent stripe rust resistance.

HY2096 is targeted to the Canada Prairie Spring Red (CPSR) market class.

Grain yield of HY2096 averaged over 40 site years in the High Yield Wheat C test (2018-20), was six percent higher than AAC Penhold.

Plant height of HY2096 is 12 cm taller than AAC Penhold with similar strong straw. The FHB response under epidemic nursery conditions has been notably superior to AAC Penhold.

HY2096 expresses resistance to prevalent races of stripe rust, leaf rust, stem rust and common bunt.

HY2096 has been noted to express intermediate resistance to Ug99 and variants of stem rust.

Excellent amylograph peak viscosity as well as improved falling number and flour milling characteristics have been noted.

The functionality of the gluten is desirably stronger.

Based on the data generated for HY2096, it would be a benefit to farmers in high productivity areas where very strong straw is needed and OWBM infestations can occur as well as FHB and stripe rust epidemics.

OA1598-1 Oat

OA1598-1 Oat was developed at the Ottawa Research and Development Centre, Ottawa, Ont.

It is a white-hulled spring oat cultivar, developed from the cross 12W02 (CFA1102/OA1357-2-1), made on Oct.14, 2012 at Ottawa Research and Development Center (ORDC).

CFA1102 was later registered as Kara by Coop Federée, Quebec; and OA1357-2 was later registered as AAC Noranda by ORDC.

Across the 27 trials conducted in Ontario, Quebec, PEI, Manitoba, and Alberta during 2018-2020, OA1598-1 yielded 10 percent higher than AAC Nicolas, the higher yielding of the two checks.

Across 15 trials conducted from 2018 to 2020 in Areas 2 and 3 of Ontario, it yielded 10 percent higher than the higher yielding check AAC Bullet.

Across eight trials conducted from 2018 to 2020 at New Liskeard ON, Normandin QC, and Harrington PE, it yielded six percent higher than the higher yielding check AAC Nicolas.

OA1610-6 Oat

OA1610-6 Oat was developed at the Ottawa Research and Development Centre, Ottawa, Ont. It is a white hulled spring oat genotype.

It was developed from the cross 12W38b (OA1347-2/OA1331-5-4), made on Oct. 24, 2012 at Ottawa.

Both OA1331-5-4 and OA1347-2 were ORDC lines; OA1331-5-4 was registered as AAC Nicolas in 2014 and OA1347-2 was registered as AAC Blake in 2016.

Across 24 trials in Quebec and two trials at Ottawa Ontario from 2018 to 2020, OA1610-6 yielded significantly higher than check means.

Compared to AAC Nicolas, which is one of its parents and currently one of the most popular oat cultivars in eastern Canada, A1610 had higher beta-glucan and kernel weight.

OA1613-5 Oat

OA1613-5 Oat was developed at the Ottawa Research and Development Centre, Ottawa, Ont.

It is a white-hulled spring oat cultivar, developed from the cross 12W42 (CFA1102/OA1331-5-4), made on 2012-10-23 at Ottawa Research and Development Center (ORDC).

CFA1102 was later registered as Kara by Coop Federée, Quebec; and OA1331-5-4 was later registered as AAC Nicolas by ORDC.

Across the 27 trials conducted in Ontario, Quebec, PEI, Manitoba, and Alberta during 2018-2020, OA11613-5 yielded 12 percent higher than AAC Nicolas, the higher yielding of the two checks.

Across 15 trials conducted from 2018 to 2020 in Areas 2 and 3 of Ontario, it yielded 14 percent higher than the higher yielding check AAC Bullet.

Across eight trials conducted from 2018 to 2020 at New Liskeard ON, Normandin QC, and Harrington PE, it yielded five percent higher than the higher yielding check AAC Nicolas.

OT18-01 Conventional Soybean

OT18-01 Conventional Soybean was developed at the Ottawa Research and Development Centre, Ottawa, Ont.

It is a grey pubescence, yellow hilum cultivar for the non-GMO food soybean market.

OT018-01 is a late maturity group 00 adapted to these regions of Manitoba, Ontario and Quebec.

OX-201 Tofu Soybean

OX-201 Tofu Soybean was developed at the Harrow Research and Development Centre, Harrow, Ont.

OX-201 is a high-yielding, food grade soybean cultivar with a yellow hilum and good field resistance to soybean cyst nematode (SCN) and Soybean Sudden Death Syndrome (SDS).

It was developed from the cross S23-T5/SN06-0215-MLM-2 made in 2013.

S23-T5 is a SCN resistant soybean cultivar developed by Syngenta Canada.

SN06-0215MLM-2 is a food grade soybean line developed by Harrow-RDC from the cross between food grade soybean line 951048-2-2-1-1-3-1c and Leo that were developed at Harrow-RDC.

Leo is a food grade soybean cultivar (Poysa et al. 2005). The 95108-2-2-1-1-3-1c soybean line was derived from the cross between Jack and Harovinton.

Jack is a SCN resistant soybean cultivar developed at the University of Illinois.

Harovinton is a food grade soybean cultivar developed at Harrow-RDC.

P0936-3913 Pea

P0936-3913 Pea was developed at the Lacombe Research and Development Centre, Lacombe, Alta.

It is a semi-leafless and powdery mildew resistant yellow pea line.

In the 2019-2020 Field Pea Cooperative Registration Test over 22 location-years across western Canada, P0936-3913 yielded 4220 kg/ha, similar to the check cultivars CDC Amarillo (4188 kg/ha) and AAC Lacombe (4078/ha).

P0936-3913 had a lodging score of 3.2, slightly lower than CDC Amarillo (3.4) and AAC Lacombe (3.6).

The thousand-seed-weight (TSW) of P0936-3913 was 221 g, significantly smaller than the TSW of the CDC Amarillo (232 g) and AAC Lacombe (261 g).

P0936-3913 matured at approx. 100 days.

The seed protein content of P0936-3913 was 24.6 percent, whereas CDC Amarillo and AAC Lacombe had a protein content of 23.0 percent and 23.2 percent, respectively.

P0936-3913 was moderately susceptible to Mycosphaerella blight and Fusarium root rot, similar to CDC Amarillo and AAC Lacombe.

PT495 Canada Western Red Spring Wheat

PT495 Canada Western Red Spring Wheat was developed at the Brandon Research and Development Centre, Bran-

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APPENDIX OF VARIETIES (continued)

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don, Man. It is an awned hollow stemmed spring wheat derived from the cross of PT459 and PT584 (CDC Titanium).

Three years (2018-2020) of testing on 35 site years, PT492 was five percent higher yielding than Carberry and six percent higher yielding than Parata.

PT495 had 0.2 percent lower protein than Carberry.

PT495 matured five days earlier than Carberry and a day earlier than Parata.

PT495 is similar in height as Glenn. PT495 has test weight similar to Carberry.

PT495 has been rated intermediate resistant to FHB over three years of testing at Morden and Carmen FHB inoculated testing nurseries.

PT495 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 (2018-2019).

TR13235 Two-Row Malting Barley

TR13235 Two-Row Malting Barley was developed at the Brandon Research and Development Centre, Brandon, Man.

TR13235 is a two-row, hulled malting barley line developed from the cross TR05290/TR03273.

Widely adapted to western Canada, it combines good yield (six percent higher than AC Metcalfe and similar to CDC Copeland) with earlier maturity than the malting checks, CDC Copeland and AC Metcalfe; good standability (lodging score lower than all the checks), kernel weight higher than the malting checks; and plumpness higher than all the checks.

TR13235 has a fair disease resistance package with resistance to the stem rust and loose smut, resistance to moderate resistance to surface smuts, moderate resistance to spot-form net blotch, moderate to intermediate resistance to spot blotch, and moderately susceptible to susceptible to FHB.

TR13235 has good malting quality generally in the range of the malting checks. Based on molecular marker and chemotype screening, TR13235 has been identified as a non-glycosidic nitrile (non-GN) line.

GN is a cyanogenic glycoside precursor of ethyl carbamate, which develops during malting.

Ethyl carbamate is an undesirable trace component that remains in spirits or whisky produced from malted grains that contain GN.

TR18257 Two-Row Malting Barley

TR18257 Two-Row Malting Barley was developed at the Brandon Research and Development Centre, Brandon, Man.

TR18257 is a hulled malting barley with good adaptability across western Canada.

It combines good agronomic performance (seven percent higher yield than AC Metcalfe, two percent higher than CDC Copeland and five percent lower than AAC Synergy; maturity similar to AC Metcalfe; shorter straw than all the checks with good standability similar to CDC Copeland and CDC Austenson), and physical grain quality (good plumpness similar to AAC Synergy; test weight and kernel weight in the range of the checks similar to AAC Synergy and CDC Copeland, respectively) with resistance to stem rust, resistance to moderate resistance to surface-borne smuts, moderate resistance to net-form net blotch, moderate to intermediate resistance to spot-form net blotch, intermediate resistance to spot blotch and loose smut, and moderately susceptible to FHB.

It has an excellent malting quality profile with higher fine extract and lower beta-glucan than all three malting checks and high alpha-amylase similar to AC Metcalfe.

Overall, TR18257 has a good combination of agronomic traits, disease resistance and malting quality.

It should be a useful variety for barley growers and the malting and brewing industry.

TR18258 Two-Row Malting Barley

TR18258 Two-Row Malting Barley was developed at the Brandon Research and Development Centre, Brandon, Man.

It is a hulled malting barley developed from the cross AAC Synergy/TR08116 using conventional breeding methods with early generations handled by a modified bulk method and initial selection done in the irrigated leaf disease nursery at AAFC Brandon.

It has good adaptability across western Canada and combines good agronomic performance (13 percent higher yield than AC Metcalfe, seven percent higher than CDC Copeland, and similar to AAC Synergy), and physical grain quality (good plumpness, test weight and kernel weight) with resistance to stem rust (carries the Rpg1 gene), moderate resistance to net-form net blotch and surface-borne smuts, moderate to intermediate resistance to spot-form net blotch and loose smut, intermediate resistance to spot blotch, and moderately susceptible to FHB.

It has good malting quality profile with higher fine extract and lower peeled and broken kernels and beta-glucan content than all three malting checks.

TR19268 Feed Barley

TR19268 Two-Row Feed Barley was developed at the Brandon Research and Development Centre, Brandon, Man.

It is a promising hulled feed barley line developed from the cross AAC Synergy/TR09398.

Widely adapted to western Canada, it combines very good yield potential (four percent higher than the feed check, CDC Austenson) with good standability (lodging score slightly lower than CDC Austenson), kernel weight and plumpness higher than CDC Austenson, test weight and kernel thins lower than CDC Austenson, and grain protein similar to CDC Austenson.

TR19268 has an average to above average combination of disease resistance including resistance to the stem rust, surface smuts and net-form net blotch, moderate resistance to spot-form net blotch, intermediate resistance to spot blotch and moderately susceptible to FHB.

With its high yield, good standability and disease resistance, TR19268 will offer a good production choice for feed growers across the Prairies.

U9-26-32 Canada Eastern Hard Red Winter Wheat

U9-26-32 Canada Eastern Hard Red Winter Wheat was developed at the Ottawa Research and Development Centre, Ottawa, Ont.

U9-26-32 is an earlier maturing, medium height, awnletted hard red winter wheat. Grain yield is 96 percent of the checks over two years (2018 and 2019).

Maturity is one day earlier than the checks. U9-26-32 is shorter than AC Morley but taller than Priesley.

Lodging and Test Weight similar to AC Morley.

1000 kernel weight larger than all the checks and grain protein higher than all the checks.

U9-26-32 best suited to Zone 1 and 2 of Ontario winter wheat production areas.

W601 Canada Western Red Winter Wheat

W601 Canada Western Red Winter Wheat was developed at the Lethbridge Research and Development Centre, Lethbridge, Alta.

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

W601 combines very high grain yield and cold tolerance, mid-season maturity, short stature, strong straw, and very good disease resistance.

Based on data from 32 environments collected over three years (2018–2020), W601 had higher grain yield than all of the CWRW checks (CDC Buteo +13 percent, Emerson +15 percent, Moats +9 percent, AAC Elevate +8 percent) and CWSP checks (CDC Falcon +14 percent, W520 +3 percent, Sunrise +3 percent).

Winter survival of W601 (89 percent) was equal to CDC Buteo, the best check.

W601 had maturity (217.8 d) similar to Emerson (217.4 d) and was 1.5 to 1.9 days later maturing than Moats, AAC Elevate and CDC Buteo, respectively.

Indirect comparison with Emerson registration data suggests W601 is about a day earlier than Radiant.

W601 was equal in height (76 cm) to AAC Elevate, the shortest CWRW check.

Lodging resistance of W601 (1.7) was marginally better than Emerson (1.8), the best check.

Test weight (81.9 kg/hL) and kernel weight (32.8 mg) of W601 were within the range of the checks.

W601 expressed R to MR reactions to stem, leaf and stripe rust, FHB tolerance in the MR to Intermediate range, and was susceptible to common bunt.

W601 had grain protein concentration equal to CDC Buteo and Moats (12.4 percent), and higher than AAC Elevate (11.9 percent).

W601 was deemed suitable for the CWRW class in 2018 and 2019.

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 duly notified, 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 varieties 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
Barley	Six Row	AC Malone	4910	1999-04-30	2017-08-01	2020-08-01
Barley	Six Row	AC Vision	5323	2001-05-10	2017-08-01	2020-08-01
Barley	Six Row	AC Westech	4769	1998-06-03	2017-08-01	2020-08-01
Barley	Two Row	AC Bountiful	5028	1999-12-07	2015-08-01	2018-08-01
Barley	Two Row	AC Queens	4765	1998-06-02	2017-08-01	2020-08-01
Barley	Two Row	Calder	5490	2002-05-24	2017-08-01	2020-08-01
Barley	Two Row	Hector	1433	1973-02-06	2017-08-01	2020-08-01
Barley	Two Row	Norman	6534	2009-02-02	2017-08-01	2020-08-01
Barley	Two Row Hulless	Millhouse	6137	2006-05-19	2017-08-01	2020-08-01
Bean	Black	Carmen Black	6886	2010-09-23	2015-08-01	2018-08-01
Bean	Pinto	AC Pintoba	4668	1998-01-16	2015-08-01	2018-08-01
Bean	Red Mexican	AC Scarlet	5217	2000-11-30	2015-08-01	2018-08-01
Fababean		Florent	6567	2009-03-16	2016-08-01	2019-08-01
Flax	Oilseed	AC Carnduff	4713	1998-03-13	2018-08-01	2021-08-01
Flax	Oilseed	AC Watson	4441	1997-01-07	2018-08-01	2021-08-01
Flax	Oilseed	Shape	6477	2008-06-27	2017-08-01	2020-08-01
Oat	Hulless	AC Baton	3963	1994-06-01	2018-08-01	2021-08-01
Oat	Hulless	AC Belmont	3649	1992-08-14	2018-08-01	2021-08-01
Oat	Hulless	AC Fregeau	4381	1996-08-09	2017-08-01	2020-08-01
Oat	Hulless	AC Lotta	3414	1991-04-08	2017-08-01	2020-08-01
Oat	Hulless	Tibor	2534	1985-05-06	2017-08-01	2020-08-01
Oat	Spring	AC Francis	4382	1996-08-09	2018-08-01	2021-08-01
Oat	Spring	AC Hunter	3587	1992-04-21	2018-08-01	2021-08-01
Oat	Spring	AC Rebel	4705	1998-03-09	2015-08-01	2018-08-01
Oat	Spring	AC Rebel	4705	1998-03-09	2017-08-01	2020-08-01
Oat	Spring	AC Stewart	3384	1991-03-05	2018-08-01	2021-08-01
Oat	Spring	AC Vermont	5249	2001-02-21	2017-08-01	2020-08-01
Oat	Spring	Athabasca	1834	1978-04-14	2018-08-01	2021-08-01

Crop Kind		Variety	Reg. #	Date Registered	Date Posted	Date of Cancellation
Oat	Spring	Capital	2848	1987-06-03	2018-08-01	2021-08-01
Oat	Spring	Cascade	1920	1979-04-09	2018-08-01	2021-08-01
Oat	Spring	Condesa	3017	1988-12-09	2018-08-01	2021-08-01
Oat	Spring	Dumont	2250	1982-05-20	2018-08-01	2021-08-01
Oat	Spring	Goslin	5157	2000-06-23	2017-08-01	2020-08-01
Oat	Spring	Kaufmann	5373	2001-11-22	2018-08-01	2021-08-01
Oat	Spring	Manic	1942	1979-10-10	2018-08-01	2021-08-01
Oat	Spring	Marion	2544	1985-06-05	2018-08-01	2021-08-01
Oat	Spring	Riel	2535	1985-05-10	2018-08-01	2021-08-01
Oat	Spring	Sherwood	5846	2004-08-04	2017-08-01	2020-08-01
Oat	Spring	Stainless	6422	2008-04-07	2017-08-01	2020-08-01
Pea	Green	Nitouche	4900	1999-04-14	2015-08-01	2018-08-01
Pea	Yellow	AC Melfort	4861	1999-02-10	2015-08-01	2018-08-01
Pea	Yellow	DS-Admiral	5166	2000-06-30	2019-08-01	2022-08-01
Pea	Yellow	Sorento	6303	2007-06-27	2017-08-01	2020-08-01
Potato		Concurrent	4814	1998-10-06	2016-08-01	2019-08-01

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PROPOSED LIST OF VARIETY REGISTRATION CANCELLATIONS (CONTINUED)

Crop Kind		Variety	Reg. #	Date Registered	Date Posted	Date of Cancellation
Potato		Morning Gold	4525	1997-03-21	2016-08-01	2019-08-01
Potato		NL10-RBK	4928	1999-05-06	2017-08-01	2020-08-01
Potato		NL10-SUP	4929	1999-05-06	2017-08-01	2020-08-01
Potato		NL20-SHE	5502	2002-06-13	2017-08-01	2020-08-01
Potato		NL30-RBK-82	5501	2002-06-13	2017-08-01	2020-08-01
Potato		Obelix	4815	1998-10-06	2016-08-01	2019-08-01
Potato		Van Gogh	4959	1999-07-23	2016-08-01	2019-08-01
Ryegrass	Perennial	Rosalin	4606	1997-06-12	2018-08-01	2021-08-01
Soybean	Oilseed	9132	4166	1995-08-14	2017-08-01	2020-08-01
Soybean	Oilseed	004R21	7137	2012-02-02	2018-08-01	2021-08-01
Soybean	Oilseed	22-60RY	7656	2015-02-06	2019-08-01	2022-08-01
Soybean	Oilseed	22-61RY	8183	2017-02-10	2018-08-01	2021-08-01
Soybean	Oilseed	23-10RY	7110	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	23-11RY	7659	2015-02-06	2019-08-01	2022-08-01
Soybean	Oilseed	24-11RY	7642	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	24-12RY	7882	2016-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	24-51R	6014	2005-11-24	2018-08-01	2021-08-01
Soybean	Oilseed	24-52R	6557	2009-03-06	2018-08-01	2021-08-01
Soybean	Oilseed	24-60RY	6909	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	24-61RY	7262	2012-12-04	2018-08-01	2021-08-01
Soybean	Oilseed	25-02R	5526	2002-07-23	2018-08-01	2021-08-01
Soybean	Oilseed	25-03R	5613	2003-03-31	2018-08-01	2021-08-01
Soybean	Oilseed	25-04R	5790	2004-04-21	2018-08-01	2021-08-01
Soybean	Oilseed	25-11RY	7883	2016-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	25-52R	6143	2006-05-24	2018-08-01	2021-08-01
Soybean	Oilseed	25-60RY	6911	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	26-02R	5612	2003-03-31	2018-08-01	2021-08-01
Soybean	Oilseed	26-12RY	7289	2012-12-17	2018-08-01	2021-08-01
Soybean	Oilseed	26-14RY	7884	2016-01-29	2019-08-01	2022-08-01
Soybean	Oilseed	26-54R	6129	2006-05-15	2018-08-01	2021-08-01
Soybean	Oilseed	26-55R	6382	2008-02-13	2018-08-01	2021-08-01
Soybean	Oilseed	26-61RY	7109	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	26-62RY	7263	2012-12-04	2018-08-01	2021-08-01
Soybean	Oilseed	2601R	4770	1998-06-05	2018-08-01	2021-08-01
Soybean	Oilseed	26R	5106	2000-05-05	2018-08-01	2021-08-01
Soybean	Oilseed	27-06R	5791	2004-04-21	2018-08-01	2021-08-01
Soybean	Oilseed	27-07R	6130	2006-05-15	2018-08-01	2021-08-01
Soybean	Oilseed	27-10RY	6914	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	27-51R	5913	2005-03-07	2018-08-01	2021-08-01
Soybean	Oilseed	27-52R	6587	2009-04-20	2018-08-01	2021-08-01
Soybean	Oilseed	27-60RY	6722	2010-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	2701R	4771	1998-06-05	2018-08-01	2021-08-01
Soybean	Oilseed	2702R	4882	1999-03-29	2018-08-01	2021-08-01
Soybean	Oilseed	28-03R	6144	2006-05-26	2018-08-01	2021-08-01
Soybean	Oilseed	28-12RY	7122	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	28-14RY	7643	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	28-51R	5923	2005-03-21	2018-08-01	2021-08-01
Soybean	Oilseed	28-52R	5924	2005-03-21	2018-08-01	2021-08-01
Soybean	Oilseed	28-60RY	6727	2010-01-29	2019-08-01	2022-08-01
Soybean	Oilseed	28-61RY	6723	2010-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	2801R	4772	1998-06-05	2018-08-01	2021-08-01
Soybean	Oilseed	2802R	5173	2000-08-25	2018-08-01	2021-08-01
Soybean	Oilseed	29-02R	5619	2003-04-02	2018-08-01	2021-08-01
Soybean	Oilseed	29-10RY	6735	2010-02-08	2018-08-01	2021-08-01
Soybean	Oilseed	29-11RY	7123	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	29-52R	6381	2008-02-13	2018-08-01	2021-08-01
Soybean	Oilseed	29-60RY	6725	2010-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	29-62RY	7886	2016-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	30-04R	5617	2003-04-02	2018-08-01	2021-08-01
Soybean	Oilseed	30-06R	5806	2004-05-10	2018-08-01	2021-08-01
Soybean	Oilseed	30-07R	5917	2005-03-10	2018-08-01	2021-08-01
Soybean	Oilseed	30-08 VR	6377	2008-02-04	2018-08-01	2021-08-01
Soybean	Oilseed	30-10RY	6918	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	30-11RY	6935	2011-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	30-12RY	7662	2015-02-09	2018-08-01	2021-08-01
Soybean	Oilseed	30-61RY	6936	2011-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	31-03R	5618	2003-04-02	2018-08-01	2021-08-01
Soybean	Oilseed	31-04R	5809	2004-05-10	2018-08-01	2021-08-01
Soybean	Oilseed	31-10RY	6539	2009-02-02	2018-08-01	2021-08-01
Soybean	Oilseed	31-11RY	6726	2010-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	31-12RY	7650	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	31-14RY	7887	2016-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	31-53R	6385	2008-02-13	2018-08-01	2021-08-01
Soybean	Oilseed	31-60RY	6919	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	31-61RY	7471	2014-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	3102R	5174	2000-08-25	2018-08-01	2021-08-01
Soybean	Oilseed	32-03R	5616	2003-04-02	2018-08-01	2021-08-01
Soybean	Oilseed	32-04R	6004	2005-11-08	2018-08-01	2021-08-01
Soybean	Oilseed	32-05R	6383	2008-02-13	2018-08-01	2021-08-01
Soybean	Oilseed	32-11RY	7108	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	32-12RY	7646	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	32-51R	5918	2005-03-10	2018-08-01	2021-08-01
Soybean	Oilseed	32-52R	6017	2005-11-28	2018-08-01	2021-08-01
Soybean	Oilseed	32-54VR	6376	2008-02-04	2018-08-01	2021-08-01
Soybean	Oilseed	32-55VR	6551	2009-02-24	2018-08-01	2021-08-01
Soybean	Oilseed	32-60RY	6537	2009-02-02	2018-08-01	2021-08-01

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Crop Kind		Variety	Reg. #	Date Registered	Date Posted	Date of Cancellation
Soybean	Oilseed	32-61RY	6920	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	32-62RY	7888	2016-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	3201R	4755	1998-05-20	2018-08-01	2021-08-01
Soybean	Oilseed	5201RR2Y	6538	2009-02-02	2018-08-01	2021-08-01
Soybean	Oilseed	ADV Runaway RR	5705	2003-12-04	2018-08-01	2021-08-01
Soybean	Oilseed	AG2101	4788	1998-07-08	2018-08-01	2021-08-01
Soybean	Oilseed	AG2703	5175	2000-08-25	2018-08-01	2021-08-01
Soybean	Oilseed	Arctic	5513	2002-07-05	2018-08-01	2021-08-01
Soybean	Oilseed	Aspen RR	7117	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	B2111RR	5229	2001-01-03	2018-08-01	2021-08-01
Soybean	Oilseed	Breeze	5614	2003-03-31	2018-08-01	2021-08-01
Soybean	Oilseed	Cairns R2	7894	2016-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	Camaro R2	7464	2014-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	Carda R2	7661	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	CF11GR	6915	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	CF13GR	7305	2013-01-10	2018-08-01	2021-08-01
Soybean	Oilseed	CF14GR	7470	2014-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	CF21GR	6898	2010-11-17	2018-08-01	2021-08-01
Soybean	Oilseed	CF23GR	7264	2012-12-04	2018-08-01	2021-08-01
Soybean	Oilseed	CF30GR	6736	2010-02-08	2018-08-01	2021-08-01
Soybean	Oilseed	CF41GR	6921	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	CF43GR	7261	2012-11-29	2018-08-01	2021-08-01
Soybean	Oilseed	CF51GR	6824	2010-05-14	2018-08-01	2021-08-01
Soybean	Oilseed	CF52GR	7111	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	CF61GR	6941	2011-01-17	2018-08-01	2021-08-01
Soybean	Oilseed	CF65GR	7638	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	Chadburn R2	7013	2011-05-05	2018-08-01	2021-08-01
Soybean	Oilseed	Chinook	5699	2003-11-20	2018-08-01	2021-08-01
Soybean	Oilseed	Corvette R2	7474	2014-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	Currie R2	7112	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	Cyrano RR	5973	2005-07-18	2018-08-01	2021-08-01
Soybean	Oilseed	D601R	5335	2001-06-06	2018-08-01	2021-08-01
Soybean	Oilseed	Dart RR	6825	2010-05-14	2018-08-01	2021-08-01
Soybean	Oilseed	DKB00-65	5270	2001-03-19	2018-08-01	2021-08-01
Soybean	Oilseed	DKB00-99	4918	1999-05-03	2018-08-01	2021-08-01
Soybean	Oilseed	DKB005-51	5497	2002-06-04	2018-08-01	2021-08-01
Soybean	Oilseed	DKB007-67	8464	2018-03-29	2019-08-01	2022-08-01
Soybean	Oilseed	DKB02-04	8465	2018-03-29	2019-08-01	2022-08-01
Soybean	Oilseed	DKB03-95	8278	2017-06-30	2019-08-01	2022-08-01
Soybean	Oilseed	DKB06-43	8289	2017-06-30	2019-08-01	2022-08-01
Soybean	Oilseed	DKB06-52	5527	2002-07-23	2018-08-01	2021-08-01
Soybean	Oilseed	DKB06-61	7806	2015-10-09	2018-08-01	2021-08-01
Soybean	Oilseed	DKB07-51	4919	1999-05-03	2018-08-01	2021-08-01

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Crop Kind		Variety	Reg. #	Date Registered	Date Posted	Date of Cancellation
Soybean	Oilseed	DKB07-75	5269	2001-03-19	2018-08-01	2021-08-01
Soybean	Oilseed	DKB09-91	7807	2015-10-09	2019-08-01	2022-08-01
Soybean	Oilseed	DKB10-01	8016	2016-05-20	2018-08-01	2021-08-01
Soybean	Oilseed	DKB10-54	8284	2017-06-30	2018-08-01	2021-08-01
Soybean	Oilseed	DKB12-57	8279	2017-06-30	2019-08-01	2022-08-01
Soybean	Oilseed	DKB13-51	5176	2000-08-25	2018-08-01	2021-08-01
Soybean	Oilseed	DKB17-34	8286	2017-06-30	2019-08-01	2022-08-01
Soybean	Oilseed	DKB20-01	7809	2015-10-09	2018-08-01	2021-08-01
Soybean	Oilseed	DKB20-10	4996	1999-10-06	2018-08-01	2021-08-01
Soybean	Oilseed	DKB22-21	7810	2015-10-09	2019-08-01	2022-08-01
Soybean	Oilseed	DKB23-51	5177	2000-08-25	2018-08-01	2021-08-01
Soybean	Oilseed	DKB24-41	7811	2015-10-09	2018-08-01	2021-08-01
Soybean	Oilseed	DKB26-51	5178	2000-08-25	2018-08-01	2021-08-01
Soybean	Oilseed	DKB26-52	5182	2000-09-08	2018-08-01	2021-08-01
Soybean	Oilseed	DKB26-61	8018	2016-05-20	2019-08-01	2022-08-01
Soybean	Oilseed	Drakorr	5813	2004-05-12	2016-08-01	2019-08-01
Soybean	Oilseed	Endurance R2	6917	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	Fulgorarr	6570	2009-03-16	2016-08-01	2019-08-01
Soybean	Oilseed	Fury RR	6897	2010-11-17	2018-08-01	2021-08-01
Soybean	Oilseed	Geryon RR	6692	2009-12-24	2018-08-01	2021-08-01
Soybean	Oilseed	HS 03RY11	6835	2010-06-09	2018-08-01	2021-08-01
Soybean	Oilseed	HS 09RYS12	6933	2011-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	HS 16RY04	6751	2010-02-26	2018-08-01	2021-08-01
Soybean	Oilseed	HS 24RYS01	6541	2009-02-04	2018-08-01	2021-08-01
Soybean	Oilseed	HS 24RYS15	6922	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	HS 26RYS16	6823	2010-05-14	2018-08-01	2021-08-01
Soybean	Oilseed	HS 28RYS28	7081	2011-11-18	2018-08-01	2021-08-01
Soybean	Oilseed	Hyperion	6569	2009-03-16	2016-08-01	2019-08-01
Soybean	Oilseed	Imana R2	7269	2012-12-04	2018-08-01	2021-08-01
Soybean	Oilseed	Isisrr	6576	2009-03-26	2016-08-01	2019-08-01
Soybean	Oilseed	Jade	5760	2004-03-23	2018-08-01	2021-08-01
Soybean	Oilseed	Laka R2	6999	2011-04-11	2018-08-01	2021-08-01
Soybean	Oilseed	LS 002R23	7270	2012-12-04	2018-08-01	2021-08-01
Soybean	Oilseed	LS 003R22	7164	2012-03-13	2018-08-01	2021-08-01
Soybean	Oilseed	LS 004R25	7660	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	LS 005R24	7481	2014-02-11	2018-08-01	2021-08-01
Soybean	Oilseed	LS 006R21	6992	2011-04-06	2018-08-01	2021-08-01
Soybean	Oilseed	LS 007R22	7074	2011-10-19	2018-08-01	2021-08-01
Soybean	Oilseed	LS Northwester	7657	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	Lynxrr	5759	2004-03-18	2016-08-01	2019-08-01
Soybean	Oilseed	Maheo R2	7000	2011-04-11	2018-08-01	2021-08-01
Soybean	Oilseed	Malibu R2	7463	2014-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	Mirada Rr	7116	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	Monaco RR	7041	2011-07-14	2018-08-01	2021-08-01
Soybean	Oilseed	Montero R2	7216	2012-06-07	2018-08-01	2021-08-01
Soybean	Oilseed	Murano R2	6961	2011-02-17	2018-08-01	2021-08-01
Soybean	Oilseed	Nanook R2	7476	2014-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	NSC Anola RR2Y	7087	2011-12-01	2018-08-01	2021-08-01
Soybean	Oilseed	NSC Argyle RR	6693	2009-12-24	2018-08-01	2021-08-01
Soybean	Oilseed	NSC Balmoral RR2Y	7023	2011-05-16	2018-08-01	2021-08-01
Soybean	Oilseed	NSC Elie RR2Y	7124	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	Olexrr	5469	2002-04-29	2016-08-01	2019-08-01
Soybean	Oilseed	Opto R2	7113	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	Pekko R2	7100	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	Polar	5604	2003-03-25	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 2615R	6131	2006-05-15	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 2635R2	6934	2011-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 2725R2	7115	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 2775 R2	7468	2014-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 2790R	5370	2001-10-29	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 2825R2C	6924	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 2835R2	6724	2010-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 285	4588	1997-05-06	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 2915R	6146	2006-05-24	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 2935R2C	6925	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 3090R	5369	2001-10-29	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 315	4646	1997-11-05	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 3190R	5766	2004-03-24	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 3195R	5812	2004-05-12	2018-08-01	2021-08-01
Soybean	Oilseed	PRO 3215R2C	6834	2010-06-09	2018-08-01	2021-08-01
Soybean	Oilseed	PRO2900R2	7897	2016-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	PRO3175R2	7895	2016-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	PRO3225R2X	7819	2015-10-09	2018-08-01	2021-08-01
Soybean	Oilseed	PS 0027 RR	6548	2009-02-24	2016-08-01	2019-08-01
Soybean	Oilseed	PS 0044 XRN	8306	2017-07-21	2018-08-01	2021-08-01
Soybean	Oilseed	PS 0083 R2	7104	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	PS 0088 R2	7893	2016-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	PS 0753 R2	7033	2011-07-07	2018-08-01	2021-08-01
Soybean	Oilseed	PS 1315NR2	7640	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	PS 1563 R2	7085	2011-12-01	2018-08-01	2021-08-01
Soybean	Oilseed	PS 1614 NR2	7274	2012-12-04	2018-08-01	2021-08-01
Soybean	Oilseed	PS 2014 NR2	7283	2012-12-12	2018-08-01	2021-08-01
Soybean	Oilseed	PS 2314 NR2	7290	2012-12-17	2018-08-01	2021-08-01
Soybean	Oilseed	PS 2335 NR2	7649	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	PS 2393 NR2	7086	2011-12-01	2018-08-01	2021-08-01
Soybean	Oilseed	PS 2797 NR2	6752	2010-02-26	2018-08-01	2021-08-01
Soybean	Oilseed	PS 2945 NR2	7473	2014-01-13	2018-08-01	2021-08-01

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PROPOSED LIST OF VARIETY REGISTRATION CANCELLATIONS (CONTINUED)

Crop Kind		Variety	Reg. #	Date Registered	Date Posted	Date of Cancellation
Soybean	Oilseed	PS 3092NR2	6985	2011-03-21	2018-08-01	2021-08-01
Soybean	Oilseed	R2C0992	7275	2012-12-04	2018-08-01	2021-08-01
Soybean	Oilseed	R2C1782	7276	2012-12-04	2018-08-01	2021-08-01
Soybean	Oilseed	R2C2000	6946	2011-01-24	2018-08-01	2021-08-01
Soybean	Oilseed	R2C2351	7101	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	R2C2754	7648	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	R2C2861	7103	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	R2C3011	6969	2011-03-03	2018-08-01	2021-08-01
Soybean	Oilseed	R2T0221	7106	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	R2T0510	6926	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	R2T0980	6927	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	R2T1741	7102	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	RC 2723	6018	2005-11-28	2018-08-01	2021-08-01
Soybean	Oilseed	RC 2906	6073	2006-04-13	2018-08-01	2021-08-01
Soybean	Oilseed	RC3125	6003	2005-11-28	2018-08-01	2021-08-01
Soybean	Oilseed	Riotrr	5584	2003-01-31	2016-08-01	2019-08-01
Soybean	Oilseed	RR Robust	4917	1999-05-03	2018-08-01	2021-08-01
Soybean	Oilseed	RR2 Capella	7891	2016-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	RR2 Dynamite	7092	2011-12-06	2018-08-01	2021-08-01
Soybean	Oilseed	RR2 Fusion	7277	2012-12-04	2018-08-01	2021-08-01
Soybean	Oilseed	RR2 Gold	6944	2011-01-24	2018-08-01	2021-08-01
Soybean	Oilseed	RR2 Gravity	6947	2011-01-24	2018-08-01	2021-08-01
Soybean	Oilseed	RR2 Impact	7093	2011-12-06	2018-08-01	2021-08-01
Soybean	Oilseed	RR2 Optic	7890	2016-01-29	2018-08-01	2021-08-01
Soybean	Oilseed	RR2 Platinum	7094	2011-12-06	2018-08-01	2021-08-01
Soybean	Oilseed	RR2 Tungsten	6832	2010-03-31	2018-08-01	2021-08-01
Soybean	Oilseed	RT 2533	6074	2006-04-13	2018-08-01	2021-08-01
Soybean	Oilseed	RT0087	6019	2005-11-28	2018-08-01	2021-08-01
Soybean	Oilseed	RT0395	6016	2005-11-28	2018-08-01	2021-08-01
Soybean	Oilseed	RT2442	6132	2006-05-15	2018-08-01	2021-08-01
Soybean	Oilseed	S00-T9	7260	2012-11-29	2018-08-01	2021-08-01
Soybean	Oilseed	S01-K8	6912	2010-12-21	2018-08-01	2021-08-01
Soybean	Oilseed	S05-A7	7089	2011-12-06	2018-08-01	2021-08-01
Soybean	Oilseed	S05-B3	6954	2011-02-04	2018-08-01	2021-08-01
Soybean	Oilseed	S16-J4	6955	2011-02-04	2018-08-01	2021-08-01
Soybean	Oilseed	S25-W4	6956	2011-02-04	2018-08-01	2021-08-01
Soybean	Oilseed	S28-M1	6957	2011-02-04	2018-08-01	2021-08-01
Soybean	Oilseed	S31-L7	7017	2011-05-10	2018-08-01	2021-08-01
Soybean	Oilseed	Sampsa R2	7125	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	Sanopi R2	7465	2014-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	Santo R2	7459	2014-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	Smith R2	7655	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	Sono R2	7118	2011-12-20	2018-08-01	2021-08-01

