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T-14035A (11/2016)



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**ON THE COVER:** The Spring 2017 issue of *Alberta Seed Guide* contains stories that focus on making crops better, including initiatives to improve crops like canola, pulses and wheat via breeding and best management practices. Enjoy this spring issue, and be sure to let us know your thoughts. Visit [seed.ab.ca](http://seed.ab.ca) for more stories, and to contact us.



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GLENN LOGAN



**THIS** is my last message as the president of the Alberta Seed Growers, and I would like to first say that there would not be an *Alberta Seed Guide* without the support and dedication of the research associations and public/private partnerships we work with across the province. They provide our customers with the resources needed to succeed.

For a complete list of these valuable contributors, see page 46.

As those of you reading this may well know, we have a world-renowned seed system because we are committed to consistent improvement. In the past year, our organization and national body have embodied that value by encouraging further industry partnerships to streamline the way we do business. Through working with our national body, this has led to the birth of the Seed Synergy program, designed to facilitate an inclusive approach for all seed related industries to find a new way forward together.

What does this mean for your bottom line?

It means the Alberta Seed Growers are working to create an even more efficient and responsive seed system that maintains the high-quality genetics for our customers. We are also focused on fostering an environment of education and readily available technology to make sure that you are using the best seed possible – allowing farmers to capture value for their investment.

In the spirit of partnerships, we are also taking a bigger role in provincial matters where we can be leaders and affect change – such as fusarium and disease management. By adapting to the current environment, we are making sure that our seed system is responsive and able to combat fusarium – wherever possible.

However, we will not succeed without also relying on farmers to

source the best seed and use best management practices to ensure we fight it on all fronts. The time to act on this is now, and we will only succeed through collaboration and education.

We have also taken a bigger role in provincial policy efforts, including the farm safety file through the Alberta Agriculture Farm and Ranch Safety Coalition (AgCoalition). By sharing our members' unique viewpoint and experiences, we are able to have input and help to shape the future of farm safety guidelines in this province. We are also made stronger by presenting a united front with our fellow producer groups.

I will be around for two more years as a past chairman, and I look forward to seeing what the future holds. With our new executive director, Kelly Chambers, in place, I know that this organization is in good hands.

Now we look forward; our organization survives and thrives based on our members' input and involvement.

**Glenn Logan**  
**President**

Alberta Seed Growers  
Email: wheatcrestfarms@gmail.com







DAVID BISHOP



**THE** season of 2016 is not a distant memory for many of us, with environmental conditions pushing harvest into an unprecedented warm November. The unknown twists and turns that this business of farming delivers sometimes really tests our resolve. However, the old adage "It is not the strongest nor the most intelligent who will survive but those who can best manage change" really holds true.

Looking back on the years I've been farming, there has never been a season when all things went exactly as planned. However, we keep going, and we always plan and strive to make things better.

This issue of *Alberta Seed Guide* is all about "Making Crops Better - The quest to improve the food we grow."

Looking at our local and national agriculture industry, constant improvement is a key performance indicator regardless of the size of operation. For many of us, we don't have fancy posters on the wall, nor graphs showing where we are and where we are going on this path of improvement. Rather, we have an internal compass supported by an external culture of excellence that guides us.

There are a multitude of examples of industry improvement. One is the Regional Variety Trial and Canola Performance Trial programs operated by various committees and groups with the unified goal of creating data to assist growers to select the best variety for their area or farming practices. Accolades must go out to the people who form the committees and groups that oversee this important work.

Additionally, recognition must go out to the individuals who actually conduct the trials, acknowledging much plot work is conducted without some of the technology that large scale crop production takes for granted, with old fashioned elbow grease required to get the job done.

The amount of research conducted in the agriculture industry is almost immeasurable. The volumes of data generated by federal and provincial research agencies is staggering. Take that and add it to the work of regional research agencies that the Agricultural Research and Extension Council of Alberta (ARECA) groups carry out. Then (yes there's more!) add the on-farm research that many farmers do intentionally or unintentionally. Wow! That's a lot of constant improvement in the quest to grow better crops.

Growing better crops takes best management practices that are constantly changing. However, one thing that hasn't changed is the best management practice to use the highest quality seed possible. Getting a full seed test to look at germination, vigour and even seed-borne disease loading is a great investment regardless of harvest conditions. Be sure to review your seed test with your agronomist or seed lab staff, and use the best seed possible. Everything we do on our farms is linked to how well that tiny seed will grow; it only makes sense to use seed testing technology as a tool to ensure the seed going into the ground has potential to meet your farm's yield and quality targets.

Protecting that seed with a seed treatment protects your investment in that crop. Remember: seed treatments are a tool to make good seed better. Be Seed Smart, don't raise the risk of crop production by not knowing seed quality.

Best Wishes in making your next crop the best ever. Enjoy this issue of *Alberta Seed Guide*.

**David Bishop**  
**President**

Alberta Seed Processors  
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ON behalf of the Government of Alberta, it is my pleasure as Minister of Agriculture and Forestry to extend greetings to the readers of the *Alberta Seed Guide*. This edition focuses on the theme of the quest to improve the food we grow – a crucial question for producers and one that reflects the increasing demands of consumers throughout the province and around the world.

Expanding the yield of our agricultural production while elevating the quality of the crops grown begins with the seeds selected for planting.

Alberta's agricultural sector continues to be one of the pillars of our province's economy. As the largest renewable sector in Alberta, agriculture demonstrates that economic growth can be sustainable.

The *Alberta Seed Guide* is a vital tool for our producers. It provides critical information for our farming community that empowers decision-making and informs production decisions. The guide also helps showcase the depth and quality of our seed system, which is essential to maintaining the sustainability of our agriculture sector.

Thank you to the Alberta Seed Growers and the Alberta Seed Processors for their dedication to Alberta's agricultural producers and my sincere wishes for your continued success.

Oneil Carlier  
Minister

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# Alberta Seed Guide

Spring 2017



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## PUBLISHED BY ISSUES INK

403-313 Pacific Avenue  
Winnipeg, MB R3A 0M2  
PRINTED IN CANADA  
(204) 453-1965  
Email: [issues@issuesink.com](mailto:issues@issuesink.com)

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Winnipeg, MB R3A 0M2  
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# BREEDING PERENNIAL CEREALS

A Lethbridge breeder is developing perennial wheat and perennial cereal rye for Western Canada.

**UNDERSTANDING** the appeal of perennial cereals is easy. Compared to growing annuals, perennial cereal production would reduce seeding costs and seeding workloads. Other potential advantages include access to nutrients deeper in the soil profile because of greater rooting depths, use of soil moisture over a longer period of the year and to a greater depth, better soil conservation, and increased ability to outcompete weeds, reducing herbicide needs.

However, breeding perennial cereals is not easy. It's a long, difficult road. But it's a road strewn with interesting challenges and intriguing possibilities.

Dr. Jamie Larsen, a research scientist with Agriculture and Agri-Food Canada (AAFC), is one of the few Canadian crop breeders working on perennial cereals. He came to AAFC's Lethbridge Research and Development Centre a little over five years ago and started working on perennial cereal rye.

## Perennial Cereal Rye

"Surya Acharya, a forage breeder here, had bred the perennial cereal rye variety ACE-1. I came here based on some of the interesting aspects of it and the promise of it," says Larsen. ACE-1 is the first perennial cereal rye variety to be released in Canada. It was developed through crosses between annual rye and perennial wild cereal rye, and was bred for silage and greenfeed.

"When I initially looked at it here in Lethbridge, ACE-1 looked really promising; it absolutely was perennial and vigorous," he says. "And the grain yield is not bad. [When ACE-1 is grown with high fertility levels,] the yields we've seen here are around or just below the fall rye average for Canada."

Larsen's current work to develop perennial wheat lines includes crossing wheat with intermediate wheatgrass lines from the USDA gene bank (right) and with Kernza, a domesticated intermediate wheatgrass.

Photos courtesy of Jamie Larsen, AAFC



However, Larsen learned that AAFC researchers at Swift Current and some producers who have grown the crop haven't had as much success with the crop, suggesting the variety is very regionally adapted.

So Larsen is doing many crosses with annual rye, perennial cereal rye and wild perennial cereal rye to work towards new perennial cereal rye varieties with wider adaptation, higher grain yields, higher biomass yields and other improvements.

One breeding objective is to reduce ergot levels. Although crossing annual and perennial rye is relatively easy because they are in the same genus, the chromosomes from the two parents don't necessarily pair up properly. That can lead to sterility issues in the offspring, resulting in non-pollinated florets with a high risk of ergot infection.

Another objective is to develop lines that head earlier than ACE-1, which is somewhat late heading. Larsen thinks moving the heading date back could result in an earlier maturing crop that would have a more convenient grain harvesting date and that might mature more uniformly.

"This perennial cereal rye seems to be fairly indeterminate, so you can have some tillers with heads that are ready to harvest and other tillers that are still undergoing anthesis [flowering] in August. Plus, instead of constantly putting energy into filling grain at the end of August, earlier maturing plants would have time to get ready for winter through September and October," says Larsen.

He is also working on an interesting angle to try to improve the perenniality of the crop. "We have planted annual rye in the spring to see how it grows – does it grow all summer, then go through the winter, and then regrow the next year? Some lines do. Some lines don't. So we have selected [lines that do regrow] as parents to make perennial crosses to see if that would give more longevity."

As well, Larsen is conducting some agronomy work, including seeding rate and harvest timing trials. He notes that extension recommendations for ACE-1 have advised cutting or grazing the crop at the boot stage because that is optimal for forage quality.

"However, we found that cutting at the boot stage knocks back the crop's survival the following year by half; so instead of 90 per cent, it's about 45 per cent. That really affected the crop and people's perception of it."

## Wheat X Wheatgrass

According to Larsen, breeders are using two main approaches to developing perennial wheat: making wheat x wheatgrass crosses; and domesticating intermediate wheatgrass.

"The old, standard approach – people have been trying to do it for 90 years – is to make crosses between annual wheat and a perennial wheatgrass, such as tall wheatgrass or intermediate wheatgrass, which are forage grasses grown on the Prairies of North America," he says.

"The majority of work in that area is actually to bring disease resistance into wheat. But in some cases, perennial wheat has come out as a byproduct, and people have worked with that."



One part of a current project involves screening wheatgrass lines for stripe rust resistance, so the resistance genes can be brought into annual wheat.

Larsen is using this approach. He hopes to eventually develop perennial wheat varieties that have the end-use quality attributes of the western Canadian wheat classes, along with a perennial growth habit and good yields year after year.

It's challenging work. Wheat is not as closely related to the various wheatgrass species as annual rye is to wild perennial cereal rye, so progeny from wheat x wheatgrass crosses have greater problems with sterility and low grain yields. Some chromosomes can get randomly lost during crossing, and that randomness makes it very difficult to develop stable lines for breeding. Also, wheat x wheatgrass progeny tend not to have a very high degree of perennial habit. Larsen says, "Usually they'll yield a reasonable amount of grain in the first year, but after that, the grain yield is so low that it wouldn't be worth it for a farmer to try to harvest it."

## Domesticated Wheatgrass X Wheat

The Land Institute, a Kansas-based agricultural research agency, is a pioneer in domesticating wheatgrass to make it more wheat-like. "The Land Institute has made impressive improvements. Compared to a standard forage grass, the domesticated plants look more like wheat plants; they have larger leaves, shorter stature, larger grain and the grain is a little more free threshing," explains Larsen.

Grain from the Land Institute's domesticated intermediate wheatgrass, called Kernza, is now being used in some small niche markets. Work continues to improve such traits as yield, seed size, disease resistance, free threshing and bread-making quality.

Larsen isn't using this approach but he does conduct some agronomy trials and other collaborative work with researchers who are breeding domesticated wheatgrass, like Dr. Doug Cat-tani at the University of Manitoba.



Also, Larsen is using Kernza-type wheatgrass lines in his wheat x wheatgrass crossbreeding work. “If you have an improved source of perennial habit with a nicer plant type, better grain yield and so on, and you cross it with wheat, then theoretically you should get a better perennial wheat type.”

In a new project, Larsen is crossing wheat and Kernza lines to achieve the dual goals of bringing robust sources of stripe rust resistance and Fusarium head blight (FHB) resistance into annual wheat, and providing a larger germplasm base for his perennial wheat breeding work.

“The project is trying to make the best use of everything we’re doing. We’re making all these crosses, which are lots of work. So we want to make sure the germplasm is used by people who need it,” he explains. “Typically, instead of perhaps 50 seeds or 30 seeds per cross, you’ll get one or two or three seeds [from crossing wheat and wheatgrass]. Then we do a colchicine seed treatment [a way to more quickly fix the genetics of a breeding line by doubling half the usual set of chromosomes]. You lose some lines because it’s a pretty harsh process. And the seed set is typically poor; you might get two or three seeds per plant.”

Larsen has obtained Kernza lines from The Land Institute and intermediate wheatgrass lines from the United States Department of Agriculture (USDA) gene bank. He is evaluating the lines in the field for stripe rust resistance, and Cattani is testing them for FHB resistance. The project team is crossing resistant and susceptible wheatgrass lines with resistant and susceptible spring wheat and winter wheat lines. They are also mapping the wheatgrass resistance genes so they can develop molecular markers to track those genes in the offspring from the crosses.

Some of the progeny from the wheat x wheatgrass crosses will be backcrossed repeatedly with wheat. The idea is to produce wheat lines with just a sliver of wheatgrass genetic material that contains the disease resistance genes and not much more. The resulting wheat lines will be provided to Canadian annual wheat breeders.

The Alberta Wheat Commission (AWC) and Alberta Innovates are funding this project. “While perennial wheat has a ways to go before Alberta producers will be able to incorporate it into their rotations, if this project is successful, there are several benefits that producers can look forward to,” explains Lauren Comin, research manager at AWC.

“First is the introduction of new genetics and the possibility of improved resistance to abiotic and biotic stress. This could have implications for traditional spring wheat and winter wheat as well. There is also a sustainability component to this project: wheat-



Noticeably different spikes: wheat (bottom), wheat x wheatgrass crosses (next 6 spikes), Kernza (second from the top) and intermediate wheatgrass (top).

grass may provide genetics that reduce the amount of inputs required. Achieving a perennial crop means that producers aren’t planting every year. They are saving money they may spend on seed, time they spend on seeding and other inputs involved in the seeding process. Perennial cereals also have benefits ecologically including large developed root systems, constant ground cover and reduced disturbance of soils.”

She notes, “While producers have always tried to work towards increased sustainability because it has practical benefits for their operations, there is new off-farm pressure for production to be more and more sustainable from an environmental standpoint. Perennial wheat, given adequate quality, is just one more tool in a producer’s sustainability toolbox.”

### A Novel Approach: Gene Editing for Perennial Habit

Larsen is also exploring a third, more theoretical approach to developing perennial wheat. It is based on the intriguing hypothesis that the difference between an annual habit and a perennial habit might be a matter of only a few genes.



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Larsen got the idea from talking to Dr. David Major, who had been a research scientist at AAFC Lethbridge. The more Larsen thought about the idea, the more plausible it seemed.

"With winter wheat, you plant it, it grows like a grass, it requires vernalization to elongate, and then it grows up, [produces mature seeds] and dies. A perennial forage grass follows a similar process – it requires vernalization, it elongates. But then [in response to shorter daylengths and/or cooler temperatures] it tells some tillers to stay vegetative for next year," says Larsen. "So in the annual, there is a gene that has been changed or silenced so the plant puts everything into [seed production]. But in the perennial that gene is still effective, telling some of the new meristems and tillers to stay vegetative until next year."

Through AAFC-funded research, Larsen is working with colleague Dr. Andre Laroche to find the gene or genes responsible for a perennial habit and to understand how those genes are switched on and off.

Larsen suspects the flowering genes are key. Wheat's flowering genes are already known, so he and Laroche have sequenced the wheatgrass flowering genes and are analyzing the expression of those genes.

"What has been fascinating to us is that the DNA sequence of the flowering genes in wheatgrass and wheat are amazingly similar, from 90 to maybe 99 per cent the same," he says. "The other interesting thing is that throughout the plant's life cycle, these genes in the annual and the perennial are actually regulated in the same way with some slight, important differences in some of the genes. Essentially the flowering pattern in an annual and a perennial is very similar."

So perhaps advanced techniques like gene editing could be used to make the flowering genes in an elite wheat variety 100 per cent the same as the perennial flowering genes. And those little changes might change the regulation of growth in the plant from annual to perennial. And, in theory, the resulting wheat plant would be fully fertile with all its excellent agronomic and quality traits intact, but with its perennial growth habit switched on.

Larsen and Laroche have much more work to do to understand the complete mechanism of perennial growth habit, but so far Larsen's hypothesis seems to be holding true.

## Down the Road

Larsen expects it will be at least 10 to 15 years before commercial perennial wheat varieties are available for the Canadian Prairies. "People have worked on wheat x wheatgrass crosses for a long time; there has been limited success. They are making great progress with Kernza, but it is still very much a work in progress."

Comin notes, "This work is still in its beginning stages. For producers to incorporate [perennial wheat] into their rotations as a marketable product it would need to bring them suitable value. This will require quality similar or equal to annual wheat. This quality, along with a sustained yield in subsequent years, will be key to the future of perennial wheat. Sustainability will certainly be a consideration, but profitability will be the deciding factor."

Once perennial wheat varieties achieve the necessary quality and productivity characteristics, Larsen believes the crop will be widely adopted on the Prairies. "With perennial wheat, you would only have to seed once every three years or so. That's a bunch of work off a farmer's plate. I firmly believe perennial



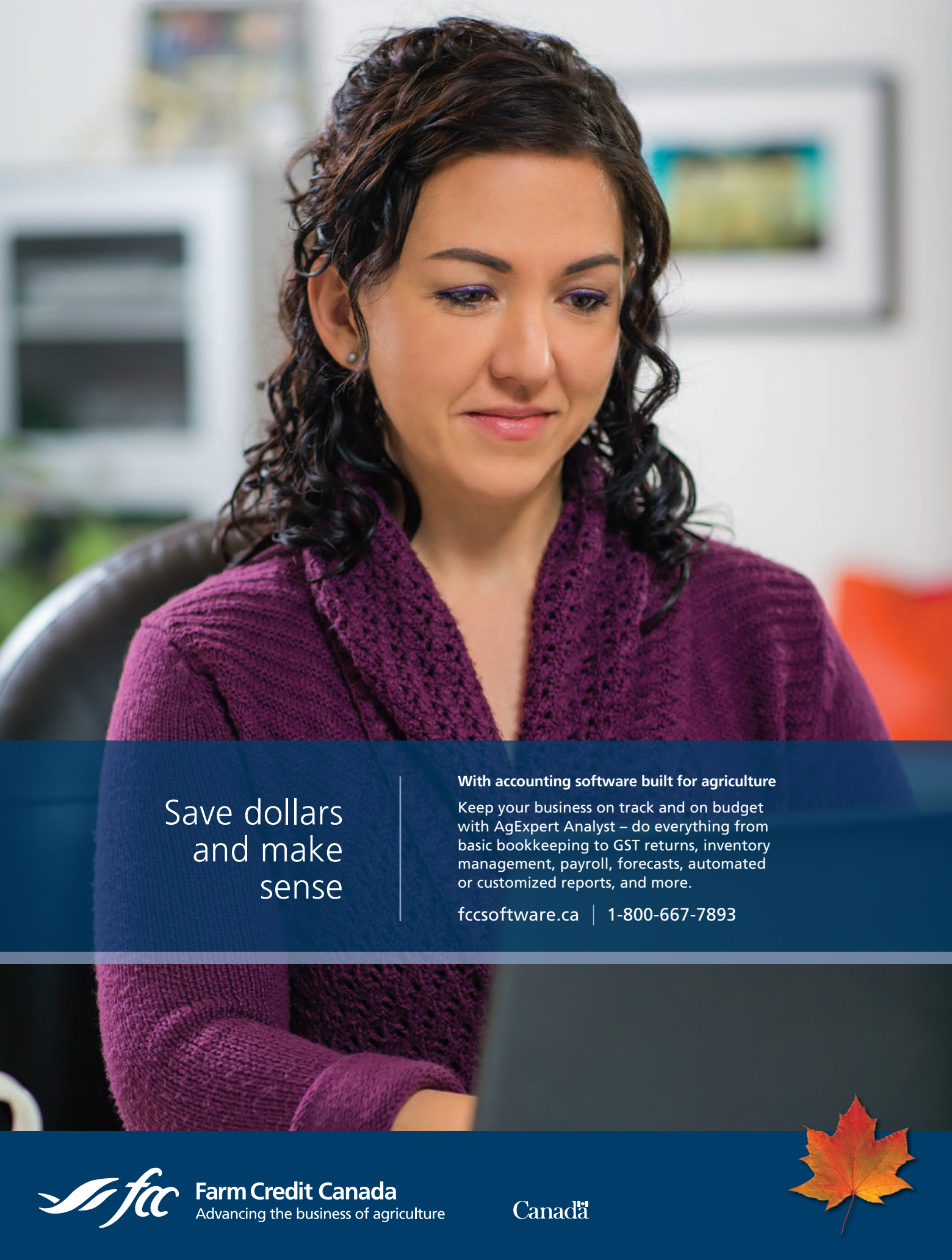
Larsen is crossing perennial cereal rye (left) and annual rye (right) in his work to develop new perennial cereal rye varieties with higher grain yields and other improvements.

wheat will be taken up just because of its advantages in terms of economics and workload."

The environmental benefits will be an important plus. Larsen notes, "At a meeting in the summer, I heard General Mills talking about perennial grains and how they would love to have a good source of perennial grain to put into their products. A lot of large food companies have sustainability as part of their mandate and have strategies to reduce their environmental footprint. There are companies waiting to use perennial grain."

He adds, "People need to start to dream about what perennial cereals would look like on their farms. For instance, researchers are working on polycultures and things like that. Do you want land in wheat for three years, or do you want to have other crops mixed in to maximize productivity? Maybe you could mix in legumes to provide nitrogen and reduce your costs. When you start to dream about what could happen, it becomes pretty exciting from efficiency and economic sustainability and environmental sustainability perspectives." **Carolyn King**





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# Building a Better Canola

University of Alberta and Dow AgroSciences researchers are conducting a collaborative research project to create a “super elite” line of high-performance canola hybrids.

**RESEARCHERS** at the University of Alberta are about half way through a three year collaborative project with Dow AgroSciences Canada Inc. to create elite canola germplasm featuring improved seed oil and meal traits.

The results of the project so far are “very exciting,” says one of the study’s lead researchers, Dr. Randall Weselake, an agricultural biotechnology professor at the University of Alberta. “We’re working on developing the whole package. It’s absolutely doable if we do it in a systematic manner.”

The collaborative project, funded through a \$320,000 investment by Genome Canada and about double that in-kind by Dow AgroSciences, includes four main priorities. Not surprisingly, priority one is to increase seed oil content. Increasing seeds’ oil content by one percentage point would add a whopping \$90 million to Canada’s oilseed crushing and extraction industry.

“The oil content and oil profile are our top priorities because that is where the value is,” says the study’s principal investigator from Dow AgroSciences, Dr. Muhammed Tahir.

“We have two main stakeholders: farmers and crushers. Farmers are focused on profitability, so we need to make sure that the varieties are high yielding. Crushers are focused on oil: if we can increase oil content, they’ll be more efficient, which keeps Canadian canola competitive in the global marketplace.”

Though not as valuable as canola oil, there is significant potential in improving canola meal as well, says Weselake. The project aims to increase the meal’s protein, which would increase its

value and utility in a range of applications. The researchers also aim to decrease meal's fibre content to make it more palatable and digestible by monogastric animals.

Currently, the majority of canola meal is fed to dairy cattle, since ruminants are more efficiently able to digest canola meal. If canola meal's fibre content were reduced, however, meal could be a valuable addition to a variety of animal feeds, from chicken feed to pet foods.

"A canola plant's energy is partitioned between oil, fibre and protein," says Tahir. "Reducing meal's fibre content means the carbon the plant would have used to produce fibre can instead be converted into either oil or protein, which have much more value."

Finally, the project is also attempting to change the fatty acid composition of canola oil.

"Canola oil is naturally low in saturated fat. Dow AgroSciences added to that health benefit by producing a line of canola hybrids called Nexera that are also high in omega 9s. The omega 9s also make it more stable at high temperatures," says Tahir. "This study's aim is to further enhance the oil and meal profile of the Nexera canola hybrids."

Canola oil typically contains between six and seven per cent saturated fat. As the majority of consumers today know, a diet high in saturated fatty acids can lead to enhanced cholesterol formation and heart disease. That said, consuming some saturated fat is not actually bad for you, says Weselake.

**"The generic goals of all new cultivars is high yield, high oil, high protein and excellent disease resistance across all diseases."**

— Raymond Gadoua

"When consumed with omega 3s, saturated fats are not as much of an issue. It's all about balance. In fact, saturated fats are an important part of our overall health.

"But, when people read labels they get frightened of any saturated fats because they have been so conditioned to believe that saturated fats are bad for you. From a nutritional perspective, canola's saturated fat content is not an issue. But if we could get the level lower, it could theoretically help from a marketing perspective," he adds.

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Photo by Janet Kanter's

University of Alberta and Dow AgroSciences researchers are conducting a collaborative research project to create a "super elite" line of high-performance canola hybrids.







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Ideally, Weslake and Tahir are aiming to cut canola's current saturated fat content in about half. If an oil contains less than 3.5 per cent saturated fat, it can be labelled "saturated fat free." This drop could offer a major potential win on the marketing front.

Weslake and his team are, interestingly, not conducting their genomic trials within canola varieties. Rather, they are carrying out their experiments using a canola cousin called Arabidopsis (thale cress or mouse-ear cress). This plant shares many key attributes with canola but offers two important differences: it grows to maturity in several weeks rather than several months, and it contains much simpler genetics than canola.

As they develop important genomic improvements, the research team will transfer those advances into Dow AgroScience's Nexera varieties, saving both time and significant expense.

Just 18 months into the study, it is too early to say yet what the results may be. If results are in line with most breeding advances, the changes will be incremental but extremely important.

The Western Canada Canola/Rapeseed Recommending Committee (WCC/RRC) recommended more than 90 new canola cultivars for registration in 2016. Of these, about five per cent will end up being sold in the marketplace, says Raymond Gadoua, the canola co-op test manager with the WCC.

"The generic goals of all new cultivars is high yield, high oil, high protein and excellent disease resistance across all diseases. It's a constant challenge to accommodate all of those goals," says Gadoua. "It's pretty rare that a variety becomes widespread. Between high- and low-yielding varieties you might see maybe one to two per cent difference in oil content, maybe slightly more

in protein. There are biochemical reasons for improvements not being way above those percentages.”

While some might initially be squeamish at the thought of academic researchers collaborating with corporate strategies, the reality is that such collaboration is common and very important to the health and growth of the agriculture industry. Improved quality and agronomic performance brings benefits across the entire value chain and helps keep canola competitive against crops like soybean.

“It’s very common for companies to support academic research and develop collaborative research relationships. There is always more work to be done in canola research. There are always more questions that need to be looked at than we have capacity, certainly more than canola producers have funds to pursue,” says Ward Toma, general manager of the Alberta Canola Producers Commission. “Given that companies like Dow are going to be able to profit from the research, it is appropriate that they finance it. Producer organizations invest in things that directly impact

farmers but even there their funds are very limited. Regardless of who finances it, adding value is a high priority.”

Weselake says his key research priority is turning his work into something usable that supports and enhances the industry.

“If you have an innovation and pair with the right company, your innovation can potentially turn into a useful product that will of course benefit the company, but also benefit the consumer. If you are doing research that involves a lot of genetic modification, it’s a good idea to develop an alliance with a company because it has the resources in place to deal with complex regulatory hurdles and a pipeline to get the product to market,” he notes.

“Some factions feel academics should not work with industry because industry is interested in the bottom line. But the reality is a lot of discoveries have been made by industry. My view is that if you are doing basic research and there is innovation there, that is valuable. If you want to effectively move traits into application, it’s very logical to work with industry.” **Madeleine Baerg**

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# TAKING CONTROL OF FUSARIUM HEAD BLIGHT

Through careful management growers can get a handle on this devastating disease.

**FUSARIUM** head blight has been slowly making its way across Alberta. By now its incidence is too widespread to avoid, and its cost to farmers too high to ignore. While there is currently no way to eradicate the disease, through careful management growers can get a handle on potential financial losses.

“Breeders need time to develop resistant varieties,” says Michael Harding, research scientist, plant pathology with Alberta Agriculture and Food in Brooks, Alta. “In the meantime, by practicing good management practices growers who have the disease are able to reduce its impact. Those who don’t have it are able to delay the development of the disease, but even if you are doing everything, you can still get Fusarium head blight. However most growers can mitigate some of the damage with their farming practices.”

Fusarium head blight (FHB) is primarily caused by the pathogen *Fusarium graminearum*. Across Canada, FHB costs Canadian growers between \$50-300 million annually depending on the disease severity in any given year. Its potential damage to cereal growers is three-fold: it can have a significant impact on yield, it causes Fusarium damaged kernels (FDKs) which result in downgrading at the elevator, and it can produce the mycotoxin deoxynivalenol (DON), which is harmful to humans and livestock and therefore limits market access.

While FHB has been in Canada since the early 1900s, it was primarily an eastern Canadian disease up until its first appearance in Alberta in the late 1980s. It was



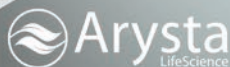
Multiple management practices are required to control Fusarium head blight.

Photos courtesy of Michael Harding



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Growers should be careful to reduce the window of infection where possible.

added as a regulated pest in the province in 1999, and since then established itself initially in the irrigated areas of southern Alberta. Today it has moved into central Alberta and can be found sporadically in fields in most areas on the province.

Brian Kennedy, grower relations and extension coordinator with the Alberta Wheat Commission says despite its widespread prevalence, they are still dealing with some denial in Alberta. "I hear from lots of growers that they don't have Fusarium in their area," he says. "When in fact it is everywhere to some extent. We are looking to provide all growers with the tools they need to make sure it doesn't become a big problem in wet years like this past one where we have had reports of lots of Fusarium across the province."

### A Growing Concern

Fusarium is relatively easy to spread. While it can spread through infected seed, the majority of its local movement happens through airborne spore dispersal, generally through wind or rain. But anything from infected straw through to contaminated soil transported by equipment can move the disease over long distances.

"The fungus produces some spores that move better through splashes of water,

and others that are forcibly discharged into the air and then blown from field to field or moved through farming practices," says Harding. "Each type of spore has adapted to disperse better in different ways. But human activities can also impact how the spores are moved around."

Fusarium took a while to take hold in Alberta because the growing conditions in this province are not always conducive to disease development. "Compare this to an area like Manitoba which pretty much has all three points of the disease triangle in a given growing season," says Harding. "They have highly susceptible crops in wheat and corn, they have a particularly aggressive pathogen and they have the warm, humid weather in which disease can thrive."

So how did the disease spread across Alberta? While wheat is grown on most farms, it took a while for the pathogen to establish itself in Alberta's relatively cool, dry climate. However, the earliest discovery of the disease in southern Alberta wasn't because of the high moisture on irrigated farms. Rather, it was due to the prevalence of susceptible crops – corn and durum wheat.

"Corn is a better host for the pathogen than wheat, but it is not as damaging a disease for that crop," says Harding.

"Fusarium doesn't have the dramatic impact on yield on corn and it doesn't cause downgrading in the crop. But corn is a great host for the disease and so when a grower rotates into wheat they have to contend with the spores from the disease in the straw. Similarly, durum wheat is a highly susceptible market class of wheat and provides opportunity for *Fusarium graminearum* to become established in a region."

In central Alberta, current research shows the pathogen is spreading from the east, rather than coming up from the southern areas of the province. Researchers can see this in two types of DON produced by the disease – 15-ADON and 3-ADON. Sampling shows that all the corn is 15-ADON, as is most of the wheat in southern Alberta. In central Alberta, virtually 100 per cent of the pathogen is 3-ADON, a more aggressive pathogen similar to that found in areas outside the province, which is not spread through corn straw.

### Managing the Disease

To help combat the threat from the disease, Alberta Agriculture and Rural Development first introduced the Alberta *Fusarium graminearum* Management Plan in 2001, and recently updated the Plan in 2015 due to a significant increase

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in the spread of the disease during the 2012-2013 growing season. The aim of the plan is to help minimize the introduction, escalation and spread of *Fusarium graminearum*, and to provide guidelines for reducing the economic impact for those already battling the disease.

The best management practices (BMPs) for FHB are generally broken into two sets – one for those where the disease has established, and another set of practices for those where it's not commonly found.

"For both types of growers, multiple management practices are required," says Harding. "First and foremost, you need to take care to rotate into broad-leaf crops that are not susceptible to the disease, reducing the number of spores in the soil and straw for your next wheat rotation."

Other BMPs include the use of high quality seed that has been tested for *Fusarium graminearum*. Growers should choose varieties that have the best tolerance possible to the pathogen. While there are no current varieties with complete resistance, there are some that are not as susceptible.



Fusarium head blight causes Fusarium damaged kernels (FDKs), which result in downgrading at the elevator.

"Growers should also be careful to reduce the window of infection where possible," says Harding. "They should consider seeding at a higher rate to reduce tillering and, as a result, the length of the flowering period, which in turn will shorten the window when the crop is susceptible to the disease. In areas where the

disease has established, growers should be prepared to apply a fungicide at early anthesis, and turning off their irrigation during anthesis."

