Government of Saskatchewan

# Varieties of Grain Crops 2019

## Table of Contents



## Symbols and Abbreviations Used:

§ Variety may not be described in 2020
--- Insufficient test data to describe
n/a = Not applicable
Applied for PBR protection at time of printing (UPOV'91)
Plant Breeders' Rights (UPOV'78) at time of printing
Plant Breeders' Rights (UPOV'91) at time of printing

**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



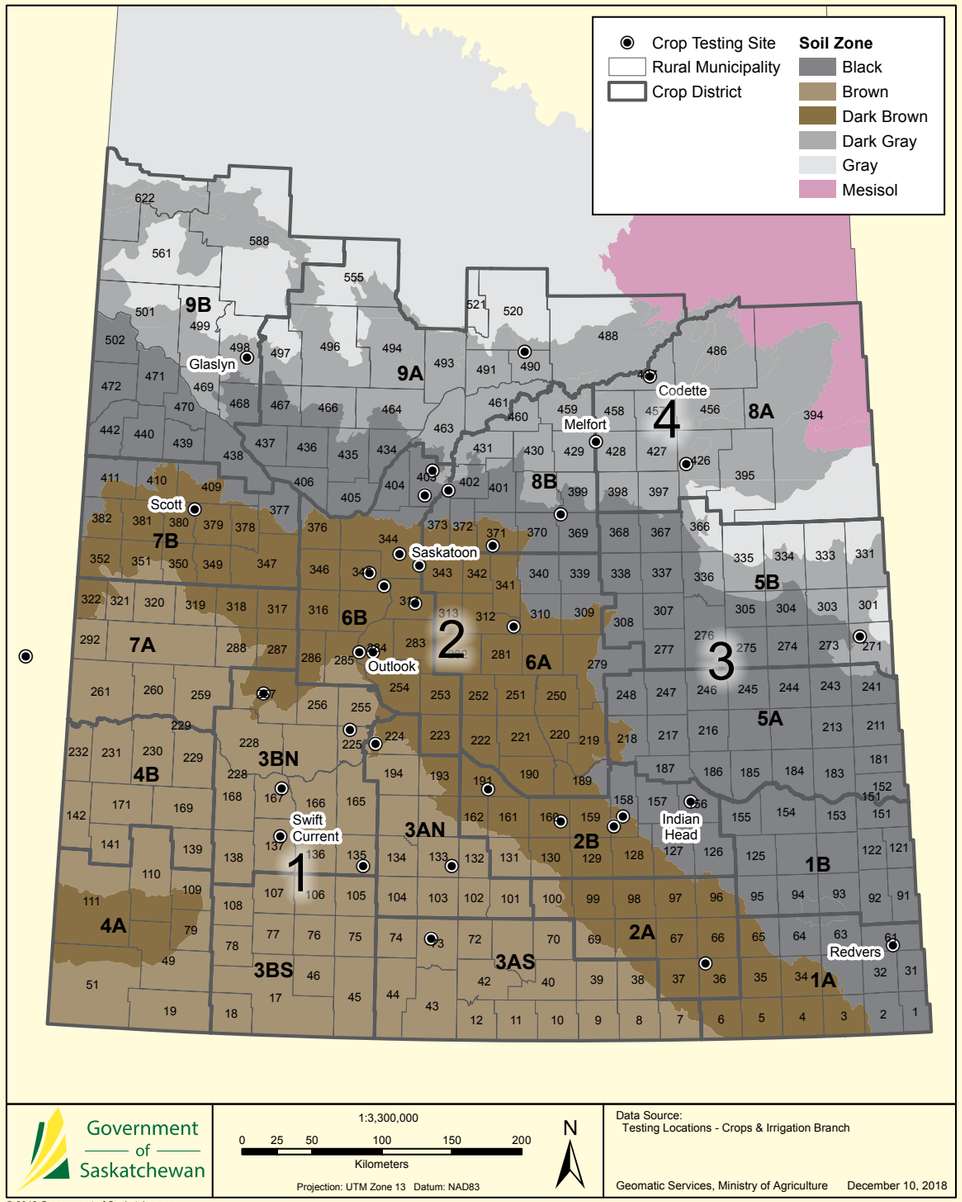
### Accessing Public Release Varieties

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

### Legal Disclaimer

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

# Regional Variety Testing Locations






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

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

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

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

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

**Note About Dividing Lines:**

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



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

SASKATCHEWAN pulse Growers

SASKATCHEWAN Winter Cereals DEVELOPMENT COMMISSION

SaskOats SASKATCHEWAN OAT DEVELOPMENT COMMISSION

Sask Wheat DEVELOPMENT COMMISSION

SaskBarley DEVELOPMENT COMMISSION

SaskFlax

SaskCanola Saskatchewan Canola Development Commission

SaskSeed Saskatchewan Seed Growers Association

Government of Saskatchewan

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

- Saskatchewan 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 Saskatchewan Ministry of Agriculture*

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

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

The Saskatchewan 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 *2019 SaskSeed Guide*.

The Saskatchewan Variety Performance Group (SVPG) administers the program for spring cereals, fall rye and flax. SVPG is composed of representatives from seed industry, producers, breeders and government. SeCan Association administers the funds for SVPG. Crop coordinators manage the data and provide expertise for their respective crops. An entry fee system is used, in which variety owners or companies with the distribution rights to a particular variety pay a portion of the cost of having the variety tested. The Saskatchewan Seed Growers' Association, Saskatchewan Wheat Development Commission, Saskatchewan Barley Development Commission, Saskatchewan Oat Development Commission and Sask-Flax collectively provide $79,900 to the core program. Supplementary funds enhance the core program.

Saskatchewan Pulse Growers (SPG) funds the pulse and soybean regional variety trials for Saskatchewan growers. For 2018 trials, SPG provided approximately $373,000 for pulse regional variety trials and $121,000 for soybean regional variety trials. Canadian marketing agents that distribute soybean varieties in Saskatchewan pay an entry fee that covers a portion of the cost of having their varieties tested. SPG collaborates with researchers at several locations to conduct the trials, including the Crop Development Centre at the University of Saskatchewan, Agriculture and Agri-Food Canada research stations, provincial AgriARM sites, and the Canada-Saskatchewan Irrigation Diversification Centre.

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

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

**Relative yield of varieties**

Trials are conducted using uniform protocols and standard check varieties. Data are 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 the yield differences that are 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 is a tool that 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 Mitchell Japp, Saskatchewan Agriculture*

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

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

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

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

UPOV is the International Union for the Protection of New Varieties of Plants. In order to be a member, a country must have legislation that aligns with a ratified UPOV convention. There are 75 UPOV member countries, 58 of which have ratified UPOV'91 compliant legislation.

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

PBR
Progress through Research

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

91
Progress Through Research
Le progrès grâce à la recherche

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

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

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

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

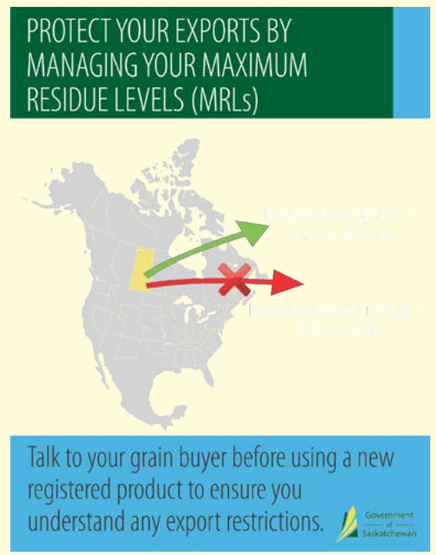
For more information visit *www.pbrfacts.ca* or contact the PBR Office at 613-773-7188.

# Maximum Residue Limits

Maximum Residue Limits (MRLs) are the level of pesticide residues permitted in the harvested crop, including imported food. Each country establishes its own MRLs, including Canada.

MRLs are set for each pesticide registered in Canada. Sometimes MRLs in Canada differ from those in export markets or may not exist in export markets for certain pesticides. Agricultural exports may be tested by importing countries for residues of unregistered products, excess residues of registered products or unregistered uses.

For more information, visit keepingitclean.ca.



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

*By Saskatchewan 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 to 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 the 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 Seed Guide but individual seed lots can vary tremendously. Having the actual TKW for the seed lot being grown is important for the accuracy of seeding rates.

There are upcoming changes in the canola seed industry that might require you to pay closer attention to seeding rates, or to change how you approach seeding. At least one company will begin selling seed based on categories of seed size, represented by thousand seed weight (TSW) by 2020.

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

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

[2] Target plant stands are not well established for canaryseed and quinoa. Canaryseed target 35 – 45 kg/ha (500 – 750 seeds/$m^2$). Quinoa target 10 kg/ha (10 lbs/acre).

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

## Calculating Seeding Rates

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 thousand kernel weight (TKW) could mean seeding too heavy and spending more on seed than needed, or seeding too light 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 5 to 20% 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%. Factors to take into account when determining the expected seedling survival are seeding date, soil temperature, moisture and texture, as well as seed quality and possible soil-borne diseases and insect pressures. The amount of seed-placed fertilizer and the seeding depth are factors that can also affect seedling survival. The formula below should be used to determine the target seeding rate:

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

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

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



# 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%. 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.

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% 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 caused by *F. graminearum* should avoid introducing it. The *Fusarium* total reported on the seed test includes *F. graminearum*.

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

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

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

### Soil Germination Test

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

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

### Seed Samples

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

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

# Seed-Borne and Seedling Disease Management

*By Saskatchewan 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 Saskatchewan Agriculture publication *Seed-Borne Diseases of Cereal Crops* for more information.

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

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

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

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

For ascochyta blight of lentil, use of seed with up to 5 per cent seed infection is acceptable in the Brown and Dark Brown Soil Zones, but 0 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 5%. In pea, up to 10% seed infection with ascochyta is acceptable.

In chickpea, 0% 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 publication *Seed-Borne Diseases of Pulse Crops.*

Handle delicate seeds (i.e. pulses) with care as seed coats are susceptible to damage – run augers full and slow, and watch fan speeds on airseeders. Use a seed treatment if seed has a high level of disease, seeds 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.

**Seed-Borne and Seedling Diseases and Actions to Minimize Impact**

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

*Source: Guideline for Seed-Borne Diseases of Pulse Crops, Saskatchewan Ministry of Agriculture*



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 could be considered another nitrogen fixing crop that has resistance to *Aphanomyces*.

With soybeans the best management practices for *Phytophthora* stem rot include selecting varieties with genetic resistance as well as 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 Saskatchewan 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 Saskatchewan Ministry of Agriculture*

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

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

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

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

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

# Fusarium Damaged Kernels

*By Mitchell Japp, Saskatchewan Agriculture*

Fusarium head blight has recently become more common in Saskatchewan. Producers will find out the level of fusarium damaged kernels (FDK) and perhaps also 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 in 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 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* has not become established, seed with more than 5% *F. graminearum* is not recommended for planting. Seed with 2-5% *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%.

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 Saskatchewan Agriculture publication *Seed-Borne Diseases of Cereal Crops.*

# Relative Maturity

*By Saskatchewan Ministry of Agriculture*

**Ratings**

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

Some of the tables in this booklet express the relative maturity in days while others use a five-category scale: VE, E, M, L and VL (very early, early, medium, late, very late). The limits for each category can vary from crop to crop. In barley, for example, AC Metcalfe would be M, with L and E varieties plus or minus 1-2 days, and VL and VE varieties beyond this range.

**Comparisons**

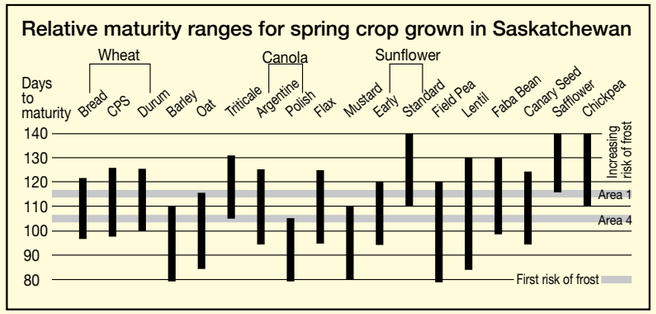
The relative maturity of varieties of different crops is important when making plans for seeding.

The table below 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 kilometres from north to south. For Saskatchewan, soybeans are most suited with 00 and 000 MG. Each MG can have subgroupings with a 0 to 9 decimal number following the group (or zone) number and these decimal places equate to slight increases in maturity. In the 00 maturity ratings, a subgroup of 00.1 would be earlier maturing than 00.9. Note that these MG ratings are not entirely standardized between seed companies. Check with your seed supplier to better understand MG ratings. Days to maturity is a direct measure of the days each variety takes to reach physiological maturity and is averaged across locations. The lower the number the earlier maturing the variety was across the sites tested. This value is obtained through the Regional Variety Testing Program and is an independent rating. Growers are advised to use all maturity information available to choose appropriate varieties for their area.




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



# General Seed Facts

**PEDIGREED SEED**

Use certified seed regularly. This assures that the seed has high genetic purity, 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% 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% ergot is considered poisonous and should not be used for food. Refer to the Saskatchewan 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. 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. Farmers 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 Saskatchewan Agriculture publication *Wheat Midge*.

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

*Source: Saskatchewan Ministry of Agriculture*

# Safe Rates of Seed-Placed Fertilizer

Phosphorus (P) is an important plant nutrient. Phosphorus promotes the development of extensive root systems and vigorous seedlings. Encouraging vigorous root growth is an important step in promoting good nodule development and nitrogen fixation for all legumes and growth of all crops. It also plays an important role in promoting earlier and more uniform maturity in all crops. Maximum safe rates of actual seed-placed phosphate fertilizer vary by crop and are based on monoammonium phosphate (11-52-0) which has a relatively low salt index and should not be used for other fertilizers. The table to the 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/acre) |
|---|---|
| Cereals | 50 |
| Canola | 25 |
| Canaryseed | 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,* Saskatchewan Ministry of Agriculture