Crop Kind		Variety	Reg. #	Date Registered	Date Posted	Date of Cancellation
Soybean	Oilseed	Stealth R2	7278	2012-12-04	2018-08-01	2021-08-01
Soybean	Oilseed	TH 33008R2Y	7215	2012-06-07	2018-08-01	2021-08-01
Soybean	Oilseed	TH 35002 R2Y	7636	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	Theo R2	7119	2011-12-20	2018-08-01	2021-08-01
Soybean	Oilseed	Thesan R2	7040	2011-07-14	2018-08-01	2021-08-01
Soybean	Oilseed	Toreorr	5594	2003-03-06	2016-08-01	2019-08-01
Soybean	Oilseed	Torino R2	7472	2014-01-13	2018-08-01	2021-08-01
Soybean	Oilseed	Twister RR	6945	2011-01-24	2018-08-01	2021-08-01
Soybean	Oilseed	Valiant RR	6943	2011-01-24	2018-08-01	2021-08-01
Soybean	Oilseed	Venture R2	7654	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	Vistarr	5482	2002-05-14	2016-08-01	2019-08-01
Soybean	Oilseed	Volt R2	7641	2015-02-06	2018-08-01	2021-08-01
Soybean	Oilseed	Wizard	4709	1998-03-11	2018-08-01	2021-08-01
Soybean	Oilseed	York	4321	1996-04-24	2018-08-01	2021-08-01
Soybean	Oilseed	Zephyr	4553	1997-04-10	2019-08-01	2022-08-01

2021 INSURED COMMERCIAL ACRES

This insured acreage 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 SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Canola	98,706	1	5,404,794	28	10,380,394	54	3,475,089	18	19,358,984	100
Wheat	55,946		4,460,702	35	5,327,092	42	2,852,048	22	12,695,788	100
Barley	47,652	1	2,719,989	48	2,515,935	44	409,122	7	5,692,698	100
Amber durum			757,026	18	3,551,475	82	1,488		4,309,989	100
Lentils			376,665	11	2,900,292	88	1,070		3,278,027	100
Peas	40,203	1	1,067,919	37	1,575,385	54	212,103	7	2,895,610	100
Oats	50,650	3	339,012	18	820,967	44	647,356	35	1,857,985	100
Soybeans			440		31,186	2	1,249,977	98	1,281,603	100
Flaxseed			88,502	13	547,681	78	61,707	9	697,890	100
Corn			11,668	3	430		383,647	97	395,745	100
Canary seed			1,884	1	236,647	96	6,979	3	245,510	100
Beans			62,983	31	2,049	1	136,079	68	201,111	100
Mustard			62,130	34	117,787	64	2,856	2	182,773	100
Rye	571		31,821	21	15,807	11	100,065	67	148,264	100
Chickpeas			34,836	25	103,205	75			138,041	100
Fababeans			40,303	47	39,461	46	5,206	6	84,970	100
Sunflower			2,936	4			79,890	96	82,826	100
Pea beans							40,204	100	40,204	100
Triticale			22,005	61	11,839	33	2,045	6	35,889	100
Buckwheat							4,416	100	4,416	100

MALTING BARLEY:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

MALT BARLEY SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
CDC Copeland	8,026		385,050	14	578,838	21	21,734	1	993,648	37
AAC Synergy	5,503		301,535	11	464,384	17	32,888	1	804,310	30
AC Metcalfe			121,132	4	173,880	6	16,927	1	311,939	12
AAC Connect	5,448		98,191	4	107,024	4	36,349	1	247,012	9
CDC Fraser			26,674	1	56,516	2	10,653		93,843	3
CDC Bow	365		36,551	1	36,172	1	3,855		76,943	3
Legacy			16,287	1	37,562	1	951		54,800	2
CDC Copper	587		18,998	1	3,305		3,542		26,432	1
Newdale			2,655		14,739	1	7,935		25,329	1
Celebration					4,289		14,189	1	18,478	1
Cerveza			9,897		1,629		1,290		12,816	
Bentley			7,955		1,004		813		9,772	
CDC Churchill			4,872		2,548				7,420	
Bill Coors 100			6,652		582				7,234	
CDC Platinum Star					4,749				4,749	
Tradition							2,410		2,410	
CDC Meredith			1,697		704				2,401	
CDC Anderson			1,477						1,477	
CDC Kindersley			1,213						1,213	
Stellar-ND					892				892	
Robust			100				754		854	
CDC Yorkton			495						495	
Lowe			402						402	
AB Brewnet			380						380	
Harrington			358						358	
CDC Battleford			260						260	
Lacey			246						246	
Major			180						180	
Merit 16			150						150	
CDC Clyde			150						150	
CDC Polarstar			50						50	
Total	**19,929**	**1**	**1,043,607**	**39**	**1,488,817**	**55**	**154,290**	**6**	**2,706,643**	**100**

CANARYSEED:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CANARYSEED SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Keet	812	43	61,739	26	2,543	36	65,094	27
Cantate	350	19	56,084	24	1,235	18	57,669	23
Not specified			43,214	18	1,401	20	44,615	18
CDC Cibo			35,819	15	615	9	36,434	15
CDC Calvi	490	26	25,417	11			25,907	11
CDC Lumio			6,700	3			6,700	3
CDC Maria			3,972	2			3,972	2
CDC Togo			2,502	1			2,502	1
CDC Bastia	232	12	1,200	1			1,432	1
Elias					1,185	17	1,185	
Total	**1,884**	**100**	**236,647**	**100**	**6,979**	**100**	**245,510**	**100**

CHICKPEAS:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CHICKPEAS SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
CDC Leader	480	1	58,661	57			59,141	43
CDC Orion	32,542	93	16,116	16			48,658	35
Not specified			17,973	17			17,973	13
Amit (B 90)	1,086	3	5,191	5			6,277	5
CDC Frontier			3,237	3			3,237	2
CDC Consul			2,027	2			2,027	1
CDC Palmer	728	2					728	1
Total	**34,836**	**100**	**103,205**	**100**			**138,041**	**100**

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

NON-MALTING BARLEY: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

NON-MALT SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
CDC Austenson	5,117		504,839	17	510,154	17	148,760	5	1,168,870	39
Not specified	3,362		2,893		269,786	9	12,080		288,121	10
Brahma	4,650		259,569	9	5,270				269,489	9
Oreana			139,627	5	39,471	1	1,450		180,548	6
Claymore			82,488	3	60,772	2	10,353		153,613	5
Sirish	1,557		134,978	5	1,191		770		138,496	5
Canmore			113,941	4			13,917		127,858	4
CDC Coalition			89,435	3	3,434				92,869	3
Champion	308		66,303	2	21,876	1	1,223		89,710	3
CDC Maverick	154		29,984	1	53,147	2	5,430		88,715	3
Conlon			30,014	1	4,271		49,681	2	83,966	3
Xena			78,796	3	2,905				81,701	3
CDC Cowboy			21,916	1	13,839		1,272		37,027	1
Altorado			17,147	1	10,361		671		28,179	1
AB Cattlelac	355		16,799	1	4,416		3,770		25,340	1
AB Advantage	331		11,426		7,730				19,487	1
Amisk			10,275						10,275	
CDC Thompson			9,967						9,967	
AC Mecalfe	7,551								7,551	
Esma			6,053				840		6,893	
Seebe			6,335						6,335	
AC Rosser			1,926		4,163				6,089	
Sundre			2,439		2,758				5,197	
AC Ranger			3,295		1,386				4,681	
CDC Bold			4,610						4,610	
CDC Trey			4,190						4,190	
Ponoka			4,089						4,089	
Desperado							3,672		3,672	
CDC Mcgwire					2,577		943		3,520	
Busby			2,212						2,212	
AC Albright	2,050		160						2,210	
Otal	1,828		378						2,206	
Gadsby			1,407		756				2,163	
AB Wrangler	270		1,801						2,071	
Alston			2,032						2,032	
Goldstar					1,954				1,954	
AC Lacombe	190		1,621						1,811	
Falcon			1,653						1,653	
CDC Earl			1,213						1,213	
Chigwell			1,202						1,202	
Stander			1,178						1,178	
Breton			982						982	
CDC Carter					973				973	
Haybet					903				903	
Stockford					879				879	
Muskwa			872						872	

NON-MALT SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Manley					783				783	
AC Sirius					774				774	
CDC Richard					589				589	
Trochu			525						525	
CDC Tisdale			410						410	
CDC Helgason			408						408	
AB Prime			382						382	
AB Tofield			377						377	
Excel			335						335	
CDC Stratus			315						315	
CDC Alamo			280						280	
Mcleod			278						278	
Vivar			252						252	
Dillon			240						240	
Condor			200						200	
Bridge			188						188	
CDC Aurora Nijo			175						175	
CDC Mindon			165						165	
Conrad			160						160	
TR 18647			156						156	
Torbelino			146						146	
Yuma			142						142	
Johnston			140						140	
Duel			130						130	
Calder			130						130	
CDC Dolly			120						120	
KWS Kellie			120						120	
AB Hague			93						93	
Bonanza			85						85	
CDC Ascent			80						80	
AC Oxbow			69						69	
Jackson			35						35	
AC Harper			35						35	
CDC Hilose			31						31	
Bronco			30						30	
B 1215			30						30	
Leduc			30						30	
Kasota			23						23	
OAC21			17						17	
SR18524			5						5	
Total	**27,723**	**1**	**1,676,382**	**56**	**1,027,118**	**34**	**254,832**	**9**	**2,986,055**	**100**

2021 INSURED COMMERCIAL ACRES (CONTINUED)

BEANS:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

BEANS SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Vibrant					46,377	34	46,377	23
Windbreaker					29,035	21	29,035	14
Island	19,139	30					19,139	10
Eclipse					15,219	11	15,219	8
AAC Whitehorse	14,375	23					14,375	7
Not specified	1,541	2	1,518	74	8,174	6	11,233	6
CDC Blackstrap					10,507	8	10,507	5
AAC Y012	6,844	11					6,844	3
SV6139GR					6,664	5	6,664	3
Pink Panther					5,208	4	5,208	3
Resolute	4,316	7					4,316	2
Crimson					3,268	2	3,268	2
AC Black Diamond	2,636	4					2,636	1
AC Redbond	2,375	4					2,375	1
AAC Expedition	2,332	4					2,332	1
Red Hawk					2,149	2	2,149	1
Black Tails					1,960	1	1,960	1
Chianti					1,958	1	1,958	1
AAC Whitestar	1,896	3					1,896	1
Beryl					1,639	1	1,639	1
AAC Tundra	1,321	2					1,321	1
AAC Y015	1,250	2					1,250	1
Gn Aries					1,168	1	1,168	1
AAC Black Diamond 2	1,160	2					1,160	1
Rampart					1,091	1	1,091	1
AAC Explorer	1,089	2					1,089	1
SV6533GR					1,051	1	1,051	1
Big Red					611		611	
CDC WM-2			531	26			531	
Medicine Hat	529	1					529	
CDC WM-3	522	1					522	
Etna	513	1					513	
Winchester	408	1					408	
CDC White Mountain	284						284	
AAC Burdett	134						134	
Aries	130						130	
Myasi	70						70	
AAAC Y073	65						65	
CDC Starburst	54						54	
Total	**62,983**	**100**	**2,049**	**100**	**136,079**	**100**	**201,111**	**100**

CANOLA:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CANOLA SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
L233P	25,278	26	433,427	8	2,231,652	22	1,044,292	30	3,734,649	19
L345PC	3,888	4	580,241	11	1,242,535	12	293,594	8	2,120,258	11
Not specified	24,411	25	40,084	1	1,313,090	13	32,896	1	1,410,481	7
L340PC	1,108	1	212,113	4	620,380	6	367,321	11	1,200,922	6
L255 PC			167,953	3	346,622	3	291,823	8	806,398	4
L234PC	1,668	2	354,506	7	167,012	2	62,869	2	586,055	3
L357P			49,929	1	294,442	3	156,413	5	500,784	3
45CM39			164,517	3	275,308	3	50,783	1	490,608	3
1028 RR			99,971	2	260,565	3	109,044	3	469,580	2
P506ML	6,124	6	146,493	3	238,713	2	76,515	2	467,845	2
L258HPC			74,226	1	261,369	3	46,306	1	381,901	2
DKTF 96 SC	2,079	2	119,314	2	171,384	2	84,839	2	377,616	2
DKTF98 CR			297,772	6	48,576		4,940		351,288	2
L241C			300,028	6	25,271		862		326,161	2
L252			44,056	1	219,041	2	51,418	1	314,515	2
DKLL 82 SC	477		40,204	1	69,475	1	176,288	5	286,444	1
B3010M			209,213	4	47,068		24,542	1	280,823	1
P501L			80,000	1	135,602	1	34,088	1	249,690	1
P505MSL	930	1	101,592	2	99,035	1	45,099	1	246,656	1
CS2600 CR-T			171,410	3	39,431		7,401		218,242	1
V14-1			35,420	1	154,435	1	11,323		201,178	1
L230	3,541	4	58,574	1	114,094	1	10,831		187,040	1
75-65 RR			66,758	1	100,607	1	9,635		177,000	1
75-42 CR			166,308	3	6,660				172,968	1
PV 761 TM			21,095		119,040	1	12,700		152,835	1
6074 RR	255		4,793		133,361	1	11,820		150,229	1
6090 RR	130		32,476	1	101,560	1	11,525		145,691	1
PV 681 LC	395		73,761	1	66,852	1			141,008	1
45CS40	295		87,722	2	49,050		3,389		140,456	1
44H44	2,471	3	84,728	2	46,815		5,495		139,509	1
45H42			52,828	1	69,843	1	13,721		136,392	1
L352C			32,339	1	78,916	1	16,281		127,536	1
P508MCL			4,066		67,402	1	54,212	2	125,680	1
45M35			43,168	1	64,223	1	1,731		109,122	1
BY 6204 TF	50		40,562	1	50,702		8,478		99,792	1
6076 CR			89,910	2	6,440		993		97,343	1
PV 680 LC			42,249	1	44,806		6,257		93,312	
PV 780 TC			69,702	1	13,410		915		84,027	
75-45 RR	5,491	6	52,858	1	21,019		1,876		81,244	
PV 760 TM	2,813	3	36,277	1	31,992		7,671		78,753	
PV 660 LCM			28,573	1	28,783		16,269		73,625	
DKTF 99 SC			16,963		39,652		13,315		69,930	
PV 540 G			8,588		57,767	1	3,416		69,771	
DKTFLL 21 SC	3,334	3	16,059		21,239		27,228	1	67,860	
1026 RR			16,074		28,771		21,456	1	66,301	
LR344PC			28,623	1	19,653		15,247		63,523	
DKTF97			59,179	1					59,179	
2028 CL			7,053		27,002		24,785	1	58,840	
PV 585 GC			58,660	1					58,660	
B2030MN			6,886		19,034		30,389	1	56,309	
PV 581 GC			47,852	1					47,852	
3010 M					45,313				45,313	
Evolve					40,191		3,419		43,610	
45H37	2,860	3	30,257	1	8,163		1,225		42,505	

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

2021 INSURED COMMERCIAL ACRES (CONTINUED)

CANOLA SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
CS2300			1,902		32,262		7,817		41,981	
B3011			25,128		14,413		2,324		41,865	
V25-5T			8,518		28,265		951		37,734	
74-44 BL			19,246		14,253		1,737		35,236	
V25-3T			11,755		22,725				34,480	
CS2000			27,212	1	6,824				34,036	
D3158CM			7,955		20,190		4,988		33,133	
BY 5125 CL			2,212		24,757		4,444		31,413	
DKTF 97 CRSC					16,580		13,065		29,645	
PV 200 CL	28		2,275		11,991		12,908		27,202	
46H75					16,557		8,429		24,986	
2030					23,826				23,826	
CS2100			6,993		12,789		1,664		21,446	
CS4000 LL	525	1			9,704		10,935		21,164	
P502CL	620	1	2,745		14,266		3,317		20,948	
P607CL			3,792		8,358		8,567		20,717	
2026 CL			2,885		10,440		7,015		20,340	
D3157C			3,131		13,477		3,292		19,900	
45H33			4,854		14,347				19,201	
501					17,899		871		18,770	
V1030			291		17,036				17,327	
V33-1 CL					12,351		4,697		17,048	
585PV GC					16,895				16,895	
BY 5105 CL			2,922		9,873		3,424		16,219	
Evolve			14,999						14,999	
CS2500 CL	536	1	536		3,626		9,909		14,607	
Hyhear 3			420		13,573				13,993	
B1030N			6,053				7,641		13,694	
CS 4000 LL			12,720						12,720	
V24-1			8,991		680		1,808		11,479	
6080 RR			2,387		8,973				11,360	
45CM36			3,712		6,608		754		11,074	
43 E03	1,705	2	8,556		619				10,880	
4166 RR			2,323		8,508				10,831	
1020 RR			648		7,514		1,547		9,709	
PV 560 GM			1,766		6,921		951		9,638	
581PV GC					9,115				9,115	
505 Hyola RR					9,096				9,096	
BY 6207 TF			2,654		5,378		688		8,720	
357 RR					8,592				8,592	
V25-1T			2,826		4,470		956		8,252	
L140P			1,333		3,134		3,505		7,972	
CS2400	2,044	2	3,746		1,031		900		7,721	
L130			2,446		4,618		547		7,611	
CP20R3C			6,457				984		7,441	
DKTF 92 SC			1,049		4,070		2,233		7,352	
1024 RR			338		3,945		2,741		7,024	
5440			1,435		4,466		1,120		7,021	
D3156M			4,411				2,473		6,884	
3156M D					6,817				6,817	
45H76			460		4,849		899		6,208	
CP21T3P			1,229		2,372		2,378		5,979	
1022 RR			246		2,503		2,848		5,597	
PV 530 G			1,239		3,579				4,818	
UA Alfagold			4,572						4,572	
45H35					4,549				4,549	
4187 RR			3,685				699		4,384	
45M38			1,611		2,736				4,347	
L150			2,745		1,466				4,211	
CS 2600 CR-T	3,969	4							3,969	
45H75					3,856				3,856	
DKTF 95 HL					1,705		1,726		3,431	
45H72			1,631		1,794				3,425	
3345			2,463				950		3,413	
45H22			2,494		855				3,349	
V12-1					3,288				3,288	
624 RR			1,091		2,188				3,279	
2153			438				2,829		3,267	
CS2200 CL			439		2,673				3,112	
Early One			2,934						2,934	
P509L			1,467		1,412				2,879	
46A76					1,825		989		2,814	
1867			2,799						2,799	
5545 CL					1,323		1,286		2,609	
PV 591 GCS			2,447						2,447	
45CM44					784		1,636		2,420	
45H29			1,186		1,100				2,286	
D3155C			601		1,567				2,168	
6060 RR			185		1,977				2,162	
73-45 RR			885				1,260		2,145	
46M35					2,137				2,137	
243 CL			2,007						2,007	
DKLL 81 BL			110		1,073		786		1,969	
580PV GC					1,960				1,960	
DKTF94CR			1,096		818				1,914	
NC355TF	985	1	273				646		1,904	
45H31	55		60		1,752				1,867	
5505 CL			1,370		449				1,819	
5525 CL			418		1,387				1,805	
2020 CL			486				1,256		1,742	
34-55			1,071		606				1,677	
D3153					1,636				1,636	
BY 6211 TF			303		1,288				1,591	
5535 CL					739		781		1,520	
1012 RR			522				963		1,485	
1826 RR					1,482				1,482	
591PV GCS					1,444				1,444	
6044 RR			885		514				1,399	
44A04			1,332						1,332	
6040 RR					1,317				1,317	
D3154S					1,270				1,270	
997 RR			100		1,164				1,264	
73-65 RR			405		854				1,259	
45P70					1,221				1,221	
VT 500 G					460		750		1,210	
L157H							1,176		1,176	
74-54 RR			302		865				1,167	
4434 RR			1,141						1,141	
9560 CL					1,135				1,135	
CP19R1C			1,123						1,123	
33-95					1,090				1,090	
1143							1,064		1,064	
1918			154		877				1,031	
DKTFL 95 HL			1,022						1,022	
V22-1					1,022				1,022	
5070			580		417				997	

2021 INSURED COMMERCIAL ACRES (CONTINUED)

CANOLA SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
VT 530 G					971				971	
32-35					961				961	
45A71			930						930	
PV 580 GC			900						900	
SY4166							897		897	
L135C			862						862	
UA Bountygold			862						862	
L261					858				858	
3333 LG					850				850	
74-75 RR					840				840	
83S01 RR			87		745				832	
5843 CL					828				828	
225 RR					800				800	
45H74			766						766	
45A51			65				669		734	
43H57			730						730	
Nex 828 CI							679		679	
SW Wizzard			667						667	
2573							660		660	
13N1119L			660						660	
71-45 RR			650						650	
79K							620		620	
VR 9562 GC			584						584	
SY4157					555				555	
NX4-206 CL			555						555	
4157 RR			513						513	
46A65							505		505	
H215	150		340						490	
75-57 RR			483						483	
6020 RR			481						481	
75-43 RR			438						438	
6802 SW					410				410	
VR 9558 GC			400						400	
C5507			396						396	
NX4-102 RR			385						385	
L120	30		350						380	
Hyhear	339								339	
NX4-104 RR			320						320	
34-65			320						320	
Cash			320						320	
2012 CL			317						317	
6130 RR			310						310	
NEX 845 CL			310						310	
35-25			310						310	
73-67 RR			307						307	
45S56			300						300	
45H25			285						285	
PV 533 G			280						280	
PV 590 GCS			275						275	

CANOLA SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
NEX 500			275						275	
08N554R			269						269	
43 E01			260						260	
45H20			255						255	
PV 531 G			250						250	
45H73			228						228	
45H26			224						224	
1144			215						215	
13N1125L			210						210	
6086 CR			202						202	
CE216910H			200						200	
72-65 RR			198						198	
5003			193						193	
AC Sunbeam			182						182	
SW Spirit River			160						160	
LBD561RR			160						160	
H4250			160						160	
41P55			160						160	
73-55 RR			158						158	
1145			158						158	
SX1502			156						156	
73-35 RR			150						150	
45A54			148						148	
L159			145						145	
Synergy			140						140	
72-35 RR			140						140	
DKC65-95			140						140	
S0097			138						138	
45H24			135						135	
Roper			123						123	
D3150	122								122	
1016 RR			105						105	
4424 RR			104						104	
454 RR			80						80	
Nex 710			77						77	
6056 CR			77						77	
Nex 720			73						73	
72-55 RR			60						60	
NX4-201 CL			50						50	
Kelsey			50						50	
1878 V			45						45	
14GG1221R			40						40	
43 E02			32						32	
Hyhear 1			30						30	
UA 19-4			25						25	
1141			20						20	
Total	**98,706**	**100**	**5,404,794**	**100**	**10,380,394**	**100**	**3,475,089**	**100**	**19,358,984**	**100**

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

2021 INSURED COMMERCIAL ACRES (CONTINUED)

CORN: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CORN SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
P7211AM					61,861	16	61,861	16
P7527AM					41,710	11	41,710	11
P7455R					35,965	9	35,965	9
Not specified	11,668	100			19,525	5	31,193	8
DKC24-06RIB					19,175	5	19,175	5
P7211HR			430	100	18,004	5	18,434	5
DKC31-85RIB					14,974	4	14,974	4
P7861AM					12,879	3	12,879	3
P7958AM					12,776	3	12,776	3
P7417AM					11,791	3	11,791	3
TH 6977 VT2P					11,560	3	11,560	3
DKC33-37RIB					11,309	3	11,309	3
DKC29-89RIB					10,733	3	10,733	3
DKC33-78RIB					8,805	2	8,805	2
TH6079 VT2P					7,463	2	7,463	2
P7861R					5,462	1	5,462	1
TH 6982 VT2P					5,364	1	5,364	1
P8588AM					5,326	1	5,326	1
A4939G2 RIB					5,130	1	5,130	1
P7417R					4,704	1	4,704	1
DKC35-88RIB					4,018	1	4,018	1
DKC26-40					3,854	1	3,854	1
P8407AM					3,727	1	3,727	1
2123 VT2P RIB					3,439	1	3,439	1
DKC21-36RIB					3,389	1	3,389	1
TH 6875 VT2P					2,980	1	2,980	1
DKC 23-17 RIB					2,428	1	2,428	1
MZ 1688 DBR					2,338	1	2,338	1
PV 61180 RIB					2,248	1	2,248	1
TH4072 RR					1,897		1,897	
2288VT2P					1,770		1,770	
P7202AM					1,559		1,559	
A3993G2 RIB					1,526		1,526	

CORN SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
PV 21276RIB					1,348		1,348	
P7005AM					1,321		1,321	
P7443R					1,188		1,188	
PS 2552RR					1,165		1,165	
P7572AMXT					1,130		1,130	
TH 7578 VT2P RIB					1,120		1,120	
DKC24-05					987		987	
P7940AM					984		984	
PV 60172RR					968		968	
P8234AM					924		924	
NS 72-521 VT2P RIB					913		913	
DKC35-37RIB					879		879	
TH7578 VT2P					770		770	
P8407Q					725		725	
E49K32 R					710		710	
A4199G2 RIB					675		675	
TH6182 VT2P					640		640	
TH7677 VT2P					634		634	
NK 7837					625		625	
P6909R					616		616	
P7632AM					614		614	
P7445R					610		610	
P7958YHR					606		606	
DKC34-57RIB					605		605	
DL 800					603		603	
MZ 1544DBR					551		551	
PV60075 RIB					533		533	
DKC27-33					511		511	
HZ 1885					503		503	
P8581R					500		500	
Total	**11,668**	**100**	**430**	**100**	**383,647**	**100**	**395,745**	**100**

FABABEANS: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

FABABEANS SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Snowbird	33,397	83	30,294	77	3,004	58	66,695	78
Not specified	10		6,422	16	748	14	7,180	8
Fabelle	4,920	12					4,920	6
FB9-4			2,120	5			2,120	2
CDC Snowdrop	1,103	3	625	2			1,728	2
DL Rico					766	15	766	1
DL Tesoro					688	13	688	1
219-16	573	1					573	1
Malik	175						175	
CDC SSNS-1	73						73	
Rodeo	45						45	
Tabasco	7						7	
Total	**40,303**	**100**	**39,461**	**100**	**5,206**	**100**	**84,970**	**100**

MUSTARD: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

MUSTARD SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Andante	46,732	75	38,183	32	1,453	51	86,368	47
Centennial Brown	4,380	7	37,159	32			41,539	23
Not Specified	71		20,606	17	1,403	49	22,080	12
Cutlass			12,189	10			12,189	7
AC Pennant	8,924	14	776	1			9,700	5
AAC Brown 18	650	1	6,281	5			6,931	4
Forge	680	1	2,593	2			3,273	2
AAC Yellow 80	480	1					480	
AAC Adagio	213						213	
Total	**62,130**	**100**	**117,787**	**100**	**2,856**	**100**	**182,773**	**100**

2021 INSURED COMMERCIAL ACRES (CONTINUED)

FLAX:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

FLAX SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
CDC Glas	32,574	37	195,762	36	24,279	39	252,615	36
Not specified	505	1	106,594	19	2,364	4	109,463	16
CDC Sorrel	7,896	9	66,303	12	7,202	12	81,401	12
CDC Bethune	3,679	4	47,588	9	5,132	8	56,399	8
AAC Bravo	6,461	7	19,401	4	3,809	6	29,671	4
CDC Neela	4,404	5	14,912	3	7,954	13	27,270	4
Westlin 72	4,124	5	11,558	2	1,630	3	17,312	2
CDC Sanctuary	1,449	2	14,330	3			15,779	2
Topaz	447	1	13,793	3			14,240	2
AAC Marvelous	7,179	8	6,224	1	738	1	14,141	2
VT50	410		11,156	2	1,280	2	12,846	2
Prairie Sapphire	4,411	5	3,924	1			8,335	1
Omega	340		7,388	1			7,728	1
CDC Plava	1,900	2	2,371		2,932	5	7,203	1
Vimy			7,150	1			7,150	1
CDC Dorado	4,850	5	1,702		535	1	7,087	1
Westlin 71	1,349	2	3,377	1			4,726	1
Westlin 70			3,957	1	584	1	4,541	1
AAC Bright	188		2,717	1	769	1	3,674	1
CDC Rowland	2,634	3	917				3,551	1
Hanley	1,570	2			743	1	2,313	
Lightning					1,756	3	1,756	
Norlin	80		1,380				1,460	
CDC Gold	442	1	852				1,294	
AC Lightning			1,239				1,239	
Prairie Blue			1,202				1,202	
Taurus			1,106				1,106	
Somme			778				778	
McGregor	674	1					674	
AAC Prairie Sunshine	646	1					646	
Westlin 60	150						150	
AC Watson	80						80	
CDC Kernen	45						45	
Prairie Grande	15						15	
Total	**88,502**	**100**	**547,681**	**100**	**61,707**	**100**	**697,890**	**100**

LENTILS:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

LENTILS SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
CDC Maxim	140,923	37	749,964	26			890,887	27
CDC Impulse	65,906	18	431,423	15			497,329	15
CDC Proclaim	70,999	19	342,333	12	570	53	413,902	13
Not Specified	1,036		411,821	14	500	47	413,357	13
CDC Greenstar	24,559	7	201,991	7			226,550	7
CDC Imvincible	147		160,053	6			160,200	5
CDC Greenland	150		145,599	5			145,749	4
CDC Dazil	15,218	4	114,568	4			129,786	4
CDC Lima	15,082	4	58,583	2			73,665	2
CDC Impower	14,541	4	58,657	2			73,198	2
Redmoon			60,322	2			60,322	2
CDC Improve	13,596	4	25,399	1			38,995	1
CDC Kermit			25,840	1			25,840	1
CDC Simmie	1,530		19,578	1			21,108	1
CDC Imax	8,840	2	10,993				19,833	1
Nimble			16,268	1			16,268	1
CDC Impact	475		15,728	1			16,203	
CDC Viceroy			11,801				11,801	
CDC Impress			8,553				8,553	
CDC Richlea	770		4,121				4,891	
CDC Blaze			4,470				4,470	
CDC Imperial			3,372				3,372	
CDC Peridot CI			3,118				3,118	
CDC Rouleau			2,471				2,471	
CDC Iberina			2,433				2,433	
CDC KR-2			2,312				2,312	
CDC Grandora			2,211				2,211	
CDC Glamis			1,781				1,781	
CDC Redberry			1,505				1,505	
CDC Marble			1,380				1,380	
CDC Impala	973						973	
CDC Nimble	960						960	
CDC Lemay	960						960	
CDC Plato			660				660	
CDC SB-4			504				504	
CDC Redwing			480				480	
Total	**376,665**	**100**	**2,900,292**	**100**	**1,070**	**100**	**3,278,027**	**100**

2021 INSURED COMMERCIAL ACRES (CONTINUED)

OATS: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

OATS SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
CS Camden	2,744		55,212	3	279,752	15	202,304	11	540,012	29
AC Morgan	18,677	1	177,255	10	113,141	6	5,102		314,175	17
Summit			729		57,303	3	210,510	11	268,542	14
CDC Arborg	5,538		20,898	1	88,825	5	55,723	3	170,984	9
Not Specified	1,028		1,440		95,862	5	18,064	1	116,394	6
ORE3542M	3,723		7,936		11,961	1	57,671	3	81,291	4
CDC Ruffian	390		2,710		32,214	2			35,314	2
CDC Haymaker	150		5,162		13,640	1	16,028	1	34,980	2
CDC SO-I			13,466	1	13,063	1	7,077		33,606	2
Triactor					31,896	2	1,054		32,950	2
AC Mustang	16,938	1	12,822	1	2,050				31,810	2
Souris					12,428	1	16,078	1	28,506	2
Derby	275		12,922	1	6,067				19,264	1
CDC Dancer			120		15,643	1	2,170		17,933	1
CDC Endure			364		3,683		13,758	1	17,805	1
ORE3541M	633		191		1,814		13,705	1	16,343	1
CDC Nasser			12,035	1	3,164		795		15,994	1
Pinnacle					3,135		7,620		10,755	1
Leggett					6,777		2,749		9,526	1
CDC Baler			3,843		3,441		2,034		9,318	1
CDC Minstrel					7,930		917		8,847	
CDC Morrison					5,621		1,740		7,361	
CDC Orrin					5,134				5,134	
Calibre	344		1,677		1,910				3,931	
Waldern			2,940						2,940	
CDC Big Brown			455		771		1,530		2,756	
Haywire							2,259		2,259	
Furlong							1,917		1,917	
SW Betania					1,576				1,576	
CDC Seabiscuit			1,316						1,316	
AAC Douglas			28				1,245		1,273	
CDC Boyer					1,176				1,176	

OATS SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Canmore			468				684		1,152	
Ronald					412		579		991	
AAC Justice							970		970	
Triple Crown							936		936	
Harmon			344		578				922	
Cascade	210		680						890	
AC Assiniboia							819		819	
Dumont							783		783	
ORE 6251M			663						663	
7600M			609						609	
Grizzly			546						546	
Robert							535		535	
AC Juniper			508						508	
Foothill			316						316	
LU			310						310	
Murphy			255						255	
Victory			205						205	
Stride			105						105	
CDC SOL-FI			87						87	
CDC Weaver			80						80	
Rodney			80						80	
AC Hunter			66						66	
CDC Norseman			40						40	
Random			32						32	
Tibor			29						29	
Gehl			26						26	
Athabasca			20						20	
Pendek 99			12						12	
Kalio			10						10	
Total	**50,650**	**3**	**339,012**	**18**	**820,967**	**44**	**647,356**	**35**	**1,857,985**	**100**

PEAS: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

PEAS SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
CDC Meadow	20,214	50	395,540	37	236,790	15	10,256	5	662,800	23
AAC Carver			179,806	17	102,521	7	59,914	28	342,241	12
Not specified	2,538	6	14,208	1	269,909	17	3,611	2	290,266	10
AAC Chrome			99,553	9	85,465	5	52,234	25	237,252	8
CDC Inca	441	1	50,842	5	162,130	10	11,564	5	224,977	8
CDC Amarillo	662	2	32,802	3	139,270	9	18,242	9	190,976	7
CDC Spectrum			22,267	2	134,809	9	1,623	1	158,699	5
CDC Saffron			76,642	7	23,165	1	1,035		100,842	3
AAC Ardill			20,057	2	58,045	4			78,102	3
CDC Raezer	1,551	4	18,126	2	48,998	3	1,619	1	70,294	2
CDC Limerick	356	1	21,689	2	43,739	3			65,784	2
CDC Forest	2		10,118	1	49,896	3	2,870	1	62,886	2
Abarth			2,417		19,060	1	18,193	9	39,670	1
CDC Lewochko			5,922	1	23,757	2	8,605	4	38,284	1
CDC Golden			1,912		32,170	2			34,082	1
CDC Greenwater			3,534		28,296	2	937		32,767	1
CDC Spruce			4,329		26,184	2	1,105	1	31,618	1
CDC Striker			10,363	1	16,937	1	1,625	1	28,925	1

PEAS SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
AAC Lacombe			22,408	2	2,015		4,397	2	28,820	1
CDC Mosaic			6,492	1	17,065	1			23,557	1
CDC Canary			15,788	1	4,963				20,751	1
ACC Carver	11,102	28							11,102	
CDC Blazer			888		8,887	1			9,775	
AAC Barrhead	1,548	4	7,448	1					8,996	
AAC Profit			4,074				4,836	2	8,910	
Croma			672		3,290		2,341	1	6,303	
Garde			5,534	1					5,534	
LN4228			5,361	1					5,361	
CDC Treasure			1,266		3,672				4,938	
CDC Acer			1,276		3,112				4,388	
4010			573		695		2,561	1	3,829	
AAC Peace River	1,170	3	2,549						3,719	
Eclipse			285		3,095				3,380	
CDC Bronco					3,318				3,318	

2021 INSURED COMMERCIAL ACRES (CONTINUED)

PEAS SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Profi					3,299				3,299	
CDC Dakota			525		2,536				3,061	
Stratus			2,895						2,895	
Carneval			1,539		1,174				2,713	
Espace			1,228		1,375				2,603	
CDC Sage					2,466				2,466	
DS-Admiral					2,420				2,420	
CDC Hornet			795		1,527				2,322	
CDC Patrick			775		1,545				2,320	
Agassiz			313		774		1,077	1	2,164	
CDC Pluto			1,225		790				2,015	
AAC Comfort	555	1	1,459						2,014	
CDC Tetris			1,956						1,956	
Carrera			1,215		700				1,915	
CDC Athabasca							1,658	1	1,658	
Delta			895		732				1,627	
Banner			1,507						1,507	
AAC Delhi			1,379						1,379	
Century					1,284				1,284	
Livioletta							1,280	1	1,280	
Yellowhead					417		520		937	
SW Salute					871				871	
Redbat 8			744						744	

PEAS SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Midori					734				734	
SW Midas			706						706	
Camry			641						641	
CDC Prosper					619				619	
DL Lacross			495						495	
Nitouche					458				458	
Grande					411				411	
CDC Horizon	65		344						409	
Eiffel			345						345	
AAC Aberdeen			308						308	
SW Capri			290						290	
AAC Liscard			280						280	
Canstar			265						265	
Sorento			240						240	
Cooper			160						160	
Princess			155						155	
Madoc			145						145	
CDC Minuet			135						135	
Astina			119						119	
CPB Concorde			100						100	
Total	**40,203**	**100**	**1,067,919**	**100**	**1,575,385**	**100**	**212,103**	**100**	**2,895,610**	**100**

