Saskatchewan

Varieties of Grain Crops 2021

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Symbols and Abbreviations Used:

§ Variety may not be described in 2022
--- Insufficient test data to describe
n/a = Not applicable
✪ Applied for PBR protection at time of printing (UPOV'91)
Plant Breeders' Rights (UPOV'78) at time of printing
Plant Breeders' Rights (UPOV'91) at time of printing
VUA Variety Use Agreement in effect

Relative maturity: VE = Very Early, E = Early, M = Medium, L = Late, VL = Very Late

Agronomic Rating: VG = Very Good, G = Good, F = Fair, P = Poor, VP = Very Poor

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

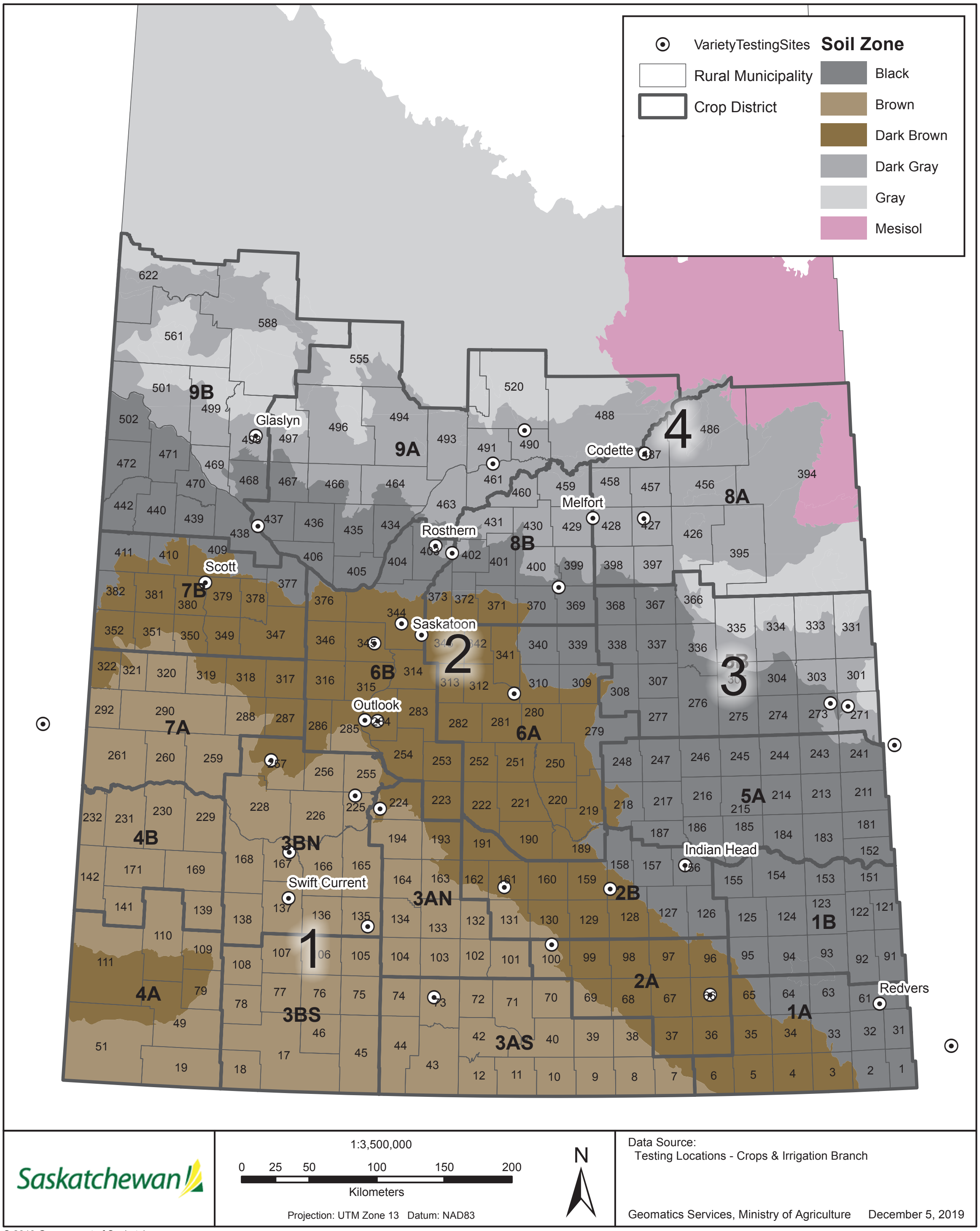
Accessing Public Release Varieties

Breeder seed of public release varieties is available to anyone (including producers and seed growers) for multiplication, increase and marketing. There are no royalties or seed marketing agency fees attached to use or sale of seed produced from breeder seed of public release varieties. While subsequent seed production may be Pedigreed, this is the buyer's choice and the buyer may increase the seed of public release varieties in any way he/she wishes (only pedigreed seed can be sold by variety name, for most major crop kinds). To purchase breeder seed of public release varieties, contact the breeding institution listed in the Breeding Institution and Seed Distributors listings on pages 38 to 40.

Legal Disclaimer

This guide is for informational purposes only. The information presented is based on aggregated data and observations, but significant individual variations may occur due to conditions such as farm management practices, climate, soil type and geographical location. While reasonable care was exercised in the preparation of the guide, no guarantees or warranties regarding the accuracy, reliability or completeness of the information are given. This guide may not reflect the newest information available and may not be regularly updated. It is the sole responsibility of the user to evaluate the accuracy and appropriateness of the information.

Regional Variety Testing Locations



The cropland of Saskatchewan has been divided into four areas based roughly on agro-climatic conditions. Crop yields can vary from area to area. In choosing a variety, producers will want to consider the yield data in combination with marketing and agronomic factors.

Area 1: Drought is a definite hazard and high winds are common. Sawfly outbreaks often occur in this area. Cereal rust may be a problem in the southeastern section.

Area 2: Drought and sawfly may be problems in the western and central sections of the area. Cereal rust may be a problem in the southern section.

Area 3: Sawfly can also be a problem. Drought is not as likely to be a problem in this area, particularly in the east. Cereal rust may occur in the eastern portion. The frost-free period can be fairly short in the northern section.

Area 4: Rainfall is usually adequate for crop production. However, early fall frosts and wet harvest conditions are frequent problems.

Note About Dividing Lines:

The dividing lines do not represent distinct changes over a short distance. The change from one area to another is gradual.

Regional Variety Testing in Saskatchewan relies on support from many organizations, including:

The Saskatchewan Advisory Council on Grain Crops (SACGC) and the Saskatchewan Variety Performance Group (SVPG) coordinate, supervise and review the collection, analysis and reporting of information in this booklet. Membership consists of representatives from:

- Ministry of Agriculture
- Seed Companies
- Saskatchewan Seed Growers Association
- Crop Commissions
- Agriculture and Agri-Food Canada
- Crop Development Centre
- University of Saskatchewan
- Saskatchewan Crop Insurance Corporation

SACGC and SVPG gratefully acknowledge the contributions of all individuals and organizations involved in the generation and publication of this information.

Testing Varieties in Saskatchewan

By The Ministry of Agriculture

Grower dollars at work testing varieties of grain crops across Saskatchewan. Variety results are reviewed and approved by SACGC to ensure information published is based on sound scientific principles.

Regional testing of crop varieties is conducted to provide producers with information on the agronomic performance of varieties under different agro-climatic conditions. Saskatchewan producers will continue to have the opportunity to evaluate the newest grain crop varieties and their suitability for production in different regions of the province. Many funders contribute to variety testing in Saskatchewan.

The Ministry of Agriculture provides $100,000 toward a testing program that is based on industry-government partnership. Technical and in-kind support is also provided by Agriculture and Agri-Food Canada, Saskatchewan Crop Insurance Corporation and *The Western Producer*, publisher of the *2021 SaskSeed Guide*.

The Saskatchewan Variety Performance Group (SVPG) administers the program for spring cereals, fall rye and flax. SVPG is composed of representatives from the seed industry, producers, breeders and government. The SeCan Association administers the funds for SVPG. Crop coordinators manage the data and provide expertise for their respective crops. An entry fee system is used, in which variety owners or companies with the distribution rights to a particular variety pay a portion of the cost of having the variety tested. The Saskatchewan Seed Growers' Association, Saskatchewan Wheat Development Commission, Saskatchewan Barley Development Commission, Saskatchewan Oat Development Commission and SaskFlax collectively provide more than $100,000 to the core program. Supplementary funds enhance the core program.

Saskatchewan Pulse Growers (SPG) funds the pulse and soybean regional variety trials for Saskatchewan growers. SPG funds the pulse and soybean variety trials for Saskatchewan growers. For 2020 trials, SPG provided approximately $200,000 for pulse regional variety trials and $103,000 for soybean regional variety trials. Canadian marketing agents that distribute soybean varieties in Saskatchewan pay an entry fee that covers a portion of the cost of having their varieties tested. SPG collaborates with researchers at several locations to conduct the trials, including the Crop Development Centre at the University of Saskatchewan, Agriculture and Agri-Food Canada research stations, provincial AgriARM sites and the Canada-Saskatchewan Irrigation Diversification Centre.

Canola Performance Trials represent the next generation in variety evaluation for Western Canadian canola growers. The three Prairie canola grower groups – Alberta Canola Producers Commission, Saskatchewan Canola Development Commission (SaskCanola) and the Manitoba Canola Growers Association – fund the program. The Canola Council of Canada delivers the program on their behalf.

The results from all variety trials of all crop kinds tested are reviewed by the Saskatchewan Advisory Council on Grain Crops (SACGC), which also updates disease and other agronomic information and approves the data prior to inclusion in this publication.

Relative yield of varieties

Trials are conducted using uniform protocols and standard check varieties. Data is collected from as many sites as are available and statistically analyzed. Results in this publication are aggregated over a number of years and on an area basis for most crops.

Grain yield is a function of genetic and non-genetic factors. Variety trials are designed to measure yield differences due to genetic causes. It is important to minimize variability due to non-genetic factors such as moisture, temperature, transpiration, weeds, diseases and other pests. Experimental design uses replication (repeated plantings of the varieties) and randomization (the position of the varieties within the test is assigned by chance) to estimate the precision with which the genetic factors can be measured.

Relative yield is the yield of one variety expressed as a percentage of the check variety. Yields obtained in these trials are not identical to those obtained in commercial production. However, the relative ranking of these varieties compared to the check variety, obtained over a number of years at several locations, would remain the same regardless of whether the grain yield was measured in small plots or large-scale fields. Relative yield is the best estimate of expected yield advantage in the areas indicated.

Considerations For New Variety Selection

There are various factors to consider when selecting a new variety and it all depends on what your main priority is. Some factors to consider include:

- Market – Identify your target market and make sure the variety selected matches the specifications and quality expected by your buyers, such as seed size, colour, functionality and other attributes.
- Maturity – Identify realistic expectations on maturity needed to achieve optimum yield and quality in your region.
- Disease resistance – Select varieties with better resistance for high-risk areas or fields. Resistance helps with disease management, but may or may not reduce the reliance on fungicide application.
- Herbicide tolerance – Consider the weeds or volunteers that may be present in the field to determine if herbicide-tolerant options are a good choice.
- Seed size – If seed size does not affect the market choice, then consider the seeding costs of the variety. Smaller-seeded varieties are usually cheaper to seed and have fewer production issues with plugging seeding equipment and other operations. Faba beans are a good example where seed size may be an important consideration.
- Crop growth habit and other physiological factors – Factors such as growth habit (determinate or indeterminate), plant height, standability, harvest management and quality parameters such as resistance to sprouting, seed coat breakage and bleaching.
- Yield – This is often the highest priority, as it directly relates to the ultimate goal of net return. In some cases, the advantages and higher performance of new varieties may not necessarily translate into higher yield, due to environment or management practices. If all other factors have been considered, then use yield potential as the deciding factor.

What Are Plant Breeders' Rights?

By The Ministry of Agriculture

The goal of Plant Breeders' Rights (PBR) legislation is to encourage investment and development in the crops sector. There are many ways to accomplish this, but UPOV-based PBR balances the interests of the farmer and the breeder. This gives the farmer fair access to the use of purchased seed, and the breeder can expect a royalty from every new farmer buying seed of the breeder's variety.

The royalty and protections under PBR assure that companies and institutions that invest in plant breeding are able to keep reasonable control of their varieties and secure fair compensation for their efforts. Some of the benefits of PBR include:

- Access to new and improved plant varieties, improving the bottom line for producers. Enhanced protection under the revised PBR will encourage the release of new varieties from other countries (once registered in Canada), as well as stimulate increased investments in variety development here in Canada.
- Farmers are allowed to save seed for their own use, on their own farms, if the original seed was obtained legitimately.
- No negative impacts for those who legitimately purchase seed.

When a plant breeder develops a new variety for use in Canada, they may apply under the *Plant Breeders' Rights Act* to obtain certain controls over the multiplication and sale of the seed of that variety. Sale, trade or any other transfer of the seed for propagation purposes is prohibited by law without the written permission of the breeder or their agent.

> UPOV is the International Union for the Protection of New Varieties of Plants. To be a member, a country must have legislation that aligns with a ratified UPOV convention. There are 76 UPOV member countries, 59 of which have ratified UPOV'91-compliant legislation.

Varieties protected by PBR are identified with one of two logos. Varieties protected prior to Feb. 27, 2015, are identified by:

Progress through Research

and those protected after Feb. 27, 2015, are identified by:

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Progress Through Research
Le progrès grâce à la recherche

Varieties previously protected by PBR remain under the same rules as before. Varieties protected since Feb. 27, 2015, are protected under the new PBR Act.

The new PBR Act extends the right of the breeder, giving them further opportunity to protect their variety and ensuring that those who benefit from the technology are paying for it.

It has always been illegal to sell PBR-protected seed without consent of the breeder. Now, it will also be illegal to purchase seed, meaning both the seller and purchaser can be liable if the seed sale is not approved. To be sure, the best way to know if the seed being purchased is an approved sale is to purchase certified seed. Producers should look for the blue certified seed tag and keep it in their records as long as they grow grain derived from that original seed purchase.

The first 10 years of Canada's PBR Act brought improved access to varieties, new investment in varieties, and new and improved genetics for farmers. With the new PBR, producers will benefit from greater access to new varieties for the crops they grow, and breeders will be able to better protect the investment made in the development of new varieties so they can continue to develop new varieties.

For more information, visit *www.pbrfacts.ca* or contact the PBR Office at 613-773-7188.

> **Plant Breeders' Rights status** can change throughout the year. Significant efforts are taken to ensure the correct logo is applied at the time of printing this guide. The PBR Office maintains an online database (*www.inspection.gc.ca)* that can be accessed to verify accuracy and/or changes to PBR status.

VUA Pilot Program

The Canadian Plant Technology Agency (CPTA) launched a pilot program in the February 2020 to test how the Variety Use Agreement (VUA) will work in the real world. At the same time, the Canadian Seed Trade Association (CSTA) formed a working group with producer and industry representation, to provide transparency on the pilot program and create opportunities for collaboration. These combined efforts are the best approach to get the information required on how the VUA will work, give customers more confidence and provide an opportunity to address any concerns.

VARIETY USE AGREEMENT
VUA™

CPTA has been hard at work ensuring that the pilot program's varieties are available to producers. Contracts have been signed and pilot varieties were seeded in the 2020 growing season. If you are interested in learning more about the varieties offered in the pilot program, please contact the distributor directly.

CPTA's working group consists of representatives from the seed industry and various producer organizations. They are meeting on a monthly basis.

The key principles of value creation (transparency, choice and value) remain at the core of these efforts. For more information visit: www.seedvaluecreation.ca/en/pilot-program/.

Seed Quality and Seeding Rates Are Crucial to a Good Plant Stand

By The Ministry of Agriculture

Seed quality and seeding rates are important for establishing good plant stands and—unlike the weather, are two factors we can control. Plant population sets the stage for the yield potential of a crop. Research has shown that each crop has an optimum plant density range that producers should target when seeding their crop. Rates may be adjusted depending on the conditions in the field, date of seeding, weed pressure, seed-placed fertilizer and other pressures that may affect emergence or plant stand.

Determining the quality of the seed starts with a seed test prior to buying seed or seeding the crop. Sending a seed sample to a qualified lab can provide information on germination, vigour, diseases present, purity and thousand kernel weight (TKW). All of these factors help inform growers of whether the seed is suitable for planting and influence seeding rates for that seed lot. Germination tells us how many seeds are expected to germinate and vigour gives an indication of how well the seedlings will thrive under stressful conditions. TKW provides the seed size, which is vital when calculating seeding rates to target optimum plant populations. Average TKW for varieties are listed in the *Varieties of Grain Crops,* but individual seed lots can vary tremendously. Having the actual TKW for the seed lot being grown is important for the accuracy of seeding rates.

There are upcoming changes in the canola seed industry that might require you to pay closer attention to seeding rates, or to change how you approach seeding. At least one company has begun selling seed based on categories of seed size, represented by thousand seed weight (TSW).

Crop	Target Plant Population (per m^2)	Target Plant Population (per ft^2)	TKW (grams)
Wheat – hard red spring	250	24	31 – 38
Wheat – CPS	250	24	39 – 50
Durum	210 – 250	20 – 24	41 – 45
Wheat – SWS	210 – 250	20 – 24	34 – 36
Barley – 2 row	210 – 250	20 – 24	40 – 50
Barley – 6 row	210 – 250	20 – 24	30 – 45
Oat	350	35	30 – 45
Triticale – spring	310	29	42 – 48
Brown and Oriental Mustard	70 – 120	7 – 11	2 – 3
Yellow Mustard	70 – 120	7 – 11	5 – 6.5
Canola	60 – 100	6 – 9	2.5 – 7.5
Flax	300 – 400	30 – 40	5 – 6.5
Pea	85	8	125 – 300
Fababean	45	4	350 – 425
Lentil	130	12	30 – 80
Chickpea	44	4	220 – 450
Soybean[1]	44 – 57	4 – 5	n/a
Canary seed[2]	n/a	n/a	6 – 7
Camelina	210	20	1.3
Hemp (green)	100 – 125	10 – 12	12 – 18
Hemp (fibre)	300 – 375	30 – 35	12 – 18
Quinoa[2]	n/a	n/a	2.8

[1] Soybeans are seeded based on seeds per acre and it is recommended to target 200,000 seeds per acre with air drills and 180,000 seeds per acre with planters. The soybean emergence rates are higher with planters than airdrills due to airflow causing some damage to sensitive seeds.
[2] Target plant stands are not well established for Canary seed and quinoa. Canary seed target 35 to 45 kg/ha (500 to 750 seeds/m^2). Quinoa target 10 kg/ha (10 lbs/ac).

The majority of canola seed today falls into a TSW range of 4.0 to 5.9g. The TSW is currently listed on a bag, but each bag is equal weight and price; thus, the number of seeds between bags with different TSWs might be inconsistent. With upcoming changes, bag weights will differ between each TSW category, but the number of seeds per bag will be much more consistent across TSWs listed on the bags; germination and vigour will not differ. Pricing should remain consistent, as well, regardless of bag weight. The important consideration to note is that seeding rate must be adjusted accordingly to achieve consistent establishment (and plant stand density) across any of the TSWs.

Calculating Seeding Rates

Thousand Kernel Weight (TKW), germination rate and target plant populations are needed when calculating the seeding rate. Crops and varieties can vary significantly in seed size, especially pulses and not knowing your TKW could mean seeding too heavily and spending more on seed than needed, or seeding too lightly and limiting yield potential. Emergence rate is more difficult to estimate, as it is dependent on germination and environmental conditions.

Expected seedling survival is typically five to 20 per cent less than the germination rate with pulses and cereals — more under ideal conditions and less under adverse conditions. For canola, expected survival rates range from 40 to 60 per cent. Factors to take into account when determining the expected seedling survival are seeding date, soil temperature, moisture and texture, as well as seed quality and possible soil-borne diseases and insect pressures. The amount of seed-placed fertilizer and the seeding depth are factors that can also affect seedling survival. The formula below should be used to determine the target seeding rate:

$$\textbf{Seeding Rate kilograms per hectare (kg/ha)} = \frac{\textbf{(target population per square metre x TKW* in grams)}}{\textbf{\% field emergence or survival (in whole number, i.e. 85)}}$$

To convert to pounds per acre, multiply the seeding rate (in kg/ha) by 0.89 *TKW = Thousand Kernel Weight

For example: With **CDC Amarillo** yellow peas, the target plant population is 85 plants/m^2. A seed lot with TKW of 235 grams and germination at 98 per cent under good emergence conditions (using 88 per cent emergence, which is 10 per cent less than the germination rate) would have a target seeding rate of: 85 x 235 / 88 = 227 kg/ha, or 202 lbs./ac or 3.4 bu/ac.

Interpreting Seed Test Results

By Jason Danielson, Discovery Seed Labs

Seed testing can give an indication of how fit your seed is for planting. Tests should be done for germination, vigour and disease. This package of tests can help you better understand how suitable seed will be for spring.

The germination test will give you an indication of the percentage of seeds that will grow in an ideal growth environment. The vigour test indicates the percentage of seed that will grow in adverse conditions. Even though the vigour assay is not standardized between seed labs, the results should be indicative of the seed's fitness when grown in harsher conditions. Combining the information from the germination and vigour tests will give you a good snapshot of the fitness of your seed.

Ideally, the germination rate from your sample should be higher than 85 per cent. The vigour should be close to the germination value; but if there is variation, it should be no greater than 10 percentage points. A large difference could be an indication of issues in the seed, especially if storage conditions over the winter months are not ideal.

Challenging harvest conditions can decrease the viability of the crop for seed. A germination test in the fall may not be representative of the germination in the spring, after several months of storage. A fall germination test can be helpful in determining seed needs for the upcoming year. A germination test closer to spring is recommended to ensure the seed remains sound for spring planting.

Grain dryers can be used on crops intended for seed, but the grain dryer must be kept at temperatures safe for the seed. High temperatures in grain dryers can reduce germination. For more information on grain drying and storage, visit www.*saskatchewan.ca* and search "drying grain."

If forced to use seed with a lower germination rate, you will have to increase the seeding rate to reach your target plants per square foot. Keep in mind that you cannot just increase the seeding amount by the percentage you are off from 100 per cent as not all of the seeds you are adding to the increased seeding rate will germinate. A seeding rate calculator can be a helpful tool to determine the correct seeding rate.

Significant time between when your test was completed and when seeding will occur can result in your germination and vigour values dropping. You can retest your seed in the spring to determine if germination has changed from the initial test in the fall.

When performing your own germination tests, it can be challenging to determine if a seed has germinated and is healthy, versus a seed that develops weak roots that won't grow into a plant. Other issues such as fresh and hard seeds, in addition to seed dormancy, can lead to inaccurate results. A certified seed analyst is trained to conduct seed tests.