# CEREAL CROPS

## Wheat

Main Characteristics of Varieties

| Category and Variety | Years Tested | Yield (%) Area 1 & 2 | Yield (%) Area 3 & 4 | Yield (%) Irrigation | Protein | Resistance To[2] Lodging | Sprouting | Stem Rust | Leaf Rust | Stripe Rust | Loose Smut | Bunt | Leaf Spot | FHB | Head Awnedness | Rel. Maturity (days) | Seed Weight (mg) | Volume Wt.[3] (kg/hL) | Ht. (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CWRS[1] | | --- Relative to Carberry --- | | | | | | | | | | | | | | ---- Relative to Carberry ---- | | | |
| Carberry | 6 | 100 | 100 | 100 | 14.6 | VG | F | MR | R | MR | MR | R | MS | MR | Y | 99 | 35.7 | 80.3 | 83 |
| CDC Adamant VB | 3 | 108 | 114 | --- | 0.0 | P | F | R | I | MS | S | S | MS | I | Y | -2 | -1.7 | 0.0 | +3 |
| AAC Alida VB | 2 | 105 | 108 | --- | +0.1 | VG | VG | R | R | MR | R | I | MS | MR | Y | -1 | +1.9 | +0.3 | +7 |
| CDC Bradwell | 5 | 101 | 108 | --- | 0.0 | VG | F | MR | R | MS | MR | R | MS | I | Y | 0 | -2.0 | +0.6 | +8 |
| AAC Brandon | 5 | 106 | 106 | --- | -0.4 | G | P | R | R | MR | MR | S | I | MR | Y | 0 | +0.1 | 0.0 | -1 |
| AAC Cameron VB | 5 | 108 | 118 | --- | -0.6 | F | F | MR | MR | S | S | R | I | I | Y | -2 | +3.0 | -0.4 | +17 |
| Cardale | 5 | 99 | 101 | --- | -0.1 | F | G | R | R | S | I | MR | MS | MR | Y | 0 | -1.3 | -1.2 | +3 |
| SY Chert VB | 2 | 100 | 106 | --- | -0.3 | F | F | R | R | R | R | R | MS | I | Y | -1 | -0.4 | -0.7 | +7 |
| Coleman § | 5 | 96 | 96 | --- | -0.2 | VP | P | MR | R | MR | S | S | MS | MR | Y | -3 | -2.8 | +0.4 | +16 |
| AAC Connery | 5 | 101 | 100 | --- | +0.3 | G | G | R | MR | R | MR | I | I | MR | N | -2 | 0.0 | -0.8 | +4 |
| AAC Elie | 5 | 105 | 105 | --- | -0.2 | G | F | R | R | MR | I | I | I | I | Y | 0 | -0.1 | 0.0 | -2 |
| Glenn | 6 | 99 | 102 | 102 | -0.4 | F | F | R | R | MR | I | I | I | I | Y | -1 | -0.9 | +2.6 | +9 |
| CDC Go § | 5 | 95 | 102 | --- | 0.0 | G | P | R | I | MR | MS | I | S | MS | Y | -3 | -1.9 | +2.3 | +7 |
| Go Early § | 5 | 96 | 102 | --- | +0.4 | P | VP | MR | MR | I | MS | MR | S | I | Y | -4 | 0.0 | -2.3 | +15 |
| Goodeve VB | 6 | 101 | 107 | 100 | 0.0 | G | G | MR | MR | I | MR | S | MS | S | N | -4 | +0.1 | -1.7 | +9 |
| CDC Hughes VB | 4 | 100 | 110 | --- | -0.1 | F | G | R | MR | I | MR | MS | I | I | Y | -1 | +2.1 | +0.3 | +3 |
| AC Intrepid § | 6 | 96 | 105 | --- | -0.2 | G | P | MR | MR | MR | I | MR | MS | MS | N | -5 | +3.2 | -1.8 | +11 |
| AAC Jatharia VB | 5 | 108 | 114 | --- | -0.2 | F | G | I | R | I | S | MS | I | I | Y | -1 | +0.8 | +0.8 | +15 |
| CDC Landmark VB | 4 | 109 | 112 | --- | -0.2 | G | G | R | MS | MR | MR | MS | I | I | Y | -1 | +1.2 | +0.8 | +4 |
| CDC VR Morris | 5 | 108 | 106 | --- | -0.2 | F | P | MR | R | --- | I | I | I | MR | N | -1 | -0.5 | -0.6 | +11 |
| SY Obsidian | 2 | 99 | 105 | --- | -0.3 | VG | F | MR | R | MR | R | MS | I | MS | Y | -2 | +1.2 | 0.0 | +4 |
| Parata | 2 | 98 | 106 | --- | +0.3 | F | F | R | MR | MR | MR | S | I | I | Y | -2 | -2.0 | -0.1 | +11 |
| CDC Plentiful | 5 | 105 | 104 | --- | -0.2 | G | P | R | R | MR | R | I | I | MR | N | -2 | -1.9 | -0.4 | +9 |
| AAC Prevail VB | 5 | 110 | 108 | --- | -0.5 | F | G | MR | R | R | S | S | MS | I | N | -1 | -0.5 | -1.0 | +19 |
| AAC Redberry | 4 | 105 | 108 | --- | -0.2 | F | G | R | R | R | R | I | MS | I | Y | -3 | -0.9 | +0.8 | +6 |
| Shaw VB | 6 | 112 | 114 | 103 | -0.7 | F | G | R | MR | I | S | MR | MS | MS | N | -1 | +0.5 | -0.5 | +18 |
| SY Slate | 4 | 102 | 107 | --- | +0.4 | P | P | MR | R | MR | MS | S | MS | I | Y | -2 | -0.1 | -0.8 | +7 |
| SY Sovite | 3 | 98 | 104 | --- | 0.0 | F | F | MR | R | R | R | MS | MR | MR | Y | 0 | +2.1 | -0.2 | +7 |
| CDC Stanley | 6 | 102 | 105 | 100 | -0.1 | G | VG | R | MR | I | MR | S | I | MS | N | -1 | -2.5 | -1.7 | +11 |
| AAC Starbuck VB | 1 | 113 | 117 | --- | -0.3 | G | F | I | MR | MR | MR | S | S | MR | Y | -1 | +0.7 | 0.0 | +3 |
| Stettler | 6 | 105 | 107 | 100 | +0.2 | F | G | MR | MS | MR | R | MR | MS | MS | Y | -1 | -0.6 | -0.4 | +8 |
| Thorsby § | 5 | 102 | 102 | --- | 0.0 | F | F | MR | R | R | I | S | MS | I | N | -3 | +0.5 | -0.8 | +13 |
| AAC Tisdale | 3 | 100 | 109 | --- | +0.7 | F | F | R | R | S | MR | MR | MS | MR | Y | -2 | +0.8 | -0.3 | +8 |
| CDC Titanium VB | 5 | 106 | 110 | --- | +0.6 | P | P | I | R | R | MS | I | MS | MR | Y | -2 | +1.1 | -0.2 | +10 |
| CDC Utmost VB | 6 | 108 | 112 | 107 | -0.4 | F | G | MR | R | I | MS | S | I | MS | N | -3 | -0.8 | -1.4 | +10 |
| AAC Viewfield | 4 | 109 | 108 | --- | -0.5 | VG | G | R | MR | R | S | MR | I | I | Y | -1 | -1.7 | +0.9 | -3 |
| AAC W1876 § | 5 | 98 | 101 | --- | +0.2 | F | F | MR | R | I | I | I | MS | I | Y | -1 | -0.5 | -0.8 | +3 |
| AAC Warman VB | 1 | 100 | 106 | --- | 0.0 | F | --- | R | R | MS | MR | S | I | MR | Y | -2 | -1.4 | 0.0 | +12 |
| Waskada | 6 | 108 | 107 | 101 | -0.2 | P | VG | R | I | MS | MR | R | MS | MR | Y | -1 | +0.6 | +0.8 | +16 |
| AAC Wheatland VB | 1 | 110 | 114 | --- | 0.0 | VG | G | R | R | I | R | MR | S | I | Y | -1 | +1.2 | +0.4 | +4 |
| WR859CL § | 6 | 101 | 101 | 102 | -0.1 | F | G | MR | R | I | R | R | MS | MR | Y | -1 | -2.0 | -0.4 | +4 |
| SY479 VB | 5 | 91 | 100 | --- | +0.6 | G | VG | I | R | S | MS | R | MS | I | Y | -2 | -1.4 | -0.1 | +16 |
| CWRS moving to CNHR August 1, 2021[1] | | | | | | | | | | | | | | | | | | | |
| Muchmore | 6 | 102 | 98 | 102 | -0.4 | VG | G | R | R | MR | MR | R | MS | MS | Y | 0 | -0.2 | -1.0 | -4 |
| AAC Redwater | 5 | 102 | 101 | --- | +0.1 | F | VG | R | R | MR | MS | I | MS | I | Y | -3 | -3.5 | -1.3 | +8 |
| Vesper VB | 6 | 108 | 113 | 109 | -0.7 | P | F | MR | R | S | I | S | I | I | Y | -2 | +1.0 | -0.4 | +13 |
| 5605HR CL | 5 | 103 | 106 | --- | +0.1 | F | F | MS | R | MR | R | MR | MS | MR | Y | -1 | -1.0 | +0.4 | +13 |



## Wheat (cont'd)

| Category and Variety | Years Tested | Yield (%) Area 1 & 2 | Yield (%) Area 3 & 4 | Yield (%) Irrigation | Protein | Resistance To[2] Lodging | Sprouting | Stem Rust | Leaf Rust | Stripe Rust | Loose Smut | Bunt | Leaf Spot | FHB | Head Awnedness | Rel. Maturity (days) | Seed Weight (mg) | Volume Wt.[3] (kg/hL) | Ht. (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CPSR[1] | | --- Relative to Carberry --- | | | | | | | | | | | | | | ---- Relative to Carberry ---- | | | |
| AAC Crossfield | 3 | 116 | 111 | --- | -1.4 | F | P | MR | R | R | I | S | I | I | Y | -1 | +2.1 | -1.6 | 0 |
| AAC Entice | 3 | 116 | 109 | --- | -1.1 | P | P | R | R | R | MS | S | MS | I | Y | -1 | 1.0 | -2.3 | +1 |
| AAC Foray VB | 5 | 116 | 120 | 122 | -1.7 | F | P | MR | R | I | MS | I | MS | I | Y | 0 | +7.9 | -1.3 | +5 |
| AAC Goodwin | 3 | 116 | 116 | --- | -1.5 | G | G | I | R | R | MS | I | I | I | Y | -1 | +0.9 | +0.3 | +2 |
| AAC Penhold | 5 | 108 | 111 | 108 | -1.0 | VG | VG | MR | R | MR | I | R | I | MR | Y | -2 | +5.1 | -0.2 | -9 |
| SY Rowyn | 3 | 101 | 106 | --- | -0.9 | F | F | R | R | MR | I | S | I | MR | Y | 0 | -4.5 | -0.5 | -5 |
| AAC Ryley § | 5 | 103 | 110 | 122 | -1.2 | P | G | R | R | S | I | R | MS | MS | Y | -1 | +6.9 | -4.3 | +2 |
| AAC Tenacious VB § | 5 | 100 | 106 | 93 | -1.6 | VP | G | MR | R | R | R | MR | MS | R | Y | 0 | -0.3 | -0.2 | +20 |
| CDC Terrain | 4 | 116 | 114 | --- | -1.4 | P | G | MR | R | R | MR | MR | I | MS | Y | 0 | +4.8 | -2.1 | +3 |
| 5700PR | 5 | 107 | 113 | 106 | --- | VG | F | R | I | S | MS | R | MS | MS | Y | -1 | +5.5 | 0.0 | -4 |
| SY985 § | 5 | 107 | 115 | 114 | -1.3 | P | P | R | R | --- | R | MR | I | I | Y | -1 | +5.8 | -2.1 | 0 |
| CNHR[1] | | | | | | | | | | | | | | | | | | | |
| AAC Concord | 4 | 106 | 105 | --- | -0.3 | VP | F | R | R | R | I | MR | I | MS | N | -1 | +2.9 | -1.3 | +13 |
| CDC Cordon CLPlus VB | 3 | 111 | 114 | --- | -0.8 | F | F | MR | MR | MS | MR | R | MS | I | Y | -2 | +1.1 | -2.4 | +1 |
| Elgin ND | 4 | 112 | 115 | --- | -0.7 | F | F | I | R | MR | --- | S | I | I | Y | -1 | -2.0 | -0.6 | +7 |
| Faller | 3 | 115 | 120 | --- | -1.6 | F | F | I | MR | MS | --- | I | MS | I | Y | -1 | +2.1 | -1.3 | +2 |
| Lillian § | 6 | 89 | 95 | | +1.1 | P | G | MR | R | R | I | MR | MR | S | N | -2 | +0.7 | -1.6 | +14 |
| Prosper | 3 | 116 | 119 | --- | -1.7 | F | F | MR | MR | S | --- | I | I | I | Y | 0 | +2.6 | -1.3 | +3 |
| Unity VB § | 6 | 106 | 113 | 103 | -0.6 | P | VG | MR | R | MS | MS | R | I | I | Y | -2 | -1.5 | +0.1 | +14 |
| CWSWS[1] | | | | | | | | | | | | | | | | | | | |
| AC Andrew | 5 | 130 | 137 | --- | -- | VG | P | MR | MS | I | S | S | --- | I | Y | +2 | -1.4 | -5.0 | +3 |
| AAC Chiffon VB* | 5 | 136 | 137 | 139 | -3.7 | P | VP | S | I | MR | S | S | --- | S | Y | +2 | +2.4 | -3.2 | +12 |
| AAC Indus VB* | 4 | 132 | 131 | --- | -3.9 | VG | P | S | I | R | S | MS | MS | MS | Y | +3 | +2.9 | -2.5 | +8 |
| AAC Paramount VB* | 4 | 133 | 132 | --- | -3.4 | VG | P | I | I | R | MR | S | --- | MS | Y | +1 | +2.1 | -2.3 | +7 |
| Sadash VB* | 5 | 137 | 139 | --- | -- | VG | P | MR | I | R | I | S | --- | S | Y | +3 | -1.6 | -2.3 | +5 |
| CWSP[1] | | | | | | | | | | | | | | | | | | | |
| Alderon | 3 | 140 | 133 | --- | -3.4 | VG | F | MR | R | MR | --- | MS | I | --- | N | +4 | +1.0 | -7.0 | -5 |
| AAC Awesome VB* | 3 | 136 | 134 | --- | -3.3 | F | P | R | MR | R | I | I | I | I | Y | +1 | +5.2 | -0.9 | +7 |
| Charing VB | 2 | 138 | 133 | --- | -2.9 | VG | G | --- | MR | R | --- | --- | MR | --- | N | +5 | +0.9 | -3.9 | -1 |
| AAC Innova | 5 | 128 | 132 | --- | -3.2 | G | VP | MR | R | R | S | S | I | S | Y | +2 | +0.1 | -4.5 | +5 |
| CDC Kinley | 4 | 103 | 110 | --- | -0.2 | G | P | I | MR | I | MS | MR | I | I | Y | -1 | -0.7 | +0.1 | +5 |
| CDC NRG003 § | 5 | 119 | 123 | --- | --- | F | G | R | MS | --- | MS | R | MS | S | Y | 0 | +5.5 | -3.7 | +2 |
| Pasteur | 5 | 127 | 133 | --- | -2.1 | VG | G | MR | R | MR | MS | S | I | I | N | +3 | +1.3 | -0.9 | +4 |
| Sparrow VB | 3 | 138 | 134 | --- | -2.9 | VG | G | MR | R | MR | --- | I | I | --- | N | +4 | +0.1 | -4.0 | +0 |
| CDC Throttle | 4 | 121 | 122 | --- | -2.1 | P | P | MR | MR | I | MR | I | S | I | Y | +1 | +5.5 | -0.6 | +3 |
| CWHWS[1] | | | | | | | | | | | | | | | | | | | |
| AAC Cirrus | 2 | 103 | 103 | --- | +0.2 | G | F | MR | R | R | R | I | I | I | Y | -2 | -4.3 | +0.3 | +4 |
| AAC Iceberg | 5 | 101 | 96 | --- | -0.5 | F | P | R | R | I | MS | MR | MS | I | Y | -2 | -0.3 | -0.8 | +3 |
| AAC Whitefox § | 5 | 103 | 106 | --- | -0.9 | F | F | MR | MR | MS | MS | MS | MS | I | N | -3 | -1.3 | -0.4 | +17 |
| Whitehawk § | 5 | 99 | 95 | --- | -0.9 | F | G | I | R | MS | I | MS | MS | MS | N | -2 | -0.4 | -0.6 | +13 |
| CDC Whitewood | 5 | 95 | 94 | --- | -0.3 | F | G | MR | MR | I | S | S | MS | I | Y | -1 | -2.2 | -1.2 | +4 |

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

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

# Durum Wheat

| Category and Variety | Years Tested | Yield (%) Area 1 & 2 | Yield (%) Area 3 & 4 | Yield (%) Irrigation | Protein | Resistance To[1] Lodging | Sprouting | Stem Rust | Leaf Rust | Stripe Rust | Loose Smut | Bunt | Leaf Spot | FHB | Head Awnedness | Rel. Maturity (days) | Seed Weight (mg) | Volume Wt.[2] (kg/hL) | Ht. (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CWAD | | --- Relative to Strongfield --- | | | | | | | | | | | | | | -- Relative to Strongfield -- | | | |
| Strongfield | 6 | 100 | 100 | 100 | 14.4 | P | F | R | R | MR | R | MR | I | S | Y | 102 | 43.3 | 79.7 | 89 |
| CDC Alloy | 4 | 108 | 109 | 109 | -0.3 | F | F | MR | R | R | I | R | MS | MS | Y | +1 | -0.5 | +0.9 | +3 |
| Brigade | 5 | 107 | 114 | 110 | -1.1 | F | F | R | R | MR | S | R | I | MS* | Y | +3 | +1.4 | +0.6 | +9 |
| AAC Cabri | 5 | 105 | 104 | 103 | -0.3 | P | F | MR | R | R | MR | R | I | MS | Y | +1 | -0.8 | +0.8 | +3 |
| CDC Carbide VB | 5 | 106 | 107 | 103 | -0.1 | P | P | R | R | R | MS | R | MS | MS | Y | 0 | -1.4 | -0.1 | +2 |
| AAC Congress | 4 | 109 | 107 | 116 | -0.4 | P | F | MR | R | R | MR | R | MS | MS | Y | +1 | -1.1 | +0.4 | +2 |
| CDC Credence | 3 | 106 | 110 | 103 | -0.5 | F | F | MR | R | MR | MR | R | I | MS* | Y | +1 | -0.8 | 0.0 | +6 |
| AAC Current § | 5 | 101 | 97 | 94 | 0.0 | F | P | R | R | MR | MS | MR | I | MS | Y | 0 | -0.8 | +1.0 | +4 |
| CDC Dynamic | 4 | 105 | 106 | 113 | +0.2 | F | G | MR | R | MR | I | R | I | MS | Y | 0 | -1.4 | +0.6 | +1 |
| Enterprise | 5 | 102 | 103 | 106 | -0.3 | P | G | R | R | R | MS | MR | I | MS | Y | 0 | -3.2 | +0.6 | +2 |
| Eurostar | 5 | 100 | 104 | 102 | -0.5 | P | F | R | R | R | S | R | I | MS | Y | +2 | 0.6 | +0.8 | +4 |
| CDC Fortitude | 5 | 104 | 103 | 98 | -0.2 | F | F | MR | R | R | MS | R | MS | MS | Y | +1 | -2.0 | +0.1 | -1 |
| AAC Marchwell VB | 5 | 99 | 104 | 93 | -0.1 | P | P | R | R | R | MR | R | MS | MS | Y | 0 | -2.7 | -0.6 | +0 |
| AC Navigator | 6 | 97 | 89 | --- | -0.7 | F | G | R | R | R | MS | R | S | S | Y | +2 | +1.2 | -0.1 | -8 |
| CDC Precision | 4 | 108 | 111 | 111 | -0.5 | G | F | MR | R | R | MS | R | MS | MS | Y | 0 | -0.9 | +1.1 | +2 |
| AAC Raymore | 5 | 95 | 99 | 93 | +0.2 | P | F | R | R | MR | MS | MR | I | S | Y | -1 | +1.8 | -0.1 | 0 |
| AAC Spitfire | 5 | 108 | 110 | 111 | -0.4 | G | F | R | R | R | MS | R | MS | S | Y | 0 | +0.3 | -0.3 | -1 |
| AAC Stronghold | 3 | 102 | 102 | 114 | -0.2 | VG | G | R | R | MR | R | I | I | MS | Y | +1 | +1.7 | +0.8 | -2 |
| AAC Succeed VB | 2 | 103 | 111 | --- | +0.1 | F | F | MR | R | I | R | R | MS | MS | Y | 0 | +2.5 | -0.4 | +2 |
| Transcend | 5 | 102 | 105 | 93 | -0.3 | F | G | R | R | R | S | R | I | MS* | Y | +2 | -1.4 | 0.0 | +8 |
| CDC Verona | 5 | 102 | 107 | 103 | -0.3 | G | F | R | R | R | MS | R | MS | MS | Y | +2 | +0.1 | -0.2 | +1 |

[1] Resistance ratings: R = Resistant; MR = Moderately Resistant; I = Intermediate Resistance; MS = Moderately Susceptible; S = Susceptible.
[2] multiply by 0.8 = lbs per bushel.
VB = varietal blend.