SOYBEANS: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

SOYBEANS SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
S007-Y4			2,750	9	175,442	14	178,192	14
Not specified	440	100			78,665	6	79,105	6
P006A37X			783	3	62,655	5	63,438	5
DKB005-52					58,200	5	58,200	5
S0009-M2			2,078	7	50,072	4	52,150	4
S001-D8X			1,302	4	41,691	3	42,993	3
NSC Sperling RR2Y					42,414	3	42,414	3
S003-Z4X					38,125	3	38,125	3
TH 87003 R2X					36,900	3	36,900	3
S007-A2XS					34,414	3	34,414	3
DKB002-32					29,182	2	29,182	2
P001A48X					29,012	2	29,012	2
NSC Warren RR			7,251	23	21,759	2	29,010	2
P005A83X					24,657	2	24,657	2
SI 001XTN					23,090	2	23,090	2
NSC Winkler RR2X					22,895	2	22,895	2
AKRAS R2					20,646	2	20,646	2
P005A27X					20,013	2	20,013	2
SI 007XTN					19,512	2	19,512	2
Bourke R2X					17,301	1	17,301	1
P00A49X					16,965	1	16,965	1
25-10 RY					16,823	1	16,823	1
DKB005-51					15,480	1	15,480	1
P003A97X RR2X					14,615	1	14,615	1
DKB0009-89					13,664	1	13,664	1
S005-C9X					13,303	1	13,303	1

SOYBEANS SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
LS 001XT					12,643	1	12,643	1
24-10 RY					11,968	1	11,968	1
PS 0027 RR					10,942	1	10,942	1
Sunna R2X			517	2	10,423	1	10,940	1
LS 007XT					10,804	1	10,804	1
General			10,617	34			10,617	1
NSC Redvers RR2X					10,146	1	10,146	1
TH 88007 R2X					9,918	1	9,918	1
TH 89004 R2X					9,552	1	9,552	1
Mahony R2			1,997	6	7,410	1	9,407	1
Siberia			1,375	4	7,998	1	9,373	1
DKB003-29 RR2X					9,364	1	9,364	1
Amirani R2			1,236	4	7,874	1	9,110	1
NSC Watson RR2Y					8,987	1	8,987	1
OAC Prudence					8,936	1	8,936	1
S006-M4X					8,000	1	8,000	1
PV 16S004 R2X					7,054	1	7,054	1
B0041RX					6,679	1	6,679	1
NSC Gladstone RR2Y					6,445	1	6,445	1
S0009-F2X			800	3	5,643		6,443	1
B003-29					5,759		5,759	
Astro R2					5,598		5,598	
Kudo R2X					5,446		5,446	
LS 0036RR					5,205		5,205	
TH 81007 R2XN					5,083		5,083	
NSC Cartier					4,758		4,758	

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

2021 INSURED COMMERCIAL ACRES (CONTINUED)

SOYBEANS SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
NSC Richer RR2Y					4,424		4,424	
CP005WPRX					4,128		4,128	
Barker R2X					3,974		3,974	
NSC Culross RR2X					3,918		3,918	
PV 15S0009 R2X					3,912		3,912	
Liska					3,646		3,646	
Hana					3,264		3,264	
TH 33003 R2Y					3,229		3,229	
DKB008-48					3,144		3,144	
NSC Aubigny RR2X					3,017		3,017	
DKB0005-44					2,987		2,987	
Elmo E3					2,825		2,825	
Torro R2					2,573		2,573	
Renuka R2X					2,517		2,517	
Reynolds					2,389		2,389	
Mao R2X					2,332		2,332	
B0011RX					2,312		2,312	
TH89009 R2XN					2,283		2,283	
P007A08X					2,282		2,282	
NSC Coulee RR					2,160		2,160	
DKB006-29					2,145		2,145	
DKB008-81					2,044		2,044	
RX Acron					2,036		2,036	
S006-W5					1,870		1,870	
TH 88005 R2X					1,834		1,834	
P00A75X					1,623		1,623	
Mikado R2X					1,467		1,467	
PV 19S006 R2X					1,413		1,413	
TH 32004 R2Y					1,402		1,402	
PV 22S002 R2X					1,399		1,399	
TH 87000 R2X					1,275		1,275	
P9007					1,263		1,263	
DKB 0008-87					1,201		1,201	
S003-L3					1,078		1,078	
Fisher R2X					1,073		1,073	
Bishop R2					1,019		1,019	
DKB00-99					961		961	
LS 003R24N					932		932	
LS 0078RR					891		891	
AAC Edward					891		891	
N001					888		888	
PV 12S007 RX2					862		862	
CW1760277					853		853	
LS 007R22					839		839	
AC 0800RR					809		809	
PS 0068 XR					799		799	
Kebek					765		765	
P001T34R					731		731	
LS 0065RR					714		714	
NSC Newton RR2X					705		705	
S00-W3					702		702	
NSC Holland RR2X					692		692	
TH 24004RR					680		680	
DKB 003-95					662		662	
Maxus					636		636	
DKB0003-24					633		633	
Foote R2					625		625	
P9008					617		617	
SC2450R2					610		610	

SOYBEANS SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
LS 006XT					610		610	
P9004					610		610	
Hart R2X					594		594	
26-10 RY					592		592	
B0051RX					590		590	
NSC Starbuck RRX2					590		590	
LS 004R21					579		579	
S008-N2					565		565	
Prince R2X					563		563	
Fresco R2X					545		545	
LS Mistral					529		529	
Merritt R2X					525		525	
900Y71 RR			480	2			480	
Total	**440**	**100**	**31,186**	**100**	**1,249,977**	**100**	**1,281,603**	**100**

RYE: INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

RYE SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Hazlet			3,325	2	4,852	3	33,751	23	41,928	28
KWS Bono			4,000	3	749	1	18,155	12	22,904	15
KWS Gatano			150		2,942	2	15,535	10	18,627	13
KWS Daniello			8,176	6			5,398	4	13,574	9
Not specified	571		256		5,151	3	6,325	4	12,303	8
KWS Trebiano			1,436	1			7,199	5	8,635	6
Prima			2,034	1	620		3,249	2	5,903	4
Guttino			948	1			4,332	3	5,280	4
KWS Propower			3,589	2					3,589	2
KWS Serafino			3,440	2					3,440	2
Danko							3,423	2	3,423	2
KWS Progas			3,017	2					3,017	2
AC Remington			357				963	1	1,320	1
Brasetto							1,097	1	1,097	1
Gazelle					795	1			795	1
Trebiano Kws					698				698	
Puma							638		638	
Musketeer			620						620	
AC Rifle			323						323	
Dakota			150						150	
Total	**571**		**31,821**	**21**	**15,807**	**11**	**100,065**	**67**	**148,264**	**100**

2021 INSURED COMMERCIAL ACRES (CONTINUED)

TRITICALE:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

TRITICALE SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Not specified	1,522	4	7,414	21	2,045	6	10,981	31
AAC Delight	4,914	14	1,000	3			5,914	16
Bunker	2,403	7	1,116	3			3,519	10
Pronghorn	1,397	4	1,909	5			3,306	9
Tyndal	2,506	7					2,506	7
Brevis	2,080	6					2,080	6
Sunray	1,475	4					1,475	4
Luoma	1,287	4					1,287	4
Taza	676	2	400	1			1,076	3
AC Ultima	850	2					850	2
Surge	748	2					748	2
Ab Stampeder	670	2					670	2
Metzger	360	1					360	1
Pika	232	1					232	1
Wapiti	163						163	
AC Certa	160						160	
09p144	154						154	
AC Alta	129						129	
Fridge	126						126	
Companion	85						85	
Bobcat	40						40	
AC Copia	28						28	
Total	**22,005**	**61**	**11,839**	**33**	**2,045**	**6**	**35,889**	**100**

CPSR WHEAT:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CPSR SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
AAC Penhold	5,235	1	381,197	47	55,684	7	7,199	1	449,315	56
Accelerate			78,872	10	21,070	3	28,384	4	128,326	16
AAC Goodwin			59,997	7			726		60,723	8
SY Rowyn			4,211	1	16,731	2	18,155	2	39,097	5
5700PR			32,839	4	5,279	1			38,118	5
AAC Foray	1,030		12,703	2	19,051	2			32,784	4
AAC Crossfield			27,486	3					27,486	3
AAC Entice	355		13,389	2	540		630		14,914	2
AAC Ryley	1,850		7,586	1					9,436	1
CDC Terrain			3,140						3,140	
SY Rorke			1,785						1,785	
5701PR			1,315						1,315	
CDC Reign			626						626	
5702PR			220						220	
Forefront			190						190	
Total	**8,470**	**1**	**625,556**	**77**	**118,355**	**15**	**55,094**	**7**	**807,475**	**100**

WHEAT VARIETIES BY CLASS:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

ALL WHEAT SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
CWRS	37,526		3,463,603	22	4,423,358	28	2,436,810	15	10,361,297	66
CWAD			756,926	5	3,089,576	20	1,208		3,847,710	24
CPS	8,470		625,556	4	118,355	1	55,094		807,475	5
CWSWS			171,562	1	97,118	1			268,680	2
CNHR	780		71,133		28,773		128,623	1	229,309	1
CWRW	2,903		81,743	1	20,254		34,974		139,874	1
CWSP	1,473		36,498		84,621	1	2,585		125,177	1
CWHWS			6,104		3,200		530		9,834	
Total	**51,151**		**5,213,125**	**33**	**7,865,255**	**50**	**2,659,824**	**17**	**15,789,355**	**100**

CWAD DURUM:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CWAD SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Transcend	184,796	5	1,163,051	30			1,347,847	35
CDC Precision	62,879	2	544,980	14			607,859	16
Brigade	55,103	1	265,716	7			320,819	8
AAC Spitfire	51,373	1	261,764	7			313,137	8
AAC Stronghold	175,992	5	79,762	2	1,208		256,962	7
CDC Alloy	57,882	2	195,321	5			253,203	7
Strongfield	51,398	1	116,205	3			167,603	4
AAC Congress	28,479	1	76,856	2			105,335	3
CDC Fortitude	29,117	1	52,795	1			81,912	2
AAC Grainland	7,952		44,865	1			52,817	1
CDC Dynamic	526		49,319	1			49,845	1
CDC Credence	530		49,050	1			49,580	1
CDC Verona	6,001		38,861	1			44,862	1
AAC Succeed	5,451		27,891	1			33,342	1
AAC Raymore	22,018	1	7,906				29,924	1
AC Navigator			18,038				18,038	
Enterprise	5,169		11,142				16,311	
Eurostar			16,255				16,255	
AAC Current	466		11,417				11,883	
Kyle	404		10,983				11,387	
CDC Carbide			11,323				11,323	
Commander			9,975				9,975	
AAC Cabri			7,857				7,857	
AAC Marchwell			6,830				6,830	
CDC Defy	425		5,489				5,914	
CDC Vivid	5,193						5,193	
AC Avonlea	1,120		2,250				3,370	
AAC Goldnet	3,236						3,236	
CDC Desire			2,777				2,777	
AAC Donlow	814		898				1,712	
CDC Flare	366						366	
CDC Covert	136						136	
Sceptre	100						100	
Total	**756,926**	**20**	**3,089,576**	**80**	**1,208**		**3,847,710**	**100**

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

CRWS WHEAT:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CWRS SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
AAC Brandon	3,315		1,165,705	11	1,435,541	14	1,291,661	12	3,896,222	38
AAC Viewfield	4,580		700,661	7	523,710	5	207,203	2	1,436,154	14
CDC Landmark	1,050		68,177	1	634,326	6	32,455		736,008	7
AAC Elie	3,055		300,469	3	115,514	1	96,208	1	515,246	5
AAC Redberry	1,297		190,653	2	175,339	2	125,031	1	492,320	5
AAC Starbuck			18,109		127,297	1	244,830	2	390,236	4
AAC Wheatland			105,135	1	127,869	1	99,191	1	332,195	3
AAC Alida			6,500		261,027	3	3,808		271,335	3
CDC Go	8,698		154,564	1	3,213		1,796		168,271	2
CDC Plentiful			50,865		112,260	1	4,845		167,970	2
Stettler	2,329		147,829	1	8,749				158,907	2
Carberry			49,761		80,998	1	13,378		144,137	1
Cardale			6,288		93,267	1	44,323		143,878	1
CDC Hughes			28,288		99,329	1	6,658		134,275	1
AAC Cameron			2,220		96,884	1	22,069		121,173	1
CDC Utmost			36,971		81,570	1			118,541	1
CDC Abound			108,491	1	9,145				117,636	1
Bolles			1,102		14,076		101,950	1	117,128	1
AAC Leroy			16,684		58,848	1	27,158		102,690	1
CDC Stanley	898		48,822		37,264		7,326		94,310	1
CDC Titanium	1,314		13,329		66,293	1	566		81,502	1
Glenn			17,249		32,427		10,645		60,321	1
AAC Tisdale	3,277		4,432		23,898		26,478		58,085	1
AAC Connery			43,952		8,317		1,205		53,474	1
Shaw			17,914		21,174				39,088	
CDC Ortona			21,204		8,121		3,026		32,351	
AAC Jatharia					31,543				31,543	
Sy Torach			1,940		11,919		17,047		30,906	
CDC Vr Morris			2,084		22,076		5,046		29,206	
Parata	4,009		22,757		718				27,484	
AC Barrie			3,773		18,616		3,223		25,612	
SY Gabbro			4,398		2,704		15,965		23,067	
Thorsby			21,262						21,262	
AC Intrepid	2,310		6,332		8,901				17,543	
Superb			12,772		4,270				17,042	
CDC Adamant			4,935		6,506				11,441	
Daybreak							11,201		11,201	
Goodeve			1,315		9,533				10,848	
AC Splendor			3,579		6,070		592		10,241	
Waskada					8,634		688		9,322	
WR859 CL			1,628		6,787				8,415	
CDC Imagine			4,295		2,815		1,160		8,270	
Go Early			6,719						6,719	

CWRS SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
AAC Prevail					6,501				6,501	
Jake	1,280		5,173						6,453	
5604HR CL			1,258		2,243		1,903		5,404	
AC Cadillac			3,115		1,741				4,856	
Ellerslie			4,137		560				4,697	
SY Cast			713				3,795		4,508	
AC Elsa			2,098		1,924				4,022	
CDC Teal			1,382				2,109		3,491	
CDC Bradwell			856		2,614				3,470	
AAC Magnet			277		2,011		977		3,265	
Roblin			2,385		564				2,949	
SY Sovite					2,460				2,460	
CDC Skrush			1,685				770		2,455	
AAC Warman			961		1,438				2,399	
Prodigy			1,066		1,181				2,247	
AAC Redstar	115		1,757						1,872	
Zealand			1,786						1,786	
Rednet			804		898				1,702	
SY Obsidian			1,504						1,504	
CDC Alsask			1,318						1,318	
AAC Russell			1,317						1,317	
AAC Broadacres			1,205						1,205	
CDC Bounty			562		622				1,184	
Laura			444		640				1,084	
CDC Pilar CLplus			940						940	
5602HR			715						715	
Coleman			690						690	
Sheba			625						625	
AAC Bailey			605						605	
AAC Hockley			45				524		569	
Infinity			148		413				561	
CDC Thrive			327						327	
CDC Succession CLPlus			256						256	
Somerset			114						114	
SY Crossite			60						60	
Resolve			60						60	
Tracker			38						38	
AAC Hodge			12						12	
Noor			2						2	
Total	**37,526**		**3,463,603**	**33**	**4,423,358**	**43**	**2,436,810**	**24**	**10,361,297**	**100**

CWSWS WHEAT:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CWSWS SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Sadash	99,509	37	48,607	18	148,116	55		
AC Andrew	29,360	11	42,032	16	71,392	27		
AAC Paramount	19,592	7	3,277	1	22,869	9		
AC Chiffon	19,388	7	3,202	1	22,590	8		
AC Indus	3,713	1			3,713	1		
Total	171,562	64	97,118	36	268,680	100		

CWHWS WHEAT:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CWHWS SEEDED AREA	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
AAC Cirrus	2,797	28					2,797	28
Snowbird	541	6	1,477	15			2,018	21
AAC Iceberg	1,834	19					1,834	19
Snowstar			1,023	10	530	5	1,553	16
Whitehawk	932	9					932	9
AAC Whitefox			700	7			700	7
Total	**6,104**	**62**	**3,200**	**33**	**530**	**5**	**9,834**	**100**

2021 INSURED COMMERCIAL ACRES (CONTINUED)

CWSP WHEAT:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CWSP SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Pasteur			17,131	14	62,138	50	2,057	2	81,326	65
AAC Awesome			10,072	8	9,848	8			19,920	16
Sparrow			416		8,996	7			9,412	8
Alderon			3,393	3	685	1			4,078	3
Pintail	1,380	1	2,553	2					3,933	3
AAC Innova			1,523	1	1,636	1			3,159	3
WPB Whistler					1,318	1			1,318	1
CDC NRG003			1,307	1					1,307	1
CDC Falcon							528		528	
CDC Ptarmigan	93								93	
CDC Harrier			76						76	
AAC Proclaim			27						27	
Total	**1,473**	**1**	**36,498**	**29**	**84,621**	**68**	**2,585**	**2**	**125,177**	**100**

CNHR WHEAT:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CNHR SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
Faller					7,485	3	98,256	43	105,741	46
AC Foremost			43,562	19			923		44,485	19
Prosper							24,102	11	24,102	11
Aac Redwater	720		7,763	3			1,621	1	10,104	4
Muchmore			8,199	4					8,199	4
Oslo			6,022	3					6,022	3
Conquer					5,768	3			5,768	3
Lillian			1,796	1	3,638	2			5,434	2
5605HR CL			1,937	1	3,036	1			4,973	2
Vesper					4,143	2			4,143	2
Harvest			593		441		1,708	1	2,742	1
Unity					1,542	1			1,542	1
Shelly							1,460	1	1,460	1
AC Crystal			698		509				1,207	1
Kane					970				970	
Elgin ND					726				726	
AC Domain							553		553	
Columbus			25		515				540	
AC Michael			202						202	
Katepwa			152						152	
Park			73						73	
Leader			70						70	
CDC Osler	60								60	
CDC Cordon CLPlus			40						40	
Thatcher			1						1	
Total	**780**		**71,133**	**31**	**28,773**	**13**	**128,623**	**56**	**229,309**	**100**

CWRW WHEAT:
INSURED COMMERCIAL ACRES, DESIGNATED VARIETIES

CWRW SEEDED AREA	B.C. ACRES	%	ALTA. ACRES	%	SASK. ACRES	%	MAN. ACRES	%	TOTAL ACRES	%
AAC Wildfire	1,285	1	54,074	39	8,748	6	1,990	1	66,097	47
Emerson	10		1,264	1	6,770	5	12,457	9	20,501	15
AAC Gateway	184		7,821	6			11,708	8	19,713	14
AAC Elevate			7,445	5			5,564	4	13,009	9
Moats			3,604	3	1,701	1			5,305	4
AAC Goldrush			2,268	2	1,430	1	1,323	1	5,021	4
Radiant	1,424	1	2,767	2					4,191	3
CDC Buteo					1,605	1	1,932	1	3,537	3
AC Readymade			1,063	1					1,063	1
CDC Osprey			642						642	
AC Tempest			378						378	
AAC Network			352						352	
AC Bellatrix			65						65	
Total	**2,903**	**2**	**81,743**	**58**	**20,254**	**14**	**34,974**	**25**	**139,874**	**100**

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

SASKATCHEWAN PEDIGREED SEED GROWERS

2022 Directory of Crop Varieties: This list was prepared by the Canadian Seed Growers Association. It includes varieties eligible for sale in Canada and seed crops issued certificates as of Nov. 15, 2021. CSGA assumes 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 2021. 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 Canadian Seed Growers' Association (CSGA) in 2021. Fields that were declined pedigreed status are not included in this listing. Data in this list is provided for informational purposes only. The CSGA is 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 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

ALGONQUIN

R&E Aitken Farm Ltd.	Eyebrow	306-759-2700				C	
K. Alan Stewart And Sharon Stewart	Carrot River	306-768-7621				C	
Le Bras, Mart & Evan	Arborfield	306-812-8414				C	

DAKOTA

Northstar Seed Ltd.	Neepawa	204-476-5241				C	

GIBRALTAR

Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088				C	

HALO 2

Nutrien Ag Solutions (Canada) (Forages)	Carrot River	306-768-3335				C	

INSTINCT

Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088				C	

TH2

Northstar Seed Ltd.	Neepawa	204-476-5241				C	

VISION

Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088				C	

BARLEY

AAC CONNECT (TWO-ROW)

Je-Jo Farms Ltd.	Glaslyn	306-342-7898				C	
McArthur Agventures	Watrous	306-230-9853				C	
Anderson, Skyler	Hazlet	306-741-6827				C	**
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696	S			C	
Crosson, Lorne & Glen	Welwyn	306-733-4593				C	
Dear, Jonathon	Saskatoon	306-222-0666		F			
Denis, Michel P. & Marc	St. Denis	306-258-2219				C	
Dutton, David H., Vicki & George	Paynton	306-441-9299				C	
Fedoruk, Michael J.	Kamsack	306-542-4235				C	
Frederick Seeds	Watson	306-287-3977				C	
Hetland, Bill & Bohachewski, Joe	Naicam	306-874-5694				C	
Johnson, Lee Stuart	Margo	306-338-7727				C	
Lung Seeds Ltd.	Lake Lenore	306-368-2414		F		C	
Mayerle, Kris	Tisdale	306-873-7301				C	
Novak, Orrin	Kuroki	306-327-7270				C	
Seed Source Inc.	Archerwill	306-323-4402				C	
Trawin Seeds	Melfort	306-752-4060				C	
Wiens, Brennan R.	Herschel	306-831-6352				C	**
Wylie, Leslie Dale	Biggar	306-948-6045		F		C	
Yauck, Kevin Rodney	Govan	306-484-4555		F			

AAC SYNERGY (TWO-ROW)

LLSeeds.ca	Lumsden	306-530-8433				C	
Gregoire Seed Farms Ltd.	North Battleford	306-445-5516				C	
Charabin Seed Farm	North Battleford	306-445-2939			R		
Ferndale Farms Ltd	Rocanville	306-645-4423	S	F			
Berscheid Brothers Seeds	Lake Lenore	306-368-2602			R		
Lakeside Seeds	Wynyard	306-554-2078			R	C	
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S	F	R	C	
Tez Seeds Inc.	Elrose	306-290-7113				C	
McDougall Acres Limited	Moose Jaw	306-693-3649				C	
Beuker, Allan Daniel	Melfort	306-752-4810				C	
Boyd, Clare W. & Dale A.	Melfort	306-752-2564	S		R		
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696				C	
Condie Seed	Regina	306-569-7333				C	
Crosson, Lorne & Glen	Welwyn	306-733-4593			R	C	
Denis, Michel P. & Marc	St. Denis	306-258-2219			R		
Fraser, Scott & Shawn	Pambrun	306-741-0475				C	
Frederick Seeds	Watson	306-287-3977			R	C	
Girodat, Gerald	Shaunavon	306-297-2563		F			
Hanmer, Ronald F., Kent, Brad & Dallas	Govan	306-484-4327			R	C	
Hetland, Bill & Bohachewski, Joe	Naicam	306-874-5694				C	
Hyndman, Glen	Balcarres	306-331-8168			R		
Johnson, Lee Stuart	Margo	306-338-7727				C	
Mayerle, Kris	Tisdale	306-873-7301			R	C	
Ostafie, Robert	Canora	306-563-6244				C	
Petruic, Joe, Cameron L., Judy & Nick	Avonlea	306-868-2240		F			
Sand, Evan	Limerick	306-263-4944				C	
Sayers, Charlie Joseph	Delmas	306-445-6522			R		
Seed Source Inc.	Archerwill	306-323-4402				C	
Smith, Ron T.W. & Barb A.	Limerick	306-263-4944	S				
Smith, Wayne D.	Limerick	306-263-4944			R		
Tomtene, Steven & Brad	Birch Hills	306-749-3447				C	
Wiens, Brennan R.	Herschel	306-831-6352			R		

AB ADVANTAGE (SIX-ROW)

Ardell Seeds Ltd.	Vanscoy	306-668-4415				C	
G&R Kerber Farms Ltd	Rosthern	306-232-4474			R	C	
Huber, Daniel & Rebecca	Landis	306-658-4200				C	
Toman, Rick & Randy	Guernsey	306-365-8386				C	

AB CATTLELAC (SIX-ROW)

Anderson, Skyler	Hazlet	306-741-6827			R		**
Penner, David & Braden	Norquay	306-594-7897			R		

AB TOFIELD (SIX-ROW)

G&R Kerber Farms Ltd	Rosthern	306-232-4474		F			

AB WRANGLER (TWO-ROW)

Southline Ag Services	Climax	306-293-7525			R		
Girodat, Gerald	Shaunavon	306-297-2563			R		

AC METCALFE (TWO-ROW)

Je-Jo Farms Ltd.	Glaslyn	306-342-7898				C	
Olynick, Marlon	Quill Lake	306-383-2920				C	
Youzwa, Donald	Nipawin	306-862-7678				C	

CDC AUSTENSON (TWO-ROW)

McArthur Agventures	Watrous	306-230-9853				C	
Palmier Seed Farms	Lafleche	306-263-3520			R		
Antelope Creek Enterprises Ltd	Central Butte	306-796-7484				C	
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S	F	R		
Seidle Seed Farm	Medstead	306-342-4377		F	R	C	
G&R Kerber Farms Ltd	Rosthern	306-232-4474			R	C	
Buziak, Ronald Charles	Mayfair	306-445-6556				C	

Edmunds, Greg, Michael, Daniel & Glen	Tisdale	306-873-4780				C		
Ennis, Garnet, Neil & Schmidt, Jordan	Glenavon	306-429-2793			R			
Fedoruk, Michael J.	Kamsack	306-542-4235				C		
Foster, Mark (Sk)	Nipawin	306-873-7376				C		
Fraser, Scott & Shawn	Pambrun	306-741-0475				C		
Frederick Seeds	Watson	306-287-3977				C		
Goossen, Mathew	Sturgis	306-547-7432				C		
Heggie, Robert Thomas	Leross	306-795-7493				C		
Johnson, Jordon	Swift Current	306-750-1701				C		
Marcotte, Raymond W.	Kinistino	306-864-2948			R	C		
Mayerle, Kris	Tisdale	306-873-7301			R			
Ostafie, Robert	Canora	306-563-6244				C		
Penner, David & Braden	Norquay	306-594-7897			R			
Rempel, Blair Allan & Nicole	Nipawin	306-862-3573		F				
Rugg, Robert B., John Barry & Brian R.	Elstow	306-257-3638				C		
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377			R			
Wiebe, Josh	Swift Current	306-784-7680				C		
Wilfing, Ryan John	Meadow Lake	306-236-6811			R	C		
Woroschuk, Andrew	Calder	306-742-4682				C		
CDC BOW (TWO-ROW)								
Seidle Seed Farm	Medstead	306-342-4377		F		C		
Reisner Farm Ltd.	Limerick	306-642-8666	S	F	R			
Charabin Seed Farm	North Battleford	306-445-2939				C		
Lakeside Seeds	Wynyard	306-554-2078	S		R			
Je-Jo Farms Ltd.	Glaslyn	306-342-7898				C		
Edmunds, Greg, Michael, Daniel & Glen	Tisdale	306-873-4780				C		
Frederick Seeds	Watson	306-287-3977				C		
Heavin, Larry N. & L. Warren	Melfort	306-752-4020				C		
Heavin, Milton Russell	Melfort	306-752-4071	S	F	R			
Panasiuk, Kelly & Logan & Dean & Dillon	Wadena	306-338-3756				C		
Schemenauer, Sherry., Brad, Brie, Austin, Tori	Lake Lenore	306-368-2414				C	**	
Wakefield, Kristopher & Laurie G. & Monica	Maidstone	780-872-2394			R			
Warkentin, Michael, Toews Bruce & Shawn	Porcupine Plain	306-814-7705				C		
CDC CHURCHILL (TWO-ROW)								
Je-Jo Farms Ltd.	Glaslyn	306-342-7898			R	C		
Berscheid Brothers Seeds	Lake Lenore	306-368-2602			R			
Gregoire Seed Farms Ltd.	North Battleford	306-445-5516				C		
McArthur Agventures	Watrous	306-230-9853				C		
Anderson, Skyler	Hazlet	306-741-6827			R			
Dear, Jonathon	Saskatoon	306-222-0666		F	R			
Denis, Michel P. & Marc	St. Denis	306-258-2219			R			
Fedoruk, Michael J.	Kamsack	306-542-4235	S	F				
Lung Seeds Ltd.	Lake Lenore	306-368-2414			R			
Medernach, Louis J., Kim L. & Kyle	Cudworth	306-256-3991			R			
Ostafie, Robert	Canora	306-563-6244	S	F	R			
Rempel, Blair Allan & Nicole	Nipawin	306-862-3573	S		R			
Rude, Stanley & Assie, Craig	Naicam	306-380-6216			R	C		
Rugg, Robert B., John Barry & Brian R.	Elstow	306-257-3638	S	F				
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687		F		C		
Wakefield, Kristopher & Laurie G. & Monica	Maidstone	780-872-2394			R			
Youzwa, Donald	Nipawin	306-862-7678			R	C		
CDC CLEAR (TWO-ROW)								
Tomtene, Steven & Brad	Birch Hills	306-749-3447			R			
CDC COPELAND (TWO-ROW)								
Berscheid Brothers Seeds	Lake Lenore	306-368-2602				C		
Seidle Seed Farm	Medstead	306-342-4377			R	C		
Sandercock Seed Farm	Balcarres	306-334-2958				C		
Shewchuk Seeds	Blaine Lake	306-497-2800				C		
Blumer, Brad & Doug	Dinsmore	306-460-7744				C		
Boldt, Garry	Osler	306-222-2967				C		

Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235				C		
Filarczuk, Darren	Ituna	306-795-2871				C		
Fraser, Scott & Shawn	Pambrun	306-741-0475			R			
Frederick Seeds	Watson	306-287-3977			R	C		
Fritzler, Baine A. & Adam A.	Govan	306-484-2010			R			
Hannah, Kelvin	Foam Lake	306-269-0228				C		
Heggie, Kyle Robert	Leross	306-795-7493			R			
Hetland, Bill & Bohachewski, Joe	Naicam	306-874-5694				C		
Johnson, Jordon	Swift Current	306-750-1701				C		
Novak, Orrin	Kuroki	306-327-7270			R	C		
Olynick, Marlon	Quill Lake	306-383-2920				C		
Ostafie, Robert	Canora	306-563-6244				C		
Rude, Stanley & Assie, Craig	Naicam	306-380-6216				C		
Sayers, Charlie Joseph	Delmas	306-445-6522			R	C		
Seed Source Inc.	Archerwill	306-323-4402				C		
Wiens, Brennan R.	Herschel	306-831-6352				C		**
CDC COPPER (TWO-ROW)								
Sayers, Charlie Joseph	Delmas	306-445-6522			R			
Smith, Kyle (KTS Farms Ltd.)	Limerick	306-263-4944				C		
Tomtene, Steven & Brad	Birch Hills	306-749-3447	S					
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377	S	F	R			
Wilfing, Ryan John	Meadow Lake	306-236-6811			R			
CDC FRASER (TWO-ROW)								
Seidle Seed Farm	Medstead	306-342-4377	S					
Edwards Farm Co. Ltd.	Nokomis	306-528-7809				C		
Berscheid Brothers Seeds	Lake Lenore	306-368-2602				C		
Fenton Seed Farm Ltd.	Tisdale	306-873-7543				C		
McDougall Acres Limited	Moose Jaw	306-693-3649				C		
Beuker, Allan Daniel	Melfort	306-752-4810			R	C		
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696			R	C		
Edmunds, Greg, Michael, Daniel & Glen	Tisdale	306-873-4780				C		
Fraser, Scott & Shawn	Pambrun	306-741-0475			R	C		
Heggie, Robert Thomas	Leross	306-795-7493				C		
Hetland, Bill & Bohachewski, Joe	Naicam	306-874-5694				C		
Laforge, Troy	Swift Current	306-773-0924				C		
Luck, Lorne C.	Tisdale	306-873-8882				C		
Lung Seeds Ltd.	Lake Lenore	306-368-2414			R			
Medernach, Louis J., Kim L. & Kyle	Cudworth	306-256-3991		F	R			
Olynick, Marlon	Quill Lake	306-383-2920				C		
Panasiuk, Kelly & Logan & Dean & Dillon	Wadena	306-338-3756			R	C		
Pratchler, Leander	Muenster	306-682-3317			R			
Printz, Gerald & Kurt	Gravelbourg	306-648-3511				C		
Rude, Stanley & Assie, Craig	Naicam	306-380-6216	S			C		
Rugg, Robert B., John Barry & Brian R.	Elstow	306-257-3638	S			C		
Seed Source Inc.	Archerwill	306-323-4402				C		
Thoms, Glenn	Bruno	306-231-7892				C		
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687	S	F	R			
Warkentin, Michael, Toews Bruce & Shawn	Porcupine Plain	306-814-7705				C		
Wylie, Leslie Dale	Biggar	306-948-6045			R			
Yauck, Kevin Rodney	Govan	306-484-4555	S	F				
CDC GOLDSTAR (TWO-ROW)								
Tomtene, Steven & Brad	Birch Hills	306-749-3447				C		
Wylie, Leslie Dale	Biggar	306-948-6045		F		C		
CDC HILOSE (TWO-ROW)								
Tomtene, Steven & Brad	Birch Hills	306-749-3447		F				
CDC MAVERICK (TWO-ROW)								
Ardell Seeds Ltd.	Vanscoy	306-668-4415		F	R			
Edwards Farm Co. Ltd.	Nokomis	306-528-7809			R			
Blumer, Brad & Doug	Dinsmore	306-460-7744			R			
Bodnaryk, John E., Ian & Vangen, Stacy	Rhein	306-273-4263			R			
Dear, Jonathon	Saskatoon	306-222-0666	S			C		
Fedoruk, Michael J.	Kamsack	306-542-4235			R			
Girodat, Gerald	Shaunavon	306-297-2563				C		
Hicks, Dale & Barry	Mossbank	306-229-9517				C		
Sayers, Charlie Joseph	Delmas	306-445-6522				C		
Wylie, Leslie Dale	Biggar	306-948-6045				C		

CDC PLATINUM STAR (TWO-ROW)								
Mayerle, Kris	Tisdale	306-873-7301				C		
Tomtene, Steven & Brad	Birch Hills	306-749-3447			R			
CDC RENEGADE (TWO-ROW)								
Fedoruk, Michael J.	Kamsack	306-542-4235	S					
CERVEZA (TWO-ROW)								
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696				C		
ESMA (TWO-ROW)								
Dear, Jonathon	Saskatoon	306-222-0666		F				
Sayers, Charlie Joseph	Delmas	306-445-6522			R			
Tebbutt, Gregg & Blake D.	Nipawin	306-862-9730			R			
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377			R			
LEGACY (SIX-ROW)								
Fenton Seed Farm Ltd.	Tisdale	306-873-7543	S	F	R			
Berscheid Brothers Seeds	Lake Lenore	306-368-2602				C		
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696				C		
Hetland, Bill & Bohachewski, Joe	Naicam	306-874-5694				C		
Latrace, Bill	Caronport	306-693-2626			R			
Ostafie, Robert	Canora	306-563-6244			R	C		
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377			R			
OREANA (TWO-ROW)								
Sayers, Charlie Joseph	Delmas	306-445-6522			R			
RGT PLANET (TWO-ROW)								
Mayerle, Kris	Tisdale	306-873-7301	S		R			
Wylie, Leslie Dale	Biggar	306-948-6045	S	F	R			
ROSELAND (TWO-ROW)								
Wayfinder Farms	Garrick	306-276-2384		F				
STOCKFORD (TWO-ROW)								
Dear, Jonathon	Saskatoon	306-222-0666			R			
TORBELLINO (TWO-ROW)								
Fedoruk, Michael J.	Kamsack	306-542-4235		F				
BEAN								
CDC BLACKSTRAP (BLACK)								
Ewen, Jeff	Riverhurst	306-796-7393		F		C		
CDC SUNBURST (YELLOW)								
Walker Ag Ventures Ltd.	Outlook	306-873-7733		F				
CDC WM-3 (PINTO)								
Walker Ag Ventures Ltd.	Outlook	306-873-7733				C		
BIRDSFOOT TREFOIL								
LEO								
Nutrien Ag Solutions(Canada) (Forages)	Carrot River	306-768-3335				C		
BROMEGRASS								
AC KNOWLES (HYBRID)								
Nutrien Ag Solutions (Canada) (Forages)	Carrot River	306-768-3335				C		
AC SUCCESS (HYBRID)								
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088				C		
ARMADA (MEADOW)								
Trawin Seeds	Melfort	306-752-4060				C		
FLEET (MEADOW)								
Northstar Seed Ltd.	Neepawa	204-476-5241				C		
MBA (MEADOW)								
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088				C		
CANARYGRASS								
CANTATE (ANNUAL)								
Hansen, James S.	Yellow Grass	306-465-2525				C		
CDC CIBO (ANNUAL)								
Herle, Gregory & Andrew E.	Wilkie	306-843-2934			R			**
Hetland, Bill & Bohachewski, Joe	Naicam	306-874-5694			R	C		
Wiens, Brennan R.	Herschel	306-831-6352	S		R			
CDC LUMIO (ANNUAL)								
Tez Seeds Inc.	Elrose	306-290-7113			R			
Simpson Seeds Inc.	Moose Jaw	306-693-9402	S	F				
Frederick Seeds	Watson	306-287-3977			R	C		
Gizen, Jason	Prelate	306-628-8127	S		R			
Herle, Gregory & Andrew E.	Wilkie	306-843-2934			R			

CANARY-GRASS

Lung Seeds Ltd.	Lake Lenore	306-368-2414			R		
Petruic, Joe, Cameron L., Judy & Nick	Avonlea	306-868-2240			R		
Wiens, Brennan R.	Herschel	306-831-6352	S	F	R		