Timely application of a foliar fungicide can help suppress development of FHB, protecting the value of the crop through the end of the season. Growers can con-

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tinue to manage the spread of the disease through harvest. For example, downgrading may be avoided if they increase their wind speed on the combine to blow out as many of the lighter Fusarium damaged kernels as possible so they don't end up in the harvested grain. They should also be careful to control volunteers heading into the winter.

### Mapping Out Disease Risk

On top of developing a set of management practices, several provincial organizations have been working to create a Fusarium risk map based on the model used in the other Prairie Provinces.

"Manitoba has had risk maps for probably 15 years, and Saskatchewan launched theirs three years ago," says Kennedy. "These maps have proven to be a very useful tool for growers. This year they were widely utilized on social media. In this province, we want to capitalize on that success and come up with a FHB risk map for Alberta."

The risk maps are weather-based, examining climactic conditions on a regional and local basis. With 400

weather stations in Alberta, growers will be able to get a fairly accurate representation of what they can expect in their fields.

"Our intention is to launch a mobile friendly website that growers can use while out in their field in real time conditions," says Kennedy. "The grower will log in with their GPS location and will receive information from the three closest weather stations. They'll then receive a risk rating – from low, to moderate or high. It's a very localized early warning system."

Kennedy says they have taken the model used by Manitoba and are adapting it for the growing conditions in Alberta. "This is another tool on top of BMPs and fungicides to help minimize risk," he says. "It will take a few years to validate that model in Alberta, but we hope to include data from the past couple of years to launch the pilot map in time for the summer 2017 growing season."

### What's next for Fusarium management?

Kennedy says until Fusarium is eradicated, growers will have to look at ways at

protecting themselves financially when they have FHB in their crop. The Alberta Wheat Commission has recently asked the Canadian Grain Commission to look at using grain testing instead of visual testing to identify levels of DON in a crop. This would limit the instances where wheat is being downgraded to feed after visual testing, when it is actually acceptable quality for the international milling market.

Looking forward, Kennedy says a recent report of a Fusarium-tolerant hybrid wheat variety is very exciting for the future management of the disease. But he cautions this is very early research, and even if successful wouldn't likely be available for another 20 years.

"Plant breeders are working hard to develop varieties that are tolerant to Fusarium – it's a very high priority for their research," he says. "But until then, growers need to be on top of managing for the disease. The development of best management practices and tools like the risk map will help them mitigate the problem." **Jennifer Barber**



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Heather Hill, project manager for Cigi's Pulse Flour Milling and Food Applications, is focused on introducing pulse flours to a wide variety of food products.

# BUILDING A BETTER BRAND IN CANADA

Cigi is working with the value chain from the ground up to deliver better grain products to international customers.

**303 MAIN STREET** might be the only building in downtown Winnipeg – or in Western Canada – that contains a pilot bakery and flour mill on the eleventh floor.

Three floors of this building serve as headquarters for the Canadian International Grains Institute (Cigi), a not-for-profit organization working to drive improvement and international utilization of Canadian grain and field crops.

No part of the Canadian agricultural industry is untouched by Cigi, which contributes to the improvement of new seed varieties, provides customized training for customers and farmers, conducts an annual harvest assessment of Western Canada's new wheat crop and transfers that technical intelligence to Canadian customers around the world on yearly new crop missions.

"We work all the way through from variety registration to commercialization, maintaining quality and ensuring the customer gets what they need – and providing that information to the

customer and back to the value chain," says JoAnne Buth, Cigi's chief executive officer.

"We work on behalf of growers and grain exporters to make sure that the quality of our varieties will take the highest dollar out there that's possible."

In other words, Cigi is building the brand for Canadian grains – and providing a crucial link between Canadian producers and end-use customers.

## New Variety Development

Over the past three years, Cigi has divided its work into several focus areas including new variety development.

One key project is examining quality attributes of new varieties being grown extensively across Western Canada.

Cigi has five staff members on the Prairie Grain Development Committee's Wheat, Rye and Triticale Quality Evaluation Team

(WRT-QET). According to Elaine Sopiwnyk, director of grain quality for Cigi, WRT-QET meetings involve assessments of candidate cultivars in relation to check varieties, evaluations or revisions to quality guidelines for each wheat class, as well as reviews of methods used for candidate cultivar evaluations.

"All of these activities draw heavily on the expertise that Cigi members bring to the table," says Sopiwnyk.

Something else Cigi staffers bring to these meetings is insight into international customers' requirements for variety characteristics, such as desired gluten strength for a particular wheat class headed for Chinese steamed bread, or ash content in semolina intended for Italian spaghetti.

Cigi is also working on three projects focusing on registered wheat varieties within Agriculture and Agri-Food Canada's (AAFC) Agri-Innovation Program.

One of these is a project organized by Harpinder Randhawa of AAFC's Lethbridge Research Centre, which will test large quantities of registered CPSR wheat varieties – 12 varieties grown at 12 locations – in addition to other work Cigi is conducting on registered varieties of CWRS and CWAD.

"Although CWRS is an important wheat class for Alberta producers, the highest amount of insured acres of CPSR in Western Canada is planted in Alberta, making it the second most important wheat class," says Sopiwnyk. "Cigi's assessment of these 12 CPSR varieties may help determine whether any varieties offer innovative opportunities for domestic or international customers."

### Harvest Assessment

As well as its work with wheat varieties, Cigi has other projects that go on all year round. Through its market support activities, Cigi provides targeted technical support and customized training that brings customers from key markets to Winnipeg to learn about the Canadian grain value chain, and to participate in hands-on technical sessions in Cigi's processing facilities to learn how to optimize Canadian grain in a multitude of end products.

In recent years, Cigi has had an increasing focus on applications of pulse flours in commercial food products. Cigi has teamed up with Warburton's, a British bread company, to investigate the incorporation of pulse flours in bread products to increase nutritional characteristics and add value to the Canadian pulse industry.

But autumn is Cigi's busiest season: this is when the annual new wheat crop assessment begins.

Buth says the harvest assessment involves analyzing grain samples coming through the commercial system from elevators and grain handlers in the western and eastern Prairies. Cigi performs quality analyses on these samples, looking at protein content, gluten strength, starch damage and colour, as well as end-use suitability.


"This year, we received 114 samples from nine different companies. These were composites of the deliveries of new crop from elevators throughout the Prairies," says Buth. Cigi's quality reports on eastern and western composite wheat samples can be found online at [canadianwheat.ca](http://canadianwheat.ca).

After these technical analyses, Cigi staff prepare products such as breads, Asian noodles and pastas using the new crop samples to assess their performance.

Once the new crop assessment is complete, western Canadian wheat new crop missions (a collaborative effort with Cereals Canada and the Canadian Grain Commission) set off for countries in Asia, Latin America, Europe, North Africa and West Africa, presenting the new crop summary to end-use customers during November and December.

The new crop summary includes a review of the growing season, technical information on grading factors and wheat class qualities, functionality of the various grades within a wheat class, and how customers can best utilize the different classes to produce products using their own cooking or baking methods and equipment.

"We're focused on that technology transfer to customers," says Buth.



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## Communication is Key

Buth says it's this link to the customer that most benefits the Canadian industry, and the seed industry in particular. Customers provide valuable feedback on grain quality characteristics that Cigi employees can bring directly to stakeholders in Canada. "It goes toward variety registration and making sure the best varieties are out there, and that's key to the seed industry," she says.

Buth sits on the Seed Sector Value Chain Roundtable, where Cigi's contributions have mostly focused on the modernization of the variety registration system, and the importance of meeting the needs of both the grower and end use customer in the process.

"Whether it's seed analyzers, breeders, variety registration system or those involved in commercialization, Cigi is trying to make sure there's strong cooperation between them," she says.

As competition heats up between Canada and other wheat producing regions such as the Black Sea region, it will be crucial for Canada to keep a leg up on quality. This means Cigi's work supporting Brand Canada – and improving cooperation and communication between stakeholders – will be increasingly key to maintaining our advantage. **Julienne Isaacs**



Small loaves baked from new crop samples in Cigi's test bakery are analyzed for volume, weight and height.



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# Seed Smart

A new program provides Alberta growers with a better understanding of the benefits of seed testing.

**SEED** quality is an integral part of growing a successful crop, but it often doesn't get the attention it deserves. Alberta Seed Processors (ASP), the association representing the province's co-op seed cleaning plants, have introduced a program it's hoping will help change that.

"Farmers are investing tons of resources into precision farming, but sometimes seed health is overlooked. We want to bring seed health into the conversation," says Monica Klaas, ASP general manager.

ASP has partnered with three seed labs in Alberta – BioVision, 20/20 and Seed Check Technologies – for an initiative called Seed Smart. It's aimed at educating farmers about the importance of knowing seed quality as a crop management tool.

The program was launched last summer and kicked off with an ad promoting the benefits of seed testing that ran for two weeks during a popular radio farm program in September. Next up is distributing Seed Smart posters to seed cleaning facilities to remind growers they can bring in seed samples for testing and to reinforce how important seed health is.

According to Klaas, Seed Smart was developed as a proactive strategy.

Currently, cereal crops are tested for Fusarium in Alberta, as required by the province's Agricultural Pests Act, and many growers routinely add a germination assessment when they send their seed in for testing. Some in the industry are concerned that seed testing may go by the wayside if there's a change to the legislation.

"We have been told through the Alberta Fusarium Action Committee that the government is going to be opening up the Pest Act for consultation, and with that consultation there could be a change," says Klaas. "However, to be clear, the existing Pest Act is still in force, and changes are subject to a thorough and lengthy process, including stakeholder engagement."

Should benchmark seed infection levels be removed from the Pest Act, she adds, it could be the same effect when other key pieces of legislation affecting agricultural practices were amended or withdrawn – namely, fewer people following the practice afterwards because they didn't fully understand all of the direct and indirect benefits.

"Our board thought by starting now, as a proactive measure, we could get growers to have a deeper understanding of seed testing technology, and instill the practice as part of best management practices of all acres," says Klaas. "Further, we are trying to promote more advanced testing measures such as vigour and disease screening."



Photo courtesy of Seed Check Technologies

Seed analyst Morgan Saumer at work at Seed Check Technologies.

## Benefits of Broader Testing

Sarah Foster, senior seed analyst and president of 20/20 Seed Labs, says broader testing provides a lot of good information about a seed lot or field.

"Germination is only one small part. Scientifically speaking, the germination test is conducted under optimum conditions. Evaluating seedlings in a germination test is far less stringent than the evaluation conducted for a vigour test," she says.

"In simple terms a germination test is best described as the seeds' ability to perform under a wide range of field conditions, and the vigour test is best described as seeds' ability to perform under stressful conditions," Foster adds.

"The disease test is very important too. Laboratories today can provide a plethora of disease screens that hone in on diseases of economic importance. The disease diagnosis can be the foundation on which to decide if the seed is worthy of planting or treating."

Klaas says a key aspect of disease testing is that it enables growers to target specific pathogens that can rob them of yield

– for example, by choosing seed treatments that provide the most benefit.

“Everything you do is dependent on whether or not that seed is going to grow,” Klaas notes, adding that while there’s widespread use of farm-saved seed in cereal and pulse production in Alberta, much of that seed isn’t getting the full health checkup it needs.

“We’re just saying that it’s good practice to test it, because you’re basing all of your other management plans on that seed. You should know the quality of that seed going into the game.”

Morgan Webb, senior seed analyst and owner of Seed Check Technologies, says there’s a clear need for growers to recognize the value of seed testing.

“Knowing what you have right off the bat is certainly invaluable. It’s like good insurance to make sure all that other effort is worthwhile.

“Because we live it everyday, we believe in the value of quality seed and how it can be such an important starting input into producing a good crop,” he adds. “A seed test is one of the most affordable parts of knowing what you’re doing.”

According to Webb, the cost of a full seed testing package that includes germination, vigour and disease screening depends on the type of crop but it’s usually somewhere between \$100 and \$200. Considering the benefits, it represents an excellent value for growers, he says.

“The cost of your seed test can be the same as the first tank of fuel that you put in your tractor,” notes Webb. “It’s really just pennies per acre.”

Foster agrees getting seed tested with the right combination of tests makes financial sense for farmers and seed growers. “[It] saves them money because they won’t seed something that isn’t going to perform [and] guarantees that their product will perform in certain conditions.”

20/20 Seed Labs offers a standard cereal package that includes germination, vigour and disease testing that ranges in cost from \$105 to \$163.

BioVision Seed Labs has a number of different multi-test packages that vary in price from \$50 to \$200 depending on the package and the fit for the client, according to the company’s president and CEO, Trevor Nysetvold.

## United Voice

“This initiative fits well strategically with what we’re trying to do, and that’s to increase the awareness of the importance of seed testing, says Nysetvold. “I think the end goal is to get producers who haven’t tested [their seed] regularly, to test as a best management practice.”

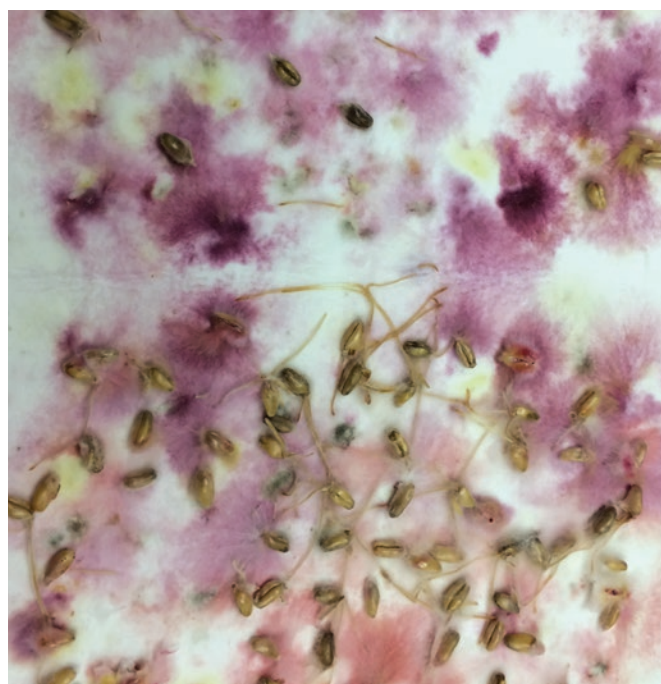
Foster says her company is “thrilled” to support the Seed Smart initiative.

“We decided to become involved because we have been a part of the agriculture industry for many years [and] have not seen this type of a project before.

“We need to have a unified voice,” she adds. “I think it’s important for the laboratories that have joined this program to remember that we are not competing for business but rather treating this an opportunity to educate the entire seed cleaning community and their clients to respect their seed.”



Germination analyst Shauna Sereda at work at 20/20 Seed Labs.



Germination tests heavily infected with Fusarium.

Nysetvold agrees, stressing Seed Smart is less about marketing and more about education. “We’ve joined hands in this, and our unified goal is to benefit all producers through education. When there is additional testing done, we’ll compete for that at a later date. For now we want to get the message out,” he says.

Klaas says the Seed Smart partnership is the kind of initiative she’d like to see more of in the seed sector.

While seed businesses and crop enhancement and crop protection companies are generally doing a good job educating growers about things like genetic advances and good stewardship practices, she says, there’s not nearly as much going on in the area of seed health.

“There hasn’t been really a movement that we could see that’s getting farmers to recognize that seed quality really matters,” Klaas says. “We think that better seed makes better farmers. At the end of the day, successful farmers make a more robust industry – we all win.” **Mark Halsall**

Photo courtesy of 20/20 Seed Labs

Photo courtesy of 20/20 Seed Labs



# Pea Leaf Weevil

Challenging-to-control pea leaf weevils expanded their range in Alberta again in 2016.

**FOR** the third year in a row, pea leaf weevils continued their damaging march into central and north-central Alberta in 2016. Their range expansion leaves pea and faba bean growers frustrated and scientists scratching their heads.

"To be honest, we're not exactly sure why their range is expanding," says Scott Meers, insect management specialist with Alberta Agriculture and Forestry (AAF). "They stayed relatively contained in southern Alberta from the early 2000s until about three years ago when they started moving north.

"It could be because of faba bean acreage expansion; it could be the series of milder winters we've had lately; it could be because of the August moisture we've had in some of those expansion areas over the past few years. It's probably a perfect storm of multiple factors and the insects are taking advantage of the opportunity."

In keeping with the past couple of years, movement continued largely in a north-westerly direction with weevils showing up in the Barrhead, Westlock and Lac St. Anne areas in 2016. Once again, the economic infestations occurred south of Hwy 1 and in central Alberta from Red Deer north almost to Edmonton. The weevils' range appears to be expanding more quickly in faba bean acreage than pea fields.

Unlike most yield-robbing insects, it is very difficult to quantify losses due to pea leaf weevil damage. Adult pea leaf weevils eat faba bean and pea leaves in spring but typically this feeding does not result in decreased yield. Rather, yield losses occur due to the weevils' voracious larvae. These larvae eat a young crop's nitrogen fixing nodules, causing indirect yield loss when the crop is starved of nitrogen.

"Pea leaf weevils cause subtle yield losses – the less nitrogen fixation that occurs, the lower the yield potential. But that can be masked by soils that have high organic matter," says Meers. "With an insect like bertha army worm, you



Photo by Janet Kanter's.

Watch for characteristic, crescent shaped feeding marks along the edges of newly emerged pea leaves.

know exactly what the loss will be. But it's not possible with pea leaf weevil to say that if you have X number of weevil, you give up Y per cent of yield."

While pea leaf weevils are not the number one ranked robber of yield in pea and faba bean fields, they do cause significant stress to producers because they are difficult to manage.

Pea leaf weevil do not generally respond well to foliar-applied insecticide: by the time a foliar application is possible, pea leaf weevil eggs have already been laid in the soil and are enroute to hatching into hungry, nodule-consuming larvae. Producers who opt to apply foliar insecticide should only apply at early growth stages (two to three node growth stage), and only if damage appears on the clam leaves. If damage is evident on lower leaves of the crop, it is likely the adults have already laid eggs in the soil and insecticide will be useless.

Research from southern Alberta suggests that seed treatment can limit yield loss from weevils; however, response to seed treatment is variable. When seeds germinate and seedlings emerge quickly

and strongly, response to seed treatment can prove effective. However, cool, wet weather, early seeding and poor seeding depth can delay germination and emergence, and can result in less effective weevil control.

That said, several days of very warm temperatures (20 C or more) in late April or early May can help weevils get an early start. A crop is much better able to withstand weevil infestation if it manages to grow beyond the sixth node stage before the weevils arrive, or if the seed treatment remains effective through the sixth node stage.

Producers should also be aware that seed treatment may not offer as strong a return on investment in soils with higher organic matter content as it might in soils containing low organic matter. Given that central Albertan soils typically contain two to three times as much organic matter as southern Alberta's soils, more research will need to be conducted to determine whether seed treatment offers a good return in those areas.

"It's a bit dangerous to project southern Alberta's research on central Alberta. I

think it's fair to say that soils are typically short of nitrogen, even in high organic matter soils. We just don't have good clarity on how much yield loss you might expect from weevils in higher organic matter soils," says Meers.

Pea and faba bean growers should start scouting for pea leaf weevil as soon as their crop emerges and continue until the sixth node stage. Damage in a newly infested field usually occurs at the outside edges first. Watch for characteristic, crescent shaped feeding marks along the edges of newly emerged, still folded (clam leaf) pea leaves. The weevils pose a yield risk if damage is noted in 30 per cent or more of the clam leaves.

Growers struggling with pea leaf weevil

should develop an integrated pest management plan. In addition to seeding peas and faba beans at the correct timing and depth with insecticide-treated seeds, growers should opt to include non-host crops in their rotation, and should be fertilizing and managing disease, pests and weeds appropriately to promote strong seedlings.

According to population climax modelling conducted by Agriculture and Agri-Food Canada researcher Dr. Owen Olfert, pea leaf weevils have the potential to expand into all of Alberta pea growing areas.

Though Meers expects range expansion to continue over the foreseeable future, he says two factors may slow it at least temporarily. First, like most insect populations, pea leaf weevil numbers can

be knocked back by a cold winter. Second, newly pupated adults attempting to emerge from the soil in late July and August can be trapped underground if the soil surface is dry and hard. Therefore, dry summer conditions reduce pea leaf weevil populations in the following year.

While there is little a producer can do to hold back the tide of pea leaf weevils, the first and best step to managing the insects is being informed, both about the bugs themselves and about what is occurring in a particular field.

"Pea leaf weevils are likely here to stay," says Meers. "The best thing producers in range expansion areas can do is to be very vigilant." **Madeleine Baerg**

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# The STAMP of APPROVAL

This family-owned business focuses on the customer first.

**GREG STAMP** often refers to his family's seed farm as a small operation that likes to dream of "what can it become."

Located near the town of Enchant in southern Alberta, Stamp Seeds has grown from a modest enterprise established by his parents Rick and Marian in 1978, into perhaps one of the larger seed farms in the province.

Today, its customers' number more than 600 in the Wild Rose province and Western Canada, selling over 300,000 bushels of seed in any given year. Focused entirely on "everything" related to seed, it has grown from the 320 acres the family started with, to now over 5,000 acres it currently farms and an additional 2,000 acres it contracts.

Although that's a far cry from the company's early days, Stamp says his family and its employees have never lost sight of the fact it remains a people-driven enterprise.

"It's a family-owned business that is professionally run and customer-focused," says Greg, a co-owner who manages the company's seed sales, advertising and marketing.

"We want to ensure everyone who interacts with us in any way, is treated well and gets good, quick service. When you come into our yard we want it to be spotless and our buildings the same." Most of the company's business is retail sales sold directly to producers.

Stamp Seeds produces and offers a wide selection of seed; from flax, faba beans, hybrid rye and canola, peas and lentils, to a variety of cereals including hard red spring wheat and barley. Cover crops blends, soybeans and corn seed are also in the mix.

Rick Stamp says he and Marian began with no money and virtually no equipment, but what they did have was a lot of energy, determination and a great passion to learn. They started with a small crop farm but were encouraged to give seed production a go, from two patriarchs in the seed business who became their mentors – Leonard Haney and Tony Crooymans.

After a roller coaster of growth, the company undertook an ambitious expansion plan about 10 years ago. Since then it has enjoyed an average sales increase of over 20 per cent, per year.



Rick (left) and Greg Stamp are two of several family members involved in Stamp Seeds in Enchant, Alta.



Stamp Seeds hosts regular crop tours.

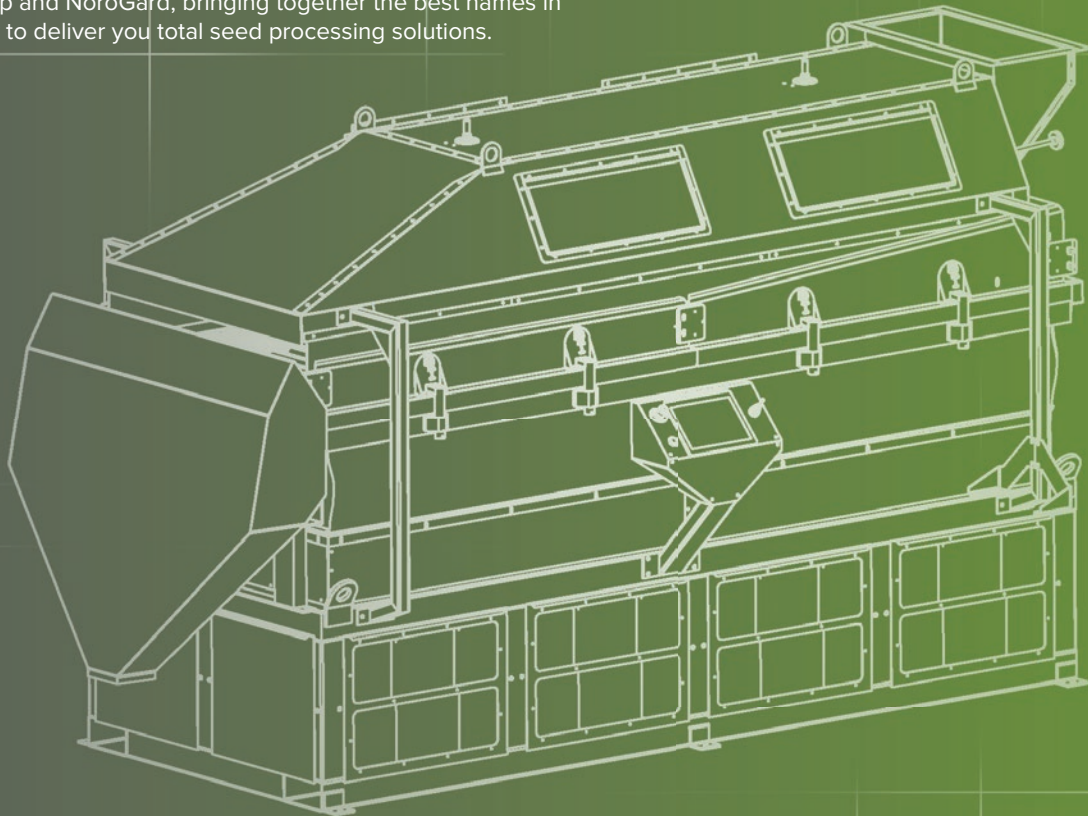
Photos courtesy of Stamp Seeds

"When I started we just didn't have enough people, or enough capital," says Rick, whose company now employs a team of 10 full-time individuals including his sons Matthew and Nathan.

"How we've grown is that we've really changed our business structure and have a handle on the costs associated with seed production and sales. Integrity and high-quality seed along with customer service and support drive sales forward.

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"As seed growers, we all produce a lot of seed, but then perhaps only sell a percentage of it as seed," adds Rick. "Today we are retailing about 130 to 140 per cent of what we grow."

One of the keys to these percentages of Stamp Seeds' growth, according to Greg, is its drive and ownership in SeedNet. As a group of 14 independent seed growers who joined forces in 2010, it has a mandate to develop partnerships and stimulate long-term opportunities for its members.

**"We're working together to provide more options for all of our customers."**

— Greg Stamp

While each of the family-owned and retail businesses operate independently, they share information and pool resources to help grow the industry.

"We're working together to provide more options for all of our customers. We all believed it was better to work together on the many aspects in our businesses," Greg says.

"What it's done is it's allowed us to build relationships and partnerships with companies that maybe we couldn't have on our own as individual farms. We can do more than we used to do [separately] such as acquiring access to new varieties, which we might not have been able to do so before. It has allowed us to be a strategically different type of enhanced seed company."

That's not to say Stamp Seeds is small potatoes when it comes to the Alberta seed farm industry. You need only look at some of its recent capital projects for evidence of how much it has continued to grow.

In addition to adding new corporate offices about four years ago, the company constructed its new state-of-the-art seed treatment facility and accredited warehouse in 2014. The system, which operates year-round, treats and fully weighs the seed before it hits a customer's truck.

"It has helped us to facilitate our growth. We couldn't keep up with providing fast enough service for all the sales that we were doing. It was just the next step to have a permanent system," Greg says.

The company also began construction of a new pulse cleaning facility in mid-2016 and expect it to be fully operational in early 2017.

"We found that the traditional seed cleaning plants damage pulse crops, resulting in lower germination and seed quality. We decided to set up a plant that has no legs, having only conveyor belts to feed the machinery and to fill bins," Greg says. "This is the first phase of construction of a planned three-phase venture and commitment into seed processing."

While Stamp Seeds has been a key player in the Alberta seed sector for more than four decades, it has also had a significant presence in the community at large for nearly as long. Rick and Greg have lent their experience to several industry and community groups while Marian sits on the board of the local Canadian Foodgrains Bank project, which Stamp Seeds supports. The Stamps also work closely on a large habitat and wetland project along with a landowner and the Alberta Conservation Association. They were also actively involved in the construction of a new church hall in the town of Vauxhall.

"These projects make you realize...we're so lucky to have what we have here," Greg says.

And with a little luck – and a lot of hard work – he expects the company's growth over the past decade to continue for the foreseeable future.

"I don't think we've hit the limit yet on what we can do. I think we've got room to grow on both [the growing and retail] sides of things." **Jim Timlick**

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# Progress Takes Root

The Enchant Seed Cleaning Plant looks to the future.

**WHETHER** you're a person or a plant, 50 years of hard labour can take its toll. For the Enchant Seed Cleaning Plant, responding to the aging process required more than a facelift and a tummy tuck; it called for a major operation.

Located on Hwy 526 between Lethbridge and Brooks, the Enchant Seed Cleaning Plant has been servicing the area since 1969. It offers seed cleaning and dockage services for cereals, oilseeds, corn, pulses, grasses and legumes, as well as seed treating.

## Seed Money

"Like many co-op seed plants, we got our start from the local chamber of commerce," says manager Bruce Mathieu. "The chamber sold shares and the share money was matched by the province and municipal district."

All told, the plant with furnishings and equipment cost a whopping \$78,000. While it served clients well for almost half a century, management saw the need for a fresh start in 2005 and started making plans.

"Our shareholders were demanding new technology and there wasn't enough room to expand in the old plant," says Mathieu.

Thus the task of building a new plant began in November 2014. In March of this year, the doors opened and a new era was launched.

## More, Better, Faster

"The scale of equipment is so much larger today and the technology is vastly



A new and improved plant opened in March 2016.



The Enchant Seed Cleaning Plant has been servicing the area since 1969.

Photos courtesy of Enchant Seed Cleaning Plant

**"Our niche is, and always will be, that we do what others don't want to do."**

— Bruce Mathieu

improved. We went from cleaning 100 bu/hr in 1969 to 600 bu/hr today, and we can do a much better job of it now," says Mathieu.

In addition to improving speed and quality, the new plant allows them to keep pace with changing demands. Those include irrigation-built crops coming up from the U.S. and down from the Peace Country, new crops like hybrid canola and specialty crops growing in the area that need a place to be processed.

## A "Joint" Venture

For example, they are one of the few plants that process hemp.

"Hemp is something new that's flourishing down here. It's a restricted product with Health Canada so you must go through a certification process to handle it," notes Mathieu.

The plant also takes on more certified organic seed from all over Western Canada, servicing bakers in B.C. and bringing in product from Saskatchewan that's heading south of the border.

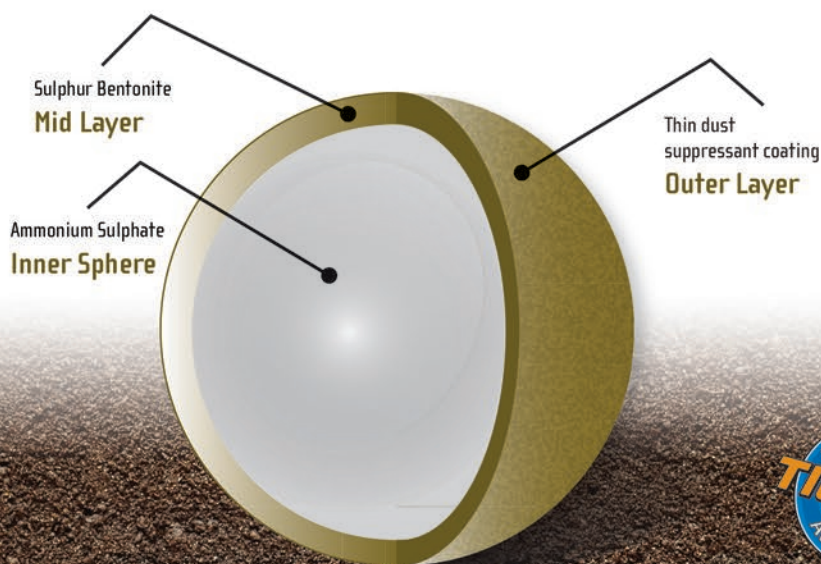


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According to Mathieu, this type of seed is “getting to be a global thing that will continue to build in response to consumer demands.

“We’re also being asked to upgrade a lot of farmers’ products before they go to market,” says Mathieu. “Where we used to clean the 400 bushels needed to seed a quarter section, in a lot of cases we’re now cleaning 10,000 bushels harvested from that quarter section so producers can get a better price for it.”

Of course, doing more and doing it better requires cutting edge equipment, something Mathieu knows all about.

“Our SEA-CHROME optical colour sorter is an unbelievable machine. It’s computer-based with a high-resolution camera that sorts every seed optically. Sure, you can keep piling equipment on top of each other to improve speed, but to get speed and

quality in one machine is really something,” says Mathieu.

Their USC Seed Treater is another notable addition, allowing them to strengthen a part of their operation that had been lagging over the last 10-15 years.

### Crunchable Numbers

The new facility boasts some impressive numbers: rough seed capacity of 12,000 with screening and clean seed capacity of 20,000 each.

Although it represents a good start, Mathieu and his team are far from finished.

“In phase two we plan to increase our bulk storage capacity to 120,000 bushels over the next few years so we can retail seed for companies.”

Another area for growth is the seed treatment end of the business.

“We want to get more of that market. Right now we only treat 15 per cent of the seed we clean while the provincial average is 60 per cent. In light of the various diseases around today, we are encouraging people to treat their seed, whether they do that at home or with us.”

Mathieu hopes many customers will choose his plant for seed treating rather than the do-it-yourself approach because of the high quality system he has in place.