## ADDITIONAL INFORMATION

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

Grain yield, protein content, time to maturity, seed weight, volume weight, and plant height of all varieties of common wheat and durum wheat are compared to **Carberry** and **Strongfield**, respectively. In 2018, the spring wheat varieties supported for registration since 2013 were grown in replicated trials at 13 locations and compared to **Carberry**. Spring wheat varieties registered prior to 2010 have been compared indirectly to **Carberry** using a long term comparison to **AC Barrie** and **Katepwa**.

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

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

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

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

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

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

### CANADA WESTERN RED SPRING (CWRS)

**Muchmore**, **AAC Redwater**, **Vesper VB** and **5605HR CL** will be moving to the CNHR class as of August 1, 2021.

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

Seed of **SY Obsidian** and **AAC Tisdale** will be available spring 2019. Seed of new varieties **AAC Alida VB**, **SY Chert VB**, and **AAC Warman VB** will be available in limited quantities fall 2019. Seed of new varieties **AAC Starbuck VB** and **AAC Wheatland VB** is expected to be available in limited quantities fall 2020.

**WR859CL**, and **5605HR CL** are tolerant to the CLEARFIELD® herbicides Adrenalin SC and Altitude FX.



## WHEAT ADDITIONAL INFORMATION (CONT'D)

### CANADA PRAIRIE SPRING RED (CPSR)

Seed of new varieties **AAC Crossfield**, **AAC Entice** and **AAC Goodwin** are available spring 2019.

### CANADA NORTHERN HARD RED (CNHR) Spring

**Lillian** and **AAC Concord** have a solid stem which can provide protection against the wheat stem sawfly.

**CDC Cordon CLPlus VB** is tolerant to the CLEARFIELD® herbicides Adrenalin SC and Altitude FX.

Seed of new variety **CDC Cordon CLPlus VB** is expected to be available in limited quantities fall 2019.

### CANADA WESTERN HARD WHITE SPRING (CWHWS)

Varieties in the Hard White market class are intended for whole wheat bread and Yellow Alkaline Noodle markets.

Seed of new variety **AAC Cirrus** will be available fall 2019.

### CANADA WESTERN SOFT WHITE SPRING (CWSWS)

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

### CANADA WESTERN SPECIAL PURPOSE (CWSP) SPRING

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

### CANADA WESTERN AMBER DURUM (CWAD)

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

Seed of new variety **AAC Succeed VB** is expected to be available fall 2019.

CWAD varieties are generally more susceptible than CWRS varieties to Fusarium Head Blight. Growing varieties with improved resistance is recommended to reduce infection and disease propagule production as part of an integrated management strategy. Although no varieties are resistant, **Brigade**, **CDC Credence** and **Transcend** generally express lower Fusarium Head Blight symptoms compared to other cultivars in the class. Mycotoxin (DON) production by FHB fungi is generally lower for **Transcend**.

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

# Wheat Classes Changes

*By Mitchell Japp, Saskatchewan Agriculture*

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

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

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

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

As an ongoing part of the review, five additional varieties have been identified. **AC Crystal** will move out of CPSR to CNHR August 1, 2019. **AC Domain**, **Muchmore**, **AAC Redwater**, **Vesper VB** and **5605HR CL** will move out of CWRS to CNHR August 1, 2021.

For farmers growing one of the varieties that will be moved to CNHR, these varieties can continue to be grown, but must be marketed in their new class after the transition date.

# Winter Wheat

Main Characteristics of Varieties

| Category and Variety | Years Tested | Yield (%) Area 1 & 2 | Yield (%) Area 3 & 4 | Protein (%) | Winter Survival | Resistance To[2] Lodging | Stem Rust | Leaf Rust | Stripe Rust | Bunt | FHB | Head Awnedness | Relative Maturity | Seed Weight (mg) | Volume Wt.[3] (kg/hL) | Height (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CWRW[1] | | -- Relative to CDC Buteo -- | | | | | | | | | | | ------- Relative to CDC Buteo ------- | | | |
| CDC Buteo | 18 | 100 | 100 | 12.3 | VG | F | I | I | S | S | MR | Y | M | 32.8 | 81.0 | 91 |
| CDC Chase | 7 | 106 | 109 | +0.3 | F | F | R | R | MR | S | MS | Y | M | -0.5 | -0.2 | +3 |
| AAC Elevate | 8 | 109 | 102 | -0.1 | G | VG | MR | I | MS | MR | I | Y | M | +4.3 | -2.2 | -7 |
| Emerson | 7 | 98 | 93 | +0.4 | G | G | R | I | MR | S | R | Y | M | -4.1 | -0.8 | -5 |
| Flourish § | 9 | 99 | 101 | +0.3 | F | VG | I | I | I | MR | S | Y | E | +2.3 | -1.7 | -11 |
| AAC Gateway | 8 | 98 | 99 | +0.5 | F | VG | MR | I | MR | S | I | Y | M | -0.1 | -1.5 | -14 |
| AAC Goldrush | 6 | 109 | 111 | +0.2 | VG | G | MR | R | I | S | I | Y | M | +0.3 | -1.7 | -4 |
| Moats | 11 | 105 | 103 | +0.4 | G | F | R | R | MR | MS | S | Y | M | -0.3 | -0.4 | +1 |
| Radiant | 18 | 103 | 102 | -0.3 | VG | VG | S | S | MS | S | S | Y | L | +1.7 | -1.9 | 0 |
| AAC Wildfire | 7 | 114 | 117 | 0.0 | VG | G | S | I | R | MR | MR | Y | VL | +2.6 | -1.2 | -5 |
| CW Experimental | | | | | | | | | | | | | | | | |
| AAC Icefield | 6 | 100 | 99 | -0.9 | F | VG | R | MR | MR | S | I | Y | M | -1.7 | -1.5 | -10 |
| CWSP[1] | | | | | | | | | | | | | | | | |
| CDC Falcon | 16 | 102 | 98 | -0.8 | F | VG | MR | MR | S | S | S | Y | E | -3.0 | -1.9 | -16 |
| Pintail | 6 | 107 | 112 | -1.7 | VG | F | MS | MS | MR | S | S | N | M | -4.2 | -3.4 | -3 |

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

## ADDITIONAL INFORMATION

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

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

**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 serves as a reservoir for mites should be followed whenever possible.

**AAC Wildfire** expresses tolerance to Biotype 1 of the Russian wheat aphid.

**AAC Icefield** is a new hard white winter wheat that is eligible for experimental grades under an Identity Preserved system to facilitate market research. It was granted full registration in 2018. **AAC Icefield** expresses high milling yield of very white flour and good gluten strength at lower protein concentrations that may be of interest in some niche markets. For more information contact FP Genetics.

**Radiant** and **AAC Wildfire** express bronze chaff at maturity. The awnless head of **Pintail** may improve palatability when harvested for forage or silage.

**AAC Goldrush** and **AAC Icefield** will be available in 2019.



# Fall Rye

Main Characteristics of Varieties

| Variety | Years Tested | Yield (%) Area 1 & 2 | Yield (%) Area 3 & 4 | Protein (%) | Resistance To[1] Winter Survival | Lodging | Shattering | Ergot | Heading Date (days)[2] | Maturity (days)[3] | Seed Weight (mg) | Volume Weight (kg/hL)[4] | Height (cm) | Falling Number (seconds) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Open-Pollinated | | ----- Relative to Hazlet ----- | | | | | | | ---------- Relative to Hazlet ---------- | | | | | |
| Hazlet | 15 | 100 | 100 | 11.3 | VG | G | VG | MS | June 8 | August 2 | 36.7 | 73.0 | 102 | 172 |
| Prima | 15 | 83 | 94 | 0.4 | VG | F | F | MS | -1 | -3 | -4.9 | -1.1 | 11 | +56 |
| Danko | 4 | 100 | 94 | 0.6 | VG | G | --- | --- | -2 | -2 | -3.7 | +0.5 | 0 | --- |
| Hybrid Varieties | | | | | | | | | | | | | | |
| KWS Bono | 6 | 127 | 124 | -1.1 | G | VG | --- | MS | 1 | 1 | -4.8 | -0.8 | -13 | +115 |
| Brasetto | 6 | 113 | 122 | -0.9 | VG | VG | --- | MS | 0 | 1 | -3.5 | -1.7 | -10 | +107 |
| KWS Daniello | 4 | 113 | 110 | -0.6 | G | G | --- | I | 1 | 0 | -4.2 | -1.7 | -9 | +129 |
| KWS Gatano | 4 | 119 | 119 | -1.1 | G | F | --- | I | 0 | 2 | -5.6 | -0.6 | -12 | +111 |
| Guttino | 6 | 116 | 127 | -0.9 | VG | VG | --- | MS | 1 | 0 | -4.5 | -0.9 | -13 | +148 |

[1] Resistance ratings: R = Resistant; MR = Moderately Resistant; I = Intermediate Resistance; MS = Moderately Susceptible; S = Susceptible.
[2] Average heading date relative to **Hazlet**. Flowering typically occurs 7-14 days after heading, depending on weather conditions.
[3] Average maturity date relative to **Hazlet**. Wet and cool conditions can prolong maturity beyond these dates.
[4] Multiply by 0.8 = lbs per bushel.

## ADDITIONAL INFORMATION

Fall rye is much more cold tolerant than winter wheat or winter triticale, with field survival being approximately 30 to 100% 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.

# Triticale

Main Characteristics of Varieties

| Variety | Years Tested | Yield (%) Area 1 & 2 | Yield (%) Area 3 | Test Weight (kg/hL) | Seed Weight (mg) | Height (cm) | Maturity (days) | Resistance To[1] Lodging | Stem Rust | Leaf Rust | Bunt | Root Rot | Ergot | FHB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spring Habit | | ---------- Relative to AC Ultima ---------- | | | | | | | | | | | | |
| AC Ultima | 20 | 100 | 100 | 70.1 | 44.0 | 101 | 104 | G | R | R | R | I | MS | I |
| Brevis | 12 | 109 | 108 | 3.7 | -3.0 | -7 | 1 | VG | R | R | R | --- | I | I |
| Bunker | 4 | 92 | --- | 3.0 | 1.1 | 5 | 1 | G | MR | R | R | I | I | MR |
| AAC Delight | 6 | 104 | 106 | 1.7 | -0.1 | -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 | 9 | 105 | 101 | -1.7 | -4.4 | -1 | 1 | G | R | R | R | --- | MR | MS |
| Taza | 7 | 104 | 97 | -0.5 | -1.9 | 6 | 2 | G | R | R | R | --- | I | S |
| Tyndal | 7 | 101 | 101 | 1.8 | -3.2 | -6 | 0 | G | R | R | R | --- | --- | MS |
| Winter Habit | | ---------- Relative to Pika ---------- | | | | | | | | | | | | |
| Pika | 6 | 100 | 100 | 68 | --- | 125 | E | F | --- | --- | --- | --- | --- | --- |
| Luoma | 5 | 100 | 96 | -1.0 | --- | 1 | L | F | --- | --- | --- | --- | --- | --- |
| Metzger | 5 | 96 | 101 | -1.0 | --- | -14 | E | G | --- | --- | --- | --- | --- | --- |

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

## ADDITIONAL INFORMATION

Spring triticale matures 2-4 days later than **AC Andrew** CWSWS wheat; therefore it should be planted as early as possible. Newer triticale varieties yield 2 to 10% 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. **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.

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.

# Malting Barley

Main Characteristics of Varieties

| Category[1] and Variety | Years Tested | 2 or 6 Row | Awns[2] | Yield (%) Area 1 & 2 | Yield (%) Area 3 & 4 | Relative Maturity[3] | Resistance To[4] Lodging | Netted Net Blotch[5] | Spotted Net Blotch[5] | Spot Blotch | Scald | Loose Smut | Other Smuts | Root Rot | Stem Rust | FHB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Malting Acceptance: Recommended** | | | | Relative to AC Metcalfe | | | | | | | | | | | | |
| AC Metcalfe | 8 | 2 | R | 100 | 100 | M | F | S | I | I | MS | R | I | I | MR | I |
| CDC Bow | 7 | 2 | R | 111 | 111 | M | VG | S | MR | I | MS | S | I | MS | MR | MS |
| AAC Connect | 4 | 2 | R | 113 | 106 | M | G | I | MR | MR | S | S | R | MS | MR | MR |
| CDC Copeland | 8 | 2 | R | 107 | 108 | M | F | I | I | S | MS | MS | I | I | MR | I |
| AAC Synergy | 7 | 2 | R | 118 | 118 | M | F | MR | R | R | S | S | I | I | MR | I |
| Legacy | 6 | 6 | S | 104 | 101 | M | G | S | MR | MR | MS | I | MR | MR | MR | MS |
| **Malting Acceptance: In Development or Limited Demand** | | | | | | | | | | | | | | | | |
| Bentley | 7 | 2 | R | 113 | 112 | L | G | MS | R | I | MS | MS | MR | I | MR | MS |
| CDC Fraser | 6 | 2 | R | 112 | 115 | M | G | MR | R | MR | MS | R | R | MS | MR | I |
| Lowe | 5 | 2 | R | 112 | 110 | L | F | I | MR | I | MR | R | R | --- | S | MR |
| Newdale | 6 | 2 | R | 112 | 113 | M | G | I | MR | I | MS | S | MR | MR | MR | I |
| CDC PlatinumStar[7] | 7 | 2 | R | 104 | 106 | M | F | I | MR | S | S | S | R | S | I | MR |
| Celebration | 7 | 6 | S | 109 | 107 | M | VG | S | MR | MR | S | R | R | MS | I | MS |
| Tradition | 5 | 6 | S | 112 | 107 | M | VG | S | I | MR | MS | S | MR | MR | MR | S |
| **Other[6]** | | | | | | | | | | | | | | | | |
| CDC Copper | 3 | 2 | R | 113 | 119 | M | G | MR | MR | I | MR | I | MR | --- | I | MS |
| CDC Goldstar[7] | 4 | 2 | R | 110 | 110 | M | G | I | MR | I | S | I | R | S | MR | MS |
| CDC Kindersley | 7 | 2 | R | 105 | 107 | E | G | MS | MR | I | S | S | R | I | MR | I |
| Major § | 7 | 2 | R | 112 | 115 | M | G | I | MR | MR | S | R | MR | MS | MR | I |
| CDC PolarStar[7] § | 7 | 2 | R | 104 | 99 | M | F | S | MR | MS | S | S | R | MS | S | MR |
| Sirish | 5 | 2 | R | 101 | 104 | M | VG | MS | MS | MS | MR | S | R | --- | S | MS |

[1] These categories are established annually by the Canadian Malting Barley Technical Centre (Call 204-984-4399 for more information).
[2] R=Rough, S=Smooth
[3] Relative maturity: The relative maturity of the check, **AC Metcalfe**, is M (on average, 91 days from seeding to swathing ripeness).
[4] Resistance ratings: R = Resistant; MR = Moderately Resistant; I = Intermediate; MS = Moderately Susceptible; S = Susceptible.
[5] There are two forms of net blotch, netted (*Pyrenophora teres f. teres*) and spotted (*Pyrenophora teres f. maculata*). Generally, in Saskatchewan the netted form is more prevalent.
[6] Although not on the CMBTC list, a malting barley market may exist for these varieties.
[7] **CDC PolarStar**, **CDC PlatinumStar** and **CDC GoldStar** are available only through a closed loop Identity Preserved program offered by Prairie Malt Limited/Sapporo Breweries and their agents.

## ADDITIONAL INFORMATION

Growers are reminded that the malting and brewing industry is cautious about using new varieties. Growers are cautioned that most malting varieties, especially two-row barley, are more susceptible to sprouting.

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

**Lines Tested for Malting and Brewing Quality**

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



CMBTC™ CANADIAN MALTING BARLEY TECHNICAL CENTRE

# 2019-2020 RECOMMENDED MALTING BARLEY VARIETIES

**The Canadian Malting Barley Technical Centre (CMBTC) recommended list** is designed to provide 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).

## RECOMMENDED VARIETIES

| VARIETY | TYPE | MARKET COMMENTS | SEED DISTRIBUTOR |
|---|---|---|---|
| CDC Copeland | 2 Row | Established Demand | SeCan |
| AC Metcalfe | 2 Row | Established Demand | SeCan |
| AAC Synergy | 2 Row | Growing Demand | Syngenta |
| AAC Connect | 2 Row | Growing Demand | CANTERRA SEEDS |
| CDC Bow | 2 Row | Growing Demand | SeCan |
| Legacy | 6 Row | Limited Demand | FP Genetics |

› Marketing opportunities remain for **Newdale** (FP Genetics) and **Bentley** (CANTERRA SEEDS) in certain regions. Contact Canada Malting in Calgary for contracting opportunities.

› **CDC PlatinumStar** (CANTERRA SEEDS) is a closed-loop variety. Contact Prairie Malt/Cargill in Biggar for contracting opportunities.

› Demand for six-row malting barley is limited. Contact Viterra in Regina for **Legacy** contracting opportunities. Contact Malteurop in Winnipeg for **Tradition** (FP Genetics) and **Celebration** (CANTERRA SEEDS) contracting opportunities.

› In Eastern Canada, **AC Metcalfe**, **Newdale** and **AAC Synergy** have had the greatest success in selection in recent years.

