Saskatchewan

Varieties of Grain Crops 2023

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Symbols and Abbreviations Used:

§ Variety may not be described in 2024
--- Insufficient test data to describe
na = Not applicable
Applied for PBR protection at time of printing (UPOV'91)
Plant Breeders' Rights (UPOV'78) at time of printing
Plant Breeders' Rights (UPOV'91) at time of printing
VUA Variety Use Agreement in effect

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

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

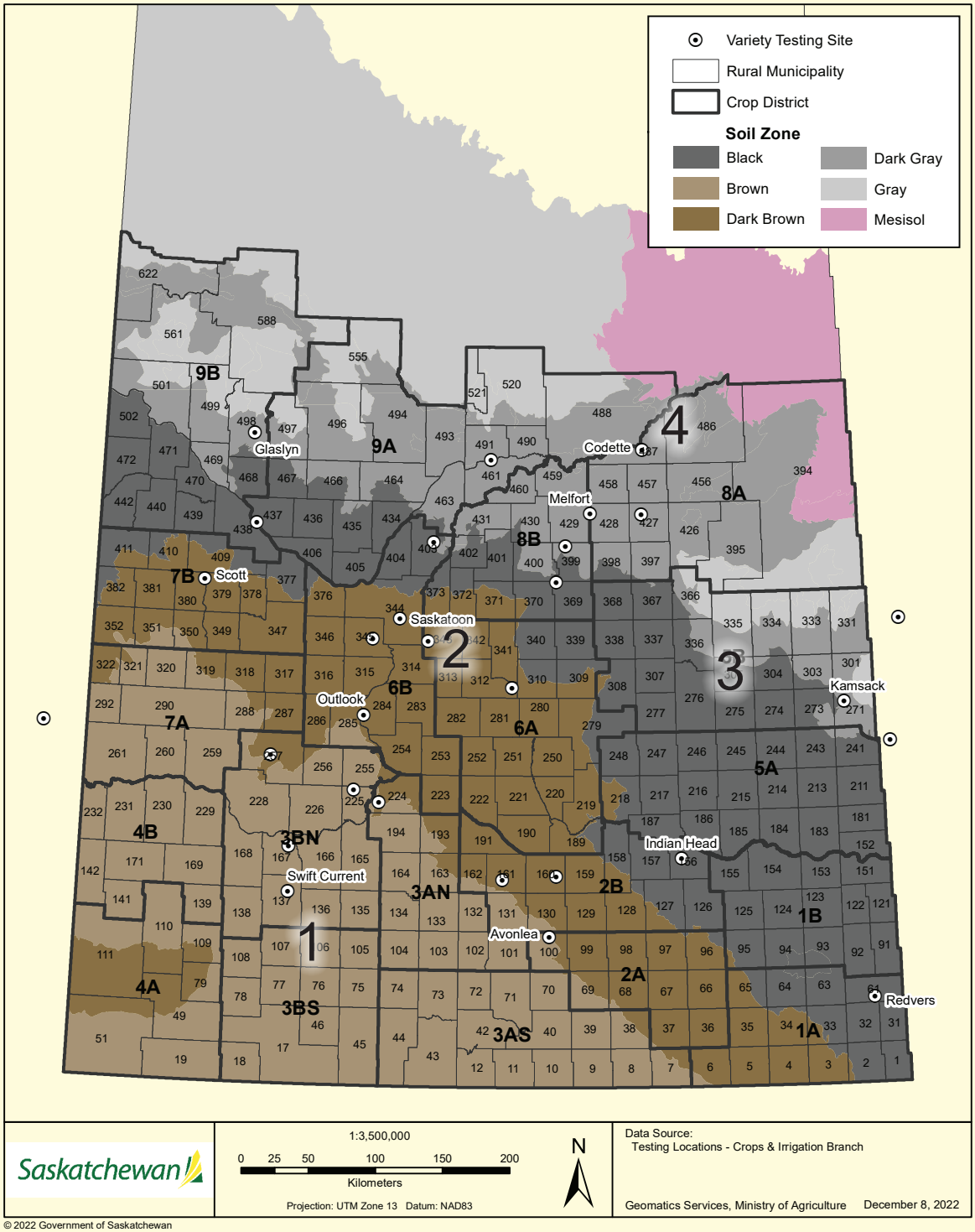
Disease Resistance: R = Resistant, MR = Moderately Resistant, I = Intermediate Resistance, MS = Moderately Susceptible, S = Susceptible

Accessing Public Release Varieties

Breeder seed of public release varieties is available to anyone (including producers and seed growers) for multiplication, increase and marketing. There are no royalties or seed marketing agency fees attached to use or sale of seed produced from breeder seed of public release varieties. While subsequent seed production may be Pedigreed, this is the buyer's choice and the buyer may increase the seed of public release varieties in any way they wish (only pedigreed seed can be sold by variety name, for most major crop kinds). To purchase breeder seed of public release varieties, contact the breeding institution listed in the Breeding Institution and Seed Distributors listings on pages VR37 to VR39.

Legal Disclaimer

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

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

The Ministry of Agriculture provides $100,000 toward a testing program that is based on industry-government partnership. Technical and in-kind support is also provided by Agriculture and Agri-Food Canada, Saskatchewan Crop Insurance Corporation and The Western Producer, publisher of the *2023 SaskSeed® Guide*.

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

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

Saskatchewan Pulse Growers (SPG) funds the pulse and soybean regional variety trials for Saskatchewan growers. For the 2022 trials, this funding was approximately $323,000 which is partially off-set by entry fees for varieties entered into the trials. SPG collaborates with 14 research organizations at 23 locations to conduct the trials, including the Crop Development Centre at the University of Saskatchewan, Agriculture and Agri-Food Canada research stations, provincial AgriARM sites, the Canada-Saskatchewan Irrigation Diversification Centre, New Era Ag Research, Chinook Applied Research Association, Parkland Crop Diversification Foundation, SM Ag Research, Palliser Triangle Research, Discovery Ag Research and the Conservation Learning 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 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 the Plant Breeders' Rights (PBR) legislation is to encourage investment and innovation in the crops sector. There are many ways to accomplish this, but the International Union for the Protection of New Varieties of Plants (UPOV)-based PBR balances the interests of the farmer and the breeder. This gives the farmer fair access to the use of purchased seed and the breeder can expect a royalty from every farmer buying seed of the breeder's variety.

PBR protection helps ensure that companies and institutions that invest in plant breeding can keep reasonable control of their varieties and secure fair compensation for their efforts. Some of the benefits of PBR include:

- Access to new and improved plant varieties and improving the bottom line for producers. Enhanced protection under the revised PBR Act will encourage the introduction of new varieties from other countries (once registered in Canada), as well as stimulate investments in variety development in Canada.
- Farmers may save seed for use on their own farms if the original seed was obtained legitimately. However, seed may not be sold for sowing, without the consent of the breeder.

Plant breeders' rights are a form of intellectual property rights that allow plant breeders to protect new varieties of plants. When plant breeders' rights are granted, the breeder gets exclusive rights in relation to propagating material (e.g. seed) of their new plant variety. Sale, trade, exchange, or any other 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 78 UPOV member countries, 61 of which have ratified UPOV'91-compliant legislation.

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

PBR
Progress through Research

and those protected on or 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 provides additional mechanisms for the breeder to seek compensation for the unauthorized use of protected varieties. It has always been illegal to sell PBR-protected seed without the consent of the breeder. Now, it is also illegal to purchase seed without the consent of the breeder, meaning both the seller and purchaser can be liable if the seed sale is not approved. The best way to ensure that the seed is being purchased legally is to purchase certified seed. Producers should look for the blue certified seed tag and keep it in their records as long as they grow grain derived from that original seed purchase.

Canada's initial PBR Act facilitated access to new and improved varieties for farmers. With the updated PBR Act, farmers will benefit from even greater access to new or improved crop varieties and breeders will be better able to protect the investments in the development of new varieties.

For more information, visit *www.seeds-canada.ca* or contact the PBR Office at *pbr.pov@inspection.gc.ca*.

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

A Variety Use Agreement (VUA) will be applied to specific varieties as determined by plant breeders and their seed distributors. When producers purchase a VUA variety and then divert some of that grain at harvest for seed use and plant it the following spring, they will declare that use in the VUA Platform and will then be invoiced a Variety Use Fee for use of the variety. This royalty

VARIETY USE AGREEMENT
VUA™

fee, which is set at the time of certified seed purchase, will be invoiced to the producer every year that farm saved seed of the VUA variety is grown.

Varieties with a VUA will be designated in this guide with VUA symbol following entry in the data tables. The VUA platform is managed by Seeds Canada. For more information, visit: *www.seeds-canada.ca/variety-use-agreement.*

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

By The Ministry of Agriculture

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

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

Changes in the canola seed industry require you to pay closer attention to seeding rates, or to change how you approach seeding. Companies are selling seed based on categories of seed size, represented by thousand seed weight (TSW).

Crop	Target Plant Population (per 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
Faba bean	45	4	350 – 425
Lentil	130	12	30 – 80
Chickpea	44	4	220 – 450
Soybean[1]	44 – 57	4 – 5	n/a
Canary seed[2]	n/a	n/a	6 – 7
Camelina	210	20	1 – 1.8
Hemp (green)	100 – 125	10 – 12	12 – 18
Hemp (fibre)	300 – 375	30 – 35	12 – 18
Quinoa[2]	n/a	n/a	2.8

[1] Soybeans are seeded based on seeds per acre and it is recommended to target 200,000 seeds per acre with air drills and 180,000 seeds per acre with planters. The soybean emergence rates are higher with planters than airdrills due to airflow causing some damage to sensitive seeds.
[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. 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:

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

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 Quality and Seed-Borne Diseases

By The Ministry of Agriculture

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

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

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

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

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

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

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

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

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

Seed-Borne and Seedling Diseases and Actions to Minimize Impact

Crop	Disease Pathogen	Economic Threshold	Action If Over Threshold
Field Peas Lentils	*Aphanomyces euteiches (*Root Rot)	Soil-borne only	Consider seed treatment if disease history is present
Field Peas	*Ascochyta complex*	10% on seed	Use seed treatment
Lentils	*Ascochyta lentis*	5% on seed	Use seed treatment
		10% on seed	Do not use seed
	Stemphylium botryosum	May be detected on seed tests	Unknown
	Colletotrichum lentis (Anthracnose)	May be detected on seed tests	Not considered high risk of seed to seedling transmission
Chickpeas	*Ascochyta rabiei*	0.3% on seed	Do not use seed
Faba Beans	*Colletotrichum sp.* (Anthracnose) Seed rot/damping off: *Fusarium, Pythium, Rhizoctonia*	Unknown	Consider seed treatment if disease history
Soybeans	Seed rot/damping off: *Fusarium, Pythium, Rhizoctonia, Phamapsis, Phytophythora*	Unknown	Consider seed treatment if disease history
Field Peas 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: Seed Quality and Guidelines for Seed-Borne Diseases of Pulse Crops, Ministry of Agriculture

could be considered other nitrogen-fixing crops that have resistance to *Aphanomyces*.

With soybeans, the best management practices for *Phytophthora* stem rot include selecting varieties with genetic resistance and using a seed treatment that is labeled for control.

Wireworms that attack all grain crops, pea leaf weevil in pea and faba beans and flea beetles that attack canola and mustard can be controlled by seed treatments containing 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 for the applicable crops is rated on a five-point scale of Resistant (R), Moderately Resistant (MR), Intermediate Resistance (I), Moderately Susceptible (MS) and Susceptible (S).

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

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

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

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

Fusarium-Damaged Kernels

By The Ministry of Agriculture

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

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

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

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

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

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

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

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

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

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

Relative Maturity

By The Ministry of Agriculture

Ratings

Maturity is measured from seeding to physiological maturity, which is the stage at which the crop is at the appropriate ripeness for swathing. The actual number of days to reach maturity depends on local climatic conditions and to some extent, on management practices.

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

Comparisons

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

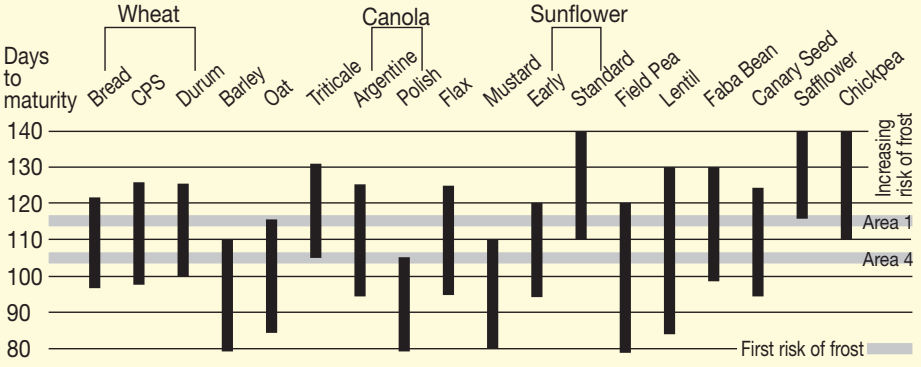
The chart on the right compares the relative maturity ranges for crops grown in Saskatchewan. Within each crop there are early and late maturing varieties. Whether a crop matures before the first killing frost depends on seeding date, management practices and environmental factors. Not all crops have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

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

Understanding Soybean Maturity Ratings

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

Relative maturity ranges for spring crop grown in Saskatchewan



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

Irrigated Variety Performance

Due to the limited testing for irrigation production many of the crop commodities grown under intensive irrigation do not meet the qualifications necessary for inclusion into the provincial Varieties of Grain Crops. However, the Irrigation Crop Diversification Corp (ICDC) does conduct variety evaluations under irrigation for all commonly grown irrigated crops. Results of these trials are summarized annually into a publication entitled “Crop Varieties for Irrigation” which can be found at *www.irrigationsaskatchewan.com/icdc* under ICDC Publications.