CHICKPEA

CDC CONSUL (DESI)							
Gizen, Jason	Prelate	306-628-8127	S	F	R	C	
CDC KALA (DESI)							
Simpson Seeds Inc.	Moose Jaw	306-693-9402	S				
CDC LANCER (KABULI)							
Simpson Seeds Inc.	Moose Jaw	306-693-9402			R		
Reisner Farm Ltd.	Limerick	306-642-8666	S	F	R		
Fraser, Scott & Shawn	Pambrun	306-741-0475	S	F	R		
Petruic, Joe, Cameron L., Judy & Nick	Avonlea	306-868-2240	S	F	R		
Printz, Gerald & Kurt	Gravelbourg	306-648-3511	S	F	R		
CDC LEADER (KABULI)							
McDougall Acres Limited	Moose Jaw	306-693-3649				C	
Fraser, Scott & Shawn	Pambrun	306-741-0475			R	C	
Printz, Gerald & Kurt	Gravelbourg	306-648-3511				C	
Robinson, Oren A., Marlene & Wade	Landis	306-658-4755	S				
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S	F	R		
CDC ORION (KABULI)							
McDougall Acres Limited	Moose Jaw	306-693-3649			R	C	
Riviere Ag Seeds Ltd.	Radville	306-869-7629				C	
CDC ORKNEY (KABULI)							
Reisner Farm Ltd.	Limerick	306-642-8666	S	F			
LLSeeds.ca	Lumsden	306-530-8433	S	F			
Simpson Seeds Inc.	Moose Jaw	306-693-9402	S	F			
Fraser, Scott & Shawn	Pambrun	306-741-0475	S	F			
Printz, Gerald & Kurt	Gravelbourg	306-648-3511	S	F			
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S	F			
CDC PASQUA (KABULI)							
Reisner Farm Ltd.	Limerick	306-642-8666	S	F			
Simpson Seeds Inc.	Moose Jaw	306-693-9402	S	F			
Crone Farms Inc.	Moose Jaw	306-690-7729		F			
Ackerman, Patrick	Chamberlain	306-631-9577	S				
Fraser, Scott & Shawn	Pambrun	306-741-0475	S				
Printz, Gerald & Kurt	Gravelbourg	306-648-3511	S				
CDC PEARL (KABULI)							
McDougall Acres Limited	Moose Jaw	306-693-3649	S	F			

CICER MILK VETCH

AC VELDT							
Thesen, Perry	Carrot River	306-862-8030				C	

CLOVER

ALTASWEDE (RED)							
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088				C	
AURORA (ALSIKE)							
Nutrien Ag Solutions (Canada) (Forages)	Carrot River	306-768-3335				C	
DAWN (ALSIKE)							
Pickseed Canada Inc. (Mb)	Winnipeg	204-633-0088				C	

FABABEAN

219-16							
Veikle Bros. Farm Inc.	Cut Knife	306-398-7688	S		R		
Baxter, Daniel J.H.	North Battleford	306-445-5414			R		
Hetland, Ronald	Spalding	306-874-7496			R		
Klemmer, Richard	Nipawin	306-862-6859			R		
Rempel, Blair Allan & Nicole	Nipawin	306-862-3573	S		R		
Robertson, Albert James (SK)	Saskatoon	306-270-6627	S				
Scowen, Troy	Nipawin	306-812-8797			R		
Shymanski, Tyler	Choiceland	306-276-8741			R		
Wakefield, Kristopher & Laurie G. & Monica	Maidstone	780-872-2394				C	
Willner, Lorne E.	Davidson	306-567-4613	S				

FABABEAN

CDC SNOWDROP							
Lakeside Seeds	Wynyard	306-554-2078	S	F	R		
DL NEVADO							
Dutton, David H., Vicki & George	Paynton	306-441-9299	S				
DL TESORO							
Berscheid Brothers Seeds	Lake Lenore	306-368-2602		F	R		
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377			R		
FABELLE							
Charabin Seed Farm	North Battleford	306-445-2939				C	
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696	S		R	C	
Lung Seeds Ltd.	Lake Lenore	306-368-2414				C	
Mayerle, Erwin D.	Tisdale	306-873-7301				C	
Rude, Stanley & Assie, Craig	Naicam	306-380-6216	S		R	C	
South, Winston & Richard & Bradley	Melfort	306-921-8411				C	
SNOWBIRD							
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696				C	
Dutton, David H., Vicki & George	Paynton	306-441-9299			R	C	
Mayerle, Erwin D.	Tisdale	306-873-7301			R	C	
Sayers, Charlie Joseph	Delmas	306-445-6522				C	
Trawin Seeds	Melfort	306-752-4060			R		

FESCUE

LAURA (MEADOW)							
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088			R		
SAVORY (TALL)							
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088				C	
SENU (MEADOW)							
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088				C	
SUEDE (TALL)							
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088		F			

FLAX

AAC BRAVO							
Palmier Seed Farms	Lafleche	306-263-3520				C	
Fraser, Scott & Shawn	Pambrun	306-741-0475				C	
Hyndman, Glen	Balcarres	306-331-8168				C	
Tebbutt, Gregg & Blake D.	Nipawin	306-862-9730			R		
AAC BRIGHT							
Ostafie, Robert	Canora	306-563-6244		F			
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377			R		
AAC MARVELOUS							
Ace Crop Care Ltd	Swift Current	306-831-8953			R		
Fedoruk, Michael J.	Kamsack	306-542-4235				C	
Heggie, Kyle Robert	Leross	306-795-7493			R		
Sayers, Charlie Joseph	Delmas	306-445-6522			R		
Smith, Kyle (KTS Farms Ltd.)	Limerick	306-263-4944			R		
Smith, Ron T.W. & Barb A.	Limerick	306-263-4944			R		
CDC BETHUNE *							
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687			R		
CDC GLAS *							
Lakeside Seeds	Wynyard	306-554-2078	S	F			
Ardell Seeds Ltd.	Vanscoy	306-668-4415			R	C	
Shewchuk Seeds	Blaine Lake	306-497-2800				C	
Gregoire Seed Farms Ltd.	North Battleford	306-445-5516				C	
Correction Line Seeds	Ceylon	306-869-5423				C	
Allan, John Garth	Corning	306-457-7015				C	
Allan, John Richard	Corning	306-457-7310				C	
Allan, Raymond N. & Ruth	Corning	306-224-4666				C	
Andres, Wayne	Hepburn	306-227-6905				C	
Beuker, Allan Daniel	Melfort	306-752-4810				C	
Blumer, Brad & Doug	Dinsmore	306-460-7744				C	
Dutton, David H., Vicki & George	Paynton	306-441-9299				C	
Ennis, Garnet, Neil & Schmidt, Jordan	Glenavon	306-429-2793				C	
Fritzler, Baine A. & Adam A.	Govan	306-484-2010	S			C	
Gaertner, Lyle	Tisdale	306-873-4936			R		
Greenshields, Grant, Charlotte, Thomas & Callie	Semans	306-746-7336				C	

FLAX

Heggie, Kyle Robert	Leross	306-795-7493				C
Lung Seeds Ltd.	Lake Lenore	306-368-2414	S			C
Needham, Reginald R.	Oxbow	306-483-5052				C
Ostafie, Robert	Canora	306-563-6244				C
Rugg, Robert B., John Barry & Brian R.	Elstow	306-257-3638				C
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713		F		
Wohlgemuth, Mark	Bredenbury	306-744-7722				C
CDC KERNEN						
Shewchuk Seeds	Blaine Lake	306-497-2800	S	F		
Gregoire Seed Farms Ltd.	North Battleford	306-445-5516	S			
Fraser, Scott & Shawn	Pambrun	306-741-0475		F		
Greenshields, Grant, Charlotte, Thomas & Callie	Semans	306-746-7336		F		
Moroz, Troy	Pelly	306-594-7679		F		
Ostafie, Robert	Canora	306-563-6244	S			
Seed Source Inc.	Archerwill	306-323-4402	S			
Willner, Lorne E.	Davidson	306-567-4613	S			
CDC MELYN (YELLOW)						
Wayfinder Farms	Garrick	306-276-2384		F		
CDC PLAVA						
Yauck, Kevin Rodney	Govan	306-484-4555				C
CDC ROWLAND						
Shewchuk Seeds	Blaine Lake	306-497-2800			R	
McDougall Acres Limited	Moose Jaw	306-693-3649	S	F	R	
Correction Line Seeds	Ceylon	306-869-5423		F	R	
Reisner Farm Ltd.	Limerick	306-642-8666	S	F	R	
Berscheid Brothers Seeds	Lake Lenore	306-368-2602	S	F	R	
Lakeside Seeds	Wynyard	306-554-2078	S	F	R	
Nakonechny Seeds	Ruthilda	306-932-4409		F	R	
Charabin Seed Farm	North Battleford	306-445-2939			R	
Tez Seeds Inc.	Elrose	306-290-7113			R	
Fenton Seed Farm Ltd.	Tisdale	306-873-7543	S	F	R	
Allan, Raymond N. & Ruth	Corning	306-224-4666			R	
Amos, K. Wayne	Oxbow	306-483-2963	S	F	R	
Blumer, Brad & Doug	Dinsmore	306-460-7744			R	
Condie Seed	Regina	306-569-7333			R	
Dear, Jonathon	Saskatoon	306-222-0666		F		
Edmunds, Greg, Michael, Daniel & Glen	Tisdale	306-873-4780			R	
Ellert, David & Christopher	Rockglen	306-476-7623			R	
Ennis, Garnet, Neil & Schmidt, Jordan	Glenavon	306-429-2793			R	
Fraser, Scott & Shawn	Pambrun	306-741-0475	S	F	R	
Fritzler, Baine A. & Adam A.	Govan	306-484-2010		F	R	
Greenshields, Grant, Charlotte, Thomas & Callie	Semans	306-746-7336			R	
Hanley, Erwin & Priscilla	Regina	306-539-3403	S		R	
Lung Seeds Ltd.	Lake Lenore	306-368-2414			R	
Mayerle, Kris	Tisdale	306-873-7301			R	
Noble, Garry	Mossbank	306-354-2679		F		
Novak, Orrin	Kuroki	306-327-7270			R	C
Ostafie, Robert	Canora	306-563-6244			R	
Rugg, Robert B., John Barry & Brian R.	Elstow	306-257-3638	S	F	R	
Schmeling, Donald H.	Riceton	306-530-1052		F		
Seed Source Inc.	Archerwill	306-323-4402			R	
Tebbutt, Gregg & Blake D.	Nipawin	306-862-9730			R	
Trawin Seeds	Melfort	306-752-4060	S	F	R	
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687		F	R	
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713	S			
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S	F	R	
Willner, Brady E.	Davidson	306-567-7662		F		
Willner, Lorne E.	Davidson	306-567-4613	S			
Yauck, Kevin Rodney	Govan	306-484-4555	S	F	R	
CDC SANCTUARY *						
Noble, Garry	Mossbank	306-354-2679				C

CDC SORREL *						
Boyd, Clare W. & Dale A.	Melfort	306-752-2564				C
Edmunds, Greg, Michael, Daniel & Glen	Tisdale	306-873-4780				C
Willner, Brady E.	Davidson	306-567-7662				C
PRAIRIE THUNDER						
Sunset Road Seeds	Richard	306-220-8876				C
TOPAZ						
Girodat, Gerald	Shaunavon	306-297-2563			R	
VT50						
Dear, Jonathon	Saskatoon	306-222-0666			R	

HEMP

BOUNTIFUL						
Inplanta Biotechnology	Calgary	403-329-2579			R	
GRANDI						
Hemp Genetics International Inc.	Saskatoon	204-821-0522			R	C
HEMPNUT						
Benson, Thomas	Regina	306-540-9339				C

LENTIL

CDC CARMINE (SMALL RED)						
Robinson, Oren A., Marlene & Wade	Landis	306-658-4755	S			
CDC CORAL						
Hanley, Erwin & Priscilla	Regina	306-539-3403				C
CDC GREENSTAR (LARGE GREEN)						
Simpson Seeds Inc.	Moose Jaw	306-693-9402			R	
Ellert, David & Christopher	Rockglen	306-476-7623				C
Johnson, Jordon	Swift Current	306-750-1701				C
Moen, Jim	Cabri	306-587-7452			R	
Printz, Gerald & Kurt	Gravelbourg	306-648-3511		F	R	
CDC GRIMM						
Simpson Seeds Inc.	Moose Jaw	306-693-9402	S	F		
Reisner Farm Ltd.	Limerick	306-642-8666	S	F		
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S			
Ackerman, Patrick	Chamberlain	306-631-9577	S			
Condie Seed	Regina	306-569-7333	S			
Fraser, Scott & Shawn	Pambrun	306-741-0475	S			
Printz, Gerald & Kurt	Gravelbourg	306-648-3511	S			
Seymour, Glen Patrick, Donne, Kyle, & Kelly	Stewart Valley	306-778-2344	S			
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S			
Wiens, Brennan R.	Herschel	306-831-6352	S			
CDC IMPULSE (SMALL RED)						
Palmier Seed Farms	Lafleche	306-263-3520				C
McDougall Acres Limited	Moose Jaw	306-693-3649	S	F	R	C
Reisner Farm Ltd.	Limerick	306-642-8666			R	C
Anderson, Skyler	Hazlet	306-741-6827				C
Craswell, Raymond W., Kevin A. & David M.	Strasbourg	306-725-7709	S	F		C
Denis, Michel P. & Marc	St. Denis	306-258-2219				C
Fraser, Scott & Shawn	Pambrun	306-741-0475			R	
Girodat, Gerald	Shaunavon	306-297-2563			R	
Gizen, Jason	Prelate	306-628-8127	S	F	R	
Millar, Craig	Birsay	306-858-7012				C
Petruic, Joe, Cameron L., Judy & Nick	Avonlea	306-868-2240				C
Printz, Gerald & Kurt	Gravelbourg	306-648-3511				C
Shirriff, Keith & Harle, Doug	Regina	306-536-9953				C
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781				C
Wiebe, Josh	Swift Current	306-784-7680				C
Wiens, Brennan R.	Herschel	306-831-6352				C
Willner, Brady E.	Davidson	306-567-7662			R	
CDC IMVINCIBLE						
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781				C
CDC KERMIT						
Day, Ryan	Rouleau	306-596-0262				C
CDC LIMA (LARGE GREEN)						
Correction Line Seeds	Ceylon	306-869-5423				C

McDougall Acres Limited	Moose Jaw	306-693-3649			R	C	
Nakonechny Seeds	Ruthilda	306-932-4409	S	F	R		
Reisner Farm Ltd.	Limerick	306-642-8666			R		
LLSeeds.ca	Lumsden	306-530-8433				C	
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S	F			
Antelope Creek Enterprises Ltd	Central Butte	306-796-7484				C	
Simpson Seeds Inc.	Moose Jaw	306-693-9402			R	C	
Blumer, Brad & Doug	Dinsmore	306-460-7744			R		
Condie Seed	Regina	306-569-7333			R	C	
Dear, Jonathon	Saskatoon	306-222-0666		F			
Ellert, David & Christopher	Rockglen	306-476-7623		F	R		
Ewen, Jeff	Riverhurst	306-796-7393				C	
Fraser, Scott & Shawn	Pambrun	306-741-0475			R	C	
Garratt, Lyle C. & K.C.	Milestone	403-436-2178				C	
Hansen, James S.	Yellow Grass	306-465-2525			R		
Johnson, Jordon	Swift Current	306-750-1701				C	
Nichols, Shae	Moose Jaw	306-631-5064				C	
Petruic, Joe, Cameron L., Judy & Nick	Avonlea	306-868-2240	S	F	R		
Schmeling, Donald H.	Riceton	306-530-1052			R		
Shirriff, Keith & Harle, Doug	Regina	306-536-9953				C	
Smith, Kyle (KTS Farms Ltd.)	Limerick	306-263-4944				C	
Smith, Wayne D.	Limerick	306-263-4944			R		
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781			R	C	
Wiens, Brennan R.	Herschel	306-831-6352	S	F	R	C	
Willner, Brady E.	Davidson	306-567-7662		F			
Willner, Lorne E.	Davidson	306-567-4613	S				
CDC MARBLE							
Greenshields, Grant, Charlotte, Thomas & Callie	Semans	306-746-7336			R		
CDC NIMBLE (SMALL RED)							
Simpson Seeds Inc.	Moose Jaw	306-693-9402			R		
Charabin Seed Farm	North Battleford	306-445-2939			R		
Benson, Cory	Central Butte	306-891-6885			R		
Blumer, Brad & Doug	Dinsmore	306-460-7744			R		
Boldt, Garry	Osler	306-222-2967		F			
Cote, Nickolaus	Cadillac	306-625-7919			R		
Eckart, Tanis	Richmound	306-661-7649			R		
Fritzler, Baine A. & Adam A.	Govan	306-484-2010		F			
Heenan, Thomas Dale & Deb	Regina	306-536-6800		F			
Laforge, Troy	Swift Current	306-773-0924				C	
Toman, Rick & Randy	Guernsey	306-365-8386			R		
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713			R		
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S	F	R		
Wiens, Brennan R.	Herschel	306-831-6352			R		
CDC PERIDOT							
Yauck, Kevin Rodney	Govan	306-484-4555			R		
CDC PROCLAIM (SMALL RED)							
LLSeeds.ca	Lumsden	306-530-8433	S	F		C	
McDougall Acres Limited	Moose Jaw	306-693-3649				C	
Fenton Seed Farm Ltd.	Tisdale	306-873-7543		F			**
Fritzler, Baine A. & Adam A.	Govan	306-484-2010			R		
Hanmer, Ronald F., Kent, Brad & Dallas	Govan	306-484-4327			R		
Smith, Ron T.W. & Barb A.	Limerick	306-263-4944			R		
CDC REDMOON							
Tez Seeds Inc.	Elrose	306-290-7113				C	
Blumer, Brad & Doug	Dinsmore	306-460-7744		F		C	
Printz, Gerald & Kurt	Gravelbourg	306-648-3511			R	C	**
Wiebe, Josh	Swift Current	306-784-7680				C	
Willner, Brady E.	Davidson	306-567-7662			R		
CDC SB-4							
Simpson Seeds Inc.	Moose Jaw	306-693-9402				C	
CDC SIMMIE (SMALL RED)							
Simpson Seeds Inc.	Moose Jaw	306-693-9402				C	
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S	F	R		
JTK Winny Seeds	Rosetown	306-831-6032			R		

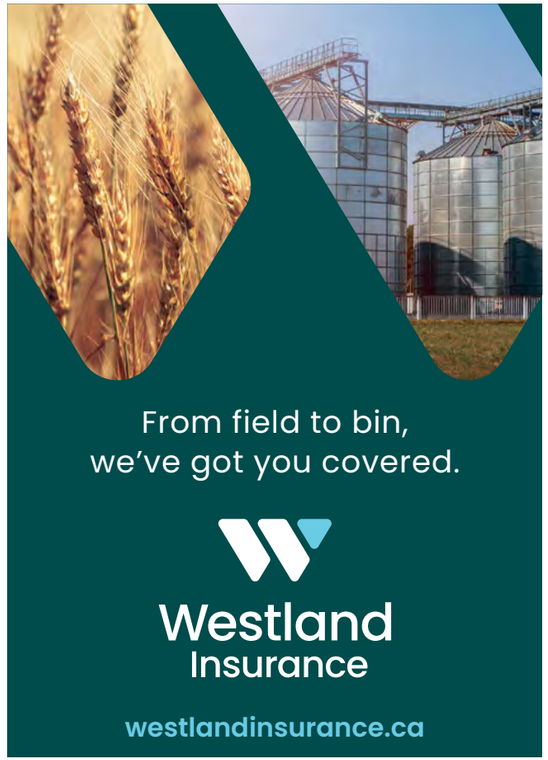
Fenton Seed Farm Ltd.	Tisdale	306-873-7543	S	F	R		
Nakonechny Seeds	Ruthilda	306-932-4409	S	F			
Tez Seeds Inc.	Elrose	306-290-7113			R	C	
McDougall Acres Limited	Moose Jaw	306-693-3649			R	C	
McArthur Agventures	Watrous	306-230-9853			R	C	
Amos, K. Wayne	Oxbow	306-483-2963			R		
Anderson, Skyler	Hazlet	306-741-6827			R		
Blumer, Brad & Doug	Dinsmore	306-460-7744			R		
Condie Seed	Regina	306-569-7333			R		
Craswell, Raymond W., Kevin A. & David M.	Strasbourg	306-725-7709			R		
Crosson, Lee, Max & Will	Welwyn	306-434-7436			R		
Denis, Michel P. & Marc	St. Denis	306-258-2219		F			
Fraser, Scott & Shawn	Pambrun	306-741-0475	S	F	R		
Girodat, Gerald	Shaunavon	306-297-2563			R		
Greenshields, Grant, Charlotte, Thomas & Callie	Semans	306-746-7336			R		
Hanley, Erwin & Priscilla	Regina	306-539-3403	S		R		
Herle, Gregory & Andrew E.	Wilkie	306-843-2934			R		
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S	F	R		
Wiens, Brennan R.	Herschel	306-831-6352		F	R		
Willner, Brady E.	Davidson	306-567-7662		F			
Wohlgemuth, Mark	Bredenbury	306-744-7722			R		
Wylie, Leslie Dale	Biggar	306-948-6045			R		
CDC SUBLIME							
Ardell Seeds Ltd.	Vanscoy	306-668-4415		F			
Meier, Garry L.	Ridgedale	306-873-7652	S				
Moen, Jim	Cabri	306-587-7452	S	F			
INDIAN HEAD (PLOW DOWN)							
Yauck, Kevin Rodney	Govan	306-484-4555		F			

MUSTARD							
AC VULCAN (ORIENTAL)							
Fraser, Scott & Shawn	Pambrun	306-741-0475		F		C	
ANDANTE (YELLOW)							
Greenshields, Grant, Charlotte, Thomas & Callie	Semans	306-746-7336				C	
CENTENNIAL (BROWN)							
Fraser, Scott & Shawn	Pambrun	306-741-0475				C	
Fritzler, Baine A. & Adam A.	Govan	306-484-2010		F		C	

OATS							
AAC DOUGLAS							
Fedoruk, Michael J.	Kamsack	306-542-4235		F			
AAC KONGSORE							
Fedoruk, Michael J.	Kamsack	306-542-4235			R		
AAC ORAVENA							
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235			R		
AC MORGAN							
Seidle Seed Farm	Medstead	306-342-4377		F			
G&R Kerber Farms Ltd	Rosthern	306-232-4474				C	
Beuker, Allan Daniel	Melfort	306-752-4810	S	F			
Edmunds, Greg, Michael, Daniel & Glen	Tisdale	306-873-4780				C	
Goossen, Mathew	Sturgis	306-547-7432				C	
Penner, David & Braden	Norquay	306-594-7897				C	
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687	S	F		C	
Wilfing, Ryan John	Meadow Lake	306-236-6811				C	
CDC ARBORG							
Fenton Seed Farm Ltd.	Tisdale	306-873-7543	S	F		C	
Palmier Seed Farms	Lafleche	306-263-3520				C	
Edwards Farm Co. Ltd.	Nokomis	306-528-7809			R		
Charabin Seed Farm	North Battleford	306-445-2939				C	
Ferndale Farms Ltd	Rocanville	306-645-4423		F		C	
McArthur Agventures	Watrous	306-230-9853				C	
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696				C	
Condie Seed	Regina	306-569-7333			R		
Danielson, Lionel & Bonnie	Norquay	306-594-7417			R		
Dear, Jonathon	Saskatoon	306-222-0666				C	

OAT

Fedoruk, Michael J.	Kamsack	306-542-4235				C
Fraser, Scott & Shawn	Pambrun	306-741-0475				C
Frederick Seeds	Watson	306-287-3977				C
Heggie, Kyle Robert	Leross	306-795-7493				C
Hetland, Bill & Bohachewski, Joe	Naicam	306-874-5694				C
Lindgren, Jordan & Jennifer	Norquay	306-594-7644				C
Littman, Allan Blake & L. Robert & Adam	Saltcoats	306-744-7708				C
Mayerle, Kris	Tisdale	306-873-7301				C
Ostafie, Robert	Canora	306-563-6244				C
Sayers, Charlie Joseph	Delmas	306-445-6522				C
Seed Source Inc.	Archerwill	306-323-4402	F	R		C
Trawin Seeds	Melfort	306-752-4060				C
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377				C
Wakefield, Kristopher & Laurie G. & Monica	Maidstone	780-872-2394				C
Wilfing, Ryan John	Meadow Lake	306-236-6811				C
CDC BALER (FORAGE)						
Trawin Seeds	Melfort	306-752-4060				C
CDC ENDURE						
Sunset Road Seeds	Richard	306-220-8876			R	
G&R Kerber Farms Ltd	Rosthern	306-232-4474			R	
McDougall Acres Limited	Moose Jaw	306-693-3649			R	
Seidle Seed Farm	Medstead	306-342-4377			R	
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S		R	
Beuker, Allan Daniel	Melfort	306-752-4810			R	
Bodnaryk, John E., Ian & Vangen, Stacy	Rhein	306-273-4263			R	
Crosson, Lorne & Glen	Welwyn	306-733-4593	F			
Fedoruk, Rod M. & Cathy	Kamsack	306-542-4235			R	
Frederick Seeds	Watson	306-287-3977			R	
Gaertner, Lyle	Tisdale	306-873-4936	F			
Goossen, Mathew	Sturgis	306-547-7432			R	
Rempel, Blair Allan & Nicole	Nipawin	306-862-3573			R	
Sayers, Charlie Joseph	Delmas	306-445-6522			R	
Trawin Seeds	Melfort	306-752-4060			R	
Warkentin, Michael, Toews Bruce & Shawn	Porcupine Plain	306-814-7705			R	
Wilfing, Ryan John	Meadow Lake	306-236-6811			R	
Wohlgemuth, Mark	Bredenbury	306-744-7722			R	
CDC HAYMAKER						
Ardell Seeds Ltd.	Vanscoy	306-668-4415			R	
G&R Kerber Farms Ltd	Rosthern	306-232-4474				C
Axten, Derek	Minton	306-969-2110				C
Bodnaryk, John E., Ian & Vangen, Stacy	Rhein	306-273-4263			R	C
Dear, Jonathon	Saskatoon	306-222-0666	F			C
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235	F			C
Fraser, Scott & Shawn	Pambrun	306-741-0475			R	
Hicks, Dale & Barry	Mossbank	306-229-9517				C
Ostafie, Robert	Canora	306-563-6244	F			
Sayers, Charlie Joseph	Delmas	306-445-6522			R	
Woroschuk, Andrew	Calder	306-742-4682				C
CDC MINSTREL						
Condie Seed	Regina	306-569-7333			R	C
Jones, Bradley, Wanda, Tennille & Jennifer	Wadena	306-338-2381			R	C
CDC MORRISON						
Mayerle, Kris	Tisdale	306-873-7301				C
Seed Source Inc.	Archerwill	306-323-4402			R	
CDC NASSER						
Fraser, Scott & Shawn	Pambrun	306-741-0475				C
CDC RUFFIAN						
Berscheid Brothers Seeds	Lake Lenore	306-368-2602				C
Frederick Seeds	Watson	306-287-3977			R	C
Jones, Bradley, Wanda, Tennille & Jennifer	Wadena	306-338-2381				C
Seed Source Inc.	Archerwill	306-323-4402				C
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377			R	
CDC SO-I						
Fedoruk, Michael J.	Kamsack	306-542-4235	S			C



Hicks, Dale & Barry	Mossbank	306-229-9517				C
Sayers, Charlie Joseph	Delmas	306-445-6522			R	
Wilfing, Ryan John	Meadow Lake	306-236-6811				C
CS CAMDEN						
Berscheid Brothers Seeds	Lake Lenore	306-368-2602				C
Sunset Road Seeds	Richard	306-220-8876				C
McArthur Agventures	Watrous	306-230-9853				C
Andres, Wayne	Hepburn	306-227-6905				C
Dutton, David H., Vicki & George	Paynton	306-441-9299				C
Fedoruk, Michael J.	Kamsack	306-542-4235			R	
Frederick Seeds	Watson	306-287-3977			R	C
Hetland, Bill & Bohachewski, Joe	Naicam	306-874-5694				C
Johnson, Lee Stuart	Margo	306-338-7727				C
Lung Seeds Ltd.	Lake Lenore	306-368-2414				C
Mayerle, Kris	Tisdale	306-873-7301				C
Novak, Orrin	Kuroki	306-327-7270				C
South, Winston & Richard & Bradley	Melfort	306-921-8411	S		R	
Trawin Seeds	Melfort	306-752-4060			R	
KYRON						
Fedoruk, Rod M. & Cathy	Kamsack	306-542-4235	S			
ORE3542M						
Amos, K. Wayne	Oxbow	306-483-2963				C
Heavin, Larry N. & L. Warren	Melfort	306-752-4020				C
Larsen, Lyle L.	Aylsham	306-862-7611				C
Olynick, Marlon	Quill Lake	306-383-2920			R	
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687		F		
Warkentin, Michael, Toews Bruce & Shawn	Porcupine Plain	306-814-7705				C
SUMMIT						
Ardell Seeds Ltd.	Vanscoy	306-668-4415			R	
Frederick Seeds	Watson	306-287-3977			R	
Ostafie, Robert	Canora	306-563-6244				C
TRIACTOR						
Lung Seeds Ltd.	Lake Lenore	306-368-2414		F		

PEA

AAC ABERDEEN (YELLOW)						
LLSeeds.ca	Lumsden	306-530-8433			R	
Bodnaryk, John E., Ian & Vangen, Stacy	Rhein	306-273-4263			R	
Crosson, Lee, Max & Will	Welwyn	306-434-7436	S	F		
Hilderman, Trent	Duval	306-725-7896			R	
Penner, David & Braden	Norquay	306-594-7897			R	
AAC ARDILL (YELLOW)						
Ardell Seeds Ltd.	Vanscoy	306-668-4415		F	R	
Hicks, Dale & Barry	Mossbank	306-229-9517				C
AAC BEYOND						
Crosson, Lee, Max & Will	Welwyn	306-434-7436	S			
AAC CARVER (YELLOW)						
Je-Jo Farms Ltd.	Glaslyn	306-342-7898				C
Condie Seed	Regina	306-569-7333				C
Crosson, Lee, Max & Will	Welwyn	306-434-7436	S		R	C
Eckart, Tanis	Richmound	306-661-7649				C
Fedoruk, Michael J.	Kamsack	306-542-4235				C
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235	S			
Gerry , Greg	Creelman	306-457-7720				C
Johnson, Jordon	Swift Current	306-750-1701				C
Mayerle, Erwin D.	Tisdale	306-873-7301				C
Sayers, Charlie Joseph	Delmas	306-445-6522				C
Wylie, Leslie Dale	Biggar	306-948-6045				C
AAC CHROME (YELLOW)						
McCarthy Seed Farm	Corning	306-224-4848				C
McDougall Acres Limited	Moose Jaw	306-693-3649	S	F	R	
Ferndale Farms Ltd	Rocanville	306-645-4423	S	F	R	C
Riviere Ag Seeds Ltd.	Radville	306-869-7629				C
Condie Seed	Regina	306-569-7333			R	
Craswell, Raymond W., Kevin A. & David M.	Strasbourg	306-725-7709		F		C
Dangstorp, Brian & Perry	Redvers	306-452-8078				C
Danielson, Lionel & Bonnie	Norquay	306-594-7417			R	

Fedoruk, Michael J.	Kamsack	306-542-4235			R	C	
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235				C	
Fraser, Scott & Shawn	Pambrun	306-741-0475			R	C	
Frederick Seeds	Watson	306-287-3977				C	
Girodat, Gerald	Shaunavon	306-297-2563				C	
Hyndman, Neil S.	Balcarres	306-331-8168				C	
Luscombe, Darren	Sintaluta	306-727-2222				C	
Toman, Rick & Randy	Guernsey	306-365-8386				C	
Wilfing, Ryan John	Meadow Lake	306-236-6811			R		
AAC JULIUS							
Ferndale Farms Ltd	Rocanville	306-645-4423	S				
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235	S				
Fraser, Scott & Shawn	Pambrun	306-741-0475	S				
AAC LORLIE (MAPLE)							
Heggie, Robert Thomas	Leross	306-795-7493	S	F			
AAC ORIOLE (RED)							
Wayfinder Farms	Garrick	306-276-2384		F			
AAC PROFIT (YELLOW)							
Charabin Seed Farm	North Battleford	306-445-2939			R	C	
Ardell Seeds Ltd.	Vanscoy	306-668-4415				C	
Fenton Seed Farm Ltd.	Tisdale	306-873-7543	S	F		C	
G&R Kerber Farms Ltd	Rosthern	306-232-4474				C	
Shewchuk Seeds	Blaine Lake	306-497-2800				C	
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696				C	
Fedoruk, Michael J.	Kamsack	306-542-4235				C	
Frederick Seeds	Watson	306-287-3977				C	
Herle, Gregory & Andrew E.	Wilkie	306-843-2934				C	
Mayerle, Erwin D.	Tisdale	306-873-7301				C	
Sayers, Charlie Joseph	Delmas	306-445-6522				C	
Seed Source Inc.	Archerwill	306-323-4402				C	
Tebbutt, Gregg & Blake D.	Nipawin	306-862-9730	S	F		C	
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713			R		
Wilfing, Ryan John	Meadow Lake	306-236-6811				C	
ABARTH (YELLOW)							
Herle, Gregory & Andrew E.	Wilkie	306-843-2934	S	F			
CDC ACER (MAPLE)							
Fenton Seed Farm Ltd.	Tisdale	306-873-7543			R		**
CDC AMARILLO (YELLOW)							
Allan, John Garth	Corning	306-457-7015				C	
Allan, John Richard	Corning	306-457-7310				C	
Lung Seeds Ltd.	Lake Lenore	306-368-2414			R		
Luscombe, Darren	Sintaluta	306-727-2222				C	
Ostafie, Brendan	Canora	306-563-6244		F			
Robinson, Oren A., Marlene & Wade	Landis	306-658-4755				C	
CDC BLAZER (MAPLE-TYPE, FORAGE)							
Boldt, Garry	Osler	306-222-2967				C	**
Greenshields, Grant, Charlotte, Thomas & Callie	Semans	306-746-7336		F			
CDC CANARY (YELLOW)							
Je-Jo Farms Ltd.	Glaslyn	306-342-7898				C	
Edmunds, Greg, Michael, Daniel & Glen	Tisdale	306-873-4780				C	
Klemmer, Richard	Nipawin	306-862-6859			R	C	
Ostafie, Brendan	Canora	306-563-6244			R		
Rempel, Blair Allan & Nicole	Nipawin	306-862-3573			R		
Wakefield, Kristopher & Laurie G. & Monica	Maidstone	780-872-2394	S			C	
Wilfing, Ryan John	Meadow Lake	306-236-6811			R		
Winterhalt, Tim	Unity	306-228-7892				C	
Youzwa, Donald	Nipawin	306-862-7678			R		
CDC DAKOTA (GREEN)							
Gizen, Jason	Prelate	306-628-8127	S	F			
CDC FOREST (GREEN)							
LLSeeds.ca	Lumsden	306-530-8433				C	
Simpson Seeds Inc.	Moose Jaw	306-693-9402			R		
Gregoire Seed Farms Ltd.	North Battleford	306-445-5516	S	F	R		
Southline Ag Services	Climax	306-293-7525			R	C	

Berscheid Brothers Seeds	Lake Lenore	306-368-2602			R		
Ardell Seeds Ltd.	Vanscoy	306-668-4415			R		
Veikle Bros. Farm Inc.	Cut Knife	306-398-7688		F			
Andres, Wayne	Hepburn	306-227-6905				C	
Baxter, Daniel J.H.	North Battleford	306-445-5414			R		
Boldt, Garry	Osler	306-222-2967		F			
Mayerle, Erwin D.	Tisdale	306-873-7301			R		
Novak, Orrin	Kuroki	306-327-7270				C	
Ostafie, Brendan	Canora	306-563-6244			R		
Panasiuk, Kelly & Logan & Dean & Dillon	Wadena	306-338-3756			R	C	
Petruic, Joe, Cameron L., Judy & Nick	Avonlea	306-868-2240	S	F			
Sayers, Charlie Joseph	Delmas	306-445-6522				C	
Shirriff, Keith & Harle, Doug	Regina	306-536-9953				C	
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713		F		C	
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S	F	R	C	
CDC HICKIE (YELLOW)							
Reisner Farm Ltd.	Limerick	306-642-8666	S	F			
Lakeside Seeds	Wynyard	306-554-2078	S				
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S				
Berscheid Brothers Seeds	Lake Lenore	306-368-2602	S				
McDougall Acres Limited	Moose Jaw	306-693-3649	S				
Ackerman, Patrick	Chamberlain	306-631-9577	S				
Condie Seed	Regina	306-569-7333	S				
Craswell, Raymond W., Kevin A. & David M.	Strasbourg	306-725-7709	S				
Crosson, Lee, Max & Will	Welwyn	306-434-7436	S				
Dear, Jonathon	Saskatoon	306-222-0666	S				
Denis, Michel P. & Marc	St. Denis	306-258-2219	S				
Dutton, David H., Vicki & George	Paynton	306-441-9299	S				
Fritzler, Baine A. & Adam A.	Govan	306-484-2010	S				
Littman, Allan Blake & L. Robert & Adam	Saltcoats	306-744-7708	S				
Robertson, Albert James (SK)	Saskatoon	306-270-6627	S				
Seed Source Inc.	Archerwill	306-323-4402	S				
Seymour, Glen Patrick, Donne, Kyle, & Kelly	Stewart Valley	306-778-2344	S				
Wiens, Brennan R.	Herschel	306-831-6352	S				
CDC INCA (YELLOW)							
McDougall Acres Limited	Moose Jaw	306-693-3649			R	C	
Riviere Ag Seeds Ltd.	Radville	306-869-7629				C	
Reisner Farm Ltd.	Limerick	306-642-8666				C	
Allan, Raymond N. & Ruth	Corning	306-224-4666			R	C	
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696				C	
Condie Seed	Regina	306-569-7333			R		
Dangstorp, Brian & Perry	Redvers	306-452-8078				C	
Ellert, David & Christopher	Rockglen	306-476-7623				C	
Gizen, Jason	Prelate	306-628-8127		F	R		
Millar, Craig	Birsay	306-858-7012				C	
Ostafie, Brendan	Canora	306-563-6244			R		
Rugg, Robert B., John Barry & Brian R.	Elstow	306-257-3638				C	
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713		F		C	
Wiens, Brennan R.	Herschel	306-831-6352			R	C	
Yauck, Kevin Rodney	Govan	306-484-4555				C	
CDC JASPER (YELLOW FORAGE)							
Bodnaryk, John E., Ian & Vangen, Stacy	Rhein	306-273-4263			R	C	
Fedoruk, Michael J.	Kamsack	306-542-4235			R		
CDC LEWOCHKO (YELLOW)							
Josuttes Holdings Ltd.	Paradise Hill	306-248-7077			R		
Lakeside Seeds	Wynyard	306-554-2078	S	F		C	
Berscheid Brothers Seeds	Lake Lenore	306-368-2602			R		
Ardell Seeds Ltd.	Vanscoy	306-668-4415		F	R		
Edwards Farm Co. Ltd.	Nokomis	306-528-7809				C	
Condie Seed	Regina	306-569-7333				C	
Denis, Michel P. & Marc	St. Denis	306-258-2219				C	
Dutton, David H., Vicki & George	Paynton	306-441-9299				C	

