

Varieties of Grain Crops 2017

Table of Contents

<i>Regional Variety Testing Locations</i>	2
<i>Testing Varieties in Saskatchewan</i>	4
<i>Plant Disease Resistance</i>	5
<i>Fusarium Damaged Kernels</i>	5
<i>What Are Plant Breeders' Rights?</i>	6
<i>Maximum Residue Limits</i>	6
<i>Managing Fusarium Head Blight in Durum Wheat</i>	7
Cereal Crops	
Wheat	8
Durum Wheat	10
<i>Wheat Class Changes</i>	11
Winter Wheat	12
Rye.....	13
Triticale.....	13
Malting Barley	14
<i>2017-18 Recommended Malting Barley Varieties</i>	15
Feed and Food Barley	16
Oat	17
<i>General Seed Facts</i>	18
Other Crops	
Buckwheat, Caraway, Coriander, Fenugreek, Safflower and Canaryseed	19
<i>Root Rot Complex in Pulse Crops</i>	20
Pulse Crops	
Lentil	21
Field Pea	22
Soybean	23
Chickpea	24
Dry Bean	24
Faba Bean	25
<i>Seed Quality and Seeding Rates</i>	25
Oilseed Crops	
Flax	26
Camelina	26
Mustard	27
Canola	28
Sunflower	29
<i>Breeding Institutions and Seed Distributors</i>	30

Symbols and Abbreviations Used:

§ Variety may not be described in 2018

--- 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

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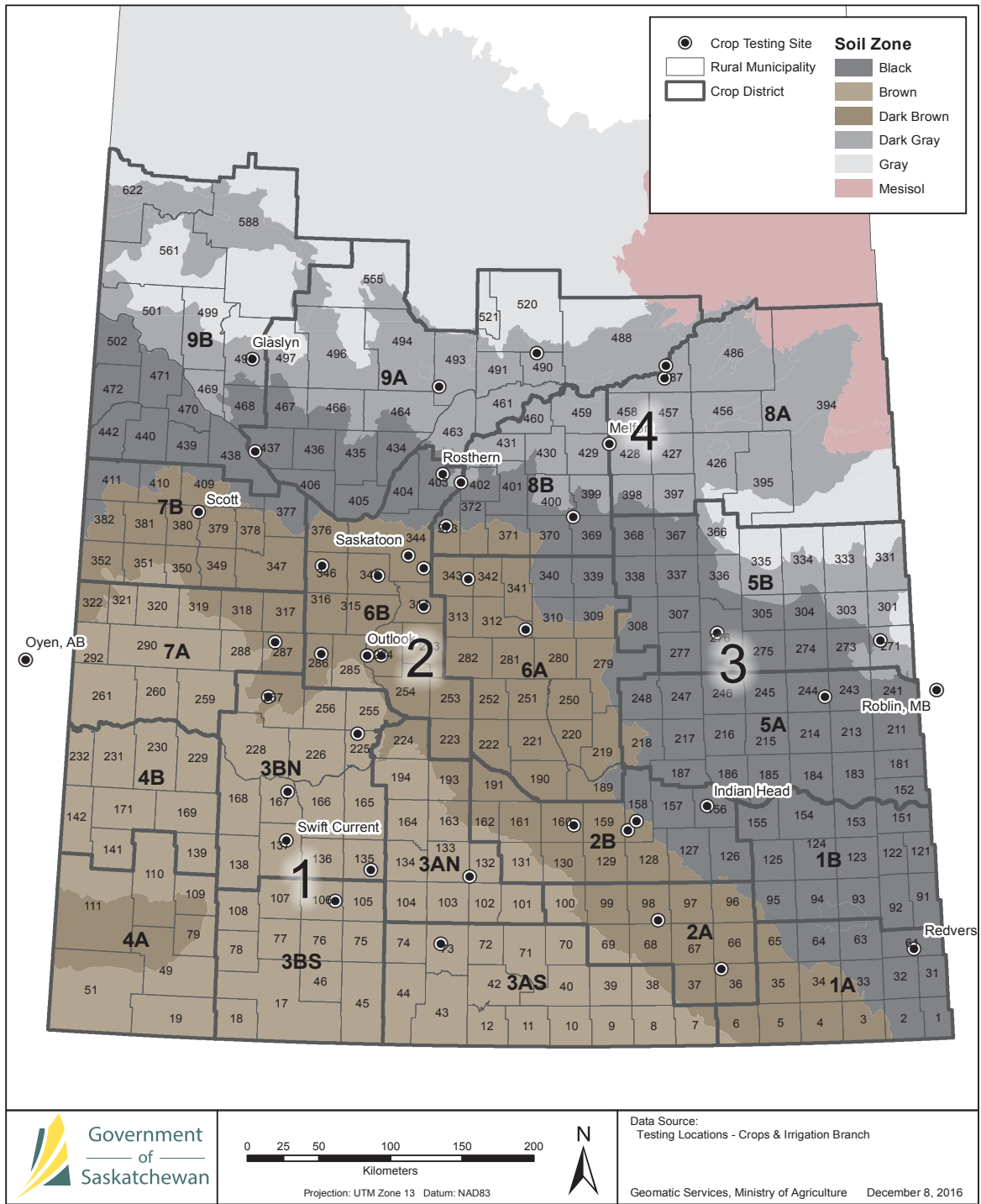
Accessing Public Release Varieties

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 30-32.

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:



SaskFlax



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

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.

The Saskatchewan Ministry of Agriculture provides \$100,000 toward a testing program that is based on industry-government partnership. 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 \$75,000 to the core program. Supplementary funds enhance the core program.

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 *2017 SaskSeed Guide*.

A long-term database is maintained to provide comparisons to a commonly grown check variety. The data include information on yield, various agronomic factors and certain market-related traits.

The Saskatchewan Variety Performance Group (SVPG) administers the program for spring cereals 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.

The results of the testing 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.

The Saskatchewan Ministry of Agriculture grant also provides some support to programs that test pulses, sunflower and canaryseed. The testing information from these crops is included 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.

Testing Pulse Crops

In 2016, the Saskatchewan Pulse Growers and the pulse breeding program at the Crop Development Centre (CDC), University of Saskatchewan, continued a 5-year agreement, with a budget of \$160,000 per year, to conduct the pulse crop regional variety trials in Saskatchewan. The CDC collaborates with researchers at several locations to conduct the trials, including Agriculture and Agri-Food Canada research stations, provincial Agri-ARM sites, and the Canada-Saskatchewan Irrigation Diversification Centre. The project collects data on varieties from the CDC program, as well as those arising from other public or private pulse breeding programs. Since 2006, field pea, lentil, chickpea, dry bean and faba bean variety trials were conducted at 3-15 locations per crop in their target areas of adaptation in Saskatchewan. (Source: CDC)

Relative Maturity

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.

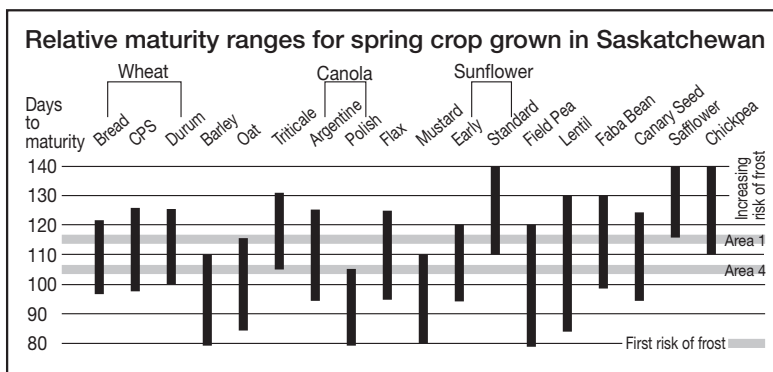
Some of the tables in this booklet express the relative maturity in days while others use a five-category scale: VE, E, M, L and VL (very early, early, medium, late, very late). The limits for each category can vary from crop to crop. In barley, for example, AC Metcalfe would be M, with L and E varieties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



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). New varieties are not tested side-by-side with all existing varieties.

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 fair resistance can show disease symptoms under favourable conditions, a susceptible 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 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. Cool, moist environmental conditions favour the disease; if these conditions persist early in the growing season, the disease symptoms can occur much earlier than the flowering stage. This is especially true on chickpea grown outside the Brown Soil Zone (the area of best adaptation) or on heavy textured soils such as clays and clay loams.

In the past, infected chickpea varieties lacking resistance to ascochyta blight could become defoliated, with girdled branches and dead plants. If conditions turn warm and dry, the diseased plants can re-grow from auxiliary nodes, often producing flowers and pods. However, these late pods and seeds will most likely be frozen in the first fall frost and have no commercial value.

Fusarium Damaged Kernels

By Mitchell Japp, Saskatchewan Agriculture

Fusarium head blight has recently become more common in Saskatchewan. Producers will get 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. Tomb-

stone 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 for fusarium head blight so recommendations are to prevent its introduction into new areas.

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.

In areas where *F. graminearum* is established, 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*.

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 propa-

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 74 UPOV member countries, 55 of which have ratified UPOV'91 compliant legislation.

gation purposes is prohibited by law without the written permission of the breeder or their agent.

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



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



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 be sure that those who are benefitting from the technology are paying for it.

It has always been illegal to sell 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.

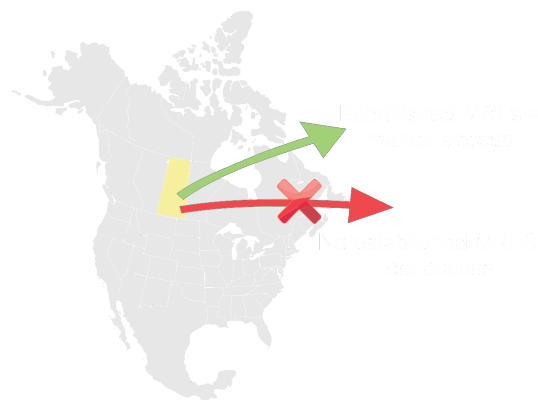
Maximum Residue Limits

Maximum Residue Limits 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.

PROTECT YOUR EXPORTS BY MANAGING YOUR MAXIMUM RESIDUE LEVELS (MRLs)



Talk to your grain buyer before using a new registered product to ensure you understand any export restrictions.



Managing Fusarium Head Blight in Durum Wheat

By Yuefeng Ruan, AAFC and Ron DePauw, SeCan

Fusarium head blight (FHB) has become the number one enemy of durum wheat production in Canada. By providing information on durum wheat variety response to fusarium head blight, this article complements the Saskatchewan Agriculture information. Readers are encouraged to visit: www.saskatchewan.ca.

Fusarium is a very complex pathogen. FHB is caused by several species of *Fusarium*. Some *Fusarium* species infect all cereal grains and some forage grasses. Some *Fusarium* species can survive on both living plant material and debris of plants.

Fusarium sporulation and cereal head infection is favoured by moist conditions during flowering. Symptoms may occur over the entire head or on just a few spikelets. Infected kernels (known as fusarium damaged kernels or FDK) may become shrivelled and light weight resulting in loss of grain yield. The infected kernels may contain mycotoxins that are harmful to humans and animals. The primary mycotoxin is deoxynivalenol (DON, also known as vomitoxin), produced primarily by *Fusarium graminearum*. There is an association of FDK to mycotoxin level but the relationship is environmentally dependent. Consequently, FDK is a grading factor for all small grains.

Grades 1 and 2 of Canada Western Amber Durum (CWAD) are permitted only up to

0.5% FDK. Grades 3 and 4 of CWAD may have only up to 2% FDK, while grade 5 may have only 4% FDK.

Disease management of FHB requires an integrated strategy. There are several management practices that can be helpful in reducing losses caused by FHB. These practices are aimed at reducing disease risk and include:

1. resistant cultivars
2. cultural practices
3. fusarium forecasting
4. chemical control

Growers will experience the greatest benefits when multiple practices are used together instead of alone and should never rely on a single management practice to control FHB.

Genetic variation for resistance to FHB is limited in tetraploid wheat, which includes durum wheat, compared to the variation in hexaploid wheat. Genetic studies have detected genetic effects on virtually every chromosome. The effects are generally small and often additive or cumulative. There are multiple mechanisms of resistance including resistance to initial infection of a floret, resistance to *Fusarium* spread within the head, detoxification of mycotoxin (DON), and escape such as flowering within the boot.

Classifying symptoms of FHB is based on incidence, severity, FDK, and DON. Incidence rates the number of heads displaying infec-

tions of at least one floret per 100 heads. Severity estimates the average percentage of the head displaying infections in the same 100 heads. A disease index is constructed by multiplying incidence by severity. A harvested sample from this same plot is threshed. The percentage FDK is calculated based on weight of damaged kernels as a proportion of the whole sample. DON is measured on a representative grain sample from this plot. DON is generally measured with an ELISA test or some other biochemical test.

The durum varieties range from susceptible to moderately susceptible. However, some of the moderately susceptible varieties express better resistance. Additional data on the response of the more recently registered durum cultivars is being collected through the Saskatchewan Variety Performance Group trials.

