



2019 Annual Report & Field Crop Variety Performance





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Opinions expressed in this document are those of the BC Grain Producers Association and not necessarily those of our funding partners.

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Introduction and Acknowledgements

The look of 'The Book' as it is known throughout the region has changed significantly this year. In addition to an earlier release, you will notice that the first section of the book is dedicated to the advocacy work that the BC Grain Producers Association completes on behalf of our members. The remainder of the book will have the more familiar look and information everyone is expecting from the BCGPA research department. The weather struggles that plagued the Prairies and the Peace Region this year also affected the research trials; most notably the South Peace trials, which are still in the field as of the publication date of this book. Another major change this year affects the canola pages, due to funding constraints there were no BCGPA directed canola trials this season, so the canola page will show the link to the Canola Performance Trials, instead of the full canola report.

Local agri-businesses and seed producers of the BC Peace Region should be recognized for their contributions by providing certified seed to the program. We thank all these individuals/organizations, along with various seed development and distribution companies for their direct financial support through "fee-for-service" contracted research, and "in-kind" support towards making field-testing and production of this book possible. Various other private organizations make financial contributions for field days, etc. throughout the year which further enhance the efforts of the research department.

Thanks are extended as well to the site cooperators who continue to generously give their support to the program via lease agreements to their land for research, the **Blanchette Family** and **Heath Tanner** for the North Peace site and **School District #59** for the South Peace site. A further word of thanks goes out to **Dennis Meier** of Dawson Creek who continuously and generously offers us space on his own farm for storage of much of our field equipment.

Cautionary Notes

This document reports all tested materials grown during the 2019 growing season from head-to-head performance trials placed at the BC Grain Producer Association research farms. Multiple-year testing for any one variety is our goal, but often new materials can only be tested for the current year, which may result in an unfair representation of new single-year materials against statistically stronger multiple-year materials. To try to resolve this issue, we now display the results in two graphs for each crop type, one with only the current year's results and one with multiple-year results. In the multiple-year graphs, new one-year data is left out to be objective. Where **one-year results are shown**, whether in current one-year graphs or in charts, **readers must still interpret and use such one-year data with considerable caution**. As additional results are obtained for a particular variety, the simple effect of compiling data from variable weather patterns over time may change its position regarding either or both yield and maturity. The more station years (*defined as one test site at one location in one year*) that can be used to produce an average, the more stable and reliable a result will be - hence the association's steadfast efforts to procure multi-year data. By providing readers with a separate "current year graph," many of the risks with looking at one-year data is still there but the chances of misrepresenting new entries against older stronger data is greatly reduced.

This book is produced without bias and is reported to the best of our ability from our own site data collected locally (except where noted). Results contained herein should only be used as a guide and where labels or agreements are signed or supplied with your product, always follow label directions and agreements.

For More Information Contact

Sharla Pearce – General Manager
Suite 3, 10421 100 Street
Fort St John, BC V1J 3Z3
Phone: 250-785-5774



REPORT TO MEMBERS

The focus of the BC Grain Producers Association (BCGPA) is to improve the long-term viability and sustainability of the grains in the oilseed industry in the BC Peace River Region. The Association communicates with other organizations and agencies to benefit the field crop industry in the Peace Region and outside the region via cooperative research and active participation with other industry focus groups and committees.

The staff and directors of the BCGPA work tirelessly on establishing a more cohesive and functional organization, as well as fulfilling both the research and the advocacy aspects of the association. Strategic planning has been an instrumental part of building a better functioning society for our members. Out of the strategic planning sessions that have taken place, the BCGPA now has solid tactical plans that require implementation over the next 3-5 years. BCGPA has applied for funding for multiple projects that benefit our members, which will be discussed in more detail in the body of this report. The BCGPA has kept up its membership on various boards and committees in the North and South Peace in order to represent the grain producers of the Peace Region and to provide the organization with as much knowledge as possible.

The realization that the majority of our members think of the BCGPA as strictly conducting crop research was eye opening, as the BCGPA does so much more than just research. Advocacy for the grain producers of the North and South Peace is a monumental part of what our Association does. A large part of this advocacy includes involvement in outside organizations, which is important to maintain and build relationships to benefit grain producers of British Columbia.

FUNDING PRIORITIES

Director's Meeting Remuneration

Director's remuneration is used to provide compensation to the Directors of the BCGPA for travel costs and time they spend at Director's meetings. The BCGPA directors are pulled in many directions, and their volunteer duties on the board can be very taxing on both their time and resources. While directors are compensated for attended BCGPA meetings out of this fund, the multitude of other meetings they attend on behalf of the BCGPA will continue to be on a volunteer basis. This small token of appreciation has helped the Association to retain experienced board members and to attract new ones. It is of utmost importance to have informed representatives on local, provincial and national issues, it is key in providing significant local based input at meetings.

Director's Support

The funding in this project provides administrative support to the BCGPA Board. The operation of an organization requires time, skill and most importantly, consistency. The many duties of the administrative support include ensuring the action items that come out of meetings are carried out and that careful preparation goes into board meeting planning to promote the efficiency. The BCGPA's General Manager, along with part-time office personnel, provide this service for the directors to ensure that their operational load is minimal, freeing their time to advocate for farmers. We have

noticed that director changeover is minimized when long-term administrative staff is in place and the operations of the Association can proceed seamlessly when directors do leave the Board.

The administrative office in Fort St John allows the BCGPA to fully serve its members and is the hub of all incoming and outgoing communications. The office staff makes director travel arrangements, prepares agendas and meeting packages for board meetings, takes meeting minutes and communicates with members and outside associations on behalf of the board. The General Manager works closely with the Board of the BCGPA to make sure that tasks delegated at the director's meetings are followed up on and completed.

The operational support provided to the BCGPA directors through this funding allows directors to attend to their own businesses and represent the membership of the BCGPA at various meetings and conferences. This project has helped to bridge the gap from meeting to meeting by having dedicated staff personnel follow through with action items.

Membership Fees

Funding for membership fees allows the Association to maintain and enhance current relationships with other organizations as well as foster new ones. The objective of this funding is to ensure that the BCGPA has adequate representation on grain and oilseed committees at both a provincial and national level. To have continued involvement with research groups, marketing groups and other special interest groups that compliment the objectives and interests of the membership of the BC Grain Producers Association is very important.

The BC Grain Producers Association is a member of the following organizations:

- ✦ BC Agriculture Council
- ✦ Grain Growers of Canada
- ✦ Cereals Canada
- ✦ Canola Growers Association
- ✦ Fort St John Chamber of Commerce

It is critical that the BCGPA have representation at both the provincial and national levels in order to have input into decisions or changes made to grain and oilseed industry policies that will directly impact BC Peace producers. By having a strong presence within these organizations, the Association is able to influence policy development in the agriculture sector. Affiliations with these organizations allow Canadian and British Columbia agriculture to present a united front and increase impact and success when fighting for policy change in the government arena.

Pan-Agriculture in the North/Regional Agriculture Awareness (2017 – 2019)

The key objective of these projects is to address issues affecting all farmers in the BC Peace in a timely and effective manner. Agricultural producers in the region are relying on directors of the organization to be proactive in their approach to dealing with agriculture matters and bringing attention to these issues, both locally and outside their region. The project has been broken into six concerns that have been flagged as important to agriculture producers across the BC Peace Region.

Producers in the Peace face distinctive challenges and no one is more capable to represent the issues and interests of BC Peace Region grain and oilseed producers than the farmer directors who are facing the same issues as the members who elected them. These projects were vital to ensuring that BC

Peace grain and oilseed producers have a say at various local, provincial and national meetings on all these important topics and have access to the involvement in developing new programs and initiatives that are meaningful to agriculture producers.

Business Risk Management – The BCGPA was kept informed about current risk management tools and was actively involved in developing and improving risk management programs. In order to be assured that these programs will be effective when needed, representative(s) had the ability to influence policy changes and regulations on federal and provincial agriculture funding programs, crop protection insurance and other issues that could be considered an eminent threat to farm income.

A national strategy for an Environmental Farm Plan was moved closer to implementation with a meeting held in Ottawa that involved discussions across the commodities and the provinces to set a plan for a new national policy framework. Staff and board members of the BCGPA were invited to attend a meeting with an independent advisory committee put in place by BC Minister of Agriculture to provide strategic advice and policy guidance on revitalizations of the ALR and ALC. Those in attendance were able to speak directly to a panel of BC based producers from around the province to discuss changes they feel would best support Peace agriculture producers.

The BCGPA was able to engage a third-party contractor to run through a generic farm cost-based scenario to show how provincial risk management programs could either benefit a producer or not, this information was presented to members during an AGM. An AgriRisk based meeting was held in Fort St John, with producers leading the discussion on what they felt the major risk(s) the grains and oilseed sector in BC were facing. This meeting ties into changing the provincial and national programs and giving farmers the tools to be proactive in risk management rather than reactive, as well as mitigating losses after the fact.

The Production Insurance Grain and Forage Advisory Committee met in March 2018 in Fort St John and members of the BCGPA board were able to attend to discuss the needs of grain and oilseed producers as related to provincial production insurance. The payments for AgriStability are still almost 2 years behind, with only 67% of applications for 2016 processed. The Ministry was again made aware that this hold up in the payouts is completely unacceptable when producers may need cash flow. The Production Insurance working group met in March 2019 and discussions on insurance of winter wheat and malt barley were had again, with no results. However, due to conversations started through this committee, the insurance pricing for all peas has been raised to 2CW.

In mid-2018, there were reports of GM wheat being found in Alberta. This project allowed for the Association to have an ear on the conversation and monitor it for any issues that would affect BC producers. The BC Grain Producers' hosted presentations from Anthony Parker with the Canadian Food Inspection Agency to speak on Plant Breeder's Rights and Gregory Sekulik from the Canola Council of Canada to discuss the threat of Clubroot arriving to the BC Peace region.

Climate Awareness and Biosecurity – Concerns regarding biosecurity and environmental issues as related to agriculture production were investigated and followed up upon. A BCGPA representative attended relevant food safety meetings, environmental meetings and seminars in order to inform producers of new and relevant protocols, as well as encouraged producers to take a closer look at their own operations and those of their neighbours to investigate solutions provided through these meetings and seminars. Environmental concerns (GMO, pests, farm waste, etc.) are constantly changing and at most times need an immediate response, making it extremely important to have

representative(s) who are accurately informed about these concerns to allow for exact and concise information to pass on to local producers who can then make educated decisions for their own farms.

The BCGPA worked in partnership with the Agriculture and AgriFood office in Summerland, BC to trap spores in the air at the North Peace farm. These samples were sent to AAFC Summerland at the end of the season for analysis. The analysis was then overlaid with climate and weather data to show the shift of the pathogens throughout the province.

Different pathways for agriculture recycling in the Peace Region were investigated with no firm plan to move forward currently available. There was not much progress made in this area as there seemed to be roadblocks everywhere stopping the progress in our region. We will continue to push forward on this matter, as recycling agriculture waste will tie into the public trust issue moving forward.

The Agriculture Waste Control Regulation (AWCR) has been replaced by the Agriculture Environmental Management Code of Practice (AEMCoP) in BC over the past year. Staff of the organization have participated in calls with the Ministry of Agriculture and Environment as the conversion has taken place over the past year, along with working with the BC Agriculture Council on this file.

BC Grain Producers Association's staff was involved in wildlife programming within the Site C Environmental Assessment Condition #31. This program will allow for wildlife monitoring within 5km of the new reservoir pre and post filling and will be a voluntary program that will have data collection by the means of camera traps, exclusion cages and the knowledge of local producers.

Marketing – With trade missions departing from Canada more often as the Canadian government attempts to break into new markets, producers need to be kept current on market options and barriers in order to capitalize on these new opportunities. As we look to the future of marketing grains and oilseeds, BCGPA representation will ensure that the needs of Peace area producers are voiced with appropriate boards and agencies. Board members and staff of the BCGPA have been able to take part in events and discussions with individuals and associations throughout the entire value chain. These conversations centered around trade markets that were in the process of opening and concerns with chemical residues and tariffs for foreign markets.

Community Building & Public Trust – Grain and oilseed producers in the Peace Region need to come together to prove we are worthy of the public's trust. This is a battle being fought worldwide and because of its importance to the future of the industry, public trust and engagement are the basis of this project. Public Trust is becoming more a part of everyday life on the farm and educating the public about science-based agriculture and fighting misinformation in the public sphere has never been more important, nor more difficult. Public engagement, along with member interaction between commodity groups was encouraged through rural town-hall meetings, school tours, agricultural show booths at regional fall fairs and tradeshow, as well as public and member workshops. The BCGPA engaged in promoting awareness of agriculture production in the BC Peace and informed the public where and how their food is produced.

BCGPA staff set up an information booth at the FSJ Trade Show in April for two years in a row. The booth had many visitors and we were able to connect with producers and educate the public on grains and oilseeds and our local grain industry. In 2019, we won the 'Best Booth' award for having the most engaging, educational and interactive display.

Staff from the BCGPA attended both the South and North Peace Fall Fairs with a public informational booth. The booth was well received and many questions were asked and answered about grains in

general and our local grain industry. There were games set up for children, as well as a place for people to hand grind wheat to make flour and see the simple process to help recognize where food comes from.

The BCGPA is working with the BC Agriculture Council on a BC wide public trust initiative. This brings together stakeholders from around the province to provide input to develop a plan to tackle this critical issue. Becky Parker from BCAC presented a short educational session at a spring seminar on speaking to non-farmer public on potential disruptive conversations.

The BCAC website was refurbished in the past few years to be more user friendly and was kept updated with current prices (in partnership with Richardson Pioneer in Dawson Creek), bulletins of local events and current contact information for the BCGPA offices and board members. There is also a 'classified' section for crop buyers to post on if they are looking for a specific commodity from a local producer.

Transportation – The largest regional concern continues to be the non-maintained roads. The continual degradation of the roads was addressed at Ag-Days in Victoria with both the Minister of Agriculture and the Minister of Transportation. This led to a meeting in the spring of 2019 with the area superintendent from the Ministry of Transportation and an increase in funding of up to \$250,000 for those unmaintained roads in the Peace Region. Members of the BCGPA transportation committee attended the Caribou Road Services stakeholder meeting and discussed how to move forward with road degradation concerns. The local rural roads are not being well maintained and it is important that there is a continuous push from producers to keep the roads available and maintained for equipment movement into fields. Directors and staff of the BCGPA are uniquely situated to deal with this concern, with the majority of rural roads being utilized by our membership.

There are many craft breweries and small distilleries looking for BC grown grains and local producers are poised to take advantage of the 'Buy BC/local' government incentives, however being relatively secluded from the remainder of the province means that solutions need to be found to move viable crops to the southern portion of the province. BC Peace producers need to have a direct link to advocate for change to rail lines, grain handling and road transportation. Having educated and local representation on the appropriate boards and committees will allow producers from the region to have direct input towards improving the grain transportation system in our province.

Those same committee members took part in a conference call held between the BCGPA and Ministry of Agriculture to discuss grain transportation in BC and how it is affected by the rail service across Canada. Grain transportation via rail is an issue across Canada and this project allowed the Peace Region to have a spot at the national table to voice concerns on Bill C-49, as well as media interviews with CBC to bring attention to the lack of rail service. Association President, Rick Kantz, was given an opportunity to speak to the Vice President of operations for CP Rail regarding subpar rail service and the acquisition of new rail cars.

Research – With current funding concerns facing the research department of the BCGPA and the vocal support from Peace area producers to keep the department research innovative, it is more important than ever that participation in a crop research network in Western Canada is ongoing.

A member of the BCGPA sat as a director to the Western Grains Research Foundation (WGRF) and attended meetings and participated in discussions which communicated the need for crop research

pertinent to the Peace River Region. An Association representation on the board of the WGRF gives local producers a voice to a national research organization and promotes and supports a producer funded research network in Western Canada. It is important to be involved in the decision-making process across the Prairies to facilitate discussions identifying projects suitable to the BC Peace Region, with our unique climate and short growing season.

Members and Association staff will continue to attend meetings and seminars such as the Prairie Registration Recommending Committee (PGDC) and Agricultural Institute of Canada, as well as others that come up intermittently. By seeking and maintaining partnerships with other agricultural research facilities, it allows the BCGPA to obtain the resources and tools necessary for producers to stay on the competitive edge. The BCGPA sends representatives to participate and voice regional concerns at the Prairie Grain Development Committee meetings each year. These meetings discuss new variety registration recommendations and BCGPA networked on behalf of Peace area producers who need specific traits in their varieties.

Directors and staff of the Association continue to work hard in order to ensure that the grain and oilseed producers of the Peace Region have a voice to advocate their unique needs and concerns at a national and provincial level. The Association also spent a great deal of time creating a strategic plan in order to form a more functional and cohesive organization moving into the future. This strategic plan will take us through the next 3 years, when we will be creating a new plan to build on the expected successes of the current one.