## VARIETIES IN DEVELOPMENT

| VARIETY | TYPE | MARKET COMMENTS | SEED DISTRIBUTOR |
|---|---|---|---|
| CDC Fraser | 2 Row | Undergoing seed propagation | SeCan |
| Lowe | 2 Row | Undergoing seed propagation | SeCan |

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

### The CMBTC and its members recommend:

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

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

cmbtc.com

Canada

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

# Feed and Food Barley

## Main Characteristics of Varieties

| Category and Variety | Years Tested | 2 or 6 Row | Awns[1] | Yield (% AC Metcalfe) Area 1 & 2 | Yield (% AC Metcalfe) Area 3 & 4 | Relative Maturity[2] | Resistance To[3] Lodging | Netted Net Blotch[4] | Spotted Net Blotch[4] | Spot Blotch | Scald | Loose Smut | Other Smuts | Root Rot | Stem Rust | FHB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Hulled** | | | | | | | | | | | | | | | | |
| Altorado | 6 | 2 | R | 117 | 114 | M | G | S | MR | S | S | MR | MR | MR | MR | I |
| CDC Austenson | 7 | 2 | R | 118 | 121 | M | G | MS | R | MR | S | S | R | I | I | I |
| Brahma | 7 | 2 | R | 114 | 115 | M | G | S | I | S | MS | MS | R | MR | MR | I |
| Canmore | 7 | 2 | R | 112 | 115 | L | G | MS | MR | I | MR | R | R | I | MS | I |
| Champion § | 8 | 2 | R | 117 | 117 | M | G | S | I | MS | S | S | R | MR | I | I |
| Claymore | 7 | 2 | R | 119 | 118 | L | VG | S | I | I | S | S | R | I | MR | I |
| CDC Coalition | 7 | 2 | R | 111 | 114 | M | VG | S | MR | I | MS | R | MR | I | MR | I |
| CDC Cowboy | 6 | 2 | R | 99 | 105 | L | F | I | MR | I | MS | MS | MR | I | MR | MR |
| CDC Maverick | 6 | 2 | S | 98 | 98 | M | F | I | MR | I | MS | S | R | I | MR | MR |
| Oreana | 7 | 2 | R | 117 | 112 | L | VG | S | MR | I | S | S | R | I | I | S |
| AB Advantage | 3 | 6 | S | 120 | 112 | VL | VG | MS | I | I | I | MR | I | --- | I | S |
| Amisk | 7 | 6 | SS | 113 | 110 | M | G | I | MR | MR | I | S | MS | MS | MR | S |
| AB Cattlelac | 2 | 6 | SS | 102 | 110 | L | VG | MS | MR | MR | I | I | R | --- | I | S |
| Muskwa | 7 | 6 | S | 112 | 110 | M | G | MS | MR | I | MR | MS | R | MS | MR | S |
| AC Rosser § | 11 | 6 | S | 115 | 115 | M | G | I | MR | MR | S | MS | MR | MR | MR | S |
| **Hulless** | | | | | | | | | | | | | | | | |
| CDC Ascent | 5 | 2 | R | 94 | 96 | M | G | S | MR | I | MS | MR | MR | I | I | MR |
| CDC Carter | 7 | 2 | R | 94 | 99 | M | G | I | MR | I | MS | R | R | S | I | MR |
| CDC Clear | 7 | 2 | R | 96 | 103 | L | G | MS | R | I | MS | R | R | I | MR | MR |
| CDC McGwire | 8 | 2 | R | 98 | 99 | M | G | I | MR | I | I | MS | MR | MR | I | MR |

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

[2] Relative maturity: The relative maturity of the check, **AC Metcalfe**, is M (on average, 91 days from seeding to swathing ripeness).

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

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

### ADDITIONAL INFORMATION

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

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

**Forage Barley**

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

**Hulless**

In hulless varieties the hull is left in the field, therefore, comparable yields are 9 to 12% lower. Hulless seed is more susceptible to damage than hulled seed, so handling should be minimized.

**Hulless Food**

**CDC Ascent**, **CDC Fibar** and **CDC Rattan** are high beta-glucan, waxy starch varieties. **CDC Hilose** is a high beta-glucan, high amylose starch variety. All are available for specialty markets. **CDC Carter**, **CDC McGwire** and **Roseland** are two-row, normal starch, hulless barleys suitable for food use.

**Irrigation**

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



# Oat

## Main Characteristics of Varieties

| Variety | Years Tested | Yield (% CDC Dancer) Area 1 & 2 | Yield (% CDC Dancer) Area 3 & 4 | Test Weight (g/0.5L) | % Hull | Hull Colour | % Plump | Relative Maturity[1] | Height (cm) | Resistance To[2] Lodging | Stem Rust | Crown Rust | Smut |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CDC Dancer | 8 | 100 | 100 | 253 | 19.8 | White | 86 | M | 103 | G | I | I | R |
| CDC Arborg | 4 | 114 | 119 | 250 | 20.1 | White | 85 | M | 108 | VG | S | I | R |
| CDC Boyer § | 8 | 99 | 100 | 232 | 23.3 | White | 85 | M | 105 | G | I | I | MS |
| CS Camden | 7 | 113 | 114 | 242 | 24.3 | White | 82 | L | 94 | VG | S | MS | I |
| Derby | 8 | 98 | 102 | 247 | 22.9 | White | 79 | M | 107 | G | S | S | MS |
| CDC Haymaker | 5 | 92 | 95 | 225 | 24.9 | White | 87 | VL | 111 | G | S | S | MR |
| AAC Justice § | 7 | 111 | 107 | 255 | 22.4 | White | 75 | L | 101 | G | I | I | R |
| Leggett | 7 | 103 | 104 | 256 | 22.0 | White | 82 | L | 96 | G | I | R | R |
| CDC Minstrel | 7 | 106 | 107 | 245 | 21.0 | White | 92 | L | 98 | VG | I | MS | R |
| AC Morgan | 8 | 104 | 108 | 236 | 25.1 | White | 82 | L | 101 | VG | S | S | I |
| CDC Morrison | 6 | 101 | 94 | 248 | 24.4 | Yellow | 83 | L | 95 | VG | I | MS | R |
| CDC Nasser § | 7 | 109 | 107 | 233 | 21.8 | White | 79 | VL | 106 | G | MS | S | R |
| CDC Norseman | 7 | 109 | 107 | 241 | 20.0 | White | 81 | M | 102 | G | S | MR | MS |
| ORe3541M | 5 | 104 | 98 | 257 | 21.5 | White | 90 | L | 93 | VG | S | R | R |
| ORe3542M | 5 | 106 | 99 | 247 | 22.5 | White | 95 | L | 93 | VG | S | R | R |
| CDC Orrin | 6 | 108 | 109 | 253 | 23.2 | White | 91 | L | 103 | G | MS | S | R |
| Pinnacle | 8 | 113 | 109 | 244 | 23.6 | White | 89 | VL | 101 | F | I | S | R |
| CDC Ruffian | 7 | 114 | 110 | 247 | 20.4 | White | 88 | L | 95 | G | S | I | R |
| Souris | 7 | 108 | 103 | 253 | 21.5 | White | 72 | M | 98 | VG | MR | MS | R |
| Stride § | 7 | 110 | 107 | 255 | 22.9 | White | 80 | L | 103 | G | I | R | R |
| Summit | 7 | 104 | 105 | 256 | 21.6 | White | 81 | M | 94 | G | I | I | R |
| Triactor | 7 | 114 | 118 | 240 | 22.8 | White | 80 | L | 99 | G | S | MR | I |
| **Varieties being tested for adaptability in Western Canada** | | | | | | | | | | | | | |
| Akina | 4 | 114 | 111 | 242 | 22.5 | White | --- | M | 95 | G | --- | R | R |
| Kara | 4 | 116 | 112 | 247 | 23.2 | White | --- | M | 88 | G | --- | MR | MR |

[1] Maturity Rating M = 96 days.

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

### ADDITIONAL INFORMATION

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

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

**Feed Oat**

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

**Forage Oat**

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

**Hulless Oat**

**AC Gwen** is a hulless variety available for production in Saskatchewan. The hull is part of normal oat yield, thus hulless types yield less. They are difficult to handle and store and should be stored at less than 12% 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 1% and occur within all oat varieties.

# OTHER CROPS

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

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

**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 coriander 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 Saskatchewan 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.

**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 lbs/ac). **Saffire** has moderate resistance to sclerotinia head rot and alternaria leaf spot. Contract production is advised.

# Quinoa

Quinoa (*Chenopodium quinoa*) is a long season (~120 days to maturity) broadleaf pseudocereal that can be grown on a wide range of soil types. Although early season it is sensitive to excessive moisture. It also has a significant moisture requirement similar to other broadleaf crops. Quinoa is frost tolerant both as a seedling and at maturity. An earlier seeding date into a well prepared seedbed is considered best practice due to the long growing season required by the crop. Quinoa can be direct seeded at a 1.5cm (0.5”), 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 ~1m tall. Quinoa should be straight cut at maturity.

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

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

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



# Canaryseed

Main Characteristics of Varieties

| Variety | Type | Site Years Tested | Yield[1] (%) | Days to Heading | Days to Maturity | Height (cm) | Test Weight (kg/hL)[3] | Seed Weight (g/1000) |
|---|---|---|---|---|---|---|---|---|
| | | | Relative to CDC Bastia | | | | | |
| CDC Bastia | glabrous | 59 | 100 | 56 | 98 | 102 | 70.8 | 8.0 |
| CDC Calvi[2] | glabrous | 45 | 106 | +2 | +3 | +4 | +0.7 | +0.3 |
| CDC Cibo[2] | glabrous | 45 | 106 | 0 | -1 | -9 | -0.4 | +0.2 |
| Cantate | hairy | 59 | 114 | +1 | +2 | -3 | -7.0 | +0.5 |
| Keet | hairy | 59 | 126 | +4 | +3 | +4 | -6.1 | -0.2 |

[1] Yield data not collected by Area
[2] 2011-2018 yield data; other varieties 2007 -2018.
[3] multiply by 0.8 = lb per bushel

**ADDITIONAL INFORMATION**

The seed of annual canarygrass, more commonly called canaryseed, 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**, and **CDC Cibo** do not have the small sharp hairs that cause irritation when canaryseed is threshed and handled and are called glabrous. **CDC Cibo** is yellow-seeded while the other varieties produce brown seed.

Canaryseed plants have a dense, shallow root system and growing the crop on sandy soils is not recommended. Canaryseed may be grown successfully on stubble, providing adequate moisture is available for rapid germination and emergence. Reduced emergence might be expected if canaryseed is seeded below 5 cm.

Canaryseed is subject to damage by English grain aphid and bird cherry oat aphid. Aphid populations build up rapidly on leaves, 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 canaryseed plant. Damage may occur at populations below these levels.

Canaryseed leaf mottle is a foliar disease that can cause yield losses. Leaf mottle is caused by a fungus, *Septoria triseti*, that only affects canaryseed. 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 canaryseed fields surveyed. The average incidence within fields was generally low (3-4%). 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.

Canaryseed is resistant to shattering. It may be straight-combined or swathed when fully mature. For more information on canaryseed, consult the Saskatchewan Agriculture publication, *Canaryseed*.

# 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[4] Ascochyta Blight | Resistance To[4] Anthracnose Race 1 | Seed Coat Colour | Cotyledon Colour | Seed Weight (g/1000) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Small Red** | | | | | | | | | | | | |
| CDC Maxim | CL | 12 | 100 | 100 | 34 | 51 | E/M | MR | MR | gray | red | 40 |
| CDC Carmine | | 8 | 111 | 106 | 34 | 54 | E/M | MR | MR | gray | red | 40 |
| CDC Cherie | | 5 | 109 | 106 | 32 | 51 | E/M | MR | I | gray | red | 39 |
| CDC Coral | | 5 | 110 | 106 | 33 | 55 | E/M | MR | MR | gray | red | 37 |
| CDC Dazil | CL | 10 | 97 | 93 | 33 | 53 | E/M | MR | I | gray | red | 35 |
| CDC Imax | CL | 12 | 92 | 78 | 35 | 51 | E/M | MR | I | gray | red | 45 |
| CDC Impact | CL | 8 | 80 | 76 | 30 | 47 | E | MR | MS | gray | red | 34 |
| CDC Impulse | CL | 9 | 108 | 95 | 37 | 52 | E/M | MR | MR | gray | red | 44 |
| CDC Nimble | CL | 5 | 108 | 108 | 35 | 52 | E/M | MR | MR | gray | red | 38 |
| CDC Proclaim | CL | 8 | 105 | 102 | 34 | 51 | E/M | MR | MR | gray | red | 40 |
| CDC Red Rider | | 6 | 95 | 85 | 34 | 52 | E/M | MR | I | gray | red | 45 |
| CDC Redberry | | 12 | 97 | 99 | 34 | 50 | E/M | MR | MR | gray | red | 42 |
| CDC Redcliff | | 7 | 107 | 103 | 35 | 51 | E/M | MR | I | gray | red | 38 |
| CDC Redcoat | | 7 | 105 | 93 | 33 | 50 | E/M | MR | MR | gray | red | 39 |
| CDC Redmoon | | 8 | 114 | 106 | 33 | 52 | E/M | MR | MR | gray | red | 41 |
| CDC Scarlet | | 10 | 104 | 104 | 35 | 53 | E/M | MR | I | gray | red | 36 |
| **Extra Small Red** | | | | | | | | | | | | |
| CDC Imp | CL | 5 | 95 | 98 | 35 | 52 | E/M | MR | MR | gray | red | 30 |
| CDC Impala | CL | 11 | 80 | 90 | 30 | 51 | E | MR | MR | gray | red | 31 |
| CDC Imperial | CL | 8 | 84 | 79 | 30 | 49 | E | MR | MR | gray | red | 30 |
| CDC Redbow | | 7 | 102 | 99 | 30 | 49 | E | MR | MR | gray | red | 32 |
| CDC Rosebud | | 7 | 100 | 99 | 30 | 50 | E | MR | MR | tan | red | 31 |
| CDC Rosie | | 8 | 92 | 90 | 33 | 52 | E/M | MR | MR | gray | red | 30 |
| CDC Roxy | | 8 | 102 | 98 | 34 | 53 | E/M | MR | MR | gray | red | 32 |
| **Large Red** | | | | | | | | | | | | |
| CDC KR-1 | | 10 | 110 | 92 | 37 | 52 | M | MR | MR | gray | red | 56 |
| CDC KR-2 | CL | 8 | 102 | 90 | 37 | 52 | M | MR | MR | gray | red | 55 |
| **Small Green** | | | | | | | | | | | | |
| CDC Imvincible | CL | 12 | 92 | 80 | 33 | 49 | E | MR | MR | green | yellow | 34 |
| CDC Kermit | | 9 | 104 | 99 | 36 | 49 | E/M | MR | MR | green | yellow | 34 |
| CDC Viceroy | | 6 | 97 | 98 | 34 | 49 | E | MR | MR | green | yellow | 33 |
| **Extra Small Green** | | | | | | | | | | | | |
| CDC Asterix | | 10 | 96 | 93 | 30 | 48 | E | MR | I | green | yellow | 26 |
| **Medium Green** | | | | | | | | | | | | |
| CDC Imigreen | CL | 11 | 78 | 71 | 44 | 50 | M | MR | S | green | yellow | 57 |
| CDC Impress | CL | 7 | 87 | 71 | 34 | 50 | M | MR | MS | green | yellow | 52 |
| CDC Meteor | | 8 | 102 | 89 | 34 | 50 | M | MR | S | green | yellow | 51 |
| CDC Richlea | | 14 | 93 | 80 | 35 | 50 | M | S | S | green | yellow | 51 |
| **Large Green** | | | | | | | | | | | | |
| CDC Greenland | | 19 | 89 | 70 | 38 | 52 | M/L | MR | S | green | yellow | 64 |
| CDC Greenstar | | 10 | 97 | 81 | 40 | 52 | M/L | MR | I | green | yellow | 73 |
| CDC Impower | CL | 12 | 79 | 63 | 41 | 52 | M/L | MR | S | green | yellow | 64 |
| CDC Lima | CL | 6 | 89 | 86 | 35 | 51 | M/L | MR | S | green | yellow | 74 |
| CDC Sovereign | | 12 | 83 | 77 | 40 | 52 | L | MR | MS | green | yellow | 66 |
| **French Green** | | | | | | | | | | | | |
| CDC Marble | | 10 | 102 | 98 | 36 | 49 | E | MR | I | green marble | yellow | 34 |
| CDC Peridot | CL | 8 | 84 | 94 | 37 | 48 | E | I | MS | green marble | yellow | 38 |



## Lentil (cont'd)

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[4] Ascochyta Blight | Resistance To[4] Anthracnose Race 1 | Seed Coat Colour | Cotyledon Colour | Seed Weight (g/1000) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Green Cotyledon** | | | | | | | | | | | | |
| CDC QG-1 | | 6 | 80 | 65 | 42 | 51 | M | I | I | green | green | 49 |
| CDC QG-2 | | 9 | 88 | 90 | 40 | 48 | E | I | I | green marble | green | 32 |
| CDC QG-3 | CL | 8 | 73 | 63 | 38 | 53 | E/M | I | MR | green | green | 46 |
| CDC QG-4 | CL | 6 | 91 | 91 | 36 | 53 | E/M | I | MR | green marble | green | 33 |
| **Spanish Brown** | | | | | | | | | | | | |
| CDC SB-3 | CL | 7 | 88 | 87 | 35 | 51 | E | I | MR | gray dotted | yellow | 38 |
| CDC SB-4 | CL | 5 | 105 | 106 | 34 | 53 | E/M | I | MR | gray dotted | yellow | 41 |

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

### ADDITIONAL INFORMATION

Seed supplies may be limited for recently released vairieties such as **CDC Roxy**, **CDC Lima**, **CDC QG-4**, **CDC Carmine**, **CDC Nimble**, **CDC SB-4**, **CDC Imp** and **CDC Coral**.