Additional Information:

- Fusarium Head Blight Fact Sheet at www.saskatchewan.ca
- Fusarium Resources at Saskatchewan Wheat Development Commission website. Sask Wheat launched weather-based fusarium head blight (FHB) risk maps in 2015. The purpose of the risk maps is to keep producers updated, in near-real-time, about the risk of FHB in wheat in their respective areas of the province so that they may best plan their management strategies: www.saskwheatcommission.com
- FHB Management in Wheat and Barley by Marcia McMullen, NDSU, 2015 conference proceedings: www.usask.ca/soilscrops
- Fusarium Head Blight of Barley and Wheat, Alberta Agriculture and Forestry: www1.agric.gov.ab.ca
- For tips on how to manage the disease, view the video – “Stop Fusarium Before it Stops You.” For a more detailed (30 minute) presentation, see “Fusarium Management.”: www.youtube.com
- Comprehensive information on managing fusarium in wheat and barley, published by the American Phytopathological Society. Fusarium Head Blight - US Wheat and Barley Scab Initiative: scabusa.org

CEREAL CROPS

Wheat

Main Characteristics of Varieties

Category and Variety	Years Tested	Yield (%)			Pro-tein	Resistance To ²										Head Awne-dness	Rel. Ma-turity (days)	Seed Weight (mg)	Volume Wt. ³ (kg/hL)	Ht. (cm)
		Area 1 & 2	Area 3 & 4	Irriga-tion		Lodg-ing	Sprout-ing	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB						
CWRS¹		--- Relative to Carberry ---										--- Relative to Carberry ---								
Carberry 🌾	6	100	100	100	14.6	VG	F	MR	R	MR	MR	R	MS	MR	Y	100	34.5	79.0	83	
AAC Bailey 🌾 §	5	98	100	---	+0.1	P	G	R	R	---	MS	MR	I	I	N	-3	+1.4	-2.2	+16	
CDC Bradwell 🌾	3	100	107	---	0.0	VG	F	MR	R	MS	MR	R	MS	I	Y	-1	-1.2	+0.5	+9	
AAC Brandon 🌾	5	106	106	---	-0.4	G	P	R	R	MR	MR	S	I	MR	Y	0	+0.5	-0.1	0	
AAC Cameron VB 🌾	3	109	118	---	-0.8	G	F	MR	MR	S	S	R	I	I	Y	-2	+3.2	-0.5	+18	
Cardale 🌾	5	99	101	---	-0.1	F	G	R	R	S	I	MR	MS	MR	Y	0	-0.7	-1.1	+2	
Coleman	4	96	95	---	-0.1	VP	P	MR	R	MR	S	S	MS	MR	Y	-3	-2.3	+0.3	+17	
AAC Connery 🌾	3	99	100	---	+0.5	G	G	R	MR	R	MR	I	I	MR	N	-2	+0.9	-0.8	+5	
AAC Elie 🌾	5	105	105	---	-0.2	G	F	R	R	MR	I	I	I	I	Y	0	+0.3	0.0	-1	
Glenn 🌾	6	101	102	102	-0.4	F	F	R	R	MR	I	I	I	I	Y	-1	-0.1	+2.6	+11	
CDC Go	5	95	102	---	0.0	G	P	R	I	MR	MS	I	S	MS	Y	-3	+2.3	-1.9	+7	
Go Early	3	95	101	---	+0.4	P	VP	MR	MR	I	MS	MR	S	I	Y	-4	+0.2	-2.5	+16	
Goodeve VB 🌾	6	101	107	---	0.0	G	G	MR	MR	I	MR	S	MS	S	N	-4	-0.6	-2.0	+9	
Harvest ⁴ 🌾	6	94	103	---	-0.3	G	VG	R	MR	MR	MR	S	MS	S	N	-3	-2.8	-1.6	+10	
CDC Hughes VB	2	101	113	---	-0.3	F	VG	MR	MR	---	MR	MS	I	I	Y	-1	+1.9	+0.5	+2	
Infinity 🌾 §	6	100	106	---	-0.1	F	G	MR	MR	MS	MR	MR	MS	S	N	-3	-4.0	-1.7	+12	
AC Intrepid 🌾 §	6	96	105	---	-0.2	F	P	MR	MR	MR	I	MR	MS	MS	N	-5	+3.2	-1.8	+11	
AAC Jatharia VB 🌾	3	110	117	---	-0.1	F	G	I	R	I	S	MS	I	I	Y	-1	+1.2	+0.8	+16	
CDC Kernen 🌾 §	6	100	103	101	0.0	F	P	MR	MR	I	R	I	MS	I	Y	0	-0.2	-1.7	+17	
CDC Landmark VB	2	111	115	---	-0.2	G	VG	R	MS	MR	MR	MS	I	I	Y	-1	+0.8	+0.9	+5	
Lillian ⁴ 🌾	6	93	96	---	+1.0	P	G	MR	R	R	I	MR	MR	S	N	-2	0.0	-2.7	+12	
CDC VR Morris 🌾	5	108	106	---	-0.2	F	P	MR	R	---	I	I	I	MR	N	-1	-0.2	-1.0	+13	
Muchmore 🌾	6	102	98	102	-0.4	VG	G	R	R	MR	MR	R	MS	MS	Y	-1	+0.1	-1.0	-4	
CDC Plentiful 🌾	5	105	104	---	-0.2	G	P	R	R	MR	R	I	I	MR	N	-3	-1.5	-0.6	+10	
AAC Prevail VB 🌾	4	112	108	---	-0.5	F	G	MR	R	R	S	S	MS	I	N	-1	-0.3	-1.1	+21	
AAC Redberry 🌾	2	106	108	---	-0.1	F	G	R	R	R	R	I	MS	I	Y	-3	-0.8	+1.0	+6	
AAC Redwater 🌾	5	102	101	---	+0.1	F	VG	R	R	MR	MS	I	MS	I	Y	-5	-3.0	-1.5	+9	
Shaw VB 🌾	6	112	114	103	-0.7	F	G	R	MR	I	S	MR	MS	MS	N	-1	+0.5	-0.5	+20	
SY Slate 🌾	2	103	110	---	0.3	P	P	MR	R	MR	MS	S	MS	I	Y	-2	+0.4	-0.7	+8	
CDC Stanley 🌾	6	102	105	100	-0.1	G	G	R	MR	I	MR	S	I	MS	N	-2	-1.1	-1.7	+13	
Stettler 🌾	6	105	107	100	+0.2	F	G	MR	MS	MR	R	MR	MS	MS	Y	-1	-1.4	-1.1	+7	
Thorsby 🌾	3	102	102	---	+0.1	F	F	MR	R	R	I	S	MS	I	N	-3	+1.0	-1.1	+14	
CDC Thrive 🌾 §	6	102	102	103	-0.1	P	F	MR	I	I	MR	I	I	MS	N	-2	-0.7	-1.2	+17	
CDC Titanium VB 🌾	4	108	110	---	+0.6	P	P	I	R	R	MS	I	MS	MR	Y	-3	+1.3	-0.2	+11	
Unity VB ⁴ 🌾	6	107	113	---	-0.6	P	VG	MR	R	MS	MS	R	I	I	Y	-2	-1.7	+0.4	+14	
CDC Utmost VB 🌾	6	108	112	107	-0.4	F	G	MR	R	I	MS	S	I	MS	N	-3	-0.1	-1.6	+12	
Vesper VB 🌾	6	108	113	---	-0.7	P	F	MR	R	S	I	S	I	I	Y	-3	+1.8	-0.5	+13	
AAC Viewfield 🌾	3	109	105	---	-0.4	VG	G	R	MR	R	S	MR	I	I	Y	-1	-1.6	+0.8	-3	
AAC W1876 🌾	3	98	98	---	+0.2	F	F	MR	R	I	I	I	MS	I	Y	0	-0.6	-0.8	+3	
Waskada 🌾	6	108	107	---	-0.2	P	VG	R	I	MS	MR	R	MS	MR	Y	-1	-1.0	+0.3	+16	
WR859CL 🌾	6	101	101	102	-0.1	F	G	MR	R	I	R	R	MS	MR	Y	-2	-2.6	-1.1	+7	
SY433 🌾 §	5	96	101	---	-0.3	P	VG	R	R	---	I	S	I	MR	Y	-1	+0.9	-1.2	+18	
SY479 VB 🌾	2	93	102	---	+0.5	G	VG	I	R	S	MS	R	MS	I	Y	-2	-1.3	-0.2	+18	
SY637 🌾	2	99	104	---	+0.4	F	---	MR	R	MR	MS	MR	I	MR	Y	0	-0.8	0.0	+15	
5604HR CL 🌾 §	6	95	99	107	-0.4	G	G	R	R	---	MS	I	MS	I	Y	-4	-3.3	-0.9	+12	
5605HR CL 🌾	4	104	106	---	+0.1	F	---	MS	R	MR	R	MR	MS	MR	Y	-2	-0.6	+0.4	+14	

Wheat (cont'd)

Category and Variety	Years Tested	Yield (%)			Protein	Resistance To ²										Head Awnedness	Rel. Maturity (days)	Seed Weight (mg)	Volume Wt. ³ (kg/hL)	Ht. (cm)
		Area 1 & 2	Area 3 & 4	Irrigation		Lodging	Sprouting	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB						
CPSR¹																				
		--- Relative to Carberry ---										--- Relative to Carberry ---								
Conquer VB ⁴ ☼	5	117	125	---	---	VP	P	R	MR	MR	MS	R	I	MS	Y	-1	+8.3	+1.9	+8	
AAC Crossfield ☼	1	121	113	---	-1.7	F	---	R	MR	R	MS	I	I	I	Y	-2	+1.4	-2.3	-1	
AAC Crusader ☼ §	5	107	115	---	-1.4	P	VP	R	R	MR	MR	I	MS	I	Y	-2	+1.1	-3.1	0	
AC Crystal ⁵ ☼ §	6	111	118	100	---	G	P	R	MS	S	MS	R	I	S	Y	+1	+5.6	-1.3	+1	
Enchant VB ☼	5	109	117	---	-1.6	P	VG	MR	R	S	MR	R	MS	S	Y	-1	+9.5	-1.4	+9	
AAC Entice ☼	1	122	110	---	-1.3	P	---	R	R	R	MS	I	MS	I	Y	-2	+0.6	-2.9	+2	
AAC Foray VB ☼	4	116	121	---	-2.0	F	P	MR	R	I	MS	I	MS	I	Y	0	+7.0	-1.5	+6	
AAC Penhold ☼	4	108	112	---	-0.9	VG	VG	MR	R	MR	I	R	I	MR	Y	-2	+5.0	-0.1	-9	
SY Rowyn ☼	1	101	107	---	-1.3	F	---	R	R	MR	I	S	I	MR	Y	0	-2.6	-0.1	-5	
AAC Ryley ☼	5	103	110	---	-1.3	P	G	R	R	S	I	R	MS	MS	Y	-2	+7.1	-5.1	+2	
AAC Tenacious VB ☼	4	100	107	---	-1.9	VP	G	MR	R	R	R	MR	MS	R	Y	-1	-0.2	+0.1	+20	
CDC Terrain ☼	2	117	113	---	-1.4	P	G	MR	R	R	MR	MR	I	MS	Y	0	+4.1	-2.7	+4	
SY985 ☼	5	107	115	---	-1.5	P	P	R	R	---	R	MR	I	I	Y	-2	+1.8	-1.9	+1	
SY995 ☼	4	114	116	---	-2.3	G	P	MR	R	MR	S	MR	MS	MS	Y	0	+0.7	-3.7	0	
5700PR ☼	5	107	113	106	---	VG	F	R	I	S	MS	R	MS	MS	Y	-1	+5.5	0.0	-4	
CNHR¹																				
AAC Concord ☼	2	106	105	---	-0.1	P	F	R	R	R	I	MR	I	MS	N	-2	+3.3	-1.5	+15	
Elgin ND ☼	1	114	121	---	-1.0	F	---	I	R	MR	---	S	I	I	Y	-1	-1.6	-0.5	+9	
Faller	1	117	119	---	-2.4	F	F	I	MR	MS	---	I	MS	I	Y	-1	+2.8	-1.2	+4	
Prosper ☼	1	115	121	---	-2.6	F	---	MR	MR	S	---	I	I	I	Y	0	+3.0	-1.7	+4	
CWSWS¹																				
AC Andrew	5	129	136	---	---	VG	P	MR	MS	I	S	S	---	I	Y	+2	-1.4	-5.0	+3	
AAC Chiffon ☼	5	136	137	---	-5.0	P	VP	S	I	MR	S	S	---	S	Y	+1	+2.5	-4.1	+12	
AAC Indus ☼	2	130	124	---	-3.9	VG	P	S	I	R	S	MS	MS	MS	Y	+5	+2.3	-3.2	+8	
AAC Paramount ☼	1	134	126	---	-4.5	VG	VP	I	I	R	MR	S	I	MS	Y	+1	+1.4	-2.9	+8	
Sadash ☼	5	136	136	---	---	VG	P	MR	I	R	I	S	---	S	Y	+3	0.0	-3.0	+6	
CWSP¹																				
AAC Awesome ☼	1	137	130	---	-5.0	F	---	R	MR	R	I	I	I	I	Y	0	+5.2	-1.5	+6	
Charing ☼	1	134	128	---	-3.6	VG	---	-	MR	R	-	-	MR	-	N	+5	+1.4	-3.6	-2	
AAC Innova ☼	5	128	132	---	-4.2	G	VP	MR	R	R	S	S	I	S	Y	+1	-0.1	-5.3	+4	
CDC Kinley	2	102	111	---	-0.1	G	P	I	MR	I	MS	MR	I	I	Y	-1	+0.4	0.0	+7	
CDC NRG003 ☼	5	119	123	---	---	F	G	R	MS	---	MS	R	S	MS	Y	-1	+3.4	-4.1	+2	
NRG010 ☼ §	5	120	127	---	---	F	F	R	R	R	MS	R	MS	I	Y	+2	+0.3	-4.3	+5	
AAC NRG097 ☼	4	115	120	---	-3.3	P	F	MR	R	S	I	R	I	I	Y	0	+3.7	-2.0	+1	
Pasteur	5	126	132	---	-2.5	VG	G	MR	R	MR	MS	S	I	I	N	+3	+1.4	-1.2	+3	
AAC Proclaim ☼ §	5	116	125	---	-3.3	P	G	MR	R	MS	MR	S	I	MR	Y	0	-0.3	-0.6	+14	
Sparrow VB	1	137	131	---	-3.7	VG	---	MR	R	MR	-	I	I	-	N	+4	-1.6	-3.6	0	
CDC Throttle	2	123	123	---	-2.5	P	VP	MR	MR	I	MR	I	S	I	Y	+1	+5.4	-0.8	+3	
SY087 ☼	4	113	123	---	-1.4	F	F	MR	MR	MR	MS	MR	I	MR	Y	0	+5.3	-0.8	+5	
WFT603	3	110	117	---	-2.5	VP	F	I	I	MR	I	R	I	MR	Y	+4	+7.2	-1.9	+10	
CWHWS¹																				
AAC Iceberg ☼	4	100	96	---	-0.5	F	P	R	R	I	MS	MR	MS	I	Y	-1	+0.1	-0.9	+4	
AAC Whitefox ☼	3	104	106	---	-1.0	F	F	MR	MR	MS	MS	MS	MS	I	N	-2	-0.4	-0.3	+17	
Whitehawk ☼	5	99	95	---	-1.0	F	G	I	R	MS	I	MS	MS	MS	N	-2	-4.1	-0.7	+12	
CDC Whitewood	4	95	94	---	-0.3	F	G	MR	MR	I	S	S	MS	I	Y	0	-1.8	-1.4	+4	
Varieties that have been registered with class to be determined by the Canadian Grain Commission¹																				
AAC Tradition	2	106	107	---	-0.5	F	VG	R	MR	S	MS	MR	I	I	Y	+1	+2.2	+1.4	+8	

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.