Local agriculture faces challenges unique from the rest of our province and producers in our region need to be supported and represented by local people who understand these unique challenges. The BCGPA is in a good position to be the leader of agriculture in this region, with the resources and staff in place to be able to represent the grain and oilseed community of the Peace Region.

Vision

Grain producers in BC are profitable, sustainable, and recognized as providers of safe, high-quality food.

Mission

BC Grain Producers Association supports and connects grain producers in BC by providing a collective voice, information, and regionally relevant research.

Strategic Goal 1: Stakeholder Engagement

Cultivate engagement between BCGPA and stakeholders.

Strategic Objective 1.1

Improve communication with membership.

Strategic Objective 1.2

Develop and implement a strategy to positively impact public trust with minimal BCGPA resource investment.

Strategic Objective 1.3

Act as informal connection point to facilitate opportunities between producers and end users.

Strategic Objective 1.4

Increase collaboration and partnerships with other Peace Region organizations.

Strategic Goal 2: Research

Determine a direction for research that is sustainable and serves the BCGPA Mission.

Strategic Objective 2.1

Continue and improve fee-for-service research that is self-funding or net income generation.

Strategic Objective 2.2

Continue to support partnered research that requires minimal BCGPA resource investment (e.g. weather and pest monitoring).

Strategic Objective 2.3

Modify variety trials research from small-plot research to field-scale producer collaboration.

Strategic Goal 3: Organizational Health

Create systems that ensure a healthy sustainable organization.

Strategic Objective 3.1

Develop and implement Policies & Procedures for core business functions (e.g. HR, finance, board, etc.).

Strategic Objective 3.2

Identify and track emerging issues.

Strategic Objective 3.3

Develop Strategic Plan (2023-2025).

Strategic Goal 4: Advocacy

Ensure that the needs of grain producers in BC are included in government policies and decisions that affect grain producers.

Strategic Objective 4.1

Establish BCGPA positions on key issues.

Strategic Objective 4.2

Continue to have staff and board involved with priority provincial and national agricultural organizations.

Strategic Objective 4.3

Improve relationships with local and provincial departments and officials.

BC Grain Producers Association Reference & Terminology

Station Years

The number of station years that the variety has been tested can be seen in the yield tables inside the square bracket []. A station year is one test site at one location in one year. For example, a canola trial conducted at two locations over three years would have six station years, or [6]. We advise using caution if the data is based on *less than three station years*, or less than two years at both locations. This is a concern for canola with high variety turnover.

Interpreting Yield Results

Crops in this book are managed using the same level of inputs as field-sized recommendations would suggest. Small-plot research plots offer better consistency and can be better controlled, whereas wet areas and variable soil fertility affect field-scale crop production. However, small plots are subject to *edge effect* which is caused by the spaces around the individual plots allowing extra sunlight to penetrate. This can boost yields on these exposed outer plants, as compared to the average plant in a field scale situation that would be shadowed by its neighbors. **The important concept here is that this edge effect can be assumed equal for all plots in a given trial therefore we can compare varieties in a trial and look at resulting yields as relative to one another.** Yields presented here are the result of *small plot production* only, using *fully randomized, fully replicated and good scientific methods*. The same "level" or amplitude of production is unlikely to be achieved on a large-scale (commercial) basis. Statistics, which are vital to good science, are best used on original yield data and not on averaged data. We elected to show *bushels per acre* for the current year data only. However, when more than one trial per site per year is used to develop the datasets as seen in this report, it is incorrect to display averaged statistical values. Treat *all* yield results as relative results. Current check varieties have been bolded.

Plant Breeders Rights and the adoption of UPOV91

The Plant Breeders' Rights (PBR) gives plant breeders "copyright" protection of a variety for up to 18 years. Once a variety has been granted PBR, the breeder has control over the multiplication and sale of the seed. In addition, as of February 27, 2015, amendments have

been made to the act to include newly adapted UPOV-91 changes. UPOV-91 contains some new elements that provide even stronger protection for plant breeders than any of the previous conventions with PBR. Either way, a breeder can take legal action for damages if someone infringes on their rights. Basically, amending the PBR Act encourages increased investment in plant breeding within Canada. This in turn gives Canadian farmers more access to new and innovative plant varieties that otherwise may never have been introduced if not protected. Farmers may still save some seed for seeding the next year on their own farm, but the sale or giving of the crop as seed for planting purposes to others is not allowed.

Simply put, any seed sold in Canada now that is protected under UPOV-91 must come with proof of proper and legally acquired genetic origin. Most new transgenic herbicide-tolerant varieties have additional restrictions through '*technical use agreements*', so be aware of these also, as it replaces PBR status and can have strong consequences if ignored. Varieties protected by PBR or UPOV-91 can be identified by their logos on a seed bag, seed tag or advertising material. This book tries to identify such lines within "*Variety Description*" tables with a flower (☼) or flower and superscript "91" (☼⁹¹) for the new UPOV-91 status. It is the responsibility of the grower to know which line is protected by breeder rights.

Certified Seed

The cost of *certified seed* is a small additional expense in relation to total crop production input costs, especially when changing to a different variety. Certified seed assures genetic purity, high germination rates and low percentage of foreign seed when compared to common seed. Certified seed can be purchased in bulk through authorized seed dealer networks. Visit the Canadian Seed Growers' Association at www.seedlocator.net to find a certified seed grower close to you.

Seed Treatment

Choosing disease-resistant varieties and using certified seed is good practice, but treated seed goes a long way in the fight against plant diseases as well. The cost of a fungicide or a combined fungicide/insecticide seed treatment can be a small price to pay for the amount of protection and peace of mind they provide. The right seed treatment choice is important as some perform better than others for certain crop types. Treated seed must not contaminate grain delivered to an elevator or be used for feed.

- Cereal seed should be treated to control *true loose smut* and early season *seedling* diseases.
- Seed of rye, winter wheat and flax should be treated to control *seedling blight*. Winter wheat and rye also require protection against *smut*.
- Canola seed should be treated to control seed borne *blackleg*, *damping off* and early *flea beetle* attack.

Ergot

The fungal disease *Ergot* can attack all varieties of wheat, barley, rye, triticale and most common species of grass. Oat varieties are rarely attacked. Grain having 0.1% ergot is considered poisonous to livestock and should not be used as feed. The black rice-like "*seed mummies*" can be spotted prior to harvest in heads during a field inspection.

Seed Inoculation

Peas can make much of their nitrogen (N) requirement from the air through a partnership with soil bacteria called *Rhizobium*. Cool, dry or excessively wet soils provide a harsh environment for proper inoculation. Under these conditions, a low level of nodulation formation will be the result. Survival of residual rhizobia organisms in our cool Peace Region soils is not consistently reliable; making use of inoculant with seed a good form of insurance. The pea seed must be inoculated immediately before or during seeding with a proper strain of bacteria specific to peas. *Rhizobia* are living organisms so check the expiry date on the package and follow inoculant label directions carefully. Generally, it is a good idea prior to its use and even during use if possible, to try and reduce the inoculant's exposure to sunlight, open-air and warmth. Note that high residual soil nitrogen levels (over 60 kg N/ha) will reduce nodulation in the field regardless of inoculation.

Granular inoculant placed with the seed at planting was used on all pea-trials seen in this report.

Seeding Rates

While the following *range* of seeding rates has given consistent yields for each crop listed, local producer experience has shown that the top end of the range provides more consistent results. **Risk of impaired emergence under stressful conditions can be reduced by increasing the seeding rate.** In addition, higher seeding rates can reduce the amount of secondary tillering, **produce earlier more uniform maturity** and reduce the amount of green kernels at harvest.

Testing conducted by the Beaverlodge Research Station in the past throughout the Peace Region showed that by

increasing the seeding rate of wheat from 80 to 120 lbs/ac (90 to 134 kg/ha), reduced the time to maturity by two days. Our own BCGPA trials involving seeding rates in barley initially showed that when increasing seeding rates from 2.25 to 2.5 bushels per acre, it decreased maturity from 2 to even 4 days at physiological maturity, which is significant by harvest. However, over the full five years of the project, our own results became less significant.

Suggested Rates of Seeding

Wheat	90 - 120 lb/ac	100 - 135 kg/ha
CPS Wheat	130 - 180 lb/ac	145 - 200 kg/ha
Barley	75 - 100 lb/ac	85 - 110 kg/ha
Oat	70 - 90 lb/ac	85 - 100 kg/ha
Flax	26 - 40 lb/ac	30 - 35 kg/ha
Rye	65 - 85 lb/ac	73 - 95 kg/ha
Peas	150 - 300 lb/ac	165 - 330 kg/ha
Argentine Canola	5 - 8 lb/ac	6 - 9 kg/ha
Polish Canola	5.5 lb/ac	6 kg/ha

Due to large differences in seed sizes, seeding rates can vary considerably. Therefore, one should base the seeding rate on a *target number of viable seeds per square foot*. Using the 1000 kernel weight (TKW), adjusting for percent germination and allowing for seed mortality to be say 5%, calculate the number of pounds of seed required per acre. It is best to acquire the *actual* TKW.

Example (using wheat): Target **24** wheat plants per square foot, the variety has a 1000 K wt. of **35** grams. Then estimate a seedling survival rate, which is the germination percentage minus a small amount for seedling mortality. Field mortality is usually 5-20%, depending on harshness of spring seedbed conditions. A seed lot with 95% germination and an expected field mortality of 5% would have an expected emergence or survival rate of 90%. Using a *constant value* of **9.6...**

$$\frac{24 \text{ plants/sq.ft} \times 35 \text{ (g/1000 K)}}{90 (\%)} \times 9.6 = 90 \text{ lb/acre}$$

*Answer: You would plant **90 lbs.** of wheat seed/acre.*

Crop	Type	Seeds / sq.ft	Avr. 1000 K wt
Wheat	CWRS	24 - 25	35 - 44 g
	CPS / CWES	24 - 25	44 - 52 g
Barley	6 Row	24 - 25	35 - 43 g
	2 Row	24 - 25	44 - 53 g
Oat	Hulled	24 - 25	38 - 47 g
Rye		24	30 - 35 g
Peas		8	200 - 345 g

BC Grain Producers Association 2019 Growing Conditions

wetter while planting this year, making it slightly more difficult to get all the crops in the ground effectively.

The weather was interesting this year, with almost continuous rain throughout the season, but we ended up with about average rainfall in total. The end of our 2019 ended with the South Peace farm still in the field, with only the peas having been harvested due to weather.

Interpreting Data

The yield for each variety is reported on a regional basis for the North and South Peace areas and as an average for the entire BC Peace, with the number of years each variety has been tested is listed for both of the areas. In the following example, the number of years is indicated in [], right after the yield. Station years are the total of times a variety has been tested in BCGPA trials.

Two Row Barley			Yield as % of AC Metcalfe								
Variety	Type	feed	South Peace			North Peace			B.C. Peace		
			2017	2012-2017	Stn.Yrs.	2017	2012-2017	Stn.Yrs.	2017	2012-2017	Stn.Yrs.
			Yield	Avg.		Yield	Avg.		Yield	Avg.	
XENA	2-row	feed	115	109	[6]	83	100	[6]	106	104	[12]

note: the above example is a dramatization

Number of **years** the variety was tested at **each station**

Number of **times** in total the variety was tested in the **B.C. Peace**.

Statistical Values

Entries into the regional trials are replicated a minimum of three times, with the preference being four at each location. This replication is used to reach an overall average per entry per trial and to allow for statistical analysis.

Coefficient of Variance (CV value)

The CV is given as a percentage and shows how statistically reliable a given data set is. Generally, any value less than or equal to 15% is considered to be acceptable. This tells us that if you were to repeat a trial under the same or similar conditions, you should get similar results. While you do not want to see yield data from a single trial with a high CV, when assessing insect or disease data, a higher CV can be acceptable, due to the higher variability traits of those types of trials.

Final Note

In order to obtain a full picture of the variety, the BCGPA research team recommends that readers of this book recognize that longer term averages should be used whenever possible, with preference given to those with data from at least six station years over the BC Peace. The BC Grain Producers research team would like to note that data for varieties with less than three station years should be compared with caution.

2019 North Peace Field Treatments

Legal Description: SW19 Tp84 R18 W6

Planting & Harvest

Crop	Seeding rate	Planted Date	Soil Temp (C°) @ plant	Seeding Depth	Harvest Date	Harvesting Method
	(viable seeds used) m ²					
Barley	270	14-May-19	6.4	1 - 1.5 inch	18-Sep-19	direct
CPS/GP&SWS Wheat	330	14-May-19	16.3	1 - 1.5 inch	1-Oct-19	direct
CWRS Wheat	330	14-May-19	16.3	1 - 1.5 inch	1-Oct-19	direct
Durum Wheat	300	14-May-19	16.3	1 - 1.5 inch	1-Oct-19	direct
Oat	300	14-May-19	6.4	1 - 1.5 inch	1-Oct-19	direct
Pea	88	13-May-19	9.6	0.75 - 1.5 inch	24-Sep-19	desiccate/direct
Triticale	310	14-May-19	17	1 - 1.5 inch	1-Oct-19	direct

Fertilizer Rates

Crop	Fertilizer Applied	Pro. kg/ha	Placement	lbs actual/ac Recom. vs. Applied	Soil-Test Results			
					N	P ₂ O ₅	K ₂ O	S
Barley	34 - 0 - 0 - 11	78	banded	*Recommended =	15	30	15	10
	5 - 26 - 30 - 0	56	banded	Actually applied =	32	28	17	9
	11 - 52 - 0 - 0	25	in-furrow					
Oat	34 - 0 - 0 - 11	78	banded	*Recommended =	15	30	15	10
	5 - 26 - 30 - 0	56	banded	Actually applied =	32	28	17	9
	11 - 52 - 0 - 0	25	in-furrow					
Pea	34 - 0 - 0 - 11	44	banded	*Recommended =	0	32	15	12
	5 - 26 - 30 - 0	53	banded	Actually applied =	21	27	16	5
	11 - 52 - 0 - 0	25	in-furrow					
Triticale	34 - 0 - 0 - 11	78	banded	*Recommended =	15	30	15	10
	5 - 26 - 30 - 0	56	banded	Actually applied =	32	28	17	9
	11 - 52 - 0 - 0	25	in-furrow					
Wheat	34 - 0 - 0 - 11	78	banded	*Recommended =	15	30	15	10
	5 - 26 - 30 - 0	56	banded	Actually applied =	32	28	17	9
	11 - 52 - 0 - 0	25	in-furrow					

*Recommended = recommendations given by ALS Laboratory Group, calculated from soil samples taken earlier in the spring

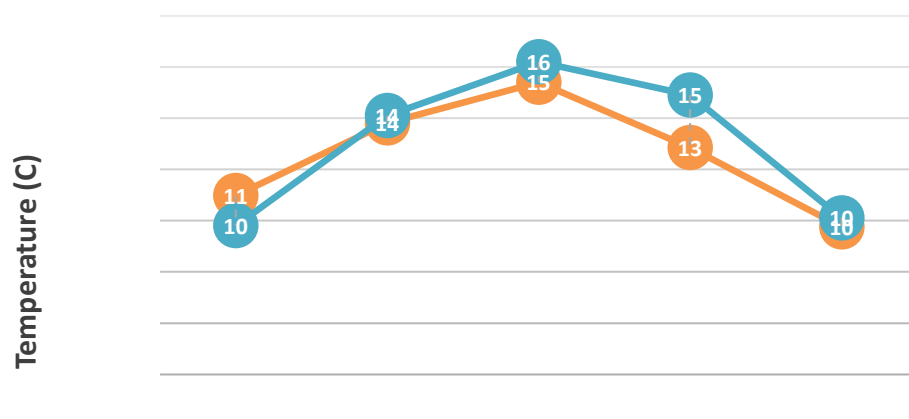


Pesticide

Crop	Date Applied	Product Used	Product Rate
Barley	20-Jun-19	Buctril-M	400 ml/ac
		MCPA Amine 600	340 ml/ac
Oat	20-Jun-19	Buctril-M	400 ml/ac
		MCPA Amine 600	340 ml/ac
Pea	19-Jun-19	Assure II	300 ml/ac
		Sure-Mix	303 ml/ac
		MCPA Amine 600	170 ml/ac
Wheat	20-Jun-19	Buctril-M	400 ml/ac
		MCPA Amine 600	170 ml/ac

North Peace Weather Information

Temperature



Notes on 2019 Weather Information Collection

2019 Weather Data on this page is calculated from May 1 – September 30, 2019. It is collected via an on-farm weather station.

