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Irrigation Crop Diversification Corporation

Crop Varieties for Irrigation





Canada-Saskatchewan Irrigation Diversification Centre

The Canada-Saskatchewan Irrigation Diversification Centre (CSIDC), Outlook, Saskatchewan, is managed and funded by the federal and provincial governments, by industry and by academia. The federal contribution is provided by Agriculture and Agri-Food Canada. The provincial partner is Saskatchewan Ministry of Agriculture. Industry is represented by Irrigation Crop Diversification Corporation (ICDC) and Saskatchewan Irrigation Projects Association (SIPA). Academia is represented by University of Saskatchewan.

The goal of CSIDC is to promote economic security and sustainable rural development, primarily through diversified cropping and intensive management of irrigated cropland.

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Using the Variety Guide

Introduction The yield comparison tables are compiled from irrigated yield tests conducted by the Irrigation Crop Diversification Corp (ICDC) and the Canada-Saskatchewan Irrigation Diversification Centre (CSIDC). The data is collected from irrigated co-operative (pre-registration) trials, regional yield trials, agronomic and observational trials, and producer-funded yield trials.

The trials are conducted on small replicated plots using specialized plot equipment. A high level of management is applied to eliminate differences caused by soil variability, weed pressure, and disease. The aim is to make conditions as uniform as possible so that yield differences are due to the varieties themselves, and not some other factor. The yield of small, uniform plots is generally greater than field yields; however, the relative ranking of varieties will be the same. Emphasis is placed on testing varieties with good lodging tolerance, suitable disease resistance, and ease of harvest under irrigated production.

Crop varieties respond differently from year to year. The highest yielding variety one year may be one of the lowest yielding in another year (for example, it may mature late and be at risk of frost). Choosing the highest yielding variety is no guarantee that it will give the highest during the season or on your farm. Selecting a lower ranked variety may be suitable, especially if some other characteristic, such as disease resistance or early maturity, is desired.

Interpreting the Tables

Site years

One site year is a test performed for one year at one site. A test conducted over 10 years at one site, or one year at 10 sites is equal to 10 site years in both cases. Results from less than six site years are reported only when data is limited.

Relative yield of varieties

All varieties are compared as a percent of a standard **check** variety. The check variety is included in all tests. All other varieties are compared to it. This allows comparisons from year to year, from site to site, and from test to test.

A well-run test performed over a large number of site years can detect yield differences of 2 or 3 percent. Consider four varieties that yield 108, 107, 106, and 102 percent of the check: the top three have produced comparable yields, and are higher yielding than the fourth. However, where site years are limited, varieties within 6 or 8 percent cannot be said to be different based on the available data. Further testing is needed to rank the varieties more precisely.

Lodging ratings

Lodging ratings are reported on a four-point subjective scale. The ratings are based on both numerical ratings and on general field observations throughout the growing season. Lodging varies greatly from year to year and from site to site.

Lodging ratings are subjective, based on the judgement of the researcher. The rankings by ICDC have been performed using a consistent method wherever possible. This improves the accuracy of the ranking of the varieties, but does not predict results for any given year, field, or level of management.

**Interpreting
the Tables
(continued)**

Agronomic information

Agronomic information includes plant height, days to flowering or maturity, seed size, and quality measurements. Crop height, for example, varies from year to year. Therefore, the agronomic information is useful only as a comparison between varieties. Find a variety you are familiar with and compare others to it to determine whether it is likely to be different.

Disease ratings

ICDC does not routinely collect disease ratings for each variety. **Please consult *Varieties of Grain Crops 2019***, a Saskatchewan Ministry of Agriculture annual publication, for disease ratings of specific varieties.

**A Word of
Caution**

Occasionally comparison with the check variety can be misleading. In some years, the check may have an exceptionally low or high yield, skewing the rankings. For example, a new variety with limited site years of data (compared to the long-term check) may rank unusually high if the check performed much worse in a specific year compared to its overall average performance over time. Further testing will even out the variability, and the ranking of the varieties will more closely reflect performance in the field.


Management practices may have a greater impact on yield than choice of variety. For example, seeding date experiments at CSIDC for irrigated flax have shown up to 20 percent yield reduction for late May seeding compared to an early May seeding date. This 20 percent spread is greater than the yield difference between flax varieties.

**Plant
Breeders'
Rights**



Plant Breeders' Rights (PBR) ensure that the private sector and institutional crop breeders are afforded reasonable control of their varieties and fair compensation for their efforts. Plant breeders may apply under the Plant Breeders' Rights Act to obtain certain controls over seed increase and seed sales of their varieties.

Sale or any other transfer of ownership of seed protected under the act is prohibited without the written permission of the breeder or the breeder's agent, and without payment of a royalty to the breeder or agent. Under PBR, bona fide farmers are allowed to keep seed of the variety for use on their own farms.

Varieties for which plant breeders' rights are in effect or have been applied for at the time of printing are identified by the symbol .