⁴ Effective August 1, 2018, the Canadian Grain Commission will move these varieties to another class.

⁵ Effective August 1, 2019, the Canadian Grain Commission will move these varieties to another class.

VB = varietal blend.

Durum Wheat

Category and Variety	Years Tested	Yield (%)			Protein	Resistance To ¹										Head Awnedness	Rel. Maturity (days)	Seed Weight (mg)	Volume Wt. ² (kg/hL)	Ht. (cm)
		Area 1 & 2	Area 3 & 4	Irrigation		Lodging	Sprouting	Stem Rust	Leaf Rust	Stripe Rust	Loose Smut	Bunt	Leaf Spot	FHB						
CWAD		--- Relative to Strongfield ---															-- Relative to Strongfield --			
Strongfield	6	100	100	100	14.4	P	F	R	R	MR	S	MR	I	S	Y	105	42.1	79.2	89	
CDC Alloy	2	111	114	---	-0.5	F	F	MR	R	R	I	R	MS	MS	Y	+1	-0.5	+1.2	+4	
Brigade	5	107	113	110	-1.1	F	F	R	R	MR	S	R	I	MS*	Y	+3	+1.4	+0.6	+9	
AAC Cabri	3	107	102	104	-0.3	P	F	MR	R	R	MR	R	I	MS	Y	+1	-0.1	+0.8	+3	
CDC Carbide VB	3	108	108	105	-0.3	P	P	R	R	R	MS	R	MS	MS	Y	0	-1.2	+0.2	+1	
AAC Congress	2	110	109	---	-0.5	P	P	MR	R	R	MR	R	MS	MS	Y	+1	-1.1	+0.4	+3	
CDC Credence	1	106	115	---	-0.8	F	---	MR	R	MR	MR	MR	I	MS*	Y	+1	-0.1	+0.1	+7	
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 Desire	5	101	100	104	-0.2	F	G	R	R	MR	MS	R	I	S	Y	-2	-3.0	-0.1	0	
AAC Durafield	4	102	105	112	-0.2	P	F	R	R	MR	S	R	I	S	Y	0	-0.5	+0.2	0	
CDC Dynamic	2	111	111	---	-0.1	F	F	MR	R	MR	I	R	I	MS	Y	0	-0.2	+1.0	+2	
Enterprise	5	102	103	106	-0.2	P	G	R	R	R	MS	MR	I	MS	Y	0	-3.2	+0.6	+2	
Eurostar	5	99	104	102	-0.5	P	F	R	R	R	S	R	I	MS	Y	+2	+0.6	+0.8	+4	
CDC Fortitude	4	105	103	100	-0.3	F	F	MR	R	R	MS	R	MS	MS	Y	+1	-2.0	+0.1	-1	
AAC Marchwell VB	4	99	104	90	-0.1	P	P	R	R	R	MR	R	MS	MS	Y	0	-2.7	-0.6	0	
AC Navigator	6	98	89	---	-0.6	F	G	R	R	R	MS	R	S	S	Y	+2	+1.2	-0.1	-8	
CDC Precision	2	113	116	---	-0.7	G	F	MR	R	R	MS	R	MS	MS	Y	0	-0.2	+1.2	+4	
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	3	109	112	111	-0.6	G	P	R	R	R	MS	R	MS	S	Y	0	+0.8	-0.4	-2	
AAC Stronghold	1	104	105	---	-0.4	VG	---	R	R	MR	R	I	I	MS	Y	+2	+2.5	+0.9	-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	101	106	103	-0.3	G	F	R	R	R	MS	R	MS	MS	Y	+2	+0.1	-0.2	+1	
CDC Vivid	5	103	101	108	-0.3	G	F	R	R	MR	I	R	I	S	Y	0	-0.6	-0.2	0	

¹Resistance 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.

* See additional information on page 11.

WHEAT 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 Grain 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 2016, the spring wheat varieties supported for registration since 2011 were grown in replicated trials at 14 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 *Guide to Crop Protection*.

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

CANADA WESTERN RED SPRING (CWRS)
AAC Cameron VB, Goodeve VB, CDC Hughes VB, AAC Jatharia VB, CDC Land-

mark VB, AAC Prevail VB, Shaw VB, CDC Titanium VB, Unity VB, CDC Utmost VB, Vesper VB, SY479 VB are CWRS midge tolerant varieties. They contain the same "Sm1" gene for tolerance. To manage against the buildup 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.

Seed of new varieties **CDC Bradwell, Go Early, SY479 VB** and **SY637** will be available in 2017. Seed of new varieties **CDC Hughes VB, CDC Landmark VB, AAC Redberry, SY Slate** and **AAC Viewfield** will be available in limited quantities fall 2017.

AAC W1876 may only be grown under contract in the Warburtons Identity Preserved Program managed by Paterson Grain and Richardson Pioneer.

CDC Abound, CDC Imagine, CDC Thrive, WR859CL, 5604HR CL, and 5605HR CL are tolerant to the CLEARFIELD® herbicides Adrenalin SC and Altitude FX.

WHEAT ADDITIONAL INFORMATION (CONT'D)

CANADA PRAIRIE SPRING RED (CPSR)

Conquer VB, **Enchant VB**, **AAC Tenacious VB** and **AAC Foray VB** are CPSR midge tolerant varieties using the same *Sm1* gene as in the CWRS varieties and will be marketed with an interspersed refuge (see above).

SY Rowyn will be available 2017. Seed of new varieties **AAC Crossfield**, **AAC Entice** and **CDC Terrain** will be available in fall 2017.

CANADA NORTHERN HARD RED (CNHR)

Seed of variety **AAC Concord** will be available in limited quantities fall 2017.

AAC Concord has a solid stem which can provide protection against the wheat stem sawfly.

CANADA WESTERN HARD WHITE SPRING (CWHWS)

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

CANADA WESTERN SOFT WHITE SPRING (CWSWS)

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

Seed of **AAC Indus** will be available spring 2018. Limited seed of **AAC Paramount** will be available fall 2018.

CANADA WESTERN SPECIAL PURPOSE (CWSP)

Sparrow VB is a CWSP midge tolerant variety using the same *Sm1* gene as in the CWRS varieties and will be marketed with an interspersed refuge (see above).

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.

Seed of **Charing**, **Sparrow VB**, **SY087** and **WFT603** will be available 2017. Limited seed of new varieties **CDC Throttle** and **CDC Kinley** will be available fall 2017.

CLASS TO BE DETERMINED BY CANADIAN GRAIN COMMISSION

Some varieties have received registration have not yet been placed into a wheat class by the Canadian Grain Commission.

AAC Tradition was developed for organic cropping systems.

CANADA WESTERN AMBER DURUM (CWAD)

AAC Cabri, **CDC Fortitude** and **AAC Raymore** have a solid stem with resistance to the wheat stem sawfly.

CDC Carbide VB and **AAC Marchwell VB** are CWAD midge tolerant varieties using the same *Sm1* gene as in the CWRS varieties and will be marketed with an interspersed refuge (see above).

Seed of new varieties **CDC Credence** and **AAC Stronghold** will not be available in 2017. Limited quantities of seeds of varieties **AAC Cabri**, **AAC Congress**, **CDC Alloy**, **CDC Dynamic** and **CDC Precision** will be available in fall 2017.

CWAD varieties are generally more susceptible than CWRS varieties to fusarium head blight (FHB). 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**, **Transcend** and **CDC Credence** generally express lower FHB 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) has initiated a Canadian Wheat Class Modernization consultation, which will use new quality standards (established in May 2015) to review 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. Customers require higher gluten strength from CWRS for their products to perform consistently. CGC reviewed the quality standards expected for CWRS (Canada Western Red Spring) and CPSR (Canada Prairie Spring Red) wheat classes so the performance of those classes are more consistent with customer expectations.

The wheat class review was comprehensive. The initial 29 varieties will be moved out of CWRS and CPSR Aug. 1, 2018.

As part of the review, CGC has already initiated changes to wheat classes (Aug. 1, 2016). Can-

Producers are strongly encouraged to use the Canadian Grain Commission's Variety Designation Lists (www.grainscanada.gc.ca) that 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.

Canada Western General Purpose (CWGP) was eliminated and all varieties in that class are in the new Canada Western Special Purpose (CWSP) class. Canada Western Interim Wheat (CWIW) was eliminated and all varieties in that class are in the new Canada Northern Hard Red (CNHR) class. Canada Western Feed class was eliminated.

CNHR is the designated class for the 29 varieties proposed to be moved out of CWRS and CPSR.

In 2016, a review of varieties where data is lacking on gluten strength was initiated. Up to two years of data will be collected; producers will be notified of any class designation changes. One additional variety, **AC Crystal**, has been identi-

fied, so far and will move out of CPSR Aug. 1, 2019.

The varieties includes 25 CWRS and five CPSR varieties, but only five appear in the *2017 Varieties of Grain Crops* – **Harvest**, **Lillian** and **Unity VB** in CWRS, **Conquer VB** and **AC Crystal** in CPSR.

For farmers growing one of the varieties that will be moved to a new class, these varieties can continue to be grown, but after Aug. 1, 2018 they will not be eligible for the CWRS or CPSR classes. After Aug. 1, 2019, **AC Crystal** will not be eligible for CPSR.

Winter Wheat

Main Characteristics of Varieties

Category and Variety	Years Tested	Yield (%)		Protein (%)	Winter Survival	Resistance To ²						Head Awned-ness	Relative Maturity	Seed Weight (mg)	Volume Wt. ³ (kg/hL)	Height (cm)
		Area 1 & 2	Area 3 & 4			Lodg-ing	Stem Rust	Leaf Rust	Stripe Rust	Bunt	FHB					
CWRW ¹ -- Relative to CDC Buteo --																
CDC Buteo	16	100	100	12.3	VG	F	I	I	S	S	MR	Y	M	32.8	81.0	91
CDC Chase	5	110	109	+0.3	F	F	R	R	MR	S	MS	Y	M	-0.5	-0.2	+3
AAC Elevate *	6	109	104	-0.1	G	VG	MR	I	MS	MR	I	Y	M	+4.3	-2.2	-7
Emerson ☉	5	105	95	+0.4	G	G	R	I	MR	S	R	Y	M	-4.1	-0.8	-5
Flourish ☉	8	101	101	+0.3	F	VG	I	I	I	MR	S	Y	E	+2.3	-1.7	-11
AAC Gateway ☉	6	101	101	+0.5	F	VG	MR	I	MR	S	I	Y	M	-0.1	-1.5	-14
AAC Goldrush *	4	113	120	+0.2	VG	G	MR	R	I	S	I	Y	M	+0.3	-1.7	-4
Moats ☉	9	108	101	+0.4	G	F	R	R	MR	MS	S	Y	M	-0.3	-0.4	+1
Radiant ☉	16	103	101	-0.3	VG	VG	S	S	MS	S	S	Y	L	+1.7	-1.9	0
AAC Wildfire *	5	116	117	0.0	VG	G	S	I	R	MR	MR	Y	VL	+2.6	-1.2	-5
CWSP ¹																
Accipiter ☉	7	110	106	-0.9	G	VG	R	I	S	S	MS	Y	M	-1.1	-0.9	-7
Broadview ☉ §	6	97	100	-0.8	G	G	R	R	S	S	S	Y	E	-1.5	-1.6	-10
CDC Falcon	16	103	98	-0.8	F	VG	MR	MR	S	S	S	Y	E	-3.0	-1.9	-16
AAC Icefield *	4	119	95	-0.9	F	VG	MR	R	R	S	MS	Y	M	-1.7	-1.5	-10
Peregrine ☉	7	114	110	-1.0	VG	F	I	MR	MR	S	I	Y	M	+0.6	-1.0	+6
Pintail ☉	5	109	110	-1.7	VG	G	MS	MS	MR	S	S	N	M	-4.2	-3.4	-3
CDC Ptarmigan	10	113	113	-2.0	G	F	S	S	S	S	I	N	M	0.0	-4.6	+2
Sunrise	6	114	118	-1.2	G	G	MR	MR	MR	S	---	Y	M	-1.0	-4.4	-2
Swainson	6	118	115	-0.5	F	F	R	R	MR	S	---	Y	M	+3.4	-2.6	+5

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 Sept. 15) and if there is adequate snowfall.

Winter wheat will often escape fusarium head blight and wheat 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 elimi-

nate the “green bridge” of plant material that serves as a reservoir for mites should be followed whenever possible.

AAC Wildfire expresses tolerance to Bio-type 1 of the Russian wheat aphid.