PEA

Fenton, Robin Paul	Tisdale	306-873-7543				C
Fraser, Edward H. & Glen & Dale	Yarbo	306-745-3830			R	C
Fraser, Scott & Shawn	Pambrun	306-741-0475			R	C
Goossen, Mathew	Sturgis	306-547-7432			R	C
Huber, Daniel & Rebecca	Landis	306-658-4200				C
Littman, Allan Blake & L. Robert & Adam	Saltcoats	306-744-7708			R	C
Medernach, Louis J., Kim L. & Kyle	Cudworth	306-256-3991			R	
Novak, Orrin	Kuroki	306-327-7270				C
Ostafie, Brendan	Canora	306-563-6244			R	
Rugg, Robert B., John Barry & Brian R.	Elstow	306-257-3638	S			C
Shirriff, Keith & Harle, Doug	Regina	306-536-9953				C
Shymanski, Tyler	Choiceland	306-276-8741		F		
Tomtene, Steven & Brad	Birch Hills	306-749-3447		F	R	
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687			R	C
Warkentin, Michael, Toews Bruce & Shawn	Porcupine Plain	306-814-7705				C
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S	F	R	C
Wylie, Leslie Dale	Biggar	306-948-6045				C
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713		F		C
CDC MOSAIC (MAPLE)						
Boldt, Garry	Osler	306-222-2967	S	F		
CDC RAEZER (GREEN)						
Panasiuk, Kelly & Logan & Dean & Dillon	Wadena	306-338-3756			R	C
CDC SPECTRUM (YELLOW)						
Charabin Seed Farm	North Battleford	306-445-2939				C
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S	F	R	
Lakeside Seeds	Wynyard	306-554-2078	S	F	R	
Palmier Seed Farms	Lafleche	306-263-3520			R	C
Fenton Seed Farm Ltd.	Tisdale	306-873-7543	S	F	R	
Tez Seeds Inc.	Elrose	306-290-7113				C
Shewchuk Seeds	Blaine Lake	306-497-2800				C
Allan, Raymond N. & Ruth	Corning	306-224-4666			R	C
Amos, K. Wayne	Oxbow	306-483-2963			R	C
Blumer, Brad & Doug	Dinsmore	306-460-7744				C
Boyd, Clare W. & Dale A.	Melfort	306-752-2564				C
Buziak, Ronald Charles	Mayfair	306-445-6556				C
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696				C
Dear, Jonathon	Saskatoon	306-222-0666	S			C
Friesen, Kevin G.	Laird	604-607-4953				C
Goossen, Mathew	Sturgis	306-547-7432			R	
Hanmer, Ronald F., Kent, Brad & Dallas	Govan	306-484-4327			R	C
Hetland, Bill & Bohachewski, Joe	Naicam	306-874-5694				C
Huber, Daniel & Rebecca	Landis	306-658-4200				C
Latrace, Bill	Caronport	306-693-2626				C
Seed Source Inc.	Archerwill	306-323-4402				C
Shirriff, Keith & Harle, Doug	Regina	306-536-9953				C
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713			R	
Willner, Brady E.	Davidson	306-567-7662				C
Winterhalt, Tim	Unity	306-228-7892				C
Woroschuk, Andrew	Calder	306-742-4682				C
CDC SPRUCE (GREEN)						
Veikle Bros. Farm Inc.	Cut Knife	306-398-7688	S	F		
Beuker, Allan Daniel	Melfort	306-752-4810				C
Rude, Stanley & Assie, Craig	Naicam	306-380-6216	S	F		C
Trawin Seeds	Melfort	306-752-4060				C
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713			R	
Youzwa, Donald	Nipawin	306-862-7678			R	
CDC TOLLEFSON (YELLOW)						
Shewchuk Seeds	Blaine Lake	306-497-2800	S			
Fenton Seed Farm Ltd.	Tisdale	306-873-7543	S			
Berscheid Brothers Seeds	Lake Lenore	306-368-2602	S			
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S			
Amos, K. Wayne	Oxbow	306-483-2963	S			
Dear, Jonathon	Saskatoon	306-222-0666	S			
Denis, Michel P. & Marc	St. Denis	306-258-2219	S			
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235	S			
Fraser, Scott & Shawn	Pambrun	306-741-0475	S			
Greenshields, Grant, Charlotte, Thomas & Callie	Semans	306-746-7336	S			
Larsen, Lyle L.	Aylsham	306-862-7611	S			
Littman, Allan Blake & L. Robert & Adam	Saltcoats	306-744-7708	S			
Medernach, Louis J., Kim L. & Kyle	Cudworth	306-256-3991	S			
Ostafie, Brendan	Canora	306-563-6244	S			
Rempel, Blair Allan & Nicole	Nipawin	306-862-3573	S			
Seymour, Glen Patrick, Donne, Kyle, & Kelly	Stewart Valley	306-778-2344	S			
Wakefield, Kristopher & Laurie G. & Monica	Maidstone	780-872-2394	S			
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S			
Wiens, Brennan R.	Herschel	306-831-6352	S			
Wilfing, Ryan John	Meadow Lake	306-236-6811	S			
Willner, Lorne E.	Davidson	306-567-4613	S			
Yauck, Kevin Rodney	Govan	306-484-4555	S			
DL DELICIOUS (FORAGE)						
Heggie, Robert Thomas	Leross	306-795-7493				C
DL GOLDEYE (FORAGE)						
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377	S	F	R	

RAPE

SYNERGY (BRASSICA RAPA)						
Fenton Seed Farm Ltd.	Tisdale	306-873-7543			C	**

RYE

HAZLET						
Ostafie, Robert	Canora	306-563-6244		R		
Trawin Seeds	Melfort	306-752-4060		R		
KWS BONO (HYBRID)						
FP Genetics (SK)	Regina	306-791-1045			C	
KWS TREBIANO (HYBRID)						
FP Genetics (SK)	Regina	306-791-1045			C	
PRIMA						
Walker Ag Ventures Ltd.	Outlook	306-873-7733			C	

SOYBEANS

FRESCO R2X						
Semences Prograin Inc (QC)	St-Cesaire	450-469-5744	S	R	C	
SIBERIA						
Semences Prograin Inc (QC)	St-Cesaire	450-469-5744		R	C	

SPELT

CDC EVOLVE						
Kennett, Brian Guy	Manor	306-577-8023		R		

TIMOTHY

AC ALLIANCE						
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088			C	
ARLAKA						
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088			C	
BASHO						
Nutrien Ag Solutions (Canada) (Forages)	Carrot River	306-768-3335			C	
CLIMAX						
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088			C	
COMER						
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088			C	
COMTAL						
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088			C	
DOLINA						
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088			C	
GRINDSTAD						
Nutrien Ag Solutions (Canada) (Forages)	Carrot River	306-768-3335		F	C	
SUMMERGRAZE						
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088			C	
TRYGGVE						
Nutrien Ag Solutions (Canada) (Forages)	Carrot River	306-768-3335			C	

TRITICALE

WINNETOU						
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088			C	
AB STAMPEDER (SPRING)						
Girodat, Gerald	Shaunavon	306-297-2563			C	
BUNKER (SPRING)						
Trawin Seeds	Melfort	306-752-4060		R		
FRIDGE (WINTER)						
Trawin Seeds	Melfort	306-752-4060			C	
TAZA (SPRING)						
Girodat, Gerald	Shaunavon	306-297-2563		R		

VETCH -CHICKLING

AC GREENFIX						
Heggie, Robert Thomas	Leross	306-795-7493	S	F		

WHEAT

AAC ALIDA - AAC BRANDON *						
Fenton Seed Farm Ltd.	Tisdale	306-873-7543			C	
Boldt, Garry	Osler	306-222-2967		R		**
Buziak, Ronald Charles	Mayfair	306-445-6556			C	
Dear, Jonathon	Saskatoon	306-222-0666			C	
Ennis, Garnet, Neil & Schmidt, Jordan	Glenavon	306-429-2793			C	
Hanmer, Ronald F., Kent, Brad & Dallas	Govan	306-484-4327			C	
Huber, Daniel & Rebecca	Landis	306-658-4200			C	
Lung Seeds Ltd.	Lake Lenore	306-368-2414			C	**
Ostafie, Robert	Canora	306-563-6244			C	
Pratchler, Leander	Muenster	306-682-3317			C	
Shirriff, Keith & Harle, Doug	Regina	306-536-9953			C	
Trawin Seeds	Melfort	306-752-4060		R		
Woroschuk, Andrew	Calder	306-742-4682			C	
AAC AWESOME - AC ANDREW *						
Blyth, Darran	Waseca	780-205-2677			C	
Laforge, Troy	Swift Current	306-773-0924			C	
Sayers, Charlie Joseph	Delmas	306-445-6522			C	
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713	S	R		
AAC BRANDON						
Gregoire Seed Farms Ltd.	North Battleford	306-445-5516		R		**
Nakonechny Seeds	Ruthilda	306-932-4409	S	F	C	
Edwards Farm Co. Ltd.	Nokomis	306-528-7809			C	
LLSeeds.ca	Lumsden	306-530-8433			C	
Allan, John Garth	Corning	306-457-7015			C	
Allan, John Richard	Corning	306-457-7310			C	
Amos, K. Wayne	Oxbow	306-483-2963		F	R	C
Crosson, Lee, Max & Will	Welwyn	306-434-7436			C	
Edmunds, Greg, Michael, Daniel & Glen	Tisdale	306-873-4780			C	
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235			C	
Johnson, Jordon	Swift Current	306-750-1701			C	
Luscombe, Darren	Sintaluta	306-727-2222			C	
Needham, Reginald R.	Oxbow	306-483-5052			C	
Novak, Orrin	Kuroki	306-327-7270			C	
Ostafie, Robert	Canora	306-563-6244		R		
Trowell, Kenneth & Larry & Nathan	Saltcoats	306-744-2687		R		
AAC CABRI (DURUM)						
Reisner Farm Ltd.	Limerick	306-642-8666		R		**
AAC CAMERON - CARBERRY *						
Mayerle, Kris	Tisdale	306-873-7301			C	
Yauck, Kevin Rodney	Govan	306-484-4555			C	
AAC CONGRESS (DURUM)						
Simpson Seeds Inc.	Moose Jaw	306-693-9402			C	
Anderson, Skyler	Hazlet	306-741-6827			C	**
Eckart, Tanis	Richmound	306-661-7649		R		
Petruic, Joe, Cameron L., Judy & Nick	Avonlea	306-868-2240	S	F	R	
AAC DONLOW (DURUM)						
Reisner Farm Ltd.	Limerick	306-642-8666		R		
Southline Ag Services	Climax	306-293-7525		R		
Condie Seed	Regina	306-569-7333		R		
Girodat, Gerald	Shaunavon	306-297-2563		R		
Petruic, Joe, Cameron L., Judy & Nick	Avonlea	306-868-2240	S	F	R	
Printz, Gerald & Kurt	Gravelbourg	306-648-3511			R	
Wiens, Brennan R.	Herschel	306-831-6352			R	
AAC ELIE						
Luscombe, Darren	Sintaluta	306-727-2222				C
AAC FORAY - AAC PENHOLD *						
Wilfing, Ryan John	Meadow Lake	306-236-6811				C
AAC GOLDNET (DURUM)						
Antelope Creek Enterprises Ltd	Central Butte	306-796-7484			R	
AAC GRAINLAND (DURUM)						
Anderson, Skyler	Hazlet	306-741-6827			R	C
Benson, Cory	Central Butte	306-891-6885				C
Carefoot, Lorne R.	Swift Current	306-741-8508				C
Condie Seed	Regina	306-569-7333				C
Dunnigan, Brent Vincent W.	Alameda	306-489-2135				C
Ellert, David & Christopher	Rockglen	306-476-7623				C
Fowler, Edith	Central Butte	306-796-4652				C
Fraser, Scott & Shawn	Pambrun	306-741-0475			R	C
Printz, Gerald & Kurt	Gravelbourg	306-648-3511		F	R	
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781				C
Wiebe, Josh	Swift Current	306-784-7680				C
AAC HOCKLEY						
McDougall Acres Limited	Moose Jaw	306-693-3649		F		
Ferndale Farms Ltd	Rocanville	306-645-4423	S	F		
Lakeside Seeds	Wynyard	306-554-2078	S			
Condie Seed	Regina	306-569-7333		F		
Craswell, Raymond W., Kevin A. & David M.	Strasbourg	306-725-7709		F		
Danielson, Lionel & Bonnie	Norquay	306-594-7417		F		
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235		F		
Fritzler, Baine A. & Adam A.	Govan	306-484-2010	S	F		
Herle, Gregory & Andrew E.	Wilkie	306-843-2934	S	F		
Hyndman, Glen	Balcarres	306-331-8168		F		
Littman, Allan Blake & L. Robert & Adam	Saltcoats	306-744-7708	S			
Wiens, Brennan R.	Herschel	306-831-6352	S	F		
AAC HODGE - AAC HOCKLEY *						
Shewchuk Seeds	Blaine Lake	306-497-2800	S	F		
Charabin Seed Farm	North Battleford	306-445-2939	S	F		
Ferndale Farms Ltd	Rocanville	306-645-4423	S	F		
Lakeside Seeds	Wynyard	306-554-2078	S	F		
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S			
Berscheid Brothers Seeds	Lake Lenore	306-368-2602	S	F		
Fenton Seed Farm Ltd.	Tisdale	306-873-7543	S	F		
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696	S	F		
Condie Seed	Regina	306-569-7333		F		
Danielson, Lionel & Bonnie	Norquay	306-594-7417		F		
Denis, Michel P. & Marc	St. Denis	306-258-2219		F		
Fedoruk, Rod M. & Cathy	Kamsack	306-542-4235		F		
Frederick Seeds	Watson	306-287-3977		F		
Fritzler, Baine A. & Adam A.	Govan	306-484-2010	S	F		
Herle, Gregory & Andrew E.	Wilkie	306-843-2934	S	F		
Hyndman, Glen	Balcarres	306-331-8168		F		
Littman, Allan Blake & L.robert & Adam	Saltcoats	306-744-7708	S	F		
Seed Source Inc.	Archerwill	306-323-4402	S			
Tomtene, Steven & Brad	Birch Hills	306-749-3447	S	F		
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377	S	F		
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713		F		
Wiens, Brennan R.	Herschel	306-831-6352	S	F		
Wilfing, Ryan John	Meadow Lake	306-236-6811	S	F		
Wylie, Leslie Dale	Biggar	306-948-6045	S			
AAC JATHARIA - CARBERRY *						
Rugg, Robert B., John Barry & Brian R.	Elstow	306-257-3638			R	

AAC LEROY - AAC REDBERRY *							
Blumer, Brad & Doug	Dinsmore	306-460-7744				C	
Bodnaryk, John E., Ian & Vangen, Stacy	Rhein	306-273-4263				C	**
Crosson, Lee, Max & Will	Welwyn	306-434-7436	S		R		
Denis, Michel P. & Marc	St. Denis	306-258-2219				C	
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235			R		
Frederick Seeds	Watson	306-287-3977				C	
Klemmer, Richard	Nipawin	306-862-6859				C	
Luscombe, Darren	Sintaluta	306-727-2222				C	
Mayerle, Kris	Tisdale	306-873-7301				C	
Olynick, Marlon	Quill Lake	306-383-2920				C	
Printz, Gerald & Kurt	Gravelbourg	306-648-3511			R		**
Rempel, Blair Allan & Nicole	Nipawin	306-862-3573				C	
Rude, Stanley & Assie, Craig	Naicam	306-380-6216			R	C	
Wiens, Brennan R.	Herschel	306-831-6352			R		
Yauck, Kevin Rodney	Govan	306-484-4555				C	
AAC MAGNET							
Shewchuk Seeds	Blaine Lake	306-497-2800				C	
Fedoruk, Rod M. & Cathy	Kamsack	306-542-4235			R		**
Fenton, Robin Paul	Tisdale	306-873-7543				C	
Sand, Evan	Limerick	306-263-4944		F		C	
Smith, Kyle (KTS Farms Ltd.)	Limerick	306-263-4944		F			
AAC PARAMOUNT - AC ANDREW *							
Wakefield, Kristopher & Laurie G. & Monica	Maidstone	780-872-2394	S		R		
AAC PENHOLD (CPS RED)							
Je-Jo Farms Ltd.	Glaslyn	306-342-7898				C	
Frederick Seeds	Watson	306-287-3977			R	C	
Wilfing, Ryan John	Meadow Lake	306-236-6811	S			C	
AAC REDBERRY							
LLSeeds.ca	Lumsden	306-530-8433				C	
Fenton Seed Farm Ltd.	Tisdale	306-873-7543				C	
Gregoire Seed Farms Ltd.	North Battleford	306-445-5516		F		C	**
Bodnaryk, John E., Ian & Vangen, Stacy	Rhein	306-273-4263		F		C	
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235				C	
Frederick Seeds	Watson	306-287-3977			R	C	
Goossen, Mathew	Sturgis	306-547-7432				C	
Luscombe, Darren	Sintaluta	306-727-2222				C	
AAC RIMBEY - AAC PENHOLD *							
SeCan Association	Kanata	613-592-8600	S				
AAC RUSSELL - AAC BRANDON *							
Fenton Seed Farm Ltd.	Tisdale	306-873-7543			R		
Buziak, Ronald Charles	Mayfair	306-445-6556			R		
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235		F			
Herle, Gregory & Andrew E.	Wilkie	306-843-2934		F	R		
Sayers, Charlie Joseph	Delmas	306-445-6522			R		
Shwaga, Jeff W.	Wroxton	306-621-7748			R		
Tebbutt, Gregg & Blake D.	Nipawin	306-862-9730			R		
Tomtene, Steven & Brad	Birch Hills	306-749-3447			R		
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377			R		
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713			R		
AAC SCHRADER (DURUM)							
Fraser, Scott & Shawn	Pambrun	306-741-0475	S				
AAC SPITFIRE (DURUM)							
Wiens, Brennan R.	Herschel	306-831-6352				C	**
AAC STARBUCK - AAC BRANDON *							
McDougall Acres Limited	Moose Jaw	306-693-3649			R	C	
McArthur Agventures	Watrous	306-230-9853				C	
Berscheid Brothers Seeds	Lake Lenore	306-368-2602			R		
Lakeside Seeds	Wynyard	306-554-2078	S		R		
Ardell Seeds Ltd.	Vanscoy	306-668-4415			R		
Ferndale Farms Ltd	Rocanville	306-645-4423			R		
Nakonechny Seeds	Ruthilda	306-932-4409		F			
Charabin Seed Farm	North Battleford	306-445-2939				C	

JTK Winny Seeds	Rosetown	306-831-6032				R	
G&R Kerber Farms Ltd	Rosthern	306-232-4474				R	
McCarthy Seed Farm	Corning	306-224-4848				R	
LLSeeds.ca	Lumsden	306-530-8433					C
Amos, K. Wayne	Oxbow	306-483-2963				R	
Barlow, Bradley L. & Matthew	Griffin	306-861-6110				R	
Blumer, Brad & Doug	Dinsmore	306-460-7744				R	
Boldt, Garry	Osler	306-222-2967				R	
Boyd, Clare W. & Dale A.	Melfort	306-752-2564	S		F		
Buziak, Ronald Charles	Mayfair	306-445-6556					C
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696	S		F	R	
Craswell, Raymond W., Kevin A. & David M.	Strasbourg	306-725-7709				R	
Crosson, Lorne & Glen	Welwyn	306-733-4593					C
Dangstorp, Brian & Perry	Redvers	306-452-8078					C
Danielson, Lionel & Bonnie	Norquay	306-594-7417				R	
Dear, Jonathon	Saskatoon	306-222-0666					C
Edmunds, Greg, Michael, Daniel & Glen	Tisdale	306-873-4780					C
Fedoruk, Michael J.	Kamsack	306-542-4235				R	
Frederick Seeds	Watson	306-287-3977					C
Gerry , Greg	Creelman	306-457-7720					C
Goossen, Mathew	Sturgis	306-547-7432					C
Greenshields, Grant, Charlotte, Thomas & Callie	Semans	306-746-7336					C
Heavin, G. Harvey & G. Ryan	Melfort	306-752-4171				R	C
Heavin, Larry N. & L. Warren	Melfort	306-752-4020	S		F	R	C
Heggie, Robert Thomas	Leross	306-795-7493				R	
Hetland, Bill & Bohachewski, Joe	Naicam	306-874-5694					C
Huber, Daniel & Rebecca	Landis	306-658-4200				R	
Johnson, Jordon	Swift Current	306-750-1701					C
Klemmer, Richard	Nipawin	306-862-6859				R	C
Kondratowicz, Frank	Unity	306-228-3684					C
Lindgren, Jordan & Jennifer	Norquay	306-594-7644					C
Lung Seeds Ltd.	Lake Lenore	306-368-2414				R	
Marcotte, Raymond W.	Kinistino	306-864-2948				R	C
Mayerle, Kris	Tisdale	306-873-7301				R	
Medernach, Louis J., Kim L. & Kyle	Cudworth	306-256-3991				R	
Novak, Orrin	Kuroki	306-327-7270					C
Panasiuk, Kelly & Logan & Dean & Dillon	Wadena	306-338-3756				R	C
Rempel, Blair Allan & Nicole	Nipawin	306-862-3573					C
Robinson, Oren A., Marlene & Wade	Landis	306-658-4755				R	
Rugg, Robert B., John Barry & Brian R.	Elstow	306-257-3638				R	
Seed Source Inc.	Archerwill	306-323-4402	S		F	R	C
Shwaga, Jeff W.	Wroxton	306-621-7748				R	
Smysniuk, Delon	Ituna	306-795-7691					C
South, Winston & Richard & Bradley	Melfort	306-921-8411	S		F		C
Tebbutt, Gregg & Blake D.	Nipawin	306-862-9730					C
Thoms, Glenn	Bruno	306-231-7892				R	
Tomtene, Steven & Brad	Birch Hills	306-749-3447			F		C
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377	S		F	R	
Wiebe, Josh	Swift Current	306-784-7680					C
Wiens, Brennan R.	Herschel	306-831-6352				R	
Wylie, Leslie Dale	Biggar	306-948-6045				R	
Yauck, Kevin Rodney	Govan	306-484-4555			F	R	
AAC STRONGHOLD (DURUM)							
Reisner Farm Ltd.	Limerick	306-642-8666					C **
Antelope Creek Enterprises Ltd	Central Butte	306-796-7484				R	
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S		F	R	
Anderson, Skyler	Hazlet	306-741-6827				R	
Carefoot, Lorne R.	Swift Current	306-741-8508					C
Fraser, Scott & Shawn	Pambrun	306-741-0475					C
Hyndman, Glen	Balcarres	306-331-8168					C
Johnson, Jordon	Swift Current	306-750-1701					C
Moen, Jim	Cabri	306-587-7452					C
Sand, Evan	Limerick	306-263-4944					C
Wiebe, Josh	Swift Current	306-784-7680					C

AAC SUCCEED - CDC ALLOY (DURUM)*								
Riviere Ag Seeds Ltd.	Radville	306-869-7629			R			
Craswell, Raymond W., Kevin A. & David M.	Strasbourg	306-725-7709		F	R			
Garratt, Lyle C. & K.c.	Milestone	403-436-2178				C		
Sand, Evan	Limerick	306-263-4944				C		
Smith, Kyle (KTS Farms Ltd.)	Limerick	306-263-4944				C		
Smith, Ron T.W. & Barb A.	Limerick	306-263-4944			R			
Smith, Wayne D.	Limerick	306-263-4944				C		
AAC TISDALE								
Reisner Farm Ltd.	Limerick	306-642-8666				C		
Greenshields, Grant, Charlotte, Thomas & Callie	Semans	306-746-7336				C		
Willner, Brady E.	Davidson	306-567-7662		F		C		
AAC TOMKINS								
Smith, Kyle (Kts Farms Ltd.)	Limerick	306-263-4944			R			
AAC VIEWFIELD								
Ferndale Farms Ltd	Rocanville	306-645-4423				C		
Charabin Seed Farm	North Battleford	306-445-2939		F	R	C		
Beuker, Allan Daniel	Melfort	306-752-4810				C		
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696				C		
Dear, Jonathon	Saskatoon	306-222-0666				C		
Fedoruk, Rod M. & Cathy	Kamsack	306-542-4235			R			**
Fraser, Scott & Shawn	Pambrun	306-741-0475				C		
Frederick Seeds	Watson	306-287-3977				C		
Fritzler, Baine A. & Adam A.	Govan	306-484-2010				C		
Heggie, Kyle Robert	Leross	306-795-7493	S			C		
Herle, Gregory & Andrew E.	Wilkie	306-843-2934				C		**
Hyndman, Glen	Balcarres	306-331-8168				C		
Lindgren, Jordan & Jennifer	Norquay	306-594-7644				C		
Littman, Allan Blake & L. Robert & Adam	Saltcoats	306-744-7708		F		C		
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713				C		
Wakefield, Kristopher & Laurie G. & Monica	Maidstone	780-872-2394		F		C		
Wiens, Brennan R.	Herschel	306-831-6352				C		
Wilfing, Ryan John	Meadow Lake	306-236-6811				C		
AAC VORTEX (WINTER)								
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S					
AAC WARMAN - AAC TISDALE								
Boldt, Garry	Osler	306-222-2967			R			**
AAC WEYBURN - CDC PRECISION (DURUM) *								
LLSeeds.ca	Lumsden	306-530-8433	S	F				
Barlow, Bradley L. & Matthew	Griffin	306-861-6110		F				
Printz, Gerald & Kurt	Gravelbourg	306-648-3511	S	F				
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S	F				
AAC WHEATLAND - AAC BRANDON *								
Josuttes Holdings Ltd.	Paradise Hill	306-248-7077				C		
Nakonechny Seeds	Ruthilda	306-932-4409	S	F				
Charabin Seed Farm	North Battleford	306-445-2939		F	R			
Ferndale Farms Ltd	Rocanville	306-645-4423			R			
Ardell Seeds Ltd.	Vanscoy	306-668-4415	S	F	R			
JTK Winny Seeds	Rosetown	306-831-6032			R			
G&R Kerber Farms Ltd	Rosthern	306-232-4474				C		
Sandercock Seed Farm	Balcarres	306-334-2958				C		
Shewchuk Seeds	Blaine Lake	306-497-2800			R	C		
Gregoire Seed Farms Ltd.	North Battleford	306-445-5516			R	C		
Allan, Raymond N. & Ruth	Corning	306-224-4666				C		
Andres, Wayne	Hepburn	306-227-6905			R			
Beuker, Allan Daniel	Melfort	306-752-4810			R			
Buziak, Ronald Charles	Mayfair	306-445-6556			R			
Condie Seed	Regina	306-569-7333				C		
Crosson, Lee, Max & Will	Welwyn	306-434-7436	S		R	C		
Crosson, Lorne & Glen	Welwyn	306-733-4593				C		
Dangstorp, Brian & Perry	Redvers	306-452-8078				C		
Danielson, Lionel & Bonnie	Norquay	306-594-7417			R			

Denis, Michel P. & Marc	St. Denis	306-258-2219				R		
Dutton, David H., Vicki & George	Paynton	306-441-9299				R	C	
Fedoruk, Michael J.	Kamsack	306-542-4235				R	C	
Fowler, Edith	Central Butte	306-796-4652					C	
Frederick Seeds	Watson	306-287-3977				R	C	
Gerry , Greg	Creelman	306-457-7720					C	
Goossen, Mathew	Sturgis	306-547-7432					C	
Herle, Gregory & Andrew E.	Wilkie	306-843-2934					C	
Kennett, Brian Guy	Manor	306-577-8023					C	
Kondratowicz, Frank	Unity	306-228-3684					C	
Lindgren, Jordan & Jennifer	Norquay	306-594-7644					C	
Lung Seeds Ltd.	Lake Lenore	306-368-2414				R		
Luscombe, Darren	Sintaluta	306-727-2222					C	
Medernach, Louis J., Kim L. & Kyle	Cudworth	306-256-3991				R		
Moroz, Troy	Pelly	306-594-7679					C	
Novak, Orrin	Kuroki	306-327-7270				R	C	
Olynick, Marlon	Quill Lake	306-383-2920					C	
Osiowy, Bruce M.	Abernethy	306-335-2777					C	
Ostafie, Robert	Canora	306-563-6244				R		
Panasiuk, Kelly & Logan & Dean & Dillon	Wadena	306-338-3756				R	C	
Rugg, Robert B., John Barry & Brian R.	Elstow	306-257-3638	S			R	C	
Sayers, Charlie Joseph	Delmas	306-445-6522				R		
Shirriff, Keith & Harle, Doug	Regina	306-536-9953					C	
Smysniuk, Delon	Ituna	306-795-7691					C	
Toman, Rick & Randy	Guernsey	306-365-8386					C	
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377	S	F				
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713				R		
Wakefield, Kristopher & Laurie G. & Monica	Maidstone	780-872-2394					C	
Warkentin, Michael, Toews Bruce & Shawn	Porcupine Plain	306-814-7705					C	
Wiens, Brennan R.	Herschel	306-831-6352					C	
Wilfing, Ryan John	Meadow Lake	306-236-6811					C	
Wohlgemuth, Mark	Bredenbury	306-744-7722					C	
Wylie, Leslie Dale	Biggar	306-948-6045				R	C	
AAC WHITEHEAD - AAC TOMKINS *								
Smith, Kyle (KTS Farms Ltd.)	Limerick	306-263-4944				R		
AAC WILDFIRE (WINTER)								
Ferndale Farms Ltd	Rocanville	306-645-4423					C	
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781					C	
AC ANDREW								
Nakonechny Seeds	Ruthilda	306-932-4409	S	F				
Blumer, Brad & Doug	Dinsmore	306-460-7744					C	
Frederick Seeds	Watson	306-287-3977					C	
Herle, Gregory & Andrew E.	Wilkie	306-843-2934					C	
Wakefield, Kristopher & Laurie G. & Monica	Maidstone	780-872-2394	S				C	
Wilfing, Ryan John	Meadow Lake	306-236-6811					C	
AC INTREPID								
Illingworth, Todd Douglas & Caden	North Battleford	306-445-5263					C	
ACCELERATE								
Crosson, Lee, Max & Will	Welwyn	306-434-7436	S			R		
Dutton, David H., Vicki & George	Paynton	306-441-9299					C	
Mayerle, Kris	Tisdale	306-873-7301	S	F			C	
Tomtene, Steven & Brad	Birch Hills	306-749-3447				R		
BOLLES								
Ennis, Garnet, Neil & Schmidt, Jordan	Glenavon	306-429-2793					C	
CARBERRY								
Ostapovitch, Fred G. & Glen	Theodore	306-647-2205					C	
Schmeling, Donald H.	Riceton	306-530-1052				R		
CDC ADAMANT - CDC BRADWELL								
Reisner Farm Ltd.	Limerick	306-642-8666					C	**
CDC ALLOY (DURUM)								
Reisner Farm Ltd.	Limerick	306-642-8666					C	**
Riviere Ag Seeds Ltd.	Radville	306-869-7629					C	

Craswell, Raymond W., Kevin A. & David M.	Strasbourg	306-725-7709				C		
Fritzler, Baine A. & Adam A.	Govan	306-484-2010				C		
Herle, Gregory & Andrew E.	Wilkie	306-843-2934				C		
Printz, Gerald & Kurt	Gravelbourg	306-648-3511				C	**	
Smith, Ron T.W. & Barb A.	Limerick	306-263-4944			R			
CDC CREDENCE (DURUM)								
Simpson Seeds Inc.	Moose Jaw	306-693-9402			R			
Petruic, Nick	Avonlea	306-868-2240		F		C		
Wiens, Brennan R.	Herschel	306-831-6352		F				
CDC DEFY (DURUM)								
Tez Seeds Inc.	Elrose	306-290-7113				C		
JTK Winny Seeds	Rosetown	306-831-6032				C		
Riviere Ag Seeds Ltd.	Radville	306-869-7629				C		
Simpson Seeds Inc.	Moose Jaw	306-693-9402			R			
McDougall Acres Limited	Moose Jaw	306-693-3649	S	F	R	C		
Nakonechny Seeds	Ruthilda	306-932-4409				C		
Reisner Farm Ltd.	Limerick	306-642-8666	S	F	R			
Ardell Seeds Ltd.	Vanscoy	306-668-4415		F	R			
Correction Line Seeds	Ceylon	306-869-5423				C		
Anderson, Skyler	Hazlet	306-741-6827		F		C		
Blumer, Brad & Doug	Dinsmore	306-460-7744			R			
Condie Seed	Regina	306-569-7333			R			
Cote, Nickolaus	Cadillac	306-625-7919				C		
Craswell, Raymond W., Kevin A. & David M.	Strasbourg	306-725-7709		F	R			
Fowler, Edith	Central Butte	306-796-4652			R			
Fraser, Scott & Shawn	Pambrun	306-741-0475	S	F	R			
Fritzler, Baine A. & Adam A.	Govan	306-484-2010		F	R			
Girodat, Gerald	Shaunavon	306-297-2563	S					
Gizen, Jason	Prelate	306-628-8127	S	F	R			
Herle, Gregory & Andrew E.	Wilkie	306-843-2934			R			
Johnson, Jordon	Swift Current	306-750-1701			R			
Miller, Sean	Avonlea	306-868-7822		F		C		
Nichols, Shae	Moose Jaw	306-631-5064				C		
Petruic, Joe, Cameron L., Judy & Nick	Avonlea	306-868-2240	S	F	R			
Printz, Gerald & Kurt	Gravelbourg	306-648-3511	S	F	R			
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781	S	F				
Wiens, Brennan R.	Herschel	306-831-6352	S		R	C		
Willner, Brady E.	Davidson	306-567-7662	S	F				
Wohlgemuth, Mark	Bredenbury	306-744-7722				C		
CDC LANDMARK - AAC VIEWFIELD *								
McCarthy Seed Farm	Corning	306-224-4848				C		
Ferndale Farms Ltd	Rocanville	306-645-4423		F				
Charabin Seed Farm	North Battleford	306-445-2939				C		
Palmier Seed Farms	Lafleche	306-263-3520				C		
Berscheid Brothers Seeds	Lake Lenore	306-368-2602			R			
Fenton Seed Farm Ltd.	Tisdale	306-873-7543			R			
G&R Kerber Farms Ltd	Rosthern	306-232-4474				C		
Boyd, Clare W. & Dale A.	Melfort	306-752-2564				C		
Buziak, Ronald Charles	Mayfair	306-445-6556				C		
Cay, Randy D., Susan, Layne & Justin	Kinistino	306-864-3696				C		
Craswell, Raymond W., Kevin A. & David M.	Strasbourg	306-725-7709				C		
Fedoruk, Michael J.	Kamsack	306-542-4235			R		**	
Fraser, Edward H. & Glen & Dale	Yarbo	306-745-3830				C		
Hetland, Bill & Bohachewski, Joe	Naicam	306-874-5694				C		
Littman, Allan Blake & L. Robert & Adam	Saltcoats	306-744-7708		F	R	C		
Ostafie, Robert	Canora	306-563-6244				C		
Seed Source Inc.	Archerwill	306-323-4402				C		
Shwaga, Jeff W.	Wroxton	306-621-7748				C		
Wakefield, Kristopher & Laurie G. & Monica	Maidstone	780-872-2394			R	C		
CDC PRECISION (DURUM)								
Tez Seeds Inc.	Elrose	306-290-7113				C		
Riviere Ag Seeds Ltd.	Radville	306-869-7629		F		C		

McDougall Acres Limited	Moose Jaw	306-693-3649				C		
Reisner Farm Ltd.	Limerick	306-642-8666			R	C		
LLSeeds.ca	Lumsden	306-530-8433				C		
Blumer, Brad & Doug	Dinsmore	306-460-7744				C		
Dunnigan, Brent Vincent W.	Alameda	306-489-2135				C		
Ellert, David & Christopher	Rockglen	306-476-7623				C		
Printz, Gerald & Kurt	Gravelbourg	306-648-3511				C		
Rennick, Joe R. & William J.	Milestone	306-436-4353			R			
Watson, Wayne Donald & Calvin & Mark	Avonlea	306-868-7781		F	R	C		
Yauck, Kevin Rodney	Govan	306-484-4555				C		
CDC REIGN								
Wilfing, Ryan John	Meadow Lake	306-236-6811			R			
CDC SILAS								
Charabin Seed Farm	North Battleford	306-445-2939	S	F				
Wylie, Leslie Dale	Biggar	306-948-6045	S					
CDC SKRUSH								
Veikle Bros. Farm Inc.	Cut Knife	306-398-7688				C		
Edwards Farm Co. Ltd.	Nokomis	306-528-7809				C		
Gregoire Seed Farms Ltd.	North Battleford	306-445-5516				C		
Amos, K. Wayne	Oxbow	306-483-2963				C		
Fritzler, Baine A. & Adam A.	Govan	306-484-2010		F				
Greenshields, Grant, Charlotte, Thomas & Callie	Semans	306-746-7336				C		
Heavin, G. Harvey & G. Ryan	Melfort	306-752-4171	S	F				
Heavin, Larry N. & L. Warren	Melfort	306-752-4020				C		
Heavin, Milton Russell	Melfort	306-752-4071	S					
Pratchler, Leander	Muenster	306-682-3317				C		
Rugg, Robert B., John Barry & Brian R.	Elstow	306-257-3638				C		