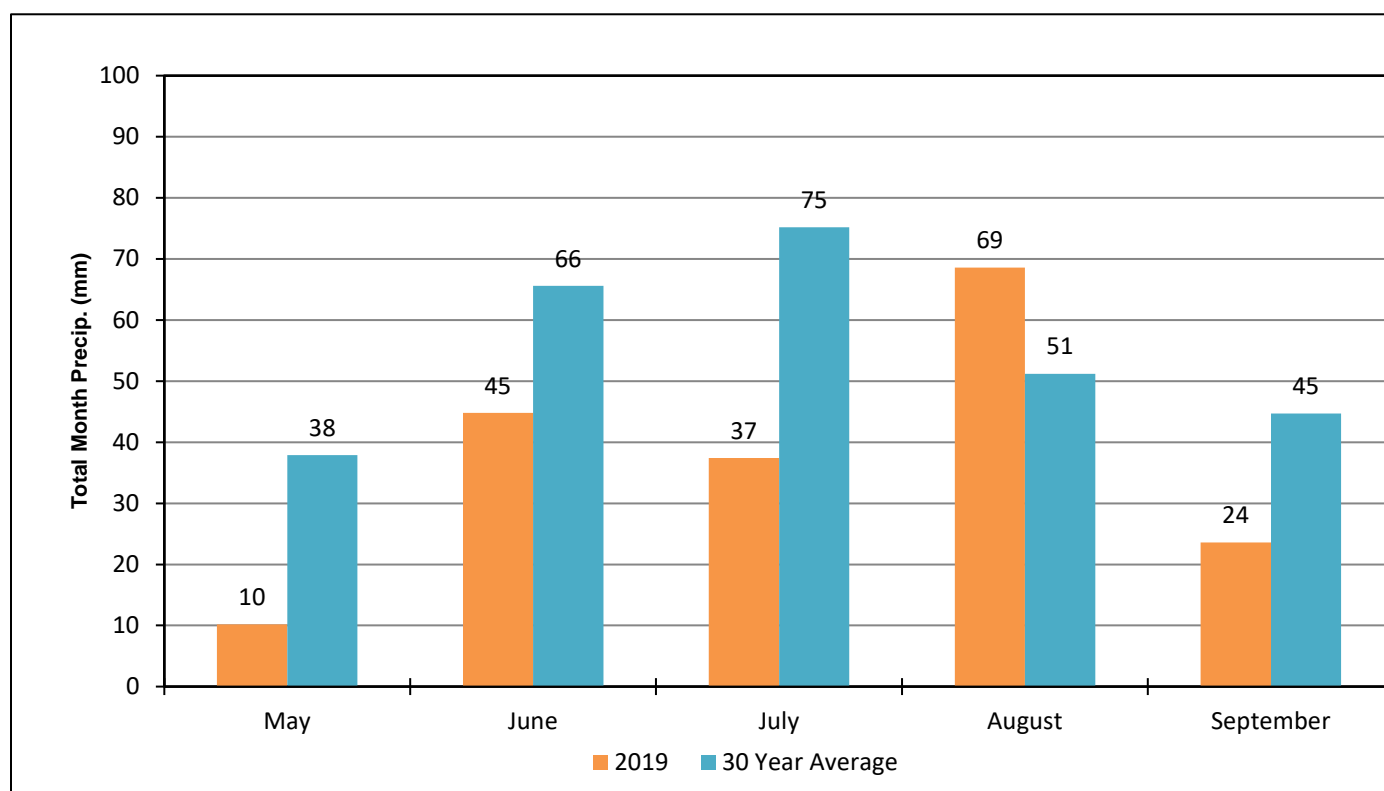
30-year averages shown are collected from Environment Canada information from 1981 – 2010.

	MAY	JUN	JUL	AUG	SEP
2019 Average	11	14	15	13	10
30 Year Average	10	14	16	15	10

GROWING DEGREE DAYS

Check out www.bcpeaceweather.com for a GDD calculator, using complete accurate information from the local weather station closest to your field!

Precipitation



2019 South Peace Field Treatments

Legal Description: SW20 Tp78 R14 W6

Planting & Harvest

Crop	Seeding rate	Planted Date	Soil Temp (C°) @ plant	Seeding Depth	Harvest Date	Harvesting Method
	viaible seeds used m ²					
Barley	270	24-May-19	16	1 - 1.5 inch		
CPS/GP&SWS Wheat	330	24-May-19	16.2	1 - 1.5 inch		
CWRS Wheat	330	24-May-19	16.2	1 - 1.5 inch		
Durum Wheat	300	24-May-19	16.2	1 - 1.5 inch		
Oat	300	24-May-19	16.5	1 - 1.5 inch		
Pea	88	22-May-19	15.9	0.75 - 1.5 inch		
Triticale	310	24-May-19	16.2	1 - 1.5 inch		

Fertilizer Rates

Crop	Fertilizer Applied	Pro. kg/ha	Placement	lbs actual/ac Recom. vs. Applied	Soil-Test Results			
					N	P ₂ O ₅	K ₂ O	S
Barley	34 - 0 - 0 - 11	245	banded	*Recommended =	80	22	15	10
	5 - 26 - 30 - 0	56	banded	Actually applied =	89	28	17	27
	11 - 52 - 0 - 0	25	in-furrow					
Oat	34 - 0 - 0 - 11	245	banded	*Recommended =	80	22	15	10
	5 - 26 - 30 - 0	56	banded	Actually applied =	89	28	17	27
	11 - 52 - 0 - 0	25	in-furrow					
Pea	34 - 0 - 0 - 11	44	banded	*Recommended =	0	32	15	12
	5 - 26 - 30 - 0	53	banded	Actually applied =	21	27	16	5
	11 - 52 - 0 - 0	25	in-furrow					
Triticale	34 - 0 - 0 - 11	235	banded	*Recommended =	46	20	25	20
	5 - 26 - 30 - 0	137	banded	Actually applied =	77	32	37	23
	11 - 52 - 0 - 0	0	in-furrow					
Wheat	34 - 0 - 0 - 11	275	banded	*Recommended =	90	22	15	10
	5 - 26 - 30 - 0	56	banded	Actually applied =	99	28	17	30
	11 - 52 - 0 - 0	25	in-furrow					

*Recommended = recommendation s given by ALS Laboratory Group, calculated from soil samples taken earlier in the spring prior to planting.

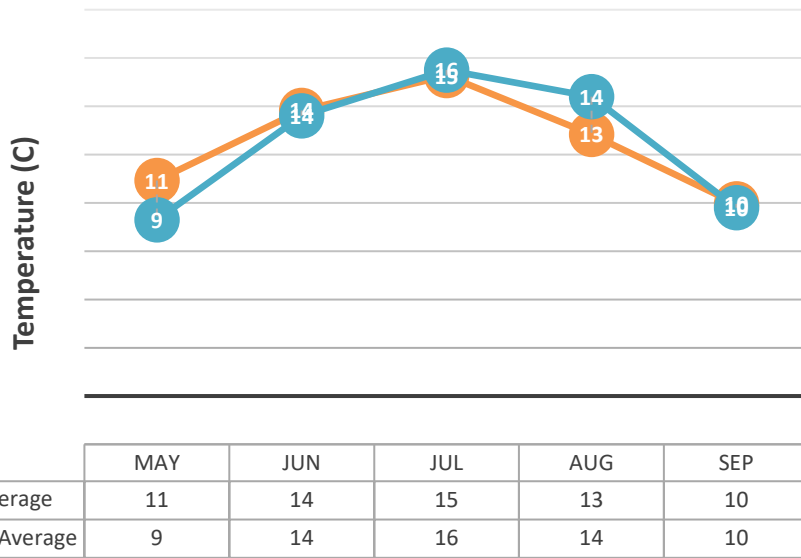


Pesticide

Crop	Date Applied	Product Used	Product Rate
Barley	05-Jul-19	Buctril-M	400 ml/ac
		MCPA Amine 600	170 ml/ac
Oats	05-Jul-19	Buctril-M	400 ml/ac
		MCPA Amine 600	170 ml/ac
Pea	02-Jul-19	Assure II	300 ml/ac
		Sure-Mix	303 ml/ac
		MCPA Amine 600	170 ml/ac
Wheat	05-Jul-19	Buctril-M	400 ml/ac
		MCPA Amine 600	170 ml/ac

South Peace Weather Information

Temperature



Notes on 2019 Weather Information Collection

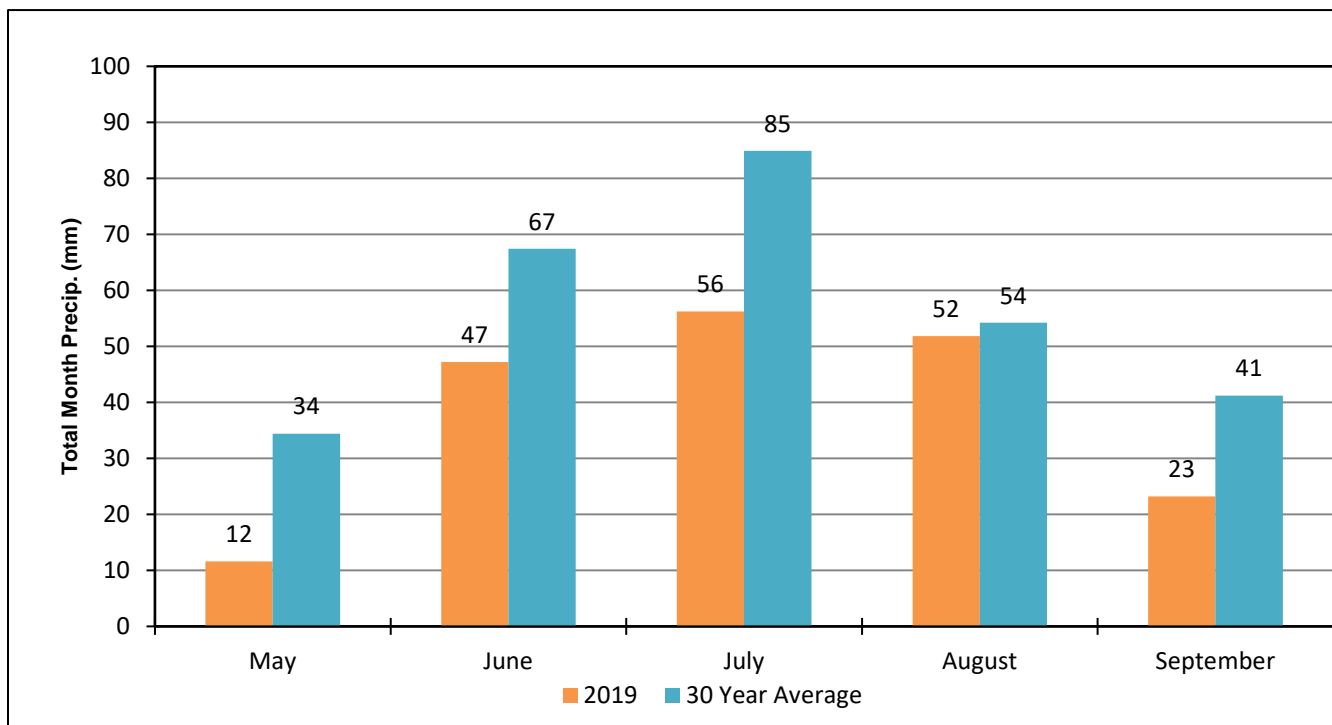
2019 Weather Data on this page is calculated from May 1 – September 30, 2019. It is collected via an on-farm weather station.

30-year averages shown are collected from Environment Canada information from 1981 – 2010.

GROWING DEGREE DAYS

Check out www.bcpeaceweather.com for a GDD calculator, using complete accurate information from the local weather station closest to your field!

Precipitation



Summary of Trials

Producer Funded 'Regional' Trials Planted

'Regional' Trials	# of Varieties	Replicates	Locations	Total Plots
Barley *	19	3	NP & SP	114
Flax *	7	4	NP & SP	56
Oat *	11	3	NP & SP	66
Green Pea *	8	4	NP & SP	64
Yellow Pea *	18	4	NP & SP	144
Triticale *	4	3	NP & SP	24
CWRS Wheat *	36	3	NP & SP	216
SP/SWS Wheat *	7	3	NP & SP	42
CPS Wheat *	8	3	NP & SP	48
Durum Wheat *	12	3	NP & SP	72
Total Plots			846	

*Denotes trials in partnership with Alberta Ministry of Agriculture and Forestry

Additional Trials Planted

The data from the two tables following is used for plant breeding and early registration support.



Co-operative Trials

Trial Name	# of Varieties	Replicates	Locations	Total Plots
B-2Y41 Barley Co-op	40	3	SP	120
Western 2-Row Western Barley Co-op	48	3	NP & SP	288
Western 6-Row Western Barley Co-op	18	3	NP & SP	108
Western Oat Co-op	32	3	NP	96
Short-Season Field Pea Co-op	24	3	NP	72
PYT05 & 06 - Field Pea	72	2	NP	144
Parkland 'C' Wheat Co-op	30	3	NP & SP	180
Canola Performance Trials - Straight Cut	12	4	NP & SP	96
Canola Performance Trials - Standard	25	3	NP & SP	200
WCC/RCC Trial - NS 1/2	50	3	NP	150
Total Plots			1454	

Fee Trials

Crop	Total Plots
Camelina	48
Canola	710
Quinoa	399
Oats	342
Soybean	48
Wheat	1232
Total Plots	2779

BARLEY

Six Row Barley						Yield as % of AC Metcalfe						
Variety	Type	South Peace				North Peace				BC Peace		
		2019 Yield		2014-2019		2019 Yield		2014-2019		2019	2014-2019	
		bu /	% of	Avg.	Stn.	bu /	% of	Avg.	Stn.	Avg.	Avg.	Stn.
		acre	check	(%)	Yrs.	acre	check	(%)	Yrs.	(%)	(%)	Yrs.
AC Metcalfe	2 row			100	[9]	112	100	100	[13]	100	100	[22]
SR17515 *	6 row				□	118	106	106	[1]	106	106	[1]
SR17519 *	6 row				□	117	104	104	[1]	104	104	[1]

Coefficient of Variance (CV) values for 2019 were as follows: SP = % NP = 6.98%

Two Row Barley					Yield as % of AC Metcalfe							
Variety	Type	South Peace				North Peace				BC Peace		
		2019 Yield		2014-2019		2019 Yield		2014-2019		2019	2014-2019	
		bus /	% of	Avg.	Stn.	bus /	% of	Avg.	Stn.	Avg.	Avg.	Stn.
		acre	check	(%)	Yrs.	acre	check	(%)	Yrs.	(%)	(%)	Yrs.
AAC Connect Δ	2 row			98	[2]	113	102	92	[4]	102	94	[6]
AAC Synergy ☼	2 row			114	[2]	112	100	104	[4]	100	107	[6]
AB Advantage	2 row			123	[1]	113	101	99	[2]	101	107	[3]
AB Cattlelac ☼	2 row			97	[1]	93	84	87	[2]	84	90	[3]
AC Metcalfe	2 row			100	[6]	112	100	100	[9]	100	100	[15]
Altorado ☼91	2 row			109	[3]	123	110	108	[5]	110	108	[8]
CDC Austenson ☼	2 row			109	[2]	117	105	106	[5]	105	107	[7]
CDC Copeland ☼	2 row			95	[1]	115	103	98	[2]	103	97	[3]
CDC Copper	2 row			158	[1]	122	109	110	[2]	109	126	[3]
CDC Goldstar Δ	2 row			105	[1]	117	105	104	[3]	105	104	[4]
Claymore ☼91	2 row			112	[4]	131	117	108	[6]	117	109	[10]
Oreana ☼91	2 row			116	[4]	131	118	114	[6]	118	115	[10]
TR15155	2 row			108	[1]	117	105	104	[2]	105	105	[3]
TR16629	2 row			144	[1]	129	115	115	[2]	115	124	[3]
TR16742 *	2 row				□	125	112	112	[1]	112	112	[1]
TR17163 *	2 row				□	125	112	112	[1]	112	112	[1]
TR17639 *	2 row				□	114	103	103	[1]	103	103	[1]