The new CWSP variety **AAC Icefield** has a hard white kernel. It has been granted interim registration to facilitate market research. **AAC Icefield** expresses high milling yield of very white flour and good gluten strength at lower protein concentrations that may be of interest in some niche markets.

CDC Ptarmigan has a soft white kernel.

Sunrise has a soft red kernel. **Radiant** and **AAC Wildfire** express bronze chaff at maturity.

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

Seed of the new variety **AAC Elevate** is expected to be available in fall 2017. Seed of the new varieties **AAC Wildfire**, **AAC Goldrush** and **AAC Icefield** will not be available in 2017.

Rye

Main Characteristics of Varieties

Variety	Years Tested	Yield (%)		Protein (%)	Resistance To ¹				Heading Date (days) ²	Maturity (days) ³	Seed Weight (mg)	Volume Weight (kg/hL) ⁴	Height (cm)	Falling Number (seconds)
		Area 1 & 2	Area 3 & 4		Winter Survival	Lodging	Shattering	Ergot						
Open-Pollinated Varieties														
Hazlet	13	100	100	10.9	VG	G	VG	MS	June 8	August 3	37.1	73.6	103	166
Prima	26	82	93	0.6	VG	F	F	MS	0	-3	-4.4	-1.2	+12	+55
Hybrid Varieties														
Bono	4	124	123	-1.3	VG	VG	---	MS	+1	0	-5.3	-1.2	-11	+121
Brasetto	5	116	122	-1.0	VG	VG	---	MS	0	+1	-3.9	-1.7	-9	+107
Guttino	5	115	127	-0.9	VG	VG	---	MS	+1	0	-4.6	-0.9	-12	+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.

RYE ADDITIONAL INFORMATION

Fall rye is much more cold tolerant than winter wheat or winter triticale, with field survival being approximately 30-100% 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 (%)		Test Weight (kg/hL)	Seed Weight (mg)	Height (cm)	Maturity	Resistance To ¹						
		Area 1 & 2	Area 3					Lodging	Stem Rust	Leaf Rust	Bunt	Root Rot	Ergot	FHB
Spring Habit														
----- Relative to AC Ultima -----														
AC Ultima	20	100	100	70.1	44.0	101	104	G	R	R	R	I	MS	I
Brevis	9	110	110	+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	4	101	---	+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	6	104	99	-1.7	-4.4	-1	+1	G	R	R	R	---	MR	MS
Taza	4	106	---	-0.5	-1.9	+6	+2	G	R	R	R	---	I	S
Tyndal	4	99	---	+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. **Brevis** has shorter and stronger straw.

AAC Delight, **Tyndal** and **Bunker** are spring forage types, and, along with **Taza**, have reduced awns.

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

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

Malting Barley

Main Characteristics of Varieties

Category ¹ and Variety	Years Tested	2 or 6 Row	Awns ²	Yield			Resistance To ⁴									
				(% AC Metcalfe) Area 1 & 2	Area 3 & 4	Relative Maturity ³	Lodg- ing	Netted Net Blotch ⁵	Spotted Net Blotch ⁵	Spot Blotch	Scald	Loose Smut	Other Smuts	Root Rot	Stem Rust	FHB
Malting Acceptance: Recommended																
AC Metcalfe	11	2	R	100	100	M	G	S	I	I	MS	R	I	I	MR	I
Bentley 🌱	7	2	R	113	112	L	G	MS	R	I	MS	MS	MR	I	MR	MS
CDC Copeland 🌱	8	2	R	107	108	M	G	I	I	S	MS	MS	I	I	MR	I
CDC Kindersley 🌱	7	2	R	105	107	E	G	MS	MR	I	S	S	R	I	MR	I
Newdale 🌱	6	2	R	112	113	M	G	I	MR	I	MS	S	MR	MR	MR	I
CDC PolarStar ⁷ 🌱	7	2	R	104	99	M	F	S	MR	MS	S	S	R	MS	S	MR
AAC Synergy 🌱	7	2	R	118	118	M	G	MR	R	R	S	S	I	I	MR	MS
Celebration 🌱	7	6	S	109	107	M	VG	S	MR	MR	S	R	R	MS	I	MS
Legacy	6	6	S	104	101	M	G	S	MR	MR	MS	I	MR	MR	MR	MS
Tradition	5	6	S	112	107	M	VG	S	I	MR	MS	S	MR	MR	MR	S
Other⁶																
CDC Bow 🌱	5	2	R	116	111	M	VG	S	MR	I	MS	S	I	MS	MR	MS
Cerveza 🌱	7	2	R	113	117	M	G	MS	MR	R	S	R	R	I	MR	I
CDC Fraser 🌱	4	2	R	113	116	M	G	MR	R	MR	MS	R	R	MS	MR	MR
Harrington	11	2	R	95	89	M	F	S	MS	S	MS	MS	MS	I	MS	MR
CDC Landis 🌱	7	2	R	109	109	M	G	I	R	I	S	S	MR	MS	MR	MR
Major 🌱	7	2	R	112	115	M	G	I	MR	MR	S	R	MR	MS	MR	I
CDC Meredith 🌱	7	2	R	114	112	L	G	MS	R	MS	MS	R	MR	I	MR	I
Merit 57 🌱	7	2	R	109	107	L	G	MS	R	MS	I	S	I	MR	I	MS
CDC PlatinumStar ⁷ 🌱	5	2	R	105	104	M	F	I	MR	S	S	S	R	S	I	MR
CDC Anderson 🌱	7	6	R	107	108	M	G	MS	MR	R	MS	MR	R	I	I	I
CDC Battleford 🌱	6	6	S	108	108	M	G	MS	R	R	MS	MS	MR	MR	MR	S
Lacey	4	6	S	101	101	M	G	S	I	MR	MS	I	MR	MR	MR	S

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** and **CDC PlatinumStar** 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.

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.

2017-18 Recommended Malting Barley Varieties

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

Two-Row Varieties

VARIETY	MARKET COMMENTS
CDC Copeland ₁	Established Demand
AC Metcalfe ₁	Established Demand
AAC Synergy ₄	Growing Demand
Bentley ₂	Limited Demand
Newdale ₃	Limited Demand
CDC PolarStar ₂	Limited Demand
CDC Kindersley ₁	Under Commercial Market Development

For Bentley or Newdale contracting opportunities contact Canada Malting Company. For CDC PolarStar (and CDC PlatinumStar) contracting opportunities contact Prairie Malt-Cargill.

The CMBTC and its members recommend:

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

Six-Row Varieties

VARIETY	MARKET COMMENTS
Legacy ₃	Limited Demand
Tradition ₃	Limited Demand
Celebration ₂	Limited Demand

New Varieties in Development

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

VARIETY	COMMENTS
AAC Connect ₂	Two-Row - Undergoing seed propagation
CDC Bow ₁	Two-Row - Undergoing seed propagation

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

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

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

cmbtc.com



Peter Watts - Managing Director

Tel: 204-983-1981 E-mail: pwatts@cmbtc.com

Dr. Yueshu Li - Director of Malting & Brewing Operations

Tel: 204-984-0561 E-mail: yli@cmbtc.com

Feed and Food Barley

Main Characteristics of Varieties

Category and Variety	Years Tested	2 or 6 Row	Awns ¹	Yield		Relative Maturity ²	Resistance To ³										
				(% AC Metcalfe) Area 1 & 2	(% AC Metcalfe) Area 3 & 4		Lodging	Netted Net Blotch ⁴	Spotted Net Blotch ⁴	Spot Blotch	Scald	Loose Smut	Other Smuts	Root Rot	Stem Rust	FHB	
Hulled																	
Altorado *	4	2	R	117	111	M	VG	S	MR	MS	S	MR	MR	MR	MR	MR	I
CDC Austenson	7	2	R	118	121	M	G	MS	R	MR	S	S	R	I	I	I	I
Brahma	7	2	R	114	115	M	G	S	I	S	MS	MS	R	MR	MS	I	I
Canmore	6	2	R	113	117	L	G	MS	MR	I	MR	R	R	I	MS	I	I
Champion	8	2	R	117	117	M	G	S	I	MS	S	S	R	MR	I	I	I
Claymore *	5	2	R	119	117	L	VG	S	I	I	S	S	R	I	MR	I	I
CDC Coalition	7	2	R	111	114	M	VG	S	MR	I	MS	R	MR	I	MR	I	I
CDC Cowboy	6	2	R	99	105	L	F	I	MR	I	MS	MS	MR	I	MR	MR	MR
CDC Dolly	11	2	R	103	103	E	G	S	MS	MS	I	S	I	I	MS	MR	MR
Gadsby	7	2	R	110	110	M	F	MS	MR	S	R	R	R	I	MR	I	I
CDC Helgason	7	2	R	105	106	M	G	MR	MR	I	MS	R	MR	I	I	MS	MR
CDC Maverick	6	2	S	98	98	M	F	I	MR	I	MS	S	R	I	MR	MR	MR
McLeod	6	2	R	108	114	M	G	S	I	S	MS	S	R	I	MS	I	I
Oreana	5	2	R	117	112	L	VG	S	MR	I	S	S	R	I	I	S	S
CDC Trey	5	2	R	104	110	M	G	I	R	I	MS	MS	R	MR	MR	I	I
Amisk	6	6	SS	113	116	M	G	I	MR	MR	I	S	MS	MS	MR	S	S
Chigwell	7	6	S	107	111	M	G	I	MR	MR	MR	MS	R	S	S	S	S
Muskwa	6	6	S	113	110	M	G	MS	MR	I	MR	MS	R	MS	MR	S	S
AC Rosser	11	6	S	115	115	M	G	I	MR	MR	S	MS	MR	MR	MR	S	S
Sundre	5	6	S	120	116	L	G	MS	I	I	R	MS	R	MS	I	S	S
Hulless																	
CDC Ascent *	3	2	R	101	101	M	G	S	MR	I	MS	MR	MR	I	S	MR	MR
CDC Carter	7	2	R	94	99	M	G	I	MR	I	MS	R	R	S	I	I	I
CDC Clear	7	2	R	96	103	L	G	MS	R	I	MS	R	R	I	MR	MR	MR
CDC McGwire	8	2	R	98	99	M	G	I	MR	I	I	MS	MR	MR	I	MR	MR
Taylor	7	2	R	82	87	M	VG	MS	MR	I	S	R	I	MS	MR	MR	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.

Harvesting grain over 16% 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.

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

Forage Barley

Desperado 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 9-12% lower. Hulless seed is more susceptible to damage than hulled seed, so handling should be minimized.

Hulless Food

CDC Fibar and **CDC Rattan** are high be-

ta-glucan, waxy starch varieties. **CDC Hi-loose** 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		Test Weight (g/0.5L)	% Hull	Hull Colour	% Plump	Relative Maturity ¹	Height (cm)	Resistance To ²			
		(% CDC Dancer) Area 1 & 2	Area 3 & 4							Lodging	Stem Rust	Crown Rust	Smut
CDC Dancer ☼	8	100	100	253	19.8	White	86	M	103	G	I	I	R
SW Betania ☼	7	105	105	245	22.0	White	82	M	97	G	S	MS	MR
CDC Big Brown ☼	7	106	106	256	20.4	Tan	88	L	101	G	MS	R	R
CDC Boyer	8	99	100	232	23.3	White	85	M	105	G	I	I	MS
CS Camden	6	114	115	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 ☼	4	91	94	225	24.9	White	87	VL	111	G	S	S	MR
AAC Justice ☼	6	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
Lu	6	102	103	248	25.2	Yellow	58	E	99	G	S	S	MR
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 ☼	4	101	90	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 ☼	5	111	107	241	20.0	White	81	M	102	G	S	MR	MS
ORe3541M ☼	3	106	100	257	21.5	White	90	L	93	VG	S	R	R
ORe3542M ☼	3	111	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
Ronald ☼	7	96	99	249	22.4	White	74	L	97	VG	I	S	R
CDC Ruffian ☼	7	114	110	247	20.4	White	88	L	95	G	S	I	R
CDC Seabiscuit ☼	7	110	106	240	20.3	White	89	L	100	G	I	S	MR
Souris ☼	7	108	103	253	21.5	White	72	M	98	VG	MR	S	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 ☼	2	116	111	242	22.5	White	---	M	95	G	---	R	R
Bradley ☼	5	105	102	240	21.7	White	81	L	103	VG	MS	MS	R
Kara ☼	2	120	114	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 **CDC Big Brown**, **Leggett**, **CDC Norseman**, **Stride**, and **Triactor**, are increasing in southeast Saskatchewan. Recent changes in the crown rust population have resulted in the *Pc91* resistance gene being no longer effective. As such, the crown rust ratings for **AAC Justice**, **CDC Morrison** and **Souris** have been redefined. In addition, the resistance genes present in **Summit** are also losing their effectiveness and therefore the crown rust rating for this variety has also been redefined. 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

Bullion and **AC Gwen** are hulless varieties available for production in Saskatchewan.

The hull is part of normal oat yield, thus hull-less 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.

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 20-25% 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.

SEED TREATMENT

Various fungicides have been registered for the control of seedling diseases caused by soil- and seed-borne pathogens.

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.

Wireworms that attack all grain crops, and flea beetles that attack canola and mustard, can be controlled by seed treatments containing insecticides.

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.

SEED-BORNE DISEASES OF PULSES

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. Thus, 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 the Saskatchewan Agriculture publication *Seed-Borne Diseases of Pulse Crops*.

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*.

SEED INOCULATION

Legume crops obtain much of their nitrogen requirement by forming a symbiotic association with soil bacteria called *Rhizobium*. These bacteria colonize the roots to form structures called nodules, where they fix nitrogen for the legume plant. To enhance nitrogen fixation, the legume crop seed should be inoculated. **Use the proper strain of bacteria specific to that crop.** For further details, consult the *Pulse Production Manual* (Saskatchewan Pulse Growers).