Seed Source Inc.	Archerwill	306-323-4402				C		
Warkentin, Michael, Toews Bruce & Shawn	Porcupine Plain	306-814-7705				C		
Willner, Brady E.	Davidson	306-567-7662	S	F				
CDC UTMOST - HARVEST *								
Palmier Seed Farms	Lafleche	306-263-3520				C		
CDC VANTTA (DURUM)								
Fraser, Scott & Shawn	Pambrun	306-741-0475	S	F				
JAKE								
Je-Jo Farms Ltd.	Glaslyn	306-342-7898				C		
PARATA								
Je-Jo Farms Ltd.	Glaslyn	306-342-7898				C		
PASTEUR								
Hanley, Erwin & Priscilla	Regina	306-539-3403		F		C		
Toman, Rick & Randy	Guernsey	306-365-8386				C		
RESOLVE								
Crosson, Lee, Max & Will	Welwyn	306-434-7436	S					
Fedoruk, Michael J.	Kamsack	306-542-4235		F				
Veikle, Carl E. & Brennan	Cut Knife	306-398-7713		F				
SADASH - AC ANDREW *								
Charabin Seed Farm	North Battleford	306-445-2939				C		
Blyth, Darran	Waseca	780-205-2677				C		
Fritzler, Baine A. & Adam A.	Govan	306-484-2010	S		R			
Wilfing, Ryan John	Meadow Lake	306-236-6811		F		C		
SPARROW - ALDERON *								
Hanley, Erwin & Priscilla	Regina	306-539-3403	S		R	C		
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377			R	C		
STRONGFIELD (DURUM)								
Robinson, Oren A., Marlene & Wade	Landis	306-658-4755	S					
SY BRAWN - SY CAST *								
Buziak, Ronald Charles	Mayfair	306-445-6556			R			
Nutrien Ag Solutions(Canada) (Forages)	Carrot River	306-768-3335			R			
SY DONALD - AAC REDBERRY *								
Boyd, Clare W. & Dale A.	Melfort	306-752-2564	S					
Dear, Jonathon	Saskatoon	306-222-0666		F				
Petruic, Joe, Cameron L., Judy & Nick	Avonlea	306-868-2240		F				
SY GABBRO								
Richardson International Ltd. (MB)	Winnipeg	866-217-6211			R	C		
SY MANNESS								
Fedoruk, Rod M.& Cathy	Kamsack	306-542-4235	S					
Heggie, Robert Thomas	Leross	306-795-7493	S					
SY ROWYN								
Rude, Stanley & Assie, Craig	Naicam	306-380-6216			R	C		
SY TORACH								
Gregoire Seed Farms Ltd.	North Battleford	306-445-5516		F		C		
Rude, Stanley & Assie, Craig	Naicam	306-380-6216				C		
TRANSCEND (DURUM)								
Palmier Seed Farms	Lafleche	306-263-3520				C		
Girodat, Gerald	Shaunavon	306-297-2563				C		
Sand, Evan	Limerick	306-263-4944				C		
WPB WHISTLER								
Van Burck, Hans, Marianne & Mira	Star City	306-863-4377		F		C		
Willner, Brady E.	Davidson	306-567-7662			R			
WHEATGRASS								
KIRK (CRESTED)								
Nutrien Ag Solutions (Canada) (Forages)	Carrot River	306-768-3335		F		C		
Pickseed Canada Inc. (MB)	Winnipeg	204-633-0088				C		
REVENUE (SLENDER)								
Nutrien Ag Solutions (Canada) (Forages)	Carrot River	306-768-3335				C		

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Saskatchewan

Varieties of Grain Crops 2022

Table of Contents

Symbols and Abbreviations Used:

§ Variety may not be described in 2023
--- 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

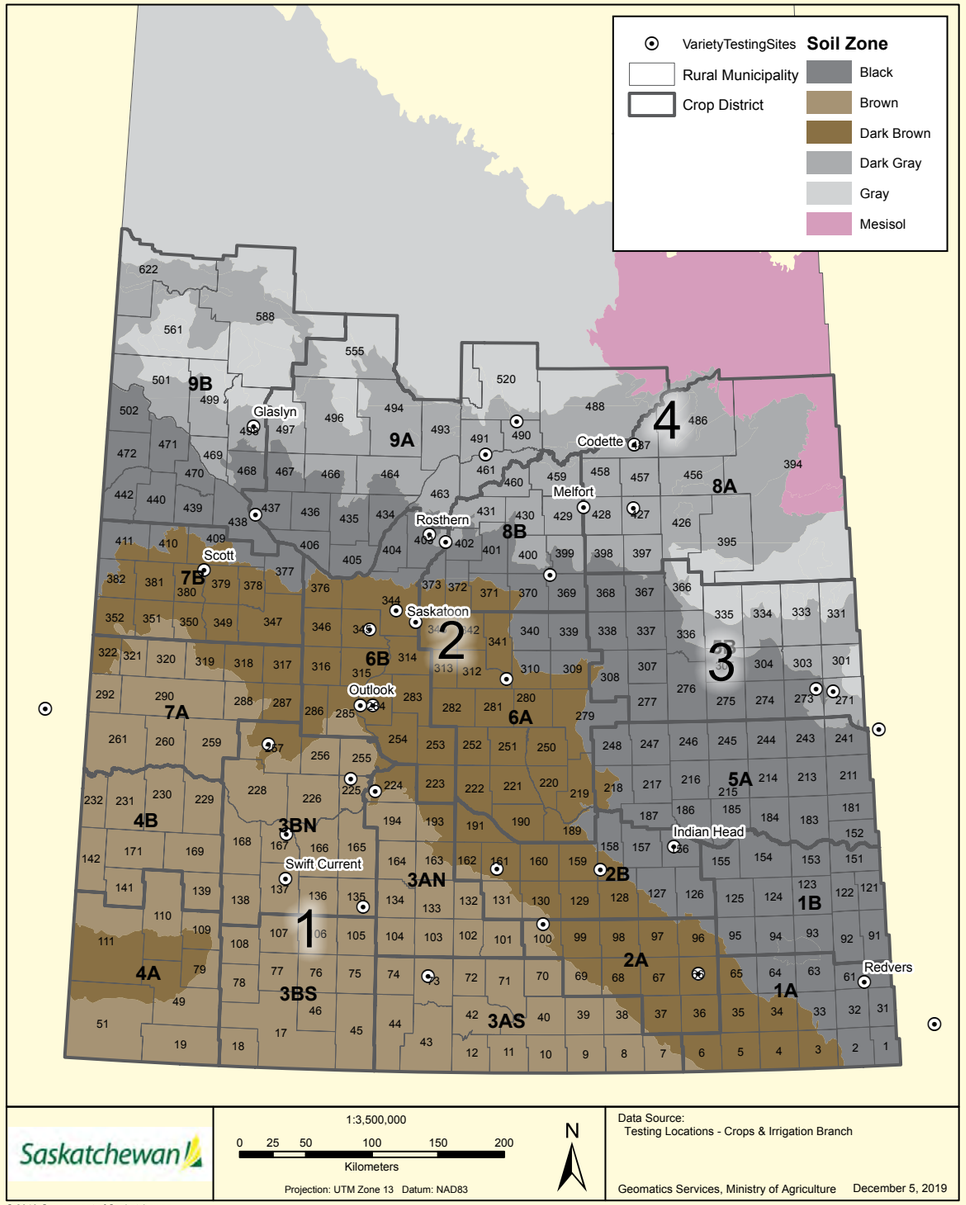
Disease Resistance: R = Resistant, MR = Moderately Resistant, I = Intermediate Resistance, MS = Moderately Susceptible, S = Susceptible

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 he/she wishes (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 VR38 to VR40.

Legal Disclaimer

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 southern section.

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:

Saskatchewan Pulse Growers

Saskatchewan Winter Cereals Development Commission

SaskOats Saskatchewan Oat Development Commission

SaskWheat Development Commission

SaskFlax

SaskBarley Development Commission

SaskCanola Saskatchewan Canola Development Commission

SaskSeed Saskatchewan Seed Growers' Association

Saskatchewan

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 Agriculture
- Seed 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.

Testing Varieties in Saskatchewan

By The Ministry of Agriculture

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.

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 *2022 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. The SeCan 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 and SaskFlax collectively provide more than $100,000 to the core program. Supplementary funds enhance the core program.

Saskatchewan Pulse Growers (SPG) funds the pulse and soybean regional variety trials for Saskatchewan growers. For the 2021 trials, this funding was approximately $390,000. Canadian marketing agents that distribute soybean varieties in Saskatchewan pay an entry fee that covers a portion of the cost of having their varieties tested. SPG collaborates with researchers at several 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 and the Canada-Saskatchewan Irrigation Diversification Centre.

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 Canola Council of Canada delivers the program on their behalf.

The results from all variety trials of all crop kinds tested are reviewed by the Saskatchewan Advisory Council on Grain Crops (SACGC), 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.

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.

What Are Plant Breeders' Rights?

By The Ministry of Agriculture

The goal of Plant Breeders' Rights (PBR) legislation is to encourage investment and development in the crops sector. There are many ways to accomplish this, but 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 new farmer buying seed of the breeder's variety.

The royalty and protections under PBR assure that companies and institutions that invest in plant breeding are able to 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, improving the bottom line for producers. Enhanced protection under the revised PBR will encourage the release of new varieties from other countries (once registered in Canada), as well as stimulate increased investments in variety development here in Canada.
- Farmers are allowed to save seed for their own use, on their own farms, if the original seed was obtained legitimately.
- No negative impacts for those who legitimately purchase seed.

When a plant breeder develops a new variety for use in Canada, they may apply under the *Plant Breeders' Rights Act* to obtain certain controls over the multiplication and sale of the seed of that variety. Sale, trade or any other transfer of the seed for propagation purposes is prohibited by law without the written permission of the breeder or their agent.

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 76 UPOV member countries, 59 of which have ratified UPOV'91-compliant legislation.

Varieties protected by PBR are identified with one of two logos. Varieties protected prior to Feb. 27, 2015, are identified by:

PBR
Progress through Research

and those protected after Feb. 27, 2015, are identified by:

91
Progress Through Research
Le progrès grâce à la recherche

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 extends the right of the breeder, giving them further opportunity to protect their variety and ensuring that those who benefit from the technology are paying for it.

It has always been illegal to sell PBR-protected seed without consent of the breeder. Now, it will also be illegal to purchase seed, meaning both the seller and purchaser can be liable if the seed sale is not approved. To be sure, the best way to know if the seed being purchased is an approved sale 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.

The first 10 years of Canada's PBR Act brought improved access to varieties, new investment in varieties and new and improved genetics for farmers. With the new PBR, producers will benefit from greater access to new varieties for the crops they grow and breeders will be able to better protect the investment made in the development of new varieties so they can continue to develop new varieties.

For more information, visit *www.pbrfacts.ca* or contact the PBR Office at 613-773-7188.

Plant Breeders' Rights status can change throughout the year. Significant efforts are taken to ensure the correct logo is applied at the time of printing this guide. The PBR Office maintains an online database (*www.inspection.gc.ca)* that can be accessed to verify accuracy and/or changes to PBR status.

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 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.

VARIETY USE AGREEMENT
VUA™

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.

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.

There are upcoming changes in the canola seed industry that might require you to pay closer attention to seeding rates, or to change how you approach seeding. At least one company has begun selling seed based on categories of seed size, represented by thousand seed weight (TSW).

Crop	Target Plant Population (per m^2)	Target Plant Population (per ft^2)	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
Fababean	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	1.3
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.

[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/m^2). Quinoa target 10 kg/ha (10 lbs/ac.).

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. With upcoming changes, bag weights will differ between each TSW category, but the number of seeds 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:

$$\textbf{Seeding Rate kilograms per hectare (kg/ha)} = \frac{\textbf{(target population per square metre x TKW* in grams)}}{\textbf{\% field emergence or survival (in whole number, i.e. 85)}}$$

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/m^2. 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.

Seed-Borne and Seedling Disease Management

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-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-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, 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 insecticides.

The degree of control with seed treatments depends on five factors:

1. active ingredients
2. rate of application
3. seed- and soil-borne fungal diseases or insects present
4. environmental conditions
5. 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.

Seed-Borne and Seedling Diseases and Actions to Minimize Impact

Crop	Disease Pathogen	Economic Threshold	Action If Over Threshold
Field Peas Lentils	Root Rot: *Aphanomyces euteiches*	Soil-borne only	Consider seed treatment if disease history is present
Field Peas	*Ascochyta complex*	10% on seed	Use seed treatment
Lentils	*Ascochyta lentis*	5% on seed	Use seed treatment
		10% on seed	Do not use seed
	Stemphylium blight	May be detected on seed tests	Unknown
	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	Anthracnose	Unknown	Consider seed treatment if disease history
	Seed rot/damping off: *Fusarium, Pythium, Rhizoctonia*		
Soybeans	Seed rot/damping off: *Fusarium, Pythium, Rhizoctonia, Phamapsis, Phytophythora*	Unknown	Consider seed treatment if disease history
Field Peas Chickpeas Lentils	Seed rot/seeding blight (pathogens unspecified)	Unknown	Use seed treatment
	Seed rot/damping off: *Botrytis + Fusarium*	10% on seed	Use seed treatment
	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: Guideline for Seed-Borne Diseases of Pulse Crops, Ministry of Agriculture

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 recently 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-Borne Diseases of Cereal Crops.*

Relative Maturity

By The Ministry of Agriculture

Ratings

Maturity is measured from seeding to swathing ripeness. 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

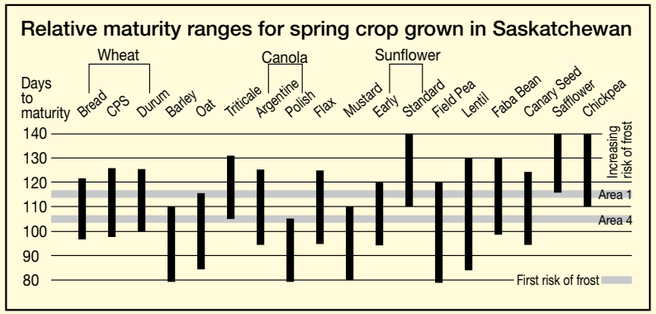
The relative maturity of varieties of different crops is important when making plans for seeding.

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.



Average Days from Seeding to Swathing Ripeness	
Peas	Medium (M) = 90 days; add three to four days for each rating beyond medium
Lentils	Early (E) = 100 days; Very Late (VL) = 110 days based on May 1 seeding
Chickpeas	Kabuli 110 – 120 days; Desi 110 days
Faba Beans	104 – 107 days
Dry Beans	E = 100 days; Late (L) = 110 days based on May 20 seeding
Soybeans	118 – 128 days

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

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*.

Seeding Guidelines

Crop	Recommended Minimum Average Soil Temperature at Seeding Depth (°C)	Estimated Seeding Dates for Saskatchewan	Recommended Seeding Depth in Inches (cm/inches)
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

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_2O_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,* Ministry of Agriculture

CEREAL CROPS

Wheat

Main Characteristics of Varieties

Category and Variety	Years Tested	Yield (%) Area 1 & 2	Yield (%) Area 3 & 4	Yield (%) Irrigation[2]	Protein (%)	Resistance To: Lodging	Sprouting	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB	Head Awnedness	Stem Solidness[3]	Rel. Maturity (days)	Seed Wt. (mg)	Volume Wt.[4] (kg/hL)	Ht. (cm)
CWRS[1]		--- Relative to AAC Brandon ---															--- Relative to AAC Brandon ---			
AAC Brandon	6	100	100	100	14.3	G	P	R	R	MR	MR	S	I	MR	Y	H	101	35.9	80.5	81
CDC Adamant VB[5]	5	99	103	---	+0.1	P	F	R	I	MS	S	S	MS	I	Y	S	-2	-2.1	0.0	+4
AAC Alida VB	5	98	98	91	+0.2	VG	VG	R	R	MR	R	I	MS	MR	Y	H	0	+1.3	+0.2	+7
Bolles	3	92	91	---	+1.1	VG	F	MR	R	MR	---	S	---	I	Y	H	0	+1.0	-1.4	+2
SY Brawn VB	3	96	99	---	+0.2	F	F	MR	R	I	---	MR	---	I	Y	H	-2	-3.3	-1.6	+9
AAC Broadacres VB	2	103	99	---	-0.3	VG	F	R	R	MR	---	R	---	I	Y	H	0	+1.7	0.0	+4
AAC Cameron VB	5	103	110	---	-0.3	F	F	MR	MR	S	S	R	I	I	Y	H	-2	+2.5	-0.6	+17
Carberry	6	94	94	92	+0.3	VG	F	MR	R	MR	MR	R	MS	MR	Y	H	0	-0.3	-0.2	0
Cardale	5	93	96	---	+0.2	F	G	R	R	S	I	MR	MS	MR	Y	H	-1	-1.9	-1.3	+4
SY Cast	3	96	96	---	+0.3	VG	G	R	R	R	---	R	---	I	Y	H	-1	-0.1	-1.0	+1
SY Chert VB	4	93	96	---	0.0	G	F	R	R	R	R	R	MS	I	Y	H	0	-0.8	-0.8	+7
AAC Connery	5	97	93	---	+0.5	VG	G	R	MR	R	MR	I	I	MR	N	H	-2	-0.4	-1.0	+4
SY Crossite	3	100	99	---	-0.2	F	G	R	R	R	---	MS	---	MR	Y	H	0	+1.4	-0.9	+8
Daybreak **VUA**	2	97	97	---	-0.1	F	F	R	MR	MR	---	S	---	I	Y	H	-1	+2.5	+0.6	+6
SY Donald VB	2	103	102	---	-0.3	F	---	I	I	I	---	MS	---	MR	Y	H	-2	-3.3	0.7	+7
AAC Elie	5	99	99	---	+0.1	G	F	R	R	MR	I	I	I	I	Y	H	+1	-0.6	-0.2	-2
Ellerslie	3	93	95	---	0.0	VG	F	R	MR	R	---	S	---	I	N	H	-2	-3.2	-2.7	+7
SY Gabbro	4	99	97	---	+0.4	VG	F	MR	R	I	R	I	MS	MR	Y	H	-1	+2.8	-0.4	+7
AAC Hockley	2	98	101	---	+0.3	VG	G	MR	R	R	---	R	---	MR	Y	H	0	-1.2	+0.6	+1
AAC Hodge VB	2	101	107	---	-0.2	G	F	R	R	R	---	R	---	MR	Y	H	-1	-1.0	+0.3	+7
CDC Hughes VB	5	98	101	---	+0.1	G	G	R	MR	I	MR	MS	I	I	Y	SS	-1	+1.7	0.0	+2
Jake	3	87	92	---	+0.9	F	F	R	MR	R	---	MR	---	MS	Y	H	-3	-3.0	-0.8	+8
AAC Jatharia VB §	5	102	106	---	+0.1	F	G	I	R	I	S	MS	I	I	Y	SS	0	+0.3	+0.6	+15
CDC Landmark VB	5	103	105	---	+0.1	G	G	R	MS	MR	MR	MS	I	I	Y	SS	-1	+0.7	+0.6	+4
AAC LeRoy VB	3	100	102	---	-0.2	F	G	MR	MR	MR	---	I	MS	MR	Y	H	-1	-0.2	+0.2	+6
AAC Magnet	3	92	95	---	+0.4	VG	F	R	R	I	---	S	MS	MR	Y	H	-1	+1.3	-1.4	+5
SY Manness	2	91	97	---	0.0	VG	---	R	R	I	---	S	---	I	Y	H	-1	-4.2	-0.8	0
SY Obsidian	4	94	96	---	0.0	VG	F	MR	R	MR	R	MS	I	MS	Y	H	-1	+0.9	-0.2	+4
CDC Ortona	4	95	97	---	-0.1	G	G	R	R	R	---	S	---	I	N	H	-3	-5.1	-2.1	+7
Parata	5	91	92	94	+0.4	F	F	R	MR	MR	MR	S	I	I	Y	H	-3	-2.5	-0.3	+9
CDC Pilar CLPlus	3	98	95	---	-0.2	VG	G	MR	R	MS	---	MR	---	I	Y	H	-1	-0.5	-0.6	-2
CDC Plentiful §	5	97	98	---	+0.1	G	P	R	R	MR	R	I	I	MR	N	H	-3	-2.4	-0.5	+9
AAC Redberry	5	99	100	---	0.0	F	G	R	R	R	R	I	MS	I	Y	H	-3	-1.4	+0.6	+6
Rednet	3	90	96	---	+0.3	F	F	R	R	R	---	S	---	MR	Y	H	-1	-1.1	-0.2	+14
AAC Redstar	2	89	102	---	-0.2	F	G	R	MR	MR	---	MR	---	MR	Y	H	-2	-0.1	-1.3	+7
AAC Russell VB	3	96	100	---	0.0	G	F	MR	R	R	---	MR	---	MR	Y	H	-1	+2.0	-0.2	+4
Shaw VB §	6	104	107	95	-0.2	F	G	R	MR	I	S	MR	MS	MS	N	H	-1	+0.2	-0.7	+19
Sheba	2	94	93	---	-0.6	G	---	R	R	R	---	MR	---	I	N	H	0	-3.7	-0.8	+6
CDC Silas	2	97	98	---	0.0	F	---	MR	R	I	---	MS	---	I	Y	H	0	-0.8	-1.4	+4
CDC SKRush	3	100	103	---	-0.1	G	P	MR	R	MR	---	I	---	MR	Y	H	-1	-3.3	-1.0	+7
SY Sovite	5	93	96	---	+0.3	F	F	MR	R	R	R	MS	MR	MR	Y	H	0	+1.9	-0.3	+7
CDC Stanley	6	98	100	92	+0.2	G	VG	R	MR	I	MR	S	I	MS	N	H	-1	-3.0	-1.8	+12
AAC Starbuck VB	4	104	106	---	-0.1	F	F	I	MR	MR	MR	S	S	MR	Y	H	0	+0.3	+0.3	+3
Stettler	6	100	99	93	+0.5	F	G	MR	MS	MR	R	MR	MS	MS	Y	H	0	-0.9	-0.5	+8
CDC Succession CLPlus VB	3	98	95	---	-0.1	VG	G	MR	MR	I	-	S	-	MS	Y	H	-1	+2.5	-0.9	3
AAC Tisdale	5	95	98	---	+0.9	F	F	R	R	S	MR	MR	MS	MR	Y	H	-2	+0.4	-0.6	+8
CDC Titanium VB	5	98	101	---	+0.8	P	P	I	R	R	MS	I	MS	MR	Y	H	-2	+0.5	-0.4	+10
SY Torach	4	90	94	---	+0.6	VG	P	MR	R	MS	R	MS	MS	MR	Y	H	-1	-4.1	-0.3	0
Tracker	3	88	94	---	+0.3	F	G	R	R	R	---	S	---	I	N	H	-2	-4.4	-2.2	+6
CDC Utmost VB	6	102	106	98	+0.1	F	G	MR	R	I	MS	S	I	MS	N	H	-3	-1.2	-1.6	+11
AAC Viewfield	5	105	101	---	-0.2	G	G	R	MR	R	S	MR	I	I	Y	H	0	-1.9	+0.7	-3
AAC Warman VB	4	94	98	---	0.0	P	F	R	R	MS	MR	S	I	MR	Y	H	-1	-1.7	-0.1	+12
AAC Wheatland VB	4	104	104	---	-0.2	VG	G	R	R	I	R	MR	S	I	Y	H	0	-0.3	+0.1	+2

Wheat (cont'd)

Category and Variety	Years Tested	Yield (%) Area 1 & 2	Yield (%) Area 3 & 4	Yield (%) Irrigation[2]	Protein (%)	Resistance To: Lodging	Sprouting	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB	Head Awnedness	Stem Solidness[3]	Rel. Maturity (days)	Seed Wt. (mg)	Volume Wt.[4] (kg/hL)	Ht. (cm)
CPSR[1]		--- Relative to AAC Brandon ---															--- Relative to AAC Brandon ---			
Accelerate **VUA**	3	102	105	---	-0.8	G	F	R	R	R	---	S	---	I	Y	H	-1	-4.3	-0.9	-4
AAC Crossfield	5	105	105	110	-1.2	F	P	MR	R	R	I	S	I	I	Y	H	-1	+1.2	-2.0	0
AAC Entice §	5	104	103	101	-0.9	P	P	R	R	R	MS	S	MS	I	Y	H	-1	-0.2	-2.6	+1
AAC Foray VB	5	105	109	---	-1.4	F	P	MR	R	I	MS	I	MS	I	Y	H	+1	+6.8	-1.7	+5
Forefront	1	104	102	---	-1.1	VG	---	R	R	R	---	I	---	MS	Y	H	0	+3.8	-1.7	-2
AAC Goodwin §	5	109	106	---	-0.3	G	G	I	R	R	MS	I	I	I	Y	H	+2	+0.8	0.0	-1
AAC Penhold	5	102	101	---	-0.6	VG	VG	MR	R	MR	I	R	I	MR	Y	H	-2	+4.0	-0.5	-9
CDC Reign	3	100	103	---	-0.5	G	VG	MR	R	I	---	S	---	I	Y	H	+1	-1.8	-0.7	+2
AAC Rimbey VB	1	108	105	---	-1.6	F	VG	R	R	R	---	I	---	I	Y	H	-1	6.2	-2.5	-2
SY Rorke	2	104	106	---	-1.2	F	F	R	R	S	---	MS	---	I	Y	H	+1	-2.8	-0.8	0
SY Rowyn	5	95	99	98	-0.8	F	F	R	R	MR	I	S	I	MR	Y	H	0	-5.2	-0.8	-5
CNHR[1]																				
Prosper §	5	108	111	120	-1.4	F	F	MR	MR	S	---	I	I	I	Y	H	0	+1.9	-1.5	+3
CWSWS[1]																				
AC Andrew	5	122	129	---	-2.9	VG	P	MR	MS	I	S	S	---	I	Y	H	+1	-0.2	-3.3	0
AAC Chiffon VB	5	125	125	---	-3.3	P	VP	S	I	MR	S	S	---	S	Y	H	+2	+1.3	-3.7	+12
AAC Paramount VB	5	122	122	128	-3.2	VG	P	I	I	R	MR	S	---	MS	Y	H	+1	+0.5	-2.9	+7
Sadash VB[5]	5	129	131	---	-3.6	VG	P	MR	I	R	I	S	---	S	Y	H	0	-1.0	-2.8	+3
CWSP[1]																				
Alderon	5	126	121	121	-2.9	VG	F	MR	R	MR	---	MS	I	MS	N	H	+4	-0.1	-7.6	-5
AAC Awesome VB	5	125	126	127	-3.0	F	P	R	MR	R	I	I	I	I	Y	H	+1	+4.0	-1.7	+7
Pasteur	5	112	118	---	-1.9	VG	G	MR	R	MR	MS	S	I	I	N	H	+2	+0.1	-1.4	+4
Sparrow VB	5	124	125	128	-2.5	VG	G	MR	R	MR	---	I	I	MR	N	H	+4	-0.4	-4.4	0
WPB Whistler	2	99	115	---	-2.9	VG	---	R	R	R	---	I	---	MS	---	H	+3	+1.6	-4.4	-4
CWHWS[1]																				
AAC Cirrus §	5	94	96	97	+0.3	VG	F	MR	R	R	R	I	I	I	Y	H	-1	-4.9	0.0	+4
AAC Tomkins	2	97	94	---	+0.2	G	G	MR	R	MS	---	MR	---	I	Y	H	-1	-0.3	-1.4	+3
AAC Whitehead VB	2	104	109	---	-0.3	G	---	R	R	MR	---	R	---	I	Y	H	0	+2.2	-2.2	+4

[1] Includes direct and indirect comparisons with **AAC Brandon**.
[2] For further information on irrigated performance please refer to the publication entitled *Crop Varieties for Irrigation* at *www.irrigationsaskatchewan.com/icdc*.
[3] H = Hollow; SS = Semi-solid; S = Solid.
[4] Multiply by 0.8 = lbs./bu.
[5] VB = varietal blend. Information on refuge varieties on Page VR13.

Varietal Blend Components

Midge Tolerant Variety	Refuge Variety	Crop Kind	Midge Tolerant Variety	Refuge Variety	Crop Kind
CDC Carbide	CDC Vivid	Durum	CDC Landmark	AAC Viewfield	Wheat
AAC Succeed	CDC Alloy	Durum	AAC Leroy	AAC Redberry	Wheat
AAC Weyburn	CDC Precision	Durum	AAC Paramount	AC Andrew	Wheat
CDC Adamant	CDC Bradwell	Wheat	AAC Rimbey	AAC Penhold	Wheat
AAC Alida	AAC Brandon	Wheat	AAC Russell	AAC Brandon	Wheat
AAC Awesome	AC Andrew	Wheat	Sadash	AC Andrew	Wheat
SY Brawn	SY Cast	Wheat	Shaw	AC Domain	Wheat
AAC Broadacres	AAC Brandon	Wheat	Sparrow	Alderon	Wheat
AAC Cameron	Carberry	Wheat	AAC Starbuck	AAC Brandon	Wheat
SY Chert	SY Sovite	Wheat	CDC Succession CLPlus	CDC Pilar CLPlus	Wheat
AAC Chiffon	AC Andrew	Wheat	CDC Titanium	Stettler	Wheat
SY Donald	AAC Redberry	Wheat	CDC Utmost	Harvest	Wheat
AAC Foray	AAC Penhold	Wheat	AAC Warman	AAC Tisdale	Wheat
AAC Hodge	AAC Hockley	Wheat	AAC Wheatland	AAC Brandon	Wheat
CDC Hughes	Cardale	Wheat	AAC Whitehead	AAC Tomkins	Wheat
AAC Jatharia	Carberry	Wheat			

Durum Wheat

Category and Variety	Years Tested	Yield (%) Area 1 & 2	Yield (%) Area 3 & 4	Yield (%) Irrigation[1]	Protein (%)	Resistance To Lodging	Sprouting	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB	Head Awnedness	Stem Solidness[2]	Rel. Maturity (days)	Seed Wt. (mg)	Volume Wt.[3] (kg/hL)	Ht. (cm)
CWAD		--- Relative to Strongfield ---															--- Relative to Strongfield ---			
Strongfield	6	100	100	100	14.4	P	F	R	R	MR	R	MR	I	S	Y	H	102	43.3	79.5	89
CDC Alloy	5	107	109	107	-0.4	F	F	MR	R	R	I	R	MS	MS	Y	H	+1	-0.7	+0.8	+3
Brigade	5	106	114	110	-0.9	F	F	R	R	MR	S	R	I	MS[5]	Y	H	+2	+0.4	+0.4	+8
CDC Carbide VB[4] §	5	106	107	103	-0.2	P	P	R	R	R	MS	R	MS	MS	Y	H	0	-1.5	+0.2	+2
AAC Congress	5	109	107	113	-0.5	P	F	MR	R	R	MR	R	MS	MS	Y	H	+1	-0.9	+0.4	+2
CDC Covert	3	108	109	---	-0.6	G	G	R	R	R	---	R	---	S	Y	H	+1	-4.8	+0.4	-1
CDC Credence	5	108	110	102	-0.7	F	F	MR	R	MR	MR	R	I	MS[5]	Y	H	+1	-0.8	0.0	+7
CDC Defy	3	112	110	---	-0.9	G	F	MR	R	I	---	R	---	MS[5]	Y	H	0	-3.6	+1.2	+4
AAC Donlow	3	111	107	---	-0.7	F	G	R	R	R	---	R	---	MS[5]	Y	H	+1	-3.6	+1.0	0
CDC Dynamic	5	105	106	110	+0.1	F	G	MR	R	MR	I	R	I	MS	Y	H	0	-1.1	+0.6	+1
CDC Flare	4	102	101	110	-0.3	VG	F	MR	R	S	R	R	I	MS	Y	H	0	+0.5	-0.9	0
CDC Fortitude	5	104	103	98	-0.2	F	F	MR	R	R	MS	R	MS	MS	Y	S	+1	-1.4	+0.2	-2
AAC GoldNet	3	110	109	---	-0.3	G	G	MR	R	R	---	R	---	S	Y	H	+1	-3.6	+0.7	+4
AAC Grainland	4	105	108	103	-0.3	F	G	MR	R	R	R	R	MS	MS	Y	S	+1	-0.5	-0.6	0
AC Navigator §	6	97	91	---	-0.6	F	G	R	R	R	MS	R	S	S	Y	H	+1	+1.8	+0.1	-11
CDC Precision	6	106	109	109	-0.5	G	F	MR	R	R	MS	R	MS	MS	Y	H	+1	-0.8	+0.9	+2
AAC Schrader	1	106	---	---	-0.3	F	---	R	R	R	---	MR	---	I	Y	H	+1	-1.1	+0.6	+5
AAC Spitfire	5	108	110	111	-0.4	G	F	R	R	R	MS	R	MS	S	Y	H	0	-0.1	-0.2	-2
AAC Stronghold	5	101	100	112	-0.3	VG	G	R	R	MR	R	I	I	MS	Y	S	+2	+0.8	+0.6	-3
AAC Succeed VB	4	106	110	102	-0.2	F	F	MR	R	I	R	R	MS	MS	Y	H	0	+1.5	-0.4	+2
Transcend	5	102	105	93	-0.2	F	G	R	R	R	S	R	I	MS[5]	Y	H	+1	-1.2	0.0	+6
CDC Vantta	1	106	---	---	-0.8	G	---	I	R	R	---	R	---	MS	Y	H	+3	-1.1	+0.9	-8
CDC Verona	5	102	106	103	-0.2	G	F	R	R	R	MS	R	MS	MS	Y	H	+1	-0.8	-0.2	+2
AAC Weyburn VB	2	110	106	---	-1.1	F	G	MR	R	R	---	R	---	MS	Y	S	+2	+0.4	-0.5	0

[1] For further information on irrigated performance please refer to the publication entitled *Crop Varieties for Irrigation* at *www.irrigationsaskatchewan.com/icdc.*
[2] H = Hollow; SS = Semi-solid; S = Solid.
[3] Multiply by 0.8 = lbs./bu.
[4] VB = varietal blend. Information on refuge varieties on Page VR13.
[5] 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 2021, the spring wheat and durum varieties supported for registration since 2017 were grown in replicated trials at up to 16 locations.

Most varieties have been rated for their relative resistance to pre-harvest sprouting. Under wet post-maturity conditions varieties 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 seed guide 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 moderately good 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 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*.

CANADA WESTERN RED SPRING (CWRS)

Seed of new varieties **SY Donald VB**, **AAC Hockley**, **SY Manness** and **CDC Pilar CLPlus** is expected to be available in limited quantities fall 2022. Seed of new varieties **CDC Silas** and **CDC Succession CLPlus VB** is expected to be available in limited quantities fall 2023.

CDC Succession CLPlus VB and **CDC Pilar CLPlus** are tolerant to the CLEARFIELD® herbicides Adrenalin SC and Altitude FX.

WHEAT ADDITIONAL INFORMATION (CONT'D)

CANADA PRAIRIE SPRING RED (CPSR)

Seed of new variety **Forefront** is expected to be available in limited quantities fall 2022. Seed of new variety **AAC Rimbey VB** is expected to be available in limited quantities fall 2023.

CANADA WESTERN HARD WHITE SPRING (CWHWS)

Varieties in the Hard White market class are intended for whole wheat bread and yellow alkaline noodle markets.

Seed of new varieties **AAC Tomkins** and **AAC Whitehead VB** is expected to be available in limited quantities fall 2022.

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 similar.

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 Flare is tolerant to the CLEARFIELD® herbicides Adrenalin SC and Altitude FX.

Seed of new variety **AAC Weyburn VB** is expected to be available in limited quantities fall 2022. Seed of new varieties **AAC Schrader** and **CDC Vantta** is expected to be available in limited quantities fall 2023.

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. 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

Variety	Years Tested	Yield (%) Area 1 & 2	Yield (%) Area 3	Test Weight (kg/hL)	Seed Weight (mg)	Height (cm)	Maturity (days)	Resistance To Lodging	Stem Rust	Leaf Rust	Bunt	Root Rot	Ergot	FHB
Spring Habit		--- Relative to AC Ultima ---												
AC Ultima	20	100	100	72.7	43.3	101	104	G	R	R	R	I	MS	I
Brevis	14	110	111	3.1	-0.5	-7	1	VG	R	R	R	---	I	I
Bunker	4	92	97	3.0	1.1	5	1	G	MR	R	R	I	I	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	I	I	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	---	I	S
Tyndal	9	98	101	0.8	-1.2	-6	0	G	R	R	R	---	---	MS
Winter Habit		--- Relative to Pika ---												
Pika	6	100	100	68	---	125	E	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.

Winter Wheat

Main Characteristics of Varieties

Category and Variety	Site Years	Yield (%) Area 1 & 2	Yield (%) Area 3 & 4	Protein (%)	Winter Survival	Resistance To: Lodging	Stem Rust	Leaf Rust	Stripe Rust	Bunt	FHB	Head Awnedness	Maturity Rating	Seed Weight (mg)	Volume Wt.[2] (kg/hL)	Height (cm)
CWRW[1]		-- Relative to CDC Buteo --											------- Relative to CDC Buteo -------			
CDC Buteo	96	100	100	12.3	VG	F	I	I	S	S	MR	Y	M	33	81	91
AAC Elevate	69	107	102	-0.4	G	VG	MR	I	S	MR	I	Y	M	+4	-2	-7
Emerson	52	100	95	0.4	G	G	R	I	MR	S	R	Y	M	-4	-1	-5
AAC Gateway	49	97	98	0.7	F	VG	MR	I	MR	S	I	Y	M	0	-2	-14
AAC Goldrush	36	105	107	0.3	VG	G	MR	R	I	S	I	Y	M	0	-2	-4
Moats	78	103	101	0.3	G	F	R	R	MR	MS	S	Y	M	-1	-1	+1
AAC Network	25	101	101	0.4	G	G	R	MR	R	MR	I	Y	L	-2	-2	-12
Radiant	61	104	104	-0.3	VG	VG	S	S	MS	S	S	Y	L	+2	-2	0
AAC Vortex	18	97	105	0.4	VG	VG	R	R	R	S	MR	Y	M	+2	-1	-6
AAC Wildfire	44	110	115	-0.1	VG	G	S	I	MR	MR	MR	Y	VL	+3	-1	-5
CW Experimental																
AAC Icefield	42	100	98	-0.9	F	VG	R	MR	MR	S	I	Y	M	-2	-2	-10
CWSP[1]																
CDC Falcon	69	99	97	-0.8	F	VG	MR	MR	S	S	S	Y	E	-3	-2	-16
Pintail	26	108	111	-1.7	VG	F	MS	MS	MR	S	S	N	M	-4	-3	-3

[1] Includes direct and indirect comparisons with **CDC Buteo**.
[2] Multiply by 0.8 = lbs./bu.