**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 compared to small red lentils.

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

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

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

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

## Chickpea

Main Characteristics of Varieties

| Variety | Years Tested | Yield (% Amit) Area 1[1] | Yield (% Amit) Area 2[1] | Ascochyta Blight[2] | Height (cm) | Days to Flower | Maturity | Seed Weight (g/1000) | Seed Shape[3] | Seed or Seed Coat Colour[4] | Tolerance to Solo ADV (imazamox) herbicide |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Kabuli** | | | | | | | | | | | |
| Amit (B-90) | 17 | 100 | 100 | 4.3 | 47 | 56 | L | 259 | Ro | B | no |
| CDC Alma | 10 | 92 | 93 | 6.0 | 41 | 53 | L | 366 | RH | B | yes |
| CDC Frontier | 17 | 107 | 104 | 4.4 | 45 | 52 | L | 351 | RH | B | no |
| CDC Leader | 13 | 107 | 107 | 4.3 | 42 | 54 | M | 392 | RH | B | no |
| CDC Luna | 16 | 97 | 100 | 5.6 | 40 | 53 | ML | 370 | RH | B | no |
| CDC Orion | 12 | 107 | 105 | 4.9 | 44 | 50 | L | 435 | RH | B | no |
| CDC Palmer | 8 | 105 | 101 | 4.8 | 42 | 52 | ML | 419 | RH | B | no |
| **Desi** | | | | | | | | | | | |
| CDC Consul | 11 | 112 | 109 | 3.9 | 45 | 52 | M | 303 | P | LT | no |
| CDC Cory | 10 | 112 | 106 | 4.2 | 47 | 56 | M | 271 | A/P | T | yes |

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

### ADDITIONAL INFORMATION

Please refer to *SaskSeed Guide 2019* for pedigreed seed availability.
For more details on production, consult *www.saskpulse.com/growing-pulses*.

# Field Pea

## Main Characteristics of Varieties

| Variety | Years Tested[1] | Yield (%) 1, 2 & South 3 | Yield (%) North 3 & 4 | Irrigation | Protein | Relative Maturity | Lodging[2] (1-9) | Vine Length (cm) | Resistance To: MB[3] | Powdery Mildew | Fusarium Wilt | SCB[4] | Bleaching | SCD[5] | Greenness[6] | Seed Weight (g/1000) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Yellow** | ---- Relative to CDC Amarillo ----- | | | | | | | | | | | | | | | |
| CDC Amarillo | 10 | 100 | 100 | 100 | 23.0 | M | 3.5 | 85 | 4.5 | R | MR | F | n/a | F | G | 230 |
| Abarth | 7 | 93 | 90 | 92 | -0.1 | E | 3.5 | 75 | 5.0 | R | I | F | n/a | G | G | 280 |
| Agassiz | 10 | 98 | 94 | 100 | -0.1 | M | 4.5 | 85 | 5.0 | R | I | G | n/a | F | G | 230 |
| AAC Ardill | 8 | 103 | 99 | 87 | -1.9 | M | 3.5 | 85 | 4.5 | R | MR | G | n/a | G | G | 230 |
| AAC Asher | 3 | 103 | 100 | --- | -0.6 | M | 4.5 | 75 | 4.5 | R | I | --- | n/a | F | G | 260 |
| CDC Athabasca | 7 | 93 | 97 | --- | +0.5 | M | 3.0 | 85 | 4.5 | R | I | F | n/a | F | G | 300 |
| CDC Canary | 6 | 97 | 98 | --- | -0.1 | E | 3.5 | 85 | 4.5 | R | I | G | n/a | F | F | 230 |
| AAC Carver | 5 | 103 | 100 | --- | -1.3 | E | 4.0 | 85 | 5.0 | R | I | G | n/a | F | G | 240 |
| AAC Chrome | 4 | 105 | 102 | --- | -1.2 | M | 4.5 | 75 | 4.5 | R | I | G | n/a | G | G | 240 |
| Earlystar § | 5 | 92 | 91 | --- | -1.1 | VE | 5.0 | 80 | 5.0 | R | I | F | n/a | G | G | 210 |
| CDC Golden | 10 | 92 | 83 | 90 | 0.7 | E | 4.5 | 75 | 5.0 | R | I | G | n/a | G | G | 230 |
| CDC Hornet § | 8 | 91 | 84 | 91 | -0.6 | M | 4.0 | 85 | 4.5 | R | I | F | n/a | G | G | 220 |
| Hyline | 4 | 94 | 95 | --- | -1.5 | E | 4.5 | 75 | 5.0 | R | I | G | n/a | G | G | 240 |
| CDC Inca | 7 | 104 | 99 | --- | -0.8 | M | 4.0 | 85 | 4.5 | R | I | G | n/a | G | F | 230 |
| AAC Lacombe | 6 | 96 | 99 | --- | -0.9 | M | 3.5 | 85 | 5.0 | R | I | F | n/a | F | F | 250 |
| CDC Lewochko | 5 | 104 | 103 | --- | +0.7 | M | 3.5 | 90 | 4.5 | R | I | G | n/a | G | G | 230 |
| CDC Meadow | 10 | 92 | 89 | 90 | -0.6 | E | 4.0 | 85 | 5.0 | R | I | G | n/a | G | G | 220 |
| AAC Profit | 3 | 101 | 110 | | +0.6 | M | 4.5 | 90 | --- | R | I | G | n/a | G | G | 230 |
| CDC Saffron | 10 | 98 | 92 | 91 | -0.4 | E | 4.0 | 80 | 4.5 | R | I | G | n/a | F | G | 250 |
| CDC Spectrum | 7 | 104 | 102 | --- | +0.5 | M | 3.5 | 85 | 4.5 | R | I | G | n/a | G | F | 240 |
| Thunderbird § | 6 | 89 | 83 | 91 | --- | M | 4.0 | 85 | 5.0 | R | I | G | n/a | G | F | 220 |
| CDC Treasure § | 8 | 88 | 87 | 93 | -0.4 | E | 4.0 | 80 | 5.0 | R | I | F | n/a | F | G | 210 |
| **Green** | | | | | | | | | | | | | | | | |
| Blueman | 3 | 91 | 88 | --- | +0.3 | M | 4.5 | 85 | 4.5 | R | I | --- | F | G | n/a | 220 |
| AAC Comfort | 4 | 90 | 99 | --- | -0.4 | M | 4.5 | 85 | 4.5 | R | I | G | G | G | n/a | 250 |
| Cooper | 8 | 89 | 80 | 85 | +0.9 | M | 4.0 | 80 | 5.0 | R | I | F | F | G | n/a | 270 |
| CDC Forest | 6 | 100 | 101 | --- | -0.2 | M | 4.0 | 85 | 4.5 | R | I | G | G | G | n/a | 230 |
| CDC Greenwater | 9 | 99 | 92 | 86 | -1.1 | M | 3.5 | 90 | 4.0 | R | MR | F | G | F | n/a | 230 |
| CDC Limerick | 10 | 95 | 90 | 90 | +2.8 | M | 3.5 | 85 | 4.0 | R | I | G | G | G | n/a | 210 |
| CDC Patrick | 10 | 87 | 86 | 87 | -1.0 | M | 4.5 | 80 | 4.5 | R | MR | G | G | G | n/a | 190 |
| CDC Pluto | 8 | 92 | 84 | 91 | -0.2 | M | 5.5 | 80 | 4.5 | R | I | G | G | G | n/a | 160 |
| AAC Radius | 6 | 77 | 77 | --- | +0.5 | M | 5.0 | 85 | 4.5 | R | I | VG | G | G | n/a | 230 |
| CDC Raezer | 10 | 81 | 80 | 94 | -0.3 | E | 3.5 | 85 | 5.0 | R | MR | G | G | G | n/a | 220 |
| AAC Royce § | 5 | 92 | 84 | --- | +0.4 | M | 5.0 | 70 | 5.0 | R | I | F | G | F | n/a | 260 |
| CDC Sage § | 5 | 73 | 71 | 73 | --- | M | 4.0 | 80 | 5.0 | R | MR | G | G | F | n/a | 220 |
| CDC Spruce | 7 | 94 | 99 | --- | +0.1 | M | 4.0 | 85 | 4.5 | R | I | F | G | F | n/a | 240 |
| CDC Striker | 10 | 81 | 80 | 84 | +2.0 | M | 3.5 | 80 | 4.5 | S | MR | VG | G | G | n/a | 240 |
| CDC Tetris | 10 | 88 | 91 | 88 | +0.4 | M | 4.0 | 85 | 4.5 | R | MR | G | F | G | n/a | 210 |
| **Red** | | | | | | | | | | | | | | | | |
| Redbat 8 | 6 | 92 | 85 | --- | +1.0 | M | 5.0 | 85 | 5.0 | R | --- | G | n/a | G | n/a | 200 |
| Redbat 88 | 5 | 91 | 92 | --- | +0.3 | M | 4.5 | 90 | 4.5 | R | --- | G | n/a | G | n/a | 190 |
| **Maple** | | | | | | | | | | | | | | | | |
| CDC Acer | 3 | 84 | 73 | --- | --- | M | 6.5 | 60 | 5.0 | R | --- | G | n/a | VG | n/a | 170 |
| CDC Blazer | 4 | 99 | 99 | --- | +1.9 | M | 5.0 | 80 | 5.0 | R | --- | G | n/a | VG | n/a | 190 |
| AAC Liscard | 5 | 89 | 89 | --- | -1.0 | M | 4.0 | 85 | 5.0 | R | --- | G | n/a | VG | n/a | 200 |
| CDC Mosaic | 4 | 81 | 74 | 58 | --- | M | 4.0 | 85 | 4.5 | R | --- | G | n/a | VG | n/a | 180 |



# Field Pea (cont'd)

## Main Characteristics of Varieties

| Variety | Years Tested[1] | Yield (%) 1, 2 & South 3 | Yield (%) North 3 & 4 | Irrigation | Protein | Relative Maturity | Lodging[2] (1-9) | Vine Length (cm) | Resistance To: MB[3] | Powdery Mildew | Fusarium Wilt | SCB[4] | Bleaching | SCD[5] | Greenness[6] | Seed Weight (g/1000) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dun** | ---- Relative to CDC Amarillo ----- | | | | | | | | | | | | | | | |
| CDC Dakota | 9 | 101 | 98 | 95 | 1.7 | M | 3.5 | 85 | 4.5 | R | --- | G | n/a | VG | n/a | 205 |
| **Forage[7]** | | | | | | | | | | | | | | | | |
| CDC Jasper | 3 | 81 | 82 | --- | 2.0 | M | 4.5 | 105 | 4.5 | R | --- | G | n/a | G | G | 180 |
| CDC Horizon | 4 | 88 | 78 | 63 | 2.2 | M | 4.0 | 100 | 4.5 | R | --- | G | n/a | G | G | 170 |

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

## 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 (inside of the seed). 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, so typically maple and dun pea varieties are quick to emerge with good stand establishment.

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

### Lodging: How Ratings are Determined and What They Mean

Lodging ratings provide an indication of the average standability of a particular variety over years and locations. Lodging at any given location can vary from what is stated in the guide, as lodging severity is typically greater under high yielding conditions and in situations with high winds. Lodging scores are based on visual ratings with a 9-point scale where 1 = completely upright and 9 = completely lodged. Ratings are conducted near the time of crop maturity.

### Seed Coat Breakage

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

### Greenness in Yellow Peas

Yellow peas are visually rated for green colouring after harvest by an experienced person. Ratings are expressed as a percentage of the seeds in a sample that have obvious green tinge to the whole seed. The green colouring may be contained within the seed coat and/or cotyledons. Typically, a rating of Fair (F) means the variety averaged 16–40 per cent seeds with green colour, whereas a rating of Good (G) would have 0–15 per cent green tinged seeds. Greenness may be impacted by genetics, environmental conditions, and harvest dates. A later maturing variety may show more greenness in the seed sample due to less mature seed if harvested on the same date as an earlier maturing variety. The impact of greenness is visual and does not affect germination but could affect grade. The Canadian Grain Commission has colour as one of the grading factors for peas with "good natural colour" required for top grades. Too much green colouring could downgrade the sample due to a "fair colour" rating.

### Seed Coat Dimpling

Seed coat dimpling refers to tiny depressions that give the seed a golfball-like appearance. Seed coat dimpling is a result of genetics and environment. Some varieties are more prone to dimpling than others. Dimpling can be found in other pulse crops, in addition to peas. It appears to be more prevalent when cool temperatures occur during seed fill. Seed coat dimpling is a measure of the percentage of seed from a harvested sample that shows dimpling. Typically, Very Good (VG) ratings have between 0–5 per cent of seeds dimpled, Good (G) between 6–20 per cent, and Fair (F) between 21–50 per cent. Buyers prefer a smooth surface to peas and grading may be impacted. Shrivelled seed is a grading factor under the Canadian Grain Commission and includes seeds that have a severely dimpled surface.

### Bleaching in Green Peas

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

# Soybean

Main Characteristics of Varieties

| Variety | Canadian Marketing Agent | Company Maturity Grouping[1] | Type[2] | Hilium Colour[3] | Years Tested | Yield (% TH 33003R2Y)[4] South | Yield (% TH 33003R2Y)[4] North | Days to Maturity[5] |
|---|---|---|---|---|---|---|---|---|
| TH 33003R2Y | Thunder Seeds | 00.3 | RR2 | BR | 4 | 100 | 100 | 0 |
| P0007A43R ✪ | DuPont Pioneer | 000.7 | RR1 | BR | 2 | 81 | 73 | -11 |
| NSC Leroy RR2Y | NorthStar Genetics | 000.6 | RR2 | Y | 3 | 94 | 84 | -7 |
| NSC Watson RR2Y | NorthStar Genetics | 000.8 | RR2 | IY | 4 | 95 | 99 | -6 |
| S0009-D6 | Syngenta Canada Inc. | 000.9 | RR2 | IY | 2 | 101 | 95 | -6 |
| S0009-M2 | Syngenta Canada Inc. | 000.9 | RR2 | IY | 4 | 101 | 101 | -6 |
| NocomaR2 ✪ | Brett Young/Elite Seeds | 000.8 | RR2 | IB | 2 | 105 | 92 | -6 |
| 23-60RY | DEKALB | 00.2 | RR2 | BL | 3 | 107 | 102 | -4 |
| P002T04R ⍟ | DuPont Pioneer | 00.2 | RR1 | TN | 3 | 91 | 96 | -4 |
| Barron R2X | SeCan | 000.8 | RR2X | BR | 2 | 96 | 89 | -4 |
| PS 00095 R2 | PRIDE Seeds | 000.9 | RR2 | BL | 3 | 105 | 94 | -4 |
| S003-L3 | Syngenta Canada Inc. | 00.3 | RR2 | BR | 3 | 108 | 98 | -3 |
| Torro R2 | Semences Prograin | 00 | RR2 | BL | 2 | 101 | 94 | -3 |
| LS TRI7XT | Legend Seeds | 000.7 | RR2X | GR | 2 | 89 | 86 | -3 |
| LS TRI9R2Y | Legend Seeds | 000.9 | RR2 | IY | 2 | 93 | 88 | -3 |
| Dario R2X | Semences Prograin | 000 | RR2X | BR | 2 | 85 | 91 | -3 |
| TH 87000 R2X | Thunder Seeds | 000.8 | RR2X | BR | 2 | 90 | 88 | -2 |
| PV 11s001 RR2 | CPS | 00.1 | RR2 | Y | 2 | 90 | 88 | -2 |
| Bishop R2 | SeCan | 00.2 | RR2 | IY | 3 | 99 | 96 | -2 |
| S006-W5 | Syngenta Canada Inc. | 00.5 | RR2 | IY | 2 | 100 | 101 | -2 |
| P002A63R ✪ | DuPont Pioneer | 00.2 | RR1 | TN | 2 | 105 | 106 | -2 |
| 22-60RY | DEKALB | 000.9 | RR2 | BL | 4 | 103 | 101 | -2 |
| NSC Reston RR2Y | NorthStar Genetics | 00.1 | RR2 | BL | 2 | 108 | 102 | -1 |
| P006T78R ⍟ | DuPont Pioneer | 00.6 | RR1 | BR | 2 | 111 | 103 | -1 |
| TH 33005R2Y | Thunder Seeds | 00.5 | RR2 | BL | 2 | 114 | 102 | -1 |
| 23-11RY | DEKALB | 000.9 | RR2 | BL | 3 | 107 | 98 | 0 |
| S007-Y4 | Syngenta Canada Inc. | 00.5 | RR2 | IY | 4 | 108 | 106 | 0 |
| TH 87003 R2X | Thunder Seeds | 00.3 | RR2X | BL | 2 | 110 | 98 | 0 |
| McLeod R2 | Secan | 00.4 | RR2 | BL | 4 | 107 | 99 | 0 |
| DKB003-29 | Monsanto | 00.3 | RR2X | BL | 2 | 111 | 97 | 0 |
| Lono R2 ✪ | Brett Young/Elite Seeds | 00.5 | RR2 | Y | 3 | 110 | 105 | +1 |
| Kosmo R2 | Semences Prograin | 00 | RR2 | IY | 2 | 93 | 91 | +1 |
| TH 35002 R2Y | Thunder Seeds | 00.2 | RR2 | BL | 2 | 101 | 102 | +1 |
| TH 32004R2Y | Thunder Seeds | 00.4 | RR2 | BL | 4 | 109 | 102 | +1 |
| Mahony R2 | Secan | 00.3 | RR2 | BL | 4 | 110 | 105 | +1 |
| LS 002R24N | Delmar Commodities | 00.2 | RR2 | BL | 3 | 112 | 98 | +1 |
| PS 0035 NR2 | PRIDE Seeds | 00.3 | RR2 | BL | 4 | 106 | 95 | +1 |
| LS NorthWester | Delmar Commodities | 00.1 | RR2 | BL | 3 | 102 | 94 | +1 |
| P006T46R ✪ | DuPont Pioneer | 00.6 | RR1 | BR | 3 | 106 | 101 | +1 |
| Akras R2 | Brett Young/Elite Seeds | 00.3 | RR2 | IB | 4 | 112 | 108 | +1 |
| TH 37004 R2Y | Thunder Seeds | 0.4 | RR2 | BL | 2 | 95 | 91 | +3 |
| HS 006RYS24 | Dow Seeds | 00.6 | RR2 | BL | 3 | 108 | 94 | +3 |
| Hero R2 | Secan | 00.4 | RR2 | BL | 2 | 120 | 101 | +4 |

[1] Maturity Groups are assigned by individual companies to assist growers select varieties suitable for their area. See page 10 for more information.