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*.

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.

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)
CDC Bastia	glabrous	48	100	57	98	99	70.7	8.0
CDC Calvi ² ⚡	glabrous	34	108	+2	+3	+5	+0.6	+0.3
Cantate	hairy	48	115	+1	+2	-3	-6.7	+0.4
Keet	hairy	48	125	+4	+4	+2	-5.8	-0.2
CDC Togo ⚡ §	glabrous	48	96	+1	0	-4	-1.4	+0.5

¹ Yield data not collected by Area

² 2011-2016 yield data; other varieties 2007 -2016

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. Seed hulls of **CDC Bastia**, **CDC Calvi** and **CDC Togo** do not have the small sharp hairs that cause irritation when canaryseed is threshed and handled and are called glabrous. **CDC Calvi**, a new, higher yielding glabrous variety was registered in 2013.

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, provided adequate moisture is available for rapid germination and emergence. The recommended seeding rate is 34 kg/ha (30 lb/ac) with germination greater than 85%. 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 the leaves, stems and head 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% 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*.

Root Rot Complex in Pulse Crops

By Dale Risula, Saskatchewan Agriculture

In the 1970s, pulse crops on the Canadian prairies had few root rot problems, but the root rot complex was always present. With repeated pulse cultivation, root rots have become a severe constraint to production.

Fusarium spp., *Pythium* spp., *Rhizoctonia solani* and *Aphanomyces euteiches* can all cause root rot in pulse crops in Saskatchewan. The root rot pathogens are often referred to as the root rot complex, since more than one pathogen can often be identified within a single field or within a single infected root.

Fusarium spp. (*F. avenaceum* in Alberta and Saskatchewan, *F. solani* in Manitoba) is the most prevalent root rot pathogen. These fungal pathogens can survive on infected stubble residue or as resting spores (only some species) and can cause seedling diseases in many different crops. It is a weak pathogen, but present on many crops. Infection by *Fusarium* spp. is favoured by moderate soil moisture and moderate temperatures.

Pythium spp. (*P. ultimum*, *P. irregulare*, and many others), are fungal-like organisms that cause rot and seedling blight resulting in seedling death or stunted growth. The pathogen overwinters in the soil as hard walled, long-lived resting structures known as oospores. The active stage of the pathogen is the zoospore stage. Zoospores are motile spores that need wet soils to move to and infect the host. Infection of pulse crops by *Pythium* spp. is generally favoured by cool, wet soils.

Rhizoctonia solani is a fungal pathogen. Many seed treatments that are effective against *Fusarium* spp. are not effective against *Rhizoctonia solani*. Infection is favoured by warm, dry soil. If infection occurs near the soil surface, a constriction in the stem may occur. *R. solani* mainly overwinters as mycelium and has a fairly wide host range.

Aphanomyces euteiches is an oomycete (like *Pythium* spp.). It produces zoospores that need water and long-lived resting spores (oospores). Infection is favoured by warm, wet soils. Host plants are susceptible to *A. euteiches* infection throughout the entire plant life-cycle. Peas and lentils are the most susceptible to aphanomyces root rot with all varieties being susceptible. Other pulses, including faba bean, chickpea and soybean, have good partial resistance. Accurate identification of the pathogen requires a DNA-based test. *A. euteiches* has recently been identified, based on molecular assessments, as the cause of

Risk factors for fusarium or aphanomyces root rot

Factor	Effects
Crop history	Short rotations between susceptible hosts builds up disease inoculum.
Soil moisture	Zoospores (<i>Aphanomyces</i>) are only released in wet soil. Wet soils stress pulse plants making them more susceptible to infection by root rot causal organisms.
Soil compaction	Heavy soils are more prone to water logging and soil compaction. Soil compaction impedes root growth and aeration.
Soil pH	Acidic soils with a pH range of 5.6-6.6 increase risk of root rot.
Soil temp	Optimal temperature for infection is 24°C.
Other soil-borne pathogens	Root rot pathogens act synergistically, increasing the impact on the crop.

severe damage in pea and lentil across the northern Great Plains region.

Disease Management

Root rots can be caused by a complex of different organisms. An integrated approach should be used to manage root rots. Disease management activities should be almost complete **BEFORE** any crop is planted.

- Plan for a diverse crop rotation (four year minimum, six years away from pea or lentil if *A. euteiches* is confirmed in a field). Alternating cereals with broad-leaved crops is best. However, rotation with different pulse crops can be useful if they carry different sources of resistance.
- Use varieties most adapted to your region with traits including high yield, suitable days to harvest and good disease resistance.
- Use seed with high germination and vigour, treated & inoculated, as well as as carries minimal or no seed-borne pathogens.
- Provide isolation from last year's heavily infected fields.
- Scout fields and apply a foliar fungicide only if required.
- Minimize damage to seeds during seeding, monitor for signs of stress and follow herbicide labels. Healthy seedlings are able to better withstand infections and recover from stress.

No strong sources of resistance have been identified for any of the root rot pathogens. Research to move genes for partial resistance and/or tolerance into breeding lines are in progress. Quantitative trait loci, (QTLs) for partial resistance (tolerance) have been identified. A diverse crop rotation and vigorous, inoculated seed is currently the best way to deal with root rot.

Seedling infection can be reduced using a fungicide seed treatment with more than one mode of action. Seed treatments only protect seedlings and do not provide protection later in the growing season. Seed treatment and vigorous seed provide for rapid development of strong plants, which are better able to sustain yield under moderate disease pressure.

No fungicides are registered against *A. euteiches* on pea. Ethaboxam (Intego Solo) is registered for early season suppression of aphanomyces root rot on lentil. It is important to remember that seed treatments will only provide suppression during the seedling stage but will not provide protection as the plant matures.

Root Rot Symptoms

In the field, symptom expression is not clear-cut. Most roots are infected with a pathogen complex, making it difficult to identify which pathogen is the major cause of concern.

Root diseases reduce the plant's ability to obtain water and nutrients from the soil

Above ground symptoms include stunting, yellowing, poor root growth, little nodulation and browning of root area.

Acknowledgements

- Pulse Grower Associations in Alberta, Saskatchewan and Manitoba.
- AAFC A-Base Competitive Grants.
- Pulse Science Cluster of Growing Forward II.
- Thank you to Sabine Banniza, Cheryl Armstrong-Cho and Syama Chatterton
- Also with Dr. Bruce Gossen, Agriculture and Agri-food Canada

PULSE CROPS

Lentil

Main Characteristics of Varieties

Market Class	Variety	Herbi- cide Toler- ance ¹	Years Tested ²	Yield (% CDC Maxim)		Height (cm)	Days to Flower	Maturity Rating ³	Resistance To ⁴		Seed Coat Colour	Coty- ledon Colour	Seed Weight (g/1000)
				Area 1 & 2	Area 3 & 4				Asco- chyta Blight	Anthrax- nose Race 1			
Small Red	CDC Maxim	CL	10	100	100	34	51	E/M	MR	MR	gray	red	40
	CDC Cherie		5	109	106	32	51	E/M	MR	I	gray	red	39
	CDC Dazil	CL	9	104	98	33	53	E/M	MR	I	gray	red	35
	CDC Imax	CL	10	96	82	35	51	E/M	MR	I	gray	red	45
	CDC Impact	CL	6	80	76	30	47	E	MR	MS	gray	red	34
	CDC Impulse *	CL	7	108	95	37	52	E/M	MR	MR	gray	red	44
	CDC Proclaim *	CL	6	105	101	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		6	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		6	105	93	33	50	E/M	MR	MR	gray	red	39
	CDC Redmoon *		6	115	102	33	52	E/M	MR	MR	gray	red	41
	CDC Scarlet		8	105	103	35	53	E/M	MR	I	gray	red	36
Extra Small Red	CDC Impala	CL	8	94	91	30	51	E	MR	MR	gray	red	31
	CDC Imperial	CL	6	84	79	30	49	E	MR	MR	gray	red	30
	CDC Redbow		6	102	99	30	49	E	MR	MR	gray	red	32
	CDC Rosebud		6	100	99	30	50	E	MR	MR	tan	red	31
	CDC Rosie		7	92	90	33	52	E/M	MR	MR	gray	red	30
	CDC Roxy *		6	103	102	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	6	105	85	37	52	M	MR	MR	gray	red	55
Small Green	CDC Invincible	CL	10	96	83	33	49	E	MR	MR	green	yellow	34
	CDC Kermit *		7	106	102	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		9	99	101	30	48	E	MR	I	green	yellow	26
Medium Green	CDC Imigreen	CL	7	78	71	44	50	M	MR	S	green	yellow	57
	CDC Impress	CL	6	87	71	34	50	M	MR	MS	green	yellow	52
	CDC Meteor		6	102	89	34	50	M	MR	S	green	yellow	51
	CDC Richlea		6	93	80	35	50	M	S	S	green	yellow	51
Large Green	CDC Greenland		7	89	70	38	52	M/L	MR	S	green	yellow	64
	CDC Greenstar		8	101	78	40	52	M/L	MR	I	green	yellow	73
	CDC Impower	CL	9	85	68	41	52	M/L	MR	S	green	yellow	64
	CDC Sovereign		6	83	77	40	52	L	MR	MS	green	yellow	66
French Green	CDC Marble		8	107	103	36	49	E	MR	I	green marble	yellow	34
	CDC Peridot	CL	6	84	94	37	48	E	I	MS	green marble	yellow	38
Green Cotyledon	CDC QG-1		5	80	65	42	51	M	I	I	green	green	49
	CDC QG-2		7	91	94	40	48	E	I	I	green marble	green	32
	CDC QG-3 *	CL	6	73	---	38	53	E/M	I	MR	green	green	46
Spanish Brown	CDC SB-3 *	CL	6	89	90	35	51	E	I	MR	gray dotted	yellow	38

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 2 for more information on maturity range in lentil.

⁴ Resistance ratings: R = Resistant; MR = Moderately Resistant; I = Intermediate Resistance; MS = Moderately Susceptible; S = Susceptible.

ADDITIONAL INFORMATION

Seed supplies may be limited for **CDC Greenstar**, **CDC Marble**, **CDC Scarlet** and **CDC Asterix**. Seed supplies will be limited for **CDC Impulse**, **CDC Roxy**, **CDC Proclaim**, **CDC Redmoon**, **CDC Kermit** and **CDC SB-3**.

Field Pea

Main Characteristics of Varieties

Variety	Years Tested ¹	Yield (% CDC Amarillo)			Leaf Type ²	Relative Maturity	Lodging ³ (1-9)	Vine Length (cm)	Resistance To							Seed Weight (g/1000)
		1, 2 & South 3	North 3 & 4	Irrigation					Mycosphaerella Blight ⁴	Powdery Mildew	Fusarium Wilt	Seed Coat Breakage	Bleaching	Seed Coat Dimpling ⁵	Greenness ⁶	
Yellow																
CDC Amarillo	8	100	100	100	SL	M	3.5	85	4.5	R	MR	F	n/a	F	G	230
Abarth ☹	7	93	90	92	SL	E	3.5	75	5.0	R	I	F	n/a	G	G	280
DS Admiral ☹ §	6	78	80	80	SL	E	4.5	80	5.0	R	I	G	n/a	G	G	240
Agassiz ☹	8	97	92	100	SL	M	4.5	85	5.0	R	I	G	n/a	F	G	230
AAC Ardill	6	103	97	87	SL	M	3.5	85	4.5	R	MR	G	n/a	G	G	230
CDC Athabasca ✱	5	94	102	---	SL	M	3.0	85	4.5	R	I	---	n/a	F	G	300
CDC Bronco §	8	92	81	86	SL	M	4.5	75	4.5	R	I	G	n/a	G	G	230
AAC Carver ✱	3	105	95	---	SL	E	4.0	85	5.0	R	I	---	n/a	F	G	240
CDC Centennial §	5	89	88	98	SL	E	5.5	70	5.0	R	I	G	n/a	G	F	270
Delta §	4	78	72	---	SL	E	5.5	70	5.5	S	---	G	n/a	---	---	250
Earlstar ☹	5	92	91	---	SL	VE	5.0	80	5.0	R	I	F	n/a	G	G	210
Eclipse ☹ §	8	82	76	85	SL	M	4.0	80	5.0	R	MS	G	n/a	F	G	250
CDC Golden	8	91	81	90	SL	E	4.5	75	5.0	R	I	G	n/a	G	G	230
CDC Hornet	8	91	84	91	SL	M	4.0	85	4.5	R	I	F	n/a	G	G	220
CDC Inca ✱	5	106	100	---	SL	M	4.0	85	4.5	R	I	G	n/a	G	F	230
AAC Lacombe	4	99	100	---	SL	M	3.5	85	5.0	R	I	F	n/a	F	F	250
CDC Meadow	8	90	87	90	SL	E	4.0	85	5.0	R	I	G	n/a	G	G	220
CDC Mozart §	7	87	79	90	SL	M	5.5	70	4.5	R	I	G	n/a	G	F	220
CDC Prosper	8	84	79	73	SL	E	4.5	80	5.0	R	MR	G	n/a	F	G	150
CDC Saffron	8	97	91	91	SL	E	4.0	80	4.5	R	I	G	n/a	F	G	250
CDC Spectrum ✱	5	104	103	---	SL	M	3.5	85	4.5	R	I	---	n/a	G	F	240
Thunderbird ☹	6	89	83	91	SL	M	4.0	85	5.0	R	I	G	n/a	G	F	220
CDC Treasure	8	88	87	93	SL	E	4.0	80	5.0	R	I	F	n/a	F	G	210
Green																
Cooper ☹	8	89	80	85	SL	M	4.0	80	5.0	R	I	F	F	G	n/a	270
CDC Greenwater	7	99	91	86	SL	M	3.5	90	4.0	R	MR	G	G	F	n/a	230
CDC Limerick	8	96	89	90	SL	M	3.5	85	4.0	R	I	VG	G	G	n/a	210
CDC Patrick	8	87	84	87	SL	M	4.5	80	4.5	R	MR	G	G	G	n/a	190
CDC Pluto	6	93	82	91	SL	M	5.5	80	4.5	R	I	G	G	G	n/a	160
AAC Radius	5	78	76	---	SL	M	5.0	85	4.5	R	I	VG	G	G	n/a	230
CDC Raezer	8	82	81	94	SL	E	3.5	85	5.0	R	MR	G	G	G	n/a	220
AAC Royce	4	90	84	---	SL	M	5.0	70	5.0	R	I	F	G	---	n/a	260
CDC Sage	5	73	71	73	SL	M	4.0	80	5.0	R	MR	G	G	F	n/a	220
CDC Spruce ✱	5	95	100	---	SL	M	4.0	85	4.5	R	I	---	G	F	n/a	240
CDC Striker	8	82	81	84	SL	M	3.5	80	4.5	S	MR	VG	G	G	n/a	240
CDC Tetris	8	90	91	88	SL	M	4.0	85	4.5	R	MR	G	F	G	n/a	210
Red																
Redbat 8 ✱	4	93	82	---	SL	M	5.0	85	5.0	R	---	---	n/a	G	n/a	200
Redbat 88 ✱	3	92	91	---	SL	M	4.5	90	4.5	R	---	---	n/a	G	n/a	190
Maple																
CDC Acer	3	84	73	---	SL	M	6.5	60	5.0	R	---	G	n/a	VG	n/a	170
CDC Blazer ✱	2	99	92	---	SL	M	5.0	80	5.0	R	---	---	n/a	VG	n/a	190
AAC Liscard	3	92	90	---	SL	M	4.0	85	5.0	R	---	---	n/a	VG	n/a	200
CDC Mosaic	4	81	74	58	SL	M	4.0	85	4.5	R	---	G	n/a	VG	n/a	180
Dun																
CDC Dakota	7	105	99	95	SL	M	3.5	85	4.5	R	---	G	n/a	VG	n/a	205
Forage																
CDC Horizon	4	88	78	63	SL	M	4.5	100	4.5	R	---	G	n/a	G	G	170
CDC Leroy	3	82	75	75	SL	M	5.0	85	4.5	R	---	G	n/a	G	G	150
CDC Tucker	3	83	77	74	SL	M	4.0	90	4.5	R	---	G	n/a	G	F	170
40-10	3	68	65	47	N	M	8.5	130	4.5	S	---	G	n/a	G	---	140