General Seed Facts

By The Ministry of Agriculture

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

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

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

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

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

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

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

Seeding Guidelines

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

Source: Ministry of Agriculture

Safe Rates of Seed-Placed Fertilizer

By The Ministry of Agriculture

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

Crop	Actual P_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 Placed with the Seed, Ministry of Agriculture*

CEREAL CROPS

Wheat

Main Characteristics of Varieties

Category and Variety	Years Tested[1]	Yield (%) Area 1 & 2	Yield (%) Area 3 & 4	Protein (%)	Resistance To: Lodging	Sprouting	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB	Head Awnedness	Stem Solidness[2]	Rel. Maturity (days)	Seed Wt. (mg)	Volume Wt.[3] (kg/hL)	Ht. (cm)
CWRS[4]	--- Relative to AAC Brandon ---															--- Relative to AAC Brandon ---			
AAC Brandon	6	100	100	14.3	G	P	R	R	MR	MR	S	I	MR	Y	H	101	35.9	80.6	81
CDC Adamant VB[5]	5	99	103	+0.1	P	F	R	I	MS	S	S	MS	I	Y	SS	-2	-2.2	0.1	+4
AAC Alida VB[5]	5	98	98	+0.1	VG	VG	R	R	MR	R	I	MS	MR	Y	H	0	+1.2	0.2	+7
Bolles	4	93	93	+1.0	VG	F	MR	R	MR	---	S	---	I	Y	H	0	+0.5	-1.4	+1
SY Brawn VB[5]	4	97	103	+0.1	F	G	MR	R	I	---	MR	---	I	Y	H	-2	-3.4	-1.5	+9
AAC Broadacres VB[5]	3	103	102	-0.3	VG	F	R	R	MR	---	R	---	I	Y	H	0	+1.6	0.0	+4
AAC Cameron VB[5]	5	103	110	-0.3	F	F	MR	MR	S	S	R	I	I	Y	H	-2	+2.4	-0.6	+17
Carberry	6	94	94	+0.3	VG	F	MR	R	MR	MR	R	MS	MR	Y	H	0	-0.4	-0.2	0
Cardale	5	93	96	+0.1	F	G	R	R	S	I	MR	MS	MR	Y	H	-1	-2.0	-1.3	+4
SY Cast ✪	4	98	100	+0.2	VG	G	R	R	R	---	R	---	I	Y	H	-1	-0.3	-0.9	+1
SY Chert VB[5] §	5	93	99	-0.1	G	F	R	R	R	R	R	MS	I	Y	H	-1	-1.0	-0.8	+7
AAC Connery	5	97	93	+0.5	VG	G	R	MR	R	MR	I	I	MR	N	H	-2	-0.5	-1.0	+4
SY Crossite ✪	4	101	103	-0.3	F	G	R	R	R	---	MS	---	MR	Y	H	0	+1.2	-0.8	+9
Daybreak ✪ VUA	3	99	101	-0.3	F	F	R	MR	MR	---	S	---	I	Y	H	-1	+2.4	0.7	+6
SY Donald VB[5] ✪	3	103	104	-0.3	F	G	I	I	I	---	MS	---	MR	Y	H	-2	-3.5	0.6	+8
AAC Dutton VB[5] ✪	1	101	106	-0.4	G	---	R	R	MR	---	R	---	MR	Y	H	-1	-1.2	-0.4	+3
AAC Elie	5	99	99	+0.0	G	F	R	R	MR	I	I	I	I	Y	H	0	-0.7	-0.1	-2
Ellerslie	4	94	97	-0.1	VG	F	R	MR	R	---	S	---	I	N	H	-2	-3.2	-2.6	+8
SY Gabbro §	5	100	99	+0.4	VG	F	MR	R	I	R	I	MS	MR	Y	H	-1	+2.6	-0.4	+7
AAC Hassler ✪	1	101	101	+0.3	F	---	MR	R	R	---	MS	---	I	Y	H	-5	-1.3	-1.6	+7
AAC Hockley ✪	3	100	105	+0.1	VG	G	MR	R	R	---	R	---	MR	Y	H	0	-1.4	0.7	+1
AAC Hodge VB[5] ✪	3	102	109	-0.3	G	F	R	R	R	---	R	---	MR	Y	H	-1	-1.1	0.3	+7
CDC Hughes VB[5]	5	98	101	0.0	G	G	R	MR	I	MR	MS	I	I	Y	SS	-1	+1.6	0.1	+2
Jake	4	86	94	+0.9	F	F	R	MR	R	---	MR	---	MS	Y	H	-3	-3.1	-0.8	+8
CDC Landmark VB[5]	5	103	105	0.0	G	G	R	MS	MR	MR	MS	I	I	Y	SS	-1	+0.6	0.6	+4
AAC LeRoy VB[5]	4	99	104	-0.2	F	G	MR	MR	MR	---	I	MS	MR	Y	H	-1	-0.2	0.3	+6
AAC Magnet	4	92	98	+0.3	VG	F	R	R	I	---	S	MS	MR	Y	H	-1	+1.3	-1.2	+6
SY Manness ✪	3	94	101	-0.1	VG	G	R	R	I	---	S	---	I	Y	H	-1	-4.7	-0.8	-1
SY Obsidian	4	94	96	-0.1	VG	F	MR	R	MR	R	MS	I	MS	Y	H	-1	+0.8	-0.2	+4
CDC Ortona	5	94	98	-0.1	G	G	R	R	R	---	S	---	I	N	H	-3	-5.0	-2.0	+8
Parata §	5	91	92	+0.4	F	F	R	MR	MR	MR	S	I	I	Y	H	-3	-2.6	-0.2	+9
CDC Pilar CLPlus ✪	4	98	97	-0.3	VG	G	MR	R	MS	---	MR	---	I	Y	H	-1	-0.7	-0.6	-3
AAC Redberry	5	99	100	0.0	F	VG	R	R	R	R	I	MS	I	Y	H	-3	-1.5	0.7	+6
Rednet	4	92	97	+0.3	F	F	R	R	R	---	S	---	MR	Y	H	-1	-1.0	0.0	+14
AAC Redstar	3	92	104	-0.1	F	G	R	MR	MR	---	MR	---	MR	Y	H	-2	-0.2	-1.3	+8
AAC Russell VB[5]	4	97	102	0.0	G	F	MR	R	R	---	MR	---	MR	Y	H	0	+1.7	-0.1	+4
Sheba	3	95	96	-0.7	G	G	R	R	R	---	MR	---	I	N	H	-1	-3.3	-0.6	+7
CDC Silas ✪	3	100	100	-0.4	F	F	MR	R	I	---	MS	---	I	Y	H	-1	-1.4	-1.1	+3
CDC SKRush ✪	4	100	104	-0.2	G	P	MR	R	MR	---	I	---	MR	Y	H	-1	-3.5	-0.9	+7
SY Sovite §	5	93	96	+0.2	F	F	MR	R	R	R	MS	MR	MR	Y	H	0	+1.8	-0.3	+7
CDC Stanley	6	98	100	+0.1	G	VG	R	MR	I	MR	S	I	MS	N	H	-1	-3.1	-1.8	+12
AAC Starbuck VB[5]	5	104	108	-0.2	F	F	I	MR	MR	MR	S	S	MR	Y	H	0	0.0	0.4	+2
Stettler	6	100	99	+0.5	F	G	MR	MS	MR	R	MR	MS	MS	Y	H	0	-1.0	-0.5	+8
CDC Succession CLPlus VB[5] ✪	4	98	97	-0.1	VG	G	MR	MR	I	-	S	-	MS	Y	H	0	+2.5	-0.9	+3
AAC Tisdale	5	95	98	+0.8	F	F	R	R	S	MR	MR	MS	MR	Y	H	-2	+0.2	-0.6	+8
CDC Titanium VB[5]	5	98	101	+0.8	P	P	I	R	R	MS	I	MS	MR	Y	H	-2	+0.4	-0.4	+10
SY Torach §	5	91	97	+0.6	VG	P	MR	R	MS	R	MS	MS	MR	Y	H	-1	-4.1	-0.3	0
Tracker	4	89	96	+0.2	F	G	R	R	R	---	S	---	I	N	H	-2	-4.5	-2.2	+6
CDC Utmost VB[5]	6	102	106	0.0	F	G	MR	R	I	MS	S	I	MS	N	H	-2	-1.4	-1.6	+11
AAC Viewfield	5	105	101	-0.3	G	G	R	MR	R	S	MR	I	I	Y	H	0	-2.1	0.7	-3
AAC Warman VB[5] §	5	95	99	0.0	P	F	R	R	MS	MR	S	I	MR	Y	H	-1	-1.8	0.0	+13
AAC Wheatland VB[5]	5	104	105	-0.2	VG	G	R	R	I	R	MR	S	I	Y	H	0	-0.5	0.1	+2

Wheat (cont'd)

Category and Variety	Years Tested[1]	Yield (%) Area 1 & 2	Yield (%) Area 3 & 4	Protein (%)	Resistance To: Lodging	Sprouting	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB	Head Awnedness	Stem Solidness[2]	Rel. Maturity (days)	Seed Wt. (mg)	Volume Wt.[3] (kg/hL)	Ht. (cm)
CPSR[4]	--- Relative to AAC Brandon ---															--- Relative to AAC Brandon ---			
Accelerate ✪ VUA	4	103	109	-1.1	G	F	R	R	R	---	S	---	I	Y	H	-1	-4.3	-0.7	-3
AAC Crossfield §	5	105	105	-1.3	F	P	MR	R	R	I	S	I	I	Y	H	-1	+1.3	-1.9	+1
AAC Foray VB[5]	5	104	108	-1.5	F	P	MR	R	I	MS	I	MS	I	Y	H	0	+7.0	-1.6	+6
Forefront	2	106	105	-1.1	VG	F	R	R	R	---	I	---	MS	Y	H	+1	+4.7	-1.2	-2
AAC Penhold	5	101	100	-0.7	VG	VG	MR	R	MR	I	R	I	MR	Y	H	-2	+4.2	-0.4	-9
AAC Perform ✪	1	113	113	-1.5	VG	---	R	R	MR	---	I	---	MS	Y	H	+1	+0.6	-1.8	+3
CDC Reign	4	100	106	-0.6	G	VG	MR	R	I	---	S	---	I	Y	H	+1	-1.5	-0.6	+3
AAC Rimbey VB[5] ✪	2	108	109	-1.8	F	VG	R	R	R	---	I	---	I	Y	H	-1	+5.5	-2.0	-1
SY Rorke	3	105	108	-1.4	F	F	R	R	S	---	MS	---	I	Y	H	0	-2.8	-0.6	0
SY Rowyn	5	95	99	-0.9	F	F	R	R	MR	I	S	I	MR	Y	H	-1	-5.0	-0.6	-4
AAC Westlock ✪	1	111	105	-1.4	G	---	R	R	R	---	R	---	MR	Y	H	0	+5.5	-1.2	0
CWSWS[4]																			
AC Andrew	5	122	129	-3.0	VG	P	MR	MS	I	S	S	---	I	Y	H	+1	+0.1	-3.2	+1
AAC Chiffon VB[5]	5	125	125	-3.4	P	VP	S	I	MR	S	S	---	S	Y	H	+2	+1.5	-3.6	+12
AAC Paramount VB[5]	5	122	122	-3.3	VG	P	I	I	R	MR	S	---	MS	Y	H	+1	+0.7	-2.8	+8
Sadash VB[5]	5	129	131	-3.7	VG	P	MR	I	R	I	S	---	S	Y	H	0	-0.7	-2.7	+4
CWSP[4]																			
Alderon	5	126	121	-3.0	VG	F	MR	R	MR	---	MS	I	MS	N	H	+4	+0.1	-7.4	-5
AAC Awesome VB[5]	5	125	126	-3.1	F	P	R	MR	R	I	I	I	I	Y	H	+1	+4.2	-1.6	+8
Pasteur	5	112	118	-2.0	VG	G	MR	R	MR	MS	S	I	I	N	H	+ 2	+0.3	-1.2	+5
Sparrow VB[5]	5	124	125	-2.6	VG	G	MR	R	MR	---	I	I	MR	N	H	+4	-0.2	-4.3	+1
WPB Whistler ✪	3	106	120	-2.9	VG	G	R	R	R	---	I	---	MS	N	H	+3	+1.5	-4.7	-3
CWHWS[4]																			
AAC Tomkins ✪	3	97	96	+0.2	G	G	MR	R	MS	---	MR	---	I	Y	H	-1	-0.5	-1.6	+3
AAC Whitehead VB[5] ✪	3	104	111	-0.4	G	G	R	R	MR	---	R	---	I	Y	H	-1	+1.9	-2.1	+3

[1] Years tested indicates years tested in Saskatchewan regional trials. Grain yield analysis includes up to three years of data from registration testing at sites in Saskatchewan.
[2] H = Hollow; SS = Semi-solid; S = Solid.
[3] Multiply by 0.8 = lbs./bu.
[4] Includes direct and indirect comparisons with **AAC Brandon**.
[5] VB = varietal blend. Information on refuge varieties on page VR13.

Varietal Blend Components

Midge Tolerant Variety	Refuge Variety	Crop Kind	Midge Tolerant Variety	Refuge Variety	Crop Kind
AAC Succeed	CDC Alloy	Durum	CDC Landmark	AAC Viewfield	Wheat
AAC Weyburn	CDC Precision	Durum	AAC Leroy	AAC Redberry	Wheat
CDC Adamant	CDC Bradwell	Wheat	AAC Paramount	AC Andrew	Wheat
AAC Alida	AAC Brandon	Wheat	AAC Rimbey	AAC Penhold	Wheat
AAC Awesome	AC Andrew	Wheat	AAC Russell	AAC Brandon	Wheat
SY Brawn	SY Cast	Wheat	Sadash	AC Andrew	Wheat
AAC Broadacres	AAC Brandon	Wheat	Sparrow	Alderon	Wheat
AAC Cameron	Carberry	Wheat	AAC Starbuck	AAC Brandon	Wheat
SY Chert	SY Sovite	Wheat	CDC Succsssion CLPlus	CDC Pilar CLPlus	Wheat
AAC Chiffon	AC Andrew	Wheat	CDC Titanium	Stettler	Wheat
SY Donald	AAC Redberry	Wheat	CDC Utmost	Harvest	Wheat
AAC Dutton	AAC Brandon	Wheat	AAC Warman	AAC Tisdale	Wheat
AAC Foray	AAC Penhold	Wheat	AAC Wheatland	AAC Brandon	Wheat
AAC Hodge	AAC Hockley	Wheat	AAC Whitehead	AAC Tomkins	Wheat
CDC Hughes	Cardale	Wheat			