There are different diseases of interest depending on the crop that you are seeding. For cereals, the main diseases to test for are *Cochliobolus sativus* (root rot), *Ustilago nuda* (smut) and *Fusarium* (root rot)—both *Fusarium graminearum* and total. Although *F. graminearum* is not the most aggressive *Fusarium* species for seedling blight, any areas that have not had fusarium head blight (FHB) caused by *F. graminearum* should avoid introducing it. The *Fusarium* total reported on the seed test includes *F. graminearum*.

For pulses, the diseases of interest are *Ascochyta* (leaf blight), *Anthracnose, Botrytis* (grey mould) and *Sclerotinia* (white mould). The amount of disease pressure during the last growing season will determine what you will likely have available for quality of seed.

A good practice is to always use the best seed you can source. In good years you should look for seed with little to no presence of disease. In challenging years when the disease is higher, it is important to still source the best seed available and be sure to use seed with good germination.

When using seed with high disease and low germination, more seed is needed to achieve the target plants per square foot. Increasing the seeding rate increases the amount of disease inoculum that you are adding to your soil. A seed treatment can be a good investment in a variety of scenarios, including when using seed with higher disease levels.

Soil Germination Test

It is important to communicate if the crop intended for seed has been treated with pre-harvest glyphosate. Otherwise, the seed will be tested in a normal germination test and the glyphosate may adversely affect germination. This adds an additional cost because the sample will have to be retested for germination. If there is a possibility of glyphosate on the seed, a soil germination test should be requested to "tie up" any glyphosate that might be on the outside of the seed so it does not have adverse effects when the seed is germinating.

Some crop desiccants are registered for use on crops intended for seed production. Glyphosate is not a desiccant. Glyphosate is not recommended for any crop that is to be used for seed. Glyphosate at pre-harvest can cause germination and possibly vigour problems if the herbicide was applied before the seed was fully mature. Crops sprayed with pre-harvest glyphosate may germinate, but the seedling could be stunted and deformed. Crops treated prematurely are off-label and have the potential to threaten export markets.

Seed Samples

The quantity of seed tested is minuscule compared to the size of the seed lot that it represents. Improper sampling is the greatest source of error in seed testing. Make certain the sample is representative of the entire seed lot. To collect a representative sample, gather more seed than needed for a given test. Hand sample or use a probe so that all areas of the seed lot are represented. If the seed is in a bin, sample it from the top, centre, sides and bottom. Do not take your seed sample from beside the bin door. It might be more appropriate to collect subsamples as the seed is being transferred from a truck or bin. After collecting the seed, thoroughly mix it.

Regardless of how accurately the technical work is, the results can only show the quality of the sample submitted for analysis. Consequently, every effort must be made to ensure the samples sent to the analyst accurately represent the composition of the lot in question.

Seed-Borne and Seedling Disease Management

By The Ministry of Agriculture

Use of seed from cereal crops infected with *Fusarium* species may result in poor emergence. Such seed should be treated with a registered fungicide before planting. Use of infected seed may introduce *Fusarium* diseases into unaffected areas. Tolerance for *Fusarium* vary with species. Refer to the Ministry of Agriculture publication *Seed-Borne Diseases of Cereal Crops* for more information.

Smuts that attack wheat, barley, oat and rye can be controlled by seed treatment. If seed from a crop in which bunt or smut was observed must be used for seed, seed should be tested and seed treatment should be considered. If the presence of smut is uncertain, varieties rated susceptible (S) should be treated every year, those rated moderately susceptible (MS) every second year and those rated intermediate resistance (I) every third year.

Only systemic fungicides will control true loose smut of barley and wheat and stem smut of rye. Pathogens causing the other types of smut (covered, false loose, oat smut and bunt) are carried on the outside of the seed and can be controlled by non-systemic seed treatments.

The virulent form of blackleg of canola is widespread in Saskatchewan. Seed treatment with a recommended fungicide can reduce the level of disease. Use of canola seed commercially coated with an appropriate seed treatment is a convenient alternative to on-farm seed treatment.

Pulse growers should use seed that has been tested for seed-borne diseases such as ascochyta, anthracnose and botrytis. Tolerances for seed infection vary with the pulse crop, the disease, weather conditions of the region and the availability of a seed treatment. If infection of the crop from sources other than seed is likely, using seed with low infection levels becomes less important. In regions with frequent rainfall and high humidity, tolerances will be lower.

For ascochyta blight of lentil, use of seed with up to five per cent seed infection is acceptable in the Brown and Dark Brown Soil Zones, but zero per cent is desirable in the Black Soil Zone. A seed treatment for ascochyta-infected lentil seed is available and is recommended if seed infection levels approach five per cent. In pea, up to 10 per cent seed infection with ascochyta is acceptable.

In chickpea, zero per cent ascochyta seed infection is recommended because of the high rate of transmission of the disease from the seed to the emerging seedlings and its highly destructive nature. Refer to Saskatchewan Agriculture's publication *Seed-Borne Diseases of Pulse Crops.*

Handle delicate seeds (i.e. pulses) with care, as seed coats are susceptible to damage—run augers full and slow and watch fan speeds on airseeders. Use a seed treatment if seeds have a high level of disease, show signs of mechanical damage, or the forecast is for wet, cool environmental conditions that may delay emergence. Kabuli chickpeas must have seed treatment or reduced emergence will occur.

Root rots can include a complex of pathogens such as *Fusarium spp*., *Rhizoctonia solani*, or *Pythium spp*. and, more recently, *Aphanomyces euteiches*. There is no indication of differences in susceptibility between varieties or crops for most of the root rot pathogens, with the exception of *Aphanomyces*. Currently all pea and lentil varieties are susceptible to *Aphanomyces* root rot. Current faba bean and chickpea varieties have partial resistance and, along with soybean,

Seed-Borne and Seedling Diseases and Actions to Minimize Impact

Crop	Disease Pathogen	Economic Threshold	Action If Over Threshold
Field Peas Lentils	Root Rot: *Aphanomyces euteiches*	Soil-borne only	Consider seed treatment if disease history is present
Field Peas	*Ascochyta complex*	10% on seed	Use seed treatment
Lentils	*Ascochyta lentis*	5% on seed	Use seed treatment
		10% on seed	Do not use seed
	Stemphylium blight	May be detected on seed tests	Unknown
	Anthracnose	May be detected on seed tests	Not considered high risk of seed to seedling transmission
Chickpeas	*Ascochyta rabiei*	0.3% on seed	Do not use seed
Faba Beans	Anthracnose Seed rot/damping off: *Fusarium, Pythium, Rhizoctonia*	Unknown	Consider seed treatment if disease history
Soybeans	Seed rot/damping off: *Fusarium, Pythium, Rhizoctonia, Phamapsis, Phytophythora*	Unknown	Consider seed treatment if disease history
Field Peas Chickpeas Lentils	Seed rot/seeding blight (pathogens unspecified)	Unknown	Use seed treatment
	Seed rot/damping off: *Botrytis + Fusarium*	10% on seed	Use seed treatment
	Seed rot/damping off: *Rhizoctonia, Botrytis, Fusarium, Pythium*	Soil-borne only	Consider seed treatment if disease history and/or will be seeding under cool, moist soil conditions

Source: Guideline for Seed-Borne Diseases of Pulse Crops, Ministry of Agriculture could be considered other nitrogen-fixing crops that have resistance to *Aphanomyces*.

With soybeans, the best management practices for *Phytophthora* stem rot include selecting varieties with genetic resistance and using a seed treatment that is labeled for control.
Wireworms that attack all grain crops, pea leaf weevil in pea and faba beans and flea beetles that attack canola and mustard can be controlled by seed treatments containing insecticides.

The degree of control with seed treatments depends on five factors:

1. active ingredients
2. rate of application
3. seed- and soil-borne fungal diseases or insects present
4. environmental conditions
5. quality of seed coverage

Check individual product labels for specifics. Adequate coverage is important to ensure each seed is protected and the seeds are completely covered (especially important with contact type seed treatments).

Read the label carefully before using any seed treatment. Information on their use and recommended rates is found in the Ministry of Agriculture publication *Guide to Crop Protection*. Carryover stocks of treated seed should be tested for germination before planting. Treated seed must not be delivered to an elevator or used for feed.

Plant Disease Resistance

By The Ministry of Agriculture

Resistance to the most important diseases in Western Canada is assessed in most crops as part of the variety registration process. The methods used to assess resistance in each crop are different. In some cases, spores of the pathogen are applied to plants in the greenhouse or in the field. In other cases, assessment is based on naturally occurring infection in the field. Each variety is rated on a five-point scale of Resistant (R), Moderately Resistant (MR), Intermediate Resistance (I), Moderately Susceptible (MS) and Susceptible (S).

Because of variation in disease levels from year to year, each new variety is assigned a rating relative to a few existing varieties that serve as disease level standards or checks. Varieties differ in resistance because of differences in their genetic makeup and/or differences in the genetic makeup of the pathogen that causes the disease. However, the genetic makeup of a pathogen can change over time and can enable the pathogen to overcome the resistance in a variety. In such cases, a variety with good resistance can quickly display poor resistance to a particular disease. Unfortunately, because not all varieties are tested side-by-side every year, the ratings of older varieties may be less reliable.

Preserving the efficacy of disease resistance genes in current crop varieties is the most economical method of plant disease control. Disease resistance can be prolonged with good agronomic and integrated pest management practices. Crop type, variety and fungicide rotation are important methods of preserving the effectiveness of disease resistance genes and fungicides. Disease resistance genes usually become ineffective due to short rotations and the prolonged use of one crop variety on a large acreage.

A number of factors can affect the level of disease symptoms observed at a given location in a given year. Environmental conditions such as moisture and temperature, the genetic makeup of both the variety and the pathogen and the amount of the pathogen present can all affect the level of disease. Although a variety with Intermediate (I) resistance can show disease symptoms under favourable conditions, a Susceptible (S) variety would have much more disease under the same conditions.

For example, ascochyta blight of chickpea is a very aggressive fungal disease. It can completely kill Susceptible (S) varieties within two weeks of symptoms first appearing. Chickpea varieties currently grown commercially in Saskatchewan have Intermediate (I) ascochyta blight ratings. This resistance weakens as plant development nears the flowering stage.

Fusarium-Damaged Kernels

By The Ministry of Agriculture

Fusarium head blight has recently become more common in Saskatchewan. Producers will find out the level of fusarium-damaged kernels (FDK) and perhaps DON (deoxynivalenol) on their grain from the elevator. However, *Fusarium* infection levels are needed to determine seed quality.

FDK does not provide the whole story regarding *Fusarium* infection. FDK is a measure of grain quality, not seed quality. Seed can be infected by *Fusarium* even when FDK are not present.

Fusarium spp. can infect the plant at different stages of the kernel development. Early infection may lead to an aborted floret, while later infection may leave spores on the kernel without showing visual symptoms. Tombstone kernels (FDK) are infected between those extremes.

Because there is no correlation between FDK and *Fusarium* infection of the seed, FDK cannot be used to predict *Fusarium* infection levels. A disease test is needed to determine if seed has *Fusarium* spores on it that could cause seedling blight or root rot.

Fusarium infection on the seed can sometimes be managed with a seed treatment. *Fusarium graminearum* is a particularly aggressive form of fusarium head blight, so recommendations are to prevent its introduction into new areas.

Seed treatments are used to manage seedling blights caused by *Fusarium spp.* The primary source of fusarium head blight infection is infected residue. Seed is not considered a contributing factor to fusarium head blight.

In areas where *F. graminearum* is not established, seed with more than five per cent *F. graminearum* is not recommended for planting. Seed with two to five per cent *F. graminearum* should be treated with an appropriate seed treatment.

F. graminearum now has a wide distribution in Saskatchewan, so, for most producers, a seed treatment should be used when total *Fusarium* species is greater than 10 per cent.

If seed is tested early in winter, germination should be retested again in the spring, especially if disease is present. Germination can decrease during storage.

For more information, refer to the Ministry of Agriculture publication *Seed-Borne Diseases of Cereal Crops.*

Relative Maturity

By The Ministry of Agriculture

Ratings
Maturity is measured from seeding to swathing ripeness. The actual number of days to reach maturity depends on local climatic conditions and, to some extent, on management practices.

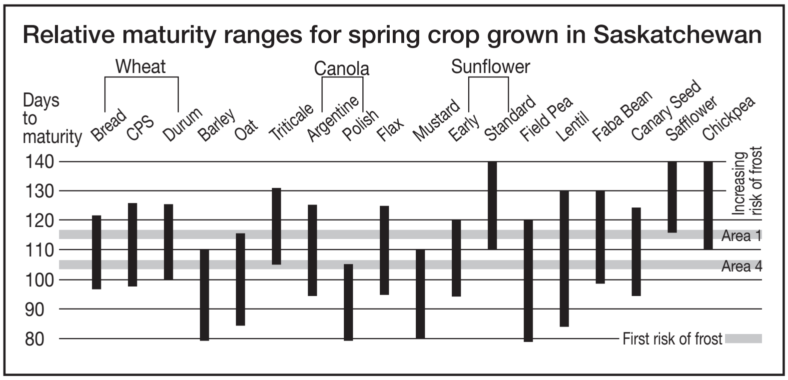
Some of the tables in this booklet express the relative maturity in days while others use a five-category scale: VE, E, M, L and VL (very early, early, medium, late, very late). The limits for each category can vary from crop to crop. In barley, for example, AAC Synergy would be M, with L and E varieties plus or minus one to two day and VL and VE varieties beyond this range.

Comparisons
The relative maturity of varieties of different crops is important when making plans for seeding.

The chart on the right compares the relative maturity ranges for crops grown in Saskatchewan. Within each crop there are early and late maturing varieties. Whether a crop matures before the first killing frost depends on seeding date, management practices and environmental factors. Not all crops have a wide area of adaptation.

It is noted that climatic conditions can cause a wide variability in crop maturity.

Understanding Soybean Maturity Ratings
Soybean maturity ratings are currently based on three approaches: corn heat units, maturity groupings and days to maturity. The preferred ways to measure soybean maturities are through maturity group classifications or days to maturity. The maturity group (MG) rating system classifies soybean varieties from MG 000 in northern areas to MG IX in southern areas of North America, based on latitude ranges and photoperiod sensitivity. Each MG region covers one or two degrees of latitude, or about 200 to 300 km from north to south. For Saskatchewan, soybeans are most suited with 00 and 000 MG. Each MG can have subgroupings with a 0 to 9 decimal number following the group (or zone) number and these decimal places equate to slight increases in maturity. In the 00 maturity ratings, a subgroup of 00.1 would be earlier maturing than 00.9. Note that these MG ratings are not entirely standardized between seed companies. Check with your seed supplier to better understand MG ratings. Days to maturity is a direct measure of the days each variety takes to reach physiological maturity and is averaged across locations. The lower the number, the earlier-maturing the variety was across the sites tested. This value is obtained through the Regional Variety Testing Program and is an independent rating. Growers are advised to use all maturity information available to choose appropriate varieties for their area.



Peas	Medium (M) = 90 days; add three to four days for each rating beyond medium
Lentils	Early (E) = 100 days; Very Late (VL) = 110 days based on May 1 seeding
Chickpeas	Kabuli 110 – 120 days; Desi 110 days
Faba Beans	104 – 107 days
Dry Beans	E = 100 days; Late (L) = 110 days based on May 20 seeding
Soybeans	118 – 128 days

General Seed Facts

PEDIGREED SEED
Use certified seed regularly. This assures that the seed has high genetic purity and high germination and is relatively free from weeds and other crop seeds.

RE-USE OF HYBRID SEED
Seed grown from a hybrid variety (regardless of crop or variety) should not be re-used, since a 20 to 25 per cent yield reduction can occur in the next generation. This reduction is due to loss of hybrid vigour and possible occurrence of male-sterile plants. Lack of uniformity for maturity and quality traits can also occur.

SEED CLEANING
Seed should be cleaned carefully to remove weed seeds, trash, small or broken kernels, ergot and sclerotia. Not all seed-cleaning plants are equipped to clean grain to acceptable seed standards.

CROP ROTATION
Seeding into stubble of the same crop kind will increase disease risk, particularly in higher rainfall areas. Residue of infected crops may harbour disease pathogens. Maintain a diverse crop rotation.

ERGOT
Ergot attacks all varieties of rye, triticale, wheat and barley, as well as most common grass species. Oat is rarely attacked and all broadleaf species are immune. Grain containing 0.1 per cent ergot is considered poisonous and should not be used for food. Refer to the Ministry of Agriculture publication *Ergot of Cereals and Grasses*.

DAMP AND FROZEN SEED
Seed that is stored damp or tough may be low in germination and may lack adequate vigour. Grain that will be used for seed should be dried, if necessary, soon after harvest. The drying temperature should be below 37C for batch driers and 43C for recirculating and continuous driers. Ensuring the grain is dried at a low temperature will help to maintain a viable embryo and germination rates. Frozen grain should always be tested for germination by a seed-testing laboratory before planting. Such grain will frequently produce a high percentage of abnormal seedlings.

WHEAT MIDGE
All wheat classes, including durum and triticale, are susceptible to wheat midge. Producers in infested areas should be prepared to spray fields with recommended insecticides if necessary, unless varieties are midge-tolerant. Consider the use of midge-tolerant varieties. Refer to the Ministry of Agriculture publication *Wheat Midge*.

Crop	Recommended Minimum Average Soil Temperature at Seeding Depth (°C)	Estimated Seeding Dates for Saskatchewan	Recommended Seeding Depth in Inches (cm/inches)
Peas	5	Mid-April to Mid-May	3 – 8 / (1.2 – 3.2)
Lentils	5	Mid-April to May	2.5 – 7.5 / (1 – 3)
Chickpeas—Kabuli	7	Prior to May 25	3.5 – 6 / (1.5 – 2.5)
Chickpeas—Desi	10	Prior to May 25	3.5 – 6 / (1.5 – 2.5)
Faba Beans	3 - 5	Mid-April to Mid-May	5.1 – 7.6 / (2 – 3)
Dry Beans	12	May 25 to June 5	5 – 6 / (2 – 2.5)
Soybeans	10	May 10 to May 25	1.9 – 3.8 / (.75 – 1.5)

Source: Ministry of Agriculture

Safe Rates of Seed-Placed Fertilizer

Phosphorus (P) is an important plant nutrient. Phosphorus promotes the development of extensive root systems and vigorous seedlings. Encouraging vigorous root growth is an important step in promoting good nodule development and nitrogen fixation for all legumes and growth of all crops. It also plays an important role in promoting earlier and more uniform maturity in all crops. Maximum safe rates of actual seed-placed phosphate fertilizer vary by crop and are based on knife openers with a one-inch spread, nine-inch row spacing and good to excellent soil moisture. For wider rows and/or narrower seed spread behind the opener, or under dry conditions, the maximum safe rates would be lower. These recommendations are based on monoammonium phosphate (11-52-0), which has a relatively low salt index and should not be used for other fertilizers. The table at right summarizes the maximum safe rates of seed-placed phosphorus (P_2O_5) fertilizer in narrow row systems based on knife openers with a one-inch spread, nine-inch row spacing and good to excellent soil moisture. Wider row spacing and/or narrower seed spread openers would have reduced tolerance and safe rates should be adjusted lower.