“With all the different chemicals out there, proper application of seed treatment is essential. In the past you didn’t have to apply the treatment very well; you just had to get a speck on the seed. Nowadays, you have to apply it to the whole seed and it is way better for the environment.”

Through all the changes, Mathieu said one thing remains: “Our niche is, and always will be, that we do what others don’t want to do. We are one of the few plants that still bags and the only one I know of that does grass seed.”

Change is never easy, but Mathieu hopes the overhaul will give the Enchant Seed Cleaning Plant a new lease on life. Like a facelift, the possibilities are intriguing once the wrinkles are ironed out. **Geoff Geddes**



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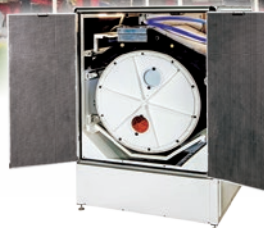
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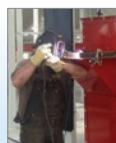


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# The Continuing Evolution of Winter Wheat

New varieties offer increased yields.

**SEEDING** winter wheat seems like an easy sell: it avoids seeding problems during late, wet springs and is ready for harvest about three weeks before spring wheat; it spreads the workload and diversifies risk. Add to that yields of up to 25 per cent more than its spring-seeded counterpart, and you've got a potential higher rate of return.

While seeded acres of winter wheat have been static over the past few years, there is still a lot of room for production increases. Over the next five years, new varieties are being introduced to address production concerns and increased yield.

"There's a lot for producers to look forward to over the next few years," says Robert Graf, research scientist, winter wheat breeding with Agriculture and Agri-Food Canada (AAFC) in Lethbridge, Alta. "Each province has winter wheat varieties that have worked well for their specific needs. In Alberta that has historically been Radiant. It is the standard against which we measure the potential of a new variety, and our breeding efforts in recent years have resulted in some possible successors."

Graf says there are no changes to winter wheat production practices expected with these varieties – what worked with previous varieties will work with these, but he suggests producers shouldn't scrimp on inputs. "Winter wheat has tremendous yield potential, but requires good fertility and agronomic management for it to be attained."

He says each of these latest offerings come with advantages for different growing areas across Alberta.

## CDC Chase

This latest variety became available for the first time in the fall of 2016. CDC Chase is the result of breeding efforts by Brian Fowler of the University of Saskatchewan's Crop Development Centre.

"This variety has fair survivability and also has a two to three per cent yield advantage over Radiant," says Graf. "What sets it apart is its very strong rust package, which is similar to Moats. It has resistance to stripe rust, leaf rust and stem rust. Over the past few years, we've seen a lot of stripe rust in Alberta and this would help address those concerns."

CDC Chase is not as strong strawed as some varieties, so while it is fine under dryland conditions, Graf says there are better options for those who grow the crop under irrigation. This variety has about one-half a percentage more protein than Radiant.

Robert Graf says AAC Icefield is the only hard white winter wheat variety in Western Canada.

Photo by Hamid Naeem

### AAC Elevate

AAC Elevate was developed in Graf's own research facility, and is expected to be available to growers in 2017. It has a five to six per cent yield advantage over Radiant and a relatively comprehensive disease resistance package. It does, however, have moderate susceptibility to stripe rust so producers may need to use a fungicide in epidemic years. That said, this variety may be attractive to growers who are struggling with Fusarium head blight.

"AAC Elevate has intermediate resistance to Fusarium head blight which will be very important to growers in the coming years," says Graf. "It also has resistance to wheat curl mite, and is the only variety other than Radiant that offers this type of protection against wheat streak mosaic virus."

This winter wheat option has about a quarter per cent greater protein than Radiant, good winter survivability and has very strong straw – making it a solid option for irrigated farms. Graf also says early tests are showing a level of drought tolerance similar to Radiant that they look forward to examining in further detail as the variety is more widely grown.

### AAC Wildfire

Another variety from Graf's shop, AAC Wildfire is expected to be commercially available for the fall of 2018. Graf says this is the

**"There's a lot for producers to look forward to over the next few years."**

—Robert Graf

variety that has everyone talking, as it is particularly well adapted for the western Canadian Prairies.

"AAC Wildfire is showing huge increases in yield over all other top varieties, including Radiant," he says. "Early data is showing up to a 15 per cent yield advantage with slightly higher protein levels. While it will likely be difficult to get those results every year, it is performing very well so far."



This variety is resistant to stripe rust and common bunt, and has a moderately resistant rating to Fusarium head blight, which are the most important diseases affecting Alberta growers. While it does have susceptibility to stem rust, that disease is not an issue for most growers in this province. Maturity for AAC Wildfire is a couple of days later than Radiant so growers may want to take this into consideration if early harvest is a primary goal.

### AAC Goldrush

Brand new from Graf's program, he anticipates market availability for this variety in the fall of 2019. He says AAC Goldrush will likely be more popular for growers in Saskatchewan, along with some growers on the provincial border.

"Different germplasm works better under different growing conditions, and so far, we are seeing a large yield advantage in Saskatchewan," he says. "While this variety has very good winter hardiness, we aren't seeing much of an advantage over Radiant in Alberta."

AAC Goldrush has intermediate resistance to stripe rust and Fusarium head blight, and good protection against leaf and stem rust. It has good standability, is a couple of days earlier maturing than Radiant and produces about a half per cent more protein.

### AAC Icefield

This variety is the only hard white winter wheat variety in Western Canada, and it also comes from Graf's lab. It has received a three-year interim registration for market development research.

"We have collaborated with other groups to see if there is a market for this type of variety," he says. "So far, AAC Icefield



Photo courtesy of Robert Graf

CDC Chase, left, has fair survivability and also has a two to three per cent yield advantage over Radiant. AAC Wildfire, right, is particularly well adapted for the western Canadian Prairies.

shows great potential for the Asian steam bun market. That type of product requires a very white flour and this lower protein white wheat does that. Even with the lower protein concentration, it has very good gluten strength. This could be a high value wheat for growers."

Over the next three years, they will determine market interest and after that they can extend the interim registration for a couple more years, or look for full registration at that time.

CDC Chase is marketed by Canterra seeds. AAC Elevate and AAC Wildfire will be sold by SeCan while AAC Goldrush and AAC Icefield will be available from FP Genetics. **Jennifer Barber**

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- large seed, good yield

### **Abarth** – Yellow Pea

- large seed, high yield



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# Taking Big Steps in Agronomic Understanding

Top-notch genetics are an important first step towards growing a successful crop. But genetics alone can only get a farmer so far.

**ANYONE** who has spent time producing crops knows no matter how fantastic a variety's breeding, improved genetics are only one factor in a successful crop's equation. Producers who don't prioritize agronomics like weed control, disease management and crop nutrition won't survive long in agriculture.

Since the Second World War, scientists – and producers – have made enormous strides in agronomic understanding. Still, expect Alberta producers to make plenty of agronomic practice improvements over the near future.

"It takes more than just genetics. We talk about a 50-50 split: 50 per cent of a crop's ultimate success comes in the genetics; 50 per cent is in agronomic BMPs in the field," says Pat Flaten, research project manager with the Western Grains Research Foundation (WGRF). "You have to allow genetics to live up to their best potential by providing great agronomy."

The good news is that today's Alberta farmers are typically quite expert in agronomy and generally operate according to industry-recommended best management practices (BMPs), says Gregory Sekulic, an agronomy specialist with the Canola Council of Canada.

"The common practices used in agriculture today – especially relating to crop inputs – are for the most part exactly what are recommended by researchers and industry, because BMPs are the most profitable," he says. "In general, growers don't over-apply anything because the economics aren't there to support it. On the other hand, they don't under-apply either because they've come to accept that inputs are investments rather than expenses."

In other areas of agronomic practice, Alberta growers tend to be similarly in line with BMPs. Where possible, seeding is largely done according to recommended timing, depth and spacing. And integrated pest management is now fairly widely accepted and practiced.

In many cases, improving technology is allowing enhanced precision of BMPs. While an increasing number of producers are considering advanced agronomic technologies like variable rate application, even refining one's operations in low-tech ways can be beneficial.

"Growers understand the importance of seeding rate, but they can fine tune their rate by using the thousand kernel weight calculation. There are some growers using thousand kernel

weight but it needs to become more widely adopted," says Mark Cutts, a crop specialist with Alberta Agriculture and Forestry. "A significant difference in thousand kernel weight can make a huge impact on how many pounds per acre you're seeding."

Instead of choosing a seeding rate by bushels per acre, he recommends, seed according to how many plants per square foot you want. And don't scrimp.

"Some farmers still want to save money at seeding time," says Sekulic. "If you went and spent the money on good seed, you need to seed it at the right rate to get the plant population you want. There's no point seeding on the low side because you thought the seed was expensive."

Crop rotation is currently one of the few areas in which expert recommendations and grower realities diverge. Today, the majority of Canadian annual cropping farmers plant a canola and wheat rotation, while the majority of their American counterparts plant a soybeans and corn rotation. The pest management risks of tight rotation are clear and well understood by researchers and producers alike: among other downsides, repetitive and frequent use of specific crops support pest populations; foster the development of resistant pest populations; compromise soil health; and decrease microbial biomass.

"Crop rotation is definitely something we need to focus more on," says Sekulic. Saying that, however, he understands why producers opt for a one in two rotation.

"In an ideal world, there would be a third or fourth or fifth lucrative crop that you could add to the two-crop rotation, and preferably farmers would be adding a perennial crop too. I certainly recommend a one-in-three or one-in-four rotation and I'll do my best to help make that profitable, but the crux comes down to economics.

"I came into this job preaching the need for rotation. But it's pretty tough to ask a guy to use longer rotations with the current mix of crop species we have, especially when a lot of the secondary crops are already at or near the max of what the market can hold. If we start growing 10 million acres of a niche crop, that's going to change the market," adds Sekulic.

While convincing growers to extend their rotations may be a hard sell, convincing them to pull land out of production may actually be reality soon. New research suggests landscape diver-

Today, WGRF considers agronomic research a huge research priority.

Photo by Harpinder S. Randhawa, AAFC Lethbridge



sity, even when practiced alongside a tight crop rotation, can offer significant agronomic and even yield benefits.

At first glance, the concept seems counter intuitive: in order to increase total profit, research now shows that one should intentionally leave a percentage of land unplanted.

"I was skeptical at first but the research is there. The presence of a more diverse landscape with semi-natural, uncultivated land in and around crop land increases the production of the crop land and decreases necessary inputs," says Sekulic. "The data remain, for the most part, in ecologist circles. One of my goals is its wider dissemination."

In a British study released in July of 2015, eight per cent of arable land was removed from production to create habitat along field edges in a wheat-oilseed-bean rotation. The study showed that despite a decrease in total productive acres, total yield was maintained and, in some cases, increased due to the habitat creation.

A study conducted in northern Alberta a decade ago is even more extreme: it showed that land produced an overall increase in yield, due largely to better pollination, if 30 per cent of it was left uncultivated, so long as cultivated land was within 750 metres of the uncultivated areas.

In still another study, researchers compared eight similar, monocropped fields: four with hedgerows planted through the middle of them and four without. Three of the four fields without hedgerows required foliar insecticide to counter aphids. Only one in four of the fields containing hedgerows required insecticide.

The results of all three of these studies fly in the face of our conventional yield maximization strategies. However, they show a tantalizing taste that improvements in sustainability may align well with tomorrow's agronomic best management practices.

## Research Investment Growing

Investment in agronomic research is increasing among research bodies and producer groups.

Until recently, the WGRF focused its efforts and its investment largely on plant breeding efforts. Today, WGRF considers agronomic research a huge research priority.

Several factors have influenced that change. First, starting several years ago, WGRF's membership groups started expressing concern about changes in the agronomic research community.

"Our membership groups started to say they were nervous about where things were going in the agronomic research community. We were seeing key researchers not being replaced when they retired. We looked at what the agronomic research capacity was in Canada, and that grew into looking at what our needs in the future will be," says Flaten.

In response, WGRF is now actively encouraging institutions to strengthen their agronomy programs, and it is also prioritizing its own investment in agronomic study.

Today, Flaten is pleased to see WGRF's investment in agronomy research, resulting in important steps forward in the research community. She is also pleased that there appears to be at least a partial turn-around at public research facilities.

"For example, in the last nine months, Agriculture and Agri-Food Canada has been advertising and filling some agronomy positions. Some of those new people have begun applying for funding, which is really exciting. The more we can learn about agronomy, the better for farmers." **Madeleine Baerg**



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# Varieties of Cereal and Oilseed Crops for Alberta

**THIS** annual publication provides information on cereal and oilseed variety performance in Alberta and northeastern British Columbia. Important agronomic characteristics and disease resistance information is provided for varieties of wheat, barley, oat, rye, triticale, flax and canola. The Alberta Regional Variety Testing program for cereals and flax is coordinated by the Alberta Regional Variety Advisory Committee (ARVAC) and Alberta Agriculture and Forestry (AAF). Funding for the program is provided by:

- Alberta Agriculture and Forestry
- Alberta Wheat Commission
- Alberta Barley Commission
- Alberta Oat Growers Association
- Alberta Seed Growers
- Alberta Seed Processors
- Entry fees for the varieties being tested

Data for this publication come from various sources, including:

- Alberta Agriculture & Forestry
- Agriculture and Agri-Food Canada
- British Columbia Grain Producers
- CPS Canada
- University of Alberta
- Alberta Innovates Technology Futures
- Farming Smarter
- Smokey Applied Research and Development Association (SARDA)
- Battle River Research Group (BRRG)
- Chinook Applied Research Association (CARA)
- Gateway Research Organization (GRO)
- Lakeland Applied Research Association (LARA)
- Mackenzie Applied Research Association (MARA)
- Northern Peace Applied Research Association (NPARA)
- Prairie Grain Development Committee
- Canola Council of Canada

The following individuals are the Regional Variety Trial and crop specific coordinators:

- Alex Fedko, Regional Variety Trial Coordinator
- Spring wheat, Dr. H. Randhawa and Dr. D. Spaner
- Winter Wheat, Dr. R. Graf
- Barley, J. Anderson
- Oat, Dr. J. Mitchell-Fetch
- Triticale, Dr. H. Randhawa
- Fall Rye, Dr. J. Larsen
- Winter Triticale, Dr. J. Larsen
- Flax, Dr. M. Beaith

Sincere thanks are extended to all individuals and organizations that contribute to this publication.

## Yield Results and Reporting

Variety choice should never be based solely on yield performance, as it is only one factor that affects net return. The genetic yield potential of a variety is often masked by numerous factors, some of which can be controlled through variety choice and others through astute agronomic management. Producers are encouraged to consider other characteristics such as maturity, plant height, lodging and disease/pest resistance when deciding which varieties to grow. Long-term satisfaction with a variety is often related to non-yield characteristics.

Exercise caution when making yield comparisons among varieties. Variety yield should only be directly compared to the standard reference check. Actual head-to-head yield comparisons between other varieties may not have occurred. Small plot agronomic trials are expensive to grow and new varieties are registered every year. It is simply impractical to grow all varieties at the same time. Following several years of data collection, the yield performance for a particular variety stabilizes relative to the check and further testing is no longer required. It is for these reasons that the check varieties are grown every year (e.g. AC Barrie for CWRS wheat, AC Metcalfe for barley) and that changes to these checks are infrequent. The "Overall Station Years of Testing" column provides an indication of the unbalanced nature of the dataset.

At least six station-years of yield data collected over two years are required prior to reporting the figures in this publication. For new varieties, Overall Yield is often the first indication of yield potential relative to the check. As additional data become available, yield performance is also expressed on the basis of environmental productivity (Yield Test Categories of Low, Medium, High and Very High). Yield rankings among varieties can change substantially due to growing conditions. To reflect these differences, results from a test site that produced high yield in a particular year are placed into the database for 'high' yielding environments. The same site may contribute to the 'low' yield category in a drought year, when yields are low. Consistent performance over all Yield Test Categories indicates that a variety has environmental responses similar to the check and may have good yield stability over a wide range of environments. Scientific studies conducted on variety performance in Western Canada have shown that Yield Test Category analysis provides a more reliable indication of yield performance than results organized by geographic region.

The yield comparison tables have several features:

- Overall actual yield of the check (bushels/acre) based on all data available to the testing program is provided along with the number of station years of testing.
- The range in yield for each Yield Test Category is defined.
- Actual yield of the check in each Yield Test Category is reported.

For varieties with sufficient data, the Overall Yield and performance in each Yield Test Category is expressed relative to the check.

Significant statistical differences relative to the check are indicated.

Yields that are statistically higher (+) or lower (-) than the check are indicated to aid in the selection process. No symbol after the yield figure indicates that there is no statistical difference from the check. Pay particular attention to data on new varieties that have not been fully tested. If a large difference from the check is reported but is not significant, it could mean that yields have varied widely, and/or there are not enough data to prove a statistical difference. With additional years of testing, the reported yield differences will become more accurate.

To make effective use of the yield comparison tables, producers should set a realistic yield target for the season and determine where it fits within the Low, Medium, High and Very High Yield Test Categories. This approach facilitates matching of variety choice to expected productivity levels and is similar to that used when making decisions on other levels of inputs. Please note that the actual yield levels indicated are from small plot trials, which may be 15 to 20 per cent higher than yields expected under commercial production.

### Maturity Ratings

As is the case for yield, growing conditions have a tremendous influence on the date of maturity. For example, a variety of CWRS wheat may mature in 98 days in Lethbridge, but take 103 days in Edmonton. Likewise, a two-day difference in maturity between varieties in southern Alberta may amount to a five-

day difference in a more northerly location. To take this into account, maturity is expressed using a five category scale: Very Early, Early, Medium, Late and Very Late. To aid producers with this relative scale, the average number of days to maturity for the check is reported. Note that this scale is different for each crop type. For example, an early barley variety will mature much earlier than an early flax variety.

### Seed Size and Plant Populations

Seed size within a crop kind will vary from variety to variety, requiring adjustment of seeding volumes to achieve desired plant populations. Some of the tables provide an average 1000 kernel weight (TKW) which can be used as a guide for variety differences. The best approach is to determine the 1000 kernel weight of the seed to be planted, germination rate, emergence mortality, and in the case of fall seeded crops, an estimate of winterkill. For more information and user-friendly seeding rate calculators that take into account these and other considerations, please see [www.agric.gov.ab.ca/app21/ldcalc](http://www.agric.gov.ab.ca/app21/ldcalc).

### Plant Breeders' Rights

Plant Breeders' Rights (PBR) are a form of intellectual property rights by which plant breeders can protect new varieties in the same way an inventor protects a new invention with a patent. In 2015, Canada amended the PBR Act to bring it into conformity with UPOV 91. Varieties protected under the previous legislation (UPOV 78) are indicated with the  logo, whereas those protected under the new legislation that are shown with a new  logo. The use of the  logo indicates that PBR is pending. For

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more information on Plant Breeders' Rights, please see [www.pbrfacts.ca](http://www.pbrfacts.ca) or the Canadian Food Inspection Agency website at [www.inspection.gc.ca](http://www.inspection.gc.ca).

## Canola

The Alberta Regional Variety Advisory Committee (ARVAC) does not take any responsibility for accuracy or validity of the canola performance data.

## Diseases, Seed Treatment and Seed Testing

- Disease ratings are compiled from various data sources in Alberta and other prairie provinces.
- Treat rye and flax seed to control seedling blight, cereal seed for smuts and fusarium, canola seed to control flea beetle, seedling blight and the seed borne phase of virulent blackleg.
- Wheat with Moderately Susceptible (MS) or Susceptible (S) ratings for common bunt should be treated with a systemic fungicide as low levels of infection will restrict marketability.
- Refer to labels for maximum storage periods of treated seed.
- Treated seed must not be fed to livestock, poultry or wildlife, and cannot be sold for feed.
- Leaf spot ratings in the wheat tables are a combination of resistance to tan spot and septoria leaf disease complex.
- Fusarium head blight (FHB), caused by *Fusarium graminearum* and other species, is an increasing problem in Alberta. The relative ranking of crops from most susceptible to least susceptible is durum wheat, common wheat, triticale, barley and oat. Corn is a host of *F. graminearum* and can serve as a source of infection when residue is left on the ground. FHB infection is highly influenced by the environment and heading date. A resistant (R) tolerance rating for FHB does not equate to immunity. Under severe epidemics, all varieties will sustain damage. All seed should be tested for the presence of FHB and treated with an appropriate seed treatment if required. Producers are advised to choose varieties with the best FHB tolerance whenever possible and always use best management practices to slow the spread of this disease.
- Seed used in the Alberta Regional Variety Testing program comes with a "fusarium-free" certificate and trials are inspected for FHB during the growing season.

Laboratories participating in the FHB testing program:

- 20/20 Seed Labs Ltd., Nisku, AB: 1-877-420-2099
- BioVision Seed Research Ltd., Edmonton, AB: 1-800-952-5407
- BioVision Seed Research Ltd., Grande Prairie, AB: 1-877-532-8889
- Parkland Laboratories, Red Deer, AB: 403-342-0404
- Precision Seed Testing, Beaverlodge, AB: 780-354-2259
- Seed Check Technologies Inc., Leduc, AB: 780-980-8324

## Abbreviations and Rating Scales

- TKW = Thousand kernel weight.
- XX = Insufficient data to describe.
- Maturity: VE = Very Early, E = Early, M = Medium, L = Late, VL = Very Late.
- Resistance Ratings: VP = Very Poor, P = Poor, F = Fair, G = Good, VG = Very Good, EX = Excellent.
- Disease Tolerance Ratings: R = Resistant, MR = Moderately Resistant, I = Intermediate, MS = Moderately Susceptible, S = Susceptible.
- Kernel Type (winter wheat): HR = Hard Red, SR = Soft Red, HW = Hard White, SW = Soft White.
- Awns (wheat): Y = Yes (bearded), N = No (awnless).
- Awn Type (barley): R = Rough, S = Smooth, SS = Semi-smooth.
- Seed Size (flax): S = Small, M = Medium, L = Large.

## Other Variety Information

For additional information, including varieties not listed in this publication, please call the Alberta Ag-Info Centre toll-free at 310-FARM (3276) or check the Alberta Agriculture and Rural Development website, Ropin' the Web at: [www.agriculture.alberta.ca/rvt](http://www.agriculture.alberta.ca/rvt).

## Fact sheet information and tables prepared, reviewed and approved by:

Alberta Regional Variety Advisory Committee (formerly the Alberta British Columbia Grain Advisory Committee – ABCGAC)

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**Spring Wheat**-AAC Brandon, AAC Redwater, CDC Go

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**Barley**-CDC Copeland, CDC Austenson, CDC Maverick

**Peas**-CDC Amarillo, AAC Lacombe

**Cover Crops**-38 varieties-Radish, Clover, Millet, Sorghum

Turnips, Vetch, Rye grass, Sunflowers, Buckwheat, Phacelia

**Red Lentils**-CDC Impulse

**Flax**-CDC Glas

**Oats**-CDC Haymaker

**Corn**-Thunder Seed, Brett Young, Dow

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# FEED AND FOOD BARLEY

Variety	2 or 6 row	Awn Type	Overall Station Years of Testing	Overall Yield	Yield Category (% AC Metcalfe):				Agronomic Characteristics:				
					Low < 60 (bu/ac)	Medium 60-90 (bu/ac)	High 90-120 (bu/ac)	V. High > 120 (bu/ac)	Maturity Rating	Test Weight (lb/bu)	TKW (g)	Height (cm)	Resistance to Lodging
GENERAL PURPOSE													
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)													
AC Metcalfe (bu/ac)				100	47	78	103	134					
AC Metcalfe ☼	2	R		100	100	100	100	100	M	51	46	79	F
Champion ☼	2	R	166	113+	124+	113+	112+	111+	M	53	49	76	G
Claymore ☼	2	R	42	111+	XX	110+	109+	115+	L	51	47	76	G
Oreana ☼	2	R	42	112+	XX	109+	114+	115+	L	53	50	66	VG
Vivar ☼	6	R	175	109+	97	105+	109+	115+	M	49	44	73	VG
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)													
Brahma ☼	2	R	87	111+	112+	109+	113+	111+	M	53	47	74	G
Busby ☼	2	R	45	104+	107	103	106	103	M	53	49	78	G
CDC Austenson ☼	2	R	65	112+	108	113+	111+	112+	L	54	46	78	G
CDC Bold †	2	R	77	106+	111+	107+	106+	102	M	53	48	72	VG
CDC Coalition ☼	2	R	57	110+	107	112+	108+	109+	L	53	47	74	G
CDC Cowboy ☼	2	R	75	95-	107	94-	93-	96-	L	52	55	103	F
CDC Dolly †	2	R	184	101	97	100	103+	100	M	53	49	74	F
CDC Maverick ☼	2	S	43	95-	XX	90-	97	96	M	54	55	98	F
CDC Trey	2	R	106	103+	101	105+	101	105+	M	52	50	80	G
Canmore ☼	2	R	40	107+	XX	104	111+	108+	M	52	49	73	G
CONLON ☼	2	S	63	94-	97	93-	93-	96-	VE	52	52	80	G
Gadsby ☼	2	R	45	112+	XX	114+	114+	108+	M	53	51	83	F
Ponoka ☼	2	R	120	108+	101	107+	110+	109+	L	51	46	80	G
Seebe	2	R	229	101	97	100	102	100	VL	52	50	86	G
XENA	2	R	271	112+	111+	109+	114+	112+	M	52	49	77	G
AC Harper	6	SS	166	103+	95	96-	102	111+	M	48	40	80	G
AC Ranger	6	S	48	107+	101	99	118+	107+	L	49	43	74	F
AC Rosser †	6	S	166	108+	101	102	109+	113+	M	48	41	82	G
Amisk ☼	6	SS	40	105+	XX	105	104	108+	M	49	46	69	VG
Breton †	6	S	42	107+	97	108	106+	110+	M	49	45	80	F
Chigwell	6	S	43	104	XX	98	106	111+	M	49	41	76	G
Muskwa ☼	6	S	44	105+	XX	103	105	110+	M	50	42	73	G
Sundre ☼	6	S	72	110+	100	105	112+	117+	L	51	43	86	G
Trochu ☼	6	S	136	107+	101	102	109+	112+	M	49	41	78	G
HULLESS													
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)													
CDC Carter ☼	2	R	45	97-	97	99	94-	XX	M	62	39	77	VG
CDC McGwire ☼ †	2	R	107	93-	88-	93-	99	XX	M	61	39	80	VG
Falcon	6	S	181	83-	72-	83-	91-	89	E	58	35	68	VG
Tyto †	6	S	72	81-	79-	84-	96	96	M	55	40	73	VG

**REMARKS:** For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. The long term average maturity for AC Metcalfe is 95 days and is rated as Medium (M). Varieties rated Intermediate (I) to Susceptible (S) for smuts should be treated with a systemic seed treatment to reduce the potential for infection. Hullless varieties leave the hull in the field and thus grain yields comparable to hulled varieties are 9-12% lower. Handling of hullless varieties should be minimized to avoid seed damage. CDC Carter, CDC McGwire, Falcon and Tyto are normal starch barleys suitable for food use. New registrations: Claymore (TR12733) and Oreana (TR12735). † - Flagged for possible removal in 2018.

# FEED AND FOOD BARLEY— CONTINUED

Disease Tolerance:

Net Blotch:

Variety	Loose Smut	Other Smuts	Root Rot	Scald	Spot form	Net form	FHB
<b>GENERAL PURPOSE</b>							
<b>Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)</b>							
<b>AC Metcalfe (bu/ac)</b>							
AC Metcalfe	R	I	I	S	I	S	I
Champion	S	R	MR	S	I	S	I
Claymore	S	R	I	S	I	S	I
Oreana	S	R	I	S	MR	S	S
Vivar	I	R	MR	I	MR	R	S
<b>Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)</b>							
Brahma	MS	R	MR	S	I	I	I
Busby	S	MR	S	I	MR	MS	I
CDC Austenson	S	R	I	S	R	MS	I
CDC Bold †	MS	MR	MR	S	I	S	S
CDC Coalition	R	R	I	S	MR	S	I
CDC Cowboy	MS	MR	I	MS	MR	I	MR
CDC Dolly †	S	I	I	I	MS	S	MR
CDC Maverick	S	R	I	MS	MR	I	MR
CDC Trey	MS	R	MR	MS	R	I	I
Canmore	R	R	I	MR	MR	MS	I
CONLON	I	I	MR	S	MR	I	MR
Gadsby	R	R	I	R	MR	MS	I
Ponoka	R	R	I	MR	MR	MS	I
Seebe	S	R	I	MR	MS	S	MR
XENA	MS	MS	MR	S	I	S	MR
AC Harper	MS	I	I	I	I	I	MS
AC Ranger	MS	I	MR	MS	MR	I	S
AC Rosser †	MS	R	MR	S	MR	I	S
Amisk	S	MS	MS	I	MR	I	S
Breton †	MS	MR	I	I	MR	I	S
Chigwell	MS	MR	MS	MR	MR	I	S
Muskwa	MS	R	MS	MR	MR	MS	S
Sundre	MS	R	MS	R	I	MS	S
Trochu	MS	MR	MR	I	MR	S	I
<b>HULLESS</b>							
<b>Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)</b>							
CDC Carter	R	R	S	MS	MR	I	I
CDC McGwire †	MS	MR	MR	I	MR	I	MR
Falcon	MS	MR	I	I	I	I	S
Tyto †	S	R	I	MS	I	S	MS

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**PEAS:**  
CDC Meadows  
CDC Amarillo  
CDC Raezer

**WHEAT:**  
Stettler  
CDC NRG 003  
CDC Plentiful  
Muchmore

**BARLEY:**  
AC Metcalfe  
  
**OATS:**  
Camden  
AC Morgan



# MALTING BARLEY

Variety	2 or 6 row	Awn Type	Overall Station Years of Testing	Overall Yield	Yield Category (% AC Metcalfe):				Agronomic Characteristics:					
					Low < 60 (bu/ac)	Medium 60-90 (bu/ac)	High 90-120 (bu/ac)	V. High > 120 (bu/ac)	Maturity Rating	Test Weight (lb/bu)	TKW (g)	Height (cm)	Resistance to Lodging	
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)														
AC Metcalfe (bu/ac)				100	47	78	103	134						
AC Metcalfe ☼	2	R		100	100	100	100	100	M	51	46	79	F	
CDC Bow ▲	2	R	42	104+	XX	106	105	104	M	51	48	77	VG	
CDC Platinum Star ▲	2	R	42	106+	XX	108	107+	102	M	53	49	82	F	
CDC Fraser ▲	2	R	27	107+	XX	106	109	107+	M	51	49	75	G	
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)														
AAC Synergy ☼	2	R	42	114+	XX	115+	115+	113+	M		51	48	75	F
Bentley ☼	2	R	77	105+	109	102	105+	106+	M	52	47	81	G	
CDC Clear ☼	2	R	43	95-	XX	92-	100	XX	L	62	47	85	G	
CDC Copeland ☼	2	R	137	103+	96	101	106+	104+	M	51	47	81	F	
CDC Kindersley ☼	2	R	47	104+	XX	102	104	104+	E	53	43	78	G	
CDC Meredith ☼	2	R	65	107+	102	108+	108+	107+	L	51	46	76	F	
CDC PolarStar ☼	2	R	43	101	XX	103	105+	97	M	52	44	79	G	
Cerveza ☼	2	R	49	109+	XX	109+	108+	109+	M	51	46	74	F	
Harrington †	2	R	284	93-	96-	94-	93-	91-	M	51	44	78	F	
Major ☼	2	R	72	107+	104	108+	107+	106+	M	51	45	73	G	
Merit 57 ☼	2	R	87	109+	110+	108+	109+	111+	VL	51	44	79	F	
Newdale	2	R	94	105+	106	104+	105+	106+	M	52	46	73	F	
CDC Anderson ☼ †	6	R	44	96	XX	96	92	100	M	50	39	80	G	
CDC Mayfair ☼ †	6	R	56	97	XX	93-	96	104	E	49	40	76	G	
LEGACY ☼	6	SS	122	99	93	95-	102	103	M	49	39	82	G	
Tradition ☼ †	6	SS	121	98	90-	95-	101	103	E	50	40	81	G	

**REMARKS:** For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. The long term average maturity for AC Metcalfe is 95 days and is rated as Medium (M). Varieties rated Intermediate (I) to Susceptible (S) for smuts should be treated with a systemic seed treatment to reduce the potential for infection. The Canadian Malting Barley Technical Centre (CMBTC) evaluates and recommends malting barley varieties for industry acceptance. Please refer to the 2016-2017 CMBTC Recommended Malt Barley Variety List for more information. CDC Clear is a hullless malting variety. New registrations: CDC Fraser (TR12135). † - Flagged for possible removal in 2018.