Durum Wheat

Category and Variety	Years Tested[1]	Yield (%)			Protein (%)	Resistance To									Head Awnedness	Stem Solidness[3]	Rel. Maturity (days)	Seed Wt. (mg)	Volume Wt.[4] (kg/hL)	Ht. (cm)
		Area 1 & 2	Area 3 & 4	Irrigation[2]		Lodging	Sprouting	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB						
CWAD		--- Relative to Strongfield ---															--- Relative to Strongfield ---			
Strongfield	6	100	100	100	14.4	P	F	R	R	MR	R	MR	I	S	Y	H	102	43	79.7	88
CDC Alloy	5	107	109	107	-0.4	F	F	MR	R	R	I	R	MS	MS	Y	H	+1	-0.6	+0.8	+3
AAC Antler	1	109	108	---	-0.2	F	---	R	R	R	---	R	---	MS[6]	Y	H	+1	-2.0	+0.8	+2
Brigade	5	106	113	110	-0.9	F	F	R	R	MR	S	R	I	MS[6]	Y	H	+2	+0.6	+0.4	+7
AAC Congress	5	109	107	113	-0.5	P	F	MR	R	R	MR	R	MS	MS	Y	H	+1	-0.8	+0.5	+2
CDC Covert	4	109	108	110	-0.5	G	G	R	R	R	---	R	---	S	Y	H	+1	-4.6	+0.3	-1
CDC Credence	5	108	110	102	-0.7	F	F	MR	R	MR	MR	R	I	MS[6]	Y	H	+1	-0.7	0.0	+7
CDC Defy	4	112	112	113	-0.9	G	F	MR	R	I	---	R	---	MS[6]	Y	H	0	-3.2	+1.3	+4
AAC Donlow	4	112	107	111	-0.7	F	G	R	R	R	---	R	---	MS[6]	Y	H	+1	-3.3	+1.0	0
CDC Dynamic	5	105	106	110	+0.1	F	G	MR	R	MR	I	R	I	MS	Y	H	0	-1.0	+0.6	+1
CDC Evident	1	115	113	---	-0.7	F	---	R	R	R	---	R	---	MS	Y	H	+1	-1.2	0.0	+2
CDC Flare	5	102	103	108	-0.3	VG	F	MR	R	S	R	R	I	MS	Y	H	0	+0.5	-0.9	-1
CDC Fortitude	5	104	103	98	-0.2	F	F	MR	R	R	MS	R	MS	MS	Y	S	+1	-1.3	+0.2	-2
AAC GoldNet	4	109	110	112	-0.3	G	G	MR	R	R	---	R	---	S	Y	H	+1	-3.2	+0.7	+3
AAC Grainland	5	105	108	104	-0.3	F	G	MR	R	R	R	R	MS	MS	Y	S	+1	-0.5	-0.6	+1
CDC Precision	6	106	109	107	-0.4	G	F	MR	R	R	MS	R	MS	MS	Y	H	+1	-0.8	+0.9	+2
AAC Schrader	2	107	106	---	-0.4	F	F	R	R	R	---	MR	---	I	Y	H	+1	-1.0	+0.5	+5
AAC Spitfire	5	108	110	111	-0.4	G	F	R	R	R	MS	R	MS	S	Y	H	0	0.0	-0.1	-2
AAC Stronghold	5	101	100	112	-0.3	VG	G	R	R	MR	R	I	I	MS	Y	S	+2	+0.8	+0.6	-3
AAC Succeed VB[5]	5	106	108	105	-0.2	F	F	MR	R	I	R	R	MS	MS	Y	H	0	+1.6	-0.5	+2
Transcend	5	102	105	93	-0.2	F	G	R	R	R	S	R	I	MS[6]	Y	H	+1	-1.1	+0.1	+7
CDC Vantta	2	108	96	---	-0.8	G	G	I	R	R	---	R	---	MS	Y	H	+3	-1.1	+0.9	-8
CDC Verona	5	102	106	103	-0.2	G	F	R	R	R	MS	R	MS	MS	Y	H	+1	-0.7	-0.1	+2
AAC Weyburn VB[5]	3	111	109	---	-1.1	F	G	MR	R	R	---	R	---	MS	Y	S	+2	+0.4	-0.3	0

[1] Years tested indicates years tested in Saskatchewan regional trials. Grain yield analysis includes up to three years of data from registration testing at sites in Saskatchewan.
[2] For further information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at *www.irrigationsaskatchewan.com/icdc*.
[3] H = Hollow; SS = Semi-solid; S = Solid.
[4] Multiply by 0.8 = lbs./bu.
[5] VB = varietal blend. Information on refuge varieties on page VR13.
[6] These varieties generally express lower Fusarium Head Blight symptoms compared to other MS rated cultivars.

ADDITIONAL INFORMATION

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

Grain yield, protein content, time to maturity, seed weight, volume weight and plant height of all varieties of common wheat and durum wheat are compared to **AAC Brandon** and **Strongfield**, respectively. In 2022, the spring wheat and durum varieties supported for registration since 2017 were grown in replicated trials at up to 16 locations. Years tested indicates number of years variety was assessed in regional testing; however, grain yield analysis includes data collected during registration testing at sites in Saskatchewan.

Most varieties have been rated for their relative resistance to pre-harvest sprouting. Under wet post-maturity conditions 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 *Varieties of Grain Crops* contains the most up-to-date information on rust resistance in current varieties. Early seeding may minimize risk of crop losses for varieties sown in southeastern Saskatchewan that are rated poor or very poor to leaf rust. Field scouting throughout the growing season is encouraged so that timely corrective action can be undertaken if required.

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

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

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

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

WHEAT ADDITIONAL INFORMATION (CONT'D)

CANADA WESTERN RED SPRING (CWRS)

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

Seed of new variety **CDC Succession CLPlus VB** is expected to be available in limited quantities fall 2023. Seed of new varieties **AAC Dutton VB** and **AAC Hassler** is expected to be available in limited quantities fall 2024.

CDC Succession CLPlus VB and **CDC Pilar CLPlus** are tolerant to the CLEARFIELD® herbicides Adrenalin SC and Altitude FX.

CANADA PRAIRIE SPRING RED (CPSR)

Seed of new varieties **AAC Perform** and **AAC Rimbey VB** is expected to be available in limited quantities fall 2023. Seed of new variety **AAC Westlock** is expected to be available in limited quantities fall 2024.

CANADA WESTERN HARD WHITE SPRING (CWHWS)

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

CANADA WESTERN SOFT WHITE SPRING (CWSWS)

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

CANADA WESTERN SPECIAL PURPOSE (CWSP) SPRING

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

CANADA WESTERN AMBER DURUM (CWAD)

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

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

Seed of new varieties **AAC Schrader** and **CDC Vantta** is expected to be available in limited quantities fall 2023. Seed of new varieties **AAC Antler** and **AAC Evident** is expected to be available in limited quantities fall 2024.

CWAD varieties are generally more susceptible than CWRS varieties to Fusarium Head Blight. Growing varieties with improved resistance is recommended to reduce infection and disease propagule production as part of an integrated management strategy. **AAC Schrader** is the first CWAD variety rated as intermediate to fusarium head blight (FHB). Mycotoxin (DON) production by FHB fungi is generally lower for **CDC Defy**, **AAC Donlow** and **Transcend**.

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

Triticale

Main Characteristics of Varieties

Variety	Years Tested	Yield (%)		Test Weight (kg/hL)	Seed Weight (mg)	Height (cm)	Maturity (days)	Resistance To						
		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	---	---	---	---	---	---

ADDITIONAL INFORMATION

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

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

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

Winter Wheat

Main Characteristics of Varieties

Category and Variety	Years Tested[1]	Yield (%) Area 1 & 2	Yield (%) Area 3 & 4	Protein (%)	Winter Survival	Resistance To: Lodging	Stem Rust	Leaf Rust	Stripe Rust	Bunt	FHB	Head Awnedness	Maturity Rating	Seed Weight (mg)	Volume Wt.[2] (kg/hL)	Height (cm)
CWRW[3]	-- Relative to CDC Buteo --												------- Relative to CDC Buteo -------			
CDC Buteo	24	100	100	12.3	VG	F	I	I	S	S	MR	Y	M	32.4	80.9	90
AAC Coldfront ✪	4	114	117	+0.1	VG	VG	R	MR	R	S	I	Y	L	-0.1	-0.5	-7
AAC Elevate	12	107	102	-0.5	G	VG	MR	I	S	MR	I	Y	M	+4.0	-2.5	-8
Emerson	15	100	95	+0.4	G	VG	R	I	MR	S	R	Y	M	-4.1	-0.9	-4
AAC Gateway	14	97	98	+0.7	F	VG	MR	I	MR	S	I	Y	M	-0.7	-1.6	-14
AAC Goldrush	10	104	107	+0.3	VG	VG	MR	R	I	S	I	Y	M	+1.3	-2.1	-5
Moats	16	103	101	+0.4	G	F	R	MR	MR	MS	S	Y	M	-0.6	-0.8	+1
AAC Network ✪	7	101	102	+0.4	G	G	R	MR	R	MR	I	Y	L	-1.7	-1.9	-14
Radiant	22	102	102	-0.3	VG	VG	S	S	S	S	S	Y	L	+1.5	-1.9	-1
AAC Vortex ✪	6	97	106	+0.3	VG	VG	R	R	R	S	MR	Y	M	+1.5	-1.2	-6
AAC Wildfire	11	111	115	-0.1	VG	G	S	I	MR	MR	MR	Y	VL	+3.5	-1.3	-5
CW Experimental[3]																
AAC Icefield	10	100	98	-0.9	F	G	R	MR	MR	S	I	Y	M	-1.3	-1.6	-10
CWSP[3]																
Pintail	15	108	111	-1.7	VG	F	MS	MS	MR	S	S	N	M	-4.3	-4.3	-2

[1] Registration trial data used to supplement regional trial data.
[2] Multiply by 0.8 = lbs./bu.
[3] Includes direct and indirect comparisons with **CDC Buteo**.

ADDITIONAL INFORMATION

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

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

For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at *www.irrigationsaskatchewan.com/icdc*.

CANADA WESTERN RED WINTER (CWRW)

AAC Coldfront is a new variety with very good winter survival and lodging resistance, resistance to stem and stripe rust, moderate resistance to leaf rust, and intermediate resistance to FHB.

AAC Vortex is a new variety with very good winter survival and lodging resistance, resistance to all rusts and moderate resistance to FHB.

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

AAC Wildfire expresses tolerance to some biotypes of the Russian wheat aphid.

Radiant and **AAC Wildfire** express bronze chaff at maturity.

CANADA WESTERN EXPERIMENTAL

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

CANADA WESTERN SPECIAL PURPOSE (CWSP)

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

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

Fall Rye

Main Characteristics of Varieties

Variety	Years Tested	Yield (%) Area 1 & 2	Yield (%) Area 3 & 4	Protein (%)	Winter Survival	Resistance To[1] Lodging	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	19	100	100	11.3	VG	G	VG	1.2	Jun 9	Aug 2	36.5	73.2	100	182
Danko	4	102	94	+0.6	VG	VG	---	---	-2	-2	-3.7	+0.5	0	---
Prima	19	91	96	+0.3	VG	G	F	-0.3	-1	-3	-5.2	-0.8	+11	+48
Hybrid Varieties														
KWS Bono	10	125	127	-1.0	VG	VG	---	0.0	+1	0	-4.7	-0.3	-12	+104
Brasetto	6	113	122	-0.9	VG	G	---	0.0	0	+1	-3.5	-1.7	-10	+107
KWS Daniello §	7	118	117	-0.6	VG	VG	---	-0.1	0	0	-4.2	-1.3	-9	+120
KWS Gatano ✪	7	121	123	-1.0	G	G	---	0.0	0	+1	-5.5	-0.4	-12	+106
KWS Receptor	3	127	137	-0.8	VG	VG	---	0.0	0	-1	-6.3	-0.1	-10	+104
KWS Sandor	3	120	129	-1.0	VG	VG	---	-0.3	0	-1	-5.9	-0.8	-9	+110
KWS Serafino ✪	6	123	128	-0.9	VG	VG	---	-0.2	0	0	-4.8	-0.8	-9	+135
KWS Trebiano ✪	6	120	125	-0.7	VG	VG	---	-0.3	0	0	-1.9	-0.6	-7	+123

[1] Ratings: VG = Very Good; G = Good; F = Fair.

[2] Ergot bodies in grain as per cent of total weight during registration testing. All varieties are susceptible to ergot. Current testing does not suitably differentiate genetically controlled resistance to ergot infection (varietal differences) from other factors such as weather, crop development stage, inoculum load and management.

[3] Flowering typically occurs seven to 14 days after heading, depending on weather conditions.

[4] Wet and cool conditions can prolong maturity beyond these dates.

[5] Multiply by 0.8 = lbs./bu.

ADDITIONAL INFORMATION

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

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

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

For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at *www.irrigationsaskatchewan.com/icdc*.

Forage Rye

KWS Propower is a hybrid fall rye variety that is suited for silage use. Similarly, **KWS Progas** is a hybrid fall rye made for the forage producer (silage or grazing).

Malting Barley

Main Characteristics of Varieties

Category[1] and Variety	Years Tested[2]	2 or 6 Row	Awns[3]	Yield (% AAC Synergy) Area 1 & 2	Yield (% AAC Synergy) Area 3 & 4	Relative Maturity[4]	Resistance To: 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
AAC Connect	7	2	R	99	95	M	G	I	MR	MR	S	S	R	MS	MR	MR
CDC Copeland	7	2	R	92	93	M	F	I	I	S	MS	MS	I	I	MR	I
CDC Fraser	7	2	R	100	98	M	G	MR	R	R	MS	R	R	MS	MR	I
Malting Acceptance: In Development or Limited Demand																
CDC Bow	7	2	R	94	93	M	VG	S	MR	I	MS	S	I	MS	MR	I
AB BrewNet	6	2	R	97	100	L	G	MS	I	MS	I	MS	MR	---	MR	MR
CDC Churchill	7	2	R	105	104	M	G	MR	MR	I	S	MS	MR	---	MR	MS
CDC Copper	7	2	R	104	100	M	G	MR	MR	I	MR	I	MR	---	I	MS
CDC Goldstar[6]	7	2	R	99	95	M	G	I	MR	I	S	I	R	S	MR	MS
Legacy	6	6	S	90	85	M	G	S	MR	MR	MS	I	MR	MR	MR	MS
AC Metcalfe	7	2	R	87	86	M	F	S	I	I	MS	R	I	I	MR	I
CDC PlatinumStar[6]	7	2	R	94	88	M	F	I	MR	S	S	S	R	S	I	MR
AAC Prairie	4	2	R	97	98	M	F	MR	I	I	MS	S	MR	---	MR	I
Other[7]																
AAC Goldman	7	2	R	95	94	M	G	I	R	I	I	S	I	---	I	MR
Torbellino	3	2	R	98	94	M	G	MS	MS	MS	I	MS	R	---	MS	S

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

ADDITIONAL INFORMATION

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

Varietal purity is critical to producing high-quality malt. Malting and grain companies require a minimum 95 per cent varietal purity specification on malting barley deliveries.

Growers are cautioned that most malting varieties, especially two-row barley, are more susceptible to sprouting. Harvesting grain over 16 per cent moisture and then using aeration bins for drying can lead to sprouting and embryo death. Seed with reduced germination is undesirable for seed or malting.

For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at *www.irrigationsaskatchewan.com/icdc.*

Lines Tested for Malting and Brewing Quality

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

Feed and Food Barley

Main Characteristics of Varieties

Category and Variety	Years Tested[1]	2 or 6 Row	Awns[2]	Yield (% AAC Synergy) Area 1 & 2	Yield (% AAC Synergy) Area 3 & 4	Relative Maturity[3]	Resistance To: Lodging	Netted Net Blotch[4]	Spotted Net Blotch[4]	Spot Blotch	Scald	Loose Smut	Other Smuts	Root Rot	Stem Rust	FHB
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
Bighorn ✪	5	2	R	116	107	M	F	I	I	I	S	I	R	---	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
Cantu ✪	5	2	R	110	106	L	G	I	I	I	S	I	R	---	R	I
Claymore	7	2	R	103	98	L	VG	S	I	I	S	S	R	I	MR	MR
CDC Cowboy	6	2	R	85	89	L	F	I	MR	I	MS	MS	MR	I	MR	MR
CDC Durango ✪	4	2	R	109	108	M	VG	MR	MS	I	MS	S	R	---	I	I
AB Hague ✪	5	2	R	102	100	L	G	I	I	I	I	MR	R	---	MR	MR
Ibex ✪	5	2	R	108	105	M	G	I	I	I	S	S	R	---	R	I
AAC Lariat ✪	3	2	R	108	104	M	G	R	MR	I	S	R	R	---	R	MS
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
RGT Planet **VUA**	2	2	R	109	100	M	G	---	---	---	---	---	---	---	---	---
AB Prime ✪	4	2	R	108	103	M	G	MR	I	I	I	S	R	---	R	I
CDC Renegade ✪	3	2	S	109	104	M	F	I	MR	MS	S	MS	MR	---	MR	MR
Sirish	7	2	R	95	91	M	VG	MS	MS	MS	MR	S	R	---	S	MS
AB Wrangler ✪	6	2	R	104	101	M	F	I	I	MR	MS	MS	MR	---	R	MR
AB Advantage	7	6	S	103	100	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	7	6	SS	100	100	L	VG	MS	MR	R	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 ✪	5	6	S	109	107	L	G	MS	I	I	I	---	MR	---	R	S
Hulless																
CDC Clear	7	2	R	78	89	L	G	MS	R	I	MS	R	R	I	MR	MR
CDC McGwire	8	2	R	84	83	M	G	I	MR	I	I	MS	MR	MR	I	MR
Hulled varieties being tested for adaptability in Western Canada																
Esma ✪ **VUA**	3	2	R	110	102	M	G	---	---	---	---	---	---	---	---	---
KWS Kellie ✪ **VUA**	3	2	R	113	102	L	G	---	---	---	---	---	---	---	---	---

[1] Registration and regional trials in Saskatchewan.