Crop	Actual P_2O_5 (lbs./ac)
Cereals	50
Canola	25
Canary seed	30
Flax	15
Pea	15
Faba Bean	40
Lentil	20
Mustard	20
Chickpea	20
Soybean	20
Dry Bean	30

* Source: *Guidelines for Safe Rates of Fertilizer,* Ministry of Agriculture

CEREAL CROPS

Wheat

Main Characteristics of Varieties

Category and Variety	Years Tested	------ Yield (%) ------ Area 1 & 2	Area 3 & 4	Irriga-tion	Pro-tein	---- Resistance To[2] ---- Lodg-ing	Sprout-ing	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB	Head Awned-ness	Rel. Ma-turity (days)	Seed Weight (mg)	Volume Wt.[3] (kg/hL)	Ht. (cm)
CWRS[1]		--- Relative to Carberry ---														---- Relative to Carberry ----			
Carberry	6	100	100	100	14.5	VG	F	MR	R	MR	MR	R	MS	MR	Y	102	35.8	80.3	83
CDC Adamant VB	5	107	112	---	-0.2	P	F	R	I	MS	S	S	MS	I	Y	-2	-1.8	+0.2	+3
AAC Alida VB	3	106	107	---	-0.2	VG	VG	R	R	MR	R	I	MS	MR	Y	-1	+1.6	+0.3	+6
Bolles	2	107	105	---	+0.5	VG	---	MR	R	MR	---	S	---	I	Y	-1	+1.0	-1.2	+1
CDC Bradwell §	5	101	108	---	-0.1	VG	F	MR	R	MS	MR	R	MS	I	Y	-1	-2.2	+0.6	+8
AAC Brandon	6	107	106	---	-0.3	G	P	R	R	MR	MR	S	I	MR	Y	0	+0.4	+0.1	-1
SY Brawn VB	2	109	110	---	-0.2	F	F	MR	R	I	---	MR	---	I	Y	-3	-3.0	-1.4	+9
AAC Broadacres VB	1	111	112	---	-0.6	VG	F	R	R	MR	---	R	---	I	Y	-1	+1.5	0.0	+2
AAC Cameron VB	5	108	118	---	-0.6	F	F	MR	MR	S	S	R	I	I	Y	-2	+2.8	-0.4	+17
Cardale	5	99	101	---	-0.1	F	G	R	R	S	I	MR	MS	MR	Y	-2	-1.5	-1.2	+3
SY Cast	2	106	106	---	0.0	VG	G	R	R	R	---	R	---	I	Y	-1	0.0	-0.9	0
SY Chert VB	4	101	108	---	-0.5	G	F	R	R	R	R	R	MS	I	Y	-1	-0.7	-0.7	+7
AAC Connery	5	101	100	---	+0.2	VG	G	R	MR	R	MR	I	I	MR	N	-2	-0.1	-0.8	+3
SY Crossite	2	112	111	---	-0.6	F	G	R	R	R	---	MS	---	MR	Y	-1	+1.4	-0.9	+8
Daybreak VUA	1	111	108	---	-0.6	F	---	R	MR	MR	---	S	---	I	Y	-2	+2.6	0.7	+6
AAC Elie	5	105	105	---	-0.2	G	F	R	R	MR	I	I	I	I	Y	+1	-0.3	0.0	-2
Ellerslie	2	104	105	---	-0.1	VG	G	R	MR	R	---	S	---	I	N	-3	-1.9	-2.0	+7
SY Gabbro	3	108	105	---	0.1	VG	F	MR	R	I	R	I	MS	MR	Y	-2	+3.2	-0.2	+7
AAC Hodge VB	1	113	118	---	-0.7	G	G	R	R	R	---	R	---	MR	Y	-1	-0.5	+0.7	+7
CDC Hughes VB	5	102	110	---	-0.2	G	G	R	MR	I	MR	MS	I	I	Y	-1	+2.0	+0.2	+2
Jake	2	97	101	---	+0.7	F	---	R	MR	R	---	MR	---	MS	Y	-3	-2.6	-0.6	+7
AAC Jatharia VB	5	108	114	---	-0.2	F	G	I	R	I	S	MS	I	I	Y	-1	+0.6	+0.8	+15
CDC Landmark VB	5	109	112	---	-0.2	G	G	R	MS	MR	MR	MS	I	I	Y	-1	+1.0	+0.8	+3
AAC LeRoy VB	2	111	113	---	-0.6	F	G	MR	MR	MR	---	I	MS	MR	Y	-2	+0.3	+0.3	+6
AAC Magnet	2	103	106	---	+0.2	VG	F	R	R	I	---	S	MS	MR	Y	-1	+2.3	-1.0	+5
SY Obsidian	4	101	104	---	-0.4	VG	F	MR	R	MR	R	MS	I	MS	Y	-1	+1.2	0.0	+3
CDC Ortona	3	104	107	---	-0.2	G	G	R	R	R	---	S	---	I	N	-2	-3.4	-1.5	+8
Parata	4	98	103	---	+0.2	F	F	R	MR	MR	MR	S	I	I	Y	-3	-2.1	-0.1	+9
CDC Plentiful	5	105	104	---	-0.2	G	P	R	R	MR	R	I	I	MR	N	-3	-2.2	-0.4	+9
AAC Redberry	5	105	107	---	-0.3	F	G	R	R	R	R	I	MS	I	Y	-3	-1.1	+0.8	+5
Rednet	2	101	107	---	0.0	P	F	R	R	R	---	S	---	MR	Y	-2	-1.1	-0.4	+14
AAC Redstar	1	95	113	---	-0.3	F	G	R	MR	MR	---	MR	---	MR	Y	-3	+0.5	-0.8	+7
AAC Russell VB	2	108	111	---	-0.4	G	F	MR	R	R	---	MR	---	MR	Y	-1	+2.1	+0.1	+4
Shaw VB	6	112	114	103	-0.5	F	G	R	MR	I	S	MR	MS	MS	N	-1	+0.3	-0.5	+19
Sheba	1	105	103	---	-0.6	G	---	R	R	R	---	MR	---	I	N	0	-1.9	0.0	+8
CDC SKRush	2	111	114	---	-0.4	G	P	MR	R	MR	---	I	---	MR	Y	-2	-2.8	-0.7	+8
SY Sovite	5	98	103	---	0.0	F	F	MR	R	R	R	MS	MR	MR	Y	-1	+2.2	-0.1	+7
CDC Stanley	6	102	105	100	-0.1	G	VG	R	MR	I	MR	S	I	MS	N	-2	-2.6	-1.7	+12
AAC Starbuck VB	3	113	118	---	-0.5	F	F	I	MR	MR	MR	S	S	MR	Y	0	+0.3	+0.5	+2
Stettler	6	105	107	100	+0.2	F	G	MR	MS	MR	R	MR	MS	MS	Y	0	-0.7	-0.4	+8
AAC Tisdale	5	102	105	---	+0.6	F	F	R	R	S	MR	MR	MS	MR	Y	-2	+0.7	-0.4	+8
CDC Titanium VB	5	106	110	---	+0.5	P	P	I	R	R	MS	I	MS	MR	Y	-2	+0.9	-0.2	+10
SY Torach	3	101	104	---	+0.2	VG	F	MR	R	MS	R	MS	MS	MR	Y	-1	-4.0	+0.1	-1
Tracker	2	100	103	---	+0.1	F	G	R	R	R	---	S	---	I	N	-3	-3.3	-1.6	+6
CDC Utmost VB	6	108	112	107	-0.3	F	G	MR	R	I	MS	S	I	MS	N	-3	-0.9	-1.4	+10
AAC Viewfield	5	111	109	---	-0.5	G	G	R	MR	R	S	MR	I	I	Y	-1	-1.7	+0.9	-3
AAC Warman VB	3	102	108	---	-0.2	P	F	R	R	MS	MR	S	I	MR	Y	-2	-1.4	+0.2	+13
Waskada §	6	108	107	101	0.0	P	VG	R	I	MS	MR	R	MS	MR	Y	-1	+0.5	+0.7	+16
AAC Wheatland VB	3	112	114	---	-0.5	VG	G	R	R	I	R	MR	S	I	Y	-1	-0.2	0.0	+2

Wheat (cont'd)

Category and Variety	Years Tested	Yield (%) Area 1 & 2	Yield (%) Area 3 & 4	Yield (%) Irrigation	Protein	Resistance To[2] Lodging	Sprouting	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB	Head Awnedness	Rel. Maturity (days)	Seed Weight (mg)	Volume Wt.[3] (kg/hL)	Ht. (cm)
CPSR[1]		--- Relative to Carberry ---														---- Relative to Carberry ----			
Accelerate ✪ VUA	2	111	119	---	-1.3	G	---	R	R	R	---	S	---	I	Y	-1	-3.5	-0.4	-4
AAC Castle VB ✪	2	114	119	---	-0.8	F	F	R	R	MR	---	R	---	I	Y	0	+8.0	+0.4	-1
AAC Crossfield	5	114	113	---	-1.4	F	P	MR	R	R	I	S	I	I	Y	-1	+2.1	-1.7	0
AAC Entice	5	113	112	---	-1.2	P	P	R	R	R	MS	S	MS	I	Y	-1	+0.7	-2.3	+1
AAC Foray VB	5	116	120	122	-1.6	F	P	MR	R	I	MS	I	MS	I	Y	+1	+7.8	-1.4	+5
AAC Goodwin §	4	116	114	---	-0.6	G	G	I	R	R	MS	I	I	I	Y	-1	+1.1	+0.2	+2
AAC Penhold	5	108	111	108	-0.9	VG	VG	MR	R	MR	I	R	I	MR	Y	-2	+5.0	-0.2	-9
CDC Reign ✪	2	107	117	---	-0.8	G	---	MR	R	I	---	S	---	I	Y	+1	-0.5	-0.4	+2
SY Rorke ✪	1	110	118	---	-1.2	F	F	R	R	S	---	MS	---	I	Y	+1	-2.6	-0.9	0
SY Rowyn	5	102	108	---	-1.0	F	F	R	R	MR	I	S	I	MR	Y	0	-4.2	-0.5	-5
CDC Terrain §	5	116	114	108	-1.6	P	G	MR	R	R	MR	MR	I	MS	Y	0	+4.8	-2.1	+3
CWRS[1] moving to CNHR Aug. 1, 2021																			
AAC Redwater §	5	102	101	---	0.0	F	VG	R	R	MR	MS	I	MS	I	Y	-4	-3.7	-1.3	+8
CNHR[1]																			
Faller §	5	113	121	---	-1.6	F	F	I	MR	MS	---	I	MS	I	Y	-1	+2.4	-1.2	+2
Prosper	5	115	120	---	-1.6	F	F	MR	MR	S	---	I	I	I	Y	0	+2.9	-1.2	+3
CWSWS[1]																			
AC Andrew	5	130	137	---	-3.2	VG	P	MR	MS	I	S	S	---	I	Y	+1	+0.6	-3.0	0
AAC Chiffon VB*	5	136	137	139	-3.5	P	VP	S	I	MR	S	S	---	S	Y	+2	+2.2	-3.4	+12
AAC Paramount VB*	5	130	131	139	-3.4	VG	P	I	I	R	MR	S	---	MS	Y	+1	+1.4	-2.6	+7
Sadash VB*	5	137	139	---	-3.8	VG	P	MR	I	R	I	S	---	S	Y	+1	-0.3	-2.6	+3
CWSP[1]																			
Alderon	5	134	131	---	-3.2	VG	F	MR	R	MR	---	MS	I	MS	N	+4	+0.9	-7.3	-5
AAC Awesome VB*	5	134	136	---	-3.2	F	P	R	MR	R	I	I	I	I	Y	+1	+5.0	-1.4	+7
CDC Kinley §	5	103	108	---	-0.3	G	P	I	MR	I	MS	MR	I	I	Y	-1	-0.9	0.1	5
Pasteur	5	127	133	---	-2.2	VG	G	MR	R	MR	MS	S	I	I	N	+2	+1.1	-1.1	+4
Sparrow VB	5	133	135	---	-2.8	VG	G	MR	R	MR	---	I	I	---	N	+4	+0.6	-4.1	0
WPB Whistler ✪	1	115	133	---	-3.2	VG	---	R	R	R	---	I	---	MS	---	+3	+3.0	-4.4	-4
CWHWS[1]																			
AAC Cirrus	3	102	101	---	0.0	VG	F	MR	R	R	R	I	I	I	Y	-1	-4.6	+0.2	+4
AAC Whitefox §	5	103	106	---	-0.9	F	F	MR	MR	MS	MS	MS	MS	I	N	-3	-1.5	-0.4	+16

[1] Includes direct and indirect comparisons with **Carberry**.
[2] Resistance ratings: R = Resistant; MR = Moderately Resistant; I = Intermediate Resistance; MS = Moderately Susceptible; S = Susceptible.
[3] Multiply by 0.8 = lbs. per bushel (lbs./bu)
VB = varietal blend.

***AAC Awesome VB**, **AAC Chiffon VB**, **AAC Paramount VB** and **Sadash VB** were recently discovered to be midge -tolerant varieties with the *Sm1* gene. Producers with seed purchased prior to 2018 should check with their seed grower to ensure they have a stewardship agreement in place in order to preserve the single gene resistance. New seed may be needed to preserve the gene. More information is available at *www.midgetolerantwheat.ca*.

Durum Wheat

Category and Variety	Years Tested	------ Yield (%) ------ Area 1 & 2	Area 3 & 4	Irriga-tion	Pro-tein	---- Resistance To[1] ---- Lodg-ing	Sprout-ing	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB[2]	Head Awned-ness	Rel. Ma-turity (days)	Seed Weight (mg)	Vol-ume Wt.[3] (kg/hL)	Ht. (cm)
CWAD		--- Relative to Strongfield ---														-- Relative to Strongfield --			
Strongfield	6	100	100	100	14.3	P	F	R	R	MR	R	MR	I	S	Y	102	43.3	79.5	89
CDC Alloy	5	107	109	107	-0.4	F	F	MR	R	R	I	R	MS	MS	Y	+1	-0.7	+0.8	+3
Brigade	5	106	114	110	-0.9	F	F	R	R	MR	S	R	I	MS*	Y	+2	+0.4	+0.4	+8
AAC Cabri §	5	105	103	103	-0.4	P	F	MR	R	R	MR	R	I	MS	Y	+1	-0.6	+0.7	+4
CDC Carbide VB	5	106	107	103	-0.2	P	P	R	R	R	MS	R	MS	MS	Y	0	-1.5	+0.2	+2
AAC Congress	5	109	107	113	-0.5	P	F	MR	R	R	MR	R	MS	MS	Y	+1	-0.9	+0.4	+2
CDC Covert	2	108	112	---	-0.6	G	G	R	R	R	---	R	---	S	Y	+1	-5.1	+0.5	-1
CDC Credence	5	108	110	102	-0.7	F	F	MR	R	MR	MR	R	I	MS*	Y	+1	-0.8	0.0	+7
CDC Defy	2	111	111	---	-0.9	G	F	MR	R	I	---	R	---	MS*	Y	0	-4.0	+1.3	+4
AAC Donlow	2	110	107	---	-0.7	F	G	R	R	R	---	R	---	MS*	Y	+1	-4.1	+1.0	0
CDC Dynamic	5	105	106	110	+0.1	F	G	MR	R	MR	I	R	I	MS	Y	0	-1.1	+0.6	+1
CDC Flare	3	103	101	---	-0.3	VG	F	MR	R	MR	R	R	I	MS	Y	-1	+0.5	-0.8	0
CDC Fortitude	5	104	103	98	-0.2	F	F	MR	R	R	MS	R	MS	MS	Y	+1	-1.4	+0.2	-2
AAC GoldNet	2	111	111	---	-0.3	G	G	MR	R	R	---	R	---	S	Y	+1	-4.1	+0.7	+4
AAC Grainland	3	105	110	---	-0.3	F	G	MR	R	R	R	R	MS	MS	Y	+1	-0.4	-0.6	+1
AC Navigator	6	97	91	---	-0.6	F	G	R	R	R	MS	R	S	S	Y	+1	+1.8	+0.1	-11
CDC Precision	5	108	110	109	-0.5	G	F	MR	R	R	MS	R	MS	MS	Y	+1	-0.9	+1.0	+2
AAC Spitfire	5	108	110	111	-0.4	G	F	R	R	R	MS	R	MS	S	Y	0	-0.1	-0.2	-2
AAC Stronghold	5	101	100	112	-0.3	VG	G	R	R	MR	R	I	I	MS	Y	+2	+0.8	+0.6	-3
AAC Succeed VB	4	106	110	102	-0.2	F	F	MR	R	I	R	R	MS	MS	Y	0	+1.5	-0.4	+2
Transcend	5	102	105	93	-0.2	F	G	R	R	R	S	R	I	MS*	Y	+1	-1.2	0.0	+6
CDC Verona	5	102	106	103	-0.2	G	F	R	R	R	MS	R	MS	MS	Y	+1	-0.8	-0.2	+2

[1] Resistance ratings: R = Resistant; MR = Moderately Resistant; I = Intermediate Resistance; MS = Moderately Susceptible; S = Susceptible.
[2] Although no varieties are considered to have Intermediate resistance, varieties with MS* rating generally express lower fusarium head blight symptoms compared to other MS rated cultivars.
[3] multiply by 0.8 = lbs./bu.
VB = varietal blend.

ADDITIONAL INFORMATION

Producers are strongly encouraged to use a combination of the Canadian Food Inspection Agency's List of Registered Varieties (*www.inspection.gc.ca*) and the Canadian Grains Commission's Variety Designation Lists (*www.grainscanada.gc.ca*) to determine the registration and grade eligibility status of varieties.

Grain yield, protein content, time to maturity, seed weight, volume weight and plant height of all varieties of common wheat and durum wheat are compared to **Carberry** and **Strongfield**, respectively. In 2020, the spring wheat varieties supported for registration since 2016 were grown in replicated trials at 14 locations.

Most varieties have been rated for their relative resistance to pre-harvest sprouting. Under wet post-maturity conditions varieties rated poor have a reduced ability to retain high Hagberg Falling Number values relative to those rated good or very good. Varieties with high test weight retain grade better under adverse harvest weather than those with low test weight. During wet harvest weather, grades drop more rapidly due to sprouting in swathed than in standing crops.

New races of leaf rust and stripe rust continue to evolve. Therefore, the rust resistance in varieties may change from year to year. The seed guide contains the most up-to-date information on rust resistance in current varieties. Early seeding may minimize risk of crop losses for varieties sown in southeastern Saskatchewan that are rated poor or very poor to leaf rust. Field scouting throughout the growing season is encouraged so that timely corrective action can be undertaken if required.

All varieties are at least moderately resistant to shattering. All varieties have moderately good resistance to common root rot.

Seed of varieties rated moderately susceptible and susceptible for bunt and loose smut should be treated with a recommended fungicide. Please refer to the Seed Facts section of this booklet or the most recent *Guide to Crop Protection*.

All wheat and durum varieties exhibit similar susceptibility to ergot infestation.

Varietal Blend ("VB") designated varieties possess the same "*Sm1*" gene, which confers tolerance to Orange Wheat Blossom Midge. To manage against the build-up of midge resistance to the *Sm1* gene, an interspersed refuge is used commercially. These varieties are not immune to wheat midge and can suffer some midge damage when high midge infestation levels occur. More information on midge tolerant wheat cultivars and interspersed refuge can be found at: *www.midgetolerantwheat.ca*.

CANADA WESTERN RED SPRING (CWRS)

AAC Redwater will be moving to the CNHR class as of August 1, 2021.

CDC Adamant VB, **CDC Hughes VB** and **CDC Landmark VB**, have partially solid to solid stems which may provide protection against the wheat stem sawfly.

Seed of new variety **Daybreak** is available. Seed of varieties **AAC Broadacres VB**, **AAC Redstar**, **AAC Russell VB** and **Sheba** is expected to be available in limited quantities fall 2021. Seed of new varieties **SY Brawn VB**, **SY Cast**, **SY Crossite**, **AAC Hodge VB** and **CDC SKRush** is expected to be available in limited quantities fall 2022.

CANADA PRAIRIE SPRING RED (CPSR)

Seed of the variety **Accelerate** is available. Seed of new varieties **CDC Reign** and **SY Rorke** is expected to be available in limited quantities fall 2021.

CANADA WESTERN HARD WHITE SPRING (CWHWS)

Varieties in the Hard White market class are intended for whole wheat bread and yellow alkaline noodle markets.

WHEAT ADDITIONAL INFORMATION (CONT'D)

CANADA WESTERN SOFT WHITE SPRING (CWSWS)

Soft white spring wheat may be used as a feedstock in the production of ethanol. Soft white spring wheat varieties are susceptible to pre-harvest sprouting. The leaf spot pathogens that affect other wheat classes also affect soft white cultivars and therefore recommendations for leaf spot control are similar.

CANADA WESTERN SPECIAL PURPOSE (CWSP) SPRING

Varieties in the Special Purpose Market class have no defined quality attributes and may have specific end-uses. Most varieties are intended for ethanol and livestock feed purposes. Producers are encouraged to contact the variety distributor or developer regarding uses of these varieties.

CANADA WESTERN AMBER DURUM (CWAD)

AAC Cabri, **CDC Fortitude**, **AAC Grainland**, **AAC Raymore** and **AAC Stronghold** have a solid stem which can provide protection against the wheat stem sawfly.

Seed of new varieties **AAC Donlow**, **CDC Flare**, **AAC GoldNet** and **CDC Defy** is expected to be available in limited quantities fall 2021.

CDC Flare is tolerant to the CLEARFIELD® herbicides Adrenalin SC and Altitude FX.

CWAD varieties are generally more susceptible than CWRS varieties to fusarium head blight. Growing varieties with improved resistance is recommended to reduce infection and disease propagule production as part of an integrated management strategy. Although no varieties are considered to have Intermediate resistance, **Brigade**, **CDC Credence**, **CDC Defy**, **AAC Donlow**, and **Transcend** generally express lower fusarium head blight symptoms compared to other MS rated cultivars. These varieties are noted in the table with an MS* rating for fusarium head blight resistance. Mycotoxin (DON) production by FHB fungi is generally lower for **CDC Defy**, **AAC Donlow** and **Transcend**.

All durum varieties are susceptible to two new races of loose smut.

Triticale

Main Characteristics of Varieties

Variety	Years Tested	------ Yield (%) ------		Test Weight (kg/hL)	Seed Weight (mg)	Height (cm)	Maturity (days)	------ Resistance To[1] ------						
		Area 1 & 2	Area 3					Lodging	Stem Rust	Leaf Rust	Bunt	Root Rot	Ergot	FHB
Spring Habit		------ Relative to AC Ultima ------												
AC Ultima	20	100	100	72.7	43.3	101	104	G	R	R	R	I	MS	I
Brevis	14	110	111	3.1	-0.5	-7	1	VG	R	R	R	---	I	I
Bunker	4	92	97	3.0	1.1	5	1	G	MR	R	R	I	I	MR
AAC Delight	8	104	104	0.6	4.2	-2	2	VG	R	R	R	---	I	I
Pronghorn	20	98	100	-0.3	0.5	7	2	G	MR	R	R	I	I	MR
Sunray	11	104	103	-1.2	-0.4	-1	1	G	R	R	R	---	MR	MS
Taza	9	103	97	-0.8	0.5	6	2	G	R	R	R	---	I	S
Tyndal	9	98	101	0.8	-1.2	-6	0	G	R	R	R	---	---	MS
Winter Habit		------ Relative to Pika ------												
Pika	6	100	100	68	---	125	E	F	---	---	---	---	---	---
Luoma	5	100	96	-1	---	1	L	F	---	---	---	---	---	---
Metzger	5	96	101	-1	---	-14	E	G	---	---	---	---	---	---

[1] Resistance ratings: R = Resistant; MR = Moderately Resistant; I = Intermediate Resistance; MS = Moderately Susceptible; S = Susceptible.

ADDITIONAL INFORMATION

Spring triticale matures two to four days later than **AC Andrew** CWSWS wheat; therefore it should be planted as early as possible. Newer triticale varieties yield two to 10 per cent higher than **AC Andrew**. Susceptibility to fusarium head blight is at least as great in triticale as in wheat. **AC Ultima** has an improved Hagberg Falling Number. **Brevis** has shorter and stronger straw. **AAC Delight**, **Tyndal** and **Bunker** are spring forage types and along with **Taza** have reduced awns.

Winter triticale has winter hardiness equal to that of winter wheat. **Luoma** and **Metzger** have reduced awns. **Metzger** is shorter and with stronger straw.

All triticale cultivars are susceptible to ergot infection and similar in reaction. Severe infestation of ergot can occur in any of the available cultivars if environmental conditions are favourable. **Sunray** represents an improvement in ergot resistance.

Winter Wheat

Main Characteristics of Varieties

Category and Variety	Years Tested	Yield (%) Area 1 & 2	Yield (%) Area 3 & 4	Protein (%)	Winter Survival	Resistance To [2]: Lodging	Stem Rust	Leaf Rust	Stripe Rust	Bunt	FHB	Head Awnedness	Maturity Rating	Seed Weight (mg)	Volume Wt.[3] (kg/hL)	Height (cm)
CWRW[1]		-- Relative to CDC Buteo --												------- Relative to CDC Buteo --------		
CDC Buteo	21	100	100	12.3	VG	F	I	I	S	S	MR	Y	M	32.8	81.0	91
CDC Chase	9	105	109	0.3	F	F	R	R	MR	S	MS	Y	M	-0.5	-0.2	3
AAC Elevate	10	107	102	-0.3	G	VG	MR	I	S	MR	I	Y	M	4.3	-2.2	-7
Emerson	10	99	95	0.7	G	G	R	I	MR	S	R	Y	M	-4.1	-0.8	-5
AAC Gateway	11	98	99	0.5	F	VG	MR	I	MR	S	I	Y	M	-0.1	-1.5	-14
AAC Goldrush	8	106	108	0.2	VG	G	MR	R	I	S	I	Y	M	0.3	-1.7	-4
Moats	14	104	102	0.3	G	F	R	R	MR	MS	S	Y	M	-1.1	-0.6	1
AAC Network	5	100	101	0.4	G	VG	R	MR	R	MR	I	Y	L	-2.0	-1.5	-12
Radiant	21	102	102	-0.3	VG	VG	S	S	MS	S	S	Y	L	1.7	-1.9	0
AAC Wildfire	9	112	116	0	VG	G	S	I	MR	MR	MR	Y	VL	2.6	-1.2	-5
CW Experimental																
AAC Icefield	8	100	99	-0.9	F	VG	R	MR	MR	S	I	Y	M	-1.7	-1.5	-10
CWSP[1]																
CDC Falcon	21	102	98	-0.8	F	VG	MR	MR	S	S	S	Y	E	-3.0	-1.9	-16
Pintail	8	108	111	-1.7	VG	F	MS	MS	MR	S	S	N	M	-4.2	-3.4	-3

[1] Includes direct and indirect comparisons with **CDC Buteo**
[2] Resistance ratings: R = Resistant; MR = Moderately Resistant; I = Intermediate Resistance; MS = Moderately Susceptible; S = Susceptible.
[3] Multiply by 0.8 = lbs./bu.