## BARLEY

### AAC CONNECT ☼

**BI: AAFC, Dist: Canterra Seeds**

Sendziak, Don P. & Stephen / Edmonton / AB / (780) 434-1322

### AAC SYNERGY ☼

**BI: AAFC (Brandon), Dist: Syngenta**

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Strathmore Seed Cleaning Plant Ltd. / Strathmore / AB / (403) 934-3421

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Ohrn, Norman / Thorsby / AB / (780) 985-2263

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Stamp Seeds / Enchant / AB / (403) 739-2233

Strain, Arthur George / Foremost / AB / (403) 867-2227

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### AC RANGER

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Jones, Greg Thomas & Tristan / Ponoka / AB / (403) 783-6495

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### CANMORE ☼

**BI: FCDC (Lacombe), Dist: Canterra Seeds**

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Benci, Dennis / Carmangay / AB / (403) 643-2294

Cross, Douglas / Westlock / AB / (780) 349-2587

# MALTING BARLEY — CONTINUED

Disease Tolerance:

Net Blotch:

Variety	Loose Smut	Other Smuts	Root Rot	Scald	Spot form	Net form	FHB
<b>Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)</b>							
<b>AC Metcalfe (bu/ac)</b>							
<b>AC Metcalfe</b>	<b>R</b>	<b>I</b>	<b>I</b>	<b>S</b>	<b>I</b>	<b>S</b>	<b>I</b>
CDC Bow	S	I	MS	MS	MR	S	MS
CDC Platinum Star	R	R	S	S	MR	I	MR
CDC Fraser	R	MR	MS	MS	MR	MR	I
<b>Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Metcalfe)</b>							
AAC Synergy	S	I	I	S	R	MR	MS
Bentley	MS	MR	MR	S	R	MS	MS
CDC Clear	R	R	I	S	R	MS	MR
CDC Copeland	MS	I	I	S	I	I	I
CDC Kindersley	S	R	I	S	MR	MS	I
CDC Meredith	R	MR	MR	S	R	S	I
CDC PolarStar	S	R	MS	S	MR	S	MR
Cerveza	R	R	I	S	MR	MS	I
Harrington †	MS	MS	I	S	MS	S	MR
Major	R	MR	I	MS	MR	I	I
Merit 57	MS	S	I	MS	MR	MS	MS
Newdale	S	MR	MR	MS	MR	I	I
CDC Anderson †	MR	R	I	MS	MR	MS	I
CDC Mayfair †	S	MR	I	S	MR	MS	MS
LEGACY	I	MR	MR	S	MR	S	MS
Tradition †	S	MR	MR	S	I	S	S

Haney Farms / Picture Butte / AB / (403) 738-4517	C
King, Harold & Webb, David G. / Three Hills / AB / (403) 443-7330	R C
Lindholm Seed Farm / New Norway / AB / (780) 352-3240	R
Parkland Fertilizers / Wetaskiwin / AB / (780) 352-3359	C
Penwest Seeds / Three Hills / AB / (403) 443-2577	C
Rasmussen, Brian D. & Joel T. / Standard / AB / (403) 644-3800	R C
Senzia, Don P. & Stephen / Edmonton / AB / (780) 434-1322	R
Solick Seeds / Halkirk / AB / (403) 884-2358	S* F* R C*
Welsh, Donald Alan / Milk River / AB / (403) 647-2228	F
<b>CDC AUSTENSON</b>	
<b>BI: CDC, Dist: SeCan Members</b>	
Benci, Dennis / Carmangay / AB / (403) 643-2294	C
Brummelhuis, Mitchell & Mack / Vauxhall / AB / (403) 654-7515	C
Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900	C
Corns, Bryan & Gary / Grassy Lake / AB / (403) 655-2464	C
Dallas, Bradley C. / Bowden / AB / (403) 224-2162	C
Dyck, Ernie / La Crete / AB / (780) 821-9445	R
Dyck, Heinz W. & Colin & Alan & Kelton / Rosemary / AB / (403) 378-3321	S
Feenstra, Lloyd / Barons / AB / (403) 757-3737	C
Galloway Farms / Fort Saskatchewan / AB / (780) 998-3036	C
Gibson, Donald / Sangudo / AB / (780) 785-2214	C
Hadland, Edward / Baldonnel / BC / (250) 793-9746	C
Hallett, Dale R. & Richard / Carstairs / AB / (403) 337-3072	C
Haney Farms / Picture Butte / AB / (403) 738-4517	C*
Hoff, Peter Edward / Gleichen / AB / (403) 734-2140	S F
Huvenaars, Carl / Hays / AB / (403) 725-2213	R C
Jones, Greg Thomas & Tristan / Ponoka / AB / (403) 783-6495	R
Kemp, Richard L. / Red Deer County / AB / (403) 227-4836	C
Kopjar, Gerald M. / Rowley / AB / (403) 368-2409	C
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McNelly, Bevin / Clyde / AB / (780) 348-5749	R C
Meinczinger, Matthew Jr. / Busby / AB / (780) 349-2456	R
Mueller, Richard & R.R. & Rosemary / Barrhead / AB / (780) 674-2595	F R
Nemetz, Charlie & Jerritt & Lewis & B. / Stettler / AB / (403) 742-0436	C
Niemela, Terrance & Tracy / Sylvan Lake / AB / (403) 746-2645	F R C
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Smith, Gary W. / Eckville / AB / (403) 746-5878		C
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Weigum, Garry & Sarah / Three Hills / AB / (403) 443-2476	R	
Witdouch, Dale / Iron Springs / AB / (403) 738-4395		C
Wood, Robert & Patricia & Marshall / Bowden / AB / (403) 224-3928		R
<b>CDC BATTLEFORD</b> ☺		
<b>BI: CDC, Dist: SeCan Members</b>		
Wagner, Terry & Loree / Lacombe / AB / (403) 782-2107		C
<b>CDC BOW</b> ☺		
<b>BI: CDC, Dist: SeCan Members</b>		
Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900	S	
Eliason, Bruce W. / Wrentham / AB / (403) 222-2258		R
Goldstrom, David / Red Deer County / AB / (403) 227-2133		R
Hadway, W. Tom & Carol / Didsbury / AB / (403) 335-4929		F
Knight, W. & Craig & Brian / Tees / AB / (403) 784-3633	S	R
Kopjar, Gerald M. / Rowley / AB / (403) 368-2409	S	R
Shultz, Shawn / Didsbury / AB / (403) 335-3694	S	
Sim, Darwin & Derek / Ponoka / AB / (780) 372-2111		F
Solick Seeds / Halkirk / AB / (403) 884-2358	F	
Stamp Seeds / Enchant / AB / (403) 739-2233		R
Thompson, M. Ellwood & Kelly / Red Deer County / AB / (403) 728-3535		R
Wagner, Terry & Loree / Lacombe / AB / (403) 782-2107		F
Weigum, Garry & Sarah / Three Hills / AB / (403) 443-2476		R
<b>CDC COALITION</b> ☺		
<b>BI: CDC, Dist: SeCan Members</b>		
Cross, Douglas / Westlock / AB / (780) 349-2587		C
Cyre, Clifford & Greg / Barrhead / AB / (780) 349-4775	R	C
Haney Farms / Picture Butte / AB / (403) 738-4517		R
Lindholm Seed Farm / New Norway / AB / (780) 352-3240		C
Meinczinger, Matthew Jr. / Busby / AB / (780) 349-2456		R

<b>CDC COPELAND</b>		
<b>BI: CDC, Dist: SeCan Members</b>		
Plante, Jacques / St. Paul / AB / (780) 645-4604		C
Brummelhuis, Mitchell & Mack / Vauxhall / AB / (403) 654-7515		R
Carlson, David / Gwynne / AB / (780) 352-6871		C
Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900		C
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Dueck, Ralph E. & Brent / Olds / AB / (403) 556-2602	S	F
Dyck, Ernie / La Crete / AB / (780) 821-9445		R
Eliason, Bruce W. / Wrentham / AB / (403) 222-2258		R
Ellis, Brian / Olds / AB / (403) 556-2890		C
Galloway Farms / Fort Saskatchewan / AB / (780) 998-3036		C
Geeraert, Gerald / Rockyford / AB / (403) 533-2421		C
Goldstrom, David / Red Deer County / AB / (403) 227-2133		R
Hadway, W. Tom & Carol / Didsbury / AB / (403) 335-4929		C
Hallett, Dale R. & Richard / Carstairs / AB / (403) 337-3072		R
Hartzler, Leonard / Carstairs / AB / (403) 337-2416		R
Hickie, Wesley / Radway / AB / (780) 490-8899		C
Jensen, Albert / Drumheller / AB / (403) 823-9976		C
Jensen, Colin / Drumheller / AB / (403) 820-0181		C
Kemp, Richard L. / Red Deer County / AB / (403) 227-4836		C
King, Harold & Webb, David G. / Three Hills / AB / (403) 443-7330		R
Kittle, James William & A. / Viking / AB / (780) 336-2583		R
Knight, W. & Craig & Brian / Tees / AB / (403) 784-3633		R
Kopjar, Gerald M. / Rowley / AB / (403) 368-2409		R
Lindholm Seed Farm / New Norway / AB / (780) 352-3240		R
Macy, Tim / Radway / AB / (780) 699-4073		R
Markert Seeds / Vulcan / AB / (403) 485-6708		R
Massey, Derwin / Stettler / AB / (403) 883-2503		C
McDonald, Gerald / Co. Of Grande Prairie #1 / AB / (780) 538-3868		R
McNelly, Bevin / Clyde / AB / (780) 348-5749		C
Mueller, Richard & R.R. & Rosemary / Barrhead / AB / (780) 674-2595		C
Murray, Bruce & Wesley / Lethbridge / AB / (403) 327-9389		C
Niemela, Terrance & Tracy / Sylvan Lake / AB / (403) 746-2645	S	F
Nisbet, A. E. & Diane E. / Bowden / AB / (403) 224-3788	S	R
Oatway's Seed Farm / Clive / AB / (403) 784-3001		C
Pedrozo, Alejandro / Airdrie / AB / (403) 948-6700		C
Penwest Seeds / Three Hills / AB / (403) 443-2577		R
Richards, Cliff & Dan / Sexsmith / AB / (780) 766-2266		R



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Sayer, Roger / Carstairs / AB / (403) 337-5847		C	Hallett, Dale R. & Richard / Carstairs / AB / (403) 337-3072		C
Schmermund, Donnie / Sturgeon County / AB / (780) 967-2850		C	McDonald, Gerald / Co. Of Grande Prairie #1 / AB / (780) 538-3868		R C
Selte, Donald / Vermilion / AB / (780) 853-2484		C	Metzger, Don / Carbon / AB / (403) 572-3284		C
Shultz, Shawn / Didsbury / AB / (403) 335-3694		C	Selte, Donald / Vermilion / AB / (780) 853-2484		R
Sich, Louis John & Ivan & Martin / Trochu / AB / (403) 442-2112	R	C	Solick, Leonard & Kelsey & Corwin / Halkirk / AB / (403) 884-2358	F*	
Sim, Darwin & Derek / Ponoka / AB / (780) 372-2111		C	Warkentin, Harold K. & Errol / Tofield / AB / (780) 662-2617		R
Solick Seeds / Halkirk / AB / (403) 884-2358	R	C	Webber, Curtis / Stony Plain / AB / (780) 963-6897		R
Stickland, Brian, Melvin G. & Irma / Red Deer / AB / (403) 886-4875		C	<b>CDC MEREDITH ☺</b>		
Svean, Alan Carl & Scott / Rivercourse / AB / (780) 745-2578		R	<b>BI: CDC, Dist: SeCan Members</b>		
Victoor, Jesse / Sturgeon County / AB / (780) 459-3253		C	Davidson, E. Daryl & Dean / Kitscoty / AB / (780) 846-2456	F	C
Victoor, Rene & Jamie / Sturgeon County / AB / (780) 459-3253	S	R	Foster's Seed & Feed Limited / Beaverlodge / AB / (780) 354-2107		C
Wagner, Terry / Loree / Lacombe / AB / (403) 782-2107		R	Harris, William P & Linda & Thomas & A. / Beaverlodge / AB / (780) 354-2823	S	F R
Weigum, Garry & Sarah / Three Hills / AB / (403) 443-2476		R	Wheatcrest Farms / Lomond / AB / (403) 792-3696		C*
Zwack, Thomas / Daysland / AB / (780) 374-2450		C	<b>CDC THOMPSON</b>		
<b>CDC COWBOY ☺</b>			<b>BI: CDC, Dist: FP Genetics</b>		
<b>BI: CDC, Dist: SeCan Members</b>			Thompson, M. Ellwood & Kelly / Red Deer County / AB / (403) 728-3535		R
Airth, Jock & Linda / Brooks / AB / (403) 362-4372		C	<b>CDC TREY ☺</b>		
Selte, Donald / Vermilion / AB / (780) 853-2484	F	C	<b>BI: CDC, Dist: FP Genetics</b>		
Warkentin, Harold K. & Errol / Tofield / AB / (780) 662-2617	S	F	Wood, Robert & Patricia & Marshall / Bowden / AB / (403) 224-3928		R
Webber, Curtis / Stony Plain / AB / (780) 963-6897		C	<b>CERVEZA ☺</b>		
<b>CDC FIBAR ☺</b>			<b>BI: AAFC (Brandon), Dist: Mastin Seeds</b>		
<b>BI: CDC, Dist: Canterra Seeds</b>			Mastin Seeds / Sundre / AB / (403) 556-2609	S	R
Wheatcrest Farms / Lomond / AB / (403) 792-3696	S	F	<b>CHIGWELL ☺</b>		
<b>CDC FRASER ☺</b>			<b>BI: FCDC (Lacombe), Dist: SeCan Members</b>		
<b>BI: CDC, Dist: SeCan Members</b>			Anderson, Ken & Evelyn / Barrhead / AB / (780) 674-5670		C
Niemela, Terrance & Tracy / Sylvan Lake / AB / (403) 746-2645	S	F	Feenstra, Lloyd / Barons / AB / (403) 757-3737		C
<b>CDC HILOSE ☺</b>			Repka, Gerald / Willingdon / AB / (780) 636-3458		C
<b>BI: CDC, Dist: Canterra Seeds</b>			Webber, Curtis / Stony Plain / AB / (780) 963-6897		C
Sendziak, Don P. & Stephen / Edmonton / AB / (780) 434-1322	F		<b>GADSBY ☺</b>		
<b>CDC KINDERSLEY ☺</b>			<b>BI: FCDC (Lacombe), Dist: SeCan Members</b>		
<b>BI: CDC, Dist: SeCan Members</b>			Harris, William P & Linda & Thomas & A. / Beaverlodge / AB / (780) 354-2823	S	F
Niemela, Terrance & Tracy / Sylvan Lake / AB / (403) 746-2645	R	C	Ohrn, Norman / Thorsby / AB / (780) 985-2263		C
Wood, Robert & Patricia & Marshall / Bowden / AB / (403) 224-3928		C	Schmermund, Donnie / Sturgeon County / AB / (780) 967-2850		C
<b>CDC MAVERICK ☺</b>			Warkentin, Harold K. & Errol / Tofield / AB / (780) 662-2617	F*	R C*
<b>BI: CDC, Dist: SeCan Members</b>			Webber, Curtis / Stony Plain / AB / (780) 963-6897		R C
Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900		C	<b>LEGACY</b>		
Dechaine, Louis / St. Lina / AB / (780) 635-2235		C	<b>BI: Busch Ag Res., Dist: FP Genetics</b>		
Degenhardt, Keith L. & Terry L. & Kerry / Hughenden / AB / (780) 856-2383	R		Wood, Robert & Patricia & Marshall / Bowden / AB / (403) 224-3928	F	C
Gibson, Donald / Sangudo / AB / (780) 785-2214		C			
Hadland, Edward / Baldonnel / BC / (250) 793-9746		C			

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<b>MAJOR</b> 🍷 <b>BI: N/A, Dist: CPS (Canada) Inc.</b> Airth, Jock & Linda / Brooks / AB / (403) 362-4372	S				
<b>MERIT 57</b> <b>BI: Busch Ag Res., Dist: CPS (Canada) Inc./FP Genetics</b> Haney Farms / Picture Butte / AB / (403) 738-4517 Sendziak, Don P. & Stephen / Edmonton / AB / (780) 434-1322 Solick, Leonard & Kelsey & Corwin / Halkirk / AB / (403) 884-2358	S*	F*	C*		
<b>NEWDALÉ</b> 🍷 <b>BI: AAFC (Brandon), Dist: FP Genetics</b> King, Harold & Webb, David G. / Three Hills / AB / (403) 443-7330			C		
<b>PONOKA</b> 🍷 <b>BI: FCDC (Lacombe), Dist: SeCan Members</b> Webber, Curtis / Stony Plain / AB / (780) 963-6897			C		
<b>SEEBE</b> <b>BI: FCDC (Lacombe), Dist: SeCan Members</b> Anderson, Ken & Evelyn / Barrhead / AB / (780) 674-5670 Webber, Curtis / Stony Plain / AB / (780) 963-6897			C		C
<b>SUNDRE</b> 🍷 <b>BI: FCDC (Lacombe), Dist: Mastin Seeds</b> Card, Gordon B. & Rhett / Magrath / AB / (403) 758-3444 Feenstra, Lloyd / Barons / AB / (403) 757-3737 Jones, Danny / Beaverlodge / AB / (780) 354-8089 Mastin Seeds / Sundre / AB / (403) 556-2609				R	C
<b>TROCHU</b> 🍷 <b>BI: FCDC (Lacombe), Dist: SeCan Members</b> Kittle, James William & A. / Viking / AB / (780) 336-2583 Webber, Curtis / Stony Plain / AB / (780) 963-6897				R	C
<b>VIVAR</b> 🍷 <b>BI: FCDC (Lacombe), Dist: SeCan Members</b> Beamish, Dale / Jarvie / AB / (780) 954-2166 Mc Donald, Grant / Didsbury / AB / (403) 335-8188 Sim, Darwin & Derek / Ponoka / AB / (780) 372-2111					C

## Alberta and British Columbia Pedigreed Seed Growers Directory of Varieties Produced in 2016

Grower listings were prepared by the Canadian Seed Growers' Association for varieties eligible for sale in Canada and crops issued certificates at the time of publication. Breeding institution and distributor listings were prepared by the publisher. PBR status is noted following the variety. CSGA assumes no responsibility for errors or omissions in any listings. Pedigreed class code is listed after the grower's phone number. S=Select; F=Foundation; R=Registered; C=Certified. BI=Breeding Institution; Dist.=Canadian Distributor(s). Varieties with a star after the pedigreed class code are carryover seed.

# There is NO Plan B



Midge tolerant wheat protects your crop against devastating pest damage, but it's up to you to protect the technology. The Stewardship Agreement limits the use of farm-saved seed to one generation past Certified seed. It's a simple step that keeps the interspersed refuge system at the proper level, preventing build-up of resistant midge. Without the refuge, we risk losing the one and only tolerant gene. There is no plan B.

Protect this important tool. Plan for high yields and quality grades for years to come. Contact your retailer or visit [www.midgetolerantwheat.ca](http://www.midgetolerantwheat.ca).

# 2017-18 Recommended Malting Barley Varieties

**THE** following varieties of two-row and six-row malting barley are registered with the Canadian Food Inspection Agency (CFIA) based on good agronomic properties and malting quality criteria. These varieties have been pilot scale tested by the CMBTC and exhibit good malting and brewing characteristics. In addition to market opportunities, seeding decisions should be based on agronomic considerations and feedback from your grain company representative, local elevator operators or malting companies. Visit the CMBTC website at [www.cmbtc.com](http://www.cmbtc.com) for detailed pilot malting and brewing data.

## TWO-ROW BARLEY VARIETIES

VARIETY	MARKET COMMENTS
CDC COPELAND <sup>1</sup>	ESTABLISHED DEMAND
AC METCALFE <sup>1</sup>	ESTABLISHED DEMAND
AAC SYNERGY <sup>4</sup>	GROWING DEMAND
BENTLEY <sup>2</sup>	LIMITED DEMAND
NEWDAL <sup>3</sup>	LIMITED DEMAND
CDC POLARSTAR <sup>2</sup>	LIMITED DEMAND
CDC KINDERSLEY <sup>1</sup>	UNDER COMMERCIAL MARKET

FOR BENTLEY OR NEWDALE CONTRACTING OPPORTUNITIES CONTACT CANADA MALTING COMPANY. FOR CDC POLARSTAR (AND CDC PLATINUMSTAR) CONTRACTING OPPORTUNITIES CONTACT PRAIRIE MALT-CARGILL.

## SIX-ROW VARIETIES

VARIETY	MARKET COMMENTS
LEGACY <sup>3</sup>	LIMITED DEMAND
TRADITION <sup>3</sup>	LIMITED DEMAND
CELEBRATION <sup>2</sup>	LIMITED DEMAND

### The CMBTC and its members recommend:

- Talk with your local malting barley buyer about opportunities in your area to grow and market two-row and six-row malting barley varieties.
- Use certified seed to ensure varietal purity, reduce disease incidence and increase the likelihood of selection for malt.

### New Varieties in Development

The following varieties have been registered with CFIA and are undergoing seed propagation. Both varieties have been pilot scale tested at the CMBTC and exhibit good quality characteristics suitable for all malt and adjunct brewing styles.

VARIETY	COMMENTS
AAC CONNECT <sup>2</sup>	TWO-ROW - UNDERGOING SEED PROPAGATION
CDC BOW <sup>1</sup>	TWO-ROW - UNDERGOING SEED PROPAGATION

The following companies have pedigreed seed distribution rights for those varieties that are footnoted:

1 – SeCan; 2 – CANTERRA SEEDS; 3 – FP Genetics; 4 – Syngenta

**Questions?** Call your selector, seed company, grain handling company or contact the CMBTC.

Peter Watts - Managing Director Tel: 204-983-1981 E-mail: [pwatts@cmbtc.com](mailto:pwatts@cmbtc.com)

Dr. Yueshu Li - Director of Malting & Brewing Operations Tel: 204-984-0561 E-mail: [yli@cmbtc.com](mailto:yli@cmbtc.com)



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## OATS

Variety	Overall Sta- tion Years of Testing	Overall Yield	Yield Category (% CDC Dancer):				Agronomic Characteristics:					Tolerance to Smuts
			Low < 70 (bu/ac)	Medium 70-100 (bu/ac)	High 100-130 (bu/ac)	V. High > 130 (bu/ac)	Maturity Rating	Test Weight (lb/bu)	TKW (g)	Height (cm)	Resistance to Lodging	
MILLING												
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to CDC Dancer)												
CDC Dancer (bu/ac)		95	49	84	112	148						
CDC Dancer ☼	129	100	100	100	100	100	E	42	37	94	G	R
Akina ▲	19	110+	XX	102	112	XX	M	41	38	88	VG	XX
CDC Norseman ▲	27	101	XX	100	101	XX	E	41	38	94	G	MS
CS Camden ▲	27	109+	XX	109+	106	XX	L	41	39	90	G	I
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to CDC Dancer)												
AAC Justice ☼	28	104	XX	99	109+	XX	M	42	36	91	G	R
AC Juniper	80	104+	102	104	106+	105+	E	41	38	94	VG	I
AC Morgan	95	111+	110+	110+	111+	115+	M	40	40	92	VG	I
Bradley ☼	31	104+	XX	103	108	106	M	39	39	92	VG	R
CDC Boyer	89	102	103	102	100	105	M	39	42	101	G	MS
CDC Minstrel ☼	61	104+	103	103	105	105+	M	39	38	88	VG	R
CDC Orrin ☼	52	109+	113+	107+	107+	XX	M	41	40	84	G	R
CDC Ruffian ☼	28	110+	110	105	116+	XX	M	40	39	94	G	R
CDC Seabiscuit ☼	30	111+	124	106	108	108	M	39	41	101	G	MR
CDC Weaver	44	104	108+	103	100	100	M	40	43	91	F	R
Derby	79	101	103	102	96-	105	L	41	39	103	G	MS
Jordan ☼	36	112+	112+	109+	117+	XX	VL	38	44	87	G	R
Souris ☼	28	110+	120+	103	111	XX	M	41	34	91	VG	R
Stride ☼	30	104+	101	102	107	106	M	42	35	104	G	R
Triactor ☼	47	110+	109	108+	114+	110+	M	38	38	89	G	R
FEED												
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to CDC Dancer)												
AC Mustang *	108	114+	118+	112+	110+	116+	L	42	37	103	G	I
CDC Nasser	31	116+	132	107	115+	110	L	39	36	98	G	MR
Lu *	58	100	99	98	99	108	VE	41	39	85	G	R
FORAGE												
Previously tested varieties (Yield and agronomic data only directly comparable to CDC Dancer)												
CDC Baler *	42	99	96	106	96	XX	L	40	43	99	XX	S
CDC Haymaker	28	104	XX	103	105	XX	L	39	40	100	F	MR
Murphy ☼ *	51	95-	93	96	97	94	M	39	36	108	XX	S

**REMARKS:** For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. The long term average maturity for CDC Dancer is 98 days and rated as Early (E). Varieties rated Intermediate (I) to Susceptible (S) for the smuts should be treated with a systemic seed treatment to reduce the potential for infection. New registrations: OT6011. Insufficient data to describe: OT6011. \* Yield figures based on direct and indirect comparisons with CDC Dancer.



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# OATS

## AC MORGAN

### BI: AAFC (Lacombe), Dist: SeCan Members

Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900  
 Corns, Bryan & Gary / Grassy Lake / AB / (403) 655-2464  
 Hill, Gordon P. & Blair / Taylor / BC / (250) 789-3469  
 Jonk, Nicholas / Westlock / AB / (780) 349-5458  
 Kemp, Richard L. / Red Deer County / AB / (403) 227-4836  
 Massey, Derwin / Stettler / AB / (403) 883-2503  
 Meinczinger, Matthew Jr. / Busby / AB / (780) 349-2456  
 Mueller, Richard & R.R. & Rosemary / Barrhead / AB / (780) 674-2595  
 Nemetz, Charlie & Jerritt & Lewis & B. / Stettler / AB / (403) 742-0436  
 Ohrn, Norman / Thorsby / AB / (780) 985-2263  
 Richard, Gerald / Spirit River / AB / (780) 864-2339  
 Selte, Donald / Vermilion / AB / (780) 853-2484  
 True Seeds Ltd. / Redwater / AB / (780) 777-5885  
 Victoor, Rene & Jamie / Sturgeon County / AB / (780) 459-3253  
 Warkentin, Harold K. & Errol / Tofield / AB / (780) 662-2617

## AC MUSTANG

### BI: AAFC (Lacombe), Dist: Mastin Seeds

Feenstra, Lloyd / Barons / AB / (403) 757-3737  
 Gibson, Donald / Sangudo / AB / (780) 785-2214  
 Hadland, Edward / Baldonnel / BC / (250) 793-9746  
 Hallett, Dale R. & Richard / Carstairs / AB / (403) 337-3072  
 King, Harold & Webb, David G. / Three Hills / AB / (403) 443-7330  
 Mastin Seeds / Sundre / AB / (403) 556-2609  
 Richard, Gerald / Spirit River / AB / (780) 864-2339  
 Tolway, Wilfred / Clairmont / AB / (780) 567-2422  
 Dallas, Bradley C. / Bowden / AB / (403) 224-2162

## CDC BALER

### BI: CDC, Dist: FP Genetics

Sim, Darwin & Derek / Ponoka / AB / (780) 372-2111  
 Wood, Robert & Patricia & Marshall / Bowden / AB / (403) 224-3928  
 Airth, Jock & Linda / Brooks / AB / (403) 362-4372

## CDC HAYMAKER

### BI: CDC, Dist: SeCan Members

Hadway, Walter Thomas / Didsbury / AB / (403) 335-4929  
 Hoffmann, Curtis / Oyen / AB / (403) 664-9617  
 Jonk, Nicholas / Westlock / AB / (780) 349-5458  
 McDonald, Gerald / Co. Of Grande Prairie #1 / AB / (780) 538-3868  
 Selte, Donald / Vermilion / AB / (780) 853-2484  
 Warkentin, Harold K. & Errol / Tofield / AB / (780) 662-2617  
 Degenhardt, Keith L. & Terry L. & Kerry / Hughenden / AB / (780) 856-2383

## CDC NASSER

### BI: CDC, Dist: N/A

Davidson, E. Daryl & Dean / Kitscoty / AB / (780) 846-2456  
 Harbin, Clifford T. & Bruce C. / Rivercourse / AB / (780) 745-2268  
 Repka, Gerald / Willingdon / AB / (780) 636-3458  
 Sand, Ron W. & David R. / McLaughlin / AB / (780) 745-2251

## CDC RUFFIAN

### BI: CDC, Dist: FP Genetics

Laliberté, Adam & Vos, Henry / Fairview / AB / (780) 835-5286  
 True Seeds / Redwater / AB / (780) 777-5885  
 Galloway Farms / Fort Saskatchewan / AB / (780) 998-3036

## CDC SEABISCUIT

### BI: CDC, Dist: Canterra Seeds

Jonk, Nicholas / Westlock / AB / (780) 349-5458  
 Sendziak, Don P. & Stephen / Edmonton / AB / (780) 434-1322

## CS CAMDEN

### BI: Lantmannen SW Seed AB, Dist: Canterra Seeds

Jonk, Nicholas / Westlock / AB / (780) 349-5458  
 Kapitski, Lawrence / A. / AB / (780) 365-2134  
 Sekulic, Nick / Rycroft / AB / (780) 814-2849  
 Sendziak, Don P. & Stephen / Edmonton / AB / (780) 434-1322  
 True Seeds / Redwater / AB / (780) 777-5885  
 Unrau, George / La Crete / AB / (780) 926-1133  
 Victoor, Rene & Jamie / Sturgeon County / AB / (780) 459-3253  
 Wuthrich, David / Cecil Lake / BC / (250) 781-3527

## FOOTHILL

### BI: AAFC, Dist: SeCan Members

Degenhardt, Keith L. & Terry L. & Kerry / Hughenden / AB / (780) 856-2383

## MURPHY

### BI: AAFC, Dist: SeCan Members

Webber, Curtis / Stony Plain / AB / (780) 963-6897

## MURPHY

### BI: AAFC, Dist: SeCan Members

Warkentin, Harold K. & Errol / Tofield / AB / (780) 662-2617

## STRIDE

### BI: AAFC (Winnipeg), Dist: SeCan Members

Jones, Greg Thomas & Tristan / Ponoka / AB / (403) 783-6495

## TRIACTOR

### BI: SW Seed Ltd., Dist: Canterra Seeds

Sendziak, Don P. & Stephen / Edmonton / AB / (780) 434-1322

## WALDERN

### BI: AAFC, Dist: SeCan Members

Airth, Jock & Linda / Brooks / AB / (403) 362-4372  
 Selte, Donald / Vermilion / AB / (780) 853-2484

# TRITICALE - SPRING

## AC ULTIMA

### BI: AAFC, Dist: FP Genetics

Solick, Leonard & Kelsey & Corwin / Halkirk / AB / (403) 884-2358

## BREVIS

### BI: AAFC, Dist: N/A

Sim, Darwin & Derek / Ponoka / AB / (780) 372-2111  
 Webber, Curtis / Stony Plain / AB / (780) 963-6897

## BUNKER

### BI: FCDC (Lacombe), Dist: FP Genetics

Airth, Jock & Linda / Brooks / AB / (403) 362-4372  
 Solick Seeds / Halkirk / AB / (403) 884-2358

## PRONGHORN

### BI: AAFC, Dist: N/A

Mans, John / Nobleford / AB / (403) 824-3585

## SUNRAY

### BI: AAFC, Dist: SeedNet

Benci, Dennis / Carmangay / AB / (403) 643-2294  
 Fabian, Patrick V. / Tilley / AB / (403) 377-2000  
 Jonk, Nicholas / Westlock / AB / (780) 349-5458

## TAZA

### BI: FCDC (Lacombe), Dist: Solick Seeds

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stephen.sendziak@gmail.com



Don & Krystyna, Stephen & Tasha Sendziak



# CANADA WESTERN AMBER DURUM

Variety	Overall Station Years of Testing	Overall Yield	Yield Category (% Strongfield):			Agronomic Characteristics:							Disease Tolerance:					
			Low < 45 (bu/ ac)	Medium 45-75 (bu/ac)	High > 75 (bu/ ac)	Mat. Rating	Prot. %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Resistance to:		Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB	
											Ldg.	Sprt.						
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to Strongfield)																		
Strongfield (bu/ac)		64	36	61	96													
Strongfield 🌾		100	100	100	100	M	14.1	62	46	84	F	F	S	I	MR	MS	S	
AAC Cabri 🌾	25	94-	98	93-	XX	M	0.1	62	45	86	G	P	MR	R	R	I	MS	
AAC Congress ▲	15	100	XX	100	XX	M	-0.6	62	46	81	F	P	MR	R	R	MS	MS	
AAC Spitfire ▲	25	97	100	96	XX	M	-0.4	61	46	82	G	P	MS	R	R	MS	S	
CDC Carbide VB ▲	25	100	104	100	XX	M	0	62	45	85	G	P	MS	R	R	MS	MS	
CDC Precision ▲	15	93-	XX	94	XX	M	-0.4	62	46	82	G	F	MS	R	R	MS	MS	

Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to Strongfield)																	
AAC Current 🌾	30	99	104	98	XX	M	0	62	44	85	F	F	MS	MR	MR	I	MS
AAC Durafield 🌾	22	99	XX	99	XX	M		64	46	76	F	F	S	R	MR	I	S
AAC Marchwell VB 🌾	32	99	107	96	98	M	-0.1	63	46	83	F	F	MR	R	R	MS	MS
AAC Raymore 🌾	34	97	99	98	94	M	0.8	62	47	82	F	F	MS	MR	MR	I	S
AC Navigator 🌾	65	95-	102	93-	93-	M	XX	63	45	77	G	G	S	R	R	S	S
Brigade 🌾	69	103	105	103	102	L	XX	63	48	88	G	F	MS	R	MR	I	MS
CDC Desire 🌾	34	102	106	101	101	E	0	62	44	83	F	G	MS	R	MR	I	S
CDC Fortitude 🌾	32	102	102	102	103	M	-0.6	63	45	81	G	F	MS	R	R	MS	MS
CDC Verona 🌾	46	102	103	103	99	M	XX	62	46	82	G	F	MS	R	R	MS	MS
CDC Vivid 🌾	34	100	104	99	98	M	0.1	62	45	83	G	F	I	R	MR	I	S
Enterprise 🌾	48	101	104	100	102	M	XX	63	44	83	G	F	MS	MR	R	I	MS
Eurostar 🌾	47	102	100	105+	99	L	XX	64	47	88	G	F	MS	R	R	I	MS
Transcend 🌾	35	102	103	101	100	M	XX	62	47	89	F	F	S	R	R	I	MS

**Remarks:** For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. Generally, durum wheat is best adapted to southern Alberta. Outside of this area, durum tends to be late maturing and often subject to quality loss. The long term average maturity for Strongfield is 105 days and is rated as Medium (M). Strongfield yields about 10% higher than AC Barrie in areas of best adaptation. Durum varieties are generally more susceptible to Fusarium Head Blight than CWRS wheat varieties. AAC Cabri, AAC Raymore and CDC Fortitude have a solid stem that confers resistance to the wheat stem sawfly. VB - designates a varietal blend to preserve the Sm1 orange wheat blossom midge tolerance gene. New CWAD registrations: AAC Congress (DT856), AAC Stronghold (DT862), CDC Alloy (DT579), CDC Credence (DT583), CDC Dynamic (DT578), CDC Precision (DT577). XX - Insufficient data to describe. † - Flagged for possible removal in 2018.