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 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 Vortex is a new variety with very good winter survival and lodging resistance, resistance to all rusts and moderate resistance to FHB. Seed will not be available in fall 2022.

Seed of **AAC Network** became available in fall 2021.

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 under 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	Yield (%) Area 3 & 4	Protein (%)	Winter Survival	Resistance To[1]: Lodging	Shattering	Ergot[2] (%)	Heading Date[3] (days)	Maturity[4] (days)	Seed Weight (mg)	Volume Weight[5] (kg/hL)	Height (cm)	Falling Number (sec.)
Open-Pollinated		- Relative to Hazlet -							---------- Relative to Hazlet ----------					
Hazlet	18	100	100	11.2	VG	G	VG	1.1	Jun 9	Aug 2	36.4	73.1	99	180
Danko	4	102	94	0.6	VG	VG	---	---	-2	-2	-3.7	0.5	0	---
Prima	18	92	96	0.3	VG	G	F	-0.3	-1	-3	-5.1	-0.8	11	+48
Hybrid Varieties														
KWS Bono	9	126	127	-1.0	VG	G	---	0.0	1	0	-4.7	-0.3	-12	+107
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 Serafino	5	124	128	-0.8	VG	VG	---	-0.1	0	0	-4.8	-0.8	-8	+136
KWS Trebiano	5	122	125	-0.6	VG	VG	---	-0.2	0	0	-1.8	-0.6	-6	+125

[1] Ratings: VG = Very Good; G = Good; F = Fair.
[2] Ergot bodies in grain as percent 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.

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*.

Forage Rye

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).

Wheat Classes Changes

By The Ministry of Agriculture

The Canadian Grain Commission (CGC) Wheat Class Modernization was initiated in 2015. Revised quality standards (established in May 2015) led to a review of the suitability of all western Canadian wheat varieties for their current market classification. The review was in part due to some concerns about declining gluten strength in Canadian wheat shipments.

The observed weaker gluten strength was due to a number of factors, including the predominance of some varieties that were on the lower end of the range of gluten strength for CWRS (Canada Western Red Spring). Customers require higher gluten strength from CWRS for their products to perform consistently. CGC reviewed the quality standards expected for CWRS and CPSR (Canada Prairie Spring Red) wheat classes so that the performance of those classes are more consistent with customer expectations.

Producers are strongly encouraged to use the Canadian Grain Commission's (CGC) Variety Designation Lists (*www.grainscanada.gc.ca*), which indicate the varieties belonging to each class of wheat in Canada and the complete list of varieties being designated to another class, effective Aug. 1, 2018 and beyond. For complete and up-to-date information on the Canadian Wheat Class Modernization initiative, visit CGC's website. It is also recommended producers use the Canadian Food Inspection Agency's List of Registered Varieties (*www.inspection.gc.ca*) to determine registration status of varieties.

The wheat class review was comprehensive. The initial 29 varieties were moved out of CWRS and CPSR Aug. 1, 2018 to the Canada Northern Hard Red (CNHR) class. **AC Crystal** moved out of CPSR to CNHR Aug. 1, 2019. **AC Domain**, **Muchmore**, **AAC Redwater**, **Vesper VB** and **5605HR CL** moved out of CWRS to CNHR on Aug. 1, 2021.

Varieties that have moved to CNHR can continue to be grown, but must be marketed as CNHR. The review of varieties is complete and no further changes are expected.

Malting Barley

Main Characteristics of Varieties

Category[1] and Variety	Years Tested	2 or 6 Row	Awns[2]	Yield (% AAC Synergy) Area 1 & 2	Yield (% AAC Synergy) Area 3 & 4	Relative Maturity[3]	Resistance To: Lodging	Netted Net Blotch[4]	Spotted Net Blotch[4]	Spot Blotch	Scald	Loose Smut	Other Smuts	Root Rot	Stem Rust	FHB
Malting Acceptance: Recommended																
AAC Synergy	7	2	R	100	100	M	F	MR	R	R	S	S	I	I	MR	I
CDC Bow	7	2	R	94	93	M	VG	S	MR	I	MS	S	I	MS	MR	MS
AAC Connect	7	2	R	99	95	M	G	I	MR	MR	S	S	R	MS	MR	MR
CDC Copeland	7	2	R	92	93	M	F	I	I	S	MS	MS	I	I	MR	I
CDC Fraser	7	2	R	100	98	M	G	MR	R	R	MS	R	R	MS	MR	I
AC Metcalfe	7	2	R	87	86	M	F	S	I	I	MS	R	I	I	MR	I
Malting Acceptance: In Development or Limited Demand																
Bentley §	7	2	R	99	96	L	G	MS	R	I	MS	MS	MR	I	MR	I
AB BrewNet ✪	5	2	R	98	100	L	G	WMS	I	MS	I	MS	MR	---	MR	MR
CDC Churchill	6	2	R	104	104	M	G	MR	MR	I	S	MS	MR	---	MR	MS
CDC Copper	6	2	R	103	101	M	G	MR	MR	I	MR	I	MR	---	I	MS
CDC Goldstar[6]	7	2	R	99	95	M	G	I	MR	I	S	I	R	S	MR	MS
CDC PlatinumStar[6]	7	2	R	94	88	M	F	I	MR	S	S	S	R	S	I	MR
Celebration §	7	6	S	95	91	M	VG	S	MR	MR	S	R	R	MS	I	MS
Legacy	6	6	S	90	85	M	G	S	MR	MR	MS	I	MR	MR	MR	MS
Other[5]																
AAC Goldman	7	2	R	95	94	M	G	I	R	I	I	S	I	---	I	MR
Torbellino	4	2	R	98	97	M	G	MS	MS	MS	I	MS	R	---	MS	S

[1] These categories are established annually by the Canadian Malting Barley Technical Centre (Call 204-984-4399 for more information).
[2] R = Rough; S = 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.
[5] Although not on the CMBTC list, a malting barley market may exist for these varieties.
[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.

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.

Growers are cautioned that most malting varieties, especially two-row barley, are more susceptible to sprouting.

Harvesting grain over 16 per cent moisture and 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 malting varieties. Final acceptance is given 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 and Variety	Years Tested	2 or 6 Row	Awns[1]	Yield (% AAC Synergy) Area 1 & 2	Yield (% AAC Synergy) Area 3 & 4	Relative Maturity[2]	Resistance To: Lodging	Netted Net Blotch[3]	Spotted Net Blotch[3]	Spot Blotch	Scald	Loose Smut	Other Smuts	Root Rot	Stem Rust	FHB
Hulled																
Altorado	7	2	R	104	99	M	G	S	MR	S	S	MR	MR	MR	MR	I
CDC Ascent	7	2	R	85	83	M	G	S	MR	I	MS	MR	MR	I	I	MR
CDC Austenson §	7	2	R	102	103	M	G	MS	R	MR	S	S	R	I	I	I
Brahma	7	2	R	100	99	M	G	S	I	S	MS	MS	R	MR	MR	I
Canmore	7	2	R	96	99	L	G	MS	MR	I	MR	R	R	I	MS	I
Claymore	7	2	R	103	98	L	VG	S	I	I	S	S	R	I	MR	MR
CDC Coalition §	7	2	R	97	98	M	VG	S	MR	I	MS	R	MR	I	MR	I
CDC Cowboy	6	2	R	85	89	L	F	I	MR	I	MS	MS	MR	I	MR	MR
AB Hague ✪	4	2	R	105	101	L	G	I	I	I	I	MR	R	---	MR	MR
CDC Maverick	6	2	S	79	83	M	F	I	MR	I	MS	S	R	I	MR	MR
Oreana	7	2	R	98	93	L	VG	S	MR	I	S	S	R	I	I	S
AB Prime ✪	3	2	R	110	104	M	G	MR	I	I	I	S	R	---	R	I
CDC Renegade ✪	2	2	S	115	105	M	F	I	MR	MS	S	MS	MR	---	MR	MR
Sirish	7	2	R	95	91	M	VG	MS	MS	MS	MR	S	R	---	S	MS
AB Wrangler ✪	5	2	R	103	101	M	F	I	I	MR	MS	MS	MR	---	R	MR
AB Advantage	6	6	S	104	99	VL	VG	MS	I	I	I	MR	I	---	I	S
Amisk	7	6	SS	97	98	M	G	I	MR	MR	I	S	MS	MS	MR	S
AB Cattlelac	6	6	SS	101	99	L	VG	MS	MR	MR	I	I	R	---	I	S
AC Rosser	11	6	S	101	99	M	G	I	MR	MR	S	MS	MR	MR	MR	S
AB Tofield ✪	4	6	S	106	106	L	G	MS	I	I	I	---	MR	---	R	S
Hulless																
CDC Carter	7	2	R	103	98	L	VG	S	I	I	S	S	R	I	MR	MR
CDC Clear §	7	2	R	79	84	M	G	I	MR	I	MS	R	R	S	I	MR
CDC McGwire §	8	2	R	84	83	M	G	I	MR	I	I	MS	MR	MR	I	MR
Hulled varieties being tested for adaptability in Western Canada																
KWS Coralie[4] ✪ **VUA**	2	2	R	113	103	L	G	---	---	---	---	---	---	---	---	---
Esma[4] ✪ **VUA**	2	2	R	115	105	M	G	---	---	---	---	---	---	---	---	---
KWS Kellie[4] ✪ **VUA**	2	2	R	115	109	L	G	---	---	---	---	---	---	---	---	---

[1] R = Rough; S = Smooth; SS = Semi-Smooth.
[2] Relative maturity of the check, **AAC Synergy**, is M (on average, 94 days from seeding to swathing ripeness).
[3] 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.
[4] Not tested for disease; until a full rating is generated assume that the variety is very susceptible to the disease.

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 basis.

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 Hague**, **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 two-row, 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.

Irrigation

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*.

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]

VARIETIES RECOMMENDED

VARIETY	TYPE	MARKET COMMENTS	SEED DISTRIBUTOR
CDC Copeland	2 Row	Established Demand	SeCan
AAC Synergy	2 Row	Established Demand	Syngenta/FP Genetics
AC Metcalfe	2 Row	Declining Demand	SeCan
AAC Connect	2 Row	Established Demand	CANTERRA SEEDS
CDC Fraser	2 Row	Growing Demand	SeCan
CDC Bow	2 Row	Growing Demand	SeCan

In addition to the varieties listed, there are also contracting opportunities for the following:

- **Bentley**, **Celebration, CDC PlatinumStar, CDC GoldStar** (CANTERRA SEEDS)
- **Legacy**, **Newdale** (FP Genetics)
- **Cerveza** (Mastin Seeds)

Varieties on the recommended list are ordered to reflect estimated quantities selected in the previous year.

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	TYPE	SEED DISTRIBUTOR
CDC Churchill	2 Row	SeCan
CDC Copper	2 Row	FP Genetics
AB BrewNet	2 Row	SeedNet

THE CMBTC AND ITS MEMBERS RECOMMEND

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

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

Explore opportunities to contract production of malting barley varieties in your area.

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

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

@canadianbarley
@MaltAcademy
cmbtc.com

Oat

Main Characteristics of Varieties

Variety	Years Tested	Yield (% CS Camden) Area 1 & 2	Yield (% CS Camden) Area 3 & 4	Test Weight (g/0.5L)	% Hull	Hull Colour	% Plump	Relative Maturity[1]	Height (cm)	Resistance To: Lodging	Stem Rust	Crown Rust	Smut
CS Camden	7	100	100	242	24.3	White	82	L	94	VG	S	MS	I
CDC Arborg	7	105	106	250	20.1	White	85	M	108	VG	S	I	R
CDC Boyer	7	88	90	232	23.3	White	85	M	105	G	I	I	MS
CDC Dancer	7	88	88	253	19.8	White	86	M	103	G	I	I	R
Derby	7	87	92	247	22.9	White	79	M	107	G	S	S	MS
AAC Douglas	5	102	97	245	20.7	White	81	M	98	G	I	MR	R
CDC Endure	6	106	105	245	21.2	White	89	M	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	M	102	G	S	MR	MS
ORe3541M	7	94	90	257	21.5	White	90	L	93	VG	S	R	R
ORe3542M	7	97	92	247	22.5	White	95	L	93	VG	S	R	R
ORe Level48	3	89	88	250	20.5	White	89	L	95	VG	I	MR	R
ORe Level50	3	87	86	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	I	R
Souris	7	97	93	253	21.5	White	72	M	98	VG	MR	MS	R
Summit	7	93	95	256	21.6	White	81	M	94	G	I	I	R
Triactor	7	103	108	240	22.8	White	80	L	99	G	S	MR	I
Varieties being tested for adaptability in Western Canada													
Akina	5	102	100	242	22.5	White	---	M	95	G	---	R	R
Alka	4	106	100	247	22.8	White	---	L	95	G	S	I	R
Kara	5	102	100	247	23.2	White	---	M	88	G	---	MR	MR

[1] Maturity rating L = 98 days.

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.

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 earlier 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 (about 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. It also has a significant moisture requirement similar to other broadleaf crops. Quinoa is frost-tolerant both as a seedling and at maturity. An earlier seeding date 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.

NorQuin **NQ94PT** is a golden seeded variety with high seed yield and uniform, earlier maturity. NorQuin **NQRed** is a red-seeded quinoa variety with high seed yield and earlier maturity. NorQuin **NQRainbow** is a composite blend of several quinoa plant types with high seed yield and slightly later maturity.

For more information on quinoa, contact NorQuin at 1-855-778-4662 or *www.quinoa.com.*

Canary Seed

Main Characteristics of Varieties

Variety	Type	Site Years	Yield[1] (%)	Days to Heading	Days to Maturity	Height (cm)	Test Weight (kg/hL)[2]	Seed Weight (g/1000)
			Relative to CDC Bastia					
CDC Bastia	glabrous	69	100	56	98	102	70.8	8.0
CDC Calvi	glabrous	55	106	2	3	4	0.7	0.3
CDC Cibo	glabrous	55	107	0	-1	-9	-0.4	0.2
CDC Lumio	glabrous	32	117	2	1	3	-0.6	0.4
Cantate	hairy	69	115	1	2	-3	-7.0	0.5
Keet	hairy	69	127	4	3	4	-6.1	-0.2

[1] Yield data not collected by Area, 2007-2021.
[2] Multiply by 0.8 = lbs./bu.

ADDITIONAL INFORMATION

The seed of annual canarygrass, 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 recommended 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 inconspicuous 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 *Canary Seed*.

PULSE CROPS

Lentil

Main Characteristics of Varieties

Variety	Herbicide Tolerance[1]	Years Tested[2]	Yield (% CDC Maxim) Area 1 & 2	Yield (% CDC Maxim) Area 3 & 4	Height (cm)	Days to Flower	Maturity Rating[3]	Resistance To: Ascochyta Blight	Resistance To: Anthracnose Race 1	Seed Coat Colour	Cotyledon Colour	Seed Weight (g/1000)
Small Red												
CDC Maxim	CL	15	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 Coral		7	110	103	33	55	E/M	MR	MR	gray	red	37
CDC Dazil	CL	12	97	92	33	53	E/M	MR	I	gray	red	35
CDC Impulse	CL	11	107	100	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	8	108	107	35	52	E/M	MR	MR	gray	red	38
CDC Proclaim	CL	11	106	102	34	51	E/M	MR	MR	gray	red	40
CDC Redcoat		7	105	93	33	50	E/M	MR	MR	gray	red	39
CDC Redmoon		10	114	104	33	52	E/M	MR	MR	gray	red	41
CDC Simmie ✪	CL	6	109	103	34	53	E/M	MR	MR	gray	red	39
Extra Small Red												
CDC Imp	CL	7	95	94	35	52	E/M	MR	MR	gray	red	30
CDC Impala	CL	13	84	83	30	51	E	MR	MR	gray	red	31
CDC Roxy		10	103	97	34	53	E/M	MR	MR	gray	red	32
Large Red												
CDC KR-2	CL	11	105	91	37	52	M	MR	MR	gray	red	55
CDC Sublime ✪	CL	6	118	109	38	54	E/M	MR	MR	green	red	53
Small Green												
CDC Imvincible	CL	14	94	81	33	49	E	MR	MR	green	yellow	34
CDC Jimini ✪	CL	6	108	100	36	50	E/M	---	---	green	yellow	38
CDC Kermit		12	106	96	36	49	E/M	MR	MR	green	yellow	34
CDC Viceroy		6	97	98	34	49	E	MR	MR	green	yellow	33
Extra Small Green												
CDC Asterix		11	96	91	30	48	E	MR	I	green	yellow	26
Medium Green												
CDC Imigreen	CL	11	78	71	44	50	M	MR	S	green	yellow	57
CDC Impress	CL	7	87	71	34	50	M	MR	MS	green	yellow	52
Large Green												
CDC Greenland		19	89	70	38	52	M/L	MR	S	green	yellow	64
CDC Greenstar		13	99	82	40	52	M/L	MR	I	green	yellow	73
CDC Grimm ✪	CL	7	94	82	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	9	93	88	35	51	M/L	MR	S	green	yellow	74
French Green												
CDC Marble		13	103	96	36	49	E	MR	I	green marble	yellow	34
CDC Peridot	CL	8	84	91	37	48	E	I	MS	green marble	yellow	38
CDC Pilgrim ✪	CL	6	98	93	35	52	E/M	---	---	green marble	green	33
Green Cotyledon												
CDC Imerald ✪	CL	6	90	87	35	53	E/M	---	---	green	green	54
CDC QG-1		6	80	65	42	51	M	I	I	green	green	49
CDC QG-2		10	89	88	40	48	E	I	I	green marble	green	32
CDC QG-3	CL	7	92	66	38	53	E/M	I	MR	green	green	46
CDC QG-4	CL	9	93	91	36	53	E/M	I	MR	green marble	green	33
Spanish Brown												
CDC SB-3	CL	8	90	87	35	51	E	I	MR	gray dotted	yellow	38
CDC SB-4	CL	8	103	101	34	53	E/M	I	MR	gray dotted	yellow	41

[1] CL indicates Clearfield® tolerant variety.
[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.

Lentil (cont'd)

Main Characteristics of Varieties

ADDITIONAL INFORMATION

Seed supplies may be limited for recently released vairieties 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 Tested	Yield (% Amit) Area 1	Yield (% Amit) Area 2	Ascochyta Blight[1]	Height (cm)	Days to Flower	Maturity	Seed Weight (g/1000)	Seed Shape[2]	Seed or Seed Coat Colour[3]	Tolerance to Solo ADV (imazamox) herbicide
Kabuli											
Amit (B-90)	20	100	100	4.4	46	56	L	258	Ro	B	no
CDC Alma §	12	92	91	6.0	41	53	L	363	RH	B	yes
CDC Frontier	20	107	105	4.5	44	55	L	349	RH	B	no
CDC Lancer ✪	3	111	104	5.1	42	52	ML	348	RH	B	yes
CDC Leader	16	107	105	4.5	41	54	M	387	RH	B	no
CDC Luna §	18	98	100	5.7	40	53	ML	368	RH	B	no
CDC Orion	15	105	102	5.6	43	51	L	428	RH	B	no
CDC Orkney ✪	3	109	107	4.9	45	53	L	358	RH	B	yes
CDC Palmer	11	105	99	4.9	41	52	ML	413	RH	B	no
Desi											
CDC Consul	14	111	107	4.0	45	53	M	299	P	LT	no
CDC Cory §	13	112	105	4.3	46	56	M	269	A/P	T	yes
CDC Kala ✪	3	98	95	4.3	42	52	E	240	A	BL	yes

[1] Ascochyta Blight at pod filling period: 0-9 scale; 0 = no symptom; 9 = plants are completely blighted. Scores 4-6 are considered intermediate resistance.
[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.

ADDITIONAL INFORMATION

Please refer to the *2022 SaskSeed Guide* for pedigreed seed availability. For more details on production, consult the *Pulse Production Manual* published by the Saskatchewan Pulse Growers (*www.saskpulse.com*).

Field Pea

Main Characteristics of Varieties

Variety	Years Tested[1]	Yield (%) 1, 2 & South 3	Yield (%) North 3 & 4	Yield (%) Irrigation[2]	Protein (%)	Relative Maturity	Lodging[3]	Vine Length (cm)	Resistance To MB[4]	Resistance To Powdery Mildew	Resistance To Fusarium Wilt	Resistance To SCB[5]	Resistance To Bleaching	Resistance To SCD[6]	Greenness[7]	Seed Weight (g/1000)
Yellow	---- Relative to CDC Amarillo -----															
CDC Amarillo	13	100	100	100	23.0	M	3.5	85	4.5	R	MR	F	na	F	G	230
Abarth	7	93	90	92	-0.1	E	3.5	75	5.0	R	I	F	na	G	G	280
AAC Aberdeen	4	108	103	---	-1.1	M	3.5	85	4.5	R	I	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
CDC Athabasca §	7	93	97	---	0.5	M	3.0	85	4.5	R	I	F	na	F	G	300
AAC Beyond	3	109	110	---	0.3	M	4.5	80	5.0	R	MR	F	na	G	G	220
CDC Canary	9	99	101	---	0.1	E	3.5	85	4.5	R	I	G	na	F	F	230
AAC Carver	7	102	100	---	-1.3	E	4.0	85	5.0	R	I	G	na	F	G	240
AAC Chrome	7	106	104	---	-1.0	M	4.5	75	4.5	R	I	G	na	G	G	240
AAC Delhi	5	103	101	---	0.7	M	4.5	80	5.0	R	I	---	na	F	F	290
CDC Golden	10	92	83	90	0.7	E	4.5	75	5.0	R	I	G	na	G	G	230
CDC Hickie	5	108	110	---	0.5	M	3.5	85	4.5	R	MR	G	na	G	G	230
CDC Inca	10	104	101	104	-0.6	M	4.0	85	4.5	R	I	G	na	G	F	230
AAC Julius	3	108	110	---	0.4	M	4.0	85	4.5	R	MR	G	na	G	G	210
AAC Lacombe	9	97	99	101	-0.7	M	3.5	85	5.0	R	I	F	na	F	F	250
CDC Lewochko	8	102	103	---	0.9	M	3.5	90	4.5	R	I	G	na	G	G	230
CDC Meadow	12	93	90	91	-0.5	E	4.0	85	5.0	R	I	G	na	G	G	220
AAC Profit	5	103	110	---	0.8	M	4.5	90	4.5	R	I	G	na	G	G	230
CDC Saffron	12	98	92	93	-0.3	E	4.0	80	4.5	R	I	G	na	F	G	250
CDC Spectrum	10	104	102	---	0.7	M	3.5	85	4.5	R	I	G	na	G	F	240
CDC Tollefson	5	108	108	---	-0.3	M	3.0	90	4.0	R	MR	G	na	G	G	240
Green																
Blueman	6	94	90	---	0.5	M	4.5	85	4.5	R	I		F	F	na	220
AAC Comfort §	6	93	97	---	-0.4	M	4.5	85	4.5	R	I	G	F	G	na	250
CDC Forest	9	101	102	---	0.0	M	4.0	85	4.5	R	I	G	G	G	na	230
CDC Greenwater	11	99	93	89	-0.9	M	3.5	90	4.0	R	MR	F	G	F	na	230
CDC Limerick	13	96	91	91	2.9	M	3.5	85	4.0	R	I	G	G	G	na	210
CDC Raezer	12	82	80	95	-0.1	E	3.5	85	5.0	R	MR	G	G	G	na	220
CDC Spruce	11	96	98	---	0.3	M	4.0	85	4.5	R	I	F	G	F	na	240
CDC Striker	12	82	81	84	1.9	M	3.5	80	4.5	S	MR	VG	G	G	na	240
Red																
Redbat 8	6	92	85	---	1.0	M	5.0	85	5.0	R	---	G	na	G	na	200
Redbat 88	5	91	92	---	0.3	M	4.5	90	4.5	R	---	G	na	G	na	190
Maple																
CDC Acer §	3	84	73	---	na	M	6.5	60	5.0	R	---	G	na	VG	na	170
CDC Blazer	6	100	102	---	1.9	M	5.0	80	5.0	R	---	G	na	VG	na	190
AAC Liscard	7	89	89	---	-0.8	M	4.0	85	5.0	R	---	G	na	VG	na	200
CDC Mosaic	4	81	74	58	na	M	4.0	85	4.5	R	---	G	na	VG	na	180
Dun																
CDC Dakota	11	100	98	95	1.7	M	3.5	85	4.5	R	---	G	na	VG	na	205
Forage[8]																
DL Delicious VUA	3	68	66	---	1.4	L	7.5	110	5.0	S	---	G	na	F	na	200
DL Goldeye VUA	2	72	66	---	1.8	L	8.0	115	5.0	S	---	G	na	F	G	145
CDC Horizon	4	88	78	63	2.2	M	4.0	100	4.5	R	---	G	na	G	G	170
CDC Jasper	5	85	85	---	2.0	M	4.5	105	4.5	R	---	G	na	G	G	180
DL Lacross	3	89	93	---	0.4	M	7.0	110	5.0	S	---	G	na	F	F	170

[1] Co-op and regional trials in Saskatchewan.
[2] For 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 % of check **40-10** (100), **CDC Jasper** (111), **CDC Horizon** (108).

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 ripeness.

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 consumption or livestock feed markets. Nearly all 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.

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. The pigmented seed coats provide natural protection to various root rot diseases and so are typically quick to emerge with good stand establishment.

The following varieties have purple flower colour and pigmented seed coats: **CDC Acer**, **CDC Blazer**, **AAC Liscard**, **CDC Mosaic**, **CDC Dakota** and **DL Delicious**. **CDC Acer**, **CDC Blazer** and **CDC Mosaic** have a maple patterned seed coat, **AAC Liscard** and **DL Delicious** have a speckled seed coat, while **CDC Dakota** has a solid dun (tan) coloured seed coat. All other varieties have white flower colour and non-pigmented seed coats. **DL Goldeye** has normal leaf type; all other varieties have semileafless leaf type.

Lodging: How Ratings are Determined and What They Mean

Lodging ratings provide an indication of the average standability of a particular variety over years and locations. Lodging at any given location can vary from what is stated in the guide, as lodging severity is typically greater under high-yielding conditions and in situations with high winds. Lodging scores are based on visual ratings with a nine-point scale where one equals completely upright and nine equals completely lodged. Ratings are conducted near the time of crop maturity.

Seed Coat Breakage

Seed coat breakage ratings are based on an abrasive test. This rating is a test of durability of the seed coat and is not a measure of seed coat thickness.

Greenness in Yellow Peas

Yellow peas are visually rated for green colouring after harvest by an experienced person. Ratings are expressed as a percentage of the seeds in a sample that have obvious green tinge to the whole seed. The green colouring may be contained within the seed coat and/or cotyledons. Typically, a rating of Fair (F) means the variety averaged 16 to 40 per cent seeds with green colour, whereas a rating of Good (G) would have zero to 15 per cent green-tinged seeds. Greenness may be impacted by genetics, environmental conditions and harvest dates. A later-maturing variety may show more greenness in the seed sample due to less-mature seed if harvested on the same date as an earlier-maturing variety. The impact of greenness is visual and does not affect germination, but could affect grade. The Canadian Grain Commission has colour as one of the grading factors for peas, with "good natural colour" required for top grades. Too much green colouring could downgrade the sample due to a "fair colour" rating.

Seed Coat Dimpling

Seed coat dimpling refers to tiny depressions that give the seed a golfball-like appearance. Seed coat dimpling is a result of genetics and environment. Some varieties are more prone to dimpling than others. Dimpling can be found in other pulse crops, in addition to peas. It appears to be more prevalent when cool temperatures occur during seed fill. Seed coat dimpling is a measure of the percentage of seed from a harvested sample that shows dimpling. Typically, Very Good (VG) ratings have between zero and five per cent of seeds dimpled, Good (G) between six and 20 per cent and Fair (F) between 21 and 50 per cent. Buyers prefer a smooth surface to peas and grading may be impacted. Shrivelled seed is a grading factor under the Canadian Grain Commission and includes seeds that have a severely dimpled surface.

Bleaching in Green Peas

Green peas are marketed for their uniform green cotyledon colour. The main pigment responsible for the green colour is chlorophyll. Under certain conditions the chlorophyll is degraded by enzymes, which results in a lightening of the green colour, which is considered bleaching. Under complete degradation of chlorophyll, the seed becomes yellow.

Soybean (Herbicide-Tolerant)

Main Characteristics of Varieties

Variety	Canadian Marketing Agent	Company Maturity Grouping[1]	Type[2]	Hilum Colour[3]	Years Tested	Yield[4] (%) South	Yield[4] (%) North	Days to Maturity[5]
						------- Relative to TH 33003R2Y -------		
TH 33003R2Y		00.3	RR2	BR	7	100	100	0
Akras R2	Elite BrettYoung	00.3	RR2	BL	7	107	111	2
Amirani R2 ✪	Elite BrettYoung	000.5	RR2	IY	3	---	90	-8
Buffalo R2 ✪	Maizex Seeds	000.6	RR2	BR	2	---	98	-8
DKB0003-24	Bayer CropScience	000.3	RR2X	BL	2	---	87	-10
DKB0008-87	Bayer CropScience	000.8	RR2X	BL	2	---	101	-3
DKB0009-89	Bayer CropScience	000.9	RR2X	BL	4	---	94	-1
DKB002-32	Bayer CropScience	00.2	RR2X	BR	2	101	---	0
Fresco R2X	Prograin	000.7	R2X	BL	3	---	96	-6
Hart R2X	SeCan	00.5	R2X	BL	3	101	---	0
Mahony R2	SeCan	00.3	RR2	BL	7	106	107	0
Mynarski R2X	SeCan	000.5	R2X	BL	2	---	92	-7
NSC Redvers RR2X	NorthStar Genetics	00.2	RR2X	BL	4	96	---	-1
NSC Watson RR2Y		000.8	RR2Y	IY	7	98	98	-7
P0007A73X	Corteva (Pioneer)	000.7	RR2X	BR	2	---	75	-10
P001A48X	Corteva (Pioneer)	00.1	RR2X	TN	3	---	100	-3
P003A97X	Corteva (Pioneer)	00.3	RR2X	GR	3	99	---	0
P005A27X	Corteva (Pioneer)	00.5	RR2X	BR	4	99	---	0
P005A83X	Corteva (Pioneer)	00.5	RR2X	BL	2	96	---	0
P006A37X	Corteva (Pioneer)	00.6	RR2X	BR	2	108	---	0
Prince R2X	SeCan	00.1	R2X	BL	3	95	---	-1
PV 15s0009 R2X	Nutrien (Proven Seeds)	000.9	RR2X	BL	4	100	97	-2
PV 16s004 R2X	Nutrien (Proven Seeds)	00.4	RR2X	BL	3	95	---	1
PV 20s0006 R2X	Nutrien (Proven Seeds)	000.6	RR2X	BL	2	---	93	-4
PV 22s002 R2X	Nutrien (Proven Seeds)	00.2	RR2X	BL	2	99	---	-1
S0009-F2X	Syngenta	000.9	RR2X	BR	2	---	102	-6
S0009-M2	Syngenta	000.9	RR2Y	IY	7	99	104	-6
S001-D8X	Syngenta	00.1	RR2X	IY	2	108	109	-5
S003-Z4X	Syngenta	00.3	RR2X	BF	3	109	---	-3
S007-Y4	Syngenta	00.5	RR2Y	IY	7	110	107	0
SI 001XTN	Sevita International	00.1	RR2X	BL	3	99	---	-2
Sunna R2X	Elite BrettYoung	00.3	R2X	GR	4	104	---	0
TH 32004R2Y	Thunder Seeds	00.4	RR2Y	BL	4	107	102	1
TH 87003 R2X	Thunder Seeds	00.3	RR2X	BL	3	98	102	0
Young R2X	SeCan	000.9	R2X	BL	2	---	100	-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 maturity.

[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 2021 (*www.seedmb.ca*).

[3] Hilum is the point where seed attaches to the pod. BF = Buff; BL = Black; BR = Brown; GR = Grey; IY = Imperfect Yellow; TN = Tan.

[4] Seven year mean yield of the check variety **TH 33003R2Y** is 38 bu./ac. under dryland conditions and 57 bu./ac. under irrigation. In 2021, mean yield of **TH 33003R2Y** was 34 bu./ac. under dryland conditions and 55 bu./ac. under irrigation. Typical dryland on-farm yields are 25-38 bu./ac.

[5] Days to maturity indicates days from seeding to 95 per cent mature pods and is shown as +/- days vs. the check variety **TH 33003R2Y**. Average days to maturity for **TH 33003R2Y** is 118 days.

Soybean (Conventional)

Main Characteristics of Varieties

Variety	Canadian Marketing Agent	Company Maturity Grouping[1]	Type[2]	Hilum Colour[3]	Years Tested	Yield[4] (%)	Days to Maturity[5]
						------- Relative to OAC Prudence -------	
OAC Prudence	SeCan	00.3	Con	Y	4	100	0
TH 33003 R2Y		00.3	HT check	BR	7	102	0
NSC Watson RR2Y		000.8	HT check	IY	7	104	-7
AAC Edward	SeCan	00.4	Con	Y	4	106	-5
AAC Halli	Interlake.org Inc.	000.9	Con	Y	2	99	-1
Liska ✪	Prograin	00.6	Con	IY	3	97	+1
Maxus	Prograin	00.3	Con	IY	3	91	0
Maya ✪	Prograin	00.8	Con	IY	2	89	+2
Siberia	Prograin	00.2	Con	IY	4	113	-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 maturity. See Page VR10 for more information.

[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. BR = Brown; IY = Imperfect Yellow; Y = Yellow, .

[4] Mean yield of the check variety **OAC Prudence** in 2021 was 37 bu./ac. (31 bu./ac. under dryland conditions and 56 bu./ac. under irrigation). Typical dryland on-farm yields are 25-38 bu./ac.

[5] Days to maturity indicates days from seeding to 95 per cent mature pods and is shown as +/- days vs. the check variety **OAC Prudence**. Average days to maturity for **OAC Prudence** is 120 days.

ADDITIONAL INFORMATION

The soybean variety trial is coordinated by Saskatchewan Pulse Growers. Typical on-farm 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 yield.

Inoculants and Nitrogen Fixation with Pulses and Soybeans

Inoculants contain the nitrogen-fixing *Rhizobium* 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 seed treatments first, allow the seed to dry, 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 formulations. Single inoculant applications are effective 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 Pulse Crops	
Peas, Lentils, Faba Beans	*Rhizobium leguminosarum*
Chickpeas	*Rhizobium ciceri*
Dry Beans	*Rhizobium phaseoli*
Soybeans	*Bradyrhizobium japonicum*

Faba Bean

Main Characteristics of Varieties

Variety	Years Tested	Low Vicine / Convicine	Yield (% Fabelle)	Height (cm)	Lodging[1]	Maturity (days)	Seed Weight (g/1000)
Coloured Flower (normal tannin)							
Fabelle ✪	9	Yes	100	104	2.4	105	533
FB9-4	10	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
Vertigo ✪	4	No	105	107	3.0	106	571
Victus ✪	5	Yes	98	101	2.8	105	444
White Flower (low tannin)							
Snowbird	14	No	100	95	3.0	104	448
Imposa	4	No	105	99	2.4	107	695
Navi ✪	4	Yes	104	94	3.2	111	401
DL Rico ✪	5	Yes	84	107	3.5	109	566
CDC Snowdrop	9	No	89	97	2.8	104	325
Tabasco	5	No	96	93	1.9	106	496
DL Tesoro ✪ VUA	6	No	103	90	3.8	110	511
219-16	9	No	102	94	3.6	106	328

[1] Lodging score (1-9) where 1 = completely upright, 9 = completely lodged.

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 recommended 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-diametre seed openings and minimal change in seed flow direction or seed tube shape.
  - Avoid sharp turns with the drill.

Dry Bean

Main Characteristics of Varieties

Variety	Years Tested[1]	Yield --- (% CDC Blackstrap) --- Irrigation[2]	Yield --- (% CDC Blackstrap) --- Dryland	Days to Flower	Maturity Rating[3]	% Pod Clearance[4]	Seed Weight (g/1000)	Growth Habit[5]
Black								
CDC Blackstrap	9	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	M	79	355	II
Medicine Hat	5	107	99	58	M	72	360	II
CDC WM-2	7	93	87	52	M	79	365	II
CDC WM-3	3	91	86	52	M	78	360	II
Navy								
Bolt	6	88	88	58	L	82	190	II
Portage	7	84	81	52	M	85	175	II
OAC Spark	4	74	88	55	L	81	163	I
AAC Shock	3	86	96	51	M	89	186	II
Small Red								
AC Redbond	3	98	82	51	M	65	290	II
flor de junio								
CDC Ray	6	112	107	56	L	70	300	III
Yellow								
CDC Sunburst	3	100	91	54	M	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**.
[2] For 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 VR2 for more information.
[4] Pod clearance: percentage of pods that completely clear the cutterbar at time of swathing (~4 cm).
[5] Growth habit: I = Determinate bush; II = Indeterminate bush; III = Indeterminate vine.

ADDITIONAL INFORMATION

Please refer to the *2022 SaskSeed Guide* for pedigreed seed availability. For more details on production, consult the Pulse Production Manual published by the Saskatchewan Pulse Growers (*www.saskpulse.com*).