ADDITIONAL INFORMATION

Winter wheat can be grown successfully in most areas if seeded into standing stubble within the optimal seeding date period (generally before Sept. 15) and if there is adequate snowfall.

Winter wheat will often escape fusarium head blight and orange wheat blossom midge damage if recommended seeding dates are followed.

CANADA WESTERN RED WINTER (CWRW)

AAC Network is a new variety that may be available in limited quantities in fall 2021.

Radiant and **AAC Elevate** have tolerance to the wheat curl mite vector that transmits Wheat Streak Mosaic Virus. To preserve the effectiveness of this wheat curl mite tolerance gene, agronomic practices that eliminate the “green bridge” of plant material that provides a reservoir for the mite should be followed whenever possible.

AAC Wildfire expresses tolerance to some biotypes of the Russian wheat aphid. Radiant and **AAC Wildfire** express bronze chaff at maturity.

CANADA WESTERN EXPERIMENTAL

AAC Icefield is a hard white winter wheat that is eligible for experimental grades under an Identity Preserved system to facilitate market research. **AAC Icefield** expresses high milling yield of bright-white, low-ash flour with good gluten strength at lower protein concentrations that may be of interest in some niche markets. For more information contact FP Genetics.

CANADA WESTERN SPECIAL PURPOSE (CWSP)

Varieties in the Special Purpose market class have no defined quality attributes and may have specific end uses. Most varieties are intended for ethanol and livestock feed purposes. Producers are encouraged to contact the variety distributor or developer regarding specialty uses of these varieties.

The awnless head of **Pintail** may improve palatability when harvested for forage or silage.

Fall Rye

Main Characteristics of Varieties

Variety	Years Tested	Yield (%) Area 1 & 2	Yield (%) Area 3 & 4	Protein (%)	Resistance To[1] Winter Survival	Resistance To[1] Lodging	Resistance To[1] Shattering	Resistance To[1] Ergot[2] (%)	Heading Date[3] (days)	Maturity[4] (days)	Seed Weight (mg)	Volume Weight[5] (kg/hL)	Height (cm)	Falling Number (sec.)
Open-Pollinated		- Relative to Hazlet -							Relative to Hazlet					
Hazlet	17	100	100	11.2	VG	G	VG	1.1	Jun 8	Aug 2	36.8	73.1	100	175
Prima	17	84	94	0.4	G	G	F	-0.3	-1	-3	-5.1	-0.8	11	+51
Danko	4	102	94	0.6	VG	VG	---	---	-2	-2	-3.7	0.5	0	---
Hybrid Varieties														
KWS Bono	8	127	127	-1.1	G	G	---	0.2	1	0	-4.9	-0.3	-12	+112
Brasetto	6	113	122	-0.9	VG	G	---	0.7	0	1	-3.5	-1.7	-10	+107
KWS Daniello ✪	6	118	117	-0.7	VG	VG	---	-0.6	0	0	-4.4	-1.4	-9	+120
KWS Gatano ✪	6	121	123	-1.1	G	G	---	-0.5	0	1	-5.8	-0.4	-12	+106
KWS Serafino[6] ✪	4	127	130	-1.0	G	VG	---	-0.6	0	0	-4.7	-0.7	-10	+136
KWS Trebiano[6] ✪	4	124	127	-0.6	G	VG	---	-0.7	0	0	-1.6	-0.4	-7	+122

[1] Ratings: VG = Very Good; G = Good; F = Fair.
[2] Ergot bodies in grain as percent of total weight during registration testing. All varieties are susceptible to ergot. Current testing does not suitably differentiate genetically controlled resistance to ergot infection (varietal differences) from other factors such as weather, crop development stage, inoculum load and management.
[3] Average heading date relative to **Hazlet**. Flowering typically occurs seven to 14 days after heading, depending on weather conditions.
[4] Average maturity date relative to **Hazlet**. Wet and cool conditions can prolong maturity beyond these dates.
[5] Multiply by 0.8 = lbs./bu
[6] **KWS Serafino** and **KWS Trebiano** are new registrations.

ADDITIONAL INFORMATION

Fall rye is much more cold tolerant than winter wheat or winter triticale, with field survival being approximately 30 to 100 per cent better than winter wheat for current fall rye varieties.

A major factor in marketing rye grain into the milling market is sprouting. This is generally measured using the Hagberg falling number test and is measured in seconds. Typically, a falling number of 180 seconds or greater is preferred by the rye milling market. Falling number is heavily influenced by moisture around harvest time and producers must make sure rye is harvested in a timely manner, similar to wheat crops. There is considerable variation in fall rye varieties for falling number; this must be considered if the milling market is the targeted end-user for rye grain.

Very little recent information on shattering in rye has been obtained, as it has not been observed in field trials recently, thus no information is available for recently released varieties.

Forage Rye

KWS Propower is a hybrid rye variety that is suited for silage use.

Wheat Classes Changes

By The Ministry of Agriculture

The Canadian Grain Commission (CGC) Wheat Class Modernization was initiated in 2015. Revised quality standards (established in May 2015) led to a review of the suitability of all western Canadian wheat varieties for their current market classification. The review was in part due to some concerns about declining gluten strength in Canadian wheat shipments.

> Producers are strongly encouraged to use the Canadian Grain Commission's (CGC) Variety Designation Lists (*www.grainscanada.gc.ca*), which indicate the varieties belonging to each class of wheat in Canada and the complete list of varieties being designated to another class, effective Aug. 1, 2018 and beyond. For complete and up-to-date information on the Canadian Wheat Class Modernization initiative, visit CGC's website. It is also recommended producers use the Canadian Food Inspection Agency's List of Registered Varieties (*www.inspection.gc.ca*) to determine registration status of varieties.

The observed weaker gluten strength was due to a number of factors, including the predominance of some varieties that were on the lower end of the range of gluten strength for CWRS (Canada Western Red Spring). Customers require higher gluten strength from CWRS for their products to perform consistently. CGC reviewed the quality standards expected for CWRS and CPSR (Canada Prairie Spring Red) wheat classes so that the performance of those classes are more consistent with customer expectations.

The wheat class review was comprehensive. The initial 29 varieties were moved out of CWRS and CPSR Aug. 1, 2018 to the Canada Northern Hard Red (CNHR) class. **AC Crystal** moved out of CPSR to CNHR Aug. 1, 2019.

Additional varieties have been identified. **AC Domain**, **Muchmore**, **AAC Redwater**, **Vesper VB** and **5605HR CL** will move out of CWRS to CNHR Aug. 1, 2021.

Varieties that will be moved to CNHR can continue to be grown, but must be marketed in their new class after the transition date.

Malting Barley

Main Characteristics of Varieties

Category[1] and Variety	Years Tested	2 or 6 Row	Awns[2]	Yield (% AAC Synergy) Area 1 & 2	Yield (% AAC Synergy) Area 3 & 4	Relative Maturity[3]	Resistance To[4] Lodging	Netted Net Blotch[5]	Spotted Net Blotch[5]	Spot Blotch	Scald	Loose Smut	Other Smuts	Root Rot	Stem Rust	FHB
Malting Acceptance: Recommended																
AAC Synergy	7	2	R	100	100	M	F	MR	R	R	S	S	I	I	MR	I
CDC Bow	7	2	R	94	93	M	VG	S	MR	I	MS	S	I	MS	MR	MS
AAC Connect	6	2	R	98	93	M	G	I	MR	MR	S	S	R	MS	MR	MR
CDC Copeland	7	2	R	92	93	M	F	I	I	S	MS	MS	I	I	MR	I
CDC Fraser	7	2	R	100	98	M	G	MR	R	MR	MS	R	R	MS	MR	I
AC Metcalfe	7	2	R	87	86	M	F	S	I	I	MS	R	I	I	MR	I
Malting Acceptance: In Development or Limited Demand																
Bentley	7	2	R	99	96	L	G	MS	R	I	MS	MS	MR	I	MR	I
AB BrewNet	4	2	R	101	101	L	G	MS	I	MS	I	MS	MR	---	MR	MR
CDC Churchill	5	2	R	103	102	M	G	MR	MR	I	S	MS	MR	---	MR	MS
CDC Copper	5	2	R	102	98	M	G	MR	MR	I	MR	I	MR	---	I	MS
Lowe	7	2	R	98	95	L	F	I	MR	I	MR	R	R	---	S	MR
Newdale §	6	2	R	98	97	M	G	I	MR	I	MS	S	MR	MR	MR	I
CDC PlatinumStar[7]	7	2	R	94	88	M	F	I	MR	S	S	S	R	S	I	MR
Celebration §	7	6	S	95	91	M	VG	S	MR	MR	S	R	R	MS	I	MS
Legacy	6	6	S	90	85	M	G	S	MR	MR	MS	I	MR	MR	MR	MS
Other[6]																
AAC Goldman	7	2	R	95	94	M	G	I	R	I	I	S	I	---	I	MR
CDC Goldstar[7]	6	2	R	101	97	M	G	I	MR	I	S	I	R	S	MR	MS

[1] These categories are established annually by the Canadian Malting Barley Technical Centre (Call 204-984-4399 for more information).
[2] R=Rough, S=Smooth.
[3] Relative maturity: the relative maturity of the check, **AAC Synergy**, is M (on average, 94 days from seeding to swathing ripeness).
[4] Resistance ratings: R = Resistant; MR = Moderately Resistant; I = Intermediate; MS = Moderately Susceptible; S = Susceptible.
[5] There are two forms of net blotch, netted (*Pyrenophora teres f. teres*) and spotted (*Pyrenophora teres f. maculata*). Generally, in Saskatchewan, the netted form is more prevalent.
[6] Although not on the CMBTC list, a malting barley market may exist for these varieties.
[7] **CDC PlatinumStar** and **CDC Goldstar** are available only through a closed loop Identity Preserved program offered by Prairie Malt Limited/Sapporo Breweries and their agents.

ADDITIONAL INFORMATION

Growers are reminded that the malting and brewing industry is cautious about using new varieties. The Canadian Malting Barley Technical Centre prepares a list of recommended varieties annually. The recommended list is available on page VR20.

Growers are cautioned that most malting varieties, especially two-row barley, are more susceptible to sprouting.

Harvesting grain over 16 per cent moisture and then using aeration bins for drying can lead to sprouting and embryo death. Seed with reduced germination is undesirable for seed or malting.

Lines Tested for Malting and Brewing Quality

Small-scale tests are a good measure of malting potential, but are not sufficient to determine the commercial acceptability of malting varieties. Final acceptance is given only after two years of successful plant scale evaluation. Several carload lots of barley are malted and brewed. The beer is then given the ultimate test—a taste panel. This process normally takes a minimum of three years, since a crop grown in one year will be malted in January-February, brewed in May-June, and aged and tasted in October-November of the following year.

Feed and Food Barley

Main Characteristics of Varieties

Category and Variety	Years Tested	2 or 6 Row	Awns[1]	Yield (% AAC Synergy) Area 1 & 2	Yield (% AAC Synergy) Area 3 & 4	Relative Maturity[2]	Resistance To[3] Lodging	Netted Net Blotch[4]	Spotted Net Blotch[4]	Spot Blotch	Scald	Loose Smut	Other Smuts	Root Rot	Stem Rust	FHB
Hulled																
Altorado	7	2	R	104	99	M	G	S	MR	S	S	MR	MR	MR	MR	I
CDC Austenson	7	2	R	102	103	M	G	MS	R	MR	S	S	R	I	I	I
Brahma	7	2	R	100	99	M	G	S	I	S	MS	MS	R	MR	MR	I
Canmore	7	2	R	96	99	L	G	MS	MR	I	MR	R	R	I	MS	I
Claymore	7	2	R	103	98	L	VG	S	I	I	S	S	R	I	MR	MR
CDC Coalition	7	2	R	97	98	M	VG	S	MR	I	MS	R	MR	I	MR	I
CDC Cowboy	6	2	R	85	89	L	F	I	MR	I	MS	MS	MR	I	MR	MR
CDC Maverick	6	2	S	79	83	M	F	I	MR	I	MS	S	R	I	MR	MR
Oreana	7	2	R	98	93	L	VG	S	MR	I	S	S	R	I	I	S
Sirish	7	2	R	95	91	M	VG	MS	MS	MS	MR	S	R	---	S	MS
AB Wrangler	4	2	R	105	99	M	F	I	I	MR	MS	MS	MR	---	R	MR
AB Advantage	5	6	S	104	99	VL	VG	MS	I	I	I	MR	I	---	I	S
Amisk	7	6	SS	97	98	M	G	I	MR	MR	I	S	MS	MS	MR	S
AB Cattlelac	5	6	SS	99	97	L	VG	MS	MR	MR	I	I	R	---	I	S
AC Rosser	11	6	S	101	99	M	G	I	MR	MR	S	MS	MR	MR	MR	S
AB Tofield	3	6	S	104	105	L	G	MS	I	I	I	---	MR	---	R	S
Hulless																
CDC Ascent	7	2	R	85	83	M	G	S	MR	I	MS	MR	MR	I	I	MR
CDC Carter	7	2	R	79	84	M	G	I	MR	I	MS	R	R	S	I	MR
CDC Clear	7	2	R	78	89	L	G	MS	R	I	MS	R	R	I	MR	MR
CDC McGwire	8	2	R	84	83	M	G	I	MR	I	I	MS	MR	MR	I	MR

[1] R = Rough, S = Smooth, SS = Semi-Smooth.

[2] Relative maturity: The relative maturity of the check, **AAC Synergy**, is M (on average, 94 days from seeding to swathing ripeness).

[3] Resistance ratings: R = Resistant; MR = Moderately Resistant; I = Intermediate; MS = Moderately Susceptible; S = Susceptible.

[4] There are two forms of net blotch: netted (*Pyrenophora teres f. teres*) and spotted (*Pyrenophora teres f. maculata*). Generally, in Saskatchewan, the netted form is more prevalent.

ADDITIONAL INFORMATION

Most available varieties are susceptible to one or more types of smut. Therefore, seed of susceptible varieties should be treated with a registered fungicide on a regular basis.

Two-row barley varieties are generally more resistant to shattering than six-row varieties.

Forage Barley

AB Advantage, AB Cattlelac and **AC Ranger** are six-row forage varieties. **CDC Cowboy** and **CDC Maverick** are two-row forage varieties.

Hulless

In hulless varieties the hull is left in the field; therefore, comparable yields are nine to 12 per cent lower. Hulless seed is more susceptible to damage than hulled seed, so handling should be minimized.

Hulless Food

CDC Ascent, **CDC Fibar**, **CDC Marlina** and **CDC Rattan** are high beta-glucan, waxy starch varieties. **CDC Hilose** is a high beta-glucan, high amylose starch variety. All are available for specialty markets.

CDC Carter, **CDC McGwire** and **Roseland** are two-row, normal starch, hulless barleys suitable for food use.

Irrigation

Disease resistance, straw strength and maturity are more critical when barley is grown under irrigation. Growers should select early, strong-strawed, disease-resistant varieties.

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

VARIETIES RECOMMENDED

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

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

- **Bentley**, **Celebration** and **CDC PlatinumStar** (CANTERRA SEEDS)
- **Legacy**, **Newdale**, **Tradition** (FP Genetics)
- **Cerveza** (Mastin Seeds)
- **Lowe** (SeCan)

The CMBTC recommends that producers have a contract for all barley varieties being grown for malt

VARIETIES IN DEVELOPMENT

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

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

THE CMBTC AND ITS MEMBERS RECOMMEND

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

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

cmbtc.com

Canada

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

@MaltAcademy @MaltAcademy

Oat

Main Characteristics of Varieties

Variety	Years Tested	Yield (% CS Camden) Area 1 & 2	Yield (% CS Camden) Area 3 & 4	Test Weight (g/0.5L)	% Hull	Hull Colour	% Plump	Relative Maturity[1]	Height (cm)	Resistance To[2] Lodging	Stem Rust	Crown Rust	Smut
CS Camden	7	100	100	242	24.3	White	82	L	94	VG	S	MS	I
CDC Arborg	6	106	106	250	20.1	White	85	M	108	VG	S	I	R
CDC Boyer	7	88	90	232	23.3	White	85	M	105	G	I	I	MS
CDC Dancer	7	88	88	253	19.8	White	86	M	103	G	I	I	R
Derby	7	87	92	247	22.9	White	79	M	107	G	S	S	MS
AAC Douglas	4	105	99	245	20.7	White	81	M	98	G	I	MR	R
CDC Endure	5	107	107	245	21.2	White	89	M	102	VG	S	MR	R
CDC Haymaker	5	82	85	225	24.9	White	87	VL	111	G	S	S	MR
CDC Minstrel	7	95	97	245	21.0	White	92	L	98	VG	I	MS	R
AC Morgan	7	100	102	236	25.1	White	82	L	101	VG	S	S	I
CDC Morrison	7	91	86	248	24.4	Yellow	83	L	95	VG	I	MS	R
CDC Nasser §	7	98	97	233	21.8	White	79	VL	106	G	MS	S	R
CDC Norseman	7	95	95	241	20.0	White	81	M	102	G	S	MR	MS
ORe3541M	7	94	90	257	21.5	White	90	L	93	VG	S	R	R
ORe3542M	7	97	92	247	22.5	White	95	L	93	VG	S	R	R
Pinnacle §	7	102	99	244	23.6	White	89	VL	101	F	I	S	R
CDC Ruffian	7	101	97	247	20.4	White	88	L	95	G	S	I	R
CDC Skye	4	100	97	250	19.9	White	85	M	99	G	S	R	R
Souris	7	97	93	253	21.5	White	72	M	98	VG	MR	MS	R
Summit	7	93	95	256	21.6	White	81	M	94	G	I	I	R
Triactor	7	103	108	240	22.8	White	80	L	99	G	S	MR	I
Varieties being tested for adaptability in Western Canada													
Akina	5	102	100	242	22.5	White	---	M	95	G	---	R	R
Alka	3	108	101	247	22.8	White	---	L	95	G	S	I	R
Kara	5	102	100	247	23.2	White	---	M	88	G	---	MR	MR

[1] Maturity rating L = 98 days.
[2] Resistance ratings: R = Resistant; MR = Moderately Resistant; I = Intermediate Resistance; MS = Moderately Susceptible; S = Susceptible.

ADDITIONAL INFORMATION

Although disease pressure is lower in eastern Saskatchewan than in Manitoba, crown rust races capable of attacking most varieties, except those with an MR or R rating, are increasing in southeast Saskatchewan. Early seeding will reduce the likelihood of severe infection.

Producers growing oats for the milling market are advised to check the "approved" varieties list available from the various oat millers.

Feed Oat

CDC SO-I and **CDC Nasser** are specialty feed oat varieties with higher digestible energy for cattle.

Forage Oat

CDC Baler, **CDC Haymaker** and **Murphy** are forage oat varieties available for annual forage production in Saskatchewan.

Hulless Oat

AC Gwen is a hulless variety available for production in Saskatchewan. The hull is part of normal oat yield, thus hulless types yield less. They are difficult to handle and store and should be stored at less than 12 per cent moisture.

False Oats or Fatuoids

False wild oats, or fatuoids, are off-types within common oat fields that have an appearance similar to wild oat, most notably a prominent, dark awn and increased hairiness at the base of each floret. They are thought to result from the infrequent cross-pollination between common oat (*Avena sativa*) and true wild oat (*Avena fatua*). As such, their presence will likely be observed more often in fields planted from farm-saved seed. They have been reported within fields of common oat at rates up to one per cent and occur within all oat varieties.

OTHER CROPS

BUCKWHEAT

Buckwheat is sensitive to high temperatures and dry weather conditions in the blossom stage, which can reduce seed set and yields. New self-pollinated varieties are being released. Buckwheat is very susceptible to frost at all stages of growth. Delayed seeding is advisable to avoid spring frost.

CARAWAY

Caraway is a biennial spice crop, producing seed in the second year and sometimes in the third year. Seedlings are small, slow in developing and compete poorly with weeds. The crop is usually swathed because of its indeterminate growth habit and seed shattering.

SAFFLOWER

Safflower is an annual oilseed or birdseed crop that can be grown successfully in the Brown Soil Zone. Safflower must be sown early (late April).

Saffire matures in about 120 days. Seed should be planted shallow but into a firm, moist seedbed at about 30 kg/ha (27 lb./ac). **Saffire** has moderate resistance to sclerotinia head rot and alternaria leaf spot. Contract production is advised.

CORIANDER

Coriander is an annual spice crop. Seedlings are small, slow to develop and compete poorly with weeds. The large seeded type is earlier maturing than the small seeded type. **CDC Major** is a large-seeded variety and **CDC Minor** is a small-seeded variety. The crop is usually straight-cut to avoid wind damage in swaths. For more information, consult the Ministry of Agriculture publication *Coriander*.

FENUGREEK

Fenugreek is a leguminous spice crop adapted to dryland conditions in the Dark Brown and Brown Soil Zones. The crop should be seeded early to avoid yield and quality loss from fall frost. Contract production is advisable, as markets are limited.

Quinoa

Quinoa (*Chenopodium quinoa*) is a long season (about 120 days to maturity) broadleaf pseudocereal that can be grown on a wide range of soil types. Early in the growing season, it is sensitive to excessive moisture. It also has a significant moisture requirement similar to other broadleaf crops. Quinoa is frost-tolerant both as a seedling and at maturity. An earlier seeding date into a well-prepared seedbed is considered best practice due to the long growing season required by the crop. Quinoa can be direct seeded at a 1.5 cm (0.5 in.), though at least one tillage pass prior to planting is preferred for even emergence.