## WHEAT - DURUM

	S	F	R	C
<b>AAC CABRI 🌾</b> <b>BI: AAFC, Dist: SeCan Members</b> Willms, Henry & Timothy H. / Grassy Lake / AB / (403) 655-2434		F		
<b>AAC CONGRESS 🌾</b> <b>BI: AAFC (Swift Current), Dist: Canterra Seeds</b> Huvenaars, Carl / Hays / AB / (403) 725-2213 Kiffiak, Nathan J. & Anderson, Tim / Foremost / AB / (403) 867-2338 Welsh, Donald Alan / Milk River / AB / (403) 647-2228		F F F		
<b>AAC CURRENT 🌾</b> <b>BI: AAFC (Swift Current), Dist: Alliance Seed</b> Hierath, Michael W. & Philip / Milk River / AB / (403) 647-2347			R	C
<b>AAC RAYMORE 🌾</b> <b>BI: AAFC (Swift Current), Dist: SeCan Members</b> Huvenaars, Carl / Hays / AB / (403) 725-2213 Stamp Seeds / Enchant / AB / (403) 739-2233 Welsh, Stuart Jason / Milk River / AB / (403) 647-2228			R R R	C*
<b>AAC SPITFIRE 🌾</b> <b>BI: AAFC (Swift Current), Dist: SeCan Members</b> Benci, Dennis / Carmangay / AB / (403) 643-2294 Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900 Hierath, Michael W. & Philip / Milk River / AB / (403) 647-2347 Kiffiak, Nathan J. & Anderson, Tim / Foremost / AB / (403) 867-2338 Mercer, Lloyd A. & Connie & Ryan & Bolstad, Leslie / Lethbridge / AB / (403) 327-9736 Stamp Seeds / Enchant / AB / (403) 739-2233 Welsh, Stuart Jason / Milk River / AB / (403) 647-2228 Willms, Henry & Timothy H. / Grassy Lake / AB / (403) 655-2434			R R C C C C F F S	C C C C C C C*
<b>AC NAVIGATOR 🌾</b> <b>BI: AAFC (Swift Current), Dist: N/A</b> Wheatcrest Farms / Lomond / AB / (403) 792-3696		S	F	
<b>CDC ALLOY 🌾</b> <b>BI: CDC, Dist: FP Genetics</b> Benci, Dennis / Carmangay / AB / (403) 643-2294 Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900		S S	F	

Geldreich, Dave / Bow Island / AB / (403) 545-2222 Welsh, Donald Alan / Milk River / AB / (403) 647-2228	S S			
<b>CDC DESIRE 🌾</b> <b>BI: CDC, Dist: Syngenta Canada Inc.</b> Willms, Henry & Timothy H. / Grassy Lake / AB / (403) 655-2434				C
<b>CDC FORTITUDE 🌾</b> <b>BI: CDC, Dist: CPS (Canada) inc.</b> Crooymans, John, Joseph & A. / Bow Island / AB / (403) 580-7264				R
<b>CDC PRECISION 🌾</b> <b>BI: CDC, Dist: Alliance Seed</b> Mercer, Lloyd A. & Connie & Ryan & Bolstad, Leslie / Lethbridge / AB / (403) 327-9736 Stamp Seeds / Enchant / AB / (403) 739-2233	S	F F		
<b>CDC VIVID 🌾</b> <b>BI: CDC, Dist: CPS (Canada) inc.</b> Mercer, Lloyd A. & Connie & Ryan & Bolstad, Leslie / Lethbridge / AB / (403) 327-9736				C
<b>ENTERPRISE 🌾</b> <b>BI: AAFC (Swift Current), Dist: Canterra Seeds</b> Corns, Bryan & Gary / Grassy Lake / AB / (403) 655-2464 Van Roessel, William & Jean / Bow Island / AB / (403) 545-6018				C C
<b>STRONGFIELD</b> <b>BI: AAFC (Swift Current), Dist: SeCan Members</b> Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900 Crooymans, John, Joseph & A. / Bow Island / AB / (403) 580-7264 Nieboer, Nathan / Bow Island / AB / (403) 545-2222				C R C R C
<b>TRANSCEND</b> <b>BI: AAFC (Swift Current), Dist: FP Genetics</b> Benci, Dennis / Carmangay / AB / (403) 643-2294 Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900 Markert Seeds / Vulcan / AB / (403) 485-6708 Nieboer, Nathan / Bow Island / AB / (403) 545-2222 Strain, Arthur George / Foremost / AB / (403) 867-2227 Welsh, Donald Alan / Milk River / AB / (403) 647-2228 Wheatcrest Farms / Lomond / AB / (403) 792-3696		F		C R C C C C C*

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# CANADA WESTERN RED SPRING WHEAT

Variety	Overall Station Years of Testing	Overall Yield	Yield Category (% AC Barrie):			Agronomic Characteristics:								Disease Tolerance:					
			Low < 45 (bu/ac)	Medium 45-75 (bu/ac)	High > 70 (bu/ac)	Mat. Rating	Protein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Awns (Y/N)	Resistance to:		Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB	
												Ldg.	Sprt.						
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																			
AC Barrie (bu/ac)		60	36	57	81														
AC Barrie		100	100	100	100	M	14	62	38	87	N	G	G	MR	I	S	MS	I	
AAC Cameron VB ▲	28	116+	XX	115+	117+	M	-0.7	62	43	94	Y	G	F	S	R	S	I	I	
AAC Connery ☺	42	106+	XX	108	108+	E	0	62	40	81	N	VG	G	MR	I	R	I	MR	
AAC Prevail ▲	42	106+	XX	107+	107+	L	-0.6	62	39	96	Y	G	G	S	S	R	MS	I	
AAC Redberry ▲	28	108+	XX	108+	107+	M	-0.1	63	40	83	Y	G	G	R	I	R	MS	I	
AAC Viewfield ▲	28	117+	XX	117+	116+	L	-0.4	63	40	75	Y	VG	G	S	MR	R	I	I	
Carberry ☺	81	106+	116+	104	103	L	-0.1	62	39	78	Y	VG	F	MR	R	MR	MS	MR	
CDC Bradwell ▲	28	108+	XX	109+	109+	L	-0.4	63	38	83	Y	VG	F	MR	R	MS	MS	I	
Go Early ▲	42	104	XX	105	104	VE	0.3	61	40	93	Y	G	P	I	MR	I	S	I	
SY Slate ▲	28	106+	XX	107	103	M	0.2	62	40	84	Y	F	P	MS	S	MR	MS	I	
SY479 VB ☺	42	97-	XX	100	95-	M	0.8	62	40	94	Y	VG	VG	MS	R	S	MS	I	
SY637 ☺	42	103	XX	101	103	L	0.8	62	39	91	Y	G	XX	MS	MR	MR	I	MR	
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																			
5603HR ☺	63	105+	104	107+	104+	L	-0.5	63	33	87	Y	G	VG	MS	I	MS	MR	I	
5604HR CL ☺	76	99	102	98	99	E	-0.7	63	33	87	Y	G	G	MS	I	XX	MS	I	
5605HR CL ☺	43	109+	XX	114+	106+	M	-0.2	64	38	91	Y	G	XX	R	MR	I	MS	MR	
AAC Bailey ☺	58	103	102	104	103	M	-0.6	63	37	92	N	G	G	MS	I	I	I	I	
AAC Brandon ☺	41	114+	106	117+	113+	M	-0.2	64	38	81	Y	VG	P	MR	S	MR	I	MR	
AAC Elie ☺	41	115+	107	120+	112+	M	-0.1	64	38	81	Y	G	F	I	I	MR	I	I	
AAC Redwater ☺	41	103	96	106	104	E	0	64	35	87	Y	G	VG	MS	I	MR	MS	I	
AC Eatonia †	78	94-	87-	97	92-	M	0.4	62	35	92	N	P	G	I	MR	I	MS	XX	
AC Intrepid † ☺	107	102	98	103	105+	E	0	62	39	90	N	G	P	I	MR	MR	MS	MS	
AC Splendor †	153	95-	93-	96-	98	VE	0.9	61	37	89	N	F	F	I	I	I	I	MS	
Alvena † ☺	68	101	99	101	103	E	0.1	63	37	90	N	G	P	MR	MR	I	XX	MS	
Cardale ☺	41	105+	100	106+	105	M	-0.3	63	37	84	Y	G	G	I	S	MS	MS	MR	
Coleman	43	101	XX	105	98	M	0	64	37	93	Y	F	P	S	S	MR	I	MR	
CDC Abound ☺	88	110+	108+	110+	112+	M	-0.1	63	40	82	Y	G	F	I	I	MS	MS	S	
CDC Go	92	110+	103	112+	116+	M	-0.1	61	42	83	Y	G	VP	MS	I	MR	S	MS	
CDC VR Morris ☺	41	109+	105	111+	107	M		65	37	84	N	G	P	I	I	XX	I	MR	
CDC Osler †	74	106+	103	106	108+	E	0	61	35	85	N	G	F	MR	MR	I	I	S	
CDC Plentiful ☺	41	106+	100	108+	106+	M	-0.2	64	35	87	N	VG	P	R	I	MR	I	MR	
CDC Stanley ☺	76	113+	114+	114+	113+	M	-0.8	63	34	87	N	G	G	MR	S	I	I	MS	
CDC Titanium VB ☺	41	108+	XX	112+	103	E	0.5	65	41	87	Y	G	P	MS	I	R	MS	MR	
CDC Thrive † ☺	66	108+	107	107+	110+	M	-0.4	63	36	88	N	G	P	MR	I	I	I	MS	
CDC Utmost VB ☺	53	112+	115+	112+	111+	M	-0.2	64	36	85	N	G	G	MS	S	I	I	MS	
Glenn ☺	61	104	110+	100	104	L	-0.2	65	36	85	Y	VG	F	I	I	MR	I	I	
Goodeve VB ☺	96	105+	107+	103	104	M	-0.1	62	36	88	N	VG	G	MR	MS	I	MS	S	
Harvest ☺	118	102	98	103	104+	M	-0.1	62	36	84	N	VG	VG	MR	S	MR	MS	S	
Katepwa † ☺	278	98-	98-	97-	98-	E	-0.2	62	35	93	N	F	F	MR	MR	MS	MS	I	
Lillian ☺	87	104+	111+	100	104	M	0.2	61	37	86	N	F	G	I	MR	R	MR	S	
Muchmore ☺	53	111+	114+	107	111	L	-0.9	63	37	75	Y	VG	G	MR	R	MR	MS	MS	
Peace ☺	53	100	100	97	103	M	0.1	63	37	92	N	G	P	R	R	MR	XX	S	
Shaw VB ☺	53	112+	116+	109+	113+	M	-0.9	63	37	92	N	G	G	S	MR	I	MS	MS	
Stettler ☺	69	112+	119+	109+	111+	M	-0.3	63	37	84	Y	G	G	R	I	I	S	MS	
Superb ☺	184	112+	110+	112+	115+	L	-0.4	62	42	85	Y	G	F	I	MR	S	S	MS	
SY433 ☺	44	104	101	104	104	M		64	39	95	Y	G	G	I	S	XX	I	MR	
Thorsby ▲	43	106+	XX	110	105	E	-0.5	64	38	89	N	G	F	I	S	R	MS	I	
Unity VB ☺	71	110+	111+	110+	111+	M	-0.7	64	36	89	Y	F	G	MS	R	MS	MS	I	
Vesper VB ☺	45	106+	106	108+	104	M	-1.5	63	37	90	Y	F	F	I	S	S	I	I	
Waskada ☺ †	67	100	101	98	102	M	0.1	64	37	92	Y	F	VG	MR	R	MS	MS	MR	
WR859 CL ☺	79	106+	110+	103	107+	M	-0.4	64	34	81	Y	G	G	R	R	I	MS	MR	

**REMARKS:** For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. Several CWRS varieties will be reclassified to the new CNHR wheat class, effective August 1, 2018. The varieties affected are AC Abbey, AC Cora, AC Eatonia, AC Majestic, AC Michael, AC Minto, Alvena, Alikat, CDC Makwa, CDC Osler, Columbus, Conway, Harvest, Kane, Katepwa, Leader, Lillian, McKenzie, Neepawa, Park, Pasqua, Pembina, Thatcher, Unity VB and 5603HR. For more information see the Canadian Grain Commission website [www.grainscanada.gc.ca](http://www.grainscanada.gc.ca). The long term average maturity for AC Barrie is 106 days and rated as Medium (M). Fusarium Head Blight (FHB) infection is highly influenced by the environment and heading date. Under high levels of FHB all varieties will sustain damage. Moderately Resistant (MR) and Resistant (R) ratings for FHB do not equate to immunity. Varieties rated Intermediate (I) to Susceptible (S) for loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for infection. AC Eatonia, Lillian, CDC Landmark VB and CDC Hughes VB have a solid stem that confers resistance to the wheat stem sawfly. 5604HR CL, 5605HR CL, CDC Abound, CDC Imagine, CDC Thrive and WR589 CL are tolerant to the CLEARFIELD® herbicides Adrenalin SC and Altitude FX. VB - designates a varietal blend to preserve the Sm1 orange wheat blossom midge tolerance gene. New CWRS registrations: AAC Redberry (BW966), AAC Viewfield (BW965), CDC Landmark VB (BW971), CDC Hughes VB (PT588), Parata (PT772), SYSLate (BW496). Insufficient data to describe: AAC Whitefox, CDC Landmark VB (BW971), CDC Hughes VB (PT588). † - Flagged for possible removal in 2018.

# CANADA WESTERN HARD WHITE SPRING WHEAT

Variety	Overall Station Years of Testing	Overall Yield	Yield Category (% AC Barrie):			Agronomic Characteristics:								Disease Tolerance:					
			Low < 45 (bu/ac)	Medium 45-75 (bu/ac)	High > 70 (bu/ ac)	Mat. Rating	Pro-tein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Awns (Y/N)	Resistance to:		Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB	
												Ldg.	Sprt.						
Previously tested varieties (Yield and agronomic data only directly comparable to AC Barrie)																			
AAC Iceberg 🇨🇦	39	104	96	106	107	M	-0.7	64	39	86	Y	G	P	MS	I	MR	MS	I	
CDC Whitewood ▲	43	107+	XX	110	105	M	-0.9	64	38	87	Y	G	G	S	S	I	MS	I	
Snowbird 🇨🇦	94	101	99	101	101	M	-0.2	62	36	89	N	G	G	MR	MS	MS	S	I	
Snowstar 🇨🇦	58	102	99	103	102	M	-0.8	64	30	82	N	G	G	MS	S	MS	I	MS	
Whitehawk 🇨🇦	42	107	112+	108+	106	E	-0.9	63	33	90	N	G	G	I	MS	MS	MS	I	

**REMARKS:** For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. The long term average maturity for AC Barrie is 106 days and rated as Medium (M). Fusarium Head Blight (FHB) infection is highly influenced by the environment and heading date. Under high levels of FHB all varieties will sustain damage. Moderately Resistant (MR) and Resistant (R) ratings for FHB do not equate to immunity. Varieties rated Intermediate (I) to Susceptible (S) for loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for infection. Insufficient data to describe: AAC Whitefox. † - Flagged for possible removal in 2018.

# CANADA PRAIRIE SPRING RED WHEAT

Variety	Overall Station Years of Testing	Yield Category (% AC Barrie):				Agronomic Characteristics:								Disease Tolerance:					
		Overall Yield	Low < 45	Medium 45-90 (bu/ac)	High > 90 (bu/ac)	Mat. Rating	Protein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Awns (Y/N)	Resistance to:		Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB	
												Ldg.	Sprt.						
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																			
AC Barrie (bu/ac)		61	42	63	90														
AC Barrie		100	100	100	100	M	13.8	62	38	88	N	G	G	MR	I	S	MS	I	
AAC Crossfield ▲	26	119+	XX	119+	XX	M	-1.4	62	43	80	Y	G	XX	MS	I	R	I	I	
AAC Crusader ☹	40	116+	XX	116+	117+	M	-1.2	60	41	80	Y	G	P	MR	I	XX	MS	I	
AAC Tenacious VB ▲	40	107+	XX	109+	101	M	-1.3	62	39	97	Y	P	VG	R	R	MR	MS	R	
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																			
5700PR * ☹	117	117+	XX	121+	113+	L	-1.9	62	42	75	Y	VG	F	MS	R	MS	MS	MS	
5702PR * † ☹	52	117+	XX	119+	114+	L	-1.8	61	40	79	Y	G	P	MS	I	MS	I	MS	
AAC Foray VB ▲	41	128+	XX	130+	120+	M	-1.7	63	51	85	Y	G	G	MS	I	MR	MS	I	
AAC Penhold ☹	41	117+	XX	121+	114+	M	-1.5	63	46	71	Y	VG	G	I	R	MR	I	MR	
AAC Ryley ☹	37	118+	XX	120+	114+	M	-0.6	60	48	82	Y	G	G	I	R	S	MS	MS	
AC Crystal	278	115+	XX	119+	113+	L	XX	62	42	79	Y	G	P	I	R	S	I	S	
AC Foremost *	124	116+	XX	119+	112+	L	XX	62	43	73	Y	VG	F	I	R	S	MS	S	
Conquer VB* ☹	51	121+	XX	123+	120+	M	-0.8	62	45	84	Y	F	P	MS	R	MR	I	MS	
Enchant VB * † ☹	37	115+	XX	119+	112	M	-0.7	62	48	85	Y	F	G	MS	R	XX	MS	S	
SY985 * ☹	51	112+	XX	115+	109+	M	0.1	61	44	78	Y	G	P	R	MR	XX	I	I	
SY995 ▲	41	118+	XX	119+	113+	M	-1.9	63	45	79	Y	G	P	S	MR	MR	MS	MS	

**Remarks:** For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. Several CPSR varieties will be reclassified to the CNHR wheat class. AC Foremost, AC Taber, Conquer and Oslo will be reclassified on August 1, 2018 and AC Crystal will be reclassified on August 1, 2019. For more information see the Canadian Grain Commission website [www.grainscanada.gc.ca](http://www.grainscanada.gc.ca). The long term average maturity for AC Barrie is 106 days and rated as Medium (M). Fusarium Head Blight (FHB) infection is highly influenced by the environment and heading date. Under high levels of FHB all varieties will sustain damage. Moderately Resistant (MR) and Resistant (R) ratings for FHB do not equate to immunity. Varieties rated Intermediate (I) to Susceptible (S) for loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for infection. VB - designates a varietal blend to preserve the Sm1 orange wheat blossom midge tolerance gene. New CPSR registrations: AAC Crossfield (HY1632), AAC Entice (HY1627), CDC Terrain (HY537), SY Rowyn (HY2013). XX - Insufficient data to describe.

\* Yield figures based on direct and indirect comparisons with AC Barrie. † - Flagged for possible removal in 2018.



# CANADA WESTERN SPECIAL PURPOSE WHEAT

Variety	Overall Station Years of Testing	Yield Category (% AC Barrie):				Agronomic Characteristics:								Disease Tolerance:				
		Overall Yield	Low < 45	Medium 45-90 (bu/ac)	High > 90 (bu/ ac)	Mat. Rating	Protein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Awns (Y/N)	Resistance to:		Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB
												Ldg.	Sprt.					
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																		
AC Barrie (bu/ac)		63	26	57	88													
AC Barrie ☼		100	100	100	100	M	14.1	62	38	89	N	G	G	MR	I	S	MS	I
AAC Innova ☼	38	134+	XX	135+	135+	L	-3.2	60	41	82	Y	G	P	S	S	R	I	S
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																		
AAC NRG097 ☼	41	124+	XX	121+	126+	L	-3	63	47	80	Y	G	F	I	R	S	I	I
CDC NRG003 *† ☼	51	121+	XX	126+	112+	M	-1.9	61	43	80	Y	G	F	MS	R	XX	MS	S
NRG010 *† ☼	51	126+	XX	XX	XX	L	-2.6	62	41	83	Y	G	P	MS	R	R	I	MS
Pasteur *	37	137+	XX	142+	132+	VL	-2.3	62	42	82	N	VG	G	MS	S	MR	I	I
SY087 ☼	41	120+	XX	122+	114+	M	-1.4	63	40	82	Y	G	F	MS	MR	MR	I	MR

**Remarks:** For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. The long term average maturity for AC Barrie is 106 days and rated as Medium (M). Fusarium Head Blight (FHB) infection is highly influenced by the environment and heading date. Under high levels of FHB all varieties will sustain damage. Moderately Resistant (MR) and Resistant (R) ratings for FHB do not equate to immunity. Varieties rated Intermediate (I) to Susceptible (S) for loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for infection. New CWSP registrations: AAC Awesome (GP151), CDC Kinley (HW616) and CDC Throttle (GP131). XX-Insufficient data to describe. \* Yield figures based on direct and indirect comparisons with AC Barrie. † - Flagged for possible removal in 2018.

# CANADA WESTERN SOFT WHITE SPRING WHEAT

Variety	Overall Station Years of Testing	Yield Category (% AC Andrew):				Agronomic Characteristics:									Disease Tolerance:				
		Over- all Yield	Low < 45 (bu/ac)	Medium 45-90 (bu/ac)	High > 90 (bu/ac)	Matu- rity Rating	Pro- tein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Awns (Y/N)	Resistance to:			Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB
												Ldg.	Shat.	Sprt.					
Varieties tested in the 2016 trials (Yield, statistical differences and agronomic data only directly comparable to AC Andrew)																			
AC Andrew (bu/ac)		83	35	75	116														
AC Andrew *		100	100	100	100	L	10.8	61	39	79	Y	VG	VG	P	S	S	I	MS	I
AAC Indus ☺	24	102	XX	102	105	VL	-0.6	62	44	87	Y	VG	VG	P	S	S	MR	I	MS
Previously tested varieties (Yield, statistical differences and agronomic data only directly comparable to AC Andrew)																			
AAC Chiffon ☺	39	104+	106	105+	101	L	-0.4	62	46	88	Y	G	VG	P	S	S	MR	I	S
AC Meena	51	97-	101	97-	95-	L	0	62	37	80	Y	G	G	F	MS	S	MR	I	S
Sadash ☺	51	110+	113+	107+	109+	L	0.2	63	39	82	Y	VG	VG	P	I	S	R	I	S

**REMARKS:** For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. AC Andrew yields about 35% more than AC Barrie. In addition to traditional markets, SWS wheat varieties may have demand as a feedstock for ethanol production. \*Maturity, resistance to lodging and sprouting are compared with AC Barrie. Varieties rated Intermediate (I) to Susceptible (S) for loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for infection. New CWSWS registrations: AAC Paramount (SWS433). XX - Insufficient data to describe. \* Yield figures based on direct and indirect comparisons with AC Andrew.



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# CANADA NORTHERN HARD RED WHEAT

Variety	Overall Station Years of Testing	Yield Category (% AC Barrie):				Agronomic Characteristics:								Disease Tolerance:				
		Overall Yield	Low < 45	Medium 45-70 (bu/ac)	High > 70 (bu/ac)	Mat. Rating	Pro-tein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Awns (Y/N)	Resistance to:		Loose Smut	Bunt	Stripe Rust	Leaf Spot	FHB
												Ldg.	Sprt.					
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to AC Barrie)																		
AC Barrie (bu/ac)		60	36	56	80													
AC Barrie		100	100	100	100	M	14	62	38	88	N	G	G	MR	I	S	MS	I
AAC Concord ▲	28	107+	XX	108	107	M	-0.9	60	41	88	N	F	F	I	MR	R	I	MS
Elgin ND ☺	26	114+	XX	116+	112+	M		63	38	87	Y	G	XX	XX	S	MR	I	I

**Remarks:** For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. Several CWRS and CPSR varieties will be reclassified to this new CNHR class, effective August 1, 2018. The CWRS varieties are AC Abbey, AC Cora, AC Eatonia, AC Majestic, AC Michael, AC Minto, Alvena, Alikat, CDC Makwa, CDC Osler, Columbus, Conway, Harvest, Kane, Katepwa, Leader, Lillian, McKenzie, Neepawa, Park, Pasqua, Pembina, Thatcher, Unity VB and 5603HR. The CPSR varieties are AC Foremost, AC Taber, Conquer and Oslo. AC Crystal will be reclassified on August 1, 2019. For more information see the Canadian Grain Commission website [www.grainscanada.gc.ca](http://www.grainscanada.gc.ca). The long term average maturity for AC Barrie is 106 days and rated as Medium (M). Fusarium Head Blight (FHB) infection is highly influenced by the environment and heading date. Under high levels of FHB all varieties will sustain damage. Moderately Resistant (MR) and Resistant (R) ratings for FHB do not equate to immunity. AAC Concord has a solid stem that confers resistance to the wheat stem sawfly. Varieties rated Intermediate (I) to Susceptible (S) for loose smut or bunt should be treated with a systemic seed treatment to reduce the potential for infection. Insufficient data to describe: Faller, Prosper. New CNHR registrations: AAC Concord (BW963). XX- Insufficient data to describe.

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Plante, Jacques / St. Paul / AB / (780) 645-4604			C
Radke, Bryan Victor / Barrhead / AB / (780) 674-5715	F	R	C
Sayer, Roger / Carstairs / AB / (403) 337-5847			R
Schmermund, Donnie / Sturgeon County / AB / (780) 967-2850			R
Sekulic, Nick / Rycroft / AB / (780) 814-2849			C
Sendziak, Don P. & Stephen / Edmonton / AB / (780) 434-1322		F	C
Sim, Darwin & Derek / Ponoka / AB / (780) 372-2111			R
Smith, Gary W. / Eckville / AB / (403) 746-5878			R
Stamp Seeds / Enchant / AB / (403) 739-2233			C
Stickland, Brian, Melvin G. & Irma / Red Deer / AB / (403) 886-4875		R	C
Thompson, M. Ellwood & Kelly / Red Deer County / AB / (403) 728-3535	S	F	C
True Seeds / Redwater / AB / (780) 777-5885			C
Trueblood, Brian G. / Dapp / AB / (780) 954-3745			C
Victoor, Rene & Jamie / Sturgeon County / AB / (780) 459-3253	S		R
Wierenga, Brad & Bruce & Clayton / County Of Barrhead / AB / (780) 674-4624			C
Wood, Robert & Patricia & Marshall / Bowden / AB / (403) 224-3928	S	F	C
<b>AAC REDBERRY</b>			
<b>BI: AAFC, Dist: N/A</b>			
Hierath, Michael W. & Philip / Milk River / AB / (403) 647-2347	S		
Stamp Seeds / Enchant / AB / (403) 739-2233		F	C

<b>AAC REDWATER</b>			
<b>BI: AAFC (Winnipeg), Dist: SeCan Members</b>			
Dechaine, Louis / St. Lina / AB / (780) 635-2235			R
Galloway Farms / Fort Saskatchewan / AB / (780) 998-3036	S	F	R
Goldstrom, David / Red Deer County / AB / (403) 227-2133			C
Hadway, W. Tom & Carol / Didsbury / AB / (403) 335-4929			R
Hallett, Dale R. & Richard / Carstairs / AB / (403) 337-3072			C
Hegland, David Olaf / Wembley / AB / (780) 766-2450			C
Huvenaars, Carl / Hays / AB / (403) 725-2213			C
Lopushinsky, Julian / Bruderheim / AB / (780) 796-2048			C
McDonald, Gerald / Co. Of Grande Prairie #1 / AB / (780) 538-3868			C
Oatway's Seed Farm / Clive / AB / (403) 784-3001			R
Sayer, Roger / Carstairs / AB / (403) 337-5847			C
Sekulic, John Jr. / Rycroft / AB / (780) 765-2280			C
Sekulic, Warren, F / Rycroft / AB / (780) 765-2234			C
Sendziak, Don P. & Stephen / Edmonton / AB / (780) 434-1322		F*	R
Stamp Seeds / Enchant / AB / (403) 739-2233			R
Trueblood, Brian G. / Dapp / AB / (780) 954-3745		F	C
Warkentin, Harold K. & Errol / Tofield / AB / (780) 662-2617		F	R
Weigum, Garry & Sarah / Three Hills / AB / (403) 443-2476			C
Witdouch, Dale / Iron Springs / AB / (403) 738-4395			C
<b>AAC RYLEY</b>			
<b>BI: AAFC (Swift Current), Dist: SeCan Members</b>			
Gibson, Donald / Sangudo / AB / (780) 785-2214			C
Hadway, W. Tom & Carol / Didsbury / AB / (403) 335-4929			C
Metzger, Don / Carbon / AB / (403) 572-3284			C
Ohrn, Norman / Thorsby / AB / (780) 985-2263			R
Wuthrich, David / Cecil Lake / BC / (250) 781-3527	S		
<b>AAC VIEWFIELD</b>			
<b>BI: AAFC, Dist: FP Genetics</b>			
Sand, Ron W. & David R. / McLaughlin / AB / (780) 745-2251		F	
<b>AC Andrew</b>			
<b>BI: AAFC (Lethbridge), Dist: SeCan Members</b>			
Davidson, E. Daryl & Dean / Kitscoty / AB / (780) 846-2456			C
Degenhardt, Keith L. & Terry L. & Kerry / Hughenden / AB / (780) 856-2383			R
Kittle, James William & A. / Viking / AB / (780) 336-2583			C
Sand, Ron W. & David R. / McLaughlin / AB / (780) 745-2251			R
<b>AC FOREMOST</b>			
<b>BI: AAFC (Swift Current), Dist: SeCan Members</b>			
Dallas, Bradley C. / Bowden / AB / (403) 224-2162			C
Ellis, Brian / Olds / AB / (403) 556-2890			R*

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**Oats:**  
AC Morgan  
**Barley:**  
CDC Austenson, CDC Copeland  
**Wheat:**  
CDC Plentiful, AC Stettler,  
AC Muchmore, AAC Brandon



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<b>BI: AAFC (Swift Current), Dist: FP Genetics</b>		
Airth, Jock & Linda / Brooks / AB / (403) 362-4372	S	
Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900	C	
Galloway Farms / Fort Saskatchewan / AB / (780) 998-3036	R C	
Harbin, Clifford T. & Bruce C. / Rivercourse / AB / (780) 745-2268	C	
King, Harold & Webb, David G. / Three Hills / AB / (403) 443-7330	R	
Lindholm Seed Farm / New Norway / AB / (780) 352-3240	C	
Lindholm, Luke & Stevan / New Norway / AB / (780) 608-4277	C	
Markert Seeds / Vulcan / AB / (403) 485-6708	R C	
Massey, Derwin / Stettler / AB / (403) 883-2503	C	
Nanninga, Justin / County Of Barrhead / AB / (780) 674-3822	C	
Nieboer, Nathan / Bow Island / AB / (403) 545-2222	R	
Sand, Ron W. & David R. / McLaughlin / AB / (780) 745-2251	C	
Sim, Darwin & Derek / Ponoka / AB / (780) 372-2111	C	
Solick Seeds / Halkirk / AB / (403) 884-2358	C	
Thompson, M. Ellwood & Kelly / Red Deer County / AB / (403) 728-3535	C	
True Seeds Ltd. / Redwater / AB / (780) 777-5885	R* C	
Victoor, Rene & Jamie / Sturgeon County / AB / (780) 459-3253	C*	
Wheatcrest Farms / Lomond / AB / (403) 792-3696	C*	
<b>CARBERRY</b> ☼		
<b>BI: AAFC (Swift Current), Dist: SeCan Members</b>		
Cailliau, John & Dana & S. & Dave & Danielle / Enchant / AB / (403) 739-3100	C	
Card, Gordon B. & Rhett / Magrath / AB / (403) 758-3444	C	
Croymans, John, Joseph & A. / Bow Island / AB / (403) 580-7264	C	
Haney Farms / Picture Butte / AB / (403) 738-4517	C*	
Jonk, Nicholas / Westlock / AB / (780) 349-5458	R* C*	
Kopjar, Gerald M. / Rowley / AB / (403) 368-2409	R C	
Pepneck, David / Vauxhall / AB / (403) 424-0096	C	
Schmermund, Donnie / Sturgeon County / AB / (780) 967-2850	R	
Stamp Seeds / Enchant / AB / (403) 739-2233	C	
Strain, Arthur George / Foremost / AB / (403) 867-2227	R C	
<b>CARDALE</b> ☼		
<b>BI: AAFC (Winnipeg), Dist: Seed Depot</b>		
Croymans, John, Joseph & A. / Bow Island / AB / (403) 580-7264	C	
Stamp Seeds / Enchant / AB / (403) 739-2233	C	