OILSEED CROPS

Flax

Main Characteristics of Varieties

Variety	Years Tested	Yield[1] (% CDC Bethune) Areas 1 & 2	Area 3 South	Area 3 North & 4	Irrigation[4]	Relative Maturity[2]	Seed Size[3]	Resistance To Lodging	Powdery Mildew	Fusarium Wilt
Brown Seed										
CDC Bethune	14	100	100	100	100	L	M	G	MR	MR
AAC Bravo	5	103	102	100	94	L	L	G	MR	MR
CDC Buryu	5	97	104	100	89	L	M	G	MR	MR
CDC Glas	10	106	104	104	97	L	M	VG	MR	MR
CDC Kernen	4	103	106	105	100	L	L	G	MR	MR
AAC Marvelous	5	104	108	108	102	L	M	G	MR	MR
CDC Neela	5	105	99	99	94	L	M	G	MR	MR
CDC Plava	5	98	102	99	92	M	M	G	---	MR
Prairie Grande	3	90	92	92	95	M	M	VG	MR	MR
Prairie Sapphire	6	103	94	98	95	L	M	G	MR	MR
AAC Prairie Sunshine	4	103	103	106	---	L	M	G	---	---
Prairie Thunder	3	93	97	96	99	M	M	VG	MR	R
CDC Rowland	5	107	110	108	102	L	L	G	MR	MR
CDC Sanctuary	5	101	92	94	96	L	M	F	MR	MR
CDC Sorrel	4	95	93	96	97	L	L	G	MR	MR
Topaz	5	99	108	103	94	L	M	G	MR	MR
WestLin 60	5	94	94	94	90	M	M	G	---	MR
WestLin 71	5	98	99	98	93	L	S	VG	MR	MR
WestLin 72	5	101	105	104	97	L	S	VG	MR	MR
Yellow Seed										
AAC Bright	4	98	96	98	---	L	M	G	MR	MR
CDC Dorado	4	92	92	91	---	M	M	G	MR	MR
VT50	5	100	102	100	95	L	S	VG	---	MR

[1] Data from Regional and Co-op yield trials.
[2] The relative maturity of the check, **CDC Bethune**, is L (on average 101 days from seeding to swathing ripeness).
[3] Seed size: S = Small; M = Medium; L = Large.
[4] For further information on irrigated performance please refer to the publication entitled *Crop Varieties for Irrigation* at *www.irrigationsaskatchewan.com/icdc*

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 a half 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 Ministry of Agriculture publication, *Camelina*.

SES0787LS (tradename: **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 **MIDAS™** camelina). Its natural height is medium to tall (on average 84 cm); it flowers after about 46 days and generally reaches maturity, depending on the weather conditions, 85 – 105 days after seeding. In trials (CV < 15 per cent) conducted from 2015 to 2020 on the Canadian Prairies, **SES0787LS** yielded on average 42 bu./ac. Expected yields in Saskatchewan are 35 – 40 bu./ac. on fallow and 25 to 35 bu./ac. on stubble.

Mustard

Main Characteristics of Varieties

Type and Variety	Site Years	Yield[1] (%)	Plant Height (cm)	Hydroxylbenzyl Glucosinolate (µmol/g seed)	Allyl Glucosinolate (mg/g seed)	Mucilage[2] (cS*ml/g seed)	Fixed Oil (%)	Protein (%)	Seed Weight (g/1000)	Maturity (days)	Resistance to White Rust[3] 2a	2v
Open-Pollinated Yellow		Relative to Andante										
Andante	36	100	107	142	na	88.6	28.4	35.2	5.8	87	R	R
AAC Adagio	29	102	-4	-3	na	+8.2	+1.7	-2.2	-0.7	+7	R	R
AAC Yellow 80	36	108	+3	-5	na	-5.0	+0.8	-0.4	0.0	0	R	R
AC Pennant	124	99	-11	+6	na	-43.9	+1.1	-0.9	-0.1	+6	R	R
Open-Pollinated Brown		Relative to Centennial Brown										
Centennial Brown	42	100	126	na	12.6	na	35.8	30.0	3.0	86	S	S
Amigo	21	93	-17	na	+1.3	na	-1.6	+0.7	-0.3	+12	R	S
AAC Brown 120	22	112	0	na	-0.6	na	-0.6	-0.2	+0.7	+8	R	R
Hybrid Brown		Relative to Centennial Brown										
AAC Brown 18	42	119	+3	na	-0.4	na	+1.7	-1.3	-0.1	86	R	S
Open-Pollinated Oriental		Relative to Cutlass										
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.
[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.

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.

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 2022 *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.*

Canola (Small-Scale Straight Cut Trials)

Main Characteristics of Varieties

Variety[1] (*B. napus*)	Distributor	Overall Average[1] (16 locations)			Long Season Zone[1] (5 locations)			Mid Season Zone[1] (8 locations)			Short Season Zone[1] (3 locations)			Disease Tolerance[3]
		Yield (%)	Maturity (days)	Lodging[2]	Yield (%)	Maturity (days)	Lodging[2]	Yield (%)	Maturity (days)	Lodging[2]	Yield (%)	Maturity (days)	Lodging[2]	
Roundup Ready														
45CM39[6]	Pioneer Hi-Bred	100	94	2.3	100	91	1.8	100	96	2.5	100	93	3.3	BL/CR
D3158CM	BREVANT seeds	104	91	2.3	102	89	1.7	106	94	2.6	106	89	3.0	BL/CR
LSD(%)[5]		*13*			*21*			*6*			*12*			
Liberty Link														
B3010M	BREVANT seeds	105	92	2.1	107	90	1.6	103	94	2.4	109	90	3.0	BL/CR
CS4000 LL	CANTERRA SEEDS	110	91	2.9	110	89	2.1	110	94	3.4	111	88	3.8	BL/CR
DKLL 82 SC	DEKALB	102	90	2.8	102	88	2.0	100	92	3.2	110	86	4.0	BL
DKTFLL 21 SC[4]	DEKALB	103	89	2.7	108	87	1.7	100	90	3.2	103	85	4.0	BL
L233P	InVigor	116	88	2.2	115	88	1.9	115	90	2.5	125	84	2.0	BL
L255PC	InVigor	120	92	1.6	120	91	3.4	121	94	1.8	116	88	1.8	BL/CR
L340PC	InVigor	124	89	1.8	125	88	1.4	121	91	2.1	130	83	2.3	BL/CR
L345PC	InVigor	128	90	2.1	130	88	1.6	124	92	2.4	137	85	2.8	BL/CR
L357P	InVigor	121	91	2.0	117	90	1.7	123	94	2.3	127	89	2.0	BL
P506ML	Pioneer Hi-Bred	109	90	2.5	108	88	2.2	109	92	2.7	111	87	3.0	BL/CR
LSD(%)[5]		*12*			*14*			*11*			*13*			
TruFlex														
BY 6211TF	BrettYoung	108	92	2.4	105	89	1.5	110	95	3.0	116	87	3.0	BL
CS2600 CR-T	CANTERRA SEEDS	107	90	2.7	109	88	1.8	106	93	3.3	107	86	2.8	BL/CR
CP21T3P	WinField United-CROPLAN	105	93	2.5	101	90	1.6	107	96	3.1	111	90	3.0	BL
DKTF 96 SC	DEKALB	102	94	2.0	96	91	1.4	105	96	2.4	111	91	3.0	BL
DKTF 99 SC	DEKALB	114	91	2.4	114	89	1.6	115	94	2.9	110	86	3.0	BL
DKTF 97 CRSC	DEKALB	104	91	2.2	105	89	1.5	104	94	2.6	97	86	3.0	BL/CR
PV 761 TM	Proven Seed	99	93	2.2	98	90	1.6	99	96	2.5	96	91	3.0	BL
LSD (%)[5]		*11*			*11*			*11*			*9*			

[1] From Canola Performance Trials grown across Prairie provinces, 2021.
[2] 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).
[3] 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.
[4] Indicates varieties with glyphosate and glufosinate herbicide tolerance. Visit *www.canolaperformancetrials.ca* for more details.
[5] LSD = least significant difference (five per cent level) within herbicide system.
[6] Average yield (bu./ac.) of the check **45CM39** for long season zone, mid-season zone and short-season zone in 2021 was 44, 45 and 25, respectively.

ADDITIONAL INFORMATION

Variety descriptions summarize the performance of varieties tested in the 2021 Canola Performance Trials. Data was provided by the Canola Performance Trials Committee. For more information visit *www.canolaperformancetrials.ca*.

All varieties, except one, in the preceding tables have a 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 evironmental conditions conducive for disease development.

Clubroot is a long-lived disease in the soil that can impact canola performance. Using clubroot-resistant varietes 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 6 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

Variety[1] (*B. napus*)	Distributor	Overall Average[1] (16 locations)			Long Season Zone[1] (5 locations)			Mid Season Zone[1] (8 locations)			Short Season Zone[1] (3 locations)			Disease Tolerance[3]
		Yield	Maturity (days)	Lodging[2]	Yield	Maturity (days)	Lodging[2]	Yield	Maturity (days)	Lodging[2]	Yield	Maturity (days)	Lodging[2]	
Roundup Ready														
45CM39[6]	Pioneer Hi-Bred	100	94	2.4	100	92	2.1	100	95	2.5	100	94	---	BL/CR
1028RR[4]	BREVANT seeds	97	94	2.0	91	93	1.6	102	95	2.1	102	91	---	BL/CR
45CS40	Pioneer Hi-Bred	101	92	2.2	95	91	1.8	107	93	2.4	99	87	---	BL/CR/S
CS2300	CANTERRA SEEDS	102	94	1.7	95	94	1.1	109	95	2.0	97	90	---	BL
LSD(%)[5]		*10*			*11*			*9*			*9*			
Liberty Link														
B3011	BREVANT seeds	102	91	2.2	95	90	2.1	109	91	2.3	88	90	---	BL/CR
CP21L3C	WinField United - CROPLAN	106	90	2.4	97	90	2.0	115	90	2.6	105	85	---	BL/CR
P501L	Pioneer Hi-Bred	105	92	2.1	98	91	2.0	114	93	2.1	90	90	---	BL/CR
PV 680 LC	Proven Seed	105	94	1.8	99	94	1.6	112	95	1.9	95	90	---	BL/CR
PV 681 LC	Proven Seed	101	90	2.6	93	90	2.3	108	91	2.8	96	84	---	BL/CR
LSD(%)[5]		*11*			*12*			*9*			*15*			
TruFlex														
BY 6204TF	BrettYoung	102	92	2.1	97	91	2.0	110	93	2.2	73	90	---	BL/CR
BY 6207TF	BrettYoung	96	96	1.4	90	95	1.0	105	97	1.6	76	95	---	BL/CR
DKTF 98 CR	DEKALB	97	90	2.1	93	91	2.0	103	92	2.2	74	83	---	BL/CR
LSD (%)[5]		*12*			*13*			*12*			*11*			
Clearfield														
BY 5125CL	BrettYoung	104	87	1.9	95	87	2.3	109	86	1.8	---	---	---	BL/CR
2028 CL	BREVANT seeds	93	90	1.7	81	91	2.3	102	89	1.4	---	---	---	BL/CR
CS2700 CL	CANTERRA SEEDS	94	88	1.3	83	89	1.5	102	87	1.3	---	---	---	BL/CR
P502CL	Pioneer Hi-Bred	107	82	2.4	100	83	2.8	109	81	2.3	---	---	---	BL
LSD (%)[5]		*12*			*8*			*16*						

[1] From Canola Performance Trials grown across Prairie provinces, 2021.
[2] 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).
[3] 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.
[4] Indicates varieties with glyphosate and glufosinate herbicide tolerance. Visit *www.canolaperformancetrials.ca* for more details.
[5] LSD = least significant difference (five per cent level) within herbicide system.
[6] Average yield (bu./ac.) of the check **45CM39** for long season zone, mid-season zone and short-season zone in 2021 was 49, 45 and 38, respectively.

Sunflower

Main Characteristics of Hybrids

Hybrid	Herbicide Tolerance	Years Tested	Yield (% 63A21)	Average Maturity (days)	Harvest Moisture (%)
Oilseed EM (Early Maturing)					
63A21 §		9	100	109	18.6
Honeycomb NS		5	114	105	13.6
AC Sierra[1]		9	67	105	15.7
Oilseed (Late Maturing)					
Cobalt II	Clearfield ®	3	76	115	30.4
Talon	ExpressSun ®	2	92	113	30.1
8N 270 §	Clearfield ®	8	93	114	24.0

[1] AC Sierra is open pollinated and not a hybrid.

Varieties not appearing in this table will require more than 125 days to reach maturity.

ADDITIONAL INFORMATION

Sunflower requires 105 to 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.

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 email or call Sherri Roberts with Ministry of Agriculture at sherri.roberts@gov.sk.ca or 306-848-2856.

Understanding Clubroot Resistance and the Classification System

By Sask Canola

Growers farming in areas where clubroot has been detected, or if they are concerned about clubroot, the following management tips are recommended:

- Minimize soil movement by restricting the entry of vehicles that have not been sanitized, minimizing tillage and creating a separate exit as far as possible from the field entrance.
- Post multiple “no-trespassing” signs.
- Extend crop rotations to a minimum three to four 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 canola-related weeds throughout the rotation.
- Scout canola crops by examining the roots for the presence of swollen root tissue (galls). Focus 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 that have other crops (wheat, barley, etc).

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 three years between susceptible crops in infested areas — while effectively managing weeds, sanitizing equipment and minimizing soil movement. This approach 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 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 infested 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 ones 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.

FORAGE CROPS

Annual Forages

Main Characteristics of Varieties

Variety[1]	Site Years	Days to Heading	Lodging Score[2]	Forage DM Yield (kg/ha)	Nutritional Data[3] (%)					
					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
CDC Austenson	12	61	1	7517	9.8	29.6	49.6	67.0	0.22	0.18
AB Cattelac	12	60	1	7284	9.3	28.7	49.0	67.9	0.30	0.18
CDC Copeland	12	62	1	7610	9.0	30.3	50.2	66.3	0.28	0.17
CDC Renegade ✪	8	60	1	8631	9.3	28.2	46.2	68.5	0.22	0.17
AB Wrangler ✪	8	61	1	7598	9.1	27.3	48.0	69.4	0.28	0.18
Oat										
CDC Arborg	12	56	1	7767	10.0	32.8	52.8	63.6	0.22	0.19
CDC Baler	12	61	1	8044	9.6	35.2	58.5	61.0	0.24	0.18
CDC Haymaker	12	59	2	8085	9.5	35.7	58.1	60.5	0.23	0.18
Wheat										
AC Andrew	8	56	1	7746	8.8	29.1	49.4	67.6	0.11	0.18
AAC Awesome VB[4]	12	58	1	9313	8.6	31.4	50.3	65.1	0.11	0.17
AAC Chiffon VB[4]	12	57	1	8869	8.3	30.6	49.1	66.5	0.10	0.17
AAC Innova	8	58	1	7431	9.2	30.1	48.5	66.3	0.10	0.18
Triticale										
AB Stampeder ✪	12	54	1	8241	9.7	29.3	49.6	67.4	0.14	0.18

[1] Early spring seeding at recommended rates for cereal crops. Barley harvested at soft dough stage, oats harvested at late milk stage, wheat harvested at early dough stage and triticale harvested at soft dough stage.
[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 basis.
[4] VB = varietal blend. Information on refuge varieties on Page VR13.

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. A final report will be available once the three year project has been competed in 2022.

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. 48 forage entries of grasses and legumes (including check varieties) were assessed for hay yield and nutritive value. A full report is available within the resources section of the Saskatchewan Forage Council website.

Breeding Institutions and Seed Distributors of Varieties Listed in this Publication

Crop Kind, Class & Variety	Breeding Institution	Distributor
WHEAT		
Canada Western Red Spring (CWRS)		
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 ✪	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
SY Crossite ✪	Syngenta Seeds Canada Inc.	Syngenta Canada
Daybreak ✪ **VUA**	LCRC - Limagrain Canada	CANTERRA SEEDS
SY Donald VB ✪	Syngenta Seeds Canada Inc.	FP Genetics
AAC Elie	AAFC (Swift Current)	Alliance Seed
Ellerslie	U of Alberta	SeCan Members
SY Gabbro	Syngenta Seeds Canada Inc.	Richardson Intl
AAC Hockley ✪	AAFC (Swift Current)	FP Genetics
AAC Hodge VB ✪	AAFC (Brandon)	FP Genetics
CDC Hughes VB	U of S - CDC	Proven Seed/Nutrien Ag Solutions
Jake	U of Alberta	CANTERRA SEEDS
AAC Jatharia VB	AAFC (Brandon)	SeCan Members
CDC Landmark VB	U of S - CDC	FP Genetics
AAC LeRoy VB	AAFC (Brandon)	Alliance Seed
AAC Magnet	AAFC (Brandon)	FP Genetics
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
Parata	U of Alberta	SeCan Members
CDC Pilar CLPlus ✪	U of S - CDC	Nutrien
CDC Plentiful	U of S - CDC	FP Genetics
AAC Redberry	AAFC (Swift Current)	Alliance Seed
Rednet	U of Alberta	SeedNet Inc.
AAC Redstar ✪	AAFC (Brandon)	SeCan Members
AAC Russell VB ✪	AAFC (Swift Current)	FP Genetics / Proven Seed
Shaw VB	AAFC (Winnipeg)	SeCan Members
Sheba	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 VB CLPlus ✪	U of S - CDC	Nutrien
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 (CWSP)		
Alderon	KWS-UK	SeCan Members
AAC Awesome VB	AAFC (Lethbridge)	SeCan Members
Pasteur	Wiersum Plant Breeding	SeCan Members
Sparrow VB	KWS-UK	SeCan Members
WPB Whistler ✪	Wiersum Plant Breeding	SeCan Members
Canada Prairie Spring Red (CPSR)		
Accelerate ✪ **VUA**	LCRC - Limagrain Canada	CANTERRA SEEDS
AAC Crossfield	AAFC (Winnipeg)	CANTERRA SEEDS
AAC Entice	AAFC (Winnipeg)	Proven Seed/Nutrien Ag Solutions
AAC Foray VB	AAFC (Winnipeg)	SeCan Members
Forefront	U of Alberta	Penwest Seeds
AAC Goodwin	AAFC (Swift Current)	SeCan Members
AAC Penhold	AAFC (Swift Current)	SeCan Members
CDC Reign ✪	U of S - CDC	FP Genetics
AAC Rimbey ✪	AAFC (Swift Current)	SeCan Members
SY Rorke ✪	Syngenta Seeds Canada Inc.	Proven Seed/Nutrien Ag Solutions
SY Rowyn	Syngenta Seeds Canada Inc.	Alliance Seed

Crop Kind, Class & Variety	Breeding Institution	Distributor
WHEAT (CONT'D)		
Canada Northern Hard Red (CNHR)		
Prosper	NDSU	Seed Depot
Canada Western Hard White Spring (CWHWS)		
AAC Cirrus	AAFC (Swift Current)	FP Genetics
AAC Tomkins ✪	AAFC (Swift Current)	FP Genetics
AAC Whitehead ✪	AAFC (Lethbridge)	FP Genetics
Canada Western Soft White Spring (CWSWS)		
AC Andrew	AAFC (Lethbridge)	SeCan Members
AAC Chiffon VB	AAFC (Lethbridge)	SeedNet Inc.
AAC Paramount VB	AAFC (Lethbridge)	SeCan Members
Sadash VB	AAFC (Lethbridge)	SeCan Members
Canada Western Amber Durumm (CWAD)		
CDC Alloy	U of S - CDC	FP Genetics
Brigade	AAFC (Swift Current)	Proven Seed/Nutrien Ag Solutions
CDC Carbide VB	U of S - CDC	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 Flare	U of S - CDC	Proven Seed/Nutrien Ag Solutions
CDC Fortitude	U of S - CDC	Proven Seed/Nutrien Ag Solutions
AAC GoldNet ✪	AAFC (Swift Current)	SeedNet Inc.
AAC Grainland	AAFC (Swift Current)	SeCan Members
AC Navigator	AAFC (Swift Current)	Proven Seed/Nutrien Ag Solutions
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 ✪	U of S - CDC	SeCan Members
CDC Verona	U of S - CDC	Alliance Seed
AAC Weyburn VB ✪	AAFC (Swift Current)	Alliance Seed
WINTER WHEAT		
Canada Western Red Winter (CWRW)		
CDC Buteo	U of S - CDC	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 ✪	AAFC (Lethbridge)	Alliance Seed
AAC Wildfire	AAFC (Lethbridge)	SeCan Members
Canada Western Experimental		
AAC Icefield	AAFC (Lethbridge)	FP Genetics
Canada Western Special Purpose (CWSP)		
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	FCDC (Lacombe)	SeCan Members
AC Ultima	AAFC (Swift Current)	FP Genetics
Winter Habit		
Luoma	FCDC (Lacombe)	Corns Brothers Farms
Metzger	FCDC (Lacombe)	Haney Farm Ltd.
Pika	FCDC (Lacombe)	Progressive Seeds

Crop Kind, Class & Variety	Breeding Institution	Distributor
BARLEY		
Malting Two-Row		
Bentley	FCDC (Lacombe)	CANTERRA SEEDS
CDC Bow	U of S - CDC	SeCan Members
AB BrewNet ✪	FCDC (Lacombe)	SeedNet Inc.
CDC Churchill ✪	U of S - CDC	SeCan Members
AAC Connect	AAFC (Brandon)	CANTERRA SEEDS
CDC Copeland	U of S - CDC	SeCan Members
CDC Copper	U of S - CDC	FP Genetics
CDC Fraser	U of S - CDC	SeCan Members
CDC Goldstar	U of S - CDC/Sapporo/PML	CANTERRA SEEDS
KWS Kellie ✪ **VUA**	KWS-GMBH	Secan Members
AC Metcalfe	AAFC (Brandon)	SeCan Members
CDC PlatinumStar	U of S - CDC/Sapporo/PML	CANTERRA SEEDS
AAC Synergy	AAFC (Brandon)	FP Genetics
Malting Six-Row		
Celebration	Busch Ag Res. Inc.	CANTERRA SEEDS
Legacy	Busch Ag Res. Inc.	Proven Seed/FP Genetics
Hulled - Feed Two-Row		
Altorado	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
CDC Austenson	U of S - CDC	SeCan Members
Brahma	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
Canmore	FCDC (Lacombe)	CANTERRA SEEDS
Claymore	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
CDC Coalition	U of S - CDC	CANTERRA SEEDS
KWS Coralie ✪ **VUA**	KWS-GMBH	SeCan Members
CDC Cowboy	U of S - CDC	SeCan Members
Esma ✪ **VUA**	Ackermann Saatzucht	SeCan Members
AB Hague ✪	FCDC (Lacombe)	FP Genetics
CDC Maverick	U of S - CDC	SeCan Members
Oreana	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
AB Prime ✪	FCDC (Lacombe)	SeedNet Inc.
Sirish	Syngenta Seeds Canada Inc.	FP Genetics
AB Wrangler ✪	FCDC (Lacombe)	CANTERRA SEEDS
Hulled - Feed Six-Row		
Amisk	FCDC (Lacombe)	SeCan Members
AC Rosser	AAFC (Brandon)	SeCan Members
AB Tofield ✪	FCDC (Lacombe)	SeCan Members
Hulless - Food, Malting, Feed		
CDC Ascent	U of S - CDC	SeCan Members
CDC Clear	U of S - CDC	SeCan Members
CDC Fibar	U of S - CDC	Tomtene Seeds
CDC Hilose	U of S - CDC	Tomtene Seeds
CDC Marlina	U of S - CDC	Tomtene Seeds
CDC McGwire	U of S - CDC	SeCan Members
CDC Rattan	U of S - CDC	Tomtene Seeds
Roseland	AAFC (Brandon)	Wayfinder Farms
Forage		
AB Advantage ✪	FCDC (Lacombe)	SeCan Members
AB Cattlelac	FCDC (Lacombe)	Alliance Seed
AC Ranger	AAFC (Brandon)	FP Genetics
CDC Renegade ✪	U of S - CDC	SeCan Members
Other		
AAC Goldman	AAFC (Brandon)	
Torbellino	Syngenta Seeds Canada Inc.	FP Genetics
CANARY SEED		
CDC Bastia	U of S - CDC	Public release U of S - CDC
CDC Calvi	U of S - CDC	CANTERRA SEEDS
Cantate	J. Joordans Zaadhandel BV	Hansen Seeds
CDC Cibo	U of S - CDC	CANTERRA SEEDS
Keet	U of Minnesota; U of S - CDC	Public release U of S - CDC
CDC Lumio ✪	U of S - CDC	CANTERRA SEEDS
RYE		
KWS Bono	KWS Lochow GMBH	FP Genetics
Brasetto	KWS Lochow GMBH	FP Genetics
KWS Daniello	KWS Lochow GMBH	SeedNet Inc.
Danko	Danko Plant Breeders Ltd	FP Genetics
KWS Gatano ✪	KWS Lochow GMBH	FP Genetics
Hazlet	AAFC (Swift Current)	SeCan Members
Prima	AAFC (Swift Current)	SeCan Members
KWS Propower ✪	KWS Lochow GMBH	SeedNet Inc.
KWS Progas	KWS Lochow GMBH	FP Genetics
KWS Serafino ✪	KWS Lochow GMBH	SeedNet Inc.
KWS Trebiano ✪	KWS Lochow GMBH	FP Genetics

Crop Kind, Class & Variety	Breeding Institution	Distributor
OAT		
Hulled		
Akina	Lantmannen SW Seed	Elite Seeds
Alka ✪	Lantmannen SW Seed	Elite Seeds
CDC Arborg	U of S - CDC	FP Genetics
CDC Boyer	U of S - CDC	SeCan Members
CS Camden	Lantmannen SW Seed	CANTERRA SEEDS
CDC Dancer	U of S - CDC	FP Genetics
Derby	U of S - CDC	Mastin Seeds
AAC Douglas ✪	AAFC (Brandon)	SeCan Members
CDC Endure	U of S - CDC	Alliance Seed
Kara	Lantmannen SW Seed	Elite Seeds
ORe Level48	Oat Advantage	Seed Depot
ORe Level50	Oat Advantage	Seed Depot
CDC Minstrel	U of S - CDC	FP Genetics
AC Morgan	AAFC (Lacombe)	SeCan Members
CDC Morrison	U of S - CDC	CANTERRA SEEDS
CDC Nasser	U of S - CDC	T & L Seeds
CDC Norseman	U of S - CDC	SeCan Members
ORe3541M	Oat Advantage	SeCan Members
ORe3542M	Oat Advantage	SeCan Members
CDC Ruffian	U of S - CDC	FP Genetics
CDC SO-I	U of S - CDC	T&L Seeds
Souris	NDSU	Seed Depot
Summit	AAFC (Winnipeg)	FP Genetics
Triactor	Lantmannen SW Seed	CANTERRA SEEDS
Hulless		
AC Gwen	AAFC (Winnipeg)	SeCan Members
Forage		
CDC Baler	U of S - CDC	FP Genetics
CDC Haymaker	U of S - CDC	SeCan Members
Murphy	AAFC (Lacombe)	SeCan Members
FLAX		
CDC Bethune	U of S - CDC	SeCan Members
AAC Bravo	AAFC (Morden)	FP Genetics
AAC Bright	AAFC (Morden)	SeCan Members
CDC Buryu	U of S - CDC	SeCan Members
CDC Dorado	U of S - CDC	SeedNet Inc.
CDC Glas	U of S - CDC	SeCan Members
CDC Kernen ✪	U of S - CDC	Secan Members
AAC Marvelous	AAFC (Morden)	FP Genetics
CDC Neela	U of S - CDC	CANTERRA SEEDS
VT50	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions
CDC Plava	U of S - CDC	SeCan Members
Prairie Grande	AAFC (Morden)	SeCan Members
Prairie Sapphire	AAFC (Morden)	Alliance Seed
AAC Prairie Sunshine	AAFC (Morden)	SeCan Members
Prairie Thunder	AAFC (Morden)	CANTERRA SEEDS
CDC Rowland	U of S - CDC	SeCan Members
CDC Sanctuary	U of S - CDC	SeCan Members
CDC Sorrel	U of S - CDC	SeCan Members
Topaz	Nutrien Ag Solutions	Alliance Seed
WestLin 60	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions
WestLin 71	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions
WestLin 72	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions
MUSTARD		
Brown		
Amigo	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AAC Brown 18	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AAC Brown 120	AAFC (Saskatoon)	Mustard 21 Canada Inc.
Centennial Brown	AAFC (Saskatoon)	Mustard 21 Canada Inc.
Oriental		
Cutlass	AAFC (Saskatoon)	Mustard 21 Canada Inc.
Forge	Colman's of Norwich	Proven Seed/Nutrien Ag Solutions
AAC Oriental 200	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AC Vulcan	AAFC (Saskatoon)	Mustard 21 Canada Inc.
Yellow		
AAC Adagio	AAFC (Saskatoon)	Mustard 21 Canada Inc.
Andante	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AAC Yellow 80	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AC Pennant	AAFC (Saskatoon)	Mustard 21 Canada Inc.
SAFFLOWER		
Saffire	AAFC (Lethbridge)	Jerry Kubic (AB)
SOYBEAN		

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Crop Kind, Class & Variety	Breeding Institution	Distributor
LENTIL		
CDC Asterix	U of S - CDC	Sask. Pulse Growers
CDC Carmine ♕	U of S - CDC	Sask. Pulse Growers
CDC Coral ♕	U of S - CDC	Sask. Pulse Growers
CDC Dazil	U of S - CDC	Sask. Pulse Growers
CDC Greenland	U of S - CDC	Sask. Pulse Growers
CDC Greenstar	U of S - CDC	Sask. Pulse Growers
CDC Grimm ✪	U of S - CDC	Sask. Pulse Growers
CDC Imerald ✪	U of S - CDC	AGT Foods Canada
CDC Imigreen	U of S - CDC	Sask. Pulse Growers
CDC Imp ♕	U of S - CDC	Sask. Pulse Growers
CDC Impala	U of S - CDC	Sask. Pulse Growers
CDC Impower	U of S - CDC	Sask. Pulse Growers
CDC Impress	U of S - CDC	Sask. Pulse Growers
CDC Impulse ♕	U of S - CDC	Sask. Pulse Growers
CDC Imvincible	U of S - CDC	Sask. Pulse Growers
CDC Jimini ✪	U of S - CDC	Sask. Pulse Growers
CDC Karim ♕	U of S - CDC	Sask. Pulse Growers
CDC Kermit ♕	U of S - CDC	Sask. Pulse Growers
CDC KR-2 ♕	U of S - CDC	Sask. Pulse Growers
CDC Lima ♕	U of S - CDC	Sask. Pulse Growers
CDC Marble	U of S - CDC	Sask. Pulse Growers
CDC Maxim	U of S - CDC	Sask. Pulse Growers
CDC Nimble ♕	U of S - CDC	FP Genetics
CDC Peridot	U of S - CDC	Sask. Pulse Growers
CDC Pilgrim ✪	U of S - CDC	AGT Foods Canada
CDC Proclaim ♕	U of S - CDC	Sask. Pulse Growers
CDC QG-1	U of S - CDC	AGT Foods Canada
CDC QG-2	U of S - CDC	AGT Foods Canada
CDC QG-3 ♕	U of S - CDC	AGT Foods Canada
CDC QG-4 ♕	U of S - CDC	AGT Foods Canada
CDC Redcoat	U of S - CDC	Sask. Pulse Growers
CDC Redmoon ♕	U of S - CDC	Sask. Pulse Growers
CDC Roxy ♕	U of S - CDC	Sask. Pulse Growers
CDC SB-3 ♕	U of S - CDC	Simpson Seeds
CDC SB-4 ♕	U of S - CDC	Simpson Seeds
CDC Simmie ✪	U of S - CDC	Sask. Pulse Growers
CDC Sublime ✪	U of S - CDC	Sask. Pulse Growers
CDC Viceroy	U of S - CDC	Sask. Pulse Growers
CHICKPEA		
CDC Alma	U of S - CDC	Sask. Pulse Growers
Amit (B-90) ♨	ARO Volcani Centre	AGT Foods Canada
CDC Consul	U of S - CDC	Sask. Pulse Growers
CDC Cory	U of S - CDC	Sask. Pulse Growers
CDC Frontier	U of S - CDC	Sask. Pulse Growers
CDC Leader	U of S - CDC	Sask. Pulse Growers
CDC Lancer ✪	U of S - CDC	Sask. Pulse Growers
CDC Luna	U of S - CDC	Sask. Pulse Growers
CDC Kala	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
CAMELINA		
SES0787LS ♕ (Cypress)	Smart Earth Camelina Corp.	Smart Earth Camelina Corp.
SES1154HR ♕ (NewGold)	Smart Earth Camelina Corp.	Smart Earth Camelina Corp.
SUNFLOWER		
Cobalt II	Nuseed Americas	Nuseed Americas
Honeycomb NS	USDA	---
AC Sierra	AAFC (Saskatoon)	AAFC (Indian Head)
Talon	Nuseed Americas	Nuseed Americas
63A21	Pioneer Hi-Bred	Pioneer Hi-Bred
8N 270	Mycogen Seeds	Dow Seeds

Abbreviations Used in this List

AC	Agriculture Canada (Agriculture and Agri-Food Canada)
AAC	Agriculture Canada (Agriculture and Agri-Food Canada)
AAFC	Agriculture and Agri-Food Canada
CDC	Crop Development Centre
CPS	Crop Production Services
FCDC	Field Crop Development Centre
NDSU	North Dakota State University
OAC	Ontario Agricultural College
SY	Syngenta Seeds Canada Inc.
U	University
U of S	University of Saskatchewan
USDA	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.

Crop Kind, Class & Variety	Breeding Institution	Distributor
FIELD PEA		
Abarth ♕	Limagrain, Netherlands	FP Genetics
AAC Aberdeen ♕	AAFC (Lacombe)	Alliance Seed
CDC Acer	U of S - CDC	Sask. Pulse Growers
CDC Amarillo	U of S - CDC	Sask. Pulse Growers
AAC Ardill	AAFC	Wagon Wheel Seed Corp.
CDC Athabasca ♕	U of S - CDC	Sask. Pulse Growers
AAC Beyond	AAFC	CANTERRA SEEDS
CDC Blazer ♕	U of S - CDC	Sask. Pulse Growers
Blueman ♕	DL Seeds Inc.	SeedNet Inc.
CDC Canary ♕	U of S - CDC	Sask. Pulse Growers
AAC Carver ♕	AAFC	CANTERRA SEEDS
AAC Chrome ♕	AAFC (Lacombe)	FP Genetics
AAC Comfort ♕	AAFC (Lacombe)	CANTERRA SEEDS
CDC Dakota	U of S - CDC	Sask. Pulse Growers
DL Delicious ✪ VUA	DL Seeds Inc.	FP Genetics
AAC Delhi ♕	AAFC	SeedNet Inc.
CDC Forest ♕	U of S - CDC	Sask. Pulse Growers
CDC Golden	U of S - CDC	Sask. Pulse Growers
DL Goldeye ✪ VUA	DL Seeds Inc.	Riddell Seed Co.
CDC Greenwater	U of S - CDC	Sask. Pulse Growers
CDC Horizon	U of S - CDC	Sask. Pulse Growers
CDC Hicke ✪	U of S - CDC	Sask. Pulse Growers
CDC Inca ♕	U of S - CDC	Sask. Pulse Growers
CDC Jasper ♕	U of S - CDC	Sask. Pulse Growers
AAC Julius	AAFC	FP Genetics
AAC Lacombe ♨	AAFC	SeedNet Inc.
DL Lacross ✪	DL Seeds Inc.	SeedNet Inc.
CDC Lewochko ♕	U of S - CDC	Sask. Pulse Growers
CDC Limerick	U of S - CDC	Sask. Pulse Growers
AAC Liscard	AAFC	Wagon Wheel Seed Corp.
CDC Meadow	U of S - CDC	Sask. Pulse Growers
CDC Mosaic	U of S - CDC	Sask. Pulse Growers
AAC Profit ♕	AAFC	FP Genetics
CDC Raezer	U of S - CDC	Sask. Pulse Growers
Redbat 8 ♕	U of S - CDC	Sask. Pulse Growers
Redbat 88 ♕	U of S - CDC	Sask. Pulse Growers
CDC Saffron	U of S - CDC	Sask. Pulse Growers
CDC Spectrum ♕	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
CDC Tollefson ✪	U of S - CDC	Sask. Pulse Growers
DRY BEAN		
CDC Blackstrap ♕	U of S - CDC	Sask. Pulse Growers
Bolt	U of Guelph	Hensell District Co-op
Island	AAFC (Lethbridge)	Viterra Inc.
CDC Jet	U of S - CDC	Sask. Pulse Growers
Medicine Hat ♨	Seminis Vegetable Seeds	CANTERRA SEEDS
Portage	AAFC (Morden)	CANTERRA SEEDS
CDC Ray ♕	U of S - CDC	Rudy Agro
AC Redbond	AAFC (Lethbridge)	Viterra Inc.
AAC Shock	AAFC / U of Guelph	Hensell District Co-op
OAC Spark	U of Guelph	U of Guelph
CDC Sunburst ♕	U of S - CDC	Rudy Agro
CDC Superjet	U of S - CDC	Sask. Pulse Growers
CDC WM - 2	U of S - CDC	Rudy Agro
CDC WM - 3 ♕	U of S - CDC	Rudy Agro
FABA BEAN		
Fabelle ✪	DL Seeds Inc.	SeedNet Inc.
FB9-4	U of S - CDC	Sask. Pulse Growers
Imposa	Limagrain Nederland	Cyre Seed Farms
Navi ✪	AGri Obtentions	KGB Meier Farms
DL Rico ✪	DL Seeds Inc.	Prairie Fava
Snowbird	Limagrain Nederland	Lindholm Seeds
CDC Snowdrop	U of S - CDC	Sask. Pulse Growers
CDC SSNS-1	U of S - CDC	Meier Brothers
Tabasco ♨	DL Seeds Inc.	Riddell Seed Co.
Taboar ♨	Globe Seeds - Netherland	Terramax
DL Tesoro ✪ VUA	DL Seeds Inc.	Riddell Seed Co.
Victus ✪	DL Seeds Inc.	Valesco Genetics
219-16 ♕	U of S - CDC	Sask. Pulse Growers
QUINOA		
NQRainbow		NorQuin
NQRed ✪	NorQuin	NorQuin
NQ94PT ♨	NorQuin	NorQuin
NQRed ✪	NorQuin	NorQuin
NQ94PT ♨	NorQuin	NorQuin
CANOLA		

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