Coefficient of Variance (CV) values for 2019 were as follows: SP = % NP = 6.98%

Δ PBR pending

☼ protected by Plant Breeders Rights

☼⁹¹ protected by Plant Breeders Rights, UPOV91

* first year tested, very limited data

¶ hulless seed types

¥ semi-dwarf variety

‡ smooth-awned type

§ Awnless

Feed Barley						Variety Descriptions							
Variety	Type	BC Peace Averages					Alberta Agdex 100/32 info						
		2014-2019					Resistance to						
		Days to Maturity	Height	Bushel Weight	Kernel Protein %	Lodging	Loose Smut	False Smut	Root Rot	Scald	FHB		
		+/- check	cm	lbs/bu	+/- check								
Eligible for General Purpose Grades Only													
AC Metcalfe	2 row	0.0	80	55	0	[11]	F	R	I	I	S	I	
Altorado ☼91	2 row	1.2	75	54	0	[3]	G	MR	MR	MR	S	I	
CDC Austenson ☼	2 row	1.2	83	56	-1	[1]	VG	S	R	I	S	I	
CDC Copper	2 row	2.8	75	52	3	[1]	G	I	MR	XX	MR	MS	
CDC Goldstar Δ	2 row	-0.4	84	54	0	[1]	G	I	R	XX	S	MS	
Claymore ☼91	2 row	2.4	79	53	-1	[5]	G	S	R	I	S	I	
Oreana ☼91	6 row	2.2	66	54	-1	[5]	VG	S	R	I	S	S	
TR17639 *	2 row	0.7	79	51			XX	XX	XX	XX	XX	XX	

Malt Barley						Variety Descriptions							
Variety	Type	BC Peace Averages					Alberta Agdex 100/32 info						
		2014-2019					Resistance to						
		Days to	Bushel	Kernel	Lodging	Loose	Smut	False	Smut	Root Rot	Scald	FHB	
		Maturity	Height	Weight									Protein %
		+/- check	cm	lbs/bu	+/- check								
AAC Connect Δ	2 row	-0.6	78	52	0 [1]	G	S	R	MS	S	MR		
AAC Synergy ☼	2 row	0.8	80	54	0 [5]	F	S	I	I	S	MS		
AC Metcalfe	2 row	0.0	82	55	0 [15]	F	R	I	I	S	I		
CDC Copeland ☼	2 row	0.6	83	52	-1 [1]	F	MS	I	I	S	I		
CDC Copper	2 row	2.0	72	53	3 [1]	G	I	MR	XX	MR	MS		
CDC Goldstar Δ	2 row	-0.4	83	54	0 [1]	G	I	R	XX	S	MS		
Lowe	2 row	2.0	93	53	0 [1]	F	R	R	XX	MR	MR		
SIRISH	2 row	2.7	55	53	-1 [1]	G	S	R	XX	MR	MS		
TR15155	2 row	0.0	73	51	0 [1]	XX	XX	XX	XX	XX	XX		
TR16629	2 row	5.4	89	53	0 [1]	XX	XX	XX	XX	XX	XX		

Overall average protein for AC Metcalfe is 12.6%

Overall average maturity for AC Metcalfe is 94 days

Δ PBR pending

☼ protected by Plant Breeders Rights

☼⁹¹ protected by Plant Breeders Rights, UPOV91

* first year tested, very limited data

XX = Insufficient Data

VG= very good, G = good, F = Fair, P = Poor, VP = Very Poor

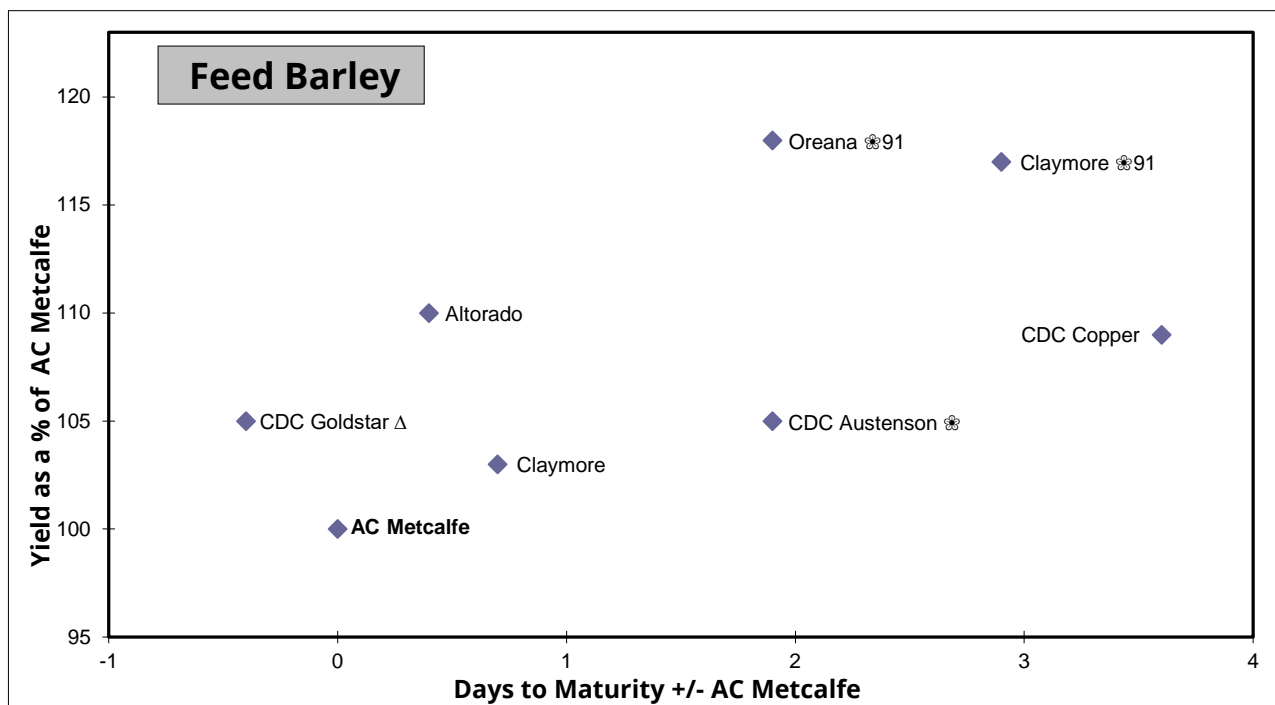
R = Resistant, MR = moderately resistant, I = Intermediate resistance, MS = Moderately Susceptible, S = Susceptible

¶ hulless seed types

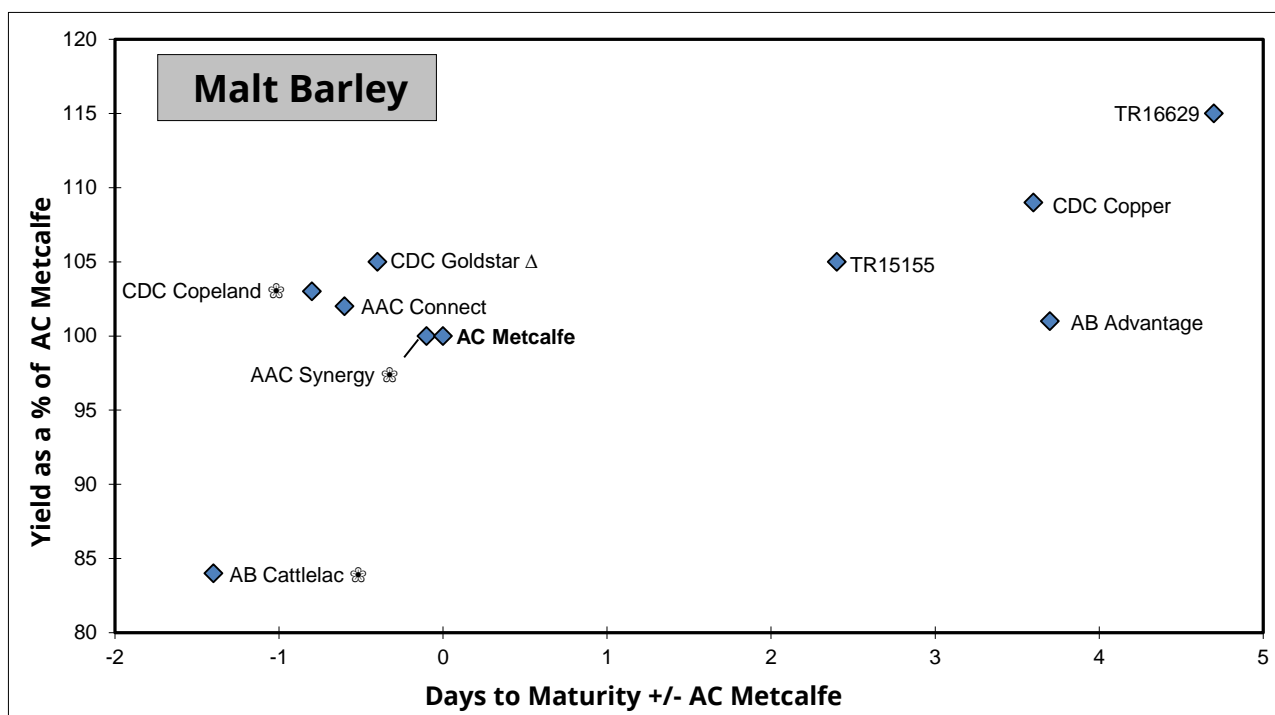
¥ semi-dwarf variety

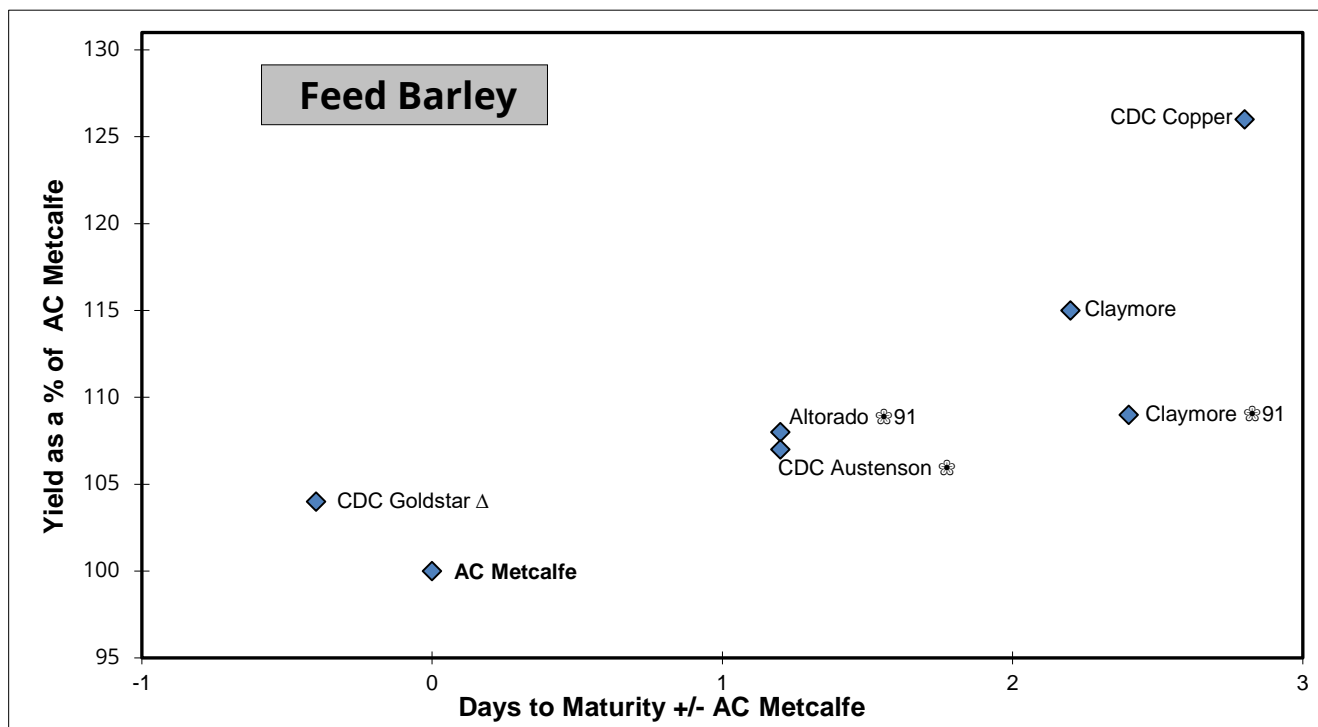
‡ smooth-awned type

§ Awnless

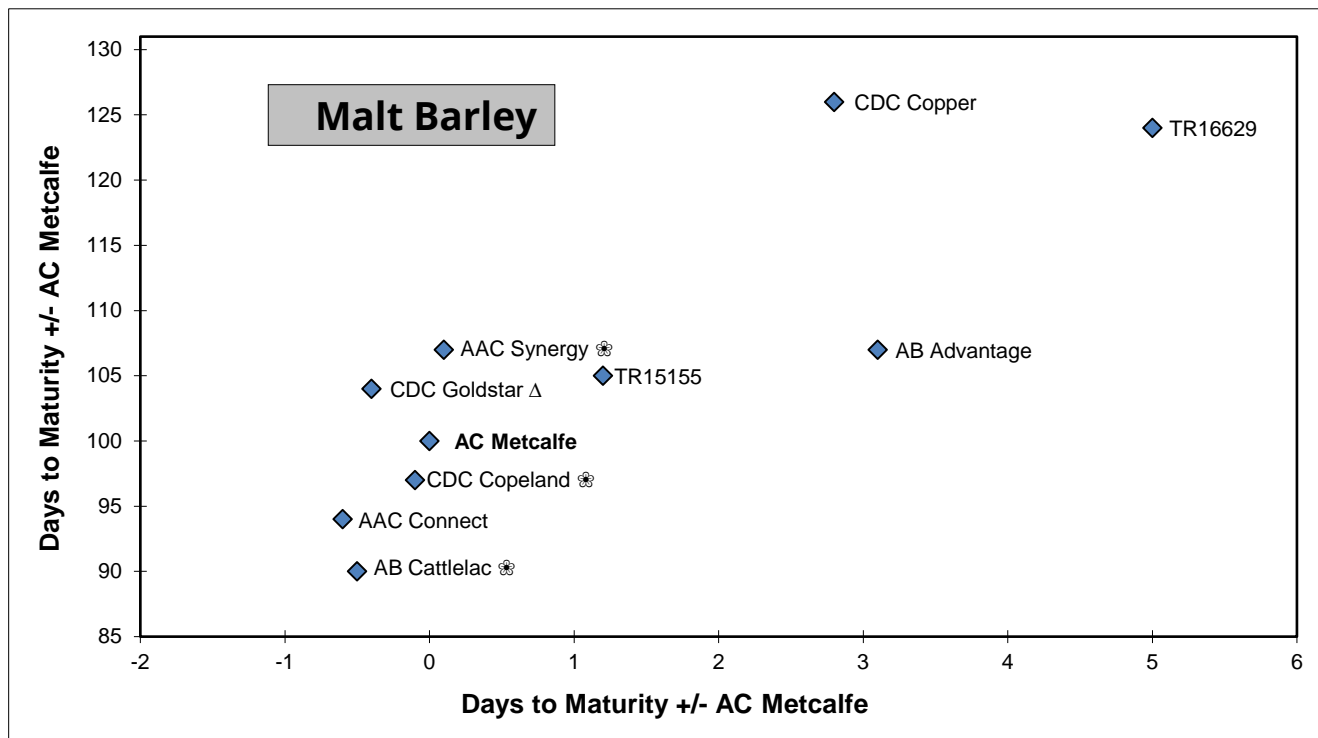


Average maturity for AC Metcalfe is 103 days for 2019





Overall average maturity for AC Metcalfe is 94 days



OAT

Oat is usually a feed crop but some varieties are also suitable for higher value feed and food markets. The milling industry prefers higher protein varieties with plump kernels and lower hull content, while the horse industry prefers white hulled varieties. Hulless oat varieties have excellent feed and food value but need to be stored drier than normal varieties (<12% moisture) and do not flow as well in the bin due to their pubescence (hairs), which seem to "lock together". The exception to this "hairy-hulless" issue are newer hulless varieties like *Gehl*, (previously tested), which are "*low pubescence* hulless" oat varieties aimed at a replacement for rice actually, hence the marketing slogan "prairie rice" for *Gehl*. Unfortunately our tests have found hairless-hulless oat lines to be very sensitive to our cold wet spring soils which can lower emergence to economically damaging levels, and so until newer more robust lines come available hairless-hulless oat are no longer being tested in our region. Yield values for hulless oat varieties are expressed after hull removal, which reduces the seed weight by 20-25% compared to the normal varieties. (See earlier reports for more information on "hulless" types).