For more detailed information on specific varieties, refer to the annual Saskatchewan Ministry of Agriculture publication, *Varieties of Grain Crops, 2019*. You can find it at the following link:

<http://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/crop-guides-and-publications/varieties-of-grain-crops>

Canola (B. napus)

Producers should note the change in the **check** variety from 5440 to L252. Consequently, the number of site years and varieties listed has declined. For varieties listed with only 4 site years producer caution should be used and other information sources sought. For queries on variety comparisons of older (not listed) varieties, contact Garry Hnatowich (see page 1).

Clubroot is a serious soil-borne disease of canola. In 2018 Clubroot was found in crop district 6B, in which the South Saskatchewan River Irrigation District is located. Currently, there are no economical control measures that can remove the disease from infected canola fields. Sanitation and crop rotation are the most effective methods of prevention. Information about clubroot is available at the following website: www.clubroot.ca.

Variety	Type	Site Years	Yield as % of L252	Lodging Rating	Height (cm)	Days to Maturity
Clearfield						
PV 200 CL	HYB	6	95	VG	133	97
VR 9560 CL	HYB	5	91	G	131	98
CS 2200 CL	HYB	6	91	VG	132	98
5525 CL	HYB	5	86	G	128	97
5545 CL	HYB	4	86	VG	131	97
Liberty Link						
L252	HYB	10	100	G	126	97
SY4135	HYB	4	99	F	122	97
L140P	HYB	4	98	G	132	97
L261	HYB	7	97	VG	142	98
L130	HYB	6	95	VG	128	97
Roundup Ready						
6074RR	HYB	7	98	VG	130	98
Canterra 1990	HYB	7	96	G	127	97
VR 9562 GC	HYB	6	96	VG	132	96
45H31	HYB	4	95	VG	130	97
6060 RR	HYB	5	93	VG	137	98
CS 2000	HYB	10	92	VG	136	97
PT 540 G	HYB	5	92	VG	128	97
CS 2100	HYB	8	90	VG	127	97
74-44 BL	HYB	4	90	G	120	95
45H33	HYB	5	89	VG	133	96
Canterra 1970	HYB	4	89	VG	129	98
V12-1*	HYB	7	88	G	130	98
SY4114	HYB	4	86	F	119	96
V12-2*	HYB	4	86	VG	124	99
6076 CR	HYB	4	85	VG	136	98
45S52	HYB	4	84	F	127	96
45H21	HYB	6	83	F	120	96

Average plot yield of L252 (check): 5,195 kg/ha (92.7 bu/ac) Lodging: F = fair; G = good; VG = very good

















HYB = Hybrid; COM = Composite Hybrid; OP = Open Pollinated

* Specialty oil profile

Flax

All flax varieties are immune to rust.

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

Variety	Site Years	Yield as % of CDC Bethune	Lodging Rating	Days to Maturity	Height (cm)
Topaz 	5	104	G	113	66
WestLin 71 	9	103	G	116	61
WestLin 72 	9	102	G	117	63
CDC Neela 	8	102	G	114	66
Prairie Sapphire 	13	101	G	113	66
NuLin VT50 	9	100	G	118	59
CDC Bethune 	30	100	G	113	66
Prairie Thunder 	22	100	G	112	63
CDC Glas 	11	100	G	114	67
AAC Bravo 	7	96	G	115	64
Prairie Grande 	19	94	G	111	60
CDC Sorrel 	24	93	F	113	71
WestLin 60 	9	92	G	114	59
CDC Plava 	9	91	G	113	58
CDC Sanctuary 	13	88	F	113	70
CDC Buryu 	7	83	G	115	66

Average plot yield of CDC Bethune (check): 3,104 kg/ha (49.4 bu/ac)

 PBR in effect

Lodging: P = poor; F = fair; G = good; VG = very good

Spring Wheat

Producers are strongly encouraged to use a combination of the Canadian Food Inspection Agency's List of Registered Varieties at:

<http://www.inspection.gc.ca>

and the Canadian Grains Commission's Variety Designation Lists at:

<http://www.grainscanada.gc.ca>

to determine the registration and grade eligibility status of varieties.

Canada Western Red Spring

AAC Cameron VB, Goodeve VB, AAC Prevail VB, Shaw VB, Unity VB, CDC Utmost VB and Vesper VB are CWRS wheat midge tolerant varieties. They contain the **SM1** tolerant gene. To manage against the build-up of midge resistance to the gene, an **interspersed refuge** is used commercially. These varieties are not immune to wheat midge and can suffer midge damage when high midge infestation levels occur. More information on midge tolerant wheat cultivars and interspersed refuge can be found at <http://www.midgetolerantwheat.ca>.

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

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

Canada Western Amber Durum

CDC Carbide VB and CDC Marchwell VB are wheat midge tolerant. **AAC Cabri**, and **CDC Fortitude** have a solid stem and are resistant to the wheat stem sawfly.