With sufficient moisture, quinoa is tolerant to high temperatures and is resistant to lodging. Quinoa has an indeterminant growth habit. Heights will vary depending on fertility and environmental conditions, but average about 100 cm tall. Quinoa should be straight cut at maturity.

Quinoa is grown exclusively under total production contract, with the seed marketed as whole seed, as ingredients and in value-added markets.

NorQuin **NQ94PT** is a golden seeded variety with high seed yield and uniform, earlier maturity. NorQuin **NQRed** is a red-seeded quinoa variety with high seed yield and earlier maturity. NorQuin **NQRainbow** is a composite blend of several quinoa plant types with high seed yield and slightly later maturity.

For more information on quinoa, contact NorQuin at 306-933-9525 or *www.quinoa.com.*

Canary Seed

Main Characteristics of Varieties

Variety	Type	Site Years Tested	Yield[1] (%)	Days to Heading	Days to Maturity	Height (cm)	Test Weight (kg/hL)[2]	Seed Weight (g/1000)
			Relative to CDC Bastia					
CDC Bastia	glabrous	13	100	56	98	102	70.8	8.0
CDC Calvi	glabrous	9	105	2	3	4	0.7	0.3
CDC Cibo	glabrous	9	106	0	-1	-9	-0.4	0.2
CDC Lumio	glabrous	5	117	2	1	3	-0.6	0.4
Cantate	hairy	13	113	1	2	-3	-7.0	0.5
Keet	hairy	13	126	4	3	4	-6.1	-0.2

[1] Yield data not collected by Area, 2007-2019
[2] Multiply by 0.8 = lbs./bu

ADDITIONAL INFORMATION

The seed of annual canarygrass, more commonly called Canary seed, is used as food for caged and wild birds. **Elias** and **Keet** pedigreed seed has not been produced in recent years.

Seed hulls of **CDC Bastia**, **CDC Calvi**, **CDC Cibo** and **CDC Lumio** do not have the small sharp hairs that cause irritation when Canary seed is threshed and handled and are called glabrous. **CDC Cibo** is yellow-seeded while the other varieties produce brown seed.

Glabrous varieties that have been dehulled are approved for human consumption in Canada and the United States, but markets are currently limited.

Canary seed plants have a dense, shallow root system and growing the crop on sandy soils is not recommended. Canary seed may be grown successfully on stubble, providing adequate moisture is available for rapid germination and emergence. The recommended seeding rate is 34 kg/ha (30 lb./ac) with germination greater than 85 per cent. Reduced emergence might be expected if Canary seed is seeded below five cm depth.

Canary seed is subject to damage by English grain aphid and bird cherry oat aphid. Aphid populations build up rapidly on leaves and stems, inside the boot and panicles of the plant in July and August and may require an insecticide application to prevent yield loss. Information from the United States indicates that infestations of 10 to 20 aphids on 50 per cent of the stems prior to soft dough stage may cause enough damage to warrant insecticide application. The aphids often hide in the dense head of the Canary seed plant. Damage may occur at populations below these levels.

Canary seed leaf mottle is a foliar disease that can cause yield losses. Leaf mottle is caused by a fungus, *Septoria triseti,* that only affects Canary seed. The disease is inconspicuous at early stages because there is little visual contrast between healthy and diseased leaf area. Stubble-borne inoculum is the source of infection, thus crop rotation is key in limiting the severity of leaf mottle.

In recent years *Fusarium spp*., particularly *F. graminearum*, were commonly found in a majority of the Saskatchewan Canary seed fields surveyed. The average incidence within fields was generally low (three to four per cent). In most instances there were no obvious infection symptoms and seed plating was required to detect the fungus. In some cases an orange discoloration arising from fusarium infection is visible on the infected panicles in the field.

Canary seed is resistant to shattering. It may be straight-combined or swathed when fully mature. For more information on Canary seed, consult the Ministry of Agriculture publication *Canary Seed*.

PULSE CROPS

Lentil

Main Characteristics of Varieties

Variety	Herbicide Tolerance[1]	Years Tested[2]	Yield (% CDC Maxim) Area 1 & 2	Yield (% CDC Maxim) Area 3 & 4	Height (cm)	Days to Flower	Maturity Rating[3]	Resistance To: Ascochyta Blight	Resistance To: Anthracnose Race 1	Seed Coat Colour	Cotyledon Colour	Seed Weight (g/1000)
Small Red												
CDC Maxim	CL	14	100	100	34	51	E/M	MR	MR	gray	red	40
CDC Carmine		10	111	106	34	54	E/M	MR	MR	gray	red	40
CDC Coral		7	110	103	33	55	E/M	MR	MR	gray	red	37
CDC Dazil	CL	12	97	92	33	53	E/M	MR	I	gray	red	35
CDC Impulse	CL	11	107	100	37	52	E/M	MR	MR	gray	red	44
CDC Karim	CL	5	102	100	35	55	E/M	MR	MR	gray	red	39
CDC Nimble	CL	7	109	107	35	52	E/M	MR	MR	gray	red	38
CDC Proclaim	CL	10	105	100	34	51	E/M	MR	MR	gray	red	40
CDC Redcoat		7	105	93	33	50	E/M	MR	MR	gray	red	39
CDC Redmoon		10	114	104	33	52	E/M	MR	MR	gray	red	41
CDC Simmie	CL	6	109	103	34	53	E/M	MR	MR	gray	red	39
Extra Small Red												
CDC Imp	CL	7	95	93	35	52	E/M	MR	MR	gray	red	30
CDC Impala	CL	13	84	82	30	51	E	MR	MR	gray	red	31
CDC Roxy		10	103	97	34	53	E/M	MR	MR	gray	red	32
Large Red												
CDC KR-2	CL	10	104	90	37	52	M	MR	MR	gray	red	55
CDC Sublime	CL	5	116	104	38	54	E/M	MR	MR	green	red	53
Small Green												
CDC Imvincible	CL	14	94	81	33	49	E	MR	MR	green	yellow	34
CDC Kermit		11	105	95	36	49	E/M	MR	MR	green	yellow	34
CDC Jimini	CL	5	108	100	36	50	E/M	---	---	green	yellow	38
CDC Viceroy		6	97	98	34	49	E	MR	MR	green	yellow	33
Extra Small Green												
CDC Asterix		11	96	91	30	48	E	MR	I	green	yellow	26
Medium Green												
CDC Imigreen	CL	11	78	71	44	50	M	MR	S	green	yellow	57
CDC Impress	CL	7	87	71	34	50	M	MR	MS	green	yellow	52
Large Green												
CDC Greenland		19	89	70	38	52	M/L	MR	S	green	yellow	64
CDC Greenstar		12	98	80	40	52	M/L	MR	I	green	yellow	73
CDC Grimm	CL	6	93	80	40	55	M/L	MR	MR	green	yellow	75
CDC Impower	CL	12	82	67	41	52	M/L	MR	S	green	yellow	64
CDC Lima	CL	8	92	85	35	51	M/L	MR	S	green	yellow	74
French Green												
CDC Marble		12	103	96	36	49	E	MR	I	green marble	yellow	34
CDC Peridot	CL	8	84	94	37	48	E	I	MS	green marble	yellow	38
CDC Pilgrim	CL	5	96	91	35	52	E/M	---	---	green marble	green	33
Green Cotyledon												
CDC Imerald	CL	5	88	82	35	53	E/M	---	---	green	green	54
CDC QG-1		6	80	65	42	51	M	I	I	green	green	49
CDC QG-2		10	89	88	40	48	E	I	I	green marble	green	32
CDC QG-3	CL	7	92	66	38	53	E/M	I	MR	green	green	46
CDC QG-4	CL	7	92	90	36	53	E/M	I	MR	green marble	green	33
Spanish Brown												
CDC SB-3	CL	8	90	87	35	51	E	I	MR	gray dotted	yellow	38
CDC SB-4	CL	7	102	101	34	53	E/M	I	MR	gray dotted	yellow	41

1 CL indicates Clearfield® tolerant variety.
2 Co-op and Regional Trials in Saskatchewan since 2006. Comparisons to the check variety, small red lentil **CDC Maxim**.
3 Maturity ratings: Normal maturity range in days based on May 1 seeding is E = 100, VL = 110 but maturity can be much earlier in dry years, much later in cool wet years. See Page 10 for more information on maturity range in lentil.
4 Seed or seed coat colour: B = beige; LT = light tan; T = tan.

Lentil (cont'd)
Main Characteristics of Varieties

ADDITIONAL INFORMATION

Seed supplies may be limited for recently released vairieties such as **CDC Simmie**, **CDC Sublime**, **CDC Jimini**, **CDC Pilgrim** and **CDC Imerald**.

Types of Lentils

Small red lentils are the most popular class grown in Saskatchewan. Large red lentils have red cotyledons with a much larger seed size than small red lentils.

Green lentils are classified by seed size, with the small greens sometimes referred to as Eston-type and the large greens referred to as Laird-type. They have green seed coats with a yellow cotyledon. The large green types represent the highest share of green lentil acres.

French green lentils have a green-marbled seed coat with yellow cotyledons. Seed size is small, most similar to small red lentils. French green lentils retain their shape better than small reds or greens upon cooking. **CDC Marble** has a slightly lighter colour pattern than other French green varieties.

Green cotyledon lentils have a green or marbled seed coat with green cotyledons and a small-to-medium seed size.

Spanish brown lentils have a grey-dotted seed coat with yellow cotyledons. This market class is sold primarily into Spain. Seed size is small, most similar to small reds.

Chickpea
Main Characteristics of Varieties

Variety	Years Tested	---------- Yield ---------- (% Amit) Area 1[1]	Area 2[1]	Ascochyta Blight[2]	Height (cm)	Days to Flower	Maturity	Seed Weight (g/1000)	Seed Shape[3]	Seed or Seed Coat Colour[4]	Tolerance to Solo ADV (imazamox) herbicide
Kabuli											
Amit (B-90)	19	100	100	4.4	47	56	L	258	Ro	B	no
CDC Alma	12	92	91	6.0	41	53	L	363	RH	B	yes
CDC Frontier	19	107	104	4.5	45	55	L	350	RH	B	no
CDC Leader	15	107	105	4.5	42	54	M	390	RH	B	no
CDC Luna	18	98	100	5.7	40	53	ML	368	RH	B	no
CDC Orion	14	105	102	5.6	44	50	L	428	RH	B	no
CDC Palmer	10	105	100	4.9	42	52	ML	415	RH	B	no
Desi											
CDC Consul	13	111	108	4.0	46	53	M	299	P	LT	no
CDC Cory	12	112	106	4.3	47	56	M	268	A/P	T	yes

[1] Area 1: Brown soil zone; Area 2: Dark Brown soil zone; see map on page 2.
[2] Ascochyta Blight at pod filling period: 0-9 scale; 0 = no symptom; 9 = plants are completely blighted. Scores 4-6 are considered intermediate resistance (I).
[3] Seed shape: Ro = Round; RH = Ram-head; P = plump; A = angular.
[4] Seed or seed coat colour: B = beige; LT = light tan; T = tan.

ADDITIONAL INFORMATION

Please refer to the *SaskSeed 2021* guide for pedigreed seed availability. For more details on production, consult the *Pulse Production Manual* published by the Saskatchewan Pulse Growers (*www.saskpulse.com*).

Field Pea

Main Characteristics of Varieties

Variety	Years Tested[1]	------- Yield (%) ------- 1, 2 & South 3	North 3 & 4	Irrigation	Protein	Relative Maturity	Lodging[2] (1-9)	Vine Length (cm)	---------- Resistance To ---------- MB[3]	Powdery Mildew	Fusarium Wilt	SCB[4]	Bleaching	SCD[5]	Greeness[6]	Seed Weight (g/1000)
Yellow		---- Relative to CDC Amarillo -----														
CDC Amarillo	12	100	100	100	23.0	M	3.5	85	4.5	R	MR	F	n/a	F	G	230
Abarth	7	93	90	92	-0.1	E	3.5	75	5.0	R	I	F	n/a	G	G	280
AAC Aberdeen ✪	3	107	103	---	-1.1	M	3.5	85	4.5	R	I	F	n/a	F	G	250
AAC Ardill	10	102	99	91	-1.5	M	3.5	85	4.5	R	MR	G	n/a	G	G	230
AAC Asher §	4	103	100	---	-0.5	M	4.5	75	4.5	R	I		n/a	F	G	260
CDC Athabasca	7	93	97	---	0.5	M	3.0	85	4.5	R	I	F	n/a	F	G	300
CDC Canary	8	98	98	----	0.1	E	3.5	85	4.5	R	I	G	n/a	F	F	230
AAC Carver	7	102	100	---	-1.3	E	4.0	85	5.0	R	I	G	n/a	F	G	240
AAC Chrome	6	105	101	---	-1.0	M	4.5	75	4.5	R	I	G	n/a	G	G	240
AAC Delhi	4	103	98	---	0.7	M	4.5	80	5.0	R	I		n/a	F	F	290
CDC Golden	10	92	83	90	0.7	E	4.5	75	5.0	R	I	G	n/a	G	G	230
CDC Inca	9	104	99	104	-0.6	M	4.0	85	4.5	R	I	G	n/a	G	F	230
AAC Lacombe	8	96	100	101	-0.7	M	3.5	85	5.0	R	I	F	n/a	F	F	250
CDC Lewochko	7	102	103	---	0.9	M	3.5	90	4.5	R	I	G	n/a	G	G	230
CDC Meadow	12	93	90	91	-0.5	E	4.0	85	5.0	R	I	G	n/a	G	G	220
AAC Profit ✪	4	100	108	---	0.8	M	4.5	90	4.5	R	I	G	n/a	G	G	230
CDC Saffron	12	98	92	93	-0.3	E	4.0	80	4.5	R	I	G	n/a	F	G	250
CDC Spectrum	9	104	101	---	0.7	M	3.5	85	4.5	R	I	G	n/a	G	F	240
Green																
Blueman	5	90	89	---	0.5	M	4.5	85	4.5	R	I	---	F	F	n/a	220
AAC Comfort	6	93	97	---	-0.4	M	4.5	85	4.5	R	I	G	F	G	n/a	250
CDC Forest	8	100	101	---	0.0	M	4.0	85	4.5	R	I	G	G	G	n/a	230
CDC Greenwater	11	99	93	89	-0.9	M	3.5	90	4.0	R	MR	F	G	F	n/a	230
CDC Limerick	12	96	90	91	2.9	M	3.5	85	4.0	R	I	G	G	G	n/a	210
CDC Raezer	12	82	80	95	-0.1	E	3.5	85	5.0	R	MR	G	G	G	n/a	220
CDC Spruce	10	95	98	---	0.3	M	4.0	85	4.5	R	I	F	G	F	n/a	240
CDC Striker	12	82	81	84	1.9	M	3.5	80	4.5	S	MR	VG	G	G	n/a	240
Red																
Redbat 8	6	92	85	---	1.0	M	5.0	85	5.0	R	---	G	n/a	G	n/a	200
Redbat 88	5	91	92	---	0.3	M	4.5	90	4.5	R	---	G	n/a	G	n/a	190
Maple																
CDC Acer	3	84	73	---	na	M	6.5	60	5.0	R	---	G	n/a	VG	n/a	170
CDC Blazer	5	99	98	---	1.9	M	5.0	80	5.0	R	---	G	n/a	VG	n/a	190
AAC Liscard	7	89	89	---	-0.8	M	4.0	85	5.0	R	---	G	n/a	VG	n/a	200
CDC Mosaic	4	81	74	58	na	M	4.0	85	4.5	R	---	G	n/a	VG	n/a	180
Dun																
CDC Dakota	11	100	98	95	1.7	M	3.5	85	4.5	R	---	G	n/a	VG	n/a	205
Forage[7]																
CDC Horizon	4	88	78	63	2.2	M	4.0	100	4.5	R	---	G	n/a	G	G	170
DL Delicious **VUA**	2	67	56	---	1.4	L	7.5	110	5.0	S	---	G	n/a	F	n/a	200
DL Goldeye ✪ **VUA**	2	72	66	---	1.8	L	8.0	115	5.0	S	---	G	n/a	F	G	145
CDC Jasper	4	80	81	---	2.0	M	4.5	105	4.5	R	---	G	n/a	G	G	180
DL Lacross ✪	2	83	75	---	0.4	M	7.0	110	5.0	S	---	G	n/a	F	F	170

[1] Co-op and regional trials in Saskatchewan.
[2] Lodging score (1-9) where 1 = completely upright, 9 = completely lodged.
[3] Mycosphaerella blight score (1-9) 1=no disease, 9=completely blighted.
[4] Seed Coat Breakage.
[5] Seed Coat Dimpling: VG = 0-5 per cent; G = 6-20 per cent; F = 21-50 per cent.
[6] Greenness: Good = 0-15 per cent; Fair = 16-40 per cent.
[7] Forage dry matter biomass, as % of check **40-10** (100), **CDC Jasper** (111), **CDC Horizon** (108).

Field Pea (cont'd)

Main Characteristics of Varieties

ADDITIONAL INFORMATION

For detailed production information, consult *www.saskpulse.com/growing-pulses*. The relative maturity of the check variety **CDC Amarillo** is M (Medium), which is on average, 95 days from seeding to swathing ripeness.

Types of Peas Grown in Saskatchewan

Yellow peas are the most widely grown peas in Saskatchewan, followed by green peas and then specialty types such as dun, maple, marrowfat and forage peas. Most varieties have white flowers and are suitable for human consumption or livestock feed markets. Nearly all varieties have a semi-leafless leaf type with tendrils instead of leaflets, which help provide better standability.

Marrowfat varieties have large, blocky, green seeds and are used in specialty snack food markets in Asia. They have white flowers and non-pigmented seed coats.

Forage peas are grown for biomass, typically in mixture with barley, oat or triticale, which on average produce four to five tonnes per acre of forage dry matter, similar to that of forage barley, but with greater protein concentration.

Red peas have red cotyledons. Market development is still underway.

Maple peas have purple flowers, pigmented seed coats with mottled pattern and yellow cotyledons. They are sold as whole seeds mixed with millets and other seeds into domestic bird seed markets internationally. The pigmented seed coats provide natural protection to various root rot diseases and so are typically quick to emerge with good stand establishment.

Dun peas have purple flowers, pigmented seed coats (without a mottled pattern) and yellow cotyledons. They are dehulled and sold in human consumption markets similar to yellow pea varieties. The pigmented seed coats provide natural protection to various root rot diseases and so are typically quick to emerge with good stand establishment.

The following varieties have purple flower colour and pigmented seed coats: **CDC Acer**, **CDC Blazer**, **AAC Liscard**, **CDC Mosaic**, **CDC Dakota** and **DL Delicious**. **CDC Acer**, **CDC Blazer** and **CDC Mosaic** have a maple patterned seed coat, **AAC Liscard** and **DL Delicious** have a speckled seed coat, while **CDC Dakota** has a solid dun (tan) coloured seed coat. All other varieties have white flower colour and non-pigmented seed coats. ` has normal leaf type; all other varieties have semileafless leaf type.

Lodging: How Ratings are Determined and What They Mean

Lodging ratings provide an indication of the average standability of a particular variety over years and locations. Lodging at any given location can vary from what is stated in the guide, as lodging severity is typically greater under high-yielding conditions and in situations with high winds. Lodging scores are based on visual ratings with a nine-point scale where one equals completely upright and nine equals completely lodged. Ratings are conducted near the time of crop maturity.

Seed Coat Breakage

Seed coat breakage ratings are based on an abrasive test. This rating is a test of durability of the seed coat and is not a measure of seed coat thickness.

Greenness in Yellow Peas

Yellow peas are visually rated for green colouring after harvest by an experienced person. Ratings are expressed as a percentage of the seeds in a sample that have obvious green tinge to the whole seed. The green colouring may be contained within the seed coat and/or cotyledons. Typically, a rating of Fair (F) means the variety averaged 16 to 40 per cent seeds with green colour, whereas a rating of Good (G) would have zero to 15 per cent green-tinged seeds. Greenness may be impacted by genetics, environmental conditions and harvest dates. A later-maturing variety may show more greenness in the seed sample due to less-mature seed if harvested on the same date as an earlier-maturing variety. The impact of greenness is visual and does not affect germination, but could affect grade. The Canadian Grain Commission has colour as one of the grading factors for peas, with "good natural colour" required for top grades. Too much green colouring could downgrade the sample due to a "fair colour" rating.

Seed Coat Dimpling

Seed coat dimpling refers to tiny depressions that give the seed a golfball-like appearance. Seed coat dimpling is a result of genetics and environment. Some varieties are more prone to dimpling than others. Dimpling can be found in other pulse crops, in addition to peas. It appears to be more prevalent when cool temperatures occur during seed fill. Seed coat dimpling is a measure of the percentage of seed from a harvested sample that shows dimpling. Typically, Very Good (VG) ratings have between zero and five per cent of seeds dimpled, Good (G) between six and 20 per cent and Fair (F) between 21 and 50 per cent. Buyers prefer a smooth surface to peas and grading may be impacted. Shrivelled seed is a grading factor under the Canadian Grain Commission and includes seeds that have a severely dimpled surface.

Bleaching in Green Peas

Green peas are marketed for their uniform green cotyledon colour. The main pigment responsible for the green colour is chlorophyll. Under certain conditions the chlorophyll is degraded by enzymes, which results in a lightening of the green colour, which is considered bleaching. Under complete degradation of chlorophyll, the seed becomes yellow.