Oat		Yield as % of CDC Dancer								
Variety	Colour	South Peace			North Peace			BC Peace		
		2019 Yield		2014-2019 Avg. Stn. (%) Yrs.	2019 Yield		2014-2019 Avg. Stn. (%) Yrs.	2019		2014-2019 Avg. Stn. (%) Yrs.
		bu /	% of		bu /	% of		Avg.	Avg.	
		acre	check		acre	check		(%)	(%)	
AC Mustang	White			104 [3]	188 122		116 [8]	122	113	[11]
CDC Arborg	White			132 [1]	198 128		125 [3]	128	127	[4]
CDC Dancer *	White			100 [4]	154 100		100 [11]	100	100	[15]
CDC Ruffian *	Yellow			119 [2]	178 115		114 [4]	115	116	[6]
CFA1502	-			135 [1]	135 88		102 [2]	88	113	[3]
CS Camden * ⁹¹	White			105 [3]	135 87		106 [5]	87	106	[8]
ORe3541M * ⁹¹	White			86 [1]	162 105		98 [3]	105	95	[4]
ORe3542M * ⁹¹	White			115 [1]	172 111		103 [3]	111	106	[4]
OT2122 *	-				183 119		119 [1]	119	119	[1]
OT3087	-			119 [1]	203 131		125 [2]	131	123	[3]
OT3097 *	-				204 132		132 [1]	132	132	[1]

Coefficient of Variance (CV) values for 2019 were as follows: SP = % NP = 19.97%

Δ PBR pending

* first year tested, very limited data

* protected by Plant Breeders Rights

*⁹¹ protected by Plant Breeders Rights, UPOV91



Health Benefits Of Oat

Oat is mainly used for livestock feed especially horses and cows and only a small percentage of oat has been traditionally used for human consumption. However, oat is a great source of fibre which consists of more than half as soluble fibres. Oat is high in protein and mineral contents including, calcium, iron, magnesium, zinc, copper, manganese, thiamin, folacin, and vitamin E. Oat is higher in these components than any other whole grain, such as wheat, barley, corn or rice. Rich in Vitamin B1, oat can help maintain carbohydrate metabolism. Many scientific researchers have proven that eating oatmeal, oat bran and whole oat products improves both blood pressure and cholesterol levels and furthermore, it also reduces the risk of heart disease, cancer and diabetes. Oat is a significant contributor to the good health of not only livestock but also to good human health as well.

Oat			Variety Description			
Variety	Use	BC Peace Averages			Alberta Agdex 100/32 info	
		2014-2019			Tolerance to:	
		Maturity as days +/- check	Height cm	Bushel Weight lbs/bu	Lodging	Smuts
AC Mustang	Feed	2.3	113	42	G	I
CDC Arborg	Milling	4.0	114	42	VG	R
CDC Dancer *	Milling	0.0	102	43	G	R
CDC Ruffian *	Milling	6.1	95	42	G	R
CFA1502	-	9.1	106	42	XX	XX
CS Camden *	Milling	0.7	92	41	VG	I
ORe3541M *	-	5.1	105	43	VG	R
ORe3542M *	-	2.9	103	42	VG	R
OT2122 *	-	-1.6	104	42	XX	XX
OT3087	-	-0.7	108	42	G	XX
OT3097 *	-	0.0	108	42	XX	XX

Δ PBR pending

* protected by Plant Breeders Rights

* first year tested, very limited data

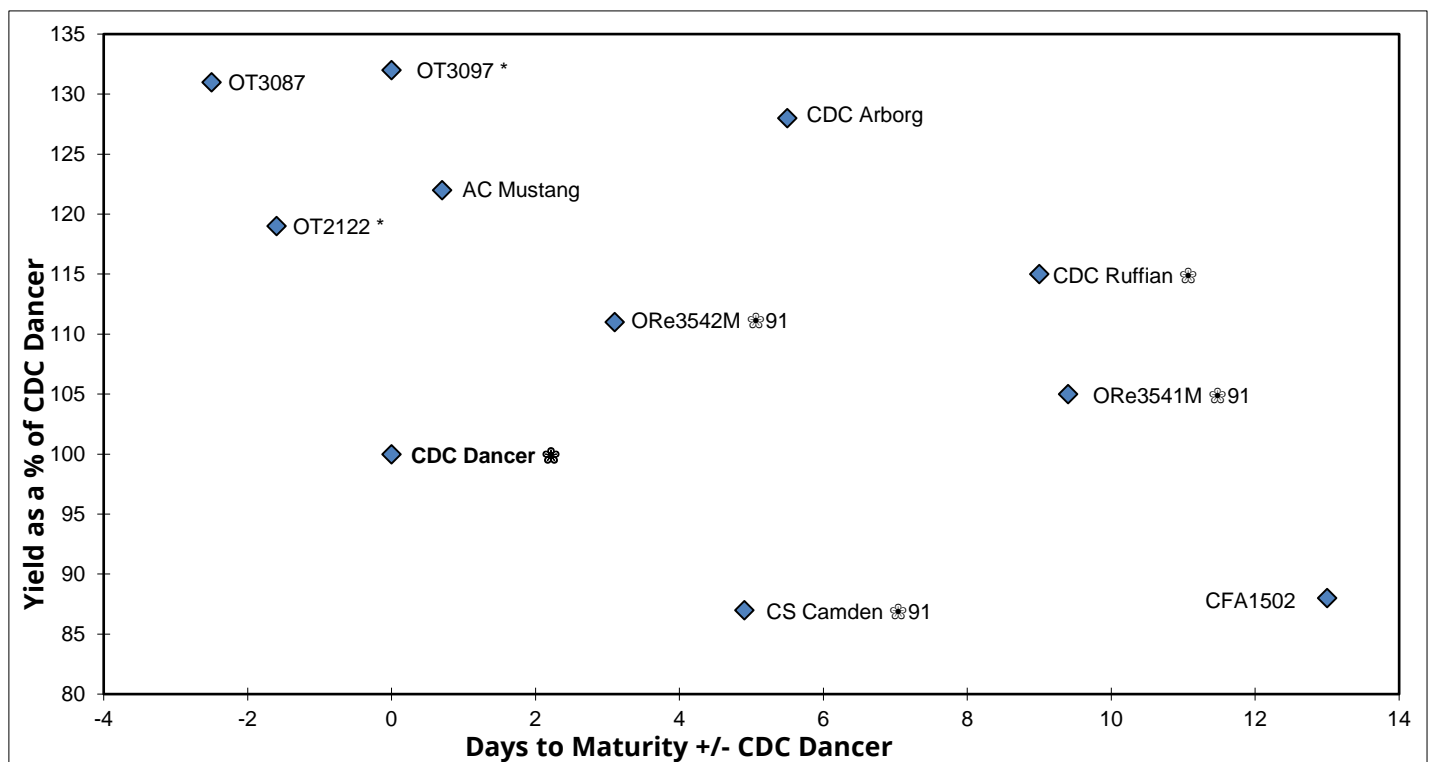
*⁹¹ protected by Plant Breeders Rights, UPOV91

XX= insufficient data

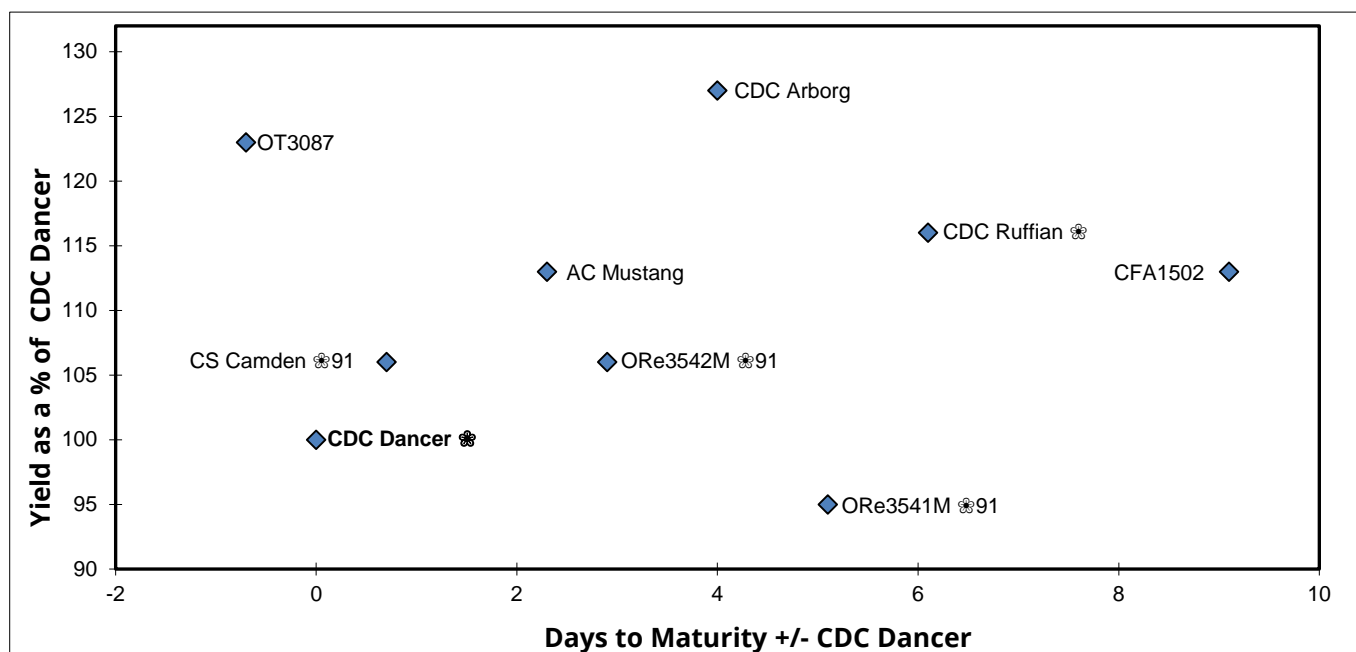
VG = Very Good, G = Good, F = Fair, P = Poor, VP = Very Poor

R = Resistant, MR = Moderately Resistant, I = Intermediate Resistance, MS = Moderately Susceptible, S = Susceptible

Oat 2019



Average maturity for CDC Dancer is 113 days for 2019



Overall average maturity for CDC Dancer is 99 days

Oat for Feed

Oats are often sown to provide fodder in the form of silage or greenfeed. Oats will yield more silage or greenfeed per unit area than any other cereal crop. If managed properly, it can provide 3-4.5 tons of dry matter per acre, or more, of high quality feed containing up to 10 percent protein¹. Many years of comparing yields of oats with barley have shown oats to be superior in the Black and Grey Wooded soil zones¹. Although the percent protein level in barley is higher than in oats, the total amount of protein produced on a given area is higher with oats than with barley¹. Oats have about 22-26 percent hull whereas barley averages about 12-14 per cent hull on a weight basis¹. When choosing a variety, the seed yield as well as the forage yield should be considered, thereby keeping one's options open to harvest as forage or grain¹. We do not currently evaluate oat varieties for forage yield in these tests.

Forage Oat

It is believed by some farmers that one variety might be better than another because it appears "leafier"; however, tests on a number of varieties have shown very little variation in leafiness². Having said that however, such work has not likely included the newer lines of forage oats that are entering the market place now. These new "forage only" lines, such as *CDC Baler* and *Murphy*, have usually been much larger plants in our tests than their traditional counterparts developed for seed quality, which should translate to more biomass to be available for forage production. Note however, that traditionally our oat tests do not lodge and so it is unclear as to whether larger plants are going to be a concern for early lodging in a large-scale forage production practice in our area. Lodging data here is from Alberta Agdex 100/32.

Other Comments

On heavier soils and in the more moist areas, lodging resistance should be considered, but again, traditionally lodging has not been a concern in our BC Peace oat trials, and as mentioned above, lodging data provided here is from Alberta Agdex 100/32. The variation in straw feed quality between oat varieties is insignificant and should not be used as a variety selection criterion³. The average feed values are: protein 4%, fibre 49%, calcium 0.27%, and phosphorus 0.08%³. Source^{1,2,3}: Alberta Agriculture, Food, and Rural Development website www.agric.gov.ab.ca

FIELD PEA

Field Pea (Green Seed)						Yield as % of CDC Limerick						
Variety	**Designated	South Peace				North Peace				BC Peace		
	Powdery	2019 Yield		2014 - 2019		2019 Yield		2014 - 2019		2019	2014 - 2019	
	Mildew	bu /	% of	Avg. Stn.	bu /	% of	Avg. Stn.	Avg.	Avg.	Stn.		
	Resistant	acre	check	(%) Yrs.	acre	check	(%) Yrs.	(%)	(%)	Yrs.		
12CP3032 *		72	112	112 [1]	99	107	107 [1]	110	110	[2]		
AAC Comfort ⌘91	R	66	104	106 [2]	99	107	107 [6]	105	106	[8]		
Bluelman	R	60	93	111 [2]	98	106	107 [6]	100	108	[8]		
CDC Forest ⌘91	R	59	93	106 [2]	98	106	113 [6]	100	111	[8]		
CDC Limerick	R	64	100	100 [7]	92	100	102 [15]	100	101	[22]		
CDC Spruce ⌘91	R	59	92	93 [2]	96	104	103 [2]	98	98	[4]		
N13073-17 *		75	117	117 [1]	98	107	107 [1]	112	112	[2]		
N13073-19 *		76	119	119 [1]	99	108	108 [1]	113	113	[2]		

Coefficient of Variance (CV) values for 2019 were as follows: SP= 12.6% NP = 7.61%

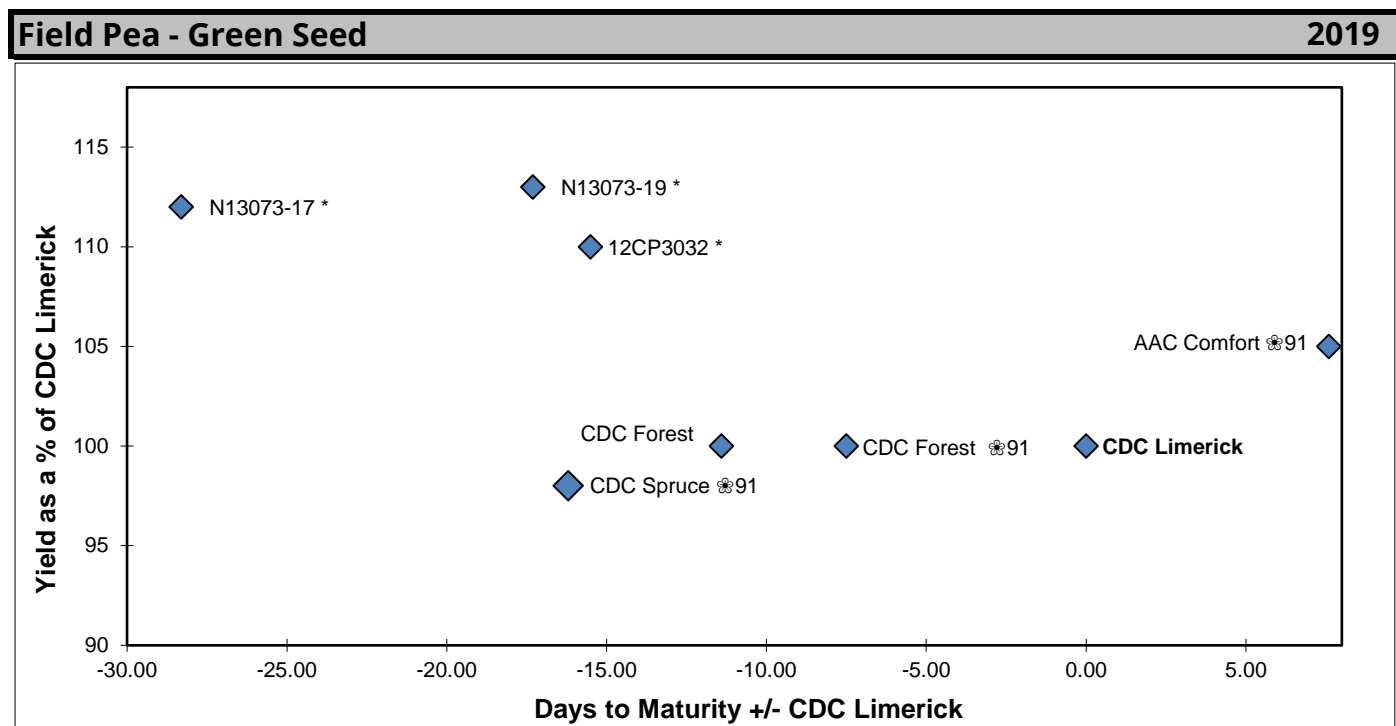
Δ PBR pending

* first year tested, very limited data

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Powdery Mildew resistance: **R = Resistant **S** = Susceptible (data: Alberta Seed Guide)