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

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

[4] Four year mean yield of the check variety **TH 33003R2Y** was 44 bushels/acre: 35.5 bu/ac in 2018; 46 bu/acre in 2017: 44 bu/acre in 2016 and 51 bu/acre in 2015.

[5] Days to maturity indicates +/- days from seeding to 95% mature pods as compared to the 3-year mean of the check variety **TH 33003R2Y** (113.5 days). Only sites which reached maturity prior to a killing frost were used for calculating days to maturity. From past experience, moist growing seasons results in delayed maturity. Data is from SK sites from 2016, 2017 & 2018.



## SOYBEAN ADDITIONAL INFORMATION

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

**Soybean Seeding Tips**

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

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

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

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

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

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

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

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

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

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

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

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

# Inoculants and Nitrogen Fixation with Pulses and Soybeans

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

**Handling Inoculants**

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

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

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

# Faba Bean

Main Characteristics of Varieties

| Variety | Years Tested | Yield (% CDC Fatima) | Height (cm) | Lodging[1] (1-9) | Maturity (days) | Seed Weight (g/1000) |
|---|---|---|---|---|---|---|
| **Coloured Flower (normal tannin)** | | | | | | |
| CDC Fatima | 12 | 100 | 106 | 3.8 | 105 | 520 |
| CDC Blitz | 6 | 101 | 101 | 3.7 | 109 | 410 |
| FB9-4 | 9 | 92 | 95 | 3.7 | 104 | 680 |
| Florent | 4 | 112 | 102 | 2.3 | 107 | 660 |
| CDC SSNS-1 | 10 | 91 | 109 | 3.4 | 105 | 335 |
| Taboar | 5 | 96 | 110 | 3.7 | 107 | 480 |
| Vertigo | 4 | 110 | 107 | 3.0 | 106 | 571 |
| 186S-11 | 6 | 106 | 105 | 3.1 | 106 | 749 |
| 247-13 | 4 | 107 | 103 | 3.4 | 106 | 620 |
| **Coloured Flower (normal tannin, low vicine/convicine)** | | | | | | |
| Fabelle | 6 | 105 | 104 | 2.4 | 105 | 533 |
| **White Flower (low tannin)** | | | | | | |
| Imposa | 4 | 105 | 99 | 2.4 | 107 | 695 |
| Snowbird | 12 | 100 | 95 | 3.0 | 104 | 448 |
| CDC Snowdrop | 9 | 89 | 97 | 2.8 | 104 | 325 |
| Tabasco | 5 | 96 | 93 | 1.9 | 106 | 496 |
| DL Tesoro | 3 | 111 | 90 | 3.8 | 110 | 511 |
| **White Flower (low tannin, low vicine/convicine)** | | | | | | |
| DL Rico | 2 | 82 | 107 | 3.5 | 109 | 566 |

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

## ADDITIONAL INFORMATION

Faba bean regional trials began in 2006 to accommodate growing interest in this crop as a nitrogen-fixing high protein food and feed grain in moist areas. White-flowered types are low 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/convicine is desirable for protein extraction markets.

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

Faba bean is a partly outcrossing (4-84% 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 2 km or more are recommended at this time to maintain variety purity for low vc status and flower colour. Commercial farmers who intend to save their seed should follow similar isolation practices.

**Seeding Tips for Faba Bean**

Tannin and zero-tannin faba bean types should be separated by at least 500 metres and up to 2 km to prevent cross pollination.

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

Seed as early as you can get in the field 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:

- Know the thousand kernel weight of your seed and target 45 plants per metre squared when calculating seeding rates.
- To reach high seeding rates consider metering from multiple tanks or changing augers/rollers.

To minimize plugging:

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



# Dry Bean

Main Characteristics of Varieties

| Variety | Years Tested[1] | Yield --- (% CDC Pintium) --- Irrigation | Yield --- (% CDC Pintium) --- Dryland | Days to Flower | Maturity Rating[2] | % Pod Clearance[3] | Seed Weight (g/1000) | Growth Habit[4] |
|---|---|---|---|---|---|---|---|---|
| **Pinto** | | | | | | | | |
| CDC Pintium | 17 | 100 | 100 | 50 | E | 85 | 350 | I |
| Island | 11 | 122 | 111 | 55 | M | 79 | 355 | II |
| Mariah § | 5 | 114 | 103 | 55 | L | 82 | 293 | II |
| CDC Marmot | 8 | 108 | 108 | 50 | E | 80 | 367 | I |
| Medicine Hat | 5 | 141 | 115 | 58 | M | 72 | 360 | II |
| Winchester | 5 | 116 | 110 | 52 | M | 82 | 352 | II |
| CDC WM-2 | 12 | 118 | 106 | 52 | E | 79 | 365 | II |
| **Navy** | | | | | | | | |
| Envoy | 17 | 105 | 84 | 53 | M | 77 | 184 | I |
| Bolt | 4 | 119 | 103 | 58 | L | 82 | 190 | II |
| Lightning | 5 | 109 | 92 | 60 | L | 85 | 175 | II |
| Portage | 6 | 105 | 94 | 52 | M | 85 | 175 | II |
| Skyline | 5 | 74 | 91 | 57 | L | 80 | 163 | I |
| OAC Spark | 7 | 90 | 102 | 55 | L | 81 | 163 | I |
| AAC Shock | 2 | 103 | 100 | 51 | M | 89 | 186 | II |
| **Small Red** | | | | | | | | |
| AC Redbond | 9 | 98 | 100 | 51 | M | 65 | 290 | II |
| **Black** | | | | | | | | |
| CDC Blackstrap | 8 | 122 | 120 | 53 | M | 85 | 195 | II |
| CDC Jet | 17 | 100 | 98 | 58 | L | 85 | 170 | II |
| CDC Superjet | 7 | 125 | 108 | 58 | L | 85 | 170 | II |
| **Shiny Black** | | | | | | | | |
| AC Black Diamond | 7 | 102 | 94 | 54 | M | 70 | 250 | II |
| **flor de junio** | | | | | | | | |
| CDC Ray | 6 | 146 | 127 | 56 | L | 70 | 300 | III |
| **Yellow** | | | | | | | | |
| CDC Sol | 10 | 111 | 97 | 55 | L | 78 | 399 | I |

[1] Co-op and regional trials grown in narrow rows. Direct comparisons to **CDC Pintium** since 2002.
[2] Maturity ratings based on E = 100 days; L = 110 days for May 20 planting to swathing maturity. See page 2 for more information.
[3] Pod clearance: percentage of pods that completely clear the cutterbar at time of swathing (~4 cm).
[4] Growth habit: I = Determinate bush; II = Indeterminate bush; III = Indeterminate vine.

# OILSEED CROPS

## Flax

Main Characteristics of Varieties

| Variety | Years Tested | Yield[1] (% CDC Bethune) | | | | Relative Maturity[2] | Seed Size[3] | Resistance To | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Area 2 | Area 3 South | Area 4 | Irrigation | | | Lodging | Powdery Mildew[4] | Fusarium Wilt[4] |
| CDC Bethune | 11 | 100 | 100 | 100 | 100 | L | M | G | MR | MR |
| AAC Bravo | 5 | 101 | 103 | 101 | 91 | L | L | G | MR | MR |
| CDC Buryu | 4 | 102 | 103 | 102 | 79 | L | M | G | | MR |
| CDC Glas | 7 | 108 | 105 | 106 | 97 | L | M | VG | MR | MR |
| CDC Neela | 5 | 104 | 104 | 105 | 94 | L | M | G | MR | MR |
| NuLin VT50 | 5 | 102 | 100 | 96 | 98 | L | S | VG | | MR |
| CDC Plava | 5 | 94 | 104 | 97 | 85 | M | M | G | | MR |
| Prairie Blue | --- | --- | --- | --- | --- | L | S | VG | MR | MR |
| Prairie Grande | 3 | 93 | 88 | 91 | 91 | M | M | VG | MR | MR |
| Prairie Sapphire | 6 | 99 | 92 | 99 | 101 | L | M | G | MR | MR |
| Prairie Thunder | 3 | 95 | 98 | 92 | 97 | M | M | VG | MR | R |
| CDC Sanctuary | 5 | 104 | 97 | 90 | 89 | L | M | F | MR | MR |
| CDC Sorrel | 4 | 99 | 102 | 92 | 92 | L | L | G | MR | MR |
| Topaz | 4 | 100 | 104 | 97 | 90 | L | M | G | MR | MR |
| Vimy § | --- | --- | --- | --- | --- | M | L | P | MS | MR |
| WESTLIN 60 | 5 | 92 | 92 | 91 | 91 | M | M | G | | MR |
| WESTLIN 71 | 5 | 95 | 104 | 94 | 96 | L | S | VG | MR | MR |
| WESTLIN 72 | 5 | 99 | 103 | 99 | 99 | L | S | VG | MR | MR |

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

**ADDITIONAL INFORMATION**

Flax was last tested in 2018. All cultivar descriptions other than yield are based on data from the Linseed Cooperative 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 colour 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 (up to 50% larger than **MIDAS™** camelina seed). Its natural height is medium to tall (65 – 95 cm); it flowers after about 45 days and generally reaches maturity, depending on the weather conditions, 85 – 105 days after seeding. In trials conducted from 2014 to 2017 on the Canadian Prairies, **Cypress** yielded on average just under 50 bu/acre. Expected yields in Saskatchewan are 35 – 45 bu/acre on fallow and 25 to 35 bu/acre on stubble. Certified seed of **Cypress** will be available to producers in 2019.



# Mustard

Main Characteristics of Varieties

| Type and Variety | Yield[1] | Plant Height (cm) | Hydroxylbenzyl Glucosinolate (µmol/g seed) | Allyl Glucosinolate (µmol/g seed) | Mucilage[2] (cS*ml/g seed) | Resistance to White Rust[3] 2a | 2v | Fixed Oil (% seed) | Protein (% Seed) | Seed Weight (g/1000) | Maturity (days) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Open-Pollinated Yellow (% Andante)** | | | | | | | | | | | |
| Andante[4] | 100 | 102 | 145 | n/a | 55.7 | n/a | | 28.4 | 35.1 | 6.0 | 93 |
| AAC Adagio[5] | 102 | +1 | -6 | n/a | +41.1 | n/a | | +1.7 | -2.1 | -0.9 | +1 |
| AC Pennant[4] | 99 | -6 | +3 | n/a | -11.0 | n/a | | +1.1 | -0.8 | -0.3 | -1 |
| **Open-Pollinated Brown (% Centennial Brown)** | | | | | | | | | | | |
| Centennial Brown[4] | 100 | 117 | n/a | 10.4 | n/a | S | S | 36.3 | 30.1 | 3.1 | 92 |
| Amigo[6] | 93 | -8 | n/a | +3.5 | n/a | R | S | -2.1 | +0.6 | -0.4 | +6 |
| AAC Brown 120[7] | 112 | +8 | n/a | +1.6 | n/a | R | R | +1.0 | -0.3 | +0.6 | +2 |
| Duchess[4] § | 99 | -4 | n/a | -1.0 | n/a | S | S | +1.8 | -1.4 | -0.4 | 0 |
| **Hybrid Brown (% Centennial Brown)** | | | | | | | | | | | |
| AAC Brown18[8] | 119 | +4 | n/a | -0.5 | n/a | R | S | +2.1 | -1.5 | -0.1 | +1 |
| **Open-Pollinated Oriental (% Cutlass)** | | | | | | | | | | | |
| Cutlass[4] | 100 | 115 | n/a | 11.6 | n/a | R | S | 41.0 | 29.1 | 2.8 | 91 |
| Forge[4] | 97 | +10 | n/a | +0.6 | n/a | S | S | -2.1 | +0.5 | -0.2 | +1 |
| AAC Oriental 200[7] | 106 | +9 | n/a | +0.1 | n/a | R | S | -4.0 | +0.9 | -0.1 | +1 |
| AC Vulcan[4] | 98 | +1 | n/a | +0.8 | n/a | R | S | -0.4 | +0.4 | +0.1 | 0 |

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

**ADDITIONAL INFORMATION**

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

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

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

# Canola (Small-Scale Trials)

Main Characteristics of Varieties

| Variety (*B. napus*) | Distributor | 2013-2018 ALL Season Zones[1] | | 2018 LONG Season Zone (6 trials) | | | 2018 MID Season Zone (8 trials) | | | Resistance Rating | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Site Years | Yield (%L252) | Yield (% L252) | Maturity (days) | Height (cm) | Yield (% L252) | Maturity (days) | Height (cm) | Blackleg[2] | Clubroot[3] |
| **Liberty Link** | | | | | | | | | | | |
| L252[4] | BASF - InVigor | 109 | 100 | 100 | 85 | 115 | 100 | 91 | 117 | R | --- |
| 5440 | BASF - InVigor | 95 | 95 | --- | --- | --- | --- | --- | --- | R | --- |
| L130P | BASF - InVigor | 56 | 92 | --- | --- | --- | --- | --- | --- | R | --- |
| L140P | BASF - InVigor | 29 | 95 | --- | --- | --- | --- | --- | --- | R | --- |
| L230 | BASF - InVigor | --- | --- | 95 | 84 | 115 | 95 | 89 | 112 | R | --- |
| L241C | BASF - InVigor | 24 | 93 | 94 | 85 | 115 | 94 | 90 | 114 | R | R |
| L261 | BASF - InVigor | 72 | 98 | --- | --- | --- | --- | --- | --- | R | --- |
| LSD(%)[5] | | | | *18* | | | *16* | | | | |
| **Clearfield** | | | | | | | | | | | |
| 5545 CL | BrettYoung | 37 | 91 | 88 | 86 | 119 | 90 | 91 | 122 | R ($CE_1$) | --- |
| CS2500 CL | CANTERRA SEEDS | --- | --- | 88 | 86 | 119 | 84 | 90 | 119 | R (C) | --- |
| DL1745CL | DL Seeds | --- | --- | 87 | 88 | 121 | 86 | 93 | 124 | R | --- |
| PV 200 CL | Nutrien Ag Solutions | 37 | 89 | 91 | 85 | 117 | 90 | 91 | 117 | R | --- |
| 46H75 | Pioneer Hi-Bred | 24 | 88 | 87 | 87 | 117 | 88 | 94 | 119 | R | --- |
| LSD (%)[5] | | | | *11* | | | *10* | | | | |
| **Roundup Ready** | | | | | | | | | | | |
| 6074 RR[6] | BrettYoung | 66 | 94 | 91 | 86 | 114 | 94 | 92 | 114 | R (C) | --- |
| 6076 CR[6] | BrettYoung | 37 | 89 | 87 | 87 | 121 | 90 | 92 | 122 | R ($CE_1$) | R |
| 6090 RR | BrettYoung | 24 | 89 | 84 | 89 | 130 | 89 | 93 | 130 | R ($CE_1$) | R |
| D3155C | BREVANT Seeds | --- | --- | 93 | 85 | 117 | 93 | 91 | 124 | R | --- |
| CS2000 | CANTERRA SEEDS | 66 | 92 | 88 | 85 | 115 | 90 | 90 | 117 | R ($CE_1$) | R |
| CS2100 | CANTERRA SEEDS | 34 | 91 | 92 | 86 | 112 | 88 | 93 | 112 | R (ACG) | --- |
| CS2300 | CANTERRA SEEDS | 24 | 93 | 90 | 86 | 122 | 94 | 93 | 124 | R (C) | --- |
| 16RH5088 | Cargill - VICTORY | --- | --- | 83 | 87 | 117 | 90 | 93 | 124 | R | --- |
| V12-3[7] | Cargill - VICTORY | --- | --- | 85 | 85 | 112 | 93 | 91 | 112 | R | R |
| V14-1[7] | Cargill - VICTORY | --- | --- | 86 | 87 | 119 | 91 | 92 | 119 | R | R |
| 74-44 BL | DEKALB | 80 | 89 | 92 | 84 | 110 | 94 | 90 | 112 | R (ACG) | --- |
| 75-42 CR | DEKALB | --- | --- | 87 | 85 | 111 | 88 | 90 | 114 | R (AC) | R |
| 75-65 RR | DEKALB | --- | --- | 92 | 83 | 109 | 88 | 89 | 112 | R (C) | --- |
| DL1634RR | DL Seeds | --- | --- | 86 | 88 | 125 | 96 | 93 | 127 | R | R |
| PV 540 G | Nutrien Ag Solutions | 24 | 91 | 91 | 86 | 111 | 94 | 92 | 117 | R | --- |
| PV 581 GC | Nutrien Ag Solutions | 24 | 90 | 89 | 87 | 118 | 94 | 93 | 122 | R | R |
| VR 9562 GC | Nutrien Ag Solutions | 56 | 94 | --- | --- | --- | --- | --- | --- | R | R |
| 45H33 | Pioneer Hi-Bred | 37 | 92 | 89 | 85 | 114 | 93 | 91 | 124 | R | R |
| 45M35 | Pioneer Hi-Bred | 24 | 96 | 92 | 84 | 111 | 99 | 91 | 114 | R | --- |
| 45CS40[6] | Pioneer Hi-Bred | --- | --- | 92 | 85 | 120 | 90 | 91 | 122 | R | R |
| LSD(%)[5] | | | | *15* | | | *12* | | | | |

[1] From Canola Performance Trials and grown at 10 or more sites across Prairie provinces, 2013-2018. Varieties new for 2018 do not have long-term data.
[2] Letters following resistance label indicate Resistance Groups as part of a new voluntary label process. Testing stubble to understand pathogen race(s) present in field is strongly recommended. See www.blackleg.ca for more information.
[3] Resistance classification as substantiated through standard testing procedures outlined in the WCC/RRC guidelines and protocols.
[4] Average yield (bu/ac) of the check L252 for long season zone and mid season zone in 2018 was 61 and 64, respectively.
[5] LSD = least significant difference (5% level) within herbicide system.
[6] Indicates Improved Tolerance (IT) to sclerotinia stem rot based on distributor data submitted to & approved by CFIA, using the WCC/RRC-approved protocol.
[7] Indicates varieties with specialty oil profiles and premiums associated with pricing. Visit www.canolaperformancetrials.ca for more details.