¹ Co-op and regional trials in Saskatchewan

² N = normal leaf type; SL = semi-leafless

³ Lodging score (1-9) where 1 = completely upright, 9 = completely lodged

⁴ Mycosphaerella blight score (1-9) where 1 = no disease, 9 = completely blighted

⁵ Seed Coat Dimpling: VG = 0-5%; G = 6-20%; F = 21-50%

⁶ Greenness: Good = 0-15%; Fair = 16-40%

FIELD PEA ADDITIONAL INFORMATION

The following varieties have purple flower colour and pigmented seed coats: **CDC Acer, CDC Blazer, AAC Liscard, CDC Mosaic, CDC Dakota** and **40-10**. **CDC Acer, CDC Blazer**, and **CDC Mosaic** have a maple patterned seed coat, **AAC Liscard** and **40-10** have a speckled seed coat, while

CDC Dakota has a solid dun (tan) coloured seed coat. All other varieties have white flower colour and non-pigmented seed coats.

The relative maturity of the check variety **CDC Amarillo** is M (Medium), which is on

average 95 days from seeding to swathing ripeness.

For detailed production information consult the *Pulse Production Manual* published by Saskatchewan Pulse Growers.

Soybean

Main Characteristics of Varieties

Variety	Canadian Marketing Agent	Company Maturity Grouping ¹	Type ²	Hilum Colour ³	Years Tested	Yield (% NSC Reston R2Y) ⁴		Days to Maturity
						South	North	
NSC Reston RR2Y	NorthStar Genetics Manitoba	00.1	RR2	BL	5	100	100	121
P002T04R	DuPont Pioneer	00.2	RR1	TN	3	88	98	118
NSC Watson RR2Y	NorthStar Genetics Manitoba	000.8	RR2	IY	2	92	99	119
S0009-M2	Syngenta Canada	000.9	RR2	IY	2	93	106	119
22-60RY	DEKALB	000.9	RR2	BL	3	94	104	121
LS NorthWester	Delmar Commodities	00.2	RR2	BL	3	95	96	123
Bishop R2	SeCan	00.2	RR2	IY	5	92	100	123
23-60RY	DEKALB	00.2	RR2	BL	4	103	101	123
P006T78R	DuPont Pioneer	00.6	RR1	BR	2	104	104	124
S007-Y4	Syngenta Canada	00.5	RR2	IY	3	106	110	124
23-11RY	DEKALB	000.9	RR2	BL	3	98	99	124
McLeod R2	SeCan	00.3	RR2	BL	5	101	102	124
TH 35002R2Y	Thunder Seeds	00.2	RR2	BL	3	99	99	125
TH 33003R2Y	Thunder Seeds	00.3	RR2	BR	5	100	101	125
NSC Tilston RR2Y	NorthStar Genetics Manitoba	00.4	RR2	BL	5	98	99	125
Mahony R2	SeCan	00.3	RR2	BL	3	105	109	125
TH 32004R2Y	Thunder Seeds	00.4	RR2	BL	5	106	103	125
PS 0035 NR2	PRIDE Seeds	00.3	RR2	BL	4	101	98	125
LS 002R24N	Delmar Commodities	00.2	RR2	BL	4	103	102	125
TH 33005R2Y	Thunder Seeds	00.5	RR2	BL	4	102	100	126
Lono R2	Brett Young	00.5	RR2	BL	3	105	108	126
Akras R2	Brett Young	00.3	RR2	BL	3	104	109	126
Hero R2	SeCan	00.4	RR2	BL	3	111	105	127
HS 006RYS24	Dow Seeds	00.6	RR2	BL	4	101	96	128

¹ In North America, soybean varieties are classified into maturity groupings from 9 in southern USA to 1 or 0 in southern Ontario. 00 refers to shorter season varieties than 0 types, while 000 refers to shorter season varieties than 00 types. The decimal point notation refers to differences within a class, for example, 00.1 should be a shorter season variety than 00.2.

² All varieties in this table are either Roundup Ready 1 or Genuity Roundup Ready 2 Yield™

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

⁴ South: Boissevain, Melita, Hamiota, Redvers, Halbrite, Swift Current, and Indian Head; North: Dauphin, Roblin, Outlook (irrigated and dryland), Saskatoon, Floral, Kamsack, Rosthern, Melfort, and Scott.

ADDITIONAL INFORMATION

The soybean variety trial is coordinated by Manitoba Agriculture Food and Rural Development. Mean yield of the check variety **NSC Reston R2Y** was 47 bushels/acre in

2016, 43 bu/acre in 2015, and 41 bu/acre in 2014. Typical on-farm yields are 25-30 bu/acre. Soybean is not native to the Canadian Prairies and so must be inoculated with

soybean inoculant that contains *Bradyrhizobium japonicum* bacteria.

Chickpea

Main Characteristics of Varieties

Market Class	Variety	Years Tested	Yield (% Amit)		Ascochyta Blight ²	Height (cm)	Days to Flower	Maturity	Seed Weight (g/1000)	Seed Shape ³	Seed or Seed Coat Colour ⁴
			Area 1 ¹	Area 2 ¹							
Kabuli	Amit (B-90) ☼	15	100	100	4.5	47	56	L	258	Ro	B
	CDC Alma	8	92	91	6.3	43	54	L	364	RH	B
	CDC Frontier	15	108	104	4.5	46	56	L	349	RH	B
	CDC Leader	11	109	108	4.5	42	54	M	390	RH	B
	CDC Luna	14	97	99	5.9	40	54	M/L	369	RH	B
	CDC Orion	10	108	106	5.1	45	51	L	434	RH	B
	CDC Palmer ☼	6	109	106	4.9	44	53	M/L	418	RH	B
Desi	CDC Consul	9	113	112	4.0	46	53	M	303	P	LT
	CDC Corinne §	14	116	111	4.2	45	56	M	245	A/P	T
	CDC Cory	8	115	108	4.3	49	57	M	270	A/P	T
	CDC Vanguard §	14	108	108	4.9	43	53	M/L	222	P	T

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 2017* for pedigreed seed availability. For more details on production, consult the *Pulse Production Manual* published by the Saskatchewan Pulse Growers (www.saskpulse.com).

Dry Bean

Main Characteristics of Varieties

Type	Variety	Years Tested ¹	Yield --- (% CDC Pintium) ---		Days to Flower	Maturity Rating ²	% Pod Clearance ³	Seed Weight (g/1000)	Growth Habit ⁴
			Irrigation	Dryland					
Pinto	CDC Pintium	15	100	100	50	E	85	350	I
	Island	9	124	111	55	M	79	355	II
	Mariah ☼	5	114	103	55	L	82	293	II
	CDC Marmot	7	112	109	50	E	80	367	I
	Medicine Hat ☼	3	---	110	58	M	72	360	II
	Winchester	5	116	110	52	M	82	352	II
	CDC WM-2 ☼	10	119	108	52	E	79	365	II
Navy	Envoy	15	86	84	53	M	77	184	I
	Bolt	3	---	112	58	L	82	190	II
	Lightning	7	109	92	60	L	85	175	II
	Skyline	5	74	91	57	L	80	163	I
	OAC Spark	7	90	102	55	L	81	163	I
	Portage	4	111	96	52	M	85	175	II
Great Northern	AC Polaris §	7	97	98	52	L	70	310	III
Small Red	AC Redbond	8	98	100	51	M	65	290	II
Black	CDC Blackcomb	7	115	95	56	M	85	167	II
	CDC Blackstrap ☼	6	124	120	58	M	85	195	II
	CDC Jet	15	100	97	58	L	85	170	II
	CDC Superjet	5	136	110	58	L	85	170	II
	Carman Black §	5	125	113	59	M	88	180	II
Shiny Black	AC Black Diamond	7	102	94	54	M	70	250	II
Yellow	CDC Sol ☼	9	111	96	58	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.

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	11	100	106	3.8	105	520
CDC Blitz §	6	101	101	3.7	109	410
Fabelle ²	4	105	104	2.4	105	533
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-1 ✱	6	106	105	3.1	106	749
247-13 ✱	4	107	103	3.4	106	620
White Flower (zero tannin)						
Imposa ☉	4	110	99	2.4	107	695
Snowbird ☉	11	104	96	2.6	104	495
CDC Snowdrop	8	94	98	2.6	104	335
Tabasco ☉	5	101	96	2.3	106	530

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

² Low vicine.

ADDITIONAL INFORMATION

Faba bean regional trials began in 2006 to accommodate growing interest in this crop as a nitrogen-fixing high-protein food and feed grain in moist areas. White-flowered

types are zero tannin. All coloured flower types have seed coats that contain tannins and may be suitable for export food markets if seed size and quality match custom-

er demand. Maturity ratings are based on days until swathing maturity but will vary depending on seeding date.

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. 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. 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. Disease tests identify the level of seed-borne diseases in the sample and help determine whether a seed treatment is recommended. Seed with good germination and a high disease level may still be suitable for planting as long as a seed treatment that controls the disease is used.

TKW and germination are needed when calculating the seeding rate, using the following formula:

$$\text{Seeding rate (kg/ha)} = (\text{target plant population/m}^2) \times (\text{TKW in grams}) \div (\text{expected seedling survival in per cent})$$

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	215 – 320	20 – 30	30 – 45
Triticale – spring	310	29	42 – 48
Mustard & Polish Canola	70 - 100	7 - 9	2 - 3
Yellow Mustard	70 - 100	7 - 9	5 - 6.5
Argentine Canola	70 - 100	7 - 9	2.5 - 7.5
Flax	300 – 400	30 – 40	5 – 6.5
Pea	85	8	125-300
Fababean	45	4	350-425
Lentil	105 - 147	10 – 14	30 – 80
Chickpea	44	4	220 - 450

Target plant populations for various crops are shown in the adjacent table. Expected seedling survival is typically 5-20% 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 40-60%. Factors to take into account when determining the expected seedling survival are seeding date, soil temperature, moisture and texture, as

well as 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.

OILSEED CROPS

Flax

Main Characteristics of Varieties

Variety	Years Tested	Yield ¹			Relative Maturity ²	Seed Size ³	Resistance To		
		Area 1 & 2	Area 3 & 4	Irrigation			Lodging	Powdery Mildew ⁴	Fusarium Wilt ⁴
CDC Bethune ☼	10	100	100	100	L	M	G	MR	MR
AAC Bravo ☼	5	100	103	102	L	L	G	MR	MR
CDC Glas ☼	5	105	110	98	L	M	VG	MR	MR
Hanley ☼ §	4	90	90	93	M	M	G	MR	R
Lightning ☼ §	6	92	92	93	L	M	G	MR	R
CDC Neela ☼	5	103	107	101	L	M	G	MR	MR
NuLin VT50 ☼	3	100	100	98	L	S	VG	---	MR
CDC Plava ☼	3	97	104	93	M	M	G	---	MR
Prairie Blue ☼	4	99	92	97	L	S	VG	MR	MR
Prairie Grande ☼	6	92	94	92	M	M	VG	MR	MR
Prairie Sapphire ☼	5	100	100	100	L	M	G	MR	MR
Prairie Thunder ☼	8	95	95	98	M	M	VG	MR	R
CDC Sanctuary ☼	7	103	101	96	L	M	F	MR	MR
CDC Sorrel ☼	8	100	101	92	L	L	G	MR	MR
Taurus ☼ §	6	94	99	94	M	M	G	R	MR
Vimy	10	94	90	85	M	L	P	MS	MR
WestLin 60 ☼	3	93	95	89	M	M	G	---	MR
WestLin 70	3	93	103	95	L	L	G	MR	MR
WestLin 71 ☼	4	94	101	102	L	M	VG	MS	MR
WestLin 72 ☼	3	102	102	96	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 2016. All cultivar descriptions other than yield are based on data from the Flax Pre-registration Trials in the Prairie Provinces. All cultivars are immune to rust.