[2] R = Rough; S = Smooth; SS = Semi-Smooth.

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

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

ADDITIONAL INFORMATION

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

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

Forage Barley

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

Hulless

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

CDC Ascent, **CDC Fibar**, **CDC Marlina**, **CDC Rattan** and **CDC Valdres** are two-row, high beta-glucan, waxy starch varieties. **CDC Hilose** is a two-row, high beta-glucan, high amylose starch variety. **CDC Carter**, **CDC McGwire** and **Roseland** are two-row, normal starch varieties.

Irrigation

Disease resistance, straw strength and maturity are more critical when barley is grown under irrigation. Growers should select early, strong-strawed, disease-resistant varieties. For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at *www.irrigationsaskatchewan.com/icdc*.

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

RECOMMENDED VARIETIES

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

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

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

THE CMBTC AND ITS MEMBERS RECOMMEND

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

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

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

NEWLY REGISTERED VARIETIES IN DEVELOPMENT

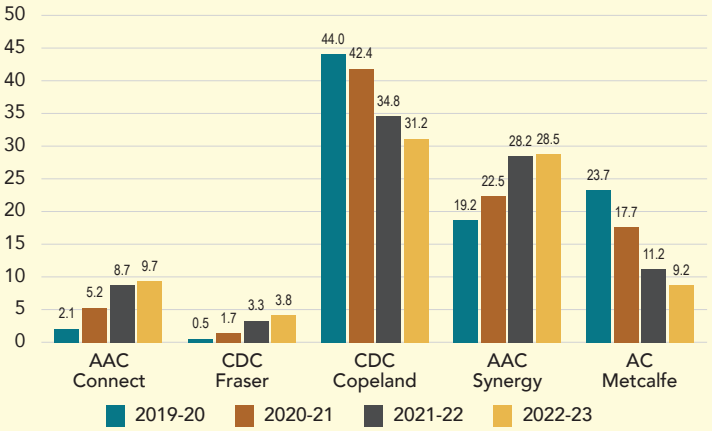
These newly registered varieties are undergoing seed propagation and commercial market development. Contact the seed distributor for opportunities to trial these promising new varieties.

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

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

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

SEEDED AREA BY MAJOR MALTING VARIETY % - W. CANADA



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

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

@canadianbarley @MaltAcademy

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Oat

Main Characteristics of Varieties

Variety	Years Tested[1]	Yield (% CS Camden) Area 1 & 2	Yield (% CS Camden) Area 3 & 4	Test Weight (g/0.5L)	% Hull	Hull Colour	% Plump	Relative Maturity[2]	Height (cm)	Resistance To: Lodging	Stem Rust	Crown Rust	Smut
CS Camden	7	100	100	242	24.3	White	82	L	94	VG	S	MS	I
CDC Anson ✪	3	102	100	243	20.7	White	90	M	85	VG	S	MR	R
CDC Arborg	7	105	106	250	20.1	White	85	M	108	VG	S	I	R
CDC Boyer	7	88	90	232	23.3	White	85	M	105	G	I	I	MS
CDC Dancer §	7	88	88	253	19.8	White	86	M	103	G	I	I	R
Derby	7	87	92	247	22.9	White	79	M	107	G	S	S	MS
AAC Douglas ✪	6	102	100	245	20.7	White	81	M	98	G	I	MR	R
CDC Endure	7	106	105	245	21.2	White	89	M	102	VG	S	MR	R
CDC Haymaker	5	82	85	225	24.9	White	87	VL	111	G	S	S	MR
CDC Minstrel	7	95	97	245	21.0	White	92	L	98	VG	I	MS	R
AC Morgan	7	100	102	236	25.1	White	82	L	101	VG	S	S	I
CDC Morrison	7	91	86	248	24.4	Yellow	83	L	95	VG	I	MS	R
CDC Nasser	7	98	97	233	21.8	White	79	VL	106	G	MS	S	R
CDC Norseman	7	95	95	241	20.0	White	81	M	102	G	S	MR	MS
ORe3542M	7	97	92	247	22.5	White	95	L	93	VG	S	R	R
ORe Level48	4	92	89	250	20.5	White	89	L	95	VG	I	MR	R
ORe Level50	4	90	88	248	21.5	White	93	L	98	VG	S	R	R
CDC Ruffian	7	101	97	247	20.4	White	88	L	95	G	S	I	R
Souris	7	97	93	253	21.5	White	72	M	98	VG	MR	MS	R
Summit	7	93	95	256	21.6	White	81	M	94	G	I	I	R
Triactor	7	103	108	240	22.8	White	80	L	99	G	S	MR	I
AAC Wesley ✪	4	98	99	246	20.9	White	85	M	91	G	I	MS	R
Varieties being tested for adaptability in Western Canada													
Akina §	5	102	100	242	22.5	White	---	M	95	G	---	R	R
Alka ✪ §	5	105	101	247	22.8	White	---	L	95	G	S	I	R
Kalio ✪	2	97	96	249	21.8	White	---	M	91	G	S	MR	R
Kara §	5	102	100	247	23.2	White	---	M	88	G	---	MR	MR
Kyron	3	105	102	244	23.7	White	---	M	98	G	S	MR	R

[1] Registration and regional trials in Saskatchewan.

[2] Maturity rating L = 98 days.

ADDITIONAL INFORMATION

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

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

For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at *www.irrigationsaskatchewan.com/icdc*.

Feed Oat

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

Forage Oat

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

Hulless Oat

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

False Oats or Fatuoids

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

Canary Seed

Main Characteristics of Varieties

Variety	Type	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	16	100	55	98	99	70.7	8.0
CDC Calvi	glabrous	12	106	+1	+3	+4	+0.6	+0.3
CDC Cibo	glabrous	12	107	0	0	-9	-0.5	+0.2
CDC Lumio	glabrous	8	117	+2	+1	+2	-0.5	+0.4
Cantate	hairy	16	115	0	+3	-3	-7.3	+0.6
Keet	hairy	16	127	+3	+3	+4	-6.1	-0.3

[1] Yield data not collected by Area, 2007-2022.
[2] Multiply by 0.8 = lbs./bu.

ADDITIONAL INFORMATION

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

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

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

Canary seed plants have a dense, shallow root system and growing the crop on sandy soils is not recommended. Canary seed may be grown successfully on stubble, providing adequate moisture is available for rapid germination and emergence. The 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 *Canaryseed*.

OTHER CROPS

BUCKWHEAT

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

CARAWAY

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

SAFFLOWER

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

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

CORIANDER

Coriander is an annual spice crop. Seedlings are small, slow to develop and compete poorly with weeds. The large seeded type is 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 (95 to 120 days to maturity) broadleaf pseudocereal that can be grown on a wide range of soil types. Early in the growing season, it is sensitive to excessive moisture. Though quinoa can tolerate and grow in dry areas, it yields higher in higher moisture areas and under irrigation. Quinoa is frost-tolerant both as a seedling and at maturity. Seeding mid-May, around May 15th, into a well-prepared seedbed is considered best practice due to the long growing season required by the crop. Quinoa can be direct seeded at a 1.5 cm (0.5 in.), though at least one tillage pass prior to planting is preferred for even emergence.

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

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

NQ94PT is a golden seeded variety with high seed yield and uniform, medium/late maturity. **NQ Red** is a red-seeded quinoa variety with high seed yield and medium maturity. **NQ20W** is a white seed quinoa variety with high yields and early maturity. **NQ20BL** is a black seeded variety with late maturity and high yield.

For more information on quinoa, contact NorQuin at 1-855-778-4662 or *www.quinoa.com*.

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	17	100	100	34	51	E/M	MR	MR	gray	red	40
CDC Carmine §		11	111	106	34	54	E/M	MR	MR	gray	red	40
CDC Dazil	CL	13	97	92	33	53	E/M	MR	I	gray	red	35
CDC Impulse	CL	13	108	102	37	52	E/M	MR	MR	gray	red	44
CDC Karim	CL	5	102	100	35	55	E/M	MR	MR	gray	red	39
CDC Nimble	CL	9	108	107	35	52	E/M	MR	MR	gray	red	38
CDC Proclaim	CL	12	106	102	34	51	E/M	MR	MR	gray	red	40
CDC Redmoon		12	114	106	33	52	E/M	MR	MR	gray	red	41
CDC Simmie	CL	8	107	102	34	53	E/M	MR	MR	gray	red	39
Extra Small Red												
CDC Impala	CL	13	84	82	30	51	E	MR	MR	gray	red	31
Large Red												
CDC KR-2	CL	11	104	90	37	52	M	MR	MR	gray	red	55
CDC Sublime	CL	7	118	110	38	54	E/M	MR	MR	green	red	53
Small Green												
CDC Imvincible	CL	14	94	81	33	49	E	MR	MR	green	yellow	34
CDC Jimini	CL	7	108	99	36	50	E/M	---	---	green	yellow	38
CDC Kermit		13	106	97	36	49	E/M	MR	MR	green	yellow	34
CDC Viceroy		6	97	98	34	49	E	MR	MR	green	yellow	33
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		14	99	83	40	52	M/L	MR	I	green	yellow	73
CDC Grimm	CL	8	94	84	40	55	M/L	MR	MR	green	yellow	75
CDC Impower	CL	12	82	68	41	52	M/L	MR	S	green	yellow	64
CDC Lima	CL	10	93	90	35	51	M/L	MR	S	green	yellow	74
French Green												
CDC Marble		13	103	96	36	49	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	6	98	93	35	52	E/M	---	---	green marble	green	33
Green Cotyledon												
CDC Imerald	CL	6	90	87	35	53	E/M	---	---	green	green	54
CDC QG-3	CL	7	92	66	38	53	E/M	I	MR	green	green	46
CDC QG-4	CL	9	93	91	36	53	E/M	I	MR	green marble	green	33
Spanish Brown												
CDC SB-3	CL	8	90	87	35	51	E	I	MR	gray dotted	yellow	38
CDC SB-4	CL	8	103	101	34	53	E/M	I	MR	gray dotted	yellow	41

[1] CL indicates Clearfield® tolerant variety.

[2] Co-op and Regional Trials in Saskatchewan since 2006. Comparisons to the check variety, small red lentil **CDC Maxim**.

[3] Normal maturity range in days based on May 1 seeding is E = 100, VL = 110 but maturity can be much earlier in dry years, much later in cool wet years. See page VR10 for more information on maturity range in lentil.

Lentil (cont'd)

Main Characteristics of Varieties

ADDITIONAL INFORMATION

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

Types of Lentils

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

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

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

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

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

Chickpea

Main Characteristics of Varieties

Variety	Years Tested	Yield (% Amit) Area 1	Yield (% Amit) Area 2	Ascochyta Blight[1]	Height (cm)	Days to Flower	Maturity	Seed Weight (g/1000)	Seed Shape[2]	Seed or Seed Coat Colour[3]	Tolerance to Solo ADV (imazamox) herbicide
Kabuli											
Amit (B-90)	21	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	20	107	104	4.5	45	55	L	350	RH	B	no
CDC Lancer ✪	4	112	105	4.9	41	52	M	350	RH	B	yes
CDC Leader	17	107	104	4.5	41	54	M	390	RH	B	no
CDC Luna §	18	98	100	5.7	40	53	ML	368	RH	B	no
CDC Orion	16	105	102	5.6	43	50	L	428	RH	B	no
CDC Orkney ✪	4	111	109	4.8	44	53	ML	355	RH	B	yes
CDC Palmer	11	105	100	4.9	42	52	ML	415	RH	B	no
Desi											
CDC Consul	14	111	108	4.0	46	53	M	299	P	LT	no
CDC Cory	13	112	106	4.3	47	56	M	268	A/P	T	yes
CDC Kala ✪	4	100	92	4.4	41	52	E	235	A	BL	yes

[1] Ascochyta Blight at pod filling period: 0-9 scale; 0 = no symptom; 9 = plants are completely blighted. Scores 4-6 are considered intermediate resistance.
[2] Seed shape: A = angular; P = plump; RH = Ram-head; Ro = Round.
[3] Seed or seed coat colour: B = beige; BL = black; LT = light tan; T = tan.

ADDITIONAL INFORMATION

Please refer to the *2023 SaskSeed® Guide* for pedigreed seed availability. For more details on production, consult the *Growing Pulses* section of the Saskatchewan Pulse Growers webpage (*www.saskpulse.com*).