Soybean (Herbicide-Tolerant)

Main Characteristics of Varieties

Variety	Canadian Marketing Agent	Company Maturity Grouping[1]	Type[2]	Hilum Colour[3]	Years Tested	Yield[4] (%) South	Yield[4] (%) North	Days to Maturity[5]
						------- Relative to TH 33003R2Y -------		
TH 33003R2Y	Thunder Seeds	00.3	RR2	BR	6	100	100	0
23-60RY	Bayer CropScience	00.2	RR2	BL	3	103	102	0
Akras R2	Elite BrettYoung	00.3	RR2	IBL	6	107	108	2
Amirani R2	Elite BrettYoung	000.5	RR2	IY	2	---	90	-7
B00071RX	Brevant Seeds (Corteva)	000.7	RR2X	TN	2	---	81	-11
B0011RX	Brevant Seeds (Corteva)	00.1	RR2X	TN	2	---	88	-4
B0030L1	Brevant Seeds (Corteva)	00.3	RR2Y	BR	2	88	66	1
B0040L1	Brevant Seeds (Corteva)	00.4	RR2Y	BR	2	103	---	3
Devo R2X	Prograin	00.2	RR2X	BR	3	92	90	-3
DKB0005-44	Bayer CropScience	000.5	RR2X	BL	3	97	97	-5
DKB0009-89	Bayer CropScience	000.9	RR2X	BL	3	99	93	-1
DKB003-29	Bayer CropScience	00.3	RR2X	BL	3	96	96	1
Fisher R2X	SeCan	000.9	R2X	BL	3	92	80	0
Fresco R2X	Prograin	000.7	RR2X	BL	2	---	93	-4
Hart R2X	SeCan	00.4	R2X	BL	2	104	---	1
Mahony R2	SeCan	00.3	RR2	BL	6	104	104	1
Nocoma R2	Elite BrettYoung	000.8	RR2	IBL	3	92	93	-5
NSC Newton RR2X	NorthStar Genetics	00.3	RR2X	BR	3	86	84	1
NSC Redvers RR2X	NorthStar Genetics	00.2	RR2X	BL	3	94	89	-1
NSC Watson RR2Y	NorthStar Genetics	000.8	RR2Y	IY	6	96	97	-6
NSC Wynyard RR2X	NorthStar Genetics	000.5	RR2X	BL	2	---	91	-7
P0007A73X	Pioneer (Corteva)	000.7	RR2X	BR	2	---	75	-10
P001A48X	Pioneer (Corteva)	00.1	RR2X	TN	2	---	97	-1
P003A97X	Pioneer (Corteva)	00.3	RR2X	G	2	90	---	1
P005A27X	Pioneer (Corteva)	00.5	RR2X	BR	3	91	108	1
P005A83X	Pioneer (Corteva)	00.5	RR2X	BL	2	100	---	0
Prince R2X	SeCan	00.1	R2X	BL	3	95	91	-1
PV 15s0009 R2X	Nutrien (Proven Seeds)	000.9	RR2X	BL	3	97	93	-1
PV 16s004 R2X	Nutrien (Proven Seeds)	00.4	RR2X	BL	3	94	92	1
Renuka R2X	Elite BrettYoung	00.3	RR2X	LBR	2	103	---	0
RX000918	Winfield United	000.9	RR2X	BL	3	93	91	-1
S0009-M2	Syngenta	000.9	RR2Y	IMY	6	97	102	-6
S003-Z4X	Syngenta	00.3	RR2X	BF	2	105	---	-2
S007-Y4	Syngenta	00.7	RR2Y	IMY	7	108	106	0
SI 001XTN	Sevita International	00.1	RR2X	black	3	97	97	-2
Sunna R2X	Elite BrettYoung	00.3	RR2X	G	3	103	101	0
TH 32004R2Y	Thunder Seeds	00.4	RR2	BL	4	105	102	1
TH 87003 R2X	Thunder Seeds	00.3	RR2X	BL	3	95	98	0
Torro R2	Prograin	00.1	RR2Y	BL	4	89	94	-2

[1] Maturity Groups are assigned by individual companies to assist growers select varieties suitable for their area; growers should not rely on only one source of information for judging maturity.

[2] All varieties in this table are Roundup Ready or Roundup Ready Xtend type.RR2/RR2Y indicates Genuity® Roundup Ready 2 Yield® soybean variety; R2X/RR2X indicates Roundup Ready 2 Xtend® soybean variety. RR1 indicates Roundup Ready 1 technology. Other varieties are commercially available. For complete list of commercial varieties see *Seed Manitoba 2019* (*www.seedmb.ca*).

[3] Hilum is the point where seed attaches to the pod. BR-Brown, Y-Yellow, IY-Imperfect Yellow, IB-Imperfect Black, BL-Black, GR-Grey, TN-Tan.

[4] Six year mean yield of the check variety **TH 33003R2Y** was 41 bu/ac: 29 bu/ac in 2020, 29 bu/ac in 2019, 36 bu/ac in 2018; 46 bu/ac in 2017: 45 bu/ac in 2016 and 51 bu/ac in 2015. Typical on-farm yields are 25-38 bu/ac.

[5] Days to maturity indicates days from seeding to 95 per cent mature pods. Only sites which reached maturity prior to a killing frost were used for calculating days to maturity. However due to the early killing frost of all trials in 2020, estimated days to maturity for most trials was not determined. From past experience, moist growing seasons result in delayed maturity. Data is from Saskatchewan sites from 2016 - 2020 (not all varieties entered into trial each year). Days to maturity for **TH 33003R2Y** is +/- 118 days.

Soybean (Conventional)

Main Characteristics of Varieties

Variety	Canadian Marketing Agent	Company Maturity Grouping[1]	Type[2]	Hilum Colour[3]	Years Tested	Yield[4] (%)	Days to Maturity
						------- Relative to OAC Prudence -------	
OAC Prudence	SeCan	00.3	Con	Y	3	100	0
TH 33003R2Y	Thunder Seeds	000.8	HT check	---	6	101	0
NSC Watson RR2Y	NorthStar Genetics	00.3	HT check	---	6	106	-7
AAC Edward	SeCan	00.4	Con	Y	3	112	-5
AAC Halli	Interlake.org Inc.	000.9	Con	Y	1	101	0
Liska	Prograin	00.6	Con	IY	2	98	3
Maxus	Prograin	00.3	Con	IY	3	94	0
Maya ✪	Prograin	00.8	Con	IY	2	84	5
PR130167Z1-02	Prograin	00.3	Con	BR	1	96	2
Siberia	Prograin	00.2	Con	IY	3	111	-1

[1] Maturity Groups are assigned by individual companies to assist growers select varieties suitable for their area; growers should not rely on only one source of information for judging maturity. See page VR10 for more information.
[2] Varieties tested in this trial are conventional (con) soybean varieties and do not have tolerance to glyphosate. Two glyphosate tolerant varieties are included as check varieties only.
[3] Hilum is the point where seed attaches to the pod. Y-Yellow, IY-Imperfect Yellow, CLR-Clear.
[4] Mean yield of the check variety **OAC Prudence** in 2020 was 29 bu/ac. Typical on-farm yields are 25-38 bu/ac.

ADDITIONAL INFORMATION

The soybean variety trial is coordinated by Saskatchewan Pulse Growers. Typical on-farm yields are 25 to 38 bu/ac. Soybean is not native to the Canadian Prairies and must be inoculated with soybean inoculant that contains *Bradyrhizobium japonicum* bacteria.

Soybean Seeding Tips

Calculate soybean seeding rates based on number of seeds per acre. Soybeans are sold by units of 140,000 seeds.

To obtain the desired plant stand, be aware that increased seed coat damage can occur with soybeans when seeded with drills versus planters.

Higher seeding rates with drills can assist with reaching target plant populations.

Soybeans require warm soils (10 C) for optimum germination and emergence.

Trash management to encourage some blackening of the soil can be advantageous to speed soil warming.

Soybeans are sensitive to late spring frosts once the growing point is above ground.

Delay seeding until at least May 10 or later if conditions remain cool. Soybeans are sensitive to cold water at the time of germination.

Seed when there is a warming trend in the forecast and a low risk of cold rainwater until after soybeans have germinated.

Soybeans are susceptible to several seed and seedling diseases, so seed treatments should be considered.

Soybeans are prone to iron chlorosis, particularly when grown on saturated soils, soils high in calcium carbonates or on soils with salinity problems. Choose your fields and soybean varieties accordingly.

The maximum amount of phosphate plus potassium fertilizer that can be safely placed with the seed is 20 lbs./ac. Amounts higher than 20 lbs./ac should be banded.

Pre-emergence herbicides should be considered as part of the weed control program. Soybeans are poor competitors with weeds, so keeping soybean fields free of weeds from emergence through early growth may enhance yield.

Inoculants and Nitrogen Fixation with Pulses and Soybeans

Inoculants contain the nitrogen-fixing *Rhizobium* species necessary to ensure nodulation and nitrogen fixation. *Rhizobium* species are specific to each pulse crop. Pea, lentil and faba bean inoculants contain the same *Rhizobium* species, but the individual strain of that species (similar to varieties of crops) may be more effective on one crop or another. Make sure to use the right inoculant for each crop.

Handling Inoculants

Inoculants are products that contain living organisms and should be handled accordingly. Avoid exposure to direct sunlight, heat or freeze-thaw conditions. Consider application method when using in combination with seed treatments, as fungicides can impact *Rhizobia* survival. For best results, apply seed treatments first, allow the seed to dry, then apply the inoculant if using seed-applied products (sequential application). Read inoculant and seed treatment labels for more information on seed compatibility.

Inoculant formulations consist of seed-applied technologies such as liquids, peats and powders, as well as granular formulations. Single inoculant applications are effective for peas, lentils, chickpeas and faba beans. For soybeans, it is recommended to use a double inoculation strategy such as a seed-applied product in combination with a granular formation, on land where soybeans are being grown for the first time. To date, no benefit of double inoculation on other pulse crops has been identified.

Peas, Lentils, Faba Beans	*Rhizobium leguminosarum*
Chickpeas	*Rhizobium ciceri*
Dry Beans	*Rhizobium phaseoli*
Soybeans	*Bradyrhizobium japonicum*

Faba Bean

Main Characteristics of Varieties

Variety	Years Tested	Low Vicine/Convicine	Yield (% CDC Fatima)	Height (cm)	Lodging[1] (1-9)	Maturity (days)	Seed Weight (g/1000)
Coloured Flower (normal tannin)							
Fabelle ✪	8	Yes	100	104	2.4	105	533
Taboar	5	No	91	110	3.7	107	480
FB9-4	9	No	87	95	3.7	104	680
CDC SSNS-1	10	No	86	109	3.4	105	335
186S-11	6	No	101	105	3.1	106	749
247-13 §	4	No	102	103	3.4	106	620
Vertigo ✪	4	No	105	107	3.0	106	571
White Flower (low tannin)							
Snowbird	14	No	100	95	3.0	104	448
Imposa	4	No	105	99	2.4	107	695
CDC Snowdrop	9	No	89	97	2.8	104	325
Tabasco	5	No	96	93	1.9	106	496
DL Rico ✪	4	Yes	84	107	3.5	109	566
DL Tesoro ✪ VUA	5	No	103	90	3.8	110	511
219-16	9	No	102	94	3.6	106	328

[1] Lodging score (1-9) where 1 = completely upright, 9 = completely lodged.

ADDITIONAL INFORMATION

Faba bean regional trials began in 2006 to accommodate growing interest in this crop as a nitrogen-fixing high protein food and feed grain in moist areas. White-flowered types are zero tannin. All coloured flower types have seed coats that contain tannins and may be suitable for export food markets if seed size and quality match customer demand. Maturity ratings are based on days until swathing maturity but will vary depending on seeding date . Low vicine white flower types have expanding demand in the plant-based protein extraction industry.

Plant breeders in the faba bean industry are moving rapidly to risk elimination of the antinutritional compounds vicine and convicine (vc) through the introduction of a gene in new varieties that reduces vc by 99 per cent. Vicine-convicine causes rapid onset of anemia in a small percentage of the human population. Low vc status may become mandatory as soon as possible for faba beans that enter food and feed systems.

Faba bean is a partly outcrossing (four to 84 per cent under local conditions) through insect pollination (various bee species). Isolation from other varieties is necessary to maintain varietal purity, especially for flower colour and, most importantly, for maintaining low vc status in future. For seed production, isolations of two km or more are recommended at this time to maintain variety purity for low vc status and flower colour. Commercial producers who intend to save their seed should follow similar isolation practices.

Seeding Tips for Faba Bean

Calculate seeding rates based on actual thousand kernel weight of your seed as seed size of faba beans can vary tremendously from lot to lot.

Tannin and zero-tannin faba bean types should be separated by up to 500 m to prevent cross pollination.

Faba beans have a high requirement for phosphorus (P) and can tolerate up to 40 lbs/ac of seed-placed phosphorus (P_2O_5).

Seed as early as possible as faba beans have good tolerance to spring frosts and are later maturing. Seed into moisture, as the large seeds require adequate moisture to germinate.

Use seed treatment with low tannin types of faba beans.

Seeding large-seeded faba beans can be difficult due to plugging and growers may experience difficulty reaching the targeted seeding rates. A study conducted by the Prairie Agricultural Machinery Institute has identified the following tips and tricks for seeding large-seed faba beans:

- To reach high seeding rates, consider metering from multiple tanks or changing augers/rollers.

To minimize plugging:
- Slow down.
- Increase clearance from metering rollers or augers to the metering housings.
- Ensure there are no tight radiuses or sags in the distribution hoses.
- Eliminate flow obstructions, such as screws, in the distribution hoses.
- Ensure hose clamps are not overtightened, resulting in hose restrictions.
- Use openers with large-diametre seed openings and minimal change in seed flow direction or seed tube shape.
- Avoid sharp turns with the drill.

Dry Bean

Main Characteristics of Varieties

Variety	Years Tested[1]	Yield --- (% CDC Blackstrap) ---		Days to Flower	Maturity Rating[2]	% Pod Clearance[3]	Seed Weight (g/1000)	Growth Habit[4]
		Irrigation	Dryland					
Black								
CDC Blackstrap	9	100	100	53	M	85	195	II
CDC Jet	8	94	87	58	L	85	170	II
CDC Superjet	7	98	92	58	L	85	170	II
Pinto								
CDC Pintium §	9	82	85	50	E	85	350	I
Island	7	101	98	55	M	79	355	II
Medicine Hat	5	107	99	58	M	72	360	II
CDC WM-2	7	93	87	52	M	79	365	II
CDC WM-3 ✪	2	89	83	52	M	78	360	II
Navy								
Bolt	6	88	88	58	L	82	190	II
Portage	7	84	81	52	M	85	175	II
OAC Spark	4	74	88	55	L	81	163	I
AAC Shock	3	86	96	51	M	89	186	II
Small Red								
AC Redbond	3	98	82	51	M	65	290	II
flor de junio								
CDC Ray	5	113	107	56	L	70	300	III
Yellow								
CDC Sol §	7	91	87	55	L	78	399	I

[1] Co-op and regional trials grown in narrow rows. Since 2002 **CDC Pintium** had been the check variety. In 2019 **CDC Blackstrap** became the new check. Lines that did not have sufficient direct comparison data to **CDC Blackstrap** were adjusted based on relative performance to **CDC Pintium**.
[2] Maturity ratings based on E = 100 days; L = 110 days for May 20 planting to swathing maturity. See page 2 for more information.
[3] Pod clearance: percentage of pods that completely clear the cutterbar at time of swathing (~4 cm).
[4] Growth habit: I = Determinate bush; II = Indeterminate bush; III = Indeterminate vine.

ADDITIONAL INFORMATION

Dry bean production in Saskatchewan is challenging and growers are reminded that growing varieties that have not been tested in Saskatchewan comes with high risk. Only varieties tested in the Saskatchewan Variety trials have been shown to be adapted to Saskatchewan conditions. Other varieties may not be adapted to Saskatchewan due to sensitivity to long daylength, cool spring and fall temperatures and the short growing season. Days to maturity is critical. Early fall frost can severely affects yield and quality.

Dry beans are highly susceptible to diseases such as bacterial blight and bacterial wilt. These diseases are highly seed borne, therefore, dry beans should only be produced from seed that is tested and shown to be disease free.

Dry beans may not be eligible for crop insurance in your area. Contact your local Saskatchewan Crop Insurance Corporation (SCIC) office regarding insurance options on dry beans.

OILSEED CROPS

Flax

Main Characteristics of Varieties

Variety	Years Tested	Yield[1] (% CDC Bethune) Areas 1 & 2	Area 3 South	Area 3 North & 4	Irrigation	Relative Maturity[2]	Seed Size[3]	Resistance To: Lodging	Powdery Mildew[4]	Fusarium Wilt[4]
Brown Seed										
CDC Bethune	13	100	100	100	100	L	M	G	MR	MR
AAC Bravo	5	103	101	99	93	L	L	G	MR	MR
CDC Buryu	5	97	105	100	88	L	M	G	MR	MR
CDC Glas	9	107	102	105	98	L	M	VG	MR	MR
AAC Marvelous	4	101	107	106	101	L	M	G	MR	MR
CDC Neela	5	105	98	99	92	L	M	G	MR	MR
CDC Plava	5	99	103	99	90	M	M	G	---	MR
Prairie Grande	3	90	93	93	94	M	M	VG	MR	MR
Prairie Sapphire	6	103	93	97	93	L	M	G	MR	MR
AAC Prairie Sunshine	3	102	99	103	---	L	M	G	---	---
Prairie Thunder	3	93	99	97	99	M	M	VG	MR	R
CDC Rowland	4	108	109	108	102	L	L	G	MR	MR
CDC Sanctuary	5	103	91	94	95	L	M	F	MR	MR
CDC Sorrel	4	96	93	97	96	L	L	G	MR	MR
Topaz	5	98	109	102	93	L	M	G	MR	MR
WestLin 60	5	95	95	94	88	M	M	G	---	MR
WestLin 71	5	99	99	98	92	L	S	VG	MR	MR
WestLin 72	5	101	105	103	95	L	S	VG	MR	MR
Yellow Seed										
AAC Bright	3	98	91	95	---	L	M	G	MR	MR
CDC Dorado	3	91	93	92	---	M	M	G	MR	MR
VT50 (NuLin 50)	5	100	102	99	93	L	S	VG	---	MR

[1] Data from Regional and Co-op yield trials.
[2] Relative maturity: The relative maturity of the check, **CDC Bethune**, is L (on average 101 days from seeding to swathing ripeness).
[3] Seed size: S = Small, M = Medium, L = Large.
[4] Disease Resistance Scale: MS = Moderately Susceptible, MR = Moderately Resistant, R = Resistant.

ADDITIONAL INFORMATION

Flax was last tested in 2020. All cultivar descriptions other than yield are based on data from the Linseed Co-operative Tests. All cultivars are immune to rust. Frozen flax should be analyzed by a feed-testing laboratory to determine if it is free of prussic acid before using it as a livestock feed.

Varieties of all crop types included in the tables of the *Varieties of Grain Crops* in the *SaskSeed Guide* are reflective of current varieties in the marketplace that have been tested in our trials. A comprehensive database of all registered varieties for each crop kind requiring variety registration can be found at *www.inspection.gc.ca.*

Camelina

Camelina, also known as false flax, is a short-season crucifer oilseed that can be grown on a wide range of soil types. It is well adapted to dryland conditions and does not tolerate excessive soil moisture. Camelina seed is fairly small (1.0 – 1.8 g/1000 seed) and requires shallow seeding. Reduced emergence may be expected when camelina is seeded deeper than a half inch. Camelina plants are resistant to blackleg disease and flea beetles and possess good shatter resistance. Camelina may be straight-combined at full maturity or swathed when pods have turned color from green to yellow. Camelina is grown almost exclusively under contract; both camelina oil and meal are marketed for food, feed and industrial applications. Crop insurance is available for camelina crops grown in Saskatchewan. For more information on camelina, consult the Ministry of Agriculture publication, *Camelina*.

SES0787LS (tradename: **Cypress**) is a spring-type camelina cultivar that combines high seed yield, high seed oil content, resistance to downy mildew, improved shatter resistance as well as improved seed size (on average 30 per cent and up to 50 per cent larger than seed of **MIDAS™** camelina). Its natural height is medium to tall (on average 84 cm); it flowers after about 46 days and generally reaches maturity, depending on the weather conditions, 85 – 105 days after seeding. In trials (CV < 15 per cent) conducted from 2015 to 2020 on the Canadian Prairies, **SES0787LS** yielded on average 42 bu/ac. Expected yields in Saskatchewan are 35 – 40 bu/ac on fallow and 25 to 35 bu/ac on stubble.

Mustard

Main Characteristics of Varieties

Type and Variety	Yield[1]	Plant Height (cm)	Hydroxylbenzyl Glucosinolate (µmol/g seed)	Allyl Glucosinolate (mg/g seed)	Mucilage[2] (cS*ml/g seed)	Resistance to White Rust[3] 2a	Resistance to White Rust[3] 2v	Fixed Oil (% seed)	Protein (% Seed)	Seed Weight (g/1000)	Maturity (days)
Open-Pollinated Yellow (% Andante)											
Andante[4]	100	102	145	n/a	55.7	R	R	28.4	35.1	6.0	93
AAC Adagio[5]	102	+1	-6	n/a	41.1	R	R	+1.7	-2.1	-0.9	+1
AAC Yellow 80[6]	109	+26	-4	n/a	23.2	R	R	+1.4	-0.8	-0.5	-1
AC Pennant[4]	99	-6	+3	n/a	-11	R	R	+1.1	-0.8	-0.3	-1
Open-Pollinated Brown (% Centennial Brown)											
Centennial Brown[4]	100	117	n/a	10.4	n/a	S	S	36.3	30.1	3.1	92
Amigo[7]	93	-8	n/a	+3.5	n/a	R	S	-2.1	+0.6	-0.4	+6
AAC Brown 120[8]	112	+8	n/a	+1.6	n/a	R	R	+1	-0.3	+0.6	+2
Hybrid Brown (% Centennial Brown)											
AAC Brown18[9]	119	+4	n/a	-0.5	n/a	R	S	+2.1	-1.5	-0.1	+1
Open-Pollinated Oriental (% Cutlass)											
Cutlass[4]	100	115	n/a	11.6	n/a	R	S	41.0	29.1	2.8	91
Forge[4]	97	+10	n/a	+0.6	n/a	S	S	-2.1	+0.5	-0.2	+1
AAC Oriental 200[8]	106	+9	n/a	+0.1	n/a	R	S	-4.0	+0.9	-0.1	+1
AC Vulcan[4]	98	+1	n/a	+0.8	n/a	R	S	-0.4	+0.4	+0.1	0

[1] Yield data not collected by area.
[2] Mucilage in yellow mustard is a measurement of viscosity of aqueous extracts from seed.
[3] Varieties are rated S (Susceptible) or R (Resistant) to White Rust strains.
[4] Data from 1999-2012 Co-operative Mustard Test. Yield per cent of check: 124 station years for yellow mustard and 117 station years for brown and oriental mustard.
[5] Data from 2009-2012 Co-operative Mustard Test (29 station years).
[6] Data from 2019 Co-operative Mustard Test (11 station years).
[7] Data from 2008-2010 Co-operative Mustard Test (21 station years).
[8] Data from 2016-2018 Co-operative Mustard Test (22 station years).
[9] Data from 2017-2018 Co-operative Mustard Test (14 station years).

ADDITIONAL INFORMATION

Three types of mustard are grown in western Canada: yellow (*Sinapis alba*) and brown and oriental (*Brassica juncea*). Mustard is typically grown under contract, where the contractor specifies the variety to be grown to meet industry specifications for product quality. All mustard varieties have good resistance to blackleg disease and mature, on average, in 91 to 98 days.

A unique feature of yellow mustard is high mucilage content. Mucilage is valued by the mustard industry as a stabilizer in prepared food products.