Frozen flax should be analyzed by a feed testing laboratory to determine that it is free of prussic acid before using it as a livestock feed.

The Canadian Grain Commission (CGC) advises that **CDC Arras**, **Flanders** and **Somme** will be deregistered effective August 1, 2017.

Camelina

Camelina, sometimes 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 very small (1.0g/1,000 seed) and requires shallow seeding. Reduced emergence may be expected when camelina is seeded deeper than 1.5 cm (0.5 inch).

Camelina plants are resistant to black-leg 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. For more information on camelina, consult the Saskatchewan Agriculture publi-

cation *Camelina*.

MIDAS™ ☼ is a spring-type camelina cultivar with high seed yield and high oil content. **MIDAS™** grows to medium heights (65 – 85 cm), flowers, depending on the weather conditions, after about 45 days and reach maturity 85 – 100 days after emergence.

MIDAS™ possesses quantitative resistance to downy mildew. Certified seed of **MIDAS™** will be available to producers in 2017.

Mustard

Main Characteristics of Varieties

Type and Variety	Yield ¹	Plant Height (cm)	Hydroxybenzyl Glucosinolate (µmol/g seed)	Allyl Glucosinolate (µmol/g seed)	Mucilage ² (cS*ml/g seed)	Resistance to White Rust ³		Fixed Oil (% seed)	Protein (% Seed)	Seed Weight (g/1000)	Maturity (days)
						2a	2v				
Yellow (% Andante)											
Andante ⁴	100	102	145	n/a	55.7	n/a		28.4	35.1	6.0	93
AAC Adagio ⁵ ⚡	102	103	139	n/a	96.8	n/a		30.1	33.0	5.1	94
AC Pennant ⁴	99	96	148	n/a	44.7	n/a		29.5	34.3	5.7	92
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	109	n/a	13.9	n/a	R	S	34.2	30.7	2.7	98
AAC Brown 100 ⁷	105	123	n/a	12.8	n/a	R	R	34.9	30.7	3.5	92
Duchess ⁴	99	113	n/a	9.4	n/a	S	S	38.1	28.7	2.7	92
Oriental (% Cutlass)											
Cutlass ⁴	100	115	n/a	11.6	n/a	R	S	41.0	29.1	2.8	91
Forge ⁴	97	125	n/a	12.2	n/a	S	S	38.9	29.6	2.6	92
AAC Oriental 200 ⁷ ⚡	106	124	n/a	11.7	n/a	R	S	37.0	30.0	2.7	92
AC Vulcan ⁴	98	116	n/a	12.4	n/a	R	S	40.6	29.5	2.9	91

¹ Field 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 2012 yield test and 2013-2015 Co-operative Mustard Test (21 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.

AAC Adagio is a new yellow mustard variety registered in 2014. Breeder seed of **AAC Adagio** was produced in 2013.

The three yellow mustard varieties have similar yield. A unique feature of yellow mustard is high mucilage content. Mucilage is valued by the mustard industry as a stabilizer in prepared food products. **AAC Adagio** has significantly higher mucilage content, but smaller seed size and lower protein content than **AC Pennant** and **Andante**.

Brown mustard is grown primarily for the Dijon mustard market. **AAC Brown 100** is a new brown mustard variety registered in September 2015. It has higher (5%) yield than

the check variety **Centennial Brown**. **AAC Brown 100** and has significantly higher allyl glucosinolate content as well as significantly larger seed size than **Centennial Brown**.

AAC Oriental 200, registered in October 2015, has a higher (6%) yield and significantly lower oil content than **Cutlass**. **AC Vulcan** and **Forge** have higher allyl glucosinolate content than **Cutlass** and **AAC Oriental 200**.

Canola (Small Scale Trials)

Main Characteristics of Varieties

Variety (<i>B. napus</i>)	Distributor	LONG Season Zone (8 trials)				MID Season Zone (15 trials)				SHORT Season Zone (6 trials)				Disease Tolerance ¹
		Yield (% 5440)	Maturity (days)	Lodging (1-5)	Height (cm)	Yield (% 5440)	Maturity (days)	Lodging (1-5)	Height (cm)	Yield (% 5440)	Maturity (days)	Lodging (1-5)	Height (cm)	
CHECK MEAN 5440 (bu/ac)		47				60				51				
Clearfield														
5545 CL	Brett Young	105	96	3.0	119	99	101	2.5	125	100	117	2.8	109	BL
CS2200 CL	CANTERRA SEEDS	95	96	3.0	119	93	102	1.9	130	97	118	2.8	107	BL
PV 200 CL	Proven Seed / CPS	103	97	3.4	113	96	101	2.5	128	90	116	3.0	106	BL
LSD (%) ²		13				12				10				
Liberty Link														
5440	Bayer CropScience	100	95	1.9	117	100	100	1.1	131	100	117	2.8	103	BL
L130	Bayer CropScience	95	95	2.4	111	98	99	1.3	128	94	114	2.3	102	BL
L252	Bayer CropScience	104	96	2.9	117	108	99	1.8	124	103	118	2.5	102	BL
LSD (%) ²		14				17				14				
Roundup Ready														
6074 RR	Brett Young	100	94	2.3	119	99	102	1.8	127	110	116	2.5	100	BL/S
6080 RR	Brett Young	97	93	2.5	114	100	100	1.7	123	97	118	1.3	100	BL
6076 CR	Brett Young	101	96	2.6	122	95	101	2.0	131	99	117	2.3	107	BL/CR/S
6086 CR	Brett Young	107	94	2.3	119	99	102	2.1	130	98	119	2.5	104	BL/CR
CS2000	CANTERRA SEEDS	96	97	3.9	117	99	100	2.4	128	103	118	3.5	107	BL/CR
V12-1 ³	Cargill - VICTORY	100	93	2.5	115	96	100	2.1	123	98	115	2.3	102	BL
SY 4187	Syngenta	106	97	1.8	124	102	101	1.7	134	96	116	2.3	105	BL/CR
PV 533 G	Proven Seed / CPS	99	91	2.7	116	101	98	1.6	122	99	115	2.5	101	BL
VR 9562GC	Proven Seed / CPS	104	93	2.7	123	106	99	1.8	130	94	117	2.3	105	BL/CR
74-44 BL	Dekalb	97	92	3.2	109	100	98	2.0	117	99	115	2.5	97	BL
74-54 RR	Dekalb	97	96	3.5	120	96	98	2.5	119	97	118	3.5	95	BL/CR
73-75 RR	Dekalb	94	95	3.8	113	100	99	2.4	116	94	118	2.8	96	BL
45H33	Canola Growers	101	93	2.5	120	101	99	2.0	128	97	115	3.0	109	BL/CR
CS2100	CANTERRA SEEDS	105	93	3.3	113	---	---	---	---	---	---	---	---	BL
LSD (%) ²		12				11				12				

¹ Indicates genetic disease resistance with an "R" or resistant rating to BL=Blackleg, CR=Clubroot and improved tolerance to sclerotinia "S", as based on variety descriptions submitted to CFIA.

² LSD = least significant difference (5% level) within herbicide system.

³ Indicates varieties with Specialty oil profiles and premiums associated with pricing. Visit www.canolaperformancetrials.ca for more details.

CANOLA ADDITIONAL INFORMATION

***Brassica napus* (Argentine Canola)**

Argentine varieties mature two weeks later than Polish varieties and are therefore better suited to the mid- and long-season growing areas of Saskatchewan. Blackleg disease, which is now widespread in Saskatchewan, can cause severe yield losses in varieties that are susceptible. Argentine varieties are susceptible to seed shattering when left standing at full maturity. Later maturing varieties tend to produce higher levels of green seed under wet and cool conditions at harvest, which can cause substantial grade reductions. The control of herbicide-tolerant canola volunteers requires good agronomic practices, such as proper crop and herbicide rotations.

***Brassica rapa* (Polish Canola)**

Polish varieties mature approximately two weeks earlier than Argentine varieties and are less likely to produce green seed. Polish varieties are more heat and drought tolerant than the Argentine type. They are also more shatter resistant than Argentine varieties and are therefore well suited to straight combining. All current Polish varieties have poor resistance to blackleg, but blackleg is less of a threat in Polish canola because of its early maturity, which tends to reduce the impact of the disease on seed yields. Three synthetic Polish varieties are **Early One**, **ACS-C29** and **Synergy**. All three varieties yield significantly more than their open-pollinated counterparts like **AC Sunbeam**. **Early One** and **ACS-C29** are available through Mastin Seeds, while **Synergy** and **AC Sunbeam** are available through SeCan. (Source: AAFC, Saskatoon)

***Brassica juncea* Canola**

Canola quality *Brassica juncea* is a class of canola that is especially well adapted to areas where hot, dry conditions are common. It has very good resistance to blackleg and exhibits better heat and drought tolerance than other *Brassica napus* canola. All production is contracted.

XCEED Canola, available from Proven Seed, Crop Production Services in 2017, is suited to the Brown and Dark Brown growing season zones. It is compatible with the Clearfield Production System (Source: CPS).

Least Significant Difference

When comparing average zone yields for varieties in the small plot data, the least significant difference (LSD) is about 10 to 17 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		7	100	110	18.5
Honeycomb NS		3	111	106	13.3
AC Sierra		7	68	105	16.1
Oilseed (Full Season)					
Cobalt II	Clearfield®	3	76	115	30.4
Talon	ExpressSun®	2	92	113	30.1
8N 270	Clearfield®	7	92	115	23.6

ADDITIONAL INFORMATION

Sunflower requires 105-125 days to mature, depending on the cultivar and the growing season. Oilseed sunflower has been grown in the Dark Brown and Black soil zones in southeastern Saskatchewan. Harvest moisture is a good indication of how quickly these hybrids will be ready to combine in the field. The EM varieties

are adapted to production in most areas of Saskatchewan. **AC Sierra** is open pollinated and not a hybrid.

The Saskatchewan Sunflower Committee has been conducting trials in Saskatchewan for the purpose of registration and demonstration since 1983. Sunflowers no

longer require three years of yield testing to be sold in Saskatchewan. Saskatchewan Sunflower Committee will publish results from each year. For the complete data set, please email or call Sherri Roberts with Saskatchewan Agriculture at sherri.roberts@gov.sk.ca or 306-848-2856.

Breeding Institutions and Seed Distributors of Varieties Listed in this Publication

Crop Kind, Class & Variety	Breeding Institution	Distributor
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WHEAT

Canada Western Red Spring

AAC Bailey ☺	AAFC (Swift Current)	CANTERRA SEEDS
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
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
Harvest ☺	AAFC (Winnipeg)	FP Genetics
CDC Hughes VB	U of S - CDC	Proven Seed/CPS Canada
Infinity ☺	AAFC (Swift Current)	CANTERRA SEEDS
AC Intrepid ☺	AAFC (Swift Current)	CANTERRA SEEDS
AAC Jatharia VB ☼	AAFC (Brandon)	SeCan Members
CDC Kernen ☺	U of S - CDC	CANTERRA SEEDS
CDC Landmark VB	U of S - CDC	FP Genetics
Lillian ☺	AAFC (Swift Current)	SeCan Members
CDC VR Morris ☺	U of S - CDC	Proven Seed/CPS Canada
Muchmore ☺	AAFC (Swift Current)	FP Genetics
CDC Plentiful ☺	U of S - CDC	FP Genetics
AAC Prevail VB ☼	AAFC (Winnipeg)	Alliance Seed
AAC Redberry ☼	AAFC (Swift Current)	Alliance Seed
AAC Redwater ☺	AAFC (Winnipeg)	SeCan Members
Shaw VB ☺	AAFC (Winnipeg)	SeCan Members
SY Slate ☼	Syngenta Seeds Canada Inc.	Syngenta Canada
CDC Stanley ☺	U of S - CDC	Proven Seed/CPS Canada
Stettler ☺	AAFC (Swift Current)	SeCan Members
CDC Thrive ☺	U of S - CDC	Proven Seed/CPS Canada
Thorsby ☼	U of Alberta	CANTERRA SEEDS
CDC Titanium VB ☺	U of S - CDC	Proven Seed/CPS Canada
Unity VB ☺	AAFC (Winnipeg)	SeCan Members
CDC Utmost VB ☺	U of S - CDC	FP Genetics
Vesper VB ☺	AAFC (Winnipeg)	SeCan Members
AAC Viewfield ☼	AAFC (Swift Current)	FP Genetics
AAC W1876 ☺	AAFC (Swift Current)	Warburtons / CANTERRA
Waskada ☺	AAFC (Winnipeg)	SeCan Members
WR859CL ☺	Syngenta Seeds Canada Inc.	Richardson Intl
SY433 ☺	Syngenta Seeds Canada Inc.	Syngenta Canada
SY479 VB ☺	Syngenta Seeds Canada Inc.	Alliance Seed
SY637 ☺	Syngenta Seeds Canada Inc.	Syngenta Canada
5604HR CL ☺	Syngenta Seeds Canada Inc.	Proven Seed/CPS Canada
5605HR CL ☺	Syngenta Seeds Canada Inc.	Proven Seed/CPS Canada