<b>CDC BRADWELL</b> ☼			
<b>BI: CDC, Dist: SeCan Members</b>			
Mercer, Lloyd A. & Connie & Ryan & Bolstad, Leslie / Lethbridge / AB / (403) 327-9736	S	F	
<b>CDC GO</b>			
<b>BI: CDC, Dist: Mastin Seeds</b>			
Croymans, John, Joseph & A. / Bow Island / AB / (403) 580-7264			R
Haney Farms / Picture Butte / AB / (403) 738-4517			R*
Kemp, Richard L. / Red Deer County / AB / (403) 227-4836			R
King, Harold & Webb, David G. / Three Hills / AB / (403) 443-7330			C
Limoges, Richard / McLennan / AB / (780) 324-2335			R C
Murray, Bruce & Wesley / Lethbridge / AB / (403) 327-9389			R
Penwest Seeds / Three Hills / AB / (403) 443-2577			C
Pepneck, David / Vauxhall / AB / (403) 424-0096			C
Schmermund, Donnie / Sturgeon County / AB / (780) 967-2850			R
Sich, Louis John & Ivan & Martin / Trochu / AB / (403) 442-2112			C
Stamp Seeds / Enchant / AB / (403) 739-2233	S*	F	R
Templeton, Doran & Brant / Lethbridge / AB / (403) 345-4144			R
Weigum, Garry & Sarah / Three Hills / AB / (403) 443-2476			C
<b>CDC OSLER</b>			
<b>BI: CDC, Dist: N/A</b>			
Hill, Gordon P. & Blair / Taylor / BC / (250) 789-3469			C
<b>CDC PLENTIFUL</b> ☼			
<b>BI: CDC, Dist: FP Genetics</b>			
Galloway Farms / Fort Saskatchewan / AB / (780) 998-3036			R
Harbin, Clifford T. & Bruce C. / Rivercourse / AB / (780) 745-2268			C
Kapitski, Lawrence / A. / AB / (780) 365-2134			C
King, Harold & Webb, David G. / Three Hills / AB / (403) 443-7330	S		R* C*
Lindholm Seed Farm / New Norway / AB / (780) 352-3240			C
Markert Seeds / Vulcan / AB / (403) 485-6708			R C
Massey, Derwin / Stettler / AB / (403) 883-2503			C
Sand, Ron W. & David R. / McLaughlin / AB / (780) 745-2251			R
Solick Seeds / Halkirk / AB / (403) 884-2358	S*	F*	R* C
Victoor, Rene & Jamie / Sturgeon County / AB / (780) 459-3253		F*	C
Welsh, Stuart Jason / Milk River / AB / (403) 647-2228			R
<b>CDC STANLEY</b> ☼			
<b>BI: CDC, Dist: CPS (Canada) inc.</b>			
Laird, Patrick R. / Paradise Valley / AB / (780) 745-2379			C
Wheatcrest Farms / Lomond / AB / (403) 792-3696			C



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### CDN BISON

**BI: AAFC, Dist: N/A**  
Mueller, Darcy / Three Hills / AB / (403) 820-4115

### COLEMAN

**BI: U of Alberta, Dist: N/A**  
Lefsrud, Kevin J. & Edmund J. / Viking / AB / (780) 336-2500  
Richard, Gerald / Spirit River / AB / (780) 864-2339

### FALLER

**BI: NDSU Research Foundation, Dist: FP Genetics**  
Stamp Seeds / Enchant / AB / (403) 739-2233

### GO EARLY ☺

**BI: U of Alberta, Dist: Mastin Seeds**  
Berge, James Garnet / Dawson Creek / BC / (250) 759-4773  
Mastin Seeds / Sundre / AB / (403) 556-2609  
Templeton, Doran & Brant / Lethbridge / AB / (403) 345-4144

### HARVEST ☺

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Solick, Leonard & Kelsey & Corwin / Halkirk / AB / (403) 884-2358

### KWS CHARING

**BI: KWS, Dist: N/A**  
Dyck, Heinz W. & Colin & Alan & Kelton / Rosemary / AB / (403) 378-3321  
Nanninga, Justin / County Of Barrhead / AB / (780) 674-3822

### PARATA

**BI: N/A, Dist: N/A**  
Macyk, Don / Waskatenau / AB / (780) 358-2411

### PARK

**BI: AAFC, Dist: N/A**  
Lyster, Norman / Stettler / AB / (403) 742-4456

### PASTEUR

**BI: Wiersum Plant Breeding, Dist: SeCan Members**  
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Lindholm Seed Farm / New Norway / AB / (780) 352-3240  
Stamp Seeds / Enchant / AB / (403) 739-2233  
Templeton, Doran & Brant / Lethbridge / AB / (403) 345-4144

### SADASH ☺

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Haney Farms / Picture Butte / AB / (403) 738-4517  
Hemminger, Patrick / Innisfail / AB / (403) 888-2050  
Stamp Seeds / Enchant / AB / (403) 739-2233  
Willms, Henry & Timothy H. / Grassy Lake / AB / (403) 655-2434  
Witdouch, Dale / Iron Springs / AB / (403) 738-4395  
Wood, Robert & Patricia & Marshall / Bowden / AB / (403) 224-3928  
Zwack, Thomas / Daysland / AB / (780) 374-2450

### STETTLER ☺

**BI: AAFC (Winnipeg), Dist: SeCan Members**  
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Davidson, E. Daryl & Dean / Kitscoty / AB / (780) 846-2456  
Dyck, Ernie / La Crete / AB / (780) 821-9445  
Galloway Farms / Fort Saskatchewan / AB / (780) 998-3036  
Harris, William P. & Linda & Thomas & A. / Beaverlodge / AB / (780) 354-2823  
Kittle, James William & A. / Viking / AB / (780) 336-2583  
Limoges, Richard / McLennan / AB / (780) 324-2335  
Massey, Derwin / Stettler / AB / (403) 883-2503  
McDonald, Gerald / Co. Of Grande Prairie #1 / AB / (780) 538-3868  
Miller, Brian / Barrhead / AB / (780) 674-5001  
Mracek, Stan John / Dawson Creek / BC / (250) 843-7359  
Nemetz, Charlie & Jerritt & Lewis & B. / Stettler / AB / (403) 742-0436  
Pare, Raymond A. / Wainwright / AB / (780) 842-2073  
Trueblood, Brian G. / Dapp / AB / (780) 954-3745  
Van Roessel, William & Jean / Bow Island / AB / (403) 545-6018

### SUPERB ☺

**BI: AAFC (Winnipeg), Dist: SeCan Members**  
Jones, Danny / Beaverlodge / AB / (780) 354-8089

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**BI: N/A, Dist Syngenta Canada Inc.**  
Mercer, Lloyd A. & Connie & Ryan & Bolstad, Leslie / Lethbridge / AB / (403) 327-9736

### SY433 ☺

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Gatez, Blaine Gerald / Crossfield / AB / (403) 946-3994  
Stamp Seeds / Enchant / AB / (403) 739-2233

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**BI: U of Alberta, Dist: Canterra Seeds**  
Berge, James Garnet / Dawson Creek / BC / (250) 759-4773  
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Variety	Overall Station Years of Testing	Yield Category (% Radiant)					Agronomic Characteristics:										Disease Tolerance:			
		Overall Yield	Low < 45 (bu/ac)	Medium 45-75 (bu/ac)	High 75-105 (bu/ac)	V. High > 105 (bu/ac)	Winter Survival	Maturity Rating	Protein %	Test Weight (lb/bu)	TKW (g)	Height (cm)	Kernel Type	Resis. to Ldg	Stripe Rust	Bunt	FHB	Leaf Rust	Stem Rust	
CANADA WESTERN RED WINTER																				
Yield, significant differences and agronomic data only directly comparable to Radiant																				
Radiant (bu/ac)		76	37	63	87	114														
Radiant ☼	240	100	100	100	100	100	VG	L	12	63	36	90	HR	VG	S	S	S	S	S	
AAC Elevate ☼	63	106+	106	106	106	XX	G	M	+0.3	63	39	84	HR	VG	MS	MR	I	I	MR	
AAC Gateway ☼	66	100	XX	99	102	XX	F	M	+0.9	63	33	77	HR	VG	MR	S	I	I	MR	
AAC Goldrush ☼	20	101	XX	XX	105	XX	VG	M	+0.5	63	34	86	HR	G	I	S	I	R	MR	
AAC Wildfire ☼	34	115+	XX	119+	115+	XX	VG	VL	+0.3	64	38	86	HR	G	R	MR	MR	I	S	
AC Tempest †	117	97-	96	97	96-	99	P	VL	+1.5	63	37	91	HR	VG	MR	MS	I	S	S	
CDC Buteo	189	96-	94-	97	95-	101	VG	M	+0.3	65	34	91	HR	F	S	S	MR	I	I	
CDC Chase	34	102	XX	97	109	XX	F	M	+0.6	64	33	94	HR	F	MR	S	MS	R	R	
Emerson ☼	79	98	96	95	100	XX	G	M	+0.7	64	30	86	HR	G	MR	S	R	I	R	
Flourish ☼	119	100	99	98	102	104	F	E	+0.6	63	35	80	HR	VG	I	MR	S	I	I	
Moats ☼	90	104+	91	102	107+	108+	G	M	+0.7	64	33	91	HR	F	MR	MS	S	R	R	
CANADA WESTERN SPECIAL PURPOSE																				
Yield, significant differences and agronomic data only directly comparable to Radiant																				
Radiant (bu/ac)		76	37	63	87	114														
Radiant ☼	240	100	100	100	100	100	VG	L	12	63	36	90	HR	VG	S	S	S	S	S	
AAC Elevate ☼	63	106+	106	106	106	XX	G	M	+0.3	63	39	84	HR	VG	MS	MR	I	I	MR	
AAC Gateway ☼	66	100	XX	99	102	XX	F	M	+0.9	63	33	77	HR	VG	MR	S	I	I	MR	
AAC Goldrush ☼	20	101	XX	XX	105	XX	VG	M	+0.5	63	34	86	HR	G	I	S	I	R	MR	
AAC Wildfire ☼	34	115+	XX	119+	115+	XX	VG	VL	+0.3	64	38	86	HR	G	R	MR	MR	I	S	
AC Tempest †	117	97-	96	97	96-	99	P	VL	+1.5	63	37	91	HR	VG	MR	MS	I	S	S	
CDC Buteo	189	96-	94-	97	95-	101	VG	M	+0.3	65	34	91	HR	F	S	S	MR	I	I	
CDC Chase	34	102	XX	97	109	XX	F	M	+0.6	64	33	94	HR	F	MR	S	MS	R	R	
Emerson ☼	79	98	96	95	100	XX	G	M	+0.7	64	30	86	HR	G	MR	S	R	I	R	
Flourish ☼	119	100	99	98	102	104	F	E	+0.6	63	35	80	HR	VG	I	MR	S	I	I	
Moats ☼	90	104+	91	102	107+	108+	G	M	+0.7	64	33	91	HR	F	MR	MS	S	R	R	
CANADA WESTERN SPECIAL PURPOSE																				
Yield, significant differences and agronomic data only directly comparable to Radiant																				
Radiant (bu/ac)		76	37	63	87	114														
Radiant ☼	240	100	100	100	100	100	VG	L	12	63	36	90	HR	VG	S	S	S	S	S	
AAC Elevate ☼	63	106+	106	106	106	XX	G	M	+0.3	63	39	84	HR	VG	MS	MR	I	I	MR	
AAC Gateway ☼	66	100	XX	99	102	XX	F	M	+0.9	63	33	77	HR	VG	MR	S	I	I	MR	
AAC Goldrush ☼	20	101	XX	XX	105	XX	VG	M	+0.5	63	34	86	HR	G	I	S	I	R	MR	
AAC Wildfire ☼	34	115+	XX	119+	115+	XX	VG	VL	+0.3	64	38	86	HR	G	R	MR	MR	I	S	
AC Tempest †	117	97-	96	97	96-	99	P	VL	+1.5	63	37	91	HR	VG	MR	MS	I	S	S	
CDC Buteo	189	96-	94-	97	95-	101	VG	M	+0.3	65	34	91	HR	F	S	S	MR	I	I	
CDC Chase	34	102	XX	97	109	XX	F	M	+0.6	64	33	94	HR	F	MR	S	MS	R	R	
Emerson ☼	79	98	96	95	100	XX	G	M	+0.7	64	30	86	HR	G	MR	S	R	I	R	
Flourish ☼	119	100	99	98	102	104	F	E	+0.6	63	35	80	HR	VG	I	MR	S	I	I	
Moats ☼	90	104+	91	102	107+	108+	G	M	+0.7	64	33	91	HR	F	MR	MS	S	R	R	
CANADA WESTERN SPECIAL PURPOSE																				
Yield, significant differences and agronomic data only directly comparable to Radiant																				
Radiant (bu/ac)		76	37	63	87	114														
Radiant ☼	240	100	100	100	100	100	VG	L	12	63	36	90	HR	VG	S	S	S	S	S	
AAC Elevate ☼	63	106+	106	106	106	XX	G	M	+0.3	63	39	84	HR	VG	MS	MR	I	I	MR	
AAC Gateway ☼	66	100	XX	99	102	XX	F	M	+0.9	63	33	77	HR	VG	MR	S	I	I	MR	
AAC Goldrush ☼	20	101	XX	XX	105	XX	VG	M	+0.5	63	34	86	HR	G	I	S	I	R	MR	
AAC Wildfire ☼	34	115+	XX	119+	115+	XX	VG	VL	+0.3	64	38	86	HR	G	R	MR	MR	I	S	
AC Tempest †	117	97-	96	97	96-	99	P	VL	+1.5	63	37	91	HR	VG	MR	MS	I	S	S	
CDC Buteo	189	96-	94-	97	95-	101	VG	M	+0.3	65	34	91	HR	F	S	S	MR	I	I	
CDC Chase	34	102	XX	97	109	XX	F	M	+0.6	64	33	94	HR	F	MR	S	MS	R	R	
Emerson ☼	79	98	96	95	100	XX	G	M	+0.7	64	30	86	HR	G	MR	S	R	I	R	
Flourish ☼	119	100	99	98	102	104	F	E	+0.6	63	35	80	HR	VG	I	MR	S	I	I	
Moats ☼	90	104+	91	102	107+	108+	G	M	+0.7	64	33	91	HR	F	MR	MS	S	R	R	
CANADA WESTERN SPECIAL PURPOSE																				
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Radiant ☼	240	100	100	100	100	100	VG	L	12	63	36	90	HR	VG	S	S	S	S	S	
AAC Elevate ☼	63	106+	106	106	106	XX	G	M	+0.3	63	39	84	HR	VG	MS	MR	I	I	MR	
AAC Gateway ☼	66	100	XX	99	102	XX	F	M	+0.9	63	33	77	HR	VG	MR	S	I	I	MR	
AAC Goldrush ☼	20	101	XX	XX	105	XX	VG	M	+0.5	63	34	86	HR	G	I	S	I	R	MR	
AAC Wildfire ☼	34	115+	XX	119+	115+	XX	VG	VL	+0.3	64	38	86	HR	G	R	MR	MR	I	S	
AC Tempest †	117	97-	96	97	96-	99	P	VL	+1.5	63	37	91	HR	VG	MR	MS	I	S	S	
CDC Buteo	189	96-	94-	97	95-	101	VG	M	+0.3	65	34	91	HR	F	S	S	MR	I	I	
CDC Chase	34	102	XX	97	109	XX	F	M	+0.6	64	33	94	HR	F	MR	S	MS	R	R	
Emerson ☼	79	98	96	95	100	XX	G	M	+0.7	64	30	86	HR	G	MR	S	R	I	R	
Flourish ☼	119	100	99	98	102	104	F	E	+0.6	63	35	80	HR	VG	I	MR	S	I	I	
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AAC Elevate ☼	63	106+	106	106	106	XX	G	M	+0.3	63	39	84	HR	VG	MS	MR	I	I	MR	
AAC Gateway ☼	66	100	XX	99	102	XX	F	M	+0.9	63	33	77	HR	VG	MR	S	I	I	MR	
AAC Goldrush ☼	20	101	XX	XX	105	XX	VG	M	+0.5	63	34	86	HR	G	I	S	I	R	MR	
AAC Wildfire ☼	34	115+	XX	119+	115+	XX	VG	VL	+0.3	64	38	86	HR	G	R	MR	MR	I	S	
AC Tempest †	117	97-	96	97	96-	99	P	VL	+1.5	63	37	91	HR	VG	MR	MS	I	S	S	
CDC Buteo	189	96-	94-	97	95-	101	VG	M	+0.3	65	34	91	HR	F	S	S	MR	I	I	
CDC Chase	34	102	XX	97	109	XX	F	M	+0.6	64	33	94	HR	F	MR	S	MS	R	R	
Emerson ☼	79	98	96	95	100	XX	G	M	+0.7	64	30	86	HR	G	MR	S	R	I	R	
Flourish ☼	119	100	99	98	102	104	F	E	+0.6	63	35	80	HR	VG	I	MR	S	I	I	
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AAC Elevate ☼	63	106+	106	106	106	XX	G	M	+0.3	63	39	84	HR	VG	MS	MR	I	I	MR	
AAC Gateway ☼	66	100	XX	99	102	XX	F	M	+0.9	63	33	77	HR	VG	MR	S	I	I	MR	
AAC Goldrush ☼	20	101	XX	XX	105	XX	VG	M	+0.5	63	34	86	HR	G	I	S	I	R	MR	
AAC Wildfire ☼	34	115+	XX	119+	115+	XX	VG	VL	+0.3	64	38	86	HR	G	R	MR	MR	I	S	
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CDC Chase	34	102	XX	97	109	XX	F	M	+0.6	64	33	94	HR	F	MR	S	MS	R	R	
Emerson ☼	79	98	96	95	100	XX	G	M	+0.7	64	30	86	HR	G	MR	S	R	I	R	
Flourish ☼	119	100	99	98	102	104	F	E	+0.6	63	35	80	HR	VG	I	MR	S	I	I	
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AAC Gateway ☼	66	100	XX	99	102	XX	F	M	+0.9	63	33	77	HR	VG	MR	S	I	I	MR	
AAC Goldrush ☼	20	101	XX	XX	105	XX	VG	M	+0.5	63	34	86	HR	G	I	S	I	R	MR	
AAC Wildfire ☼	34	115+	XX	119+	115+	XX	VG	VL	+0.3	64	38	86	HR	G	R	MR	MR	I	S	
AC Tempest †	117	97-	96	97	96-	99	P	VL	+1.5	63	37	91	HR	VG	MR	MS	I	S	S	
CDC Buteo	189	96-	94-	97	95-	101	VG	M	+0.3	65	34	91	HR	F</						

**REMARKS:** Winter wheat can be grown successfully in all areas of Alberta if seeded into standing stubble within the optimal seeding date period (generally before September 15) and if there is adequate snowfall. Varieties with poor (P) winter survival are generally not suitable outside of southern Alberta. The long term average maturity for Radiant is August 10 and is rated as late (L). Fusarium head blight infection may be reduced if varieties with Intermediate (I) resistance or better are used and when recommended seeding dates are followed. Radiant and AAC Elevate have tolerance to the wheat curl mite, the vector for Wheat Streak Mosaic Virus. To preserve the effectiveness of the wheat curl mite tolerance gene, agronomic practices that eliminate the "green bridge" of plant material that serves as a reservoir for mites should be followed whenever possible. Fields in southern Alberta should be inspected in the fall for infestation by Russian wheat aphid, as it may reduce winter survival. AAC Wildfire expresses some tolerance to Russian wheat aphid. AC Tempest, Radiant and AAC Wildfire have bronze chaff at maturity. AAC Icefield is a new special purpose variety with a hard white kernel that has been granted interim registration to facilitate market research. AAC Icefield expresses high milling yield of very white flour and good gluten strength at lower protein concentrations that may be of interest in some niche markets. CDC Ptarmigan and Pintail have an awnless head which may improve palatability when harvested for forage or silage. AAC Elevate is expected to be available in fall 2017. AAC Wildfire, AAC Goldrush and AAC Icefield will not be available in 2017. New registrations: AAC Goldrush (W526), AAC Icefield (W530). † Flagged for possible removal in 2018.

## WHEAT - WINTER

### AAC ELEVATE ☼

**BI: AAFC, Dist: SeCan Members**

Hoffmann, Curtis / Oyen / AB / (403) 664-9617

Stamp Seeds / Enchant / AB / (403) 739-2233

Willms, Henry & Timothy H. / Grassy Lake / AB / (403) 655-2434

### AAC GATEWAY ☼

**BI: AAFC, Dist: Seed Depot**

Mercer, Lloyd A. & Connie & Ryan & Bolstad, Leslie / Lethbridge / AB / (403) 327-9736

Stamp Seeds / Enchant / AB / (403) 739-2233

Van Roessel, William & Jean / Bow Island / AB / (403) 545-6018

Welsh, Donald Alan / Milk River / AB / (403) 647-2228

### AAC WILDFIRE ☼

**BI: AAFC, Dist: N/A**

Stamp Seeds / Enchant / AB / (403) 739-2233

### CDC CHASE

**BI: CDC, Dist: Canterra Seeds**

Strain, Arthur George / Foremost / AB / (403) 867-2227

### EMERSON

**BI: AAFC, Dist: Canterra Seeds**

Corns, Bryan & Gary / Grassy Lake / AB / (403) 655-2464

Haney Farms / Picture Butte / AB / (403) 738-4517

Wheatcrest Farms / Lomond / AB / (403) 792-3696

### MOATS

**BI: CDC, Dist: SeCan Members**

Benci, Dennis / Carmangay / AB / (403) 643-2294

Hoffmann, Curtis / Oyen / AB / (403) 664-9617

Limoges, Daniel / Girouxville / AB / (780) 833-1287

Stamp Seeds / Enchant / AB / (403) 739-2233

### PINTAIL ☼

**BI: FCDC (Lacombe), Dist: Mastin Seeds**

Mastin Seeds / Sundre / AB / (403) 556-2609

### RADIANT ☼

**BI: AAFC (Lethbridge), Dist: Canterra Seeds**

Corns, Bryan & Gary / Grassy Lake / AB / (403) 655-2464



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# FALL RYE

Variety	Hybrid or OP Variety	Overall Station Years of Testing	Overall Yield	Yield Category (% Hazlet):				Agronomic Characteristics:					
				Low < 48 (bu/ac)	Medium 48-80 (bu/ac)	High 80-112 (bu/ac)	V. High > 112 (bu/ac)	Winter Survival	Test Weight (lb/bu)	TKW (g)	Falling Number (sec)	Height (cm)	Resist- ance to Lodging
Yield, significant differences and agronomic data only directly comparable to Hazlet													
Hazlet (bu/ac)			102	48	65	94	137						
Hazlet	OP	48	100	100	100	100	100	EX	59	39	137	109	G
Bono	Hybrid	18	131+	XX	113	132+	133+	EX	59	34	250	105	VG
Brasetto	Hybrid	22	124+	XX	115	140+	120+	EX	59	36	246	104	VG
Guttino	Hybrid	22	123+	XX	116	135	120+	EX	60	36	279	101	VG
Prima	OP	48	85-	80-	80-	86	89	EX	58	33	179	121	F

**REMARKS:** Hazlet has lower viscosity which improves feed performance in monogastric livestock. Fall rye is much more cold tolerant than winter wheat or winter triticale. The long term average heading date and maturity for Hazlet is June 5 and August 7, respectively. All fall rye varieties are similar for heading and maturity and are considered early. 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 and this must be considered if the milling market is the targeted end-user for rye grain. All fall rye is susceptible to ergot. AFSC crop insurance deadlines for seeding fall rye is September 15, north of the Bow river and September 30, south of the Bow river.

## RYE

### BONO

BI: KWS, Dist: FP Genetics

McNaughton, Brian / Lethbridge / AB / (403) 308-9914

### BRASETTO

BI: KWS, Dist: FP Genetics

McNaughton, Brian / Lethbridge / AB / (403) 308-9914

### GUTTINO

BI: KWS, Dist: SeedNet

Benci, Dennis / Carmangay / AB / (403) 643-2294

Mercer, Lloyd A. & Connie & Ryan & Bolstad, Leslie / Lethbridge / AB / (403) 327-9736

Stamp Seeds / Enchant / AB / (403) 739-2233

Van Roessel, William & Jean / Bow Island / AB / (403) 545-6018

### HAZLET

BI: AAFC (Swift Current), Dist: SeCan Members

Degenhardt, Keith L. & Terry L. & Kerry / Hughenden / AB / (780) 856-2383

Weigum, Garry & Sarah / Three Hills / AB / (403) 443-2476

### MUSKETEER

BI: AAFC (Swift Current), Dist: SeCan Members

Degenhardt, Keith L. & Terry L. & Kerry / Hughenden / AB / (780) 856-2383

### PRIMA

BI: AAFC (Swift Current), Dist: SeCan Members

Mueller, Darcy / Three Hills / AB / (403) 820-4115

Page, Dan / Didsbury / AB / (403) 335-4563

Weigum, Sarah / Three Hills / AB / (403) 443-9599

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# TRITICALE - WINTER

## BOBCAT

BI: FCDC (Lacombe), Dist: N/A

Corns, Bryan & Gary / Grassy Lake / AB / (403) 655-2464  
Fabian, Patrick V. / Tilley / AB / (403) 377-2000

## LUOMA

BI: FCDC (Lacombe), Dist: N/A

Corns, Bryan & Gary / Grassy Lake / AB / (403) 655-2464

## METZGER

BI: FCDC (Lacombe), Dist: Haney Farms Ltd.

Corns, Bryan & Gary / Grassy Lake / AB / (403) 655-2464  
Haney Farms / Picture Butte / AB / (403) 738-4517  
Solick Seeds / Halkirk / AB / (403) 884-2358

## PIKA

BI: FCDC (Lacombe), Dist: N/A

Airth, Jock & Linda / Brooks / AB / (403) 362-4372

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- Oats - AC Morgan, CDC Haymaker, Murphy
- Peas - CDC Amarillo, CDC Limerick, CDC Patrick, CDC Horizon
- Fababeans - Tabasco, CDC Snowdrop
- Canola - Rugby, Fusion - All BrettYoung Varieties
- Grass & Forage, Corn - All BrettYoung Varieties

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# 2016 Canola Variety Information

**THE** Variety Descriptions tables summarizes the performance of limited canola varieties tested in 2016 through the post-registration Canola Performance Trial (CPT). Data was audited by field inspection and a data review process by a joint committee of government and industry.

The data presented was collected from small plot trials (13 successful in 2016) following scientific protocols to ensure comparisons are unbiased. Detailed notes on other variety attributes, trial management and variety comparisons at individual locations, or across multiple years and location can be found at [www.canola-performancetrials.ca](http://www.canola-performancetrials.ca).

The best performance indicator is a comparison over multiple sites and years. The trial design included grouping varieties by herbicide tolerance (HT), so the LSD (Least Significant Differences) has been included for each group to help determine if yield difference are significant.

Large scale (47 successful) trials with limited variety comparisons were conducted with protocols and selected audits for proper comparisons, data collection and scrutiny. Paired t test statistics were used to identify significant yield differences from the check (5% level).



## Disease Ratings for Canola

- Column indicating disease tolerance is for Blackleg, Clubroot or Sclerotinia
- Blackleg: All tested varieties have the resistant (R) rating that strongly suppress blackleg, but can still develop lesions or cankers at certain locations and years. Better blackleg control is achieved through use of resistant varieties and using a one in four year canola rotation.

## Varieties with Clubroot Resistance

- Bayer CropScience: L135 C, L241C
- Brett Young: 6056CR, 6076CR, 6086CR
- CANTERRA Seeds: CS2000; Cargill: V12-3
- Crop Production Services: PV 580 GC, PV 581 GC, PV 590 GCS, VR 9562 GC
- Dow AgroSciences: 1020 RR, 2020 CL
- Monsanto/DeKalb: 74-54 RR
- Pioneer Hi-Bred/DuPont: 45H29, 45H33, D3155C, 45CS40
- Syngenta: SY4105, SY 4187



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\* S rating for Stripe Rust
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- ✓ 1.2% Less Protein than Glenn
- ✓ Semi Dwarf - 1" taller than Carberry

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# Small Plots

SEE CANOLA NOTES for general information

No averages shown for LONG and SHORT season zones due to limited data (only 2 sites each) in the 2016 canola trials, please visit [www.canolaperformancetrials.ca](http://www.canolaperformancetrials.ca) to view data or to make comparisons across years and other locations within these growing zones.

MID Season Zone (9 trials)						
Seed supplier / sponsor	Name	Yield (%5440)	Maturity (days)	Lodging (1-5)	Height (inches)	Disease Tolerance@
<b>Clearfield</b>						
Brett Young	5545 CL	99	101	2.6	49	BL
CANTERRA SEEDS	CS2200 CL	93	102	2.0	51	BL
DL Seeds	DL 1504 +	97	102	2.0	52	BL
Crop Production Services/Proven	PV 200 CL	96	101	2.5	50	BL
	<b>LSD (%)</b>	<b>12</b>				
<b>Liberty Link</b>						
Bayer CropScience	5440	100	100	1.2	52	BL
Bayer CropScience	L130	98	99	1.4	50	BL
Bayer CropScience	L252	108	99	1.9	49	BL
	<b>LSD (%)</b>	<b>17</b>				
<b>Roundup Ready</b>						
Brett Young	6074 RR	99	102	2.0	50	BL/S
Brett Young	6080 RR	100	100	1.8	48	BL
Brett Young	6076 CR	95	101	2.2	51	BL/CR/S
Brett Young	6086 CR	99	102	2.3	51	BL/CR
CANTERRA SEEDS	CS2000	99	100	2.5	50	BL/CR
Cargill - VICTORY Hybrid Canola	V12-1 *	96	100	2.3	49	BL
Syngenta	SY 4187	102	101	1.8	53	BL/CR
Proven Seed / CPS	PV 533 G	101	98	1.7	48	BL
Proven Seed / CPS	VR 9562 GC	106	99	2.0	51	BL/CR
Dekalb	74-44 BL	100	98	2.1	46	BL
Dekalb	74-54 RR	96	98	2.7	47	BL/CR
Dekalb	73-75 RR	100	99	2.6	46	BL
Canola Growers	45H33	101	99	2.1	50	BL/CR
	<b>LSD (%)</b>	<b>11</b>				
<b>CHECK MEAN 5440 (bu/ac)</b>		<b>60</b>				

"\*" Indicates varieties with Specialty oil profiles and premiums associated with pricing. Visit [www.canolaperformancetrials.ca](http://www.canolaperformancetrials.ca) for more details

"@" Indicates genetic disease resistance based on variety descriptions submitted to CFIA: an "R" or resistant rating to blackleg =BL; Clubroot resistance=CR; and an MR to sclerotinia =S.