Average maturity for CDC Limerick is 142 days for 2019

Field Pea (Yellow Seed)					Yield as % of CDC Amarillo							
Variety	**Designated	South Peace				North Peace				BC Peace		
	Powdery	2019 Yield		2014-2019		2019 Yield		2014-2019		2019	2014-2019	
	Mildew	bus /	% of	Avg. Stn.	Yrs.	bus /	% of	Avg. Stn.	Yrs.	Avg.	Avg.	Stn.
	Resistant	acre	check	(%)		acre	check	(%)		(%)	(%)	Yrs.
AAC Barrhead *	R	65	99	97	[3]	109	106	101	[7]	102	100	[10]
AAC Chrome *	R	47	72	87	[2]	133	129	113	[6]	100	106	[8]
AAC Delhi *	R	66	101	101	[1]	110	107	107	[1]	104	104	[2]
AAC Lacombe *	R	60	92	97	[4]	116	112	106	[8]	102	103	[12]
CDC Amarillo	R	65	100	100	[7]	104	100	100	[15]	100	100	[22]
CDC Ardill *	R	73	112	112	[1]	103	99	99	[1]	106	106	[2]
CDC Canary *	R	64	99	91	[2]	100	97	92	[6]	98	92	[8]
CDC Inca *	R	71	109	101	[4]	103	99	99	[4]	104	100	[8]
N13022-7 *		66	102	102	[1]	105	101	101	[1]	101	101	[2]
N13029-10 *		73	113	113	[1]	107	103	103	[1]	108	108	[2]
N13057-4 *		55	85	85	[1]	95	92	92	[1]	88	88	[2]
N13057-5 *		66	101	101	[1]	95	92	92	[1]	97	97	[2]
N13068-1 *		65	101	101	[1]	103	100	100	[1]	100	100	[2]

Coefficient of Variance (CV) values for 2019 were as follows: SP = 17.4% NP = 8.15%

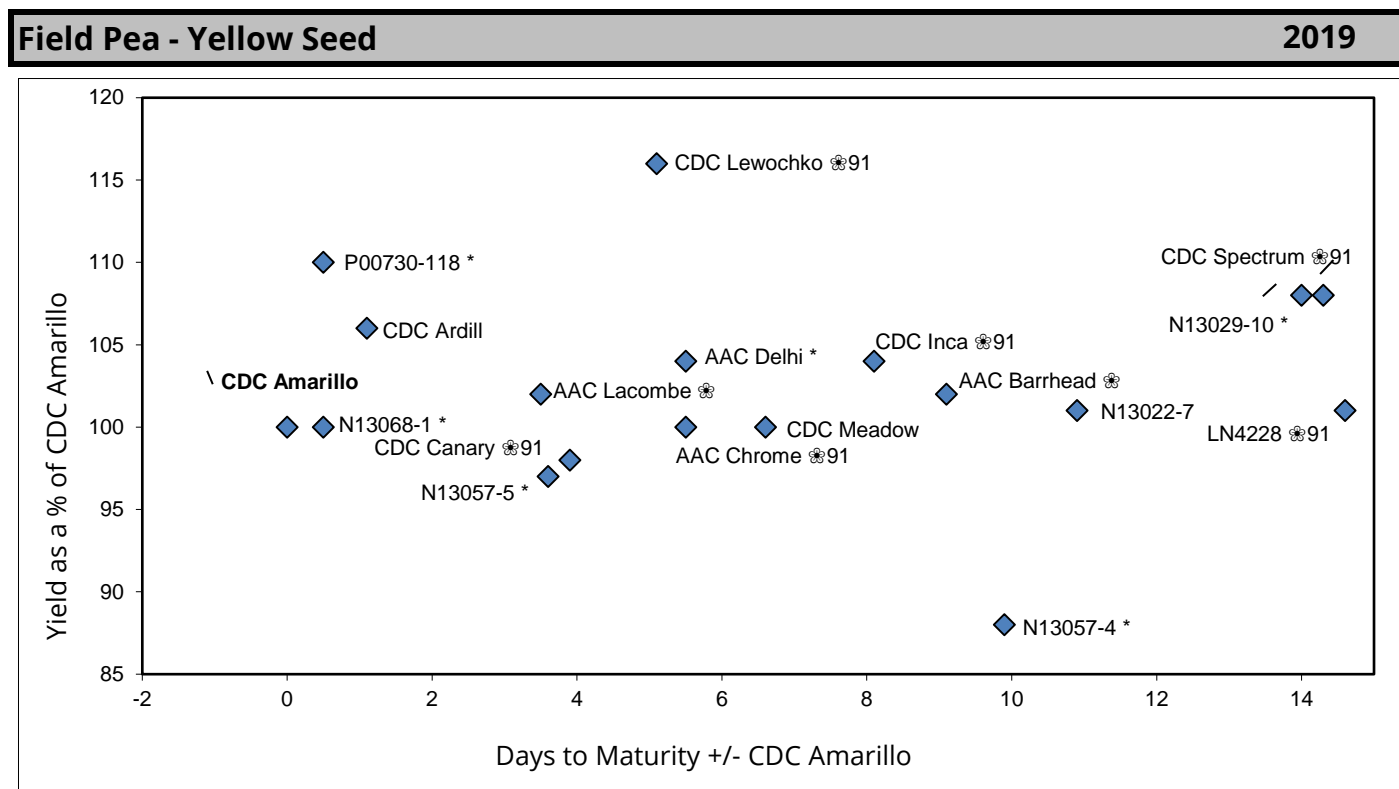
Δ PBR pending

* first year tested, very limited data

* protected by Plant Breeders Rights

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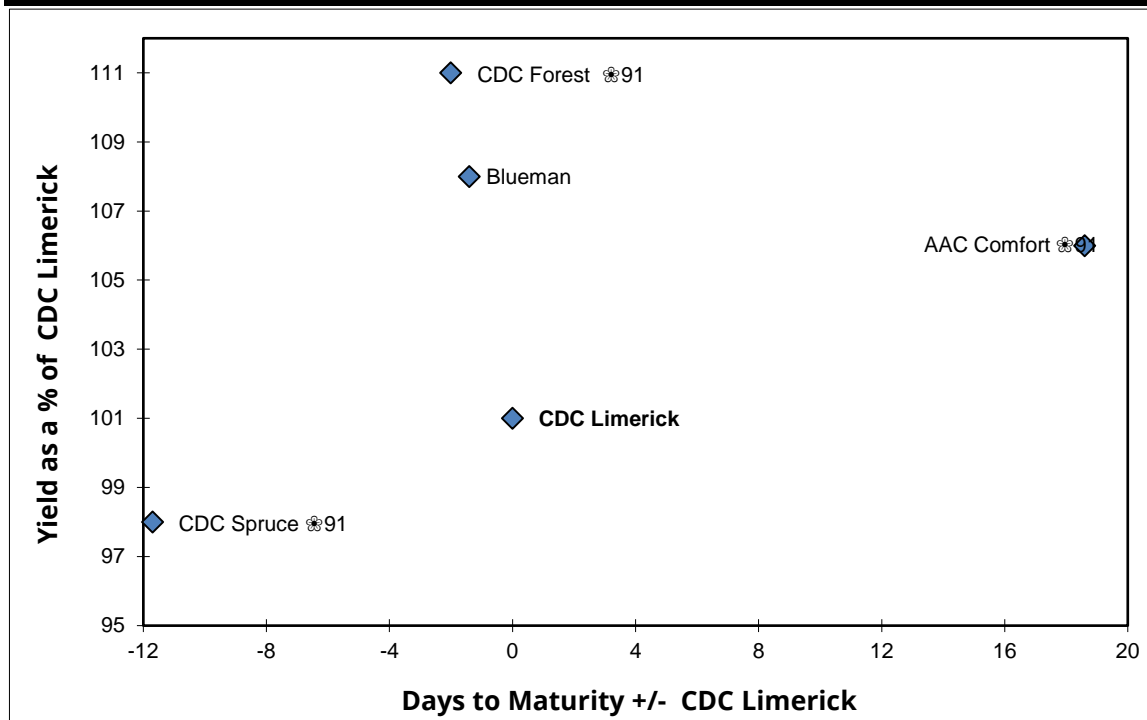
Powdery Mildew resistance: **R = Resistant **S** = Susceptible (data: Alberta Seed Guide)



Average maturity for CDC Amarillo is 117 days for 2019

Field Pea - Green Seed

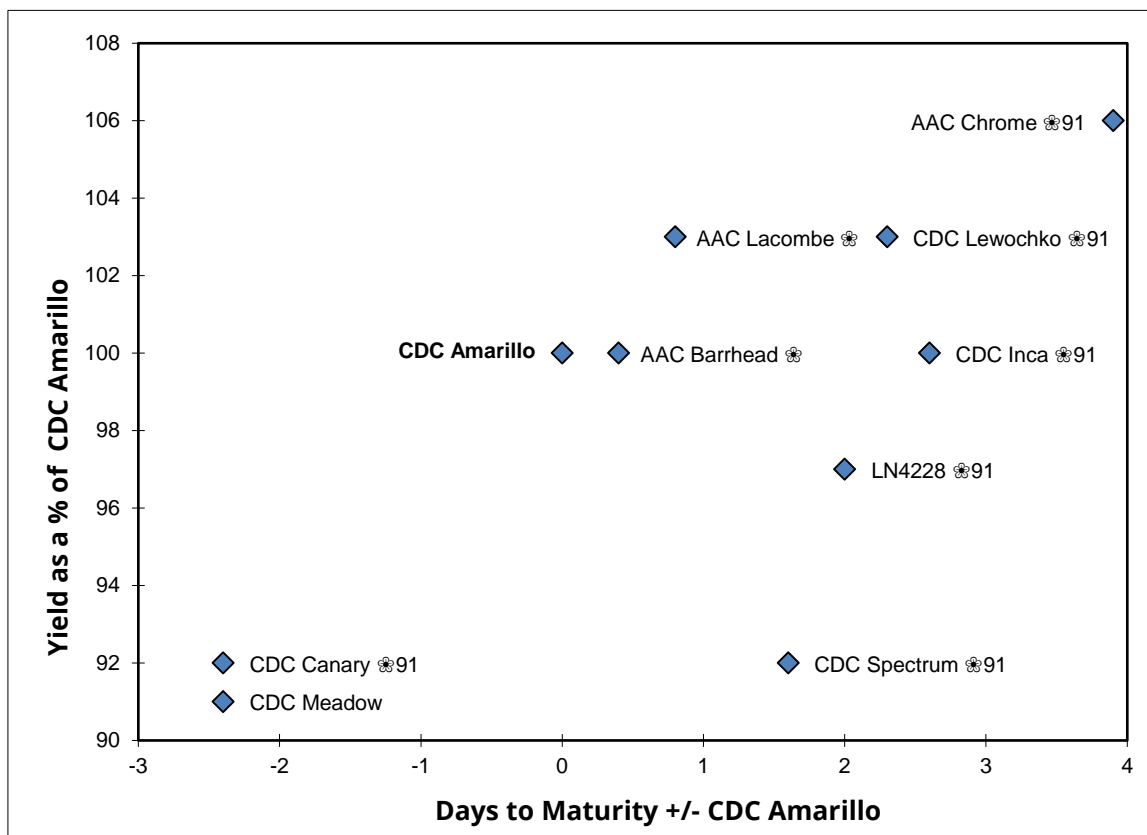
2014 - 2019



Overall average maturity for CDC Limerick is 112 days

Yellow Seed

2014 - 2019



Overall average maturity for CDC Amarillo is 104 days

Δ PBR pending

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* first year tested, very limited d. UPOV91 protected by Plant Breeders Rights, UPOV91

SPRING TRITICALE

Triticale is a genetic cross (not a hybrid) developed by crossing wheat (*Triticum turgidum* or *Triticum aestivum*) with rye (*Secale cereal*). Most varieties of spring triticale currently available are approximately 10 days or more later maturing than CWRS wheat, and as such they should not be grown in the BC Peace River region for grain production. However, a few varieties are proving to be earlier than traditional spring triticale varieties, and perhaps as breeding continues earlier lines may come along that can be grown here for grain with a consistent and early enough maturity. Their high grain yields are "attention grabbers", and so it is worth watching their development, especially as triticale seems to hold a lot of potential for ethanol production in the Peace River region if breeding efforts could produce earlier maturing lines. Drought tolerance is the primary advantage that spring triticales have over other spring cereal crops. Spring triticales are also a valuable alternative or compliment to barley & oat as forage feed, but current triticale lines do tend to have low resistance to Ergot, likely due to late maturity. This may become less of a concern as earlier lines are bred. It is for these reasons, especially its potential use as a high volume ethanol feedstock, that data is included in this report.

Spring Triticale								Yield as % of Brevis			
Variety	South Peace				North Peace				BC Peace		
	2019 Yield		2014-2019		2019 Yield		2014-2019		2019	2014-2019	
	bu /	% of	Avg.	Stn.	bu /	% of	Avg.	Stn.	Avg.	Avg.	Stn.
	acre	check	(%)	Yrs.	acre	check	(%)	Yrs.	(%)	(%)	Yrs.
Brevis			100	[2]	93	100	100	[13]	100	100	[15]
T256 *					85	91	91	[1]	91	91	[1]
T267 *					73	78	78	[1]	78	78	[1]
T270 *					88	94	94	[1]	94	94	[1]

Coefficient of Variance (CV) values for 2019 were as follows: SP = % NP = 10.33%

Δ PBR pending

* first year tested, very limited data

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§ Awnless

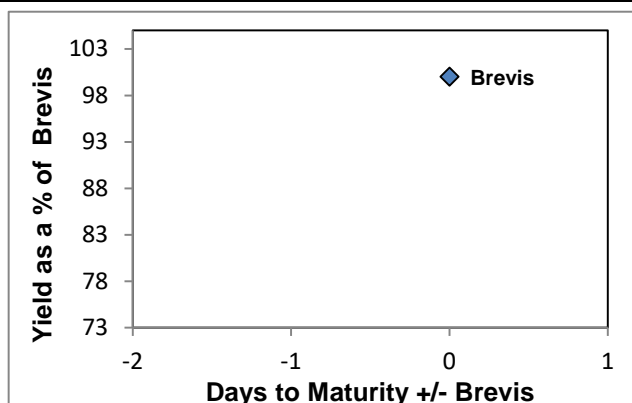
VG = Very Good, G = Good, F = Fair, P = Poor, VP = Very Poor

XX = insufficient data

R = Resistant, MR = Moderately Resistant, I = Intermediate Resistance, MS = Moderately Susceptible, S = Susceptible

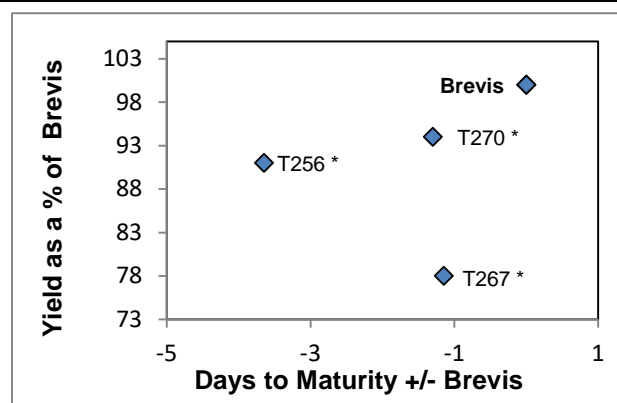
Spring Triticale					Variety Descriptions				
Variety	BC Peace Averages 2014-2019				Alberta Agdex 100/32				
	Maturity	Height	Bushel	TKW	Resistance to:				
	as days +/- check				Weight	(g/1000)	Lodging	Ergot	Common Bunt
Brevis	0.0	99	60	44	G		F	F	I

Regional Variety Performance 2014-2019



Overall average maturity for Brevis is 125 days

Regional Variety Performance 2019



Average maturity for Brevis is 122 days for 2019

CANADA PRAIRIE SPRING - CANADA WESTERN SPECIAL

PURPOSE AND SOFT WHITE SPRING

All current Canada Prairie Spring and General Purpose Spring varieties (CPS, SP and CWSWS are in this class) should be treated with a systemic fungicide seed treatment to control smut. Avoid deep seeding CPS or General Purpose wheats as seedling vigor is reduced. Note the long maturity periods required for the production of basically all currently available CWSWS wheat varieties. Seeding rates for all classes of wheat covered by the new class "General Purpose" should be increased 20 to 25% due to the larger kernel size. For testing purposes, CPS and CWSWS wheats are grown together in the same trial and compared against a CWRS.