Canada Prairie Spring Red

Conquer VB ☺	AAFC (Winnipeg)	CANTERRA SEEDS
AAC Crossfield ☼	AAFC (Winnipeg)	CANTERRA SEEDS
AAC Crusader ☺	AAFC (Winnipeg)	CANTERRA SEEDS
AC Crystal ☺	AAFC (Swift Current)	SeCan Members
Enchant VB ☺	AAFC (Winnipeg)	FP Genetics
AAC Entice ☼	AAFC (Winnipeg)	Proven Seed/CPS Canada
AAC Foray VB ☼	AAFC (Winnipeg)	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
SY995 ☺	Syngenta Seeds Canada Inc.	---
5700PR ☺	Syngenta Seeds Canada Inc.	Proven Seed/CPS Canada

Canada Northern Hard Red

AAC Concord ☼	AAFC (Swift Current)	CANTERRA SEEDS
Elgin ND ☺	NDSU	FP Genetics
Faller	NDSU	Seed Depot
Prosper ☺	NDSU	Seed Depot

Canada Western Hard White Spring

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 ☺	AAFC (Lethbridge)	SeedNet Inc.
AAC Indus ☼	AAFC (Lethbridge)	SeCan Members
AAC Paramount ☼	AAFC (Lethbridge)	SeCan Members
Sadash ☺	AAFC (Lethbridge)	SeCan Members

Crop Kind, Class & Variety	Breeding Institution	Distributor
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Canada Western Special Purpose

AAC Awesome ☼	AAFC (Lethbridge)	SeCan Members
Charing ☼	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
NRG010 ☺	AAFC (Swift Current)	CANTERRA SEEDS
AAC NRG097 ☺	AAFC (Swift Current)	CANTERRA SEEDS
Pasteur	Wiersum Plant Breeding	SeCan Members
AAC Proclaim ☺	AAFC (Lethbridge)	FP Genetics
Sparrow VB	KWS-UK	SeCan Members
CDC Throttle	U of S - CDC	Public Release U of S - CDC
WFT603	Western Feed Grains Co-op	Western Feed Grains Co-op
SY087 ☺	Syngenta Seeds Canada Inc.	---

Varieties that have been registered with class to be determined by the Canadian Grain Commission

AAC Tradition	AAFC (Winnipeg)	SeCan Members
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Canada Western Amber Durum

CDC Alloy ☼	U of S - CDC	FP Genetics
Brigade ☺	AAFC (Swift Current)	Proven Seed/CPS Canada
AAC Cabri ☺	AAFC (Swift Current)	SeCan Members
CDC Caribee VB ☼	U of S - CDC	Proven Seed/CPS Canada
AAC Congress ☼	AAFC (Swift Current)	CANTERRA SEEDS
CDC Credence ☼	U of S - CDC	CANTERRA SEEDS
AAC Current ☺	AAFC (Swift Current)	Alliance Seed
CDC Desire ☺	U of S - CDC	Syngenta Canada
AAC Durafield ☺	AAFC (Swift Current)	SeCan Members
CDC Dynamic ☼	U of S - CDC	Proven Seed/CPS Canada
Enterprise ☺	AAFC (Swift Current)	CANTERRA SEEDS
Eurostar ☺	AAFC (Swift Current)	SeCan Members
CDC Fortitude ☺	U of S - CDC	Proven Seed/CPS Canada
AAC Marchwell VB ☺	AAFC (Swift Current)	SeCan Members
AC Navigator ☺	AAFC (Swift Current)	Proven Seed/CPS Canada
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
Transcend ☺	AAFC (Swift Current)	FP Genetics
CDC Verona ☺	U of S - CDC	Alliance Seed
CDC Vivid ☼	U of S - CDC	Proven Seed/CPS Canada

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 Special Purpose

Accipiter ☺	U of S - CDC	SeCan Members
Broadview ☺	AAFC (Lethbridge)	CANTERRA SEEDS
CDC Falcon	U of S - CDC	SeCan Members
AAC Icefield ☼	AAFC (Lethbridge)	FP Genetics
Peregrine ☺	U of S - CDC	SeCan Members
Pintail ☺	FCDC (Lacombe)	Mastin Seeds
CDC Ptarmigan	U of S - CDC	Western Ag
Sunrise	U of S - CDC	Western Ag
Swainson	U of S - CDC	Public Release, U of S - CDC

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
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BARLEY

Malting Two-Row

Bentley	FCDC (Lacombe)	CANTERRA SEEDS
CDC Bow	U of S - CDC	SeCan Members
Cerveza	AAFC (Brandon)	Mastin Seeds
CDC Copeland	U of S - CDC	SeCan Members
CDC Fraser	U of S - CDC	SeCan Members
Harrington	U of S - CDC	SeCan Members
CDC Kindersley	U of S - CDC	SeCan Members
CDC Landis	U of S - CDC	Fedoruk Seeds Ltd.
Major	AAFC (Brandon)	Alliance Seed
CDC Meredith	U of S - CDC	SeCan Members
Merit 57	Busch Ag Res. Inc.	CANTERRA SEEDS
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
AAC Synergy	AAFC (Brandon)	Syngenta Canada

Malting Six-Row

CDC Anderson	U of S - CDC	SeCan Members
CDC Battleford	U of S - CDC	SeCan Members
Celebration	Busch Ag Res. Inc.	CANTERRA SEEDS
Lacey	U of Minnesota	Alliance Seed
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/CPS Canada
CDC Austenson	U of S - CDC	SeCan Members
Brahma	Westbred, LLC.	Proven Seed/CPS Canada
Canmore	FCDC (Lacombe)	CANTERRA SEEDS
Champion	Westbred, LLC.	Proven Seed/CPS Canada
Claymore	Westbred, LLC.	Proven Seed/CPS Canada
CDC Coalition	U of S - CDC	CANTERRA SEEDS
CDC Cowboy	U of S - CDC	SeCan Members
CDC Dolly	U of S - CDC	SeCan Members
Gadsby	FCDC (Lacombe)	SeCan Members
CDC Helgason	U of S - CDC	SeCan Members
CDC Maverick	U of S - CDC	SeCan Members
McLeod	Westbred, LLC.	Proven Seed/CPS Canada
Oreana	Highland Specialty Grains	Proven Seed/CPS Canada
CDC Trey	U of S - CDC	FP Genetics

Hulled Feed Six-Row

Amisk	FCDC (Lacombe)	SeCan Members
Chigwell	FCDC (Lacombe)	SeCan Members
Muskwa	FCDC (Lacombe)	SeedNet Inc.
AC Rosser	AAFC (Brandon)	SeCan Members
Sundre	FCDC (Lacombe)	Mastin Seeds

Hullless - 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	---
CDC Hilose	U of S - CDC	---
CDC McGwire	U of S - CDC	SeCan Members
CDC Rattan	U of S - CDC	---
Roseland	AAFC (Brandon)	Wayfinder Farms
Taylor	AAFC (Brandon)	Alliance Seed

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
Keet	U of Minnesota; U of S - CDC	Public release U of S - CDC
CDC Togo	U of S - CDC	CANTERRA SEEDS

RYE

Bono	KWS Lochow GMBH	FP Genetics
Brasetto	KWS Lochow GMBH	FP Genetics
Guttino	KWS Lochow GMBH	SeedNet Inc.
Hazlet	AAFC (Swift Current)	SeCan Members
Prima	AAFC (Swift Current)	SeCan Members

Crop Kind, Class & Variety	Breeding Institution	Distributor
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OAT

Hulled

Akina	Lantmännen SW Seed	La Coop Fédérée
SW Betania	Lantmännen SW Seed	Proven Seed/CPS Canada
CDC Big Brown	U of S - CDC	SeCan Members
CDC Boyer	U of S - CDC	SeCan Members
Bradley	AAFC - ECORC	SeCan Members
CS Camden	Lantmännen SW Seed	CANTERRA SEEDS
CDC Dancer	U of S - CDC	FP Genetics/Cargill
Derby	U of S - CDC	Proven Seed/Mastin Seeds
AAFC Justice	AAFC (Winnipeg)	FP Genetics
Kara	Lantmännen SW Seed	La Coop Fédérée
Leggett	AAFC (Winnipeg)	FP Genetics
Lu	AAFC (Lacombe)	SeCan Members
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
Ronald	AAFC (Winnipeg)	SeCan Members
CDC Ruffian	U of S - CDC	FP Genetics
CDC Seabiscuit	U of S - CDC	CANTERRA SEEDS
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	Lantmännen SW Seed	CANTERRA SEEDS

Hullless

Bullion	Lantmännen SW Seed	Proven Seed/CPS Canada
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

LENTIL

CDC Asterix	U of S - CDC	Sask. Pulse Growers
CDC Cherie	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 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 Invincible	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 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 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 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 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

SAFFLOWER

Saffire	AAFC (Lethbridge)	Jerry Kubic (AB)
AC Sunset	AAFC (Lethbridge)	Proven Seed/CPS Canada

Crop Kind, Class & Variety	Breeding Institution	Distributor
FLAX		
CDC Bethune ☺	U of S - CDC	SeCan Members
AAC Bravo ☺	AAFC (Morden)	FP Genetics
CDC Glas ☺	U of S - CDC	SeCan Members
Hanley ☺	AAFC (Morden)	SeCan Members
Lightning ☺	AAFC (Morden)	CANTERRA SEEDS
CDC Neela ☺	U of S - CDC	CANTERRA SEEDS
NuLin VT50	CPS Canada Inc.	Proven Seed/CPS Canada
CDC Plava ☼	U of S - CDC	---
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
Taurus ☺	Limagrain Nederland	FP Genetics
Vimy	U of S - CDC	SeCan Members
Westlin 60	CPS Canada Inc.	Proven Seed/CPS Canada
Westlin 70	CPS Canada Inc.	Proven Seed/CPS Canada
Westlin 71 ☺	CPS Canada Inc.	Proven Seed/CPS Canada
Westlin 72	CPS Canada Inc.	Proven Seed/CPS Canada

MUSTARD		
Brown		
Amigo	AAFC (Saskatoon)	Canadian Mustard Assoc.
AAC Brown 100	AAFC (Saskatoon)	Mustard 21 Canada Inc.
Centennial Brown	AAFC (Saskatoon)	Canadian Mustard Assoc.
Duchess	Colman's of Norwich	Proven Seed/CPS Canada
Oriental		
Cutlass	AAFC (Saskatoon)	Canadian Mustard Assoc.
Forge	Colman's of Norwich	Proven Seed/CPS Canada
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.

SUNFLOWER		
Cobalt II	Nuseed Americas	Nuseed Americas
Honeycomb NS	USDA	Quarry Seed
AC Sierra	AAFC (Saskatoon)	AAFC (Indian Head)
Talon	Nuseed Americas	Nuseed Americas
63A21	Pioneer Hi-Bred	Pioneer Hi-Bred
8N 270CL DM	Mycogen Seeds	Hyland Seeds

DRY BEAN		
AC Black Diamond	AAFC (Lethbridge)	Viterra Inc.
CDC Blackcomb	U of S - CDC	Scoular
CDC Blackstrap ☼	U of S - CDC	Scoular
Bolt	U of Guelph	---
Carman Black	AAFC (Morden)	---
Envoy	GenTec Seeds	Hensell District Co-op
Island	AAFC (Lethbridge)	Viterra Inc.
CDC Jet	U of S - CDC	B&J Martens Seeds
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
AC Polaris	AAFC (Lethbridge)	Viterra Inc.
Portage	AAFC (Morden)	CANTERRA SEEDS
AC Redbond	AAFC (Lethbridge)	Viterra Inc.
Skyline	Globe Seeds - Netherland	Terramax
CDC Sol ☺	U of S - CDC	Scoular
OAC Spark	U of Guelph	U of Guelph
CDC Superjet	U of S - CDC	B&J Martens Seeds
Winchester	Rogers Brothers	ADM Edible Bean Specialities
CDC WM - 2 ☺	U of S - CDC	Scoular

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

Crop Kind, Class & Variety	Breeding Institution	Distributor
FIELD PEA		
Abarth ☺	Limagrain, Netherlands	FP Genetics
CDC Acer	U of S - CDC	Sask. Pulse Growers
DS Admiral ☺	DL Seeds Inc.	FP Genetics
Agassiz ☺	AAFC (Lacombe)	CANTERRA SEEDS
CDC Amarillo	U of S - CDC	Sask. Pulse Growers
AAC Ardill	AAFC	Wagon Wheel Seed Corp.
CDC Athabasca ☼	U of S - CDC	Sask. Pulse Growers
CDC Blazer ☼	U of S - CDC	Sask. Pulse Growers
CDC Bronco	U of S - CDC	Sask. Pulse Growers
AAC Carver ☼	AAFC	CANTERRA SEEDS
CDC Centennial	U of S - CDC	Sask. Pulse Growers
Cooper ☺	Limagrain Nederland	CANTERRA SEEDS
CDC Dakota	U of S - CDC	Sask. Pulse Growers
Delta	Limagrain Nederland	FP Genetics
Earlystar ☺	AAFC (Lacombe)	CANTERRA SEEDS
Eclipse ☺	Limagrain Nederland	FP Genetics
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
CDC Inca ☼	U of S - CDC	Sask. Pulse Growers
AAC Lacombe	AAFC	SeedNet Inc.
CDC Leroy	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 Mozart	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
CDC Prosper	U of S - CDC	Sask. Pulse Growers
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
CDC Tucker	U of S - CDC	Sask. Pulse Growers
40-10	DL Seeds Inc.	FP Genetics
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 Corinne	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
CDC Vanguard	U of S - CDC	Sask. Pulse Growers
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
Florent	NPZ	DL Seeds
Imposa ☺	Limagrain Nederland	Cyre Seed Farms
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.	Ridell Seed Co.
Taboar ☺	Globe Seeds - Netherland	Terramax
Vertigo	DL Seeds Inc.	---
186S-11 ☼	U of S - CDC	AGT Foods Canada
247-13 ☼	U of S - CDC	AGT Foods Canada
CAMELINA		
Midas ☼	AAFC (Saskatoon)	Smart Earth Seeds
CANOLA		
see table on page VR28		
SOYBEAN		
see table on page VR23		