Field Pea

Main Characteristics of Varieties

Variety	Years Tested[1]	Yield (%)			Protein (%)	Relative Maturity	Lodging[3]	Vine Length (cm)	Resistance To							Seed Weight (g/1000)
		1, 2 & South 3	North 3 & 4	Irrigation[2]					MB[4]	Powdery Mildew	Fusarium Root Rot	SCB[5]	Bleaching	SCD[6]	Greeness[7]	
Yellow	---- Relative to CDC Amarillo -----															
CDC Amarillo	14	100	100	100	23.0	M	3.5	85	4.5	R	MR	F	na	F	G	230
Abarth	7	93	90	92	-0.1	E	3.5	75	5.0	R	I	F	na	G	G	280
AAC Aberdeen	4	108	103	---	-1.1	M	3.5	85	4.5	R	I	F	na	F	G	250
AAC Ardill	10	102	99	91	-1.5	M	3.5	85	4.5	R	MR	G	na	G	G	230
AAC Beyond ✪	4	107	108	---	+0.3	E	4.5	80	5.0	R	MR	F	na	F	G	220
CDC Canary	10	99	100	---	+0.1	E	3.5	85	4.5	R	I	G	na	F	F	230
AAC Carver	7	102	100	---	-1.3	E	4.0	85	5.0	R	I	G	na	F	G	240
AAC Chrome	7	106	104	---	-1.0	M	4.5	75	4.5	R	I	G	na	G	G	240
CDC Citrine ✪	5	109	109	---	+0.3	M	4.0	85	4.0	R	MR	G	na	G	G	220
AAC Delhi §	5	103	101	---	+0.7	M	4.5	80	5.0	R	I	---	na	F	F	290
CDC Golden	10	92	83	90	+0.7	E	4.5	75	5.0	R	I	G	na	G	G	230
CDC Hickie ✪	6	108	107	---	+0.5	M	3.5	85	4.5	R	MR	G	na	G	G	230
CDC Inca	11	104	101	104	-0.6	M	4.0	85	4.5	R	I	G	na	G	F	230
AAC Julius ✪	4	110	108	---	+0.4	E	4.0	85	4.5	R	MR	G	na	G	G	210
AAC Lacombe §	9	97	99	101	-0.7	M	3.5	85	5.0	R	I	F	na	F	F	250
CDC Lewochko	9	103	104	---	+0.9	M	3.5	90	4.5	R	I	G	na	G	G	230
CDC Meadow	12	93	90	91	-0.5	E	4.0	85	5.0	R	I	G	na	G	G	220
AAC Profit	6	103	109	---	+0.8	M	4.5	90	4.5	R	I	F	na	G	G	230
CDC Saffron	12	98	92	93	-0.3	E	4.0	80	4.5	R	I	G	na	F	G	250
CDC Spectrum	11	105	103	---	+0.7	M	3.5	85	4.5	R	I	G	na	G	F	240
CDC Tollefson ✪	6	108	108	---	-0.3	M	3.0	90	4.0	R	MR	G	na	G	G	240
Green																
Blueman §	6	94	90	---	+0.5	M	4.5	85	4.5	R	I	na	F	F	na	220
CDC Forest	10	102	102	---	0.0	M	4.0	85	4.5	R	I	G	F	G	na	230
CDC Greenwater	11	99	93	89	-0.9	M	3.5	90	4.0	R	MR	F	G	F	na	230
CDC Huskie ✪	5	109	108	---	-0.8	M	3.5	85	4.0	R	MR	G	G	G	na	220
CDC Limerick	14	95	91	91	+2.9	M	4.0	85	4.5	R	I	G	G	G	na	210
CDC Raezer	12	82	80	95	-0.1	E	3.5	80	5.0	R	MR	G	G	G	na	220
CDC Rider ✪	6	101	99	---	-0.3	M	3.0	85	4.5	R	MR	G	G	G	na	230
CDC Spruce	12	96	98	---	+0.3	M	4.0	85	4.5	R	I	F	G	F	na	240
CDC Striker	12	82	81	84	+1.9	M	3.5	80	4.5	S	MR	VG	G	G	na	240
Red																
Redbat 8 §	6	92	85	---	+1.0	M	5.0	85	5.0	R	---	G	---	G	---	200
Redbat 88 §	5	91	92	---	+0.3	M	4.5	90	4.5	R	---	G	---	G	---	190
Maple																
CDC Acer §	3	84	73	---	---	M	6.5	60	5.0	R	---	G	---	VG	---	170
CDC Blazer	6	100	102	---	+1.9	M	5.0	80	5.0	R	---	G	---	VG	---	190
AAC Liscard §	7	89	89	---	-0.8	M	4.0	85	5.0	R	---	G	---	VG	---	200
AAC Lorlie	2	99	100	---	-0.6	M	4.0	85	4.5	R	---	G	---	VG	---	240
CDC Mosaic	4	81	74	58	---	M	4.0	85	4.5	R	---	G	---	VG	---	180
Dun																
CDC Dakota	11	100	98	95	+1.7	M	3.5	85	4.5	R	---	G	---	VG	---	205
Forage[8]																
DL Delicious ✪ **VUA**	3	68	66	---	+1.4	L	7.5	110	5.0	S	---	G	---	F	---	200
DL Goldeye ✪ **VUA**	2	72	66	---	+1.8	L	8.0	115	5.0	S	---	G	---	F	G	145
CDC Horizon	4	88	78	63	+2.2	M	4.0	100	4.5	R	---	G	---	G	G	170
CDC Jasper	5	85	85	---	+2.0	M	4.5	105	4.5	R	---	G	---	G	G	180
DL Lacross	3	89	93	---	+0.4	M	7.0	110	5.0	S	---	G	---	F	F	170

[1] Co-op and regional trials in Saskatchewan.
[2] For further information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at *www.irrigationsaskatchewan.com/icdc*.
[3] Lodging score (1-9) where 1 = completely upright, 9 = completely lodged.
[4] Mycosphaerella blight score (1-9) 1 = no disease, 9 = completely blighted.
[5] Seed Coat Breakage.
[6] Seed Coat Dimpling: VG = 0-5 per cent; G = 6-20 per cent; F = 21-50 per cent.
[7] Greenness: Good = 0-15 per cent; Fair = 16-40 per cent.
[8] Forage dry matter biomass, as per cent of check **40-10** (100), **CDC Jasper** (111), **CDC Horizon** (108).

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.

Dry Bean

Main Characteristics of Varieties

Variety	Years Tested[1]	Yield --- (% CDC Blackstrap) --- Irrigation[2]	Dryland	Days to Flower	Maturity Rating[3]	% Pod Clearance[4]	Seed Weight (g/1000)	Growth Habit[5]
Black								
CDC Blackstrap	13	100	100	53	M	85	195	II
CDC Jet	8	94	87	58	L	85	170	II
CDC Superjet	7	98	92	58	L	85	170	II
Pinto								
Island	7	101	98	55	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	4	91	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
AAC Shock	3	86	96	51	M	89	186	II
CDC Whitetrack	3	91	84	56	M	77	174	II
Small Red								
AC Redbond	3	98	82	51	M	65	290	II
flor de junio								
CDC Ray	6	113	107	56	L	70	300	III
Yellow								
CDC Sunburst	4	99	90	54	M	78	427	I

[1] Co-op and regional trials grown in narrow rows. Since 2002 **CDC Pintium** had been the check variety. In 2019 **CDC Blackstrap** became the new check. Lines that did not have sufficient direct comparison data to **CDC Blackstrap** were adjusted based on relative performance to **CDC Pintium**.

[2] For further information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at *www.irrigationsaskatchewan.com/icdc*.

[3] Maturity ratings based on E = 100 days; L = 110 days for May 20 planting to swathing maturity. See page VR10 for more information.

[4] Pod clearance: percentage of pods that completely clear the cutterbar at time of swathing (~four cm).

[5] Growth habit: I = Determinate bush; II = Indeterminate bush; III = Indeterminate vine.

ADDITIONAL INFORMATION

Please refer to the *2023 SaskSeed® Guide* for pedigreed seed availability. For more details on production, consult the *Growing Pulses* section of the Saskatchewan Pulse Growers webpage (*www.saskpulse.com*).

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	8	100	100	0
P0007A73X	Corteva (Pioneer)	000.7	RR2X	BR	2	---	75	-10
Amirani R2 ✪	Elite BrettYoung	000.5	RR2	IY	4	84	90	-7
BY Rundle XT ✪	BrettYoung	000.5	RR2X	BL	2	88	91	-7
NSC Dauphin RR2X	NorthStar Genetics	000.8	RR2X	IY	2	---	82	-7
Fresco R2X	Prograin	000.7	RR2X	BL	3	---	96	-6
Mynarski R2X	SeCan	000.5	R2X	BR	3	---	92	-6
NSC Watson RR2Y	NorthStar Genetics	000.8	RR2Y	IY	8	98	98	-6
PV 27s0005 R2X	Nutrien (Proven Seeds)	000.5	RR2X	BL	2	---	90	-6
S0009-M2	Syngenta	000.4	RR2Y	IY	7	99	104	-6
PV 24s0008 R2X	Nutrien (Proven Seeds)	000.8	RR2X	BL	2	---	93	-5
S001-D8X	Syngenta	0.01	RR2X	IY	3	103	106	-5
S003-R5X	Syngenta	0.03	RR2X	IY	2	112	---	-5
Wolf R2X	Maizex Seeds	000.7	R2X	BL	2	100	103	-5
CP000621WPX	Winfield United	000.6	RR2X	Y/BL	2	97	---	-4
NSC Arden RR2X	NorthStar Genetics	00.1	RR2X	BL	2	103	---	-4
Pikas R2X	Maizex Seeds	000.9	R2X	BL	2	92	---	-4
DKB0008-87	Bayer CropScience	000.8	RR2X	BL	2	---	101	-3
Major R2X	SeCan	00.2	R2X	BR	2	---	95	-3
P001A48X	Corteva (Pioneer)	00.1	RR2X	TN	3	---	100	-3
PV 28s001 R2X	Nutrien (Proven Seeds)	00.1	RR2X	BL	2	102	98	-3
PV 15s0009 R2X	Nutrien (Proven Seeds)	000.9	RR2X	BL	4	---	97	-2
S0009-F2X	Syngenta	000.9	RR2X	BR	3	---	100	-2
S003-Z4X	Syngenta	00.3	RR2X	BF	4	109	---	-2
SI 001XTN	Sevita International	00.1	RR2X	BL	3	99	---	-2
Young R2X	SeCan	000.9	R2X	BL	3	---	100	-2
DKB0009-89	Bayer CropScience	000.9	RR2X	BL	5	---	94	-1
TH89004 R2X	Thunder Seeds	00.2	RR2X	BR	2	91	---	-1
DKB002-32	Bayer CropScience	00.2	RR2X	BR	3	100	---	0
Hart R2X	SeCan	00.4	R2X	BL	3	101	---	0
Mahony R2	SeCan	00.3	RR2	BL	8	106	107	0
P003A97X	Corteva (Pioneer)	00.3	RR2X	GR	3	98	---	0
P005A27X	Corteva (Pioneer)	00.5	RR2X	BR	4	99	---	0
P005A83X	Corteva (Pioneer)	00.5	RR2X	BL	2	96	---	0
P006A37X	Corteva (Pioneer)	00.6	RR2X	BR	2	108	---	0
PV 22s002 R2X	Nutrien (Proven Seeds)	00.2	RR2X	BL	3	101	99	0
S005-C9X	Syngenta	0.05	RR2X	BL	2	107	---	0
S007-Y4	Syngenta	00.7	RR2Y	IY	7	110	107	0
Sunna R2X	Elite BrettYoung	00.3	RR2X	GR	5	104	---	0
TH 87003 R2X	Thunder Seeds	00.3	RR2X	BL	3	98	102	0
Akras R2	Elite BrettYoung	00.3	RR2	BL	8	107	111	+1
PV 16s004 R2X	Nutrien (Proven Seeds)	00.4	RR2X	BL	3	94	---	+1

[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 2023 (*www.seedmb.ca*).

[3] Hilum is the point where seed attaches to the pod. BF = Buff; BL = Black; BR = Brown; GR = Grey; Y=Yellow; IY = Imperfect Yellow; TN = Tan.

[4] Eight year mean yield of the check variety **TH 33003R2Y** was 40 bu./ac.: 45 bu./ac. in 2022; 39 bu./ac. in 2021; 29 bu./ac. in 2020; 32 bu./ac. in 2019; 34 bu./ac. in 2018; 46 bu./ac. in 2017; 45 bu./ac. in 2016 and 49 bu./ac. in 2015. Typical on-farm yields are 25-38 bu./ac.

[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. Moist growing seasons result in delayed maturity. Data is from Saskatchewan sites from 2016 - 2022 (Note: not all varieties entered into trial each year). Average days to maturity for **TH 33003R2Y** is +/- 118 days.

Soybean (Conventional)

Main Characteristics of Varieties

Variety	Canadian Marketing Agent	Company Maturity Grouping[1]	Type[2]	Hilum Colour[3]	Years Tested	Yield[4] (%) ------- Relative to OAC Prudence -------	Days to Maturity[5]
OAC Prudence	SeCan	00.3	Con	Y	5	100	0
TH 33003R2Y	Thunder Seeds	000.8	HT check	---	7	102	+1
NSC Watson RR2Y	NorthStar Genetics	00.3	HT check	---	7	105	-5
AAC Edward	SeCan	00.4	Con	Y	4	106	-5
Siberia	Prograin	00.2	Con	IY	4	113	-2
AAC Halli	Interlake.org Inc.	000.9	Con	Y	3	100	-1
Maxus	Prograin	00.3	Con	IY	3	91	0
Liska	Prograin	00.6	Con	IY	3	97	+1
Maya	Prograin	00.8	Con	IY	2	89	+2

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

[2] Varieties tested in this trial are conventional (con) soybean varieties and do not have tolerance to glyphosate. Two glyphosate tolerant varieties are included as check varieties only.

[3] Hilum is the point where seed attaches to the pod. IY = Imperfect Yellow; Y = Yellow.

[4] Mean yield of the check variety **OAC Prudence** in 2022 was 35 bu./ac. Typical dryland on-farm yields are 25-38 bu./ac.

[5] Average days to maturity for **OAC Prudence** in 2022 was 113 days.

ADDITIONAL INFORMATION

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

For information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at *www.irrigationsaskatchewan.com/icdc*.

Soybean Seeding Tips

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

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

Higher seeding rates with drills can assist with reaching target plant populations. Soybeans require warm soils (10 C) for optimum germination and emergence. Trash management to encourage some blackening of the soil can be advantageous to speed soil warming.

Soybeans are sensitive to late spring frosts once the growing point is above ground. Delay seeding until at least May 10 or later if conditions remain cool. Soybeans are sensitive to cold water at the time of germination. Seed when there is a warming trend in the forecast and a low risk of cold rainwater until after soybeans have germinated.

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

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

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

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

Inoculants and Nitrogen Fixation with Pulses and Soybeans

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

Handling Inoculants

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

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

Rhizobium Species Required for Effective Nodulation of Pulse Crops	
Peas, Lentils, Faba Beans	*Rhizobium leguminosarum*
Chickpeas	*Rhizobium ciceri*
Dry Beans	*Rhizobium phaseoli*
Soybeans	*Bradyrhizobium japonicum*

Source: Inoculant Options for Pulse Crops, Saskatchewan Pulse Growers

Faba Bean

Main Characteristics of Varieties

Variety	Years Tested	Low Vicine / Convicine	Yield	Height (cm)	Lodging[3]	Maturity (days)	Seed Weight (g/1000)
Coloured Flower (normal tannin)			(% Fabelle[1])				
Fabelle	10	Yes	100	104	2.4	105	533
Allison ✪	3	Yes	103	104	---	106	507
FB9-4 §	9	No	87	95	3.7	104	680
CDC SSNS-1 §	10	No	86	109	3.4	105	335
Taboar §	5	No	91	110	3.7	107	480
Victus ✪	6	Yes	95	101	2.8	105	444
White Flower (low tannin)			(% Navi[2])				
Navi ✪	5	Yes	100	94	3.2	111	401
Imposa §	4	No	105	99	2.4	107	695
DL Nevado ✪	4	Yes	95	98	1.0	109	425
Snowbird §	14	No	101	95	3.0	104	448
CDC Snowdrop §	9	No	89	97	2.8	104	325
Tabasco §	5	No	96	93	1.9	106	496
DL Tesoro ✪ VUA §	5	No	102	90	3.8	110	511
219-16 §	9	No	102	94	3.6	106	328

[1] Long-term average yield of 5124 kg/ha or 76 bu./ac.
[2] Long term average yield of 4032 kg/ha or 60 bu./ac.
[3] Lodging score (1-9) where 1 = completely upright, 9 = completely lodged.

ADDITIONAL INFORMATION

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

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

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

Seeding Tips for Faba Bean

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

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

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

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

Use seed treatment with low tannin types of faba beans.