"+" indicates variety supported for registration by Western Canada Canola / Rapeseed Recommending Committee

## 2016 Large Scale Yield Results (% of 5440)

	Long Season Zone	Mid Season Zone	Short Season Zone	Overall
	% of 5440			
45H33	97	97	-	96*
74-44 BL	101	99	99	99
L130	99	99	103	100
L252	100	102	104*	102*
PV 533 G	-	89*	-	95*
5440 (bu/ac)	54	52	61	54

\* indicates statistical difference from 5440 using paired t test

- zone average not shown due to less than 5 locations data



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 Alberta Canola Producers Commission / 1-800-551-6652 / [www.canola.ab.ca](http://www.canola.ab.ca)

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Bayer CropScience Inc. / Lethbridge / AB / (403) 329-0706				C
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<b>NEXERA 1022 RR</b>				
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<b>NEXERA 2020 CL</b>				
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Dow Agrosciences Canada Inc. / Lethbridge / AB / (403) 328-1817				C
<b>NEXERA 2022 CL</b>				
<b>BI: N/A, Dist: Dow AgroSciences</b>				
Dow Agrosciences Canada Inc. / Lethbridge / AB / (403) 328-1817				C
<b>NEXERA 2024 CL</b>				
<b>BI: N/A, Dist: Dow AgroSciences</b>				
Dow Agrosciences Canada Inc. / Lethbridge / AB / (403) 328-1817				C
<b>PV 200 CL</b>				
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<b>PV 533 G</b>				
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Proven Seed/CPS Genetics / Lethbridge / AB / (403) 308-7993				C
<b>PV 540 G</b>				
<b>BI: N/A, Dist: CPS (Canada) Inc.</b>				
Proven Seed/CPS Genetics / Lethbridge / AB / (403) 308-7993				C
<b>PV 560 GM</b>				
<b>BI: N/A, Dist: CPS (Canada) Inc.</b>				
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Lefsrud, Kevin J. & Edmund J. / Viking / AB / (780) 336-5700	S	F		C
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Lefsrud, Kevin J. & Edmund J. / Viking / AB / (780) 336-6700	S	F		C

## FLAX

Variety	Overall Station Years of Testing	Over-all Yield	Yield Category (% CDC Bethune):				Agronomic Characteristics:					Disease Tolerance:		Quality:			
			Low < 20 (bu/ac)	Medium 20 - 35 (bu/ac)	High 35 - 50 (bu/ac)	V. High > 50 (bu/ac)	Maturity Rating	Seed Colour	Seed Size	Height (cm)	Resistance to Lodging	Fusarium Wilt	Powdery Mildew	Oil Content (%)	ALA Content (%)	Iodine Value	
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to CDC Bethune)																	
CDC Bethune (bu/ac)		37	14	29	44	58											
CDC Bethune ☼	109	100	100	100	100	100	L	brown	M	57	G	MR	MR	46	55	189	
CDC Neela ☼	24	109+	XX	115	102	XX	L	brown	M	55	G	MR	MR	46	59	194	
CDC Plava ▲	24	104	XX	110	98	XX	M	brown	M	52	G	MR	XX	47	57	196	
CDC Buryu ▲	16	100	XX	104	96	XX	L	brown	L	56	G	MR	MR	46	56	193	
VT50 ☼	24	103	XX	105	101	XX	VL	yellow	S	51	VG	MR	XX	47	68	209	
Prairie Grande ☼	76	98-	101	102	93-	99	M	brown	M	53	G	MR	MR	46	58	193	
WestLin 60 ☼	24	100	XX	103	98	XX	M	brown	M	50	G	MR	XX	46	60	198	
WestLin 72 ▲	16	102	XX	100	105	XX	VL	brown	S	51	VG	MR	MR	47	57	193	
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to CDC Bethune)																	
AAC Bravo ☼	23	104	XX	XX	103	104+	L	brown	L	64	G	MR	MR	45	60	194	
CDC Glas ☼	23	106+	XX	XX	106	XX	L	brown	S	61	G	MR	MR	46	57	192	
CDC Sanctuary ☼	28	105+	XX	100	100	108+	VL	brown	M	64	G	MR	MR	46	57	191	
CDC Sorrel ☼	32	104	112	104	100	99	L	brown	L	61	F	MR	MR	45	58	193	
Hanley ☼	37	97-	99	97	95	97	M	brown	M	53	VG	R	MR	45	59	198	
Prairie Sapphire ☼	23	96	XX	XX	97	101	L	brown	M	64	G	MR	MR	48	57	193	
Prairie Thunder ☼	40	99	101	98	99	99	L	brown	M	55	G	R	MR	45	58	195	
Taurus ☼	27	98-	103	97	XX	XX	L	brown	M	53	VG	MR	R	46	54	187	
Westlin 71 ☼	25	95-	101	94	91-	XX	L	brown	M	56	G	MR	MS	48	61	198	

**REMARKS:** For explanations on data summarization methods, abbreviations and other pertinent information, please see the comments at the beginning of this publication. The long term average maturity for CDC Bethune in Alberta is 110 days and rated as Late (L). All varieties are immune to flax rust. New registrations: CDC Buryu (FP2316), AAC Prairie Sunshine (FP2357) and WestLin 60 (FP2388). Insufficient data to describe: AAC Prairie Sunshine.

## FLAX

## AAC BRAVO ☼

BI: AAFC (Lacombe), Dist: FP Genetics

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Wheatcrest Farms / Lomond / AB / (403) 792-3696

## CDC PLAVA ☼

BI: CDC, Dist: SeCan Members

Lefsrud, Kevin J. & Edmund J. / Viking / AB / (780) 336-2500

Stamp Seeds / Enchant / AB / (403) 739-2233

## PRAIRIE SAPPHIRE ☼

BI: AAFC (Morden), Dist: SeCan Members

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Stamp Seeds / Enchant / AB / (403) 739-2233

## WESTLIN 70

BI: N/A, Dist: CPS (Canada) Inc.

Mercer, Lloyd A. & Connie & Ryan & Bolstad, Leslie / Lethbridge / AB / (403) 327-9736

## WESTLIN 71 ☼

BI: N/A, Dist: CPS (Canada) Inc.

Mercer, Lloyd A. & Connie & Ryan & Bolstad, Leslie / Lethbridge / AB / (403) 327-9736

## WESTLIN 72 ☼

BI: N/A, Dist: CPS (Canada) Inc.

Wheatcrest Farms / Lomond / AB / (403) 792-3696

## FLAX - RECONSTITUTED

\*ACR: Eligible pedigreed class for crops subject to developer's post-harvest Additional Certification Requirements, such as seed testing required for varieties of reconstituted flax.

## CDC GLAS ☼

BI: CDC, Dist: SeCan Members

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Hoffmann, Curtis / Oyen / AB / (403) 664-9617

Holmstrom, Darrell & Barbara / Killam / AB / (780) 385-3574

Huvenaars, Carl / Hays / AB / (403) 725-2213

Kopjar, Gerald M. / Rowley / AB / (403) 368-2409

Lefsrud, Kevin J. & Edmund J. / Viking / AB / (780) 336-2500

Stamp Seeds / Enchant / AB / (403) 739-2233

Weigum, Garry & Sarah / Three Hills / AB / (403) 443-2476

## CDC SANCTUARY ☼

BI: CDC, Dist: SeCan Members

Huvenaars, Carl / Hays / AB / (403) 725-2213

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BI: CDC, Dist: SeCan Members

Degenhardt, Keith L. & Terry L. & Kerry / Hughenden / AB / (780) 856-2383

King, Harold & Webb, David G. / Three Hills / AB / (403) 443-7330

Zwack, Thomas / Daysland / AB / (780) 374-2450



# 2016 Regional Silage Variety Trials

**AN** important component of the annual feed supply for Alberta's cattle producers comes in the form of silage, green feed and swath grazing of annual cereal crops. It could be argued that there is more grain forage than cereal grain fed to take many market animals from conception to plate. Selection of annual crop varieties which produce the highest forage yield and/or nutritional quality becomes increasingly important.

## Participating Organizations

- Battle River Research Group, Forestburg, AB, (780) 582-7308
- Chinook Applied Research Association, Oyen, AB, (403) 664-3777
- Gateway Research Organization, Westlock, AB, (780) 349-4546
- Lakeland Agricultural Research Association, Bonnyville, AB, (780) 826-7260
- Mackenzie Applied Research Association, Fort Vermilion, AB (780) 927-3776
- North Peace Applied Research Association, Manning AB, (780) 836-5230
- Peace Country Beef and Forage, Fairview, AB, (780) 836-3354
- Smoky Applied Research and Demonstration Association, Falher, AB, (780) 837-2900
- West-Central Forage Association, Evansburg, AB, (780) 727-4447

## Major Sponsors

- Government of Alberta (Agriculture and Forestry): Doug McCaulay, AOF Coordinator
- A & L Canada Laboratories Inc.
- Davidson Seeds, Degenhardt Farms, Dyck Seed Farm, Fabian Seeds, Lindholm Seed Farm, Mastin Seeds, Solick Seeds, H. Warkentin,

## Trial Information

Applied research and forage associations performed regional silage trials at eight locations throughout the province in 2016. Data from additional sites grown during the past five years has been included in the variety summaries below. The trials are intended to determine yield and nutritional values of various cereal crops and cereal/pea combinations. The tables below show a summary of data from 2012 through 2016 as compared to the control variety (in bold). Yield of the test varieties are expressed as wet tons/acre (ie. 65% moisture, typical of silage production). Data sets which did not meet minimum quality standards and variance levels were excluded.

Varieties of barley, oats, triticale and peas commonly used for silage, green feed and swath grazing were included in the trial. The cereal trials, (barley, oats and triticale), were seeded at recommended seeding density rates with fertility as determined from soil samples. The pulse mixture trial looked at increasing the nutritional value of silage, with a potential side benefit of decreasing future nitrogen costs. The pulse mix plots were seeded with 50 pounds of 11-52-0-0, while the monoculture

cereal comparison plots were fertilized with 50 percent of the recommended fertilizer rates. Peas were seeded at 75 percent of their recommended seeding rate and cereals at 50 percent when in mixtures.

Growing conditions at the trial sites ranged from dryer than normal to excessive moisture in 2016.

Maturity, plant height and lodging were not measured in the trials as it is reported in the Cereal RVT program tables.

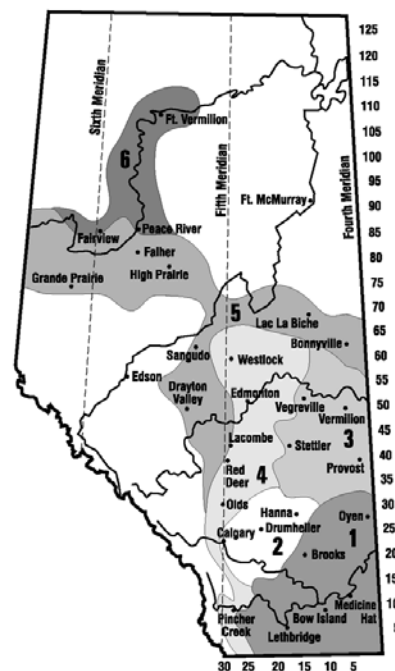
## Test Yield Categories

The defined range for each Test Yield Category is provided in tons per acre. Variety yields are reported as average yields in Low, Medium and High Test Yield Categories. This allows for comparison with the check when growing conditions, management regimes or target yields are anticipated to be of low, medium or high productivity. Varieties that are statistically higher (+) or lower (–) yielding than the standard check are indicated. No symbol after the yield figure indicates that there is no statistical difference. Caution is advised when interpreting the data with respect to new varieties that have not been fully tested.

It should also be noted that the indicated yield levels are those from small plot trials, which can be somewhat higher than yields expected under commercial production. As yield is not the only factor that affects net return, other important agronomic and disease resistance characteristics should be considered. The genetic yield potential of a variety can be influenced by various management and environmental factors.

## Nutritional Analysis

Nutrition was assessed using NIRS for macro-nutrient assessments and wet chemistry for the micro-nutrients. Full nutritional analysis was done on each sample, however, only six nutritional categories are reported: crude protein (CP), total digestible nutrients (TDN) which is an estimation of energy, calcium (Ca), phosphorus (P), potassium (K) and magnesium (Mg).



# OATS

Variety	Overall Yield	Overall Station Years of Testing	Area:					Yield Category:			Nutritional Data:					
			2	3	4	5	6	Low < 7.0 (t/ac)	Medium 7.1 - 10.0 (t/ac)	High > 10.1 (t/ac)	CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2016 trials (Yield, significant differences and agronomic data only directly comparable to CDC Baler)																
CDC Baler (t/ac)	10.1		12.4	10.7	8.6	10.8	8	5.8	9.1	12.9	9.3	61.7	0.3	0.2	1.8	0.2
CDC Baler	100	33	100	100	100	100	100	100	100	100	100	100	100	100	100	100
AC Juniper	94-	23	91	98	98	87	103	111	84-	93	101	102	92	112	102	106
AC Morgan	100	32	102	100	92-	96	114	108	96-	101	99	101	100	114	99	97
AC Mustang	98	33	99	97	95	100	97	95	97	100	103	99	99	106	102	99
CDC Haymaker	99	28	105	96	100	97	99	105	94	100	97	100	98	100	104	98
CDC Seabiscuit 🐾	94	6	91	XX	108	78	96	78	96	99	96	100	89	94	100	100
CDC SO-1	94-	33	84	102	88	93-	96	92	94	95-	103	102	96	105	97	104
Derby	96	6	100	XX	106	89	94	89	93	101	89	100	98	99	100	110
Murphy	103	27	106	104	102	103	103	104	104	102	91	95	95	96	102	99
Waldern	104	26	100	104	98	101	115	101	112+	99	93	99	105	106	94	99
Previously tested varieties (Yield, significant differences and agronomic data only directly comparable to CDC Baler)																
Everleaf	94	5	XX	113	106	72	XX	108	76	67	96	98	105	97	110	92
Foothills	99	21	103	95	101	99	103	99	96	102	99	98	103	103	102	100
Jordan	100	20	107	92	88	100	121	102	102	96	97	100	96	105	97	112

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# BARLEY

Variety	Over- all Yield	Overall Station Years of Testing	Area:					Yield Category:			Nutritional Data:					
			2	3	4	5	6	Low < 8.0 (t/ac)	Medium 8.1 - 12.0 (t/ ac)	High > 12.1 (t/ac)	CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Austenson)																
CDC Austenson (t/ac)	10.8		11.8	12.1	11	11.5	8	6.7	9.3	12.8	10.1	67.9	0.3	0.2	1.3	0.2
CDC Austenson 🌾	100	35	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Amisk	90-	23	102	92-	91	88-	83-	85	93	90-	104	99	132	106	107	109
CDC Coalition 🌾	92-	27	92	93	92	86-	102	92	92	92-	102	100	104	107	106	99
CDC Cowboy 🌾	102	27	102	103	98	103	100	106	99	100	95	98	117	107	110	115
CDC Maverick 🌾	103	29	105	96	96	104	108	111+	102	101	95	98	123	106	96	116
CDC Meredith 🌾	102	16	114	106	93	99	103	111	102	100	95	97	97	98	101	91
Canmore	98	16	105	99	93	99	97	101	93	99	100	99	119	103	98	104
Champion	102	16	104	97	100	102	106+	106	101	101	98	99	105	97	104	100
Claymore	100	16	114	102	97	100	94	106	87	103	93	96	122	93	98	100
Conlon	86-	21	82	95	86	79-	92	80-	80-	91-	99	101	128	111	101	104
Gadsby 🌾	100	27	103	106	94	100	101	104	101	98	95	99	129	99	100	103
Sundre 🌾	92-	27	97	93	87-	88-	96	86-	96	93-	102	99	134	104	114	115
TR13740	100	16	103	92	99	99	107	95	99	101	99	97	105	97	104	92
Previously tested varieties (Yield and agronomic data only directly comparable to CDC Austenson)																
Busby 🌾	93-	19	91	98	71	96	88	86-	95	97	105	99	128	100	100	103
Chigwell 🌾	90-	19	80	95	87	86-	97	91-	82-	91-	106	99	152	101	105	116
Muskwa	90-	13	101	93	XX	86-	91	86-	91	91-	114	100	167	107	121	127
Ponoka 🌾	96	19	90	100	100	96	95	96	94	97	101	99	148	103	104	115
Ranger	95	13	104	99	XX	96	88	85-	97	99	109	98	171	101	128	131
Seebe	96-	19	95	103	92	95-	95	95	96	97	109	96	136	109	113	103
Trochu 🌾	88-	18	XX	91	73	91-	85-	82-	89	92-	103	101	139	107	109	119
Vivar 🌾	93-	19	95	99	78	92-	93	90-	98	93	108	100	144	99	104	123
Xena	95-	19	87	101	84	92-	101	96	90	95	106	99	111	105	102	106

# TRITICALE

Variety	Overall Yield	Overall Station Years of Testing	Area:					Yield Category:			Nutritional Data:					
			2	3	4	5	6	Low < 8.0 (t/ac)	Medium 8.1 - 12.0 (t/ac)	High > 12.1 (t/ac)	CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to Taza)																
Taza (t/ac)	10.7		12.3	12.3	8.8	10.4	9.5	6.3	10.7	14.5	8.8	62.8	0.2	0.2	1.3	0.1
Taza 🌾	100	37	100	100	100	100	100	100	100	100	100	100	100	100	100	100
94I043057	100	7	103	XX	110	93	101	89	103	100	106	102	91	102	90	108
Bunker 🌾	99	29	99	93	111+	99	100	106	98	98	103	99	111	96	97	115
Sunray	101	30	97	100	105	100	105	99	102	100	104	104	105	103	103	109
Tyndal 🌾	99	36	98	105	109	96-	96	100	98	99	103	101	101	102	97	105
Previously tested varieties (Yield and agronomic data only directly comparable to Taza)																
AAC Chiffon	111	8	124	123	118	92	126	105	113	114	97	101	88	97	106	108
AAC Innova	104	8	121	119	123	83	102	95	107	107	108	100	87	106	109	107
AAC Ryley	97	8	108	104	87	87	110	86	100	101	103	100	95	106	89	117
AC Ultima	103	7	104	98	120	100	XX	109	100	104	110	100	101	93	97	122
Pasteur	94	8	110	96	97	84	103	91	99	91	107	103	96	99	107	117
Pronghorn	102	21	107	103	114	99	101	108+	99	103	103	100	102	99	109	106
Sadash	102	8	111	102	109	91	121	101	108	97	99	99	88	91	110	105

# PULSE MIXTURES

Variety	Overall Yield	Overall Station Years of Test- ing	Area:				Yield Category:				Nutritional Data:					
			2	3	4	5	6	Low	Medium	High	CP (%)	TDN (%)	Ca (%)	P (%)	K (%)	Mg (%)
								< 8.0 (t/ac)	8.1 - 10.0 (t/ac)	> 10.1 (t/ac)						
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Austenson)																
CDC Austenson (t/ac)	7.4		5.3	XX	XX	7.2	8.7	5.2	8.9	XX	10	65.9	0.3	0.2	1.4	0.2
CDC Austenson	100	5	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CDC Baler	116	5	111	XX	XX	108+	126	111+	119	XX	95	96	113	110	106	124
Taza	109	5	110	XX	XX	104	114	109	110	XX	86	96	77	104	103	89
CDC Austenson/CDC Horizon	105	5	109	XX	XX	100	107	108	102	XX	101	97	156	102	111	133
CDC Austenson/CDC Meadow	101	5	105	XX	XX	96	104	104	99	XX	113	77	165	106	106	164
CDC Baler/CDC Horizon	101	5	111	XX	XX	102	96	113	94	XX	109	94	173	101	123	145
CDC Baler/CDC Meadow	103	5	105	XX	XX	102	103	108	100	XX	107	96	164	105	120	144
Taza/CDC Horizon	108	5	96	XX	XX	105	119	104	111	XX	116	96	179	106	106	137
Taza/CDC Meadow	100	5	99	XX	XX	97	104	104	98	XX	101	95	194	98	103	145
Varieties tested in the 2012 - 2014 trials (Yield and agronomic data only directly comparable to Vivar)																
Vivar (t/ac)	8.6		7.9	11.2	4.4	9	8	5.8	9.7	10.3	9.4	63.5	0.5	0.2	1.2	0.2
Vivar	100	19	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Murphy	119+	18	102	106	158	123+	100	129	108	125+	88	94	77	99	129	88
Pronghorn	111	19	98	96	109	116	114	106	105	122	96	101	63	105	103	75
Murphy/40-10	105	12	XX	90	132	102	92	122	86	113	142	98	161	129	117	141
Pronghorn/40-10	104	12	XX	97	112	105	93	110	88	122	125	98	150	115	103	134
Vivar/40-10	97	12	XX	68	108	92	121	114	84	97	140	98	170	107	108	141
Murphy/CDC Horizon	112	19	82	106	144	113	102	121	97	120+	114	94	130	100	124	114
Pronghorn/CDC Horizon	111	19	85	98	133+	111	117	120	101	112	125	98	143	105	105	106
Vivar/CDC Horizon	98	19	94	99	112	96	94	103	87-	105	128	97	162	101	107	116
Murphy/CDC Meadow	105	7	74	105	XX	117+	103	96	94	119+	104	95	116	101	123	95
Pronghorn/CDC Meadow	101	7	81	91	XX	109	118	107	95	101	122	99	124	113	105	95
Vivar/CDC Meadow	99	7	92	94	XX	104	98	101	98	98	115	100	187	89	98	119



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## Forage references:

How to Purchase High Quality Forage Seed – FS120 / 45-1

Establishing Perennial Hay and Pasture Crops – FS120 / 22-2

These publications can be obtained from the Alberta Agriculture Publications Office. Call the toll-free line at 1-800-292-5697.

Other forage species and new varieties not listed in this publication are sometimes seeded by producers in Alberta.

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<b>TIMOTHY</b>	S	F	R	C	
<b>ALMA</b> <b>BI: N/A, Dist: Moore Seed Processors Inc.</b> Moore Seed Processors Inc. / Debolt / AB / (780) 957-3964					C
<b>BARPENTA</b> <b>BI: N/A, Dist: Union Forage</b> Dynamic Seeds Ltd. / Fairview / AB / (780) 835-5435					C
<b>CLIMAX</b> <b>BI: N/A, Dist: DLF Pickseed</b> BrettYoung Seeds / Rycroft / AB / (780) 765-3069					C
<b>COMTAL</b> <b>BI: N/A, Dist: DLF Pickseed</b> BrettYoung Seeds / Rycroft / AB / (780) 765-3069 Moore Seed Processors Inc. / Debolt / AB / (780) 957-3964					C C

<b>DERBY</b> <b>BI: N/A, Dist: Growmark</b> BrettYoung Seeds / Rycroft / AB / (780) 765-3069					F
<b>DOLINA</b> <b>BI: N/A, Dist: Semican</b> BrettYoung Seeds / Rycroft / AB / (780) 765-3069					C
<b>PROMESSE</b> <b>BI: BrettYoung Seeds Ltd., Dist: BrettYoung Seeds Ltd.</b> BrettYoung Seeds / Rycroft / AB / (780) 765-3069					C
<b>RICHMOND</b> <b>BI: N/A, Dist: DLF Pickseed</b> Raaen, Sylvan / Rolla / BC / (250) 759-4778					C
<b>SUMMERGRAZE</b> <b>BI: N/A, Dist: BrettYoung Seeds Ltd.</b> BrettYoung Seeds / Rycroft / AB / (780) 765-3069					C
<b>TENHO</b> <b>BI: Boreal Plant Breeding (Finland), Dist: Moore Seed Processors</b> Moore Seed Processors Inc. / Debolt / AB / (780) 957-3964					C
<b>TIFFANY</b> <b>BI: N/A, Dist: Seed-Link Inc.</b> Dynamic Seeds Ltd. / Fairview / AB / (780) 835-5435					C
<b>TITAN (LISCHKA IN GERMANY)</b> <b>BI: N/A, Dist: Northstar Seed Ltd.</b> BrettYoung Seeds / Rycroft / AB / (780) 765-3069					C
<b>TUUKKA</b> <b>BI: Boreal Plant Breeding (Finland), Dist: Moore Seed Processors</b> Moore Seed Processors Inc. / Debolt / AB / (780) 957-3964					C
<b>WINNETOU</b> <b>BI: N/A, Dist: Parsons Seeds Ltd.</b> BrettYoung Seeds / Rycroft / AB / (780) 765-3069					C

<b>WHEATGRASS</b>	S	F	R	C	
<b>AC SALTLANDER</b> <b>BI: AAFC, Dist: N/A</b> Miller, Kenneth F. / Milk River / AB / (403) 647-2127					F C
<b>ELBEE</b> <b>BI: N/A, Dist: SeCan Members</b> BrettYoung Seeds / Rycroft / AB / (780) 765-3069 Limoges, Daniel / Girouxville / AB / (780) 833-1287					F F
<b>FAIRWAY</b> <b>BI: N/A, Dist: FP Genetics</b> Dynamic Seeds Ltd. / Fairview / AB / (780) 835-5435 Whitney, David / Fairview / AB / (780) 835-4897					C C
<b>GREENLEAF</b> <b>BI: N/A, Dist: SeCan Members</b> Card, Gordon B. & Rhett / Magrath / AB / (403) 758-3444					C
<b>KIRK</b> <b>BI: AAFC (Saskatoon), Dist: SeCan Members</b> Dynamic Seeds Ltd. / Fairview / AB / (780) 835-5435 Hadland, Arthur Austin / Baldonnel / BC / (250) 789-3566 Limoges, Daniel / Girouxville / AB / (780) 833-1287					C C C
<b>NEWKIRK</b> <b>BI: AAFC, Dist: N/A</b> Limoges, Daniel / Girouxville / AB / (780) 833-1287					F



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# Special Crops

**THIS** publication provides information on pulse variety performance within Alberta and northeastern British Columbia. Important agronomic characteristics and disease resistance information is provided for varieties of field pea, chickpea, lentil, fababea, dry bean and soybean.

The Alberta Regional Variety Testing program for pulse crops is coordinated by Alberta Pulse Growers Commission (APGC) and Alberta Agriculture and Forestry (AAF). Funding for the program is provided by Agriculture Agri-Food Canada (Growing Forward II), AAF, APGC and entry fees (private companies) for the varieties being tested.

Data for this publication are contributed by numerous applied research associations, Prairie Grain Development Committee and AAF.

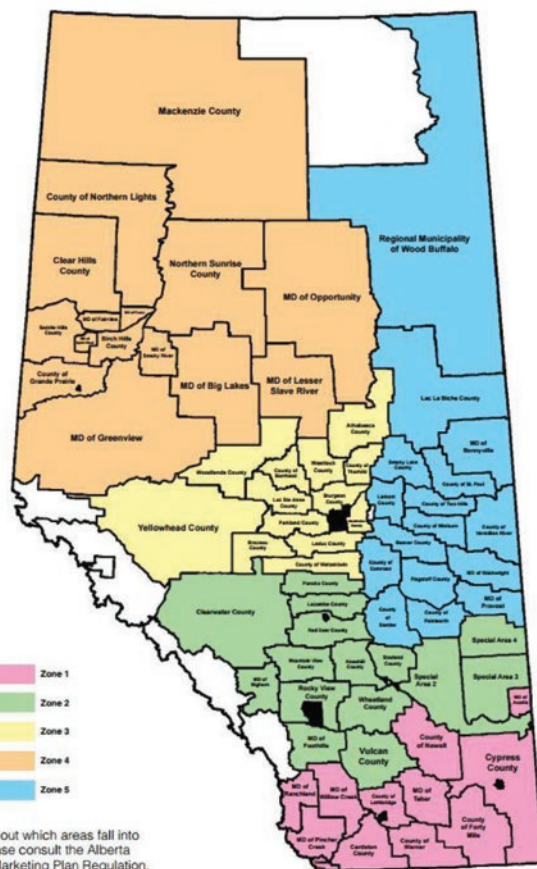
Variety choice is one of the important decisions any crop producer makes and it should never be based solely on genetic yield potential of a variety. Producers are encouraged to select varieties based on local growing conditions and planned end use. As well, growers should consider other factors such as plant height, standability (lodging) at physiological maturity and disease/pest resistance when selecting which variety to grow. Using long-term, multi-site data will lead to the selection of the best, yield-stable varieties. The yield comparison tables have several features:

- Overall actual yield of the standard check (kg/ha) based on all data available to the testing program is provided along with the number of station years of testing.
- Actual yield of the standard check in each growing area for field pea is reported.
- Overage yield of each variety is expressed relative to the standard check.
- Significant statistical differences relative to the standard check are indicated.

Yields that are statistically higher (+) or lower (-) than the check are indicated. No symbol after the yield figure indicates that there is no statistical difference from the check. Pay particular attention to data on new varieties that have not been fully tested. If a large difference from the check is reported but is not significant, it could mean that yields have varied widely, and/or there are not enough data to prove a statistical difference. With additional years of testing, the reported yield differences will become more accurate.

The following trials were grown in 2016:

- 19 green and yellow pea sites established across Alberta and two sites in north eastern British Columbia;
- Four chickpea trials at Bow Island, Brooks, Lethbridge and Medicine Hat;
- Five lentil trials at Bow Island, Brooks, Lethbridge, Medicine Hat and Oyen;
- Three wide row dry bean trials at Bow Island, Lethbridge and Vauxhall;
- A narrow row dry bean in Lethbridge, and;
- Four soybean trials established at Bow Island, Brooks, Lethbridge and Medicine Hat.



For additional information, including varieties not listed in this factsheet, please call Alberta Ag-Info Centre toll-free at 310-FARM (3276) or check the Alberta Agriculture and Rural Development website, *Ropin' the Web* at [www.agriculture.alberta.ca/rvt](http://www.agriculture.alberta.ca/rvt).



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## DRY BEAN – NARROW ROW

Variety	Type	Site Years 1997-2016	Overall Yield	Days to Bloom <sup>1</sup>	Days to Maturity	TSW <sup>2</sup> (g)	Plant Height (cm)	Lodging <sup>3</sup> (1-5)	Growth Habit <sup>4</sup>
<b>AC Black Diamond (kg/ha)</b>			<b>3174</b>						
<b>AC Black Diamond</b>	<b>Black Shiny</b>	<b>20</b>	<b>100</b>	<b>57</b>	<b>103</b>	<b>253</b>	<b>36</b>	<b>2.3</b>	<b>II</b>
AAC Black Diamond 2	Black Shiny	4	106	60	3	261	34	1.8	II
CDC Blackcomb	Black Matte	6	78	64	1	186	36	1.3	II
<b>Island (kg/ha)</b>			<b>4155</b>						
<b>Island</b>	<b>Pinto</b>	<b>10</b>	<b>100</b>	<b>56</b>	<b>102</b>	<b>344</b>	<b>42</b>	<b>2.7</b>	<b>II</b>
AAC Burdett	Pinto	5	96	58	-4	371	40	1.3	II
AAC Explorer (A)	Pinto	1	101	52	-4	345	39	2.8	II
CDC Marmot	Pinto	5	89	55	-6	419	34	2.2	II
CDC WM-2 ☼	Pinto	8	80	56	3	350	41	2.4	II
Medicine Hat	Pinto	8	99	62	4	342	44	2	II
Winchester	Pinto	5	80	58	7	302	45	2.1	II
<b>AAC Tundra (kg/ha)</b>			<b>4559</b>						
<b>AAC Tundra</b>	<b>Great Northern</b>	<b>6</b>	<b>100</b>	<b>54</b>	<b>98</b>	<b>365</b>	<b>44</b>	<b>2.4</b>	<b>II</b>
AAC Whitehorse	Great Northern	5	108	53		388	43	2.4	II
AAC Whitestar	Great Northern	2	97	48	-5	365	46	2	II
AC Polaris	Great Northern	14	76	58	5	329	35	3.4	II
AC Resolute	Great Northern	17	68	51	-2	353	40	2.2	II
<b>AC Redbond (kg/ha)</b>			<b>2658</b>						
<b>AC Redbond</b>	<b>Small Red</b>	<b>16</b>	<b>100</b>	<b>51</b>	<b>101</b>	<b>296</b>	<b>38</b>	<b>2.5</b>	<b>II</b>
<b>CDC Sol (kg/ha)</b>			<b>1887</b>						
<b>CDC Sol ☼</b>	<b>Yellow</b>	<b>6</b>	<b>100</b>	<b>59</b>	<b>111</b>	<b>385</b>	<b>33</b>	<b>1.6</b>	<b>I</b>
<b>Viva (kg/ha)</b>			<b>2380</b>						
<b>Viva</b>	<b>Pink</b>	<b>13</b>	<b>100</b>	<b>52</b>	<b>100</b>	<b>252</b>	<b>30</b>	<b>3.5</b>	<b>III</b>

**REMARKS:** A = First year entries; 1 Days to bloom from seeding; 2 Thousand Seed Weight; 3 Lodging: 1 = erect, 5 = flat. 4 Growth Habit: I = determinate bush, II = indeterminate bush, III = indeterminate prostrate. XX - Insufficient data to describe.

## DRY BEAN – WIDE ROW

Variety	Type	Site Years 1997-2016	Overall Yield	Days to Bloom <sup>1</sup>	Days to Maturity	TSW <sup>2</sup> (g)	Plant Height (cm)	Lodging <sup>3</sup> (1-5)	Growth Habit <sup>4</sup>
<b>AC Black Diamond (kg/ha)</b>			<b>3017</b>						
<b>AC Black Diamond</b>	<b>Black Shiny</b>	<b>40</b>	<b>100</b>	<b>57</b>	<b>103</b>	<b>265</b>	<b>38</b>	<b>2.2</b>	<b>II</b>
AAC Black Diamond 2	Black Shiny	7	102	58	2	258	38	2.3	II
CDC Blackcomb	Black Matte	11	79	62	0	178	35	1.8	II
<b>Island (kg/ha)</b>			<b>3758</b>						
<b>Island</b>	<b>Pinto</b>	<b>20</b>	<b>100</b>	<b>56</b>	<b>100</b>	<b>369</b>	<b>41</b>	<b>3</b>	<b>II</b>
AAC Burdett	Pinto	7	99	55	-5	352	44	2.2	II
AAC Explorer (A)	Pinto	2	93	XX	1	339	36	3.8	II
CDC WM-2 ☼	Pinto	14	76	56	1	369	40	2.5	II
Medicine Hat	Pinto	12	93	61	4	354	42	2.4	II
Winchester	Pinto	13	85	56	4	337	40	2.5	II
<b>AAC Tundra (kg/ha)</b>			<b>3570</b>						
<b>AAC Tundra</b>	<b>Great Northern</b>	<b>13</b>	<b>100</b>	<b>52</b>	<b>97</b>	<b>349</b>	<b>42</b>	<b>2.9</b>	<b>II</b>
AAC Whitehorse	Great Northern	10	98	51	0	371	43	2.8	II
AAC Whitestar	Great Northern	4	93	54	0	353	47	2.9	II
AC Polaris	Great Northern	6	107	62	7	300	37	4.1	II
AC Resolute	Great Northern	10	97	51	3	342	41	3	II
<b>AC Redbond (kg/ha)</b>			<b>3149</b>						
<b>AC Redbond</b>	<b>Small Red</b>	<b>29</b>	<b>100</b>	<b>52</b>	<b>100</b>	<b>319</b>	<b>40</b>	<b>2.4</b>	<b>II</b>
<b>CDC Sol (kg/ha)</b>			<b>2350</b>						
<b>CDC Sol ☼</b>	<b>Yellow</b>	<b>14</b>	<b>100</b>	<b>55</b>	<b>104</b>	<b>409</b>	<b>33</b>	<b>1.5</b>	<b>I</b>
AAC Y012 (A)	Yellow	2	114	XX	1	406	36	2.1	I
AAC Y015 (A)	Yellow	2	81	XX	1	386	34	1.9	I
Myasi	Yellow	9	89	63	6	350	34	2.1	I
<b>Viva (kg/ha)</b>			<b>3137</b>						
<b>Viva</b>	<b>Pink</b>	<b>29</b>	<b>100</b>	<b>54</b>	<b>102</b>	<b>258</b>	<b>34</b>	<b>3.8</b>	<b>III</b>

**REMARKS:** A = First year entries; 1 Days to bloom from seeding; 2 Thousand Seed Weight; 3 Lodging: 1 = erect, 5 = flat. 4 Growth Habit: I = determinate bush, II = indeterminate bush, III = indeterminate vine. XX - Insufficient data to describe.