CPS / CWSP / CWSWS Wheat						Yield as % of Carberry						
Variety	Type	South Peace				North Peace				BC Peace		
		2019 Yield		2014-2019		2019 Yield		2014-2019		2019	2014-2019	
		bu / acre	% of check	Avg. (%)	Stn. Yrs.	bu / acre	% of check	Avg. (%)	Stn. Yrs.	Avg. (%)	Avg. (%)	Stn. Yrs.
AAC Brandon ☼	CWRS			105	[5]	72	96	106	[9]	96	106	[14]
AAC Castle VB*	CPSR					83	104	104	[1]	104	104	[1]
AAC Paramount Δ	CWSWS			138	[1]	105	131	145	[3]	131	143	[4]
AAC Penhold ☼91	CPS-red			109	[3]	78	99	109	[6]	99	109	[9]
AC Andrew	CWSWS			138	[3]	87	110	135	[8]	110	136	[11]
AC Foremost Δ	CPS-red			98	[3]	85	107	113	[6]	107	108	[9]
Carberry ☼	CWRS			100	[3]	76	100	100	[24]	100	100	[36]
CDC Terrain Δ	CWRS			98	[12]	83	104	107	[2]	104	104	[3]
GP214 *	CWSP					102	128	128	[1]	128	128	[1]
HY2068 *	CPSR					98	123	123	[1]	123	123	[1]
HY2077 *	CPSR					92	115	115	[1]	115	115	[1]
Pasteur	CWGP			116	[1]	91	115	131	[3]	115	127	[4]
Sadash	CWSWS			134	[1]	102	127	133	[2]	127	133	[3]

Coefficient of Variance (CV) values for 2019 were as follows: SP = %, % NP = 11.48%

Δ PBR pending

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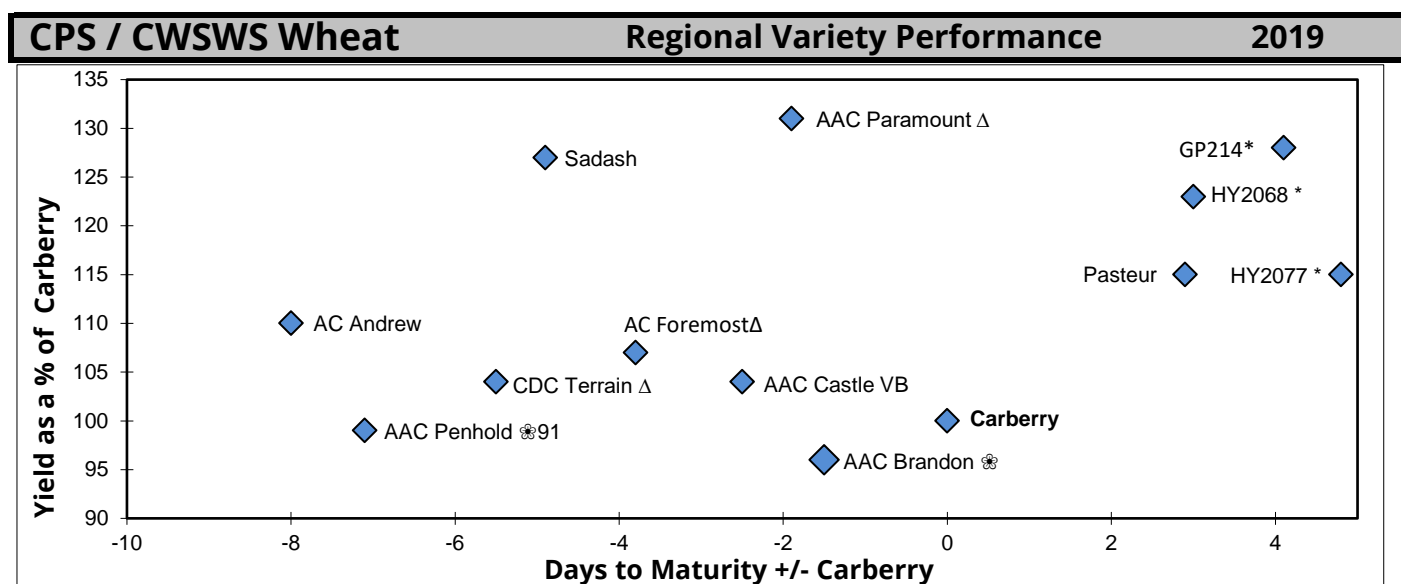
☼⁹¹ protected by Plant Breeders Rights, UPOV91

☼ Clearfield® Tolerant varieties

* first year tested, very limited data

¥ semi-dwarf variety

§ Awnless



Average maturity for Carberry is 121 days for 2019

CPS / CWSWS Wheat						Variety Descriptions								
		BC Peace Averages				Alberta Agdex 100/32								
		2014-2019				Resistance to:								
Variety	Type	Maturity	Height	Bushel	Kernel	Lodging	Sprouting	Loose	Smut	Common	Bunt	Stripe Rust	Leaf Spot	FHB
		in days	Weight	Protein %										
		+/- check	cm	lbs/bu	+/- check									
AAC Brandon ☼	CWRS	-1	84	63	0 [3]	VG	P	MR	S	MR	I	MR		
AAC Castle VB	CPSR	-3	84	64	0 [1]	XX	XX	XX	XX	XX	XX	XX		
AAC Penhold ☼ ⁹¹	CPS-red	-2	77	64	-1 [7]	VG	G	I	R	MR	I	MR		
AC Foremost Δ	CPS-red	0	79	63	-2 [7]	VG	F	I	R	S	MS	S		
Carberry ☼	CWRS	0	85	64	0 [10]	VG	F	MR	R	MR	MS	MR		
CDC Terrain Δ	CWRS	-4	91	60	-1 [3]	G	G	MR	MR	R	I	MS		
HY2068 *	CPSR	3	82	63	-1 [1]	XX	XX	XX	XX	XX	XX	XX		
HY2077 *	CPSR	5	78	63	0 [1]	XX	XX	XX	XX	XX	XX	XX		

Overall average maturity for Carberry is 112 days

Overall average protein for Carberry is 12.1 %

Δ PBR pending

☼⁹¹ protected by Plant Breeders Rights, UPOV91

§ Awnless

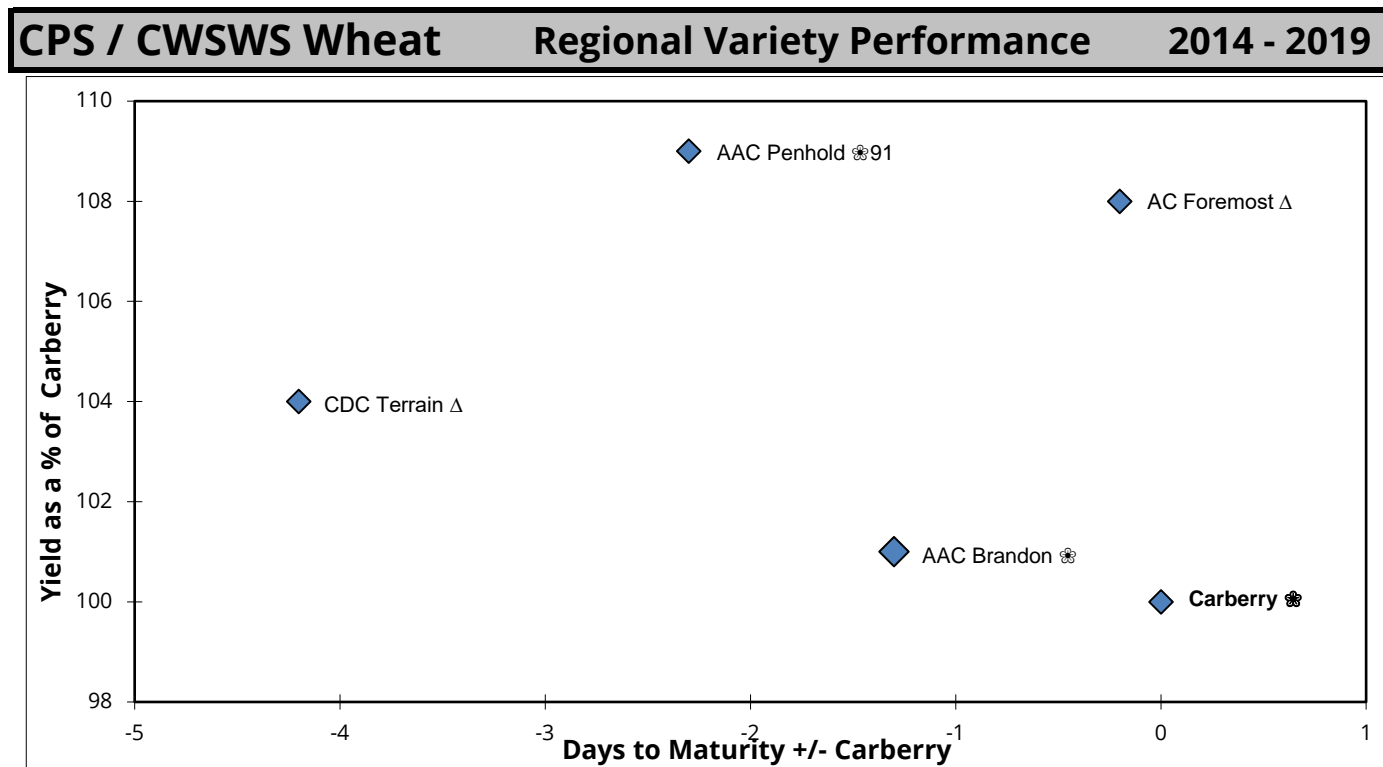
* first year tested, very limited ☼ protected by Plant Breeders Rights

¥ semi-dwarf variety

☼ Clearfield® Tolerant varieties

VG = very good, **G** = good, **F** = fair, **P** = Poor, **VP** = very poor, **XX** = insufficient data

R = Resistant, **MR** = Moderately resistant, **I** = Intermediate resistance, **MS** = Moderately Susceptible, **S** = Susceptible



CANADA WESTERN RED SPRING WHEAT

As grain yields increase, protein content generally decreases. Some of the newer varieties have both higher protein and grain yield. To control true *loose smut* of wheat only a systemic fungicide will work as the pathogen is found inside the seed. To control the other types of smut (*covered*, *false loose* and *bunt*) a non-systemic fungicide seed treatment will work as the disease pathogen is on the outside of the seed.

CWRS Wheat							Yield as % of Carberry		
Variety	South Peace			North Peace			BC Peace		
	2019 Yield		Station	2019 Yield		Station	2019	2014-2019	
	bu /	% of		bu /	% of		Avg.	Avg.	Station
	acre	Check	Years	acre	Check	Years	(%)	(%)	Years
AAC Alida VB			110 [1]	63	93	102 [3]	93	104	[4]
AAC Brandon ☼			110 [3]	70	103	109 [5]	103	110	[8]
AAC Cirrus ☼			98 [1]	52	76	90 [3]	76	92	[4]
AAC Jatharia VB ☼ ⁹¹			□	73	108	108 [1]	108	108	[1]
AAC LeRoy VB			120 [1]	66	97	100 [2]	97	107	[3]
AAC Magnet			113 [1]	63	93	94 [2]	93	101	[3]
AAC Starbuck			104 [1]	68	100	105 [2]	100	105	[3]
AAC Viewfield ☼ ⁹¹			114 [2]	67	99	115 [3]	99	115	[5]
AAC Warman VB ☼ ⁹¹			90 [1]	60	88	90 [2]	88	90	[3]
AAC Wheatland VB			112 [1]	69	102	103 [2]	102	106	[3]
Bolles *			□	63	93	93 [1]	93	93	[1]
BW1064 *			□	58	86	86 [1]	86	86	[1]
BW5028 *			□	77	113	113 [1]	113	113	[1]
BW5031 *			□	63	92	92 [1]	92	92	[1]
BW5056 *			□	62	91	91 [1]	91	91	[1]
Carberry ☼			100 [5]	68	100	100 [8]	100	100	[13]
CDC Go			108 [3]	58	85	104 [6]	85	105	[9]
CDC Landmark ☼ ⁹¹			100 [2]	64	94	102 [4]	94	102	[6]
CS Jake ☼ ⁹¹			104 [1]	43	63	77 [2]	63	86	[3]
CS Tracker ☼ ⁹¹			101 [1]	54	80	83 [2]	80	89	[3]
SY Torach			100 [1]	60	88	93 [2]	88	95	[3]
CS11200104-11 *			□	61	89	89 [1]	89	89	[1]
CS11200214-17 *			□	69	102	102 [1]	102	102	[1]
Ellerslie *			□	62	92	92 [1]	92	92	[1]
Parata Δ			97 [1]	45	66	84 [3]	66	87	[4]
PT252 *			□	68	100	100 [1]	100	100	[1]
PT488			□	60	88	88 [1]	88	88	[1]
PT596			108 [1]	65	95	95 [2]	95	100	[3]
PT598 *			□	66	97	97 [1]	97	97	[1]
PT652 *			□	60	88	88 [1]	88	88	[1]
PT783 *			□	69	102	102 [1]	102	102	[1]
Sheeba			□	64	94	94 [1]	94	94	[1]
Stettler ☼			106 [3]	73	107	107 [6]	107	107	[9]
SY Chert			115 [1]	68	100	103 [3]	100	106	[4]
SY Gabbro			100 [1]	72	106	107 [2]	106	105	[3]
SY Obsidian			101 [1]	51	75	91 [3]	75	93	[4]

Coefficient of Variance (CV) values for 2019 were as follows: SP = % NP = 12.37%

Δ PBR pending

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☼⁹¹ protected by Plant Breeders Rights, UPOV91

* first year tested, very limited data

☼ Solid-Stemmed variety, Wheat Stem Sawfly resistance

*** (CWHWS) Canadian Western Hard White Spring

¥ semi-dwarf variety

☼ Clearfield® Tolerant varieties

§ Awnless

CWRS Wheat

Variety Descriptions

Variety	BC Peace Averages				Alberta Agdex 100/32							
	2014-2019				Resistance to:							
	Days to Maturity +/- check	Height cm	Bushel Weight lbs/bu	Kernel Protein % +/- check	Lodging	Sprouting	Loose Smut	Common Bunt	Stripe Rust	Leaf Spot	FHB	
AAC Alida VB	0.1	90	62	[4]	VG	VG	R	I	MR	MS	MR	
AAC Brandon ☼	-0.9	82	64	[6]	VG	P	MR	S	MR	I	MR	
AAC Cirrus ☼	-2.9	88	63	[4]	G	F	MR	I	R	R	I	
AAC Jatharia VB ☼91	-3.3	92	65	[1]	F	G	S	MS	I	I	I	
AAC LeRoy VB	-2.5	82	61	-1 [3]	XX	XX	XX	XX	XX	XX	XX	
AAC Magnet	-2.0	88	61	[3]	XX	XX	XX	XX	XX	XX	XX	
AAC Starbuck	-0.4	86	60	[3]	G	F	MR	S	MR	S	MR	
AAC Viewfield ☼91	-0.5	74	66	1 [5]	VG	G	S	MR	R	I	I	
AAC Warman VB ☼91	-2.0	100	60	[3]	F	XX	MR	S	MS	I	MR	
AAC Wheatland VB	-0.6	83	60	[3]	VG	G	R	MR	I	S	I	
Bolles *	-7.6	83	63	1 [1]	XX	XX	XX	XX	XX	XX	XX	
BW1064 *	-3.5	87	63	[1]	XX	XX	S	XX	XX	XX	XX	
BW5028 *	2.5	85	64	-1 [1]	XX	XX	XX	XX	XX	XX	XX	
BW5031 *	-0.3	83	62	1 [1]	XX	XX	XX	XX	XX	XX	XX	
BW5056 *	1.2	85	63	1 [1]	XX	XX	XX	XX	XX	XX	XX	
Carberry ☼	0.0	82	64	[11]	VG	F	MR	R	MR	MS	MR	
CDC Go	-3.9	83	64	[7]	G	VP	MS	I	MS	S	MS	
CDC Landmark ☼91	-2.2	85	64	[6]	VG	VG	MR	MS	MR	I	I	
CS Jake ☼91	-2.9	88	62	1 [3]	XX	XX	XX	XX	XX	XX	XX	
CS Tracker ☼91	-2.9	88	62	[3]	XX	XX	XX	XX	XX	XX	XX	
SY Torach	-0.4	81	60	[3]	XX	XX	XX	XX	XX	XX	XX	
CS11200104-11 *	-4.4	78	63	1 [1]	XX	XX	XX	XX	XX	XX	XX	
CS11200214-17 *	4.0	90	62	[1]	XX	XX	XX	XX	XX	XX	XX	
Ellerslie *	-9.1	84	63	[1]	XX	XX	XX	XX	XX	XX	XX	
Parata Δ	-6.4	90	64	1 [4]	F	F	MS	S	MR	I	I	
PT252 *	1.6	86	63	1 [1]	XX	XX	XX	XX	XX	XX	XX	
PT488	-4.5	86	64	[1]	XX	XX	XX	XX	XX	XX	XX	