Brown mustard is grown primarily for the Dijon mustard market. **AAC Brown 120** and **AAC Brown 18** were registered in September 2017 and August 2018, respectively. **AAC Brown 120** is not available commercially. **AAC Brown 18** is a hybrid variety. Growers are required to buy new seed for the hybrid variety **AAC Brown 18** every year.

Canola (Small-Scale Straight Cut Trials)

Main Characteristics of Varieties

Variety[1] (*B. napus*)	Distributor	Overall Average[1] (16 locations)				Long Season Zone[1] (5 locations)				Mid Season Zone[1] (8 locations)				Short Season Zone[1] (3 locations)				Disease Toler-ance[3]
		Yld.	Mat. (days)	Ldg.[2] (1-5)	Ht. (cm)	Yld.	Mat. (days)	Ldg.[2] (1-5)	Ht. (cm)	Yld.	Mat. (days)	Ldg.[2] (1-5)	Ht. (cm)	Yld.	Mat. (days)	Ldg.[2] (1-5)	Ht. (cm)	
Liberty Link																		
B3010M	Brevant	100	93	1.9	117	94	91	1.3	119	107	92	2.1	117	100	93	2.3	117	BL/CR
DKLL 82 SC	DEKALB	101	93	2.2	109	103	92	1.7	112	106	92	2.2	109	84	99	2.9	104	BL/CR
L233P	BASF - InVigor	110	91	2.0	112	112	90	1.6	112	111	90	2.2	112	104	98	2.4	117	BL/CR
L234PC	BASF - InVigor	102	92	2.1	112	101	90	1.8	112	106	91	2.2	112	94	99	2.3	117	BL/CR
L255PC	BASF - InVigor	110	95	1.5	117	107	93	1.2	117	114	94	1.7	114	106	101	1.7	122	BL/CR
L345PC	BASF - InVigor	110	92	2.3	119	113	91	1.7	119	106	98	2.4	109	111	93	3.3	117	BL/CR
LSD(%)[4]		*10*				*8*				*12*				*8*				
Roundup Ready																		
45CM39[5]	Pioneer Hi-Bred	100	94	2.3	114	100	93	1.9	114	100	93	2.4	112	100	101	2.4	114	BL/CR
6090 RR	BrettYoung	89	95	2.1	127	85	94	1.5	130	88	94	2.3	125	101	100	2.7	119	BL/CR
75-65 RR	DEKALB	99	92	2.5	112	96	90	2.1	112	101	91	2.6	114	99	98	2.8	112	BL
LSD(%)[4]		*11*				*9*				*13*				*7*				
TruFlex																		
CS2600 CR-T	CANTERRA SEEDS	102	92	3.0	112	98	90	2.6	112	104	92	3.0	112	102	99	3.8	109	BL/CR
DKTF 96 SC	DEKALB	104	93	1.7	112	101	93	1.3	114	109	92	1.9	112	97	99	2.0	109	BL
DKTFLL 21 SC[6]	DEKALB	105	92	2.5	109	103	92	2.0	109	109	91	2.6	109	96	99	2.8	109	BL
PV 760 TM	Proven Seeds	104	92	2.1	114	99	90	1.8	114	108	91	2.3	114	100	99	2.3	117	BL
PV 761 TM	Proven Seeds	104	94	1.9	125	103	93	1.4	122	106	93	2.1	125	100	100	2.0	122	BL
LSD (%)[4]		*11*				*9*				*13*				*7*				

[1] From Canola Performance Trials grown across Prairie provinces, 2020.
[2] Lodging is measured on the degree of lean to the lower stem of the plant on a 1 to 5 scale (1=erect, 5=flat).
[3] Indicates genetic disease resistance with an "R" or resistant rating to BL = Blackleg, CR = Clubroot and improved tolerance to sclerotinia "S", as based on variety descriptions submitted to CFIA.
[4] LSD = least significant difference (five per cent level) within herbicide system.
[5] Average yield (bu/ac) of the check **45CM39** for long season zone, mid-season zone and short-season zone in 2020 was 55, 54 and 65, respectively.
[6] Indicates varieties with glyphosate and glufosinate herbicide tolerance. Visit www.canolaperformancetrials.ca for more details.

CANOLA ADDITIONAL INFORMATION

Variety descriptions summarize the performance of varieties tested in the 2019 Canola Performance Trials. Data was provided by the Canola Performance Trials Committee. For more information visit, *www.canolaperformancetrials.ca*.

All varieties, except one, in the preceding tables have a resistant (R) rating for Blackleg. Lesions and yield loss can still occur, based on the level of inoculum and blackleg pathotype in the field, in combination with evironmental conditions conducive for disease development.

Clubroot is a long-lived disease in the soil that can impact canola performance. Using clubroot-resistant varietes early, before clubroot symptoms are seen or the pathogens are detected, is highly recommended as a risk mitigation tool. Soil testing is necessary to know for sure if fields have the clubroot pathogen present, which can give an early indication of risk prior to finding galls in the fields.

Least Significant Difference

When comparing average zone yields for varieties in the small plot data, the least significant difference is about 7 to 20 per cent. If variety A yielded 95 per cent of the check and variety B yielded 101 per cent of the check, they would be considered statistically the same. This is based on a confidence level that significant differences would occur by chance less than five per cent of the time. In the small plot design used, varieties were grouped by herbicide system, which means that the least significant difference shown strictly applies to comparisons between varieties of the same herbicide system.

More importantly, comparisons between varieties within the same herbicide system reveal only genetic differences, whereas variety comparisons between herbicide systems compare the net effect of both genetic and herbicide effects (weed control and crop tolerance).

Where can you get the Canola Performance Trial results?

Results are available through an online interactive tool at *www.canolaperformancetrials.ca*. The interactive tool allows growers to explore many agronomic factors and to search for trial data in specific geographic areas near their farming operations. Details on management, operations and environmental data for each individual site are reported online. The online tool has an economic calculator that includes the costs associated with growing the selected variety to assist growers in determining potential profitability. Data is also available in booklet form and will be distributed through various publications or can be obtained from a local agri-retailer.

Canola (Small-Scale Trials)

Main Characteristics of Varieties

Variety[1] (*B. napus*)	Distributor	Overall Average[1] (16 locations) Yld.	Mat. (days)	Ldg.[2] (1-5)	Ht. (cm)	Long Season Zone[1] (5 locations) Yld.	Mat. (days)	Ldg.[2] (1-5)	Ht. (cm)	Mid Season Zone[1] (8 locations) Yld.	Mat. (days)	Ldg.[2] (1-5)	Ht. (cm)	Short Season Zone[1] (3 locations) Yld.	Mat. (days)	Ldg.[2] (1-5)	Ht. (cm)	Disease Tolerance[3]
Liberty Link																		
L234PC	BASF - InVigor	100	92	2.3	112	106	89	1.9	112	99	92	2.6	112	95	99	2.2	117	BL/CR
L241C	BASF - InVigor	99	93	1.6	117	106	91	1.3	114	96	92	1.8	117	97	99	1.7	117	BL/CR
L352C	BASF - InVigor	108	96	2.3	119	117	94	1.8	122	103	95	2.4	122	104	101	2.9	117	BL/CR
P501L	Pioneer Hi-Bred	105	92	2.2	117	114	90	1.8	117	102	91	2.5	117	98	97	2.1	117	BL/CR
PV 680 LC	Proven Seeds	102	95	1.6	125	114	94	1.2	125	96	95	1.9	127	97	100	1.8	122	BL/CR
PV 681 LC	Proven Seeds	101	91	2.3	117	108	90	2.0	114	100	90	2.6	117	95	98	2.3	117	BL/CR
LSD(%)[4]		*10*				*12*				*11*				*7*				
Roundup Ready																		
1028RR[5]	Brevant	98	95	2.2	117	102	92	1.8	112	96	94	2.4	119	98	99	2.2	135	BL/CR
45CM39[6]	Pioneer Hi-Bred	100	95	2.5	117	100	92	2.3	117	100	94	2.6	117	100	101	2.7	114	BL/CR
45CS40	Pioneer Hi-Bred	102	93	2.1	127	109	91	1.8	122	99	92	2.2	132	98	98	2.1	130	BL/CR/S
45H37	Pioneer Hi-Bred	94	91	2.6	122	103	90	2.1	119	91	91	2.8	122	87	96	2.7	119	BL/CR
6076 CR	BrettYoung	95	96	2.3	125	96	94	1.8	122	93	95	2.6	125	99	102	2.5	125	BL/CR
CP20R3C	WinField United	97	97	1.8	127	102	96	1.6	125	92	97	2.0	130	102	103	1.8	130	BL/CR
CS2300	CANTERRA SEEDS	100	96	2.2	127	104	95	1.9	127	97	95	2.4	127	102	102	2.4	127	BL
D3155C	Brevant	95	94	2.6	127	101	92	2.0	119	91	93	2.8	130	98	99	3.1	135	BL/CR
LSD(%)[4]		*10*				*12*				*10*				*8*				
TruFlex																		
BY 6204TF	BrettYoung	101	94	2.2	122	107	93	1.8	117	99	93	2.3	122	98	100	2.3	125	BL/CR
DKTF 98 CR	DEKALB	101	93	2.6	112	102	90	2.1	107	99	92	2.8	117	103	100	3.1	109	BL/CR
LSD (%)[4]		*10*				*12*				*10*				*8*				
Clearfield																		
BY 5105CL	BrettYoung	---	---	---	---	94	89	2.1	125	97	89	2.4	122	---	---	---	---	BL/CR
P502CL	Pioneer Hi-Bred	---	---	---	---	102	87	2.2	119	96	87	2.7	117	---	---	---	---	BL
LSD (%)[4]						*20*				*19*								

[1] From Canola Performance Trials grown across Prairie provinces, 2020.
[2] Lodging is measured on the degree of lean to the lower stem of the plant on a 1 to 5 scale (1=erect, 5=flat).
[3] Indicates genetic disease resistance with an “R” or resistant rating to BL = Blackleg, CR = Clubroot and improved tolerance to sclerotinia “S”, as based on variety descriptions submitted to CFIA.
[4] LSD = least significant difference (five per cent level) within herbicide system.
[5] Indicates varieites with specialty oil profiles and premiums associate with pricing. Visit www.canolaperformancetrials.ca for more details.
[6] Average yield (bu/ac) of the check **45CM39** for long season zone, mid season zone and short season zone in 2020 was 58, 57 and 59, respectively.

Sunflower

Main Characteristics of Hybrids

Hybrid	Herbicide Tolerance	Years Tested	Yield (% 63A21)	Average Maturity (days)	Harvest Moisture (%)
Oilseed EM (Early Maturing)					
63A21 §		9	100	109	18.6
Honeycomb NS[1]		5	114	105	13.6
AC Sierra		9	67	105	15.7
Oilseed (Late Maturing)					
Cobalt II	Clearfield ®	3	76	115	30.4
Talon	ExpressSun ®	2	92	113	30.1
8N 270 §	Clearfield ®	8	93	114	24.0

Varieties not appearing in this table will require more than 125 days to reach maturity

ADDITIONAL INFORMATION

Sunflower requires 105 to 125 days to mature, depending on the cultivar and the growing season. Oilseed sunflower has been grown in the Dark Brown and Black Soil Zones in southeastern Saskatchewan.

Harvest moisture is a good indication of how quickly these hybrids will be ready to combine in the field. The EM varieties are adapted to production in most areas of Saskatchewan. **AC Sierra** is open pollinated and not a hybrid.

The Saskatchewan Sunflower Committee has been conducting trials in Saskatchewan for the purpose of registration and demonstration since 1983. Sunflowers no longer require three years of yield testing to be sold in Saskatchewan. Saskatchewan Sunflower Committee will publish results from each year. For the complete data set, please email or call Sherri Roberts with Ministry of Agriculture at sherri.roberts@gov.sk.ca or 306-848-2856.

Understanding Clubroot Resistance and the Classification System

By Sask Canola

Growers farming in areas where clubroot has been detected, or if they are concerned about clubroot, the following management tips are recommended:

- Minimize soil movement by restricting the entry of vehicles that have not been sanitized, minimizing tillage and creating a separate exit as far as possible from the field entrance.
- Post multiple "no-trespassing" signs.
- Extend crop rotations to a minimum three to four year rotation, including at least a two-year break between susceptible crops, even when resistant varieties are utilized.
- Grow clubroot-resistant varieties early before clubroot symptoms are seen, or the pathogen is detected.
- Control volunteers and canola-related weeds throughout the rotation.
- Scout canola crops by examining the roots for the presence of swollen root tissue (galls). Focus on field entrances, low areas and suspicious patches.
- Consider DNA-based soil testing to help detect the pathogen, even when there are no visible symptoms or in fields that have other crops (wheat, barley, etc).

Clubroot-resistant canola varieties are key tools used to delay clubroot establishment and manage clubroot disease on the farm. However, to prevent rapid genetic shifts in clubroot populations and subsequent loss of effective resistance in clubroot-resistant varieties, this valuable resource must be used judiciously in an integrated management approach. An integrated approach includes practicing a diverse crop rotation — ideally three years between susceptible crops in infested areas — while effectively managing weeds, sanitizing equipment and minimizing soil movement. This approach allows for reduction of soil inoculum levels and minimizes the risk of selecting for clubroot pathotypes that can overcome current resistant (R) varieties.

Clubroot resistance in a variety should be substantiated through standard testing procedures outlined in the Western Canada Canola/Rapeseed Recommending Committee (WCC/RRC) guidelines and protocols. Varieties are compared to the susceptible check variety for clubroot infection and are assigned resistant (R), intermediate (I) or susceptible (S) ratings.

Resistant (R) ratings indicate less than 30 per cent infection compared to susceptible checks in disease tests. It is important to remember that **resistant (R) varieties are not immune**, but highly restrict the development of clubroot symptoms in fields with low to moderate disease pressure from resting spores in the soil. Under heavy pressure in severely infested fields, a resistant (R) variety can show significant root galling, but may develop fewer and smaller galls than a susceptible variety. Under these heavy pressure situations and frequent use of clubroot-resistant varieties, clubroot populations rapidly evolve to overcome the genetic resistance. **To delay this shift in clubroot strains and loss of clubroot-resistant variety efficacy, clubroot-resistant varieties should not be grown in short rotations.**

Intermediate (I) ratings indicate between 30 and 50 per cent infection compared to susceptible checks in disease tests. This rating will mainly be used for adding rating labels to the base resistant (R) label in multiple resistance gene varieties to specify moderate resistance against certain new strains. Varieties with additional intermediate (I) labels can provide marginally better disease protection on fields with presence of new corresponding strains, but should not be grown in fields where resistance to predominant strains has been widely defeated.

If there is no clubroot label on a variety, assume it is susceptible to clubroot. An extreme buildup of spores can occur very quickly when susceptible varieties are grown in short rotation on slightly infested fields. Susceptible varieties should not be grown in clubroot-infected fields, or those at higher risk of becoming infected.

A base (R) resistance label requires that the variety is resistant to the predominant clubroot strains or pathotypes in Western Canada. Additional ratings can be appended to the base (R) label to describe resistance to specific uncommon or new pathotypes. To date, no clubroot-resistant varieties, including new ones with multiple resistance genes, are resistant to all of the clubroot pathotypes detected in Western Canada.

Careful scouting in all host crops, including (R) rated canola crops, is extremely important to help detect early infestations. Waiting to use (R) varieties until significant infestations have developed will result in high soil spore loads and increase the probability for pathogen shifts, which can rapidly defeat variety resistance.

Visit *www.clubroot.ca* to learn more.

FORAGE CROPS

Annual Forages

Main Characteristics of Varieties

Variety[1,2]	Site Years	Days to Heading	Lodging Score (1-9)	Forage DM Yield (kg/ha)	Nutritional Data					
					CP (%)	ADF (%)	NDF (%)	TDN (%)	Ca (%)	P (%)
Barley										
CDC Austenson	8	59	1	8917	8.77	29.2	48.5	67.3	0.20	0.19
AB Advantage ✪	8	58	2	9100	8.35	28.1	48.3	66.3	0.24	0.20
AB Cattelac ✪	8	57	1	8731	8.62	28.0	48.2	68.2	0.24	0.19
CDC Copeland	8	60	1	8823	8.25	30.6	48.7	66.7	0.23	0.19
Statistically Significant P=0.05		Yes		No	No	No	Yes	Yes	Yes	No
Oat										
CDC Arborg	8	56	1	9536	9.17	33.2	52.4	63.1	0.19	0.20
CDC Haymaker	8	59	2	9875	8.96	35.8	57.6	60.4	0.20	0.18
CDC Baler	8	62	1	9648	8.63	35.9	58.4	60.3	0.21	0.18
Statistically Significant P=0.05		Yes		No	No	Yes	Yes	Yes	No	Yes
Wheat										
AAC Awesome VB	8	58	1	8652	8.18	30.8	50.9	65.1	0.10	0.17
AAC Chiffon VB	8	58	1	8655	8.80	29.9	49.1	66.3	0.10	0.18
Statistically Significant P=0.05		Yes		No	No	No	Yes	No	No	No
Triticale										
AB Stampeder ✪	8	54	1	9600	8.9	30.1	49.5	66.5	0.12	0.19

[1] CP= crude protein, ADF= acid detergent fiber, NDF=neutral detergent fiber, TDN=total digestible nutrient. The values are based on dry matter basis.

[2] Early spring seeding at recommended rates for cereal crops. Barley harvested at soft dough stage, oats harvested at late milk stage, wheat harvested at early dough stage and triticale harvested at soft dough stage.

Perennial Forages

Variety trials for select forage perennials varieties were initiated in 2017. The project compared new varieties of economically important grass and legume species against check varieties. The goal was to provide reliable and independent regional performance information for Saskatchewan producers, seed companies and plant breeders. Plots were seeded at Swift Current (Brown Soil Zone), Saskatoon (Dark Brown Soil Zone), Melfort (Black Soil Zone) and Scott (Dark Brown Soil Zone) in the spring of 2017 and data was collected from 2018 to 2020. 48 forage entries of grasses and legumes (including check varieties) were assessed for hay yield and nutritive value. A full report is available within the resources section of the Saskatchewan Forage Council website.

Breeding Institutions and Seed Distributors of Varieties Listed in this Publication

WHEAT

Canada Western Red Spring

Crop Kind, Class & Variety	Breeding Institution	Distributor
CDC Adamant VB	U of S - CDC	FP Genetics
AAC Alida VB	AAFC (Swift Current)	SeCan Members
Bolles	U of Minnesota	Seed Depot
CDC Bradwell §	U of S - CDC	SeCan Members
AAC Brandon	AAFC (Swift Current)	SeCan Members
SY Brawn VB	Syngenta Seeds Canada Inc.	Proven Seed/Nutrien Ag Solutions
AAC Broadacres VB	AAFC (Swift Current)	Proven Seed/Nutrien Ag Solutions
AAC Cameron VB	AAFC (Brandon)	CANTERRA SEEDS
Carberry	AAFC (Swift Current)	SeCan Members
Cardale	AAFC (Winnipeg)	Seed Depot
SY Cast	Syngenta Seeds Canada Inc.	Proven Seed/Nutrien Ag Solutions
SY Chert VB	Syngenta Seeds Canada Inc.	Syngenta Canada
AAC Connery	AAFC (Swift Current)	CANTERRA SEEDS
SY Crossite	Syngenta Seeds Canada Inc.	Syngenta Canada
Daybreak **VUA**	LCRC - Limagrain Canada	CANTERRA SEEDS
AAC Elie	AAFC (Swift Current)	Alliance Seed
Ellerslie	U of Alberta	SeCan Members
SY Gabbro	Syngenta Seeds Canada Inc.	Richardson Intl
AAC Hodge VB	AAFC (Brandon)	FP Genetics
CDC Hughes VB	U of S - CDC	Proven Seed/Nutrien Ag Solutions
Jake	U of Alberta	CANTERRA SEEDS
AAC Jatharia VB	AAFC (Brandon)	SeCan Members
CDC Landmark VB	U of S - CDC	FP Genetics
AAC LeRoy VB	AAFC (Brandon)	Alliance Seed
AAC Magnet	AAFC (Brandon)	FP Genetics
SY Obsidian	Syngenta Seeds Canada Inc.	Richardson Intl
CDC Ortona	U of S - CDC	Proven Seed/Nutrien Ag Solutions
Parata	U of Alberta	SeCan Members
CDC Plentiful	U of S - CDC	FP Genetics
AAC Redberry	AAFC (Swift Current)	Alliance Seed
Rednet	U of Alberta	SeedNet Inc.
AAC Redstar	AAFC (Brandon)	SeCan Members
AAC Russell VB	AAFC (Swift Current)	FP Genetics / Proven Seed
Shaw VB	AAFC (Winnipeg)	SeCan Members
Sheba	U of Alberta	Penwest Seeds
CDC SKRush	U of S - CDC	SeCan Members
SY Sovite	Syngenta Seeds Canada Inc.	Richardson Intl
CDC Stanley	U of S - CDC	Proven Seed/Nutrien Ag Solutions
AAC Starbuck VB	AAFC (Swift Current)	SeCan Members
Stettler	AAFC (Swift Current)	SeCan Members
AAC Tisdale	AAFC (Swift Current)	SeCan Members
CDC Titanium VB	U of S - CDC	Proven Seed/Nutrien Ag Solutions
SY Torach	Syngenta Seeds Canada Inc.	Alliance Seed
Tracker	U of Alberta	CANTERRA SEEDS
CDC Utmost VB	U of S - CDC	FP Genetics
AAC Viewfield	AAFC (Swift Current)	FP Genetics
AAC Warman VB	AAFC (Brandon)	SeCan Members
Waskada §	AAFC (Winnipeg)	SeCan Members
AAC Wheatland VB	AAFC (Swift Current)	SeCan Members

Canada Western Special Purpose

Crop Kind, Class & Variety	Breeding Institution	Distributor
Alderon	KWS-UK	SeCan Members
AAC Awesome VB	AAFC (Lethbridge)	SeCan Members
CDC Kinley §	U of S - CDC	Public Release U of S - CDC
Pasteur	Wiersum Plant Breeding	SeCan Members
Sparrow VB	KWS-UK	SeCan Members
WPB Whistler	Wiersum Plant Breeding	SeCan Members