# CHICKPEAS

Variety	Type	Overall Station Years of Testing	Overall Yield1	Agronomic Characteristic			
				TSW2 (g)	Maturity Rating3	Plant Height (cm)	Tolerance to Ascochyta4
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Frontier)							
CDC Frontier (kg ha-1)			3948				
CDC Frontier1	Kabuli	32	100	362	L	44	F
CDC Consul (A)	Desi	7	92	298	M	40	F
CDC Corinne	Desi	17	107	250	M	45	F
CDC Cory	Desi	17	101	277	M	46	F
CDC Palmer (A)	Kabuli	7	95	424	M	38	F
CDC Alma	Kabuli	21	89	380	ML	39	VP
CDC Leader	Kabuli	17	97	400	ML	41	F
CDC Orion	Kabuli	21	94	452	ML	43	P
Previously tested varieties							
CDC Vanguard	Desi	16	92	230	ML	42	F
Amit	Kabuli	28	90	268	L	44	F
CDC Luna	Kabuli	19	88	377	ML	38	P

**REMARKS:** All four trials: Bow Island, Brooks, Lethbridge and Medicine Hat were grown in Area 1. A = First year entries (2016). 1 Yields are reported relative to CDC Frontier. 2 TSW: Thousand Seed Weight. 3 Maturity Ratings: E = Early, M = Medium, ML = Medium to Late, L = Late. 4 Tolerance to Ascochyta: VP = Very Poor, P = Poor, F = Fair.

## CHICKPEAS - KABULI

### CDC LEADER

**BI: CDC, Dist: N/A**

Willms, Henry & Timothy H. / Grassy Lake / AB / (403) 655-2434

### CDC ORION

**BI: CDC, Dist: N/A**

Kiffiak, Nathan & Mercer, Ryan / Foremost / AB / (403) 867-2338

Willms, Henry & Timothy H. / Grassy Lake / AB / (403) 655-2434

## FABA BEANS

### CDC SNOWDROP ☼

**BI: CDC, Dist: N/A**

Brummelhuis, Mitchell & Mack / Vauxhall / AB / (403) 654-7515

Jackson, Thomas / Killam / AB / (780) 385-2332

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Warkentin, Harold K. & Errol / Toftfield / AB / (780) 662-2617

### CDC SSNS-1

**BI: CDC, Dist: N/A**

Plett, Donald H. / Gem / AB / (403) 641-2494

### FABELLE

**BI: N/A, Dist: N/A**

Stamp Seeds / Enchant / AB / (403) 739-2233

### FB 9-4

**BI: N/A, Dist: N/A**

Stamp Seeds / Enchant / AB / (403) 739-2233

### SNOWBIRD ☼

**BI: Innoseeds, Dist: Bob Park**

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**BI: Norddeutsche Pflanzenzucht, Dist: DL Seeds**

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## HEMP

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Nieboer, Nathan / Bow Island / AB / (403) 545-2222

### GRANDI

**BI: N/A, Dist: N/A**

Mercer, Lloyd & Connie & Ryan & Bolstad, L. / Lethbridge / AB / (403) 327-9736

### SILESIA

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# LENTILS

Market Class	Variety	Overall Yield	Overall Station Years of Testing	Agronomic Characteristic:					Disease Tolerance: <sup>6</sup>	
				TSW <sup>2</sup> (g)	Plant Height (cm)	Maturity Rating <sup>3</sup>	Cotyledon Colour <sup>4</sup>	Seed Coat Colour <sup>5</sup>	Ascochyta	Anthrachnose
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Maxim)										
	CDC Maxim (kg ha-1)	2952								
	CDC Maxim (CL) <sup>1</sup>	100	23	40	34	E	R	GR	G	G
Extra Small Red	CDC Rosie	104	13	30	35	EM	R	GR	G	G
	CDC Roxy	116	3	26	31	E/M	R	G	G	G
Small Red	CDC Dazil (CL)	93	19	35	35	E-M	R	GR	G	F
	CDC Scarlet	106	13	38	35	EM	R	GR	G	F
Large Red	CDC KR-1	104	17	52	38	M	R	GR	G	G
Small Green	CDC Invincible (CL)	97	22	33	35	E	Y	G	G	G
Medium Green	CDC Impulse	101	3	39	34	E/M	R	G	G	G
Large Green	CDC Greenstar	80	3	56	34	M/L	Y	G	G	F
	CDC Impower (CL)	81	17	67	40	ML	Y	G	G	VP
	CDC Improve (CL)	83	17	72	38	M	Y	G	F	VP
Previously tested varieties (Yield and agronomic data only directly comparable to CDC Redberry)										
	CDC Redberry (kg ha-1)	2666								
	CDC Redberry <sup>1</sup>	100	24	43	37	E	R	GR	G	G
Extra Small Red	CDC Impala (CL)	98	17	31	36	E	R	GR	G	G
	CDC Imperial (CL)	86	19	30	36	E	R	GR/BR	G	G
	CDC Redbow	104	13	32	34	E	R	GR	G	G
	CDC Rosebud	99	13	30	34	E	R	T	G	G
	CDC Ruby	101	14	29	35	E	R	GR	G	G
Small Red	CDC Cherie	108	3	40	32	E-M	R	G	G	F
	CDC Impact (CL)	85	8	37	34	E	R	GR	G	P
	CDC Imax (CL)	103	16	35	49	E-M	R	GR	G	F
	CDC Redcliff	116	11	38	38	E-M	R	GR	G	F
	CDC Redcoat	98	13	42	34	E	R	GR	G	G
Small Green	CDC Viceroy	111	7	31	35	E	Y	G	G	G
Medium Green	CDC Imigreen (CL)	85	11	60	47	M	Y	G	G	VP
	CDC Impress (CL)	90	11	52	40	M	Y	G	G	P
Larrge Green	CDC Greenland	93	11	67	41	M-L	Y	G	G	VP
French Green	CDC Peridot (CL)	105	2	38	XX	E	Y	MRB	F	P

**REMARKS:** Weight, diameter and thickness of lentil seeds were dependent upon environmental conditions and agronomic factors. All five trials: Bow Island, Brooks, Lethbridge, Medicine Hat and Oyen were grown in Area 1. CL = Clearfield variety; XX = Insufficient data to describe. 1 Yields are reported relative to CDC Maxim (CL) or CDC Redberry. CDC Maxim and CDC Redberry belong to Small Red Market Class. 2 Thousand Seed Weight. 3 Maturity: E = Early, M = Medium, L = Late, VL = Very Late. 4 Cotyledon Color: R = Red, Y = Yellow, G = Green; 5 Seed Coat Color/Patterns: G = Green, GR = Grey, BR = Brown, FG = French Green, T = Tan, MRB = Marbled. 6 Disease tolerance: VP = Very Poor, P = Poor, F = Fair, G = Good.



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# LENTILS

## CDC GREENSTAR

BI: CDC, Dist: N/A

Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900  
Hoffmann, Curtis / Oyen / AB / (403) 664-9617  
Willms, Henry & Timothy H. / Grassy Lake / AB / (403) 655-2434

## CDC IMAX

BI: CDC, Dist: N/A

Huvenaars, Carl / Hays / AB / (403) 725-2213  
Mercer, Lloyd & Connie & Ryan & Bolstad, L. / Lethbridge / AB / (403) 327-9736  
Witdouch, Dale / Iron Springs / AB / (403) 738-4395

## CDC IMPULSE

BI: CDC, Dist: N/A

Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900  
Hoffmann, Curtis / Oyen / AB / (403) 664-9617  
Kiffiak, Nathan & Mercer, Ryan / Foremost / AB / (403) 867-2338  
Kiffiak, Nathan J. & Anderson, Tim / Foremost / AB / (403) 867-2338  
Willms, Henry & Timothy H. / Grassy Lake / AB / (403) 655-2434  
Witdouch, Dale / Iron Springs / AB / (403) 738-4395

## CDC MARBLE

BI: CDC, Dist: N/A

Chin Ridge Seeds Ltd. / Taber / AB / (403) 223-3900

## CDC MAXIM

BI: CDC, Dist: N/A

Richard, Gerald / Spirit River / AB / (780) 864-2339

## CDC PROCLAIM

BI: CDC, Dist: N/A

Nanninga, Justin / County Of Barrhead / AB / (780) 674-3822  
Stamp Seeds / Enchant / AB / (403) 739-2233  
Willms, Henry & Timothy H. / Grassy Lake / AB / (403) 655-2434

# MUSTARD

## AC VULCAN

BI: AAFC, Dist: N/A

Mercer, Lloyd & Connie & Ryan & Bolstad, L. / Lethbridge / AB / (403) 327-9736

## ANDANTE

BI: N/A, Dist: AAFC (Saskatoon)

Mercer, Lloyd & Connie & Ryan & Bolstad, L. / Lethbridge / AB / (403) 327-9736



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# SeedNet

## AAC Lacombe Pea

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# FIELD PEA – GREEN

Variety	Overall Yield (%)	Overall Station Years of Testing	Area:										Agronomic Characteristics:			
			1		2		3		4		5					
			Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years	Maturity Rating <sup>1</sup>	Vine Length (cm)	TSW <sup>2</sup> (g)	Stand-ability <sup>3</sup> (1-9)
			Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Limerick)													
CDC Limerick (kg/ha)	4657		3511		4310		6047		4417		7329					
CDC Limerick	100	76	100	12	100	24	100	12	100	23	100	5	L	77	211	3.3
AAC Radius	92-	44	94	8	90-	11	88-	6	94-	16	87	3	M	76	217	3.6
AAC Royce	96-	27	100	5	90	5	92	4	99	11	92	2	M	66	249	3.6
CDC Greenwater	106+	42	106	8	109	11	105	6	106+	14	97	3	L	74	230	2.8
Fully tested varieties: 2013 - 2014 (Yield and agronomic data only directly comparable to CDC Patrick)																
CDC Patrick (kg/ha)	4732		5083		4031		6242		4305		6049					
CDC Patrick	100	109	100	16	100	34	100	16	100	32	100	10	M	79	186	4.4
CDC Pluto	96-	52	101	8	96	17	85-	8	100	16	92	3	M	82	170	6
CDC Raezer	105	52	91	8	110	17	98	8	107	16	116	2	M	89	227	4.2
CDC Tetris	106	52	102	8	109+	17	93	8	110+	16	115+	3	L	91	215	4.4
Fully tested varieties: 2004 - 2012 (Yield and agronomic data only directly comparable to Cooper)																
Cooper (kg/ha)	4763		4947		3672		5977		4835		4962					
Cooper ☼	100	121	100	18	100	38	100	18	100	36	100	11	L	76	270	3.6
CDC Sage	82-	31	79	3	81-	8	82-	7	84-	13	XX	XX	M	75	197	3.3
CDC Striker	96-	39	92	3	109	10	104	5	89-	21	XX	XX	M	72	255	3
Mendel ☼	91-	38	75-	3	95	12	89-	6	91-	15	95	2	M	78	205	3.9

**REMARKS:** CDC Tetris is an Espace type with blocky seed shape. All the green pea varieties listed in the table are Powdery Mildew resistant except CDC Striker that is susceptible. XX = Insufficient data to describe; † = Flagged for removal. ☼ = Protected by Plant Breeder's Rights (PBR). 1 Maturity: E = Early, M = Medium, L = Late; 2 Thousand Seed Weight: g; 3 Standability: 1 = Erect, 9 = Flat; 4 Tolerance to: P = Poor, F = Fair, G = Good, VG = Very Good; 5 Seed Coat Dimpling: VG = Very Good (0 - 5%), G = Good (6 - 20%), F = Fair (21 - 50%).



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# FIELD PEA – GREEN — *CONT.*

Disease Tolerance:<sup>4</sup>

Variety	Mycosphaerella Blight	Fusarium Wilt	Bleaching	Seed Coat Breakage	Seed Coat Dimpling <sup>5</sup>
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Limerick)					
<b>CDC Limerick (kg/ha)</b>					
<b>CDC Limerick</b>	<b>F</b>	<b>F</b>	<b>G</b>	<b>VG</b>	<b>G</b>
AAC Radius	F	F	G	G	G
AAC Royce	F	F	G	F	F
CDC Greenwater	F	G	G	F	F
Fully tested varieties: 2013 - 2014 (Yield and agronomic data only directly comparable to CDC Patrick)					
<b>CDC Patrick (kg/ha)</b>					
<b>CDC Patrick</b>	<b>F</b>	<b>G</b>	<b>G</b>	<b>G</b>	<b>G</b>
CDC Pluto	F	F	G	G	G
CDC Raezer	F	G	G	G	G
CDC Tetris	F	G	G	G	G
Fully tested varieties: 2004 - 2012 (Yield and agronomic data only directly comparable to Cooper)					
<b>Cooper (kg/ha)</b>					
<b>Cooper</b> 🌱	<b>F</b>	<b>F</b>	<b>G</b>	<b>F</b>	<b>G</b>
CDC Sage	F	G	G	VG	G
CDC Striker	F	G	G	G	F
Mendel 🌱	F	F	G	F	G



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# FIELD PEA – YELLOW

Variety	Overall Yield (%)	Overall Station Years of Testing	Area:										Agronomic Characteristics:			
			1		2		3		4		5					
			Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years	Yield (%)	Site Years	Mat. Rating1	Vine Length (cm)	TSW2 (g)	Stand-ability3 (1-9)
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Amarillo)																
CDC Amarillo (kg/ha)	5123		3688		4594		6715		5073		7798					
CDC Amarillo	100		100		100		100		100		100		M	85	226	2.6
AAC Barrhead (A) ☼	100	14	97	2	97	3	97	3	105+	5	101	1	E	80	235	3.3
AAC Carver (A) ▲	104	14	103	2	92	3	105	3	107+	5	125	1	E	85	245	3.9
CDC Inca	104	28	101	5	98	7	112+	5	104	9	109	2	M	85	232	2.2
CDC Meadow	96-	63	95	10	100	20	89-	10	95-	19	93	4	M	81	203	3.9
LN4228 ▲	93-	45	90-	8	95	13	89	7	95	14	93	3	M	69	254	2.1
Previously tested varieties																
AAC Lacombe ☼	105+	47	107+	8	101	16	112	6	107+	14	101	3	M	73	255	2.3
AAC Peace River	92-	49	89-	8	93-	16	93	6	97	16	73	3	VE	68	217	3.8
Abarth	98-	49	101	8	106	17	88-	7	94	14	89	3	M	77	249	3.6
Fully tested varieties: 2012-2014 (Yield and agronomic data only directly compared to CDC Meadow)																
CDC Meadow (kg/ha)	4982		3943		4277		6160		5316		6689					
CDC Meadow	100		100		100		100		100		100		M	81	207	3.6
CDC Saffron	103	47	110	8	103	16	99	7	101	13	101	3	M	84	236	4.3
Hugo ☼	93-	47	104	7	87-	15	91	8	96	14	80-	3	M	73	210	5.2
Stella ☼ NR F	80-	45	75-	7	80-	15	84-	8	80-	12	78-	3	M	95	213	3.9
Fully tested varieties: 2003-2011 (Yield and agronomic data only directly comparable to Cutlass)																
Cutlass (kg/ha)	4485		3388		3503		5654		4816		3932					
Cutlass ☼ †	100		100		100		100		100		100		M	71	228	4.1
Agassiz ☼	103	43	99	5	103	10	102	8	104	19	XX	XX	M	77	237	2.9
CDC Hornet	107+	43	99	6	111+	14	111+	8	102	13	128	2	M	89	215	3.7
CDC Prosper	97-	44	90	4	97	12	97	9	99	18	94	1	E	73	150	3.9
CDC Treasure	100	44	96	4	103	12	99	9	100	18	116	1	E	80	217	3.4
Thunderbird	97	37	88	5	99	10	99	9	98	13	XX	XX	M	76	229	2.1
Fully tested varieties: 2000-2005 (Yield and agronomic data only directly comparable to Carrera)																
Carrera (kg/ha)	4126		2913		2779		5248		4681		4016					
Carrera ☼	100		100		100		100		100		100		E	54	257	4.7
CDC Golden	105	36	99	5	109	12	99	7	105	11	XX	XX	M	70	223	3.5

**REMARKS:** Stella is a silage type pea. All the yellow pea varieties listed in the table are Powdery Mildew resistant except Carrera that is susceptible. ☼ = Applied for PBR protection. A = First year entries (2016). NR = Variety not registered with CFIA. F = Forage type. XX = Insufficient data to describe. ☼ = Protected by Plant Breeder's Rights (PBR). 1 Maturity: E = early, M = medium, L = Late; 2 Thousand Seed Weight: g; 3 Standability: 1 = erect, 9 = flat; 4 Tolerance to: P = poor, F = fair, G = good, VG = very good; 5 Seed Coat Dimpling: VG = very good (0-5%), G = good (6-20%), F = fair (21-50%); 6 Green Seed Coat: G = good (0-10%), F = fair (11-25%).

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# FIELD PEA – YELLOW — *CONT.*

Disease Tolerance:<sup>4</sup>

Variety	Myco-sphaerella Blight	Fusarium Wilt	Seed Coat Breakage	Seed Coat Dimpling <sup>5</sup>	Green Seed Coat <sup>6</sup>
<b>Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to CDC Amarillo)</b>					
<b>CDC Amarillo (kg/ha)</b>					
<b>CDC Amarillo</b>	<b>F</b>	<b>G</b>	<b>F</b>	<b>F</b>	<b>G</b>
AAC Barrhead (A) ☼	F	F	G	G	XX
AAC Carver (A) ▲	F	F	G	G	XX
CDC Inca	F	F	G	G	F
CDC Meadow	F	F	G	G	G
LN4228 ▲	F	F	F	F	G
<b>Previously tested varieties</b>					
AAC Lacombe ☼	F	P	G	F	G
AAC Peace River	F	F	F	G	G
Abarth	F	F	F	G	G
<b>Fully tested varieties: 2012-2014 (Yield and agronomic data only directly compared to CDC Meadow)</b>					
<b>CDC Meadow (kg/ha)</b>					
<b>CDC Meadow</b>	<b>F</b>	<b>F</b>	<b>G</b>	<b>G</b>	<b>G</b>
CDC Saffron	F	F	G	F	G
Hugo ☼	F	F	G	F	F
Stella ☼ NR F	F	F	G	G	F
<b>Fully tested varieties: 2003-2011 (Yield and agronomic data only directly comparable to Cutlass)</b>					
<b>Cutlass (kg/ha)</b>					
<b>Cutlass ☼ †</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>	<b>G</b>
Agassiz ☼	F	F	G	VG	G
CDC Hornet	F	F	F	F	G
CDC Prosper	F	G	G	F	G
CDC Treasure	F	F	G	F	F
Thunderbird	F	F	G	VG	XX
<b>Fully tested varieties: 2000-2005 (Yield and agronomic data only directly comparable to Carrera)</b>					
<b>Carrera (kg/ha)</b>					
<b>Carrera ☼</b>	<b>P</b>	<b>F</b>	<b>F</b>	<b>G</b>	<b>XX</b>
CDC Golden	F	F	G	G	G



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<b>CDC LIMERICK</b>					
<b>BI: CDC, Dist: Saskatchewan Pulse Growers</b>					
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<b>BI: CDC, Dist: N/A</b>				
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<b>REDBAT 88</b>				
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# SOYBEANS

Variety	Irrigation:		Agronomic Characteristic:					
	Yield (%) Check <sup>1</sup>	Site Years Tested	Days to Flowering	Pod Clearance <sup>2</sup> (cm)	Plant Height (cm)	Relative Days to Maturity <sup>3</sup>	TSW <sup>4</sup> (g)	Seeds per Pound
Varieties tested in the 2016 trials (Yield and agronomic data only directly comparable to McLeod)								
<b>MCLEOD (kg ha-1)</b>	<b>3497</b>							
<b>MCLEOD</b>	<b>100</b>	<b>15</b>	<b>54</b>	<b>7</b>	<b>66</b>	<b>121</b>	<b>155</b>	<b>2926</b>
22-60	102	8	51	4	57	1	145	3128
23-11	98	8	53	4	68	1	142	3194
23-60	106	8	49	4	72		143	3172
Akras	114+	15	58	10	65	2	140	3240
CFS 16.3.02 (A)	95	4	51	4	74	-5	133	3410
CHU 2425 (A)	85-	4	51	5	79	-8	149	3044
Notus	108	8	50	4	56		175	2592
Podaga (A)	97	4	51	7	81	4	159	2853
S 0009	100	8	49	5	62	-8	148	3065
S 001 (A)	105	4	53	5	77	-2	163	2783
S 003 (A)	106	4	51	6	67	-8	174	2607
S 006 (A)	118+	4	49	4	66	-8	133	3410
S 007	106	8	50	4	63	0	146	3107
Previously tested varieties								
900Y61	90-	11	54	7	56	1	150	3024
NSC Moosomin	78-	11	53	6	49	-4	138	3287
NSC Reston	103	11	54	8	61	-2	128	3544
NSC Vito	89-	11	53	7	71	0	132	3436
P001T34	65-	11	53	5	46	-9	136	3335
Pekko	102	11	57	9	65	0	130	3489

**REMARKS:** Straight combining is commonly used method of harvest. Swathing soybean can result in excessive field losses (up to 25%) due to shattering. Approximately four beans or one to two pods per square foot represent a yield loss of one bushel per acre. Varieties removed from the table: CFS 12.5.01, CFS 13.2.01, Hero, NSC Tilston, NSC Watson, P002T34, P006T78, Pro 2525, TH 32004, TH33003, TH 33005 and TH35002. All four trials: Bow Island, Brooks Lethbridge and Medicine Hat were grown under irrigation. A - first year entries (2016). 1 Yields are reported relative to MCLEOD, yields that are statistically higher (+) or lower (-) than the check are indicated. 2 Distance from the ground level to lowest pod tip. 3 Maturity is reported as +/- days relative to MCLEOD - averaged across the Brooks, Bow Island and Medicine Hat trials. 4 TSW: Thousand Seed Weight.

# SOYBEANS

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# Putting a Price on Midge Tolerant Wheat Innovation

Industry and growers work together to protect a valuable technology.

**THE** seed industry now has a solid handle on the financial benefits of midge tolerant wheat.

Since launch of the first varieties in 2010, growers and industry have been strongly committed to stewardship of the technology that protects a crop from the damaging effects of orange blossom wheat midge.

Research can now quantify just what their effort is worth. According to program evaluation experts, Ference and Company, the net benefits of the midge tolerant wheat innovation is approximately \$455.8 million. This finding comes from a cost-benefit analysis report prepared for Agriculture and Agri-Food Canada.

"We were really pleased to see these numbers," says Mike Espeseth, communications manager for the Western Grains Research Foundation (WGRF) and co-chair of the Midge Tolerant Wheat Stewardship Committee. "It's great to see that technology investment is paying off for western Canadian agriculture."

WGRF is just one of the many stakeholders who funded the innovation. The study puts the total development cost of the innovation at \$16.3 million, which includes ongoing investment over the next three years.

## Stewardship Compliance Reviews Ongoing

"Putting an actual value to the technology underscores the importance of protecting it," adds Espeseth. He is referring to the requirements that every midge tolerant wheat producer commits to when signing a Stewardship Agreement at the time of seed purchase. Specifically, they agree to limit the use of farm-saved seed to one generation past Certified



seed, which keeps the refuge at the necessary level. There is currently only one midge tolerant gene (called Sm1), which the industry can't risk losing. The Midge Tolerant Wheat Stewardship Committee works hard to ensure this message reaches growers.

Stewardship reviews are another way that growers are reminded of their commitment to protect the technology. According to Todd Hyra, business manager for SeCan in Western Canada, wheat growers are very receptive to the compliance reviews, which are ongoing. "That being said, there are a few difficult situations that we follow up on and, if necessary, take enforcement actions. It's a very small number, but they risk a lot for the entire trait."

An interspersed refuge system is critical to preserving the Sm1 trait. It prevents the build up of the virulent midge population (virulent midge carry a mutation which allows them to attack midge tolerant varieties). Without it, midge tolerance could break down within 10 years and there is no other known source of midge tolerance.

## New Varieties for 2017

It's thanks to the diligent stewardship practices of growers that varieties with the Sm1 gene can continue to be developed. Six new varieties are available for the upcoming growing season, bringing the total number of midge tolerant wheat options close to 20.

Adding new classes of wheat to the midge tolerant line-up exposes the technology to growers who may not have had a chance to try it before. Hyra views this as an opportunity to teach new growers, as well as previous ones, how it works. For example, seeing midge damage at harvest is normal.

"Midge must feed on the kernel in order to trigger the response and turn them off feeding," he explains. "It is midge tolerance, not midge resistance. In the case of a midge tolerant variety, sometimes you will see some damage in the sample, but because you are retaining more of those kernels, you have more grain. As opposed to the ones that are fed on completely and blown out the back of the combine."

There are hot spots of midge in Alberta each year, but the industry hasn't seen any significant outbreaks since the one in Peace River in 2013.

"I really do believe in midge tolerance keeping everything in balance," says Hyra. "When you're not spraying out all of the beneficial insects, that allows things to fall into balance. It also allows producers to focus on other challenges when they've got midge under control."

Removing worry from growers didn't factor into the Ference and Company return on investment report, but it's a significant benefit that you can't put a price on. **Karen Lewis**



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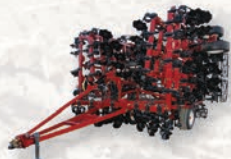
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## SEED CLEANING PLANTS AND TREATING SERVICES IN YOUR COMMUNITY.



The Alberta Seed Processors is a group of locally operated co-operatives that offer valuable cleaning services for communities throughout Alberta and British Columbia. They were established through the joint efforts of the Province of Alberta and local municipal governments.

Farmers can get seed cleaned and treated at facilities across the province. Additional services available at several facilities include pulse processing, value processing, pedigree seed processing, specialty processing, and seed inoculating, as well as seed and chemical sales.

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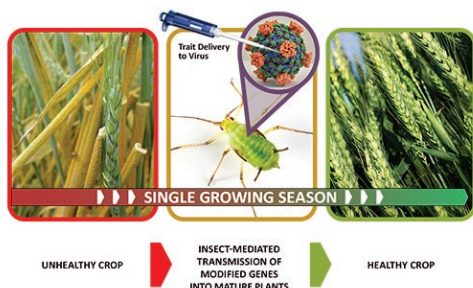
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## To Cure Crop Disease Faster, Add Bugs

Scientists might soon be able to transform wilting, diseased crops into healthy ones by releasing colonies of benign insects onto a field.



Scientists at the Defense Advanced Research Projects Agency (DARPA) in the U.S. want to capitalize on insects' natural relationships with plants. They believe the insects can transmit viruses carrying beneficial genetic traits to the plants they feed on.

The agency wants to use an approach called gene therapy to protect and rejuvenate crops from diseases – both naturally occurring ones and biothreats. Scientists think insects, which are the natural carriers of most plant viruses, could shuttle defensive genes to crops. Insects can be quickly bred and released within the same growing season.

DARPA is soliciting proposals from academic and industry scientists to develop a plant virus capable of carrying and delivering genetic material to a mature plant. Investigators will then have to figure out which insect species would deliver the viruses.

Ideally, the technology could be used for important agricultural commodities, such as corn, wheat and soybeans. For now, the gene therapy experiments will be conducted in laboratories or other contained spaces. DARPA hopes the technology will be ready to be released in the field in four years.

## Accelerating Plant Breeding in Developing Countries

Crop breeders in developing countries can now access free tools to accelerate the breeding of improved crops varieties, thanks to a collaboration between the GOBII project at Cornell University and the Boyce Thompson Institute (BTI), and the James Hutton Institute in Scotland.

The collaboration works with breeding centres around the world to identify unmet needs and has developed tools to make the process of adding a trait into an existing, high-yield crop variety more efficient. Researchers at the International Maize and Wheat Improvement Center (CIMMYT) are using the tools to

develop corn varieties with greater resistance to viruses.

Researchers at GOBII, the Genomic and Open-source Breeding Informatics Initiative, worked with developers from the Hutton Institute to build upon the existing data visualization application, Flapjack. Its new tools enable breeders to select the best possible parental lines and help users to perform marker-assisted backcrossing (MABC) – a process that involves repeated breeding with the high-yield parent to ensure that only the desired genes are transferred. Researchers estimate that they can cut a year or two from the four or five years required to develop a new variety.

Previously, these types of molecular breeding tools only existed within biotech companies. But GOBII, a Cornell-led project funded by the Bill & Melinda Gates Foundation, is tailoring these free tools for breeders in developing countries. They are building data management software in collaboration with the international crops research centers ICRIAT in India, CIMMYT in Mexico and IRRI in the Philippines.

Michael Olsen, a molecular geneticist at CIMMYT, is test-driving the tools in his work to develop lines of corn that are resistant to maize lethal necrosis, a disease that has devastated corn crops in Kenya. Olsen's research involves 43 separate breeding crosses, bred over five generations. The new tools help him to visualize the relevant genes and identify donor strains that are most likely to successfully interbreed.

Next, GOBII will conduct training sessions for the tools at breeding centres in India, Africa, Mexico, the Philippines and at Cornell. The tools can be used to improve any trait in any crop plant.



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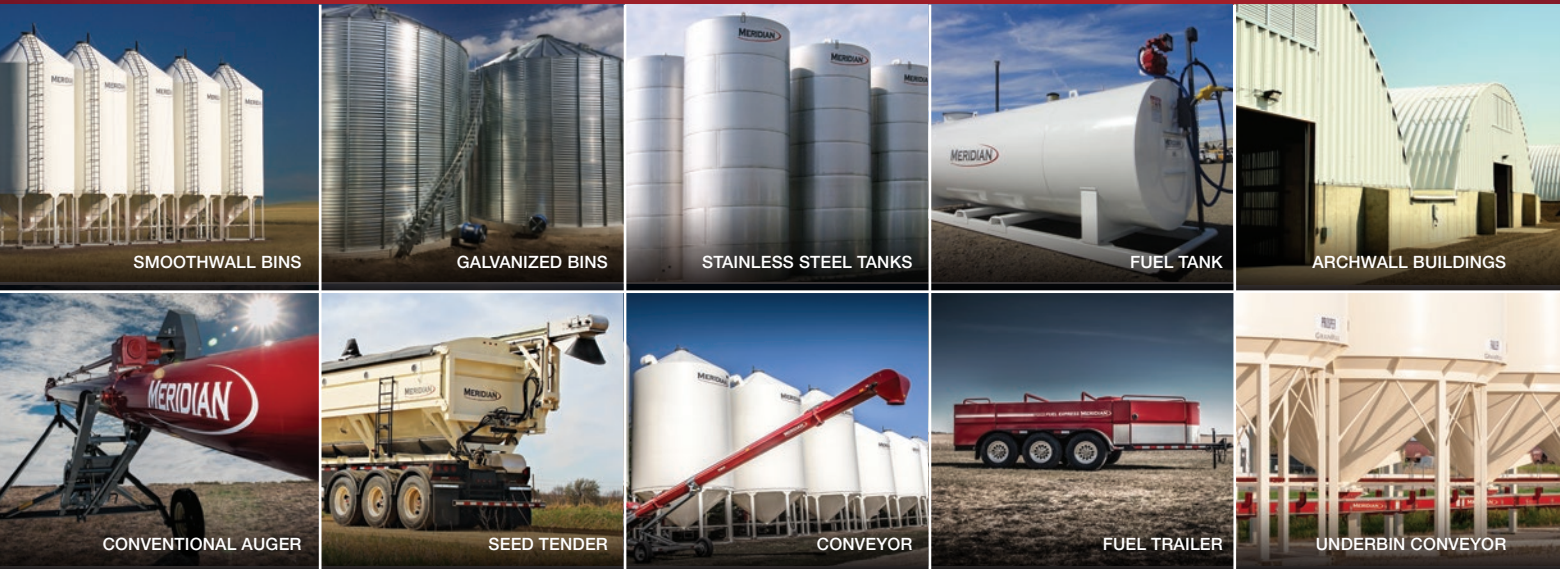
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