Average protein for Carberry is 11.1 %

Overall average maturity for Carberry is 122 days

Δ PBR pending

¥ semi-dwarf variety

☼ protected by Plant Breeders Rights

☼ Clearfield® Tolerant varieties

☼⁹¹ protected by Plant Breeders Rights, UPOV91

☼ Solid-Stemmed variety, Wheat Stem Sawfly resistance

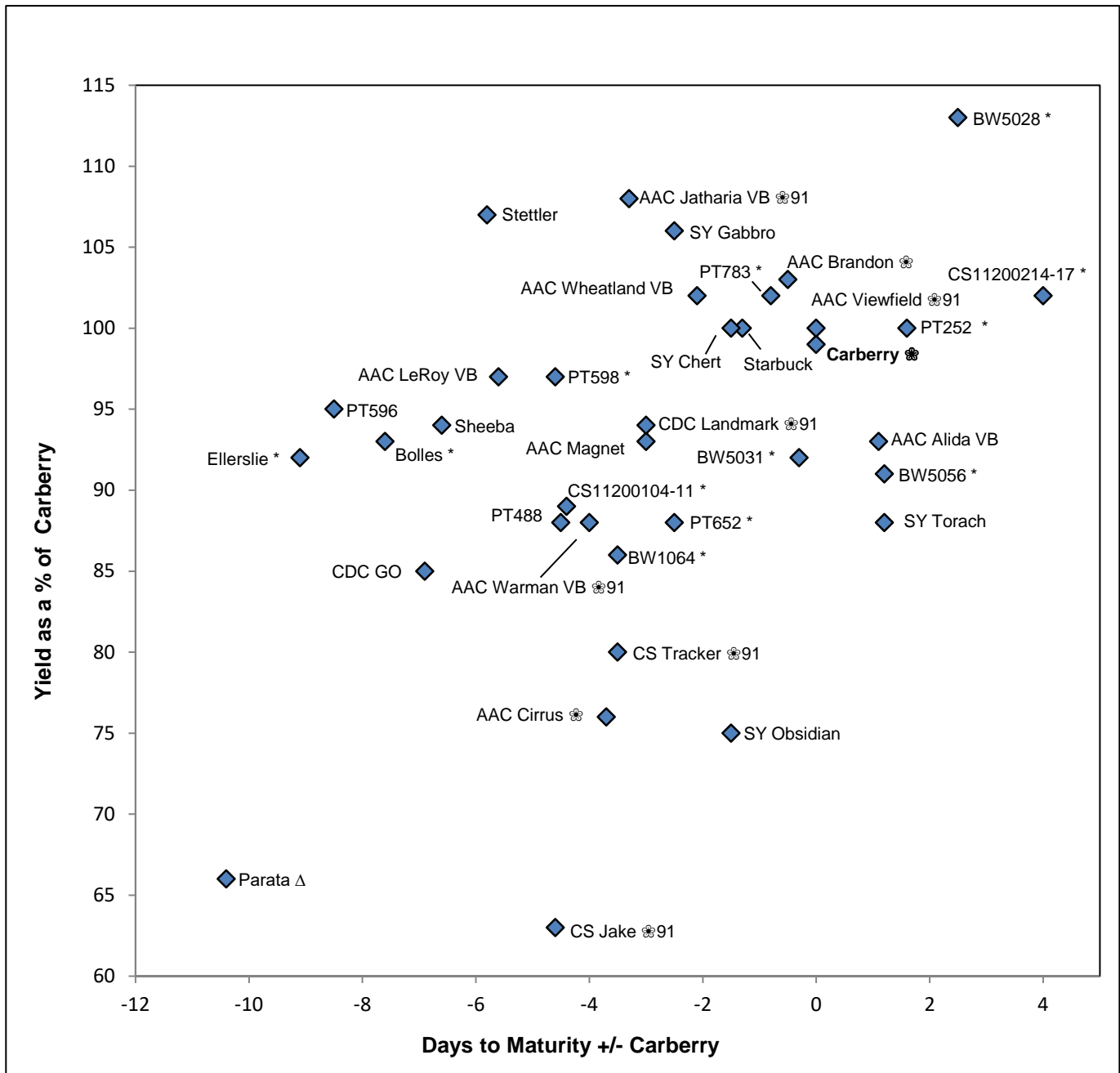
* first year tested, very limited data

§ Awnless

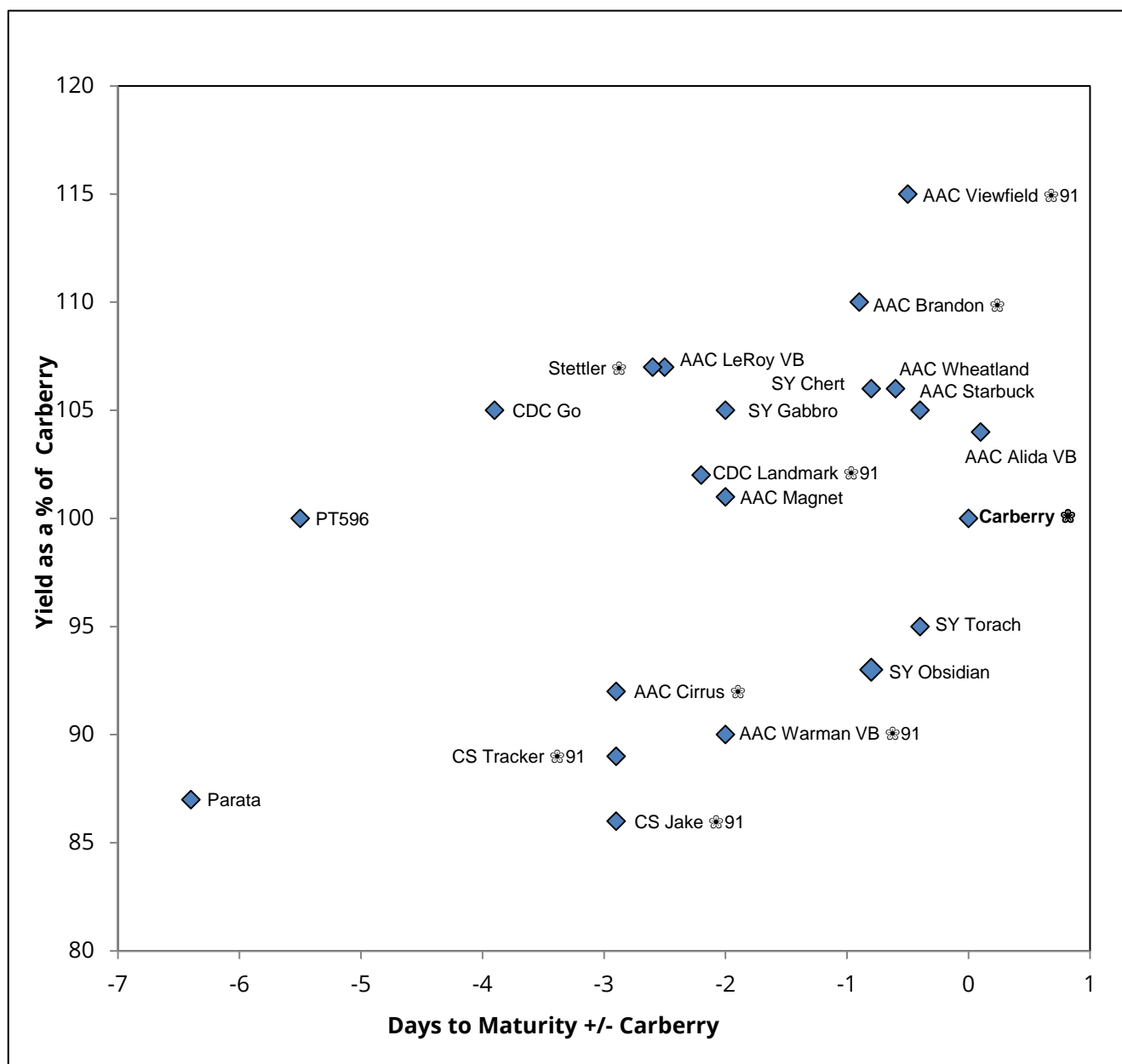
VG = very good, **G** = good, **F** = fair, **P** = Poor, **VP** = very poor

XX = insufficient data

R = Resistant, **MR** = Moderately resistant, **I** = Intermediate resistance, **MS** = Moderately Susceptible, **S** = Susceptible



Average maturity for Carberry is 122 days for 2019



Overall average maturity for Carberry is 116 days

DURUM WHEAT

Durum is a type of wheat which is used to make pasta products (macaroni, spaghetti, etc.) and Canada has become a world leader in quality durum. Durum plant breeding within Canada is moving toward even higher protein content and is developing a brand new category of high gluten strength durum for a specialty pasta market. However, durum requires a long growing season and high heat, two things the Peace River region is not known for having. For this reason durum production has been traditionally concentrated in the southern parts of the Canadian prairies.

Starting back in 2009, durum was successfully tested in our region and did well and continues to have good success growing in our B.C. Peace River region tests. Often surprises arise in our northern long-daylight region and so it was worth investigating. Most varieties of durum wheat currently available are suggested by literature to have approximately 10 days later maturity than CWRS wheat, but this is not proving to be the case locally. However, 2011 and again in 2015 (very wet & late years) durum proved to be significantly longer in maturity than CWRS as a group, with one or two early variety exceptions worth noting. But, until further testing is completed, durum should not be grown in large acreages and use caution if you choose to grow it within the B.C. Peace River region. The biggest obstacle currently is a lack of grain buyers, admittedly a vicious circle of acceptance and product availability. Its potential economic benefits to the region should grain buyers ever show interest to purchase from the region, is great enough to warrant further testing. *Disclosure of this data is not a recommendation to grow durum in the Peace River region.*

It appears however, that the B.C. Peace River region has one really big advantage in growing durum, as it would seem we can grow it free of fusarium, a major problem in most durum growing regions. Back in 2009 and 2010, years of severe drought and poor yield potentials, durum yields were respectable by comparison and even seemed to survive the drought better than other wheat classes. It appears certain very specific early durum

Durum Wheat		Yield as % of Strongfield										
Grain Type		South Peace				North Peace				BC Peace		
		2019 Yield		2014-2019		2019 Yield		2014-2019		2019	2014-2019	
		bu / acre	% of check	Avg. (%)	Stn. Yrs.	bu / acre	Avg. (%)	Avg. (%)	Stn. Yrs.	Avg. (%)	Avg. (%)	Stn. Yrs.
AAC Grainland	CWAD			91	[1]	66	112	104	[2]	112	100	[3]
AAC Stronghold ☼91	CWAD			98	[1]	61	103	93	[3]	103	94	[4]
AAC Succeed VB	CWAD			98	[1]	63	107	100	[2]	107	99	[3]
Brigade ☼	CWAD			100	[1]	71	120	107	[3]	120	105	[4]
CDC Alloy ☼91	CWAD			93	[1]	57	96	95	[4]	96	94	[5]
CDC Credence ☼91	CWAD			93	[1]	68	115	108	[2]	115	103	[3]
DT1004 *	CWAD				□	67	114	114	[1]	114	114	[1]
DT591 *	CWAD				□	63	107	107	[1]	107	107	[1]
DT887 *	CWAD				□	64	109	109	[1]	109	109	[1]
DT890 *	CWAD				□	66	112	112	[1]	112	112	[1]
Strongfield ☼	CWAD			100	[4]	59	100	100	[7]	100	100	[11]
Transcend ☼	CWAD			89	[1]	65	110	97	[3]	110	95	[4]

Coefficient of Variance (CV) values for 2019 were as follows: SP = % NP = 7.76%

Δ PBR pending

☼ protected by Plant Breeders Rights

☼⁹¹ protected by Plant Breeders Rights, UPOV91

* first year tested, very limited data

¥ semi-dwarf variety

☼ Solid-Stemmed variety, Wheat Stem Sawfly resistance

XX = insufficient data

Durum Wheat						Variety Descriptions							
Variety	Type	BC Peace Averages				Alberta Agdex 100/32							
		2014-2019				Resistance to:							
		Maturity		Bushel	Kernel	Lodging	Sprouting	Loose Smut	Common Bunt	Stripe Rust	Leaf Spot	FHB	
		in days	Height	Weight	Protein %								
+/- check	cm	lbs/bu	+/- check										
AAC Grainland		0.6	91	59	0	[3]	XX	XX	XX	XX	XX	XX	XX
AAC Stronghold 🌾91		1.6	87	61	0	[4]	VG	G	R	I	MR	I	MS
AAC Succeed VB		1.3	94	59	0	[3]	F	F	R	R	I	MS	MS
Brigade 🌾		1.7	101	61	-1	[4]	G	F	MS	R	MR	I	MS
CDC Alloy 🌾91		0.7	95	62	0	[5]	F	F	I	R	R	MS	MS
CDC Credence 🌾91		1.8	96	57	0	[3]	F	F	MR	R	MR	I	MS
DT1004 *		-0.5	94	64	-1	[1]	XX	XX	XX	XX	XX	XX	XX
DT591 *		-0.4	90	61	0	[1]	XX	XX	XX	XX	XX	XX	XX
DT887 *		6.1	92	62	0	[1]	XX	XX	XX	XX	XX	XX	XX
DT890 *		2.3	89	63	-1	[1]	XX	XX	XX	XX	XX	XX	XX
Strongfield 🌾		0.0	86	62	0	[11]	F	F	S	I	MR	MS	S
Transcend 🌾		1.9	97	61	-1	[4]	F	F	S	R	R	I	MS

Overall average maturity for Strongfield is 117 days

Overall average protein for Strongfield is 12.7 %

Δ PBR pending

¥ semi-dwarf variety

⌘ protected by Plant Breeders Rights

* first year tested, very limited data

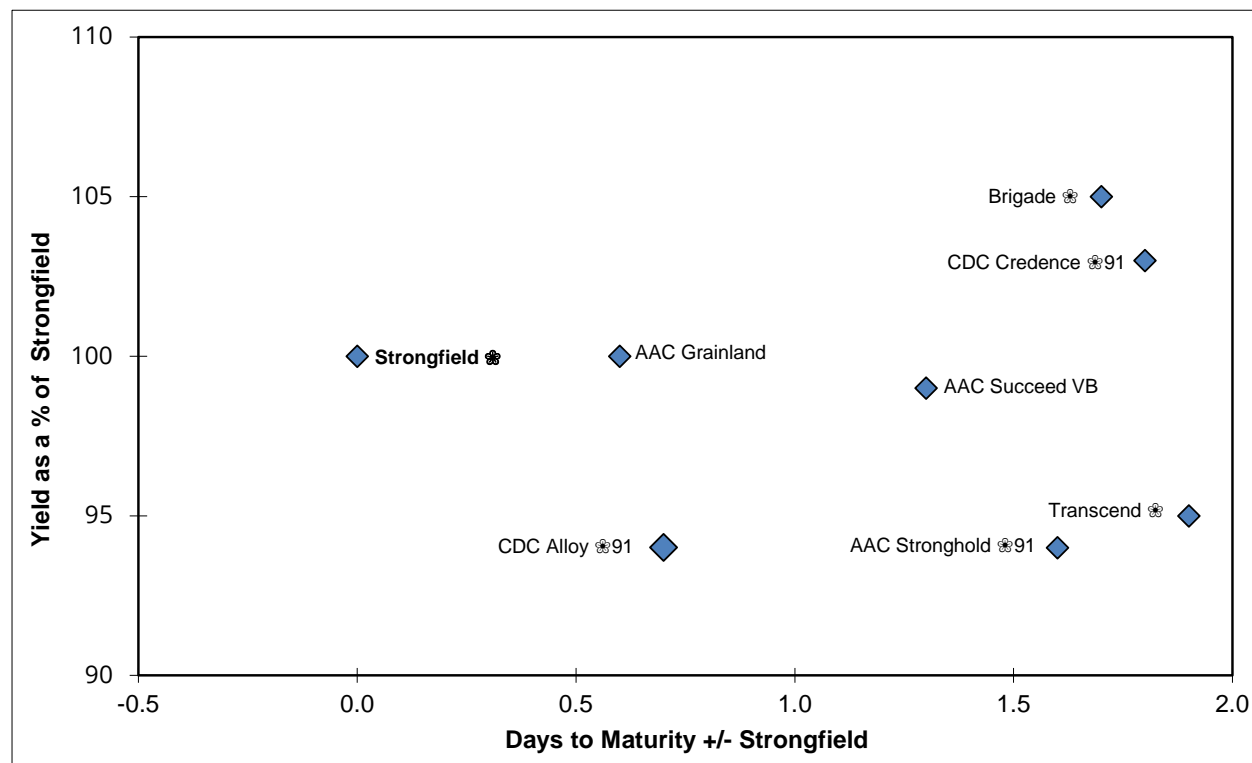
⌘⁹¹ protected by Plant Breeders Rights, UPOV91

⌘ Solid-Stemmed variety, Wheat Stem Sawfly resistance

VG = very good, **G** = good, **F** = fair, **P** = poor, **VP** = very poor **XX** = insufficient data

R = Resistant, **MR** = moderately resistant, **I** = Intermediate resistance, **MS** = Moderately Susceptible, **S** = Susceptible

Durum Wheat Regional Variety Performance 2014-2019



Overall average maturity for Strongfield is 117 days