Data presented is based on harvest data received as of November 2, 2018.

## CANOLA ADDITIONAL INFORMATION

Variety decriptions summarize the performance of varieties tested in the 2018 Canola Performance Trials (CPT). Data donated by the CPT Committee. For more information visit *www.canolaperformancetrials.ca*.

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

Clubroot is a long-lived disease in the soil that can impact canola performance. Using clubroot resistant varietes in Rural Municipalities where clubroot has been found is highly recommended as a risk mitigation tool. To know for sure if your own fields have the clubroot pathogen present, soil testing is necessary 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 (LSD) is about 10 to 18 bu/ac. If variety A yielded 52 bu/ac. and variety B yielded 45 bu/ac., they would be considered statistically the same. This is based on a confidence level that significant differences would occur by chance less than 5% of the time. In the small plot design used, varieties were grouped by herbicide system, which means that the LSD 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 your local agri-retailer.

# Sunflower

Main Characteristics of Hybrids

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

## 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. Seed of **Honeycomb NS** may be limited.

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

# Voluntary Changes to Labelling Blackleg Resistance

*By Matthew Bernard, Saskatchewan Agriculture*

Blackleg is best managed through an integrated approach which includes extended crop rotations, scouting to monitor disease levels, use of blackleg resistant canola varieties, use of disease-free certified seed and fungicides to prevent early season infection. As in any living organism – including plants and fungi – genetic diversity exists in populations of the blackleg-causing pathogen, *Leptosphaeria* (*L.*) *maculans*. This diversity can affect its ability to infect a plant. The genetic diversity in *L. maculans* is referred to as different "races." Blackleg-resistant canola varieties can include both major gene resistance, as well as minor gene resistance (quantitative resistance). Major gene resistance can provide complete resistance when there is a match between the specific genes in the pathogen race and the major gene in the resistant canola variety. On the other hand, minor gene resistance is not race-specific and will provide the same level of protection against all races of the pathogen. This type of resistance is not complete but is a stable form of resistance that will reduce the severity of infection. When a pathogen population is exposed to the host (canola) in high frequency, higher selection pressure is put onto the pathogen population which results in shifts in the pathogen population, favouring races that can cause infection in a resistant canola variety grown in the field.

A noticeable change to the canola variety table in the *2019 SaskSeed Guide* highlights the addition of a more detailed genetic-based, voluntary labelling system for blackleg resistance, where available. Major genes, or groups of genes, are represented by a lettering system referred to as Resistance Groups (RGs):

| Resistance Group (RG) | Major Resistance Gene(s) |
|---|---|
| R (A) | *Rlm1 or LepR3* |
| R (B) | *Rlm2* |
| R (C) | *Rlm3* |
| R (D) | *LepR1* |
| R ($E_1$) | *Rlm4* |
| R ($E_2$) | *Rlm7* |
| R (F) | *Rlm9* |
| R (G) | *RlmS* |
| R (H) | *LepR2* |
| R (X) | unknown |

Due to the complexity of the genetics, some hybrids might include one or several groups. Highly-similar genetics are labelled accordingly, which is why there might be sub-categories (such as R ($E_1$) vs. R ($E_2$)). Also, group names might change or new groups might be added in the future, as researchers discover more about the interactions.

Knowing the genetics and Resistance Group of the variety that you are growing is helpful in making informed variety rotation and blackleg disease management decisions, but it is only part of the tool, however. It is also important to understand the pathogen race(s) present in your field which can be accomplished by stubble testing. When these two pieces of information are known, and other parts of an integrated management approach are being employed, the resistance in the canola plant can be "rotated" by choosing a variety in a specific Resistance Group to combat the pathogen race(s) present in your field most effectively. The "rotation" of these genetics should not be shuffled on an annual basis, but rather when there is evidence that the entire integrated approach is no longer effective (which includes extended rotations and other approaches discussed above). This can be determined through late season scouting and disease severity rating. If blackleg levels remain low that means that your resistant variety is effective. However, if blackleg disease levels increase this indicates that there may be a mismatch between the major gene resistance in your variety and the pathogen race in the field. When this occurs you can refer to the Resistance Group list to select a different blackleg resistant variety. No one tool will be a sole option for blackleg management on your farm, but being aware of, and knowing how to use all the tools available, will be the most effective way to implement an integrated pest management strategy to minimize disease severity and maximize returns. For more information, visit *www.blackleg.ca*.

Stubble tests to determine races present in your field can be performed at several labs, including Manitoba's Pest Surveillance Initiative Lab (Winnipeg), Discovery Seed Labs (Saskatoon), and 20/20 Seed Labs (Winnipeg and Nisku).



# Understanding Clubroot Resistance and the Classification System

*By Errin Willenborg, Sask Canola*

In 2018, the Ministry led an extensive clubroot survey. So far, visible clubroot symptoms have been found in 37 fields across five crop districts in Saskatchewan. If you farm in areas where clubroot has been detected, or if you are concerned about clubroot, the following management tips are recommended:

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

Clubroot-resistant (CR) 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 CR varieties, this valuable resource must be used judiciously in an integrated management approach. An integrated approach includes practicing a diverse crop rotation — ideally three years between susceptible crops in infested areas — while effectively managing weeds, sanitizing equipment and minimizing soil movement. This approach allows for reduction of soil inoculum levels and minimizes the risk of selecting for clubroot pathotypes that can overcome our 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% infection compared to susceptible checks in disease tests. It is important to remember that **resistant (R) varieties are not immune**, but highly restrict the development of clubroot symptoms in fields with low to moderate disease pressure from resting spores in the soil. Under heavy pressure in severely infested fields, a resistant (R) variety can show significant root galling, but may develop fewer and smaller galls than a susceptible variety. Under these heavy pressure situations and frequent use of CR varieties, clubroot populations rapidly evolve to overcome the genetic resistance. **To delay this shift in clubroot strains and loss of CR variety efficacy, CR varieties should not be grown in short rotations.**

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

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

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

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

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

# 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 |
| CDC Bradwell | U of S - CDC | SeCan Members |
| AAC Brandon | AAFC (Swift Current) | SeCan Members |
| AAC Cameron VB | AAFC (Brandon) | CANTERRA SEEDS |
| Carberry | AAFC (Swift Current) | SeCan Members |
| Cardale | AAFC (Winnipeg) | Seed Depot |
| SY Chert VB | Syngenta Seeds Canada Inc. | Syngenta Canada |
| Coleman | U of Alberta | Lefsrud Seed |
| AAC Connery | AAFC (Swift Current) | CANTERRA SEEDS |
| AAC Elie | AAFC (Swift Current) | Alliance Seed |
| Glenn | NDSU | CANTERRA SEEDS |
| CDC Go | U of S - CDC | Public release U of S - CDC |
| Go Early | U of Alberta | Mastin Seeds |
| Goodeve VB | AAFC (Swift Current) | Alliance Seed |
| CDC Hughes VB ✪ | U of S - CDC | Proven Seed/Nutrien Ag Solutions |
| AC Intrepid | AAFC (Swift Current) | CANTERRA SEEDS |
| AAC Jatharia VB | AAFC (Brandon) | SeCan Members |
| CDC Landmark VB | U of S - CDC | FP Genetics |
| CDC VR Morris | U of S - CDC | Proven Seed/Nutrien Ag Solutions |
| SY Obsidian | Syngenta Seeds Canada Inc. | Richardson Intl |
| Parata ✪ | U of Alberta | SeCan Members |
| CDC Plentiful | U of S - CDC | FP Genetics |
| AAC Prevail VB | AAFC (Winnipeg) | Alliance Seed |
| AAC Redberry | AAFC (Swift Current) | Alliance Seed |
| Shaw VB | AAFC (Winnipeg) | SeCan Members |
| SY Slate | Syngenta Seeds Canada Inc. | Syngenta Canada |
| 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 |
| Thorsby | U of Alberta | CANTERRA SEEDS |
| AAC Tisdale | AAFC (Swift Current) | SeCan Members |
| CDC Titanium VB | U of S - CDC | Proven Seed/Nutrien Ag Solutions |
| CDC Utmost VB | U of S - CDC | FP Genetics |
| AAC Viewfield ✪ | AAFC (Swift Current) | FP Genetics |
| AAC W1876 | AAFC (Swift Current) | CANTERRA SEEDS |
| AAC Warman VB | AAFC (Brandon) | SeCan Members |
| Waskada | AAFC (Winnipeg) | SeCan Members |
| AAC Wheatland VB ✪ | AAFC (Swift Current) | SeCan Members |
| WR859CL | Syngenta Seeds Canada Inc. | Richardson Intl |
| SY479 VB | Syngenta Seeds Canada Inc. | Alliance Seed |
| **Canada Western Special Purpose** | | |
| Alderon | KWS-UK | SeCan Members |
| AAC Awesome VB | AAFC (Lethbridge) | SeCan Members |
| Charing VB ✪ | KWS-UK | SeCan Members |
| AAC Innova | AAFC (Lethbridge) | Alliance Seed |
| CDC Kinley | U of S - CDC | Public Release U of S - CDC |
| CDC NRG003 | U of S - CDC | CANTERRA SEEDS |
| Pasteur | Wiersum Plant Breeding | SeCan Members |
| Sparrow VB | KWS-UK | SeCan Members |
| CDC Throttle ✪ | U of S - CDC | Public Release U of S - CDC |
| **Canada Western Amber Durum** | | |
| CDC Alloy | U of S - CDC | FP Genetics |
| Brigade | AAFC (Swift Current) | Proven Seed/Nutrien Ag Solutions |
| AAC Cabri | AAFC (Swift Current) | SeCan Members |
| CDC Carbide VB | U of S - CDC | Proven Seed/Nutrien Ag Solutions |
| AAC Congress ✪ | AAFC (Swift Current) | CANTERRA SEEDS |
| CDC Credence ✪ | U of S - CDC | CANTERRA SEEDS |
| AAC Current | AAFC (Swift Current) | Alliance Seed |
| CDC Dynamic | U of S - CDC | Proven Seed/Nutrien Ag Solutions |
| Enterprise | AAFC (Swift Current) | CANTERRA SEEDS |
| Eurostar | AAFC (Swift Current) | SeCan Members |
| CDC Fortitude | U of S - CDC | Proven Seed/Nutrien Ag Solutions |
| AAC Marchwell VB | AAFC (Swift Current) | SeCan Members |
| AC Navigator | AAFC (Swift Current) | Proven Seed/Nutrien Ag Solutions |
| CDC Precision | U of S - CDC | Alliance Seed |
| AAC Raymore | AAFC (Swift Current) | SeCan Members |
| AAC Spitfire | AAFC (Swift Current) | SeCan Members |
| Strongfield | AAFC (Swift Current) | SeCan Members |
| AAC Stronghold | AAFC (Swift Current) | SeCan Members |
| AAC Succeed VB ✪ | AAFC (Swift Current) | FP Genetics |
| Transcend | AAFC (Swift Current) | FP Genetics |
| CDC Verona | U of S - CDC | Alliance Seed |

| Crop Kind, Class & Variety | Breeding Institution | Distributor |
|---|---|---|
| **WHEAT (CONT'D)** | | |
| **CWRS moving to CNHR - August 1, 2021** | | |
| Muchmore | AAFC (Swift Current) | FP Genetics |
| AAC Redwater | AAFC (Winnipeg) | SeCan Members |
| Vesper VB | AAFC (Winnipeg) | SeCan Members |
| 5605HR CL | Syngenta Seeds Canada Inc. | Proven Seed/Nutrien Ag Solutions |
| **Canada Prairie Spring Red** | | |
| AAC Crossfield | AAFC (Winnipeg) | CANTERRA SEEDS |
| AAC Entice | AAFC (Winnipeg) | Proven Seed/Nutrien Ag Solutions |
| AAC Foray VB | AAFC (Winnipeg) | SeCan Members |
| AAC Goodwin | AAFC (Swift Current) | SeCan Members |
| AAC Penhold | AAFC (Swift Current) | SeCan Members |
| SY Rowyn | Syngenta Seeds Canada Inc. | Alliance Seed |
| AAC Ryley | AAFC (Swift Current) | SeCan Members |
| AAC Tenacious VB | AAFC (Winnipeg) | Alliance Seed |
| CDC Terrain ✪ | U of S - CDC | FP Genetics |
| SY985 | Syngenta Seeds Canada Inc. | Proven Seed/Richardson Intl |
| 5700PR | Syngenta Seeds Canada Inc. | Proven Seed/Nutrien Ag Solutions |
| **Canada Northern Hard Red** | | |
| AAC Concord | AAFC (Swift Current) | CANTERRA SEEDS |
| CDC Cordon CLPlus VB ✪ | Crop Development Centre | |
| Elgin ND | NDSU | FP Genetics |
| Faller | NDSU | Seed Depot |
| Lillian | AAFC (Swift Current) | SeCan Members |
| Prosper | NDSU | Seed Depot |
| Unity VB | AAFC (Winnipeg) | SeCan Members |
| **Canada Western Hard White Spring** | | |
| AAC Cirrus ✪ | AAFC (Swift Current) | FP Genetics |
| AAC Iceberg | AAFC (Winnipeg) | Alliance Seed |
| AAC Whitefox | AAFC (Winnipeg) | SeCan Members |
| Whitehawk | AAFC (Winnipeg) | SeCan Members |
| CDC Whitewood | U of S - CDC | SeCan Members |
| **Canada Western Soft White Spring** | | |
| AC Andrew | AAFC (Lethbridge) | SeCan Members |
| AAC Chiffon VB | AAFC (Lethbridge) | SeedNet Inc. |
| AAC Indus VB | AAFC (Lethbridge) | SeCan Members |
| AAC Paramount VB | AAFC (Lethbridge) | SeCan Members |
| Sadash VB | AAFC (Lethbridge) | SeCan Members |
| **WINTER WHEAT** | | |
| **Canada Western Red Winter** | | |
| CDC Buteo | U of S - CDC | SeCan Members |
| CDC Chase | U of S - CDC | CANTERRA SEEDS |
| AAC Elevate | AAFC (Lethbridge) | SeCan Members |
| Emerson | AAFC (Lethbridge) | CANTERRA SEEDS |
| Flourish | AAFC (Lethbridge) | SeCan Members |
| AAC Gateway | AAFC (Lethbridge) | Seed Depot |
| AAC Goldrush ✪ | AAFC (Lethbridge) | FP Genetics |
| Moats | U of S - CDC | SeCan Members |
| Radiant | AAFC (Lethbridge) | CANTERRA SEEDS |
| AAC Wildfire | AAFC (Lethbridge) | SeCan Members |
| **Canada Western Experimental** | | |
| AAC Icefield ✪ | AAFC (Lethbridge) | FP Genetics |
| **Canada Western Special Purpose** | | |
| CDC Falcon | U of S - CDC | SeCan Members |
| 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 |
| Sunray | AAFC (Lethbridge) | SeedNet Inc. |
| Taza | FCDC (Lacombe) | Solick Seeds |
| Tyndal | FCDC (Lacombe) | SeCan Members |
| AC Ultima | AAFC (Swift Current) | FP Genetics |
| **Winter Habit** | | |
| Luoma | FCDC (Lacombe) | Corns Brothers Farms |
| Metzger | FCDC (Lacombe) | Haney Farm Ltd. |
| Pika | FCDC (Lacombe) | Progressive Seeds |