Canada Western Amber Durum

Crop Kind, Class & Variety	Breeding Institution	Distributor
CDC Alloy	U of S - CDC	FP Genetics
Brigade	AAFC (Swift Current)	Proven Seed/Nutrien Ag Solutions
AAC Cabri §	AAFC (Swift Current)	SeCan Members
CDC Carbide VB	U of S - CDC	Proven Seed/Nutrien Ag Solutions
AAC Congress	AAFC (Swift Current)	CANTERRA SEEDS
CDC Covert	U of S - CDC	Proven Seed/Nutrien Ag Solutions
CDC Credence	U of S - CDC	CANTERRA SEEDS
CDC Defy	U of S - CDC	SeCan Members
AAC Donlow	AAFC (Swift Current)	CANTERRA SEEDS
CDC Dynamic	U of S - CDC	Proven Seed/Nutrien Ag Solutions
CDC Flare	U of S - CDC	Proven Seed/Nutrien Ag Solutions
CDC Fortitude	U of S - CDC	Proven Seed/Nutrien Ag Solutions
AAC GoldNet	AAFC (Swift Current)	SeedNet Inc.
AAC Grainland	AAFC (Swift Current)	SeCan Members
AC Navigator	AAFC (Swift Current)	Proven Seed/Nutrien Ag Solutions
CDC Precision	U of S - CDC	Alliance Seed
AAC Spitfire	AAFC (Swift Current)	SeCan Members
Strongfield	AAFC (Swift Current)	SeCan Members
AAC Stronghold	AAFC (Swift Current)	SeCan Members
AAC Succeed VB	AAFC (Swift Current)	FP Genetics
Transcend	AAFC (Swift Current)	FP Genetics
CDC Verona	U of S - CDC	Alliance Seed

WHEAT (CONT'D)

CWRS moving to CNHR - August 1, 2021

Crop Kind, Class & Variety	Breeding Institution	Distributor
AAC Redwater §	AAFC (Winnipeg)	SeCan Members

Canada Prairie Spring Red

Crop Kind, Class & Variety	Breeding Institution	Distributor
Accelerate **VUA**	LCRC - Limagrain Canada	CANTERRA SEEDS
AAC Castle VB	AAFC (Lethbridge)	CANTERRA SEEDS
AAC Crossfield	AAFC (Winnipeg)	CANTERRA SEEDS
AAC Entice	AAFC (Winnipeg)	Proven Seed/Nutrien Ag Solutions
AAC Foray VB	AAFC (Winnipeg)	SeCan Members
AAC Goodwin §	AAFC (Swift Current)	SeCan Members
AAC Penhold	AAFC (Swift Current)	SeCan Members
CDC Reign	U of S - CDC	FP Genetics
SY Rorke	Syngenta Seeds Canada Inc.	Proven Seed/Nutrien Ag Solutions
SY Rowyn	Syngenta Seeds Canada Inc.	Alliance Seed
CDC Terrain §	U of S - CDC	FP Genetics

Canada Northern Hard Red

Crop Kind, Class & Variety	Breeding Institution	Distributor
Faller §	NDSU	Seed Depot
Prosper	NDSU	Seed Depot

Canada Western Hard White Spring

Crop Kind, Class & Variety	Breeding Institution	Distributor
AAC Cirrus	AAFC (Swift Current)	FP Genetics
AAC Whitefox §	AAFC (Winnipeg)	SeCan Members

Canada Western Soft White Spring

Crop Kind, Class & Variety	Breeding Institution	Distributor
AC Andrew	AAFC (Lethbridge)	SeCan Members
AAC Chiffon VB	AAFC (Lethbridge)	SeedNet Inc.
AAC Paramount VB	AAFC (Lethbridge)	SeCan Members
Sadash VB	AAFC (Lethbridge)	SeCan Members

WINTER WHEAT

Canada Western Red Winter

Crop Kind, Class & Variety	Breeding Institution	Distributor
CDC Buteo	U of S - CDC	SeCan Members
CDC Chase	U of S - CDC	CANTERRA SEEDS
AAC Elevate	AAFC (Lethbridge)	SeCan Members
Emerson	AAFC (Lethbridge)	CANTERRA SEEDS
AAC Gateway	AAFC (Lethbridge)	Seed Depot
AAC Goldrush	AAFC (Lethbridge)	FP Genetics
Moats	U of S - CDC	SeCan Members
AAC Network	AAFC (Lethbridge)	SeedNet Inc.
Radiant	AAFC (Lethbridge)	CANTERRA SEEDS
AAC Wildfire	AAFC (Lethbridge)	SeCan Members

Canada Western Experimental

Crop Kind, Class & Variety	Breeding Institution	Distributor
AAC Icefield	AAFC (Lethbridge)	FP Genetics

Canada Western Special Purpose

Crop Kind, Class & Variety	Breeding Institution	Distributor
CDC Falcon	U of S - CDC	SeCan Members
Pintail	FCDC (Lacombe)	Mastin Seeds

TRITICALE

Spring Habit

Crop Kind, Class & Variety	Breeding Institution	Distributor
Brevis	AAFC (Swift Current)	Wagon Wheel Seed Corp
Bunker	FCDC (Lacombe)	FP Genetics
AAC Delight	AAFC (Lethbridge)	Fabian Seed Farms
Pronghorn	FCDC (Lacombe)	Progressive Seeds
AB Stampeder	FCDC (Lacombe)	Solick Seeds
Sunray	AAFC (Lethbridge)	SeedNet Inc.
Taza	FCDC (Lacombe)	Solick Seeds
Tyndal	FCDC (Lacombe)	SeCan Members
AC Ultima	AAFC (Swift Current)	FP Genetics

Winter Habit

Crop Kind, Class & Variety	Breeding Institution	Distributor
Luoma	FCDC (Lacombe)	Corns Brothers Farms
Metzger	FCDC (Lacombe)	Haney Farm Ltd.
Pika	FCDC (Lacombe)	Progressive Seeds

Crop Kind, Class & Variety	Breeding Institution	Distributor

BARLEY

Malting Two-Row

Bentley	FCDC (Lacombe)	CANTERRA SEEDS
CDC Bow	U of S - CDC	SeCan Members
AB BrewNet	FCDC (Lacombe)	SeedNet Inc.
CDC Churchill	U of S - CDC	SeCan Members
AAC Connect	AAFC (Brandon)	CANTERRA SEEDS
CDC Copeland	U of S - CDC	SeCan Members
CDC Copper	U of S - CDC	FP Genetics
CDC Fraser	U of S - CDC	SeCan Members
AAC Goldman	AAFC (Brandon)	EliteSeeds
CDC Goldstar	U of S - CDC/Sapporo/PML	CANTERRA SEEDS
Lowe	FCDC (Lacombe)	SeCan Members
AC Metcalfe	AAFC (Brandon)	SeCan Members
Newdale §	AAFC (Brandon)	FP Genetics
CDC PlatinumStar	U of S - CDC/Sapporo/PML	CANTERRA SEEDS
AAC Synergy	AAFC (Brandon)	Syngenta Canada

Malting Six-Row

Celebration §	Busch Ag Res. Inc.	CANTERRA SEEDS
Legacy	Busch Ag Res. Inc.	Proven Seed/FP Genetics

Hulled - Feed Two-Row

Altorado	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
CDC Austenson	U of S - CDC	SeCan Members
Brahma	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
Canmore	FCDC (Lacombe)	CANTERRA SEEDS
Claymore	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
CDC Coalition	U of S - CDC	CANTERRA SEEDS
CDC Cowboy	U of S - CDC	SeCan Members
CDC Maverick	U of S - CDC	SeCan Members
Oreana	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
Sirish	Syngenta Seeds Canada Inc.	Syngenta Canada
AB Wrangler	FCDC (Lacombe)	CANTERRA SEEDS

Hulled - Feed Six-Row

Amisk	FCDC (Lacombe)	SeCan Members
AC Rosser	AAFC (Brandon)	SeCan Members
AB Tofield	FCDC (Lacombe)	SeCan Members

Hulless - Food, Malting, Feed

CDC Ascent	U of S - CDC	SeCan Members
CDC Carter	U of S - CDC	SeCan Members
CDC Clear	U of S - CDC	SeCan Members
CDC Fibar	U of S - CDC	Tomtene Seeds
CDC Hilose	U of S - CDC	Tomtene Seeds
CDC Marlina	U of S - CDC	Tomtene Seeds
CDC McGwire	U of S - CDC	SeCan Members
CDC Rattan	U of S - CDC	Tomtene Seeds
Roseland	AAFC (Brandon)	Wayfinder Farms

Forage

AB Advantage	FCDC (Lacombe)	SeCan Members
AB Cattlelac	FCDC (Lacombe)	Alliance Seed
AC Ranger	AAFC (Brandon)	FP Genetics

CANARY SEED

CDC Bastia	U of S - CDC	Public release U of S - CDC
CDC Calvi	U of S - CDC	CANTERRA SEEDS
Cantate	J. Joordans Zaadhandel BV	Hansen Seeds
CDC Cibo	U of S - CDC	CANTERRA SEEDS
Keet	U of Minnesota; U of S - CDC	Public release U of S - CDC
CDC Lumio	U of S - CDC	CANTERRA SEEDS

RYE

KWS Bono	KWS Lochow GMBH	FP Genetics
Brasetto	KWS Lochow GMBH	FP Genetics
KWS Daniello	KWS Lochow GMBH	SeedNet Inc.
Danko	Danko Plant Breeders Ltd	FP Genetics
KWS Gatano	KWS Lochow GMBH	FP Genetics
Hazlet	AAFC (Swift Current)	SeCan Members
Prima	AAFC (Swift Current)	SeCan Members
KWS Propower	KWS Lochow GMBH	SeedNet Inc.
KWS Serafino	KWS Lochow GMBH	SeedNet Inc.
KWS Trebiano	KWS Lochow GMBH	FP Genetics

CAMELINA

SES0787LS (Cypress)	Smart Earth Camelina Corp.	Smart Earth Camelina Corp.

SUNFLOWER

Cobalt II	Nuseed Americas	Nuseed Americas
Honeycomb NS	USDA	---
AC Sierra	AAFC (Saskatoon)	AAFC (Indian Head)
Talon	Nuseed Americas	Nuseed Americas
63A21	Pioneer Hi-Bred	Pioneer Hi-Bred
8N 270	Mycogen Seeds	Dow Seeds

Crop Kind, Class & Variety	Breeding Institution	Distributor

OAT

Hulled

Akina	Lantmannen SW Seed	Elite Seeds
Alka	Lantmannen SW Seed	Elite Seeds
CDC Arborg	U of S - CDC	FP Genetics
CDC Boyer	U of S - CDC	SeCan Members
CS Camden	Lantmannen SW Seed	CANTERRA SEEDS
CDC Dancer	U of S - CDC	FP Genetics/Cargill
Derby	U of S - CDC	Mastin Seeds
AAC Douglas	AAFC (Brandon)	SeCan Members
CDC Endure	U of S - CDC	Alliance Seed
Kara	Lantmannen SW Seed	Elite Seeds
CDC Minstrel	U of S - CDC	FP Genetics
AC Morgan	AAFC (Lacombe)	SeCan Members
CDC Morrison	U of S - CDC	CANTERRA SEEDS
CDC Nasser §	U of S - CDC	T & L Seeds
CDC Norseman	U of S - CDC	SeCan Members
ORe3541M	Oat Advantage	SeCan Members
ORe3542M	Oat Advantage	SeCan Members
Pinnacle §	AAFC (Winnipeg)	FP Genetics
CDC Ruffian	U of S - CDC	FP Genetics
CDC Skye	U of S - CDC	SeCan Members
CDC SO-I	U of S - CDC	T&L Seeds
Souris	NDSU	Seed Depot
Summit	AAFC (Winnipeg)	FP Genetics
Triactor	Lantmannen SW Seed	CANTERRA SEEDS

Hulless

AC Gwen	AAFC (Winnipeg)	SeCan Members

Forage

CDC Baler	U of S - CDC	FP Genetics
CDC Haymaker	U of S - CDC	SeCan Members
Murphy	AAFC (Lacombe)	SeCan Members

FLAX

CDC Bethune	U of S - CDC	SeCan Members
AAC Bravo	AAFC (Morden)	FP Genetics
AAC Bright	AAFC (Morden)	SeCan Members
CDC Buryu	U of S - CDC	SeCan Members
CDC Dorado	U of S - CDC	SeedNet Inc.
CDC Glas	U of S - CDC	SeCan Members
AAC Marvelous	AAFC (Morden)	FP Genetics
CDC Neela	U of S - CDC	CANTERRA SEEDS
VT50	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions
CDC Plava	U of S - CDC	SeCan Members
Prairie Grande	AAFC (Morden)	SeCan Members
Prairie Sapphire	AAFC (Morden)	Alliance Seed
AAC Prairie Sunshine	AAFC (Morden)	SeCan Members
Prairie Thunder	AAFC (Morden)	CANTERRA SEEDS
CDC Rowland	U of S - CDC	SeCan Members
CDC Sanctuary	U of S - CDC	SeCan Members
CDC Sorrel	U of S - CDC	SeCan Members
Topaz	Nutrien Ag Solutions	Alliance Seed
WestLin 60	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions
WestLin 71	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions
WestLin 72	Nutrien Ag Solutions	Proven Seed/Nutrien Ag Solutions

MUSTARD

Brown

Amigo	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AAC Brown 18	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AAC Brown 120	AAFC (Saskatoon)	Mustard 21 Canada Inc.
Centennial Brown	AAFC (Saskatoon)	Mustard 21 Canada Inc.

Oriental

Cutlass	AAFC (Saskatoon)	Mustard 21 Canada Inc.
Forge	Colman's of Norwich	Proven Seed/Nutrien Ag Solutions
AAC Oriental 200	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AC Vulcan	AAFC (Saskatoon)	Mustard 21 Canada Inc.

Yellow

AAC Adagio	AAFC (Saskatoon)	Mustard 21 Canada Inc.
Andante	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AAC Yellow 80	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AC Pennant	AAFC (Saskatoon)	Mustard 21 Canada Inc.

SAFFLOWER

Saffire	AAFC (Lethbridge)	Jerry Kubic (AB)

SOYBEAN

see tables on page VR28 - VR29

QUINOA

NQRainbow		NorQuin
NQRed	NorQuin	NorQuin
NQ94PT	NorQuin	NorQuin

Crop Kind, Class & Variety	Breeding Institution	Distributor
LENTIL		
CDC Asterix	U of S - CDC	Sask. Pulse Growers
CDC Carmine (91)	U of S - CDC	Sask. Pulse Growers
CDC Coral (91)	U of S - CDC	Sask. Pulse Growers
CDC Dazil	U of S - CDC	Sask. Pulse Growers
CDC Greenland	U of S - CDC	Sask. Pulse Growers
CDC Greenstar	U of S - CDC	Sask. Pulse Growers
CDC Imerald ✪	U of S - CDC	AGT Foods Canada
CDC Imigreen	U of S - CDC	Sask. Pulse Growers
CDC Imp ✪	U of S - CDC	Sask. Pulse Growers
CDC Impala	U of S - CDC	Sask. Pulse Growers
CDC Impower	U of S - CDC	Sask. Pulse Growers
CDC Impress	U of S - CDC	Sask. Pulse Growers
CDC Impulse (91)	U of S - CDC	Sask. Pulse Growers
CDC Imvincible	U of S - CDC	Sask. Pulse Growers
CDC Jimini ✪	U of S - CDC	Sask. Pulse Growers
CDC Karim ✪	U of S - CDC	Sask. Pulse Growers
CDC Kermit (91)	U of S - CDC	Sask. Pulse Growers
CDC KR-2 (91)	U of S - CDC	Sask. Pulse Growers
CDC Lima (91)	U of S - CDC	Sask. Pulse Growers
CDC Marble	U of S - CDC	Sask. Pulse Growers
CDC Maxim	U of S - CDC	Sask. Pulse Growers
CDC Nimble ✪	U of S - CDC	Sask. Pulse Growers
CDC Peridot	U of S - CDC	Sask. Pulse Growers
CDC Proclaim (91)	U of S - CDC	Sask. Pulse Growers
CDC Pilgrim ✪	U of S - CDC	AGT Foods Canada
CDC QG-1	U of S - CDC	AGT Foods Canada
CDC QG-2	U of S - CDC	AGT Foods Canada
CDC QG-3 (91)	U of S - CDC	AGT Foods Canada
CDC QG-4 (91)	U of S - CDC	AGT Foods Canada
CDC Redcoat	U of S - CDC	Sask. Pulse Growers
CDC Redmoon (91)	U of S - CDC	Sask. Pulse Growers
CDC Roxy (91)	U of S - CDC	Sask. Pulse Growers
CDC SB-3 (91)	U of S - CDC	Simpson Seeds
CDC SB-4 (91)	U of S - CDC	Simpson Seeds
CDC Simmie ✪	U of S - CDC	Sask. Pulse Growers
CDC Sublime ✪	U of S - CDC	Sask. Pulse Growers
CDC Viceroy	U of S - CDC	Sask. Pulse Growers
CHICKPEA		
CDC Alma	U of S - CDC	Sask. Pulse Growers
Amit (B-90) (PBR)	ARO Volcani Centre	AGT Foods Canada
CDC Consul	U of S - CDC	Sask. Pulse Growers
CDC Cory	U of S - CDC	Sask. Pulse Growers
CDC Frontier	U of S - CDC	Sask. Pulse Growers
CDC Leader	U of S - CDC	Sask. Pulse Growers
CDC Luna	U of S - CDC	Sask. Pulse Growers
CDC Orion	U of S - CDC	Sask. Pulse Growers
CDC Palmer (91)	U of S - CDC	Sask. Pulse Growers
CANOLA		

see tables on page VR34 - VR35

Crop Kind, Class & Variety	Breeding Institution	Distributor
FIELD PEA		
Abarth (91)	Limagrain, Netherlands	FP Genetics
AAC Aberdeen ✪	AAFC (Lacombe)	Alliance Seed
CDC Acer	U of S - CDC	Sask. Pulse Growers
CDC Amarillo	U of S - CDC	Sask. Pulse Growers
AAC Ardill	AAFC	Wagon Wheel Seed Corp.
AAC Asher (91) §	AAFC	FP Genetics
CDC Athabasca (91)	U of S - CDC	Sask. Pulse Growers
CDC Blazer (91)	U of S - CDC	Sask. Pulse Growers
Blueman (91)	DL Seeds Inc.	SeedNet Inc.
CDC Canary (91)	U of S - CDC	Sask. Pulse Growers
AAC Carver (91)	AAFC	CANTERRA SEEDS
AAC Chrome (91)	AAFC (Lacombe)	FP Genetics
AAC Comfort (91)	AAFC (Lacombe)	CANTERRA SEEDS
CDC Dakota	U of S - CDC	Sask. Pulse Growers
DL Delicious ✪ VUA™	DL Seeds Inc.	FP Genetics
AAC Delhi (91)	AAFC	SeedNet Inc.
CDC Forest (91)	U of S - CDC	Sask. Pulse Growers
CDC Golden	U of S - CDC	Sask. Pulse Growers
DL Goldeye ✪ VUA™	DL Seeds Inc.	Riddell Seed Co.
CDC Greenwater	U of S - CDC	Sask. Pulse Growers
CDC Horizon	U of S - CDC	Sask. Pulse Growers
CDC Inca (91)	U of S - CDC	Sask. Pulse Growers
CDC Jasper (91)	U of S - CDC	Sask. Pulse Growers
AAC Lacombe (PBR)	AAFC	SeedNet Inc.
DL Lacross ✪	DL Seeds Inc.	SeedNet Inc.
CDC Lewochko (91)	U of S - CDC	Sask. Pulse Growers
CDC Limerick	U of S - CDC	Sask. Pulse Growers
AAC Liscard	AAFC	Wagon Wheel Seed Corp.
CDC Meadow	U of S - CDC	Sask. Pulse Growers
CDC Mosaic	U of S - CDC	Sask. Pulse Growers
AAC Profit ✪	AAFC	FP Genetics
CDC Raezer	U of S - CDC	Sask. Pulse Growers
Redbat 8 (91)	U of S - CDC	Sask. Pulse Growers
Redbat 88 (91)	U of S - CDC	Sask. Pulse Growers
CDC Saffron	U of S - CDC	Sask. Pulse Growers
CDC Spectrum (91)	U of S - CDC	Sask. Pulse Growers
CDC Spruce (91)	U of S - CDC	Sask. Pulse Growers
CDC Striker	U of S - CDC	Sask. Pulse Growers
DRY BEAN		
CDC Blackstrap (91)	U of S - CDC	Sask. Pulse Growers
Bolt	U of Guelph	Hensell District Co-op
Island	AAFC (Lethbridge)	Viterra Inc.
CDC Jet	U of S - CDC	Sask. Pulse Growers
Medicine Hat (PBR)	Seminis Vegetable Seeds	CANTERRA SEEDS
CDC Pintium §	U of S - CDC	Sask. Pulse Growers
Portage	AAFC (Morden)	CANTERRA SEEDS
CDC Ray (91)	U of S - CDC	Rudy Agro
AC Redbond	AAFC (Lethbridge)	Viterra Inc.
AAC Shock	AAFC / U of Guelph	Hensell District Co-op
CDC Sol §	U of S - CDC	U of S - CDC
OAC Spark	U of Guelph	U of Guelph
CDC Superjet	U of S - CDC	Sask. Pulse Growers
CDC WM - 2 (PBR)	U of S - CDC	Rudy Agro
CDC WM - 3 ✪	U of S - CDC	Rudy Agro
FABA BEAN		
Fabelle ✪	DL Seeds Inc.	SeedNet Inc.
FB9-4	U of S - CDC	Sask. Pulse Growers
Imposa	Limagrain Nederland	Cyre Seed Farms
DL Rico ✪	DL Seeds Inc.	Prairie Fava
Snowbird (PBR)	Limagrain Nederland	Lindholm Seeds
CDC Snowdrop	U of S - CDC	Sask. Pulse Growers
CDC SSNS-1	U of S - CDC	Meier Brothers
Tabasco (PBR)	DL Seeds Inc.	Riddell Seed Co.
Taboar (PBR)	Globe Seeds - Netherland	Terramax
DL Tesoro ✪ VUA™	DL Seeds Inc.	Riddell Seed Co.
Vertigo ✪	DL Seeds Inc.	SeedNet Inc.
186S-11 (91)	U of S - CDC	Sask. Pulse Growers
219-16 (91)	U of S - CDC	Sask. Pulse Growers
247-13 (91) §	U of S - CDC	Sask. Pulse Growers

Abbreviations Used in this List

AC	Agriculture Canada (Agriculture and Agri-Food Canada)
AAC	Agriculture Canada (Agriculture and Agri-Food Canada)
AAFC	Agriculture and Agri-Food Canada
CDC	Crop Development Centre
CPS	Crop Production Services
FCDC	Field Crop Development Centre
NDSU	North Dakota State University
OAC	Ontario Agricultural College
SY	Syngenta Seeds Canada Inc.
U	University
U of S	University of Saskatchewan
USDA	United States Department of Agriculture

The distributors listed in this table have distribution rights for the variety within Saskatchewan. Those distribution rights may be different outside of Saskatchewan and/or Western Canada.