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

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

Please refer to the *2023 SaskSeed® Guide* for pedigreed seed availability. For more details on production, consult the *Growing Pulses* section of the Saskatchewan Pulse Growers webpage (*www.saskpulse.com*).

OILSEED CROPS

Flax

Main Characteristics of Varieties

Variety	Years Tested	Yield[1] (% CDC Glas) Areas 1 & 2	Yield[1] (% CDC Glas) Area 3 South	Yield[1] (% CDC Glas) Area 3 North & 4	Yield[1] (% CDC Glas) Irrigation[2]	Relative Maturity[3]	Seed Size[4]	Resistance To Lodging	Resistance To Powdery Mildew	Resistance To Fusarium Wilt
Brown Seed										
CDC Glas	11	100	100	100	100	0	M	VG	MR	MR
CDC Bethune	15	94	95	96	103	-1	M	G	MR	MR
AAC Bravo	5	98	99	96	98	+1	L	G	MR	MR
CDC Buryu	5	93	100	95	93	0	M	G	MR	MR
CDC Kernen	5	99	102	104	99	+1	L	G	MR	MR
AAC Marvelous	5	101	104	101	104	+1	M	G	MR	MR
CDC Neela	5	101	94	96	98	0	M	G	MR	MR
CDC Plava	5	94	98	94	96	-3	M	G	---	MR
Prairie Grande	3	85	89	89	98	-3	M	VG	MR	MR
Prairie Sapphire	6	99	90	94	99	0	M	G	MR	MR
AAC Prairie Sunshine	5	95	96	100	97	+2	M	G	---	MR
Prairie Thunder	3	88	94	92	102	-3	M	VG	MR	R
CDC Rowland	6	101	106	104	103	+3	L	G	MR	MR
CDC Sanctuary	5	98	88	91	101	+1	M	F	MR	MR
CDC Sorrel	4	91	89	93	101	0	L	G	MR	MR
Topaz	5	94	103	97	98	-1	M	G	MR	MR
WestLin 60	5	90	90	90	94	-2	M	G	---	MR
WestLin 71	5	94	96	93	98	-1	S	VG	MR	MR
WestLin 72	5	97	101	99	101	+2	S	VG	MR	MR
Yellow Seed										
AAC Bright	5	92	93	97	95	+1	M	G	MR	MR
CDC Dorado	5	85	89	87	89	-2	M	G	MR	MR
VT50 (NuLin 50)	5	95	98	95	100	+1	S	VG	---	MR

[1] Data from Regional and Co-op yield trials.
[2] For further information on irrigated performance please refer to the publication entitled Crop Varieties for Irrigation at *www.irrigationsaskatchewan.com/icdc*.
[3] The relative maturity of the check **CDC Glas** is L (on average 101 days from seeding to swathing ripeness).
[4] Seed size: S = Small; M = Medium; L = Large.

ADDITIONAL INFORMATION

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

Camelina

Camelina, also known as false flax, is a short-season crucifer oilseed that can be grown on a wide range of soil types. It is well adapted to dryland conditions and does not tolerate excessive soil moisture. Camelina seed is fairly small (1.0 – 1.8 g/1000 seed) and requires shallow seeding. Reduced emergence may be expected when camelina is seeded deeper than ½ inch. Camelina plants are resistant to blackleg disease and flea beetles and possess good shatter resistance. Camelina may be straight-combined at full maturity or swathed when pods have turned color from green to yellow. Camelina is grown almost exclusively under contract; both camelina oil and meal are marketed for food, feed and industrial applications. Crop insurance is available for camelina crops grown in Saskatchewan. For more information on camelina, consult the Saskatchewan Agriculture publication, *Camelina*.

SES0787LS (Cypress™) is a spring-type camelina cultivar that combines high seed yield, high seed oil content, resistance to downy mildew, improved shatter resistance as well as improved seed size (on average 30 per cent and up to 50 per cent larger than seed of **AAC 10CS0048**). Its natural height is medium to tall or on average, 85 cm; it flowers after about 46 days and generally reaches maturity, depending on weather conditions, in 85 to 105 days after seeding. In trials conducted from 2015 to 2020 in western Canada, **SES0787LS** yielded, on average, 42 bu/ac.

SES1154HR (NewGold™) is the first spring-type camelina cultivar with resistance to thifensulfuron-methyl, a Group 2 herbicide. **SES1154HR** is agronomically similar to **SES0787LS** and therefore is high yielding, has high seed oil content and is resistant to downy mildew disease. On average, it's seed size is 30 per cent to 50 per cent larger than that of **AAC 10CS0048** camelina.

Under Saskatchewan growing conditions, these two cultivars would yield from 35 to 40 bu./ac. on fallow and 25 to 35 bu./ac. on stubble.

Mustard

Main Characteristics of Varieties

Type and Variety	Site Years	Yield[1] (%)	Plant Height (cm)	Hydroxylbenzyl Glucosinolate (µmol/g seed)	Allyl Glucosinolate (mg/g seed)	Mucilage[2] (cS*ml/g seed)	Fixed Oil (%)	Protein (%)	Seed Weight (g/1000)	Maturity (days)	Resistance to White Rust[3] 2a	Resistance to White Rust[3] 2v
Open-Pollinated Yellow		Relative to Andante										
Andante	45	100	112	143	na	82.4	28.1	35.5	5.7	84	R	R
AAC Adagio	29	102	-9	-4	na	+14.4	+2.0	-2.5	-0.6	+10	R	R
AC Pennant	124	99	-16	+5	na	-37.7	+1.4	-1.2	-0.0	+8	R	R
AAC Yellow 80	45	109	+2	-3	na	+3.7	+0.8	-0.4	-0.1	0	R	R
Open-Pollinated Brown		Relative to Centennial Brown										
Centennial Brown	47	100	123	na	11.0	na	35.6	30.5	3.0	85	S	S
Amigo	21	93	-14	na	+2.9	na	-2.9	+0.2	-0.3	+13	R	S
AAC Brown 120	22	112	+2	na	+1.0	na	+1.7	-0.7	+0.7	+9	R	R
Hybrid Brown		Relative to Centennial Brown										
AAC Brown 18	47	119	+3	na	-0.5	na	+1.6	-1.3	-0.1	0	R	S
Open-Pollinated Oriental		Relative to Cutlass										
Cutlass	117	100	115	na	11.6	na	41.0	29.1	2.8	91	R	S
Forge	117	97	+10	na	+0.6	na	-2.1	+0.5	-0.2	+1	S	S
AAC Oriental 200	22	106	+9	na	+0.1	na	-4.0	+0.9	-0.1	+1	R	S
AC Vulcan	117	98	+1	na	+0.8	na	-0.4	+0.4	+0.1	0	R	S

[1] Yield data not collected by area.
[2] Mucilage in yellow mustard is a measurement of viscosity of aqueous extracts from seed.
[3] Varieties are rated S (Susceptible) or R (Resistant) to White Rust strains.

ADDITIONAL INFORMATION

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

A unique feature of yellow mustard is high mucilage content. Mucilage is valued by the mustard industry as a stabilizer in prepared food products. **AAC Yellow 80** is a composite variety registered in September, 2020.

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

Varieties of all crop types included in the tables of the *Varieties of Grain Crops* in the *2023 SaskSeed® Guide* are reflective of current varieties in the marketplace that have been tested in our trials. A comprehensive database of all registered varieties for each crop kind requiring variety registration can be found at *www.inspection.gc.ca.*

Understanding Clubroot Resistance and the Classification System

By Sask Canola

For growers farming in areas where clubroot has been detected, or growers who are concerned about clubroot, the following management tips are recommended:

- Extend crop rotations to a minimum three-year rotation, including at least a two-year break between susceptible crops, even when resistant varieties are utilized.
- Grow clubroot-resistant varieties early, before clubroot symptoms are seen or the pathogen is detected.
- Control volunteers and Brassica weeds in all crops.
- Scout canola crops by examining roots for the presence of swollen root tissue (known as galls). Focus scouting efforts on field entrances, low areas and suspicious patches.
- Consider DNA-based soil testing to help detect the pathogen, even when there are no visible symptoms or in fields with other crops (such as wheat or barley).
- Minimize soil movement between fields by minimizing tillage and implementing biosecurity practices.

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

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

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

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

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

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

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

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

Canola (Small-Scale Straight Cut Trials)

Main Characteristics of Varieties

Variety[1] (*B. napus*)	Distributor	Overall Average[1] (16 locations)			Long Season Zone[1] (5 locations)			Mid Season Zone[1] (8 locations)			Short Season Zone[1] (3 locations)			Disease Tolerance[4]
		Yield[2] (%)	Maturity (days)	Lodging[3]	Yield[2] (%)	Maturity (days)	Lodging[3]	Yield[2] (%)	Maturity (days)	Lodging[3]	Yield[2] (%)	Maturity (days)	Lodging[3]	
Roundup Ready														
45CM39[5]	Pioneer Hi-Bred	100	94	2.9	100	87	2.9	100	96	2.9	100	100	3.4	BL/CR
D3158CM	BREVANT seeds	98	93	2.7	96	87	2.6	98	95	2.6	100	98	3.3	BL/CR
LSD (%)[9]		*11*			*12*			*10*			*11*			
Liberty Link														
L340PC[6]	InVigor	100	94	2.1	100	88	2.1	100	94	1.9	100	99	2.4	BL/CR
B3010M	BREVANT seeds	87	94	2.2	89	100	2.7	86	95	2.0	86	89	2.2	BL/CR
CS4000 LL	CANTERRA SEEDS	95	93	2.7	95	87	2.5	94	94	2.7	96	99	3.3	BL/CR
DKLL 82 SC	DEKALB	87	94	2.3	89	88	1.9	86	95	2.3	86	99	3.1	BL
DKTFLL 21 SC[8]	DEKALB	87	93	2.7	88	87	2.4	89	94	2.7	83	99	3.5	BL
L343PC	InVigor	98	94	2.3	95	88	2.3	99	95	2.0	99	99	2.8	BL/CR
L345PC	InVigor	101	94	2.6	102	88	2.6	100	95	2.4	102	99	2.9	BL/CR
L356PC	InVigor	100	94	2.2	98	88	2.1	101	95	1.9	102	99	2.8	BL/CR
P505MSL	Pioneer Hi-Bred	95	95	2.5	96	89	2.5	92	96	2.3	98	100	3.0	BL/CR/S
P506ML	Pioneer Hi-Bred	91	93	2.6	93	88	2.4	89	94	2.3	94	99	3.3	BL/CR
LSD (%)[9]		*10*			*13*			*9*			*9*			
TruFlex														
CS2600 CR-T[7]	CANTERRA SEEDS	100	92	3.1	100	85	3.3	100	94	2.8	100	97	3.5	BL/CR
BY 6211TF	BrettYoung	98	94	2.6	97	86	2.8	97	96	2.3	101	99	3.5	BL
CP21T3P	WinField United-CROPLAN	95	95	2.7	95	87	3.1	97	97	2.2	92	99	3.5	BL
CS3000 TF	CANTERRA SEEDS	102	93	2.7	101	86	2.9	103	95	2.5	102	98	2.9	BL/CR
CS3100 TF	CANTERRA SEEDS	92	96	2.1	80	89	2.6	94	99	1.6	102	101	2.5	BL/CR
DKTF 97 CRSC	DEKALB	97	93	2.6	95	85	2.7	96	95	2.3	102	97	3.5	BL
DKTF 99 SC	DEKALB	101	93	2.8	101	86	3.3	102	95	2.4	98	98	3.3	BL
PV 761 TM	Proven Seed	96	95	2.3	96	87	2.8	98	97	1.9	91	100	3.0	BL
LSD (%)[9]		*10*			*9*			*10*			*11*			

[1] From Canola Performance Trials grown across Prairie provinces, 2022.
[2] Comparisons based on per cent of check should only be made within a herbicide system.
[3] Lodging is measured on the degree of lean to the lower stem of the plant on a 1 to 5 scale (1=erect, 5=flat).
[4] Indicates genetic disease resistance with an "R" or resistant rating to BL = Blackleg, CR = Clubroot and improved tolerance to sclerotinia "S", as based on variety descriptions submitted to CFIA.
[5] Average yield (bu./ac.) of the check **45CM39** for long season zone, mid season zone and short season zone in 2022 was 58, 61 and 64, respectively.
[6] Average yield (bu./ac.) of the check **L340PC** for long season zone, mid season zone and short season zone in 2022 was 58, 70 and 67, respectively.
[7] Average yield (bu./ac.) of the check **CS2600 CR-T** for long season zone, mid season zone and short season zone in 2022 was 55, 63 and 67, respectively.
[8] Indicates varieties with glyphosate and glufosinate herbicide tolerance. Visit *www.canolaperformancetrials.ca* for more details.
[9] LSD = least significant difference (five per cent level) within herbicide system.

ADDITIONAL INFORMATION

Variety descriptions summarize the performance of varieties tested in the 2022 Canola Performance Trials. Data was provided by the Canola Performance Trials Committee. For more information visit *www.canolaperformancetrials.ca*.

All varieties listed in the two canola 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 environmental conditions conducive for disease development.

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

Least Significant Difference

When comparing average zone yields for varieties in the small plot data, the least significant difference is about six to 21 per cent. If variety A yielded 95 per cent of the check and variety B yielded 101 per cent of the check, they would be considered statistically the same. This is based on a confidence level that significant differences would occur by chance less than five per cent of the time. In the small plot design used, varieties were grouped by herbicide system, which means that the least significant difference shown strictly applies to comparisons between varieties of the same herbicide system.

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

Where can you get the Canola Performance Trial results?