| Crop Kind, Class & Variety | Breeding Institution | Distributor |
|---|---|---|
| **BARLEY** | | |
| **Malting Two-Row** | | |
| Bentley | FCDC (Lacombe) | CANTERRA SEEDS |
| CDC Bow | U of S - CDC | SeCan Members |
| AAC Connect | AAFC (Brandon) | CANTERRA SEEDS |
| CDC Copeland | U of S - CDC | SeCan Members |
| CDC Copper ✪ | U of S - CDC | FP Genetics |
| CDC Fraser | U of S - CDC | SeCan Members |
| CDC Goldstar | U of S - CDC/Sapporo/PML | CANTERRA SEEDS |
| CDC Kindersley | U of S - CDC | SeCan Members |
| Lowe ✪ | FCDC (Lacombe) | SeCan Members |
| Major | AAFC (Brandon) | Alliance Seed |
| AC Metcalfe | AAFC (Brandon) | SeCan Members |
| Newdale | AAFC (Brandon) | FP Genetics |
| CDC PolarStar | U of S - CDC/Sapporo/PML | CANTERRA SEEDS |
| CDC PlatinumStar | U of S - CDC/Sapporo/PML | CANTERRA SEEDS |
| Sirish ✪ | Syngenta Seeds Canada Inc. | Syngenta Canada |
| AAC Synergy | AAFC (Brandon) | Syngenta Canada |
| **Malting Six-Row** | | |
| Celebration | Busch Ag Res. Inc. | CANTERRA SEEDS |
| Legacy | Busch Ag Res. Inc. | Proven Seed/FP Genetics |
| Tradition | Busch Ag Res. Inc. | Proven Seed/FP Genetics |
| **Hulled - Feed Two-Row** | | |
| Altorado | Highland Specialty Grains | Proven Seed/Nutrien Ag Solutions |
| CDC Austenson | U of S - CDC | SeCan Members |
| Brahma | Highland Specialty Grains | Proven Seed/Nutrien Ag Solutions |
| Canmore | FCDC (Lacombe) | CANTERRA SEEDS |
| Champion | Highland Specialty Grains | Proven Seed/Nutrien Ag Solutions |
| Claymore | Highland Specialty Grains | Proven Seed/Nutrien Ag Solutions |
| CDC Coalition | U of S - CDC | CANTERRA SEEDS |
| CDC Cowboy | U of S - CDC | SeCan Members |
| CDC Maverick | U of S - CDC | SeCan Members |
| Oreana | Highland Specialty Grains | Proven Seed/Nutrien Ag Solutions |
| **Hulled - Feed Six-Row** | | |
| AB Advantage ✪ | FCDC (Lacombe) | SeCan Members |
| Amisk | FCDC (Lacombe) | SeCan Members |
| AB Cattlelac ✪ | FCDC (Lacombe) | Alliance Seed |
| Muskwa | FCDC (Lacombe) | SeedNet Inc. |
| 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 McGwire | U of S - CDC | SeCan Members |
| CDC Rattan | U of S - CDC | Tomtene Seeds |
| Roseland | AAFC (Brandon) | Wayfinder Farms |
| **Forage** | | |
| CDC Cowboy | U of S - CDC | SeCan Members |
| Desperado | AAFC (Brandon) | Alliance Seed |
| CDC Maverick | U of S - CDC | SeCan Members |
| AC Ranger | AAFC (Brandon) | FP Genetics |
| **CANARYSEED** | | |
| 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 |
| **RYE** | | |
| KWS Bono | KWS Lochow GMBH | FP Genetics |
| Brasetto | KWS Lochow GMBH | FP Genetics |
| KWS Daniello | KWS Lochow GMBH | SeedNet Inc. |
| Danko | Danko Plant Breeders Ltd | FP Genetics |
| KWS Gatano | KWS Lochow GMBH | FP Genetics |
| Guttino | KWS Lochow GMBH | SeedNet Inc. |
| Hazlet | AAFC (Swift Current) | SeCan Members |
| Prima | AAFC (Swift Current) | SeCan Members |
| **CAMELINA** | | |
| Cypress ✪ | Smart Earth Seeds | Smart Earth Seeds |
| **CANOLA** | | |
| see table on page VR34 | | |

| Crop Kind, Class & Variety | Breeding Institution | Distributor |
|---|---|---|
| **OAT** | | |
| **Hulled** | | |
| Akina | Lantmannen SW Seed | Elite Seeds |
| CDC Arborg ✪ | U of S - CDC | FP Genetics |
| CDC Boyer | U of S - CDC | SeCan Members |
| CS Camden | Lantmannen SW Seed | CANTERRA SEEDS |
| CDC Dancer | U of S - CDC | FP Genetics/Cargill |
| Derby | U of S - CDC | Mastin Seeds |
| AAC Justice | AAFC (Winnipeg) | FP Genetics |
| Kara | Lantmannen SW Seed | Elite Seeds |
| Leggett | AAFC (Winnipeg) | FP Genetics |
| CDC Minstrel | U of S - CDC | FP Genetics |
| AC Morgan | AAFC (Lacombe) | SeCan Members |
| CDC Morrison | U of S - CDC | CANTERRA SEEDS |
| CDC Nasser | U of S - CDC | T & L Seeds |
| CDC Norseman | U of S - CDC | SeCan Members |
| ORe3541M | Oat Advantage | SeCan Members |
| ORe3542M ✪ | Oat Advantage | SeCan Members |
| CDC Orrin | U of S - CDC | FP Genetics/Cargill |
| Pinnacle | AAFC (Winnipeg) | FP Genetics |
| CDC Ruffian | U of S - CDC | FP Genetics |
| CDC So-I | U of S - CDC | T&L Seeds |
| Souris | NDSU | Seed Depot |
| Stride | AAFC (Winnipeg) | SeCan Members |
| Summit | AAFC (Winnipeg) | FP Genetics |
| Triactor | Lantmannen SW Seed | CANTERRA SEEDS |
| **Hulless** | | |
| AC Gwen | AAFC (Winnipeg) | SeCan Members |
| **Forage** | | |
| CDC Baler | U of S - CDC | FP Genetics |
| CDC Haymaker | U of S - CDC | SeCan Members |
| Murphy | AAFC (Lacombe) | SeCan Members |
| **FLAX** | | |
| CDC Bethune | U of S - CDC | SeCan Members |
| AAC Bravo | AAFC (Morden) | FP Genetics |
| CDC Buryu | U of S - CDC | SeCan Members |
| CDC Glas | U of S - CDC | SeCan Members |
| CDC Neela | U of S - CDC | CANTERRA SEEDS |
| Nulin VT50 | Nutrien Ag Solutions | Proven Seed/Nutrien Ag Solutions |
| CDC Plava | U of S - CDC | SeCan Members |
| Prairie Blue | AAFC (Morden) | SeCan Members |
| Prairie Grande | AAFC (Morden) | SeCan Members |
| Prairie Sapphire | AAFC (Morden) | Alliance Seed |
| Prairie Thunder | AAFC (Morden) | CANTERRA SEEDS |
| CDC Sanctuary | U of S - CDC | SeCan Members |
| CDC Sorrel | U of S - CDC | SeCan Members |
| Topaz | Nutrien Ag Solutions | Alliance Seed |
| Vimy | U of S - CDC | SeCan Members |
| Westlin 60 | Nutrien Ag Solutions | Proven Seed/Nutrien Ag Solutions |
| Westlin 71 | Nutrien Ag Solutions | Proven Seed/Nutrien Ag Solutions |
| Westlin 72 | Nutrien Ag Solutions | Proven Seed/Nutrien Ag Solutions |
| **MUSTARD** | | |
| **Brown** | | |
| Amigo | AAFC (Saskatoon) | Canadian Mustard Assoc. |
| AAC Brown 18 | AAFC (Saskatoon) | Mustard 21 Canada Inc. |
| AAC Brown 120 | AAFC (Saskatoon) | Mustard 21 Canada Inc. |
| Centennial Brown | AAFC (Saskatoon) | Canadian Mustard Assoc. |
| Duchess | Colman's of Norwich | |
| **Oriental** | | |
| Cutlass | AAFC (Saskatoon) | Canadian Mustard Assoc. |
| Forge | Colman's of Norwich | Proven Seed/Nutrien Ag Solutions |
| AAC Oriental 200 | AAFC (Saskatoon) | Mustard 21 Canada Inc. |
| AC Vulcan | AAFC (Saskatoon) | Canadian Mustard Assoc. |
| **Yellow** | | |
| AAC Adagio | AAFC (Saskatoon) | Mustard 21 Canada Inc. |
| Andante | AAFC (Saskatoon) | Canadian Mustard Assoc. |
| AC Pennant | AAFC (Saskatoon) | Canadian Mustard Assoc. |
| **SAFFLOWER** | | |
| Saffire | AAFC (Lethbridge) | Jerry Kubic (AB) |
| **SOYBEAN** | | |
| see table on page VR28 | | |
| **QUINOA** | | |
| NQRainbow | | NorQuin |
| NQRed | | NorQuin |
| NQ94PT | | NorQuin |

| Crop Kind, Class & Variety | Breeding Institution | Distributor |
|---|---|---|
| **LENTIL** | | |
| CDC Asterix | U of S - CDC | Sask. Pulse Growers |
| CDC Carmine ✪ | U of S - CDC | Sask. Pulse Growers |
| CDC Cherie | U of S - CDC | Sask. Pulse Growers |
| CDC Coral ✪ | U of S - CDC | Sask. Pulse Growers |
| CDC Dazil | U of S - CDC | Sask. Pulse Growers |
| CDC Greenland | U of S - CDC | Sask. Pulse Growers |
| CDC Greenstar | U of S - CDC | Sask. Pulse Growers |
| CDC Imax | U of S - CDC | Sask. Pulse Growers |
| CDC Imigreen | U of S - CDC | Sask. Pulse Growers |
| CDC Imp ✪ | U of S - CDC | Sask. Pulse Growers |
| CDC Impact | U of S - CDC | Sask. Pulse Growers |
| CDC Impala | U of S - CDC | Sask. Pulse Growers |
| CDC Imperial | U of S - CDC | Sask. Pulse Growers |
| CDC Impower | U of S - CDC | Sask. Pulse Growers |
| CDC Impress | U of S - CDC | Sask. Pulse Growers |
| CDC Impulse | U of S - CDC | Sask. Pulse Growers |
| CDC Imvincible | U of S - CDC | Sask. Pulse Growers |
| CDC Kermit | U of S - CDC | Sask. Pulse Growers |
| CDC KR-1 | U of S - CDC | AGT Foods Canada |
| CDC KR-2 | U of S - CDC | AGT Foods Canada |
| CDC Lima ✪ | U of S - CDC | Sask. Pulse Growers |
| CDC Marble | U of S - CDC | Sask. Pulse Growers |
| CDC Maxim | U of S - CDC | Sask. Pulse Growers |
| CDC Meteor | U of S - CDC | Sask. Pulse Growers |
| CDC Nimble ✪ | U of S - CDC | Sask. Pulse Growers |
| CDC Peridot | U of S - CDC | Sask. Pulse Growers |
| CDC Proclaim | U of S - CDC | Sask. Pulse Growers |
| CDC QG-1 | U of S - CDC | AGT Foods Canada |
| CDC QG-2 | U of S - CDC | AGT Foods Canada |
| CDC QG-3 | U of S - CDC | AGT Foods Canada |
| CDC QG-4 ✪ | U of S - CDC | AGT Foods Canada |
| CDC Red Rider | U of S - CDC | Sask. Pulse Growers |
| CDC Redberry | U of S - CDC | Sask. Pulse Growers |
| CDC Redbow | U of S - CDC | Sask. Pulse Growers |
| CDC Redcliff | U of S - CDC | Sask. Pulse Growers |
| CDC Redcoat | U of S - CDC | Sask. Pulse Growers |
| CDC Redmoon | U of S - CDC | Sask. Pulse Growers |
| CDC Richlea | U of S - CDC | SeCan Members |
| CDC Rosebud | U of S - CDC | Sask. Pulse Growers |
| CDC Rosie | U of S - CDC | Sask. Pulse Growers |
| CDC Roxy ✪ | U of S - CDC | Sask. Pulse Growers |
| CDC SB-3 | U of S - CDC | Simpson Seeds |
| CDC SB-4 ✪ | U of S - CDC | Simpson Seeds |
| CDC Scarlet | U of S - CDC | Sask. Pulse Growers |
| CDC Sovereign | U of S - CDC | Sask. Pulse Growers |
| CDC Viceroy | U of S - CDC | Sask. Pulse Growers |
| SUNFLOWER | | |
| Cobalt II | Nuseed Americas | Nuseed Americas |
| Honeycomb NS | USDA | --- |
| AC Sierra | AAFC (Saskatoon) | AAFC (Indian Head) |
| Talon | Nuseed Americas | Nuseed Americas |
| 63A21 | Pioneer Hi-Bred | Pioneer Hi-Bred |
| 8N 270CL DM | Mycogen Seeds | Dow Seeds |
| CHICKPEA | | |
| CDC Alma | U of S - CDC | Sask. Pulse Growers |
| Amit (B-90) | ARO Volcani Centre | AGT Foods Canada |
| CDC Consul | U of S - CDC | Sask. Pulse Growers |
| CDC Cory | U of S - CDC | Sask. Pulse Growers |
| CDC Frontier | U of S - CDC | Sask. Pulse Growers |
| CDC Leader | U of S - CDC | Sask. Pulse Growers |
| CDC Luna | U of S - CDC | Sask. Pulse Growers |
| CDC Orion | U of S - CDC | Sask. Pulse Growers |
| CDC Palmer | U of S - CDC | Sask. Pulse Growers |

**Abbreviations Used in this List**

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

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

| Crop Kind, Class & Variety | Breeding Institution | Distributor |
|---|---|---|
| FIELD PEA | | |
| Abarth | Limagrain, Netherlands | FP Genetics |
| CDC Acer | U of S - CDC | Sask. Pulse Growers |
| Agassiz | AAFC (Lacombe) | CANTERRA SEEDS |
| CDC Amarillo | U of S - CDC | Sask. Pulse Growers |
| AAC Ardill | AAFC | Wagon Wheel Seed Corp. |
| AAC Asher | AAFC | Legume Logic |
| CDC Athabasca | U of S - CDC | Sask. Pulse Growers |
| CDC Blazer | U of S - CDC | Sask. Pulse Growers |
| Blueman ✪ | DL Seeds Inc. | SeedNet Inc. |
| CDC Canary | U of S - CDC | Sask. Pulse Growers |
| AAC Carver | AAFC | CANTERRA SEEDS |
| AAC Chrome | AAFC (Lacombe) | FP Genetics |
| AAC Comfort | AAFC (Lacombe) | CANTERRA SEEDS |
| Cooper | Limagrain Nederland | CANTERRA SEEDS |
| CDC Dakota | U of S - CDC | Sask. Pulse Growers |
| Earlystar | AAFC (Lacombe) | CANTERRA SEEDS |
| CDC Forest | U of S - CDC | Sask. Pulse Growers |
| CDC Golden | U of S - CDC | Sask. Pulse Growers |
| CDC Greenwater | U of S - CDC | Sask. Pulse Growers |
| CDC Horizon | U of S - CDC | Sask. Pulse Growers |
| CDC Hornet | U of S - CDC | Sask. Pulse Growers |
| Hyline | Lantmannen SW Seed | Legume Logic |
| CDC Inca | U of S - CDC | Sask. Pulse Growers |
| CDC Jasper | U of S - CDC | Sask. Pulse Growers |
| AAC Lacombe | AAFC | SeedNet Inc. |
| CDC Lewochko | U of S - CDC | Sask. Pulse Growers |
| CDC Limerick | U of S - CDC | Sask. Pulse Growers |
| AAC Liscard | AAFC | Wagon Wheel Seed Corp. |
| CDC Meadow | U of S - CDC | Sask. Pulse Growers |
| CDC Mosaic | U of S - CDC | Sask. Pulse Growers |
| CDC Patrick | U of S - CDC | Sask. Pulse Growers |
| CDC Pluto | U of S - CDC | Sask. Pulse Growers |
| AAC Profit ✪ | AAFC | Legume Logic |
| AAC Radius | AAFC | Columbia Seeds |
| CDC Raezer | U of S - CDC | Sask. Pulse Growers |
| Redbat 8 | U of S - CDC | ILTA Grain Inc |
| Redbat 88 | U of S - CDC | ILTA Grain Inc |
| AAC Royce | AAFC | Columbia Seeds |
| CDC Saffron | U of S - CDC | Sask. Pulse Growers |
| CDC Sage | U of S - CDC | Sask. Pulse Growers |
| CDC Spectrum | U of S - CDC | Sask. Pulse Growers |
| CDC Spruce | U of S - CDC | Sask. Pulse Growers |
| CDC Striker | U of S - CDC | Sask. Pulse Growers |
| CDC Tetris | U of S - CDC | Sask. Pulse Growers |
| Thunderbird | AAFC (Lacombe) | CANTERRA SEEDS |
| CDC Treasure | U of S - CDC | Sask. Pulse Growers |
| DRY BEAN | | |
| AC Black Diamond | AAFC (Lethbridge) | Viterra Inc. |
| CDC Blackstrap | U of S - CDC | Sask. Pulse Growers |
| Bolt | U of Guelph | --- |
| Envoy | GenTec Seeds | Hensell District Co-op |
| Island | AAFC (Lethbridge) | Viterra Inc. |
| CDC Jet | U of S - CDC | Sask. Pulse Growers |
| Lightning | U of Guelph | Hensell District Co-op |
| Mariah | Seminis Vegetable Seeds | CANTERRA SEEDS |
| CDC Marmot | U of S - CDC | Sask. Pulse Growers |
| Medicine Hat | Seminis Vegetable Seeds | CANTERRA SEEDS |
| CDC Pintium | U of S - CDC | Sask. Pulse Growers |
| Portage | AAFC (Morden) | CANTERRA SEEDS |
| CDC Ray | U of S - CDC | Rudy Agro |
| AC Redbond | AAFC (Lethbridge) | Viterra Inc. |
| AAC Shock | | |
| Skyline | Globe Seeds - Netherland | Terramax |
| CDC Sol | U of S - CDC | Sask. Pulse Growers |
| OAC Spark | U of Guelph | U of Guelph |
| CDC Superjet | U of S - CDC | Sask. Pulse Growers |
| Winchester | Rogers Brothers | ADM Edible Bean Specialities |
| CDC WM - 2 | U of S - CDC | Rudy Agro |
| FABA BEAN | | |
| CDC Blitz | U of S - CDC | Redview Farms |
| CDC Fatima | U of S - CDC | Scoular |
| Fabelle ✪ | DL Seeds Inc. | Stamp Seeds |
| FB9-4 | U of S - CDC | AGT Foods Canada |
| Imposa | Limagrain Nederland | Cyre Seed Farms |
| DL Rico | DL Seeds Inc. | Prairie Fava |
| Snowbird | Limagrain Nederland | Bob Park - Lacombe, AB |
| CDC Snowdrop | U of S - CDC | Sask. Pulse Growers |
| CDC SSNS-1 | U of S - CDC | Meier Brothers |
| Tabasco | DL Seeds Inc. | Riddell Seed Co. |
| Taboar | Globe Seeds - Netherland | Terramax |
| DL Tesoro | DL Seeds Inc. | Riddell Seed Co. |
| Vertigo ✪ | DL Seeds Inc. | Stamp Seeds |
| 186S-11 | U of S - CDC | Sask. Pulse Growers |
| 247-13 | U of S - CDC | Sask. Pulse Growers |