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

Canola (Small-Scale Standard [Swathed] Trials)

Main Characteristics of Varieties

Variety[1] (*B. napus*)	Distributor	Overall Average[1] (16 locations)			Long Season Zone[1] (5 locations)			Mid Season Zone[1] (8 locations)			Short Season Zone[1] (3 locations)			Disease Tolerance[4]
		Yield[2] (%)	Maturity (days)	Lodging[3]	Yield[2] (%)	Maturity (days)	Lodging[3]	Yield[2] (%)	Maturity (days)	Lodging[3]	Yield[2] (%)	Maturity (days)	Lodging[3]	
Roundup Ready														
45CM39[5]	Pioneer Hi-Bred	100	92	2.6	100	86	2.5	100	93	2.5	100	99	3.3	BL/CR
1028 RR[10]	BREVANT seeds	92	94	2.4	94	88	2.6	92	95	1.8	88	99	3.1	BL/CR
45H42	Pioneer Hi-Bred	99	93	2.5	100	87	2.5	95	94	2.2	104	98	3.1	BL/CR
LSD (%)[9]		*12*			*11*			*13*			*10*			
Liberty Link														
L340PC[6]	InVigor	100	92	1.9	100	84	1.9	100	93	1.8	100	97	2.1	BL/CR
B3011	BREVANT seeds	87	92	2.4	87	84	2.3	83	94	2.1	93	98	2.9	BL/CR
CP21L3C	WinField United - CROPLAN	95	92	1.9	93	85	1.8	94	93	1.9	98	97	2.4	BL/CR
P501L	Pioneer Hi-Bred	93	92	2.0	98	85	2.1	88	93	1.8	95	98	2.4	BL/CR
LSD (%)[9]		*10*			*12*			*9*			*9*			
TruFlex														
CS2600 CR-T[7]	CANTERRA SEEDS	100	90	3.6	100	84	3.9	100	91	3.2	100	95	4.0	BL/CR
BY 6207TF	BrettYoung	91	95	1.7	90	89	1.8	94	97	1.6	90	100	2.0	BL/CR
DKTF 98 CR	DEKALB	97	90	2.9	94	84	3.1	100	92	2.6	96	95	3.5	BL/CR
LSD (%)[9]		*13*			*12*			*14*			*10*			
Clearfield														
BY 5125CL[8]	BrettYoung	100	91	2.7	100	88	2.8	100	94	2.5	---	---	---	BL/CR
B2030MN	BREVANT seeds	108	90	2.7	111	88	3.0	105	91	2.4	---	---	---	BL/CR
CS2500 CL	CANTERRA SEEDS	103	89	2.7	100	86	3.1	105	91	2.3	---	---	---	BL
CS2700 CL	CANTERRA SEEDS	99	91	2.3	105	89	2.8	94	93	1.8	---	---	---	BL/CR
P508MCL	Pioneer Hi-Bred	113	88	2.9	107	86	3.1	119	89	2.7	---	---	---	BL
P607CL	Pioneer Hi-Bred	114	90	2.5	113	87	3.0	115	92	2.0	---	---	---	BL/CR
PV 280 CLC	Proven Seed	117	88	2.5	112	87	2.7	120	90	2.4	---	---	---	BL/CR
LSD (%)[9]		*14*			*15*			*13*						

[1] From Canola Performance Trials grown across Prairie provinces, 2022.
[2] Comparisons based on per cent of check should only be made within a herbicide system.
[3] Lodging is measured on the degree of lean to the lower stem of the plant on a 1 to 5 scale (1=erect, 5=flat).
[4] Indicates genetic disease resistance with an "R" or resistant rating to BL = Blackleg and CR = Clubroot as based on variety descriptions submitted to CFIA.
[5] Average yield (bu./ac.) of the check **49CM39** for long season zone, mid season zone and short season zone in 2022 was 51, 61 and 65, respectively.
[6] Average yield (bu./ac.) of the check **L340PC** for long season zone, mid season zone and short season zone in 2022 was 53, 69 and 66, respectively.
[7] Average yield (bu./ac.) of the check **CS2600 CR-T** for long season zone, mid season zone and short season zone in 2022 was 53, 59 and 64, respectively.
[8] Average yield (bu./ac.) of the check **BY 5125CL** for long season zone and mid season zone in 2022 was 47 and 55, respectively.
[9] LSD = least significant difference (five per cent level) within herbicide system.
[10] Indicates varieties with glyphosate and glufosinate herbicide tolerance. Visit *www.canolaperformancetrials.ca* for more details.

Sunflower

Main Characteristics of Hybrids

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

[1] AC Sierra is open pollinated and not a hybrid.

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

ADDITIONAL INFORMATION

Sunflower requires 105-125 days to mature, depending on the cultivar and the growing season. Oilseed sunflower has been grown in the Dark Brown and Black Soil Zones in southeastern Saskatchewan. Harvest moisture is a good indication of how quickly these hybrids will be ready to combine in the field. The EM varieties are adapted to production in most areas of Saskatchewan. **AC Sierra** is open pollinated and not a hybrid.

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

FORAGE CROPS

Annual Forages

Main Characteristics of Varieties

Variety[1]	Site Years	Days to Heading	Lodging Score[2]	Forage DM Yield (kg/ha)	Nutritional Data[3]					
					CP (%)	ADF (%)	NDF (%)	TDN (%)	Ca (%)	P (%)
Barley										
AB Advantage	12	59	2	7941	9.7	30.4	49.3	66.2	0.29	0.19
Altorado	8	60	1	7435	9.4	26.6	45.5	70.3	0.22	0.20
CDC Austenson	12	61	1	7517	9.8	29.6	49.6	67.0	0.22	0.18
AB Cattlelac	12	60	1	7284	9.3	28.7	49.0	67.9	0.30	0.18
Claymore	8	60	1	7225	9.6	28.6	47.4	68.1	0.27	0.20
CDC Copeland	12	62	1	7610	9.0	30.3	50.2	66.3	0.28	0.17
AB Prime	8	59	1	7337	10.1	27.5	46.6	69.3	0.22	0.20
CDC Renegade	12	59	2	7841	9.7	27.7	45.3	69.0	0.21	0.19
Stockford	8	61	1	6562	9.5	28.7	47.3	68.0	0.31	0.20
AB Wrangler	12	61	1	6958	9.7	26.5	45.9	70.3	0.24	0.19
Oat										
CDC Arborg	12	56	1	7767	10.0	32.8	52.8	63.6	0.22	0.19
CDC Baler	12	59	2	8085	9.5	35.7	58.1	60.5	0.23	0.18
CDC Haymaker	12	61	1	8044	9.6	35.2	58.5	61.0	0.24	0.18
Wheat										
AC Andrew	12	55	1	7594	9.7	29.9	48.4	60.2	0.12	0.18
AAC Awesome VB[4]	12	58	1	9313	8.6	31.4	50.3	65.1	0.11	0.17
AAC Chiffon VB[4]	12	57	1	8869	8.3	30.6	49.1	66.5	0.10	0.17
AAC Innova	12	58	1	7824	9.6	31.5	51.0	57.8	0.14	0.18
Triticale										
AB Stampeder	12	54	1	8241	9.7	29.3	49.6	67.4	0.14	0.18

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

[2] Lodging Score: 1 = upright to 9 = flat

[3] CP = crude protein; ADF = acid detergent fiber; NDF = neutral detergent fiber; TDN = total digestible nutrient; Ca = calcium; P = phosphorus. The values are based on dry matter basis.

[4] VB = varietal blend. Information on refuge varieties on page VR13.

ADDITIONAL INFORMATION

For information on more annual forage varieties please refer to the table and interim report on the Wheatlands Conservation Inc. website at *www.wheatlandconservation.ca/research*. This project is funded through the Saskatchewan Ministry of Agriculture Strategic Field Program and includes some of the more common annual forage types and a few forage mixtures. The three-year project was completed in 2022 and a final report will be available in 2023.

Perennial Forages

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

Breeding Institutions and Seed Distributors of Varieties Listed in this Publication

Crop Kind, Class & Variety	Breeding Institution	Distributor
WHEAT		
Canada Western Red Spring		
CDC Adamant VB ♕	U of S - CDC	FP Genetics
AAC Alida VB ♕	AAFC (Swift Current)	SeCan Members
Bolles ♕	U of Minnesota	Seed Depot
AAC Brandon ⛰	AAFC (Swift Current)	SeCan Members
SY Brawn VB ♕	Syngenta Seeds Canada Inc.	Proven Seed/Nutrien Ag Solutions
AAC Broadacres VB ♕	AAFC (Swift Current)	Proven Seed/Nutrien Ag Solutions
AAC Cameron VB ♕	AAFC (Brandon)	CANTERRA SEEDS
Carberry ⛰	AAFC (Swift Current)	SeCan Members
Cardale ⛰	AAFC (Winnipeg)	Seed Depot
SY Cast ✪	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.	FP Genetics
Daybreak ✪ **VUA**	LCRC - Limagrain Canada	CANTERRA SEEDS
SY Donald VB ✪	Syngenta Seeds Canada Inc.	FP Genetics
AAC Dutton VB ✪	AAFC (Brandon)	SeCan Members
AAC Elie ⛰	AAFC (Swift Current)	Alliance Seed
Ellerslie ♕	U of Alberta	SeCan Members
SY Gabbro ♕ §	Syngenta Seeds Canada Inc.	Richardson Intl
AAC Hassler ✪	AAFC (Brandon)	FP Genetics
AAC Hockley ✪	AAFC (Swift Current)	FP Genetics
AAC Hodge VB ✪	AAFC (Brandon)	FP Genetics
CDC Hughes VB ♕	U of S - CDC	Proven Seed/Nutrien Ag Solutions
Jake ♕	U of Alberta	CANTERRA SEEDS
CDC Landmark VB ♕	U of S - CDC	FP Genetics
AAC LeRoy VB ♕	AAFC (Brandon)	Alliance Seed
AAC Magnet ♕	AAFC (Brandon)	FP Genetics
SY Manness ✪	Syngenta Seeds Canada Inc.	FP Genetics
SY Obsidian ♕	Syngenta Seeds Canada Inc.	Richardson Intl
CDC Ortona ♕	U of S - CDC	Proven Seed/Nutrien Ag Solutions
Parata ♕ §	U of Alberta	SeCan Members
CDC Pilar CLPlus ✪	U of S - CDC	Proven Seed/Nutrien Ag Solutions
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
Sheba ♕	U of Alberta	Penwest Seeds
CDC Silas ✪	U of S - CDC	FP Genetics
CDC SKRush ✪	U of S - CDC	SeCan Members
SY Sovite ♕ §	Syngenta Seeds Canada Inc.	Richardson Intl
CDC Stanley ⛰	U of S - CDC	Proven Seed/Nutrien Ag Solutions
AAC Starbuck VB ♕	AAFC (Swift Current)	SeCan Members
Stettler ⛰	AAFC (Swift Current)	SeCan Members
CDC Succession CLPlus VB ✪	U of S - CDC	Proven Seed/Nutrien Ag Solutions
AAC Tisdale ♕	AAFC (Swift Current)	SeCan Members
CDC Titanium VB ♕	U of S - CDC	Proven Seed/Nutrien Ag Solutions
SY Torach ♕ §	Syngenta Seeds Canada Inc.	Alliance Seed
Tracker ♕	U of Alberta	CANTERRA SEEDS
CDC Utmost VB ⛰	U of S - CDC	FP Genetics
AAC Viewfield ♕	AAFC (Swift Current)	FP Genetics
AAC Warman VB ♕ §	AAFC (Brandon)	SeCan Members
AAC Wheatland VB ♕	AAFC (Swift Current)	SeCan Members
Canada Western Special Purpose		
Alderon	KWS-UK	SeCan Members
AAC Awesome VB ♕	AAFC (Lethbridge)	SeCan Members
AAC Innova ♕	AAFC (Lethbridge)	Alliance Seed
Pasteur	Wiersum Plant Breeding	SeCan Members
Sparrow VB	KWS-UK	SeCan Members
WPB Whistler ✪	Wiersum Plant Breeding	SeCan Members
Canada Prairie Spring Red		
Accelerate ✪ **VUA**	LCRC - Limagrain Canada	CANTERRA SEEDS
AAC Crossfield ♕ §	AAFC (Winnipeg)	CANTERRA SEEDS
AAC Foray VB ♕	AAFC (Winnipeg)	SeCan Members
Forefront	U of Alberta	Penwest Seeds
AAC Penhold ♕	AAFC (Swift Current)	SeCan Members
AAC Perform ✪	AAFC (Lethbridge)	Alliance Seed
CDC Reign ♕	U of S - CDC	FP Genetics
AAC Rimbey VB ✪	AAFC (Swift Current)	SeCan Members
SY Rorke ♕	Syngenta Seeds Canada Inc.	Proven Seed/Nutrien Ag Solutions
SY Rowyn ♕	Syngenta Seeds Canada Inc.	Alliance Seed
AAC Westlock ✪	AAFC (Lethbridge)	SeCan Members
Canada Western Hard White Spring		
AAC Tomkins ✪	AAFC (Swift Current)	FP Genetics
AAC Whitehead VB ✪	AAFC (Lethbridge)	FP Genetics
Canada Western Soft White Spring		
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

Crop Kind, Class & Variety	Breeding Institution	Distributor
WHEAT (CONT'D)		
Canada Western Amber Durum		
CDC Alloy ♕	U of S - CDC	FP Genetics
AAC Antler ✪	AAFC (Swift Current)	SeCan Members
Brigade ⛰	AAFC (Swift Current)	Proven Seed/Nutrien Ag Solutions
AAC Congress ♕	AAFC (Swift Current)	CANTERRA SEEDS
CDC Covert ♕	U of S - CDC	Proven Seed/Nutrien Ag Solutions
CDC Credence ♕	U of S - CDC	CANTERRA SEEDS
CDC Defy ♕	U of S - CDC	SeCan Members
AAC Donlow ♕	AAFC (Swift Current)	CANTERRA SEEDS
CDC Dynamic ♕	U of S - CDC	Proven Seed/Nutrien Ag Solutions
CDC Evident ✪	U of S - CDC	Alliance Seed
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
CDC Precision ♕	U of S - CDC	Alliance Seed
AAC Schrader ✪	AAFC (Swift Current)	FP Genetics
AAC Spitfire ♕	AAFC (Swift Current)	SeCan Members
Strongfield ⛰	AAFC (Swift Current)	SeCan Members
AAC Stronghold ♕	AAFC (Swift Current)	SeCan Members
AAC Succeed VB ♕	AAFC (Swift Current)	FP Genetics
Transcend ⛰	AAFC (Swift Current)	FP Genetics
CDC Vantta ✪	U of S - CDC	SeCan Members
CDC Verona ⛰	U of S - CDC	Alliance Seed
AAC Weyburn VB ✪	AAFC (Swift Current)	Alliance Seed
WINTER WHEAT		
Canada Western Red Winter		
CDC Buteo	U of S - CDC	SeCan Members
AAC Coldfront ✪	AAFC (Lethbridge)	SeCan Members
AAC Elevate ♕	AAFC (Lethbridge)	SeCan Members
Emerson ⛰	AAFC (Lethbridge)	CANTERRA SEEDS
AAC Gateway ⛰	AAFC (Lethbridge)	Seed Depot
AAC Goldrush ♕	AAFC (Lethbridge)	FP Genetics
Moats ⛰	U of S - CDC	SeCan Members
AAC Network ✪	AAFC (Lethbridge)	SeedNet Inc.
Radiant ⛰	AAFC (Lethbridge)	CANTERRA SEEDS
AAC Vortex ✪	AAFC (Lethbridge)	Alliance Seed
AAC Wildfire ♕	AAFC (Lethbridge)	SeCan Members
Canada Western Experimental		
AAC Icefield ♕	AAFC (Lethbridge)	FP Genetics
Canada Western Special Purpose		
Pintail	FCDC (Lacombe)	Mastin Seeds
TRITICALE		
Spring Habit		
Brevis	AAFC (Swift Current)	Wagon Wheel Seed Corp
Bunker ⛰	FCDC (Lacombe)	FP Genetics
AAC Delight ♕	AAFC (Lethbridge)	Fabian Seed Farms
Pronghorn	FCDC (Lacombe)	Progressive Seeds
AB Stampeder ✪	FCDC (Lacombe)	Solick Seeds
Sunray	AAFC (Lethbridge)	SeedNet Inc.
Taza ⛰	FCDC (Lacombe)	Solick Seeds
Tyndal ⛰	FCDC (Lacombe)	SeCan Members
AC Ultima	AAFC (Swift Current)	FP Genetics
Winter Habit		
Luoma ⛰	FCDC (Lacombe)	Corns Brothers Farms
Metzger	FCDC (Lacombe)	Haney Farm Ltd.
Pika	FCDC (Lacombe)	Progressive Seeds
RYE		
Open-Pollinated		
Hazlet	AAFC (Swift Current)	SeCan Members
Danko	Danko Plant Breeders Ltd	FP Genetics
Prima	AAFC (Swift Current)	SeCan Members
Hybrid Varieties		
KWS Bono	KWS Lochow GMBH	FP Genetics
Brasetto	KWS Lochow GMBH	FP Genetics
KWS Daniello §	KWS Lochow GMBH	SeedNet Inc.
KWS Gatano ✪	KWS Lochow GMBH	FP Genetics
KWS Receptor	KWS Lochow GMBH	KWS Cereals Canada
KWS Sandor	KWS Lochow GMBH	KWS Cereals Canada
KWS Serafino ✪	KWS Lochow GMBH	SeedNet Inc.
KWS Trebiano ✪	KWS Lochow GMBH	FP Genetics
Forage		
KWS Progas	KWS Lochow GMBH	FP Genetics
KWS Propower ✪	KWS Lochow GMBH	SeedNet Inc.
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

Crop Kind, Class & Variety	Breeding Institution	Distributor
BARLEY		
Malting Two-Row		
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)	Elite Seeds
CDC Goldstar	U of S - CDC/Sapporo/PML	CANTERRA SEEDS
AC Metcalfe	AAFC (Brandon)	SeCan Members
CDC PlatinumStar	U of S - CDC/Sapporo/PML	CANTERRA SEEDS
AAC Prairie ✪	AAFC (Brandon)	CANTERRA SEEDS
AAC Synergy	AAFC (Brandon)	FP Genetics
Torbellino	Syngenta Seeds Canada Inc.	FP Genetics
Malting Six-Row		
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
Bighorn ✪	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
Brahma	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
Canmore	FCDC (Lacombe)	CANTERRA SEEDS
Cantu ✪	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
Claymore	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
CDC Durango ✪	U of S - CDC	SeCan Members
Esma ✪ **VUA**	Ackermann Saatzucht	SeCan Members
Ibex ✪	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
KWS Kellie ✪ **VUA**	KWS-GMBH	Secan Members
AAC Lariat ✪	AAFC (Brandon)	CANTERRA SEEDS
Oreana	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
RGT Planet **VUA**	RAGT	SeCan Members
AB Prime ✪	FCDC (Lacombe)	SeedNet Inc.
Sirish	Syngenta Seeds Canada Inc.	FP Genetics
AB Wrangler ✪	FCDC (Lacombe)	CANTERRA SEEDS
Hulled - Feed Six-Row		
Amisk §	FCDC (Lacombe)	SeCan Members
AC Rosser §	AAFC (Brandon)	SeCan Members
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
CDC Valdres ✪	U of S - CDC	Tomtene Seeds
Forage		
AB Advantage	FCDC (Lacombe)	SeCan Members
AB Cattlelac	FCDC (Lacombe)	Alliance Seed
CDC Cowboy	U of S - CDC	SeCan Members
AB Hague ✪	FCDC (Lacombe)	FP Genetics
CDC Maverick	U of S - CDC	SeCan Members
AC Ranger	AAFC (Brandon)	FP Genetics
CDC Renegade ✪	U of S - CDC	SeCan Members
Stockford	Highland Specialty Grains	Proven Seed/Nutrien Ag Solutions
AB Tofield ✪	FCDC (Lacombe)	SeCan Members
CAMELINA		
SES0787LS (Cypress)	Smart Earth Camelina Corp.	Smart Earth Camelina Corp.
SES1154HR (NewGold)	Smart Earth Camelina Corp.	Smart Earth Camelina Corp.
SUNFLOWER		
Cobalt II	Nuseed Americas	Nuseed Americas
AC Sierra	AAFC (Saskatoon)	AAFC (Indian Head)
Talon	Nuseed Americas	Nuseed Americas
63A21 §	Pioneer Hi-Bred	Pioneer Hi-Bred
QUINOA		
NQ Red ✪	NorQuin	NorQuin
NQ94PT	NorQuin	NorQuin
NQ20W ✪	NorQuin	NorQuin
NQ20BL ✪	NorQuin	NorQuin

Crop Kind, Class & Variety	Breeding Institution	Distributor
OAT		
Hulled		
Akina §	Lantmannen SW Seed	Elite Seeds
Alka ✪ §	Lantmannen SW Seed	Elite Seeds
CDC Anson ✪	U of S - CDC	FP Genetics
CDC Arborg	U of S - CDC	FP Genetics
CDC Boyer	U of S - CDC	SeCan Members
CS Camden	Lantmannen SW Seed	CANTERRA SEEDS
CDC Dancer §	U of S - CDC	FP Genetics
Derby	U of S - CDC	Mastin Seeds
AAC Douglas ✪	AAFC (Brandon)	SeCan Members
CDC Endure	U of S - CDC	Alliance Seed
Kalio ✪	Lantmannen SW Seed	CANTERRA SEEDS
Kara §	Lantmannen SW Seed	Elite Seeds
Kyron	Lantmannen SW Seed	CANTERRA 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
ORe3542M	Oat Advantage	SeCan Members
ORe Level48	Oat Advantage	Seed Depot
ORe Level50	Oat Advantage	Seed Depot
CDC Ruffian	U of S - CDC	FP Genetics
CDC SO-I	U of S - CDC	T&L Seeds
Souris	NDSU	Seed Depot
Summit	AAFC (Winnipeg)	FP Genetics
Triactor	Lantmannen SW Seed	CANTERRA SEEDS
AAC Wesley ✪	AAFC (Brandon)	FP Genetics
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		
Brown Seed		
CDC Bethune	U of S - CDC	SeCan Members
AAC Bravo	AAFC (Morden)	FP Genetics
CDC Buryu	U of S - CDC	SeCan Members
CDC Glas	U of S - CDC	SeCan Members
CDC Kernen	U of S - CDC	SeCan Members
AAC Marvelous	AAFC (Morden)	FP Genetics
CDC Neela	U of S - CDC	CANTERRA SEEDS
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
Yellow Seed		
AAC Bright	AAFC (Morden)	SeCan Members
CDC Dorado	U of S - CDC	SeedNet Inc.
VT50	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.
AC Pennant	AAFC (Saskatoon)	Mustard 21 Canada Inc.
AAC Yellow 80 ✪	AAFC (Saskatoon)	Mustard 21 Canada Inc.
SAFFLOWER		
Saffire	AAFC (Lethbridge)	Jerry Kubic (AB)

CANOLA

see tables on page VR34 - VR35

Crop Kind, Class & Variety	Breeding Institution	Distributor
LENTIL		
Small Red		
CDC Carmine ♕ §	U of S - CDC	Sask. Pulse Growers
CDC Dazil	U of S - CDC	Sask. Pulse Growers
CDC Impulse ♕	U of S - CDC	Sask. Pulse Growers
CDC Karim ♕	U of S - CDC	Sask. Pulse Growers
CDC Maxim	U of S - CDC	Sask. Pulse Growers
CDC Nimble ♕	U of S - CDC	Sask. Pulse Growers
CDC Proclaim ♕	U of S - CDC	Sask. Pulse Growers
CDC Redmoon ♕	U of S - CDC	Sask. Pulse Growers
CDC Simmie ✪	U of S - CDC	Sask. Pulse Growers
Extra Small Red		
CDC Impala	U of S - CDC	Sask. Pulse Growers
Large Red		
CDC KR-2 ♕	U of S - CDC	Sask. Pulse Growers
CDC Sublime ✪	U of S - CDC	Sask. Pulse Growers
Small Green		
CDC Imvincible	U of S - CDC	Sask. Pulse Growers
CDC Jimini ✪	U of S - CDC	Sask. Pulse Growers
CDC Kermit ♕	U of S - CDC	Sask. Pulse Growers
CDC Viceroy	U of S - CDC	Sask. Pulse Growers
Medium Green		
CDC Imigreen	U of S - CDC	Sask. Pulse Growers
CDC Impress	U of S - CDC	Sask. Pulse Growers
Large Green		
CDC Greenland	U of S - CDC	Sask. Pulse Growers
CDC Greenstar	U of S - CDC	Sask. Pulse Growers
CDC Grimm ✪	U of S - CDC	Sask. Pulse Growers
CDC Impower	U of S - CDC	Sask. Pulse Growers
CDC Lima ♕	U of S - CDC	Sask. Pulse Growers
French Green		
CDC Marble	U of S - CDC	Sask. Pulse Growers
CDC Peridot	U of S - CDC	Sask. Pulse Growers
CDC Pilgrim ✪	U of S - CDC	Sask. Pulse Growers
Green Cotyledon		
CDC Imerald ✪	U of S - CDC	Sask. Pulse Growers
CDC QG-3 ♕	U of S - CDC	Sask. Pulse Growers
CDC QG-4 ♕	U of S - CDC	Sask. Pulse Growers
Spanish Brown		
CDC SB-3 ♕	U of S - CDC	Sask. Pulse Growers
CDC SB-4 ♕	U of S - CDC	Sask. Pulse Growers
DRY BEAN		
Black		
CDC Blackstrap ♕	U of S - CDC	Sask. Pulse Growers
CDC Jet	U of S - CDC	Sask. Pulse Growers
CDC Superjet	U of S - CDC	Sask. Pulse Growers
Pinto		
Island	AAFC (Lethbridge)	Viterra Inc.
Medicine Hat ⛰	Seminis Vegetable Seeds	CANTERRA SEEDS
CDC WM - 2	U of S - CDC	Sask. Pulse Growers
CDC WM - 3 ♕	U of S - CDC	Sask. Pulse Growers
Navy		
Bolt	U of Guelph	Hensell District Co-op
Portage	AAFC (Morden)	CANTERRA SEEDS
AAC Shock	AAFC / U of Guelph	Hensell District Co-op
CDC Whitetrack ✪	U of S - CDC	McDougall Acres
Small Red		
AC Redbond	AAFC (Lethbridge)	Viterra Inc.
flor de junio		
CDC Ray ♕	U of S - CDC	Rudy Agro
Yellow		
CDC Sunburst ♕	U of S - CDC	Rudy Agro
SOYBEAN		

see tables on page VR28 - VR29

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
RAGT	Rouergue Auvergne Gévaudan Tarnais
SY	Syngenta Seeds Canada Inc.
U	University
U of S	University of Saskatchewan
USDA	United States Department of Agriculture

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

Crop Kind, Class & Variety	Breeding Institution	Distributor
FIELD PEA		
Yellow		
Abarth ♕	Limagrain, Netherlands	FP Genetics
AAC Aberdeen ♕	AAFC (Lacombe)	Alliance Seed
CDC Amarillo	U of S - CDC	Sask. Pulse Growers
AAC Ardill	AAFC	Wagon Wheel Seed Corp.
AAC Beyond ✪	AAFC	CANTERRA SEEDS
CDC Canary ♕	U of S - CDC	Sask. Pulse Growers
AAC Carver ♕	AAFC	CANTERRA SEEDS
AAC Chrome ♕	AAFC (Lacombe)	FP Genetics
CDC Citrine ✪	U of S - CDC	Sask. Pulse Growers
AAC Delhi ♕ §	AAFC	SeedNet Inc.
CDC Golden	U of S - CDC	Sask. Pulse Growers
CDC Hickie ✪	U of S - CDC	Sask. Pulse Growers
CDC Inca ♕	U of S - CDC	Sask. Pulse Growers
AAC Julius ✪	AAFC	FP Genetics
AAC Lacombe ⛰ §	AAFC	SeedNet Inc.
CDC Lewochko ♕	U of S - CDC	Sask. Pulse Growers
CDC Meadow	U of S - CDC	Sask. Pulse Growers
AAC Profit ♕	AAFC	FP Genetics
CDC Saffron	U of S - CDC	Sask. Pulse Growers
CDC Spectrum ♕	U of S - CDC	Sask. Pulse Growers
CDC Tollefson ✪	U of S - CDC	Sask. Pulse Growers
Green		
Blueman §	DL Seeds Inc.	SeedNet Inc.
CDC Forest ♕	U of S - CDC	Sask. Pulse Growers
CDC Greenwater	U of S - CDC	Sask. Pulse Growers
CDC Huskie ✪	U of S - CDC	Sask. Pulse Growers
CDC Limerick	U of S - CDC	Sask. Pulse Growers
CDC Raezer	U of S - CDC	Sask. Pulse Growers
CDC Rider ✪	U of S - CDC	Sask. Pulse Growers
CDC Spruce ♕	U of S - CDC	Sask. Pulse Growers
CDC Striker	U of S - CDC	Sask. Pulse Growers
Red		
Redbat 8 ♕ §	U of S - CDC	Sask. Pulse Growers
Redbat 88 ♕ §	U of S - CDC	Sask. Pulse Growers
Maple		
CDC Acer §	U of S - CDC	Sask. Pulse Growers
CDC Blazer ♕	U of S - CDC	Sask. Pulse Growers
AAC Liscard §	AAFC	Wagon Wheel Seed Corp.
AAC Lorlie	AAFC	Wagon Wheel Seed Corp.
CDC Mosaic	U of S - CDC	Sask. Pulse Growers
Dun		
CDC Dakota	U of S - CDC	Sask. Pulse Growers
Forage		
DL Delicious ✪ **VUA**	DL Seeds Inc.	FP Genetics
DL Goldeye ✪ **VUA**	DL Seeds Inc.	Riddell Seed Co.
CDC Horizon	U of S - CDC	Sask. Pulse Growers
CDC Jasper ♕	U of S - CDC	Sask. Pulse Growers
DL Lacross	DL Seeds Inc.	SeedNet Inc.
CHICKPEA		
Kabuli		
CDC Alma §	U of S - CDC	Sask. Pulse Growers
Amit (B-90)	ARO Volcani Centre	AGT Foods Canada
CDC Frontier	U of S - CDC	Sask. Pulse Growers
CDC Lancer ✪	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 Orkney ✪	U of S - CDC	Sask. Pulse Growers
CDC Palmer ♕	U of S - CDC	Sask. Pulse Growers
Desi		
CDC Consul	U of S - CDC	Sask. Pulse Growers
CDC Cory	U of S - CDC	Sask. Pulse Growers
CDC Kala ✪	U of S - CDC	Sask. Pulse Growers
FABA BEAN		
Coloured Flower (normal tannin)		
Allison ✪	DL Seeds Inc.	Prairie Fava
Fabelle ♕	DL Seeds Inc.	SeedNet Inc.
FB9-4 §	U of S - CDC	Sask. Pulse Growers
CDC SSNS-1 §	U of S - CDC	Meier Brothers
Taboar §	Globe Seeds - Netherland	Terramax
Victus ✪	DL Seeds Inc.	Valesco Genetics
White Flower (low tannin)		
Imposa §	Limagrain Nederland	Cyre Seed Farms
Navi ✪	AGri Obtentions	KGB Meier Farms
DL Nevado ✪	DL Seeds Inc.	Stamp Seeds
Snowbird §	Limagrain Nederland	Lindholm Seeds
CDC Snowdrop §	U of S - CDC	Sask. Pulse Growers
Tabasco §	DL Seeds Inc.	Riddell Seed Co.
DL Tesoro ✪ **VUA** §	DL Seeds Inc.	Riddell Seed Co.
219-16 ♕ §	U of S - CDC	Sask. Pulse Growers

Notes