Durum wheat varieties are generally more susceptible than CWRS varieties to Fusarium Head Blight (FHB). Although no varieties are resistant, **Brigade, Transcend** and **CDC Credence** generally express lower FHB symptoms compared to other durum varieties. Mycotoxin (DON) production by FHB fungi is generally lower for **Transcend**. All durum varieties are susceptible to two new races of loose smut.

Canada Prairie Spring Red

AAC Foray VB is a CPS-red midge tolerant variety using the same **SM1** gene as in the CWRS varieties and will be marketed with an interspersed refuge.

Canada Western Special Purpose

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













































Canada Western Soft White Spring

AAC Chiffon VB and AAC Indus VB are CWSWS midge tolerant varieties using the same **SM1** gene as in the CWRS varieties and will be marketed with an interspersed refuge.

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.


















Irrigated areas in Saskatchewan are susceptible to fusarium infestations. Sow less susceptible cereal types and varieties on irrigated fields with a history of fusarium head blight. Use fusarium tested seed to prevent new infestations of irrigated land. Durum are the most susceptible wheat types followed by CWSWS, CPSR, and CWRS. Information on tolerance levels in wheat varieties is available in the Saskatchewan Ministry of Agriculture annual publication: ***Varieties of Grain Crops, 2019***.

Spring Wheat & Durum


Variety	Site Years	Yield as % of Carberry	Lodging Rating	Height (cm)	Days to & Maturity	% Protein +/- Carberry	Head Awns Present
Canada Western Red Spring (CWRS)							
Goodeve VB 	11	113	VG	94	94	+0.2	N
5605HR CL 	6	112	G	99	99	+0.4	Y
CDC Utmost VB 	17	107	G	93	96	+0.2	N
Vesper VB 	9	107	F	91	96	+0.3	Y
AAC Brandon 	9	107	VG	82	98	-0.2	Y
WR859CL 	15	106	G	87	95	+0.4	Y
CDC Stanley 	12	106	VG	93	97	+0.4	N
Glenn 	17	105	VG	91	99	+0.1	Y
Stettler 	15	105	G	91	96	+1.2	Y
CDC VR Morris 	6	105	F	94	97	+0.6	N
Muchmore 	16	103	VG	80	97	-0.3	Y
AAC Cameron VB 	8	103	G	99	97	-0.4	Y
Cardale 	8	103	G	87	95	+0.2	Y
Shaw VB 	16	102	G	99	95	+0.3	N
AAC W1876 	7	102	VG	85	99	+0.6	Y
CDC Bradwell 	7	102	VG	91	100	+0.1	Y
CDC Titanium VB 	6	102	F	93	96	+1.1	Y
AAC Redberry 	7	101	VG	88	95	0.0	Y
Carberry 	19	100	VG	83	97	14.7%	Y
AAC Jatharia VB 	7	100	VG	96	100	+0.3	Y
AAC Redwater 	7	99	VG	86	93	+0.6	Y
AAC Prevail VB 	6	99	F	101	99	+0.4	N
Thorsby 	8	97	VG	97	97	-0.2	N
AAC Elie 	7	97	VG	81	98	0.0	Y
AC Barrie 	19	96	G	95	96	+0.8	N
SY479 VB 	5	95	VG	97	99	+0.8	Y
Waskada 	6	93	F	98	94	+1.1	Y
AAC Connery 	8	93	VG	85	97	+0.4	N
CDC Plentiful 	6	92	F	92	95	+0.1	N
Canada Western Amber Durum (CWAD)							
AAC Stronghold 	6	134	VG	93	102	-0.7	Y
AAC Congress 	10	128	G	94	102	-1.2	Y
CDC Dynamic 	8	127	G	96	100	-0.3	Y
CDC Precision 	13	120	G	94	102	-0.7	Y
CDC Alloy 	8	122	F	93	100	-0.2	Y
AAC Spitfire 	13	121	G	91	99	+0.2	Y
AAC Cabri 	8	117	F	97	102	-0.2	Y
CDC Carbide VB 	9	117	F	96	99	-0.2	Y
CDC Credence 	8	115	G	99	104	-1.4	Y
Enterprise 	10	114	P	94	102	+0.6	Y
Transcend 	6	112	G	100	101	+0.6	Y
CDC Fortitude 	7	111	F	90	100	0.0	Y
Brigade 	8	110	G	98	102	+0.2	Y
Strongfield 	16	108	F	92	100	+0.3	Y
CDC Verona 	8	106	VG	92	101	+0.5	Y

The spring wheat table continues on the following page.

Spring Wheat & Durum

Variety	Site Years	Yield as % of Carberry	Lodging Rating	Height (cm)	Days to Maturity	% Protein +/- AC Barrie	Head Awns Present
Canada Northern Hard Red (CNHR)							
Prosper 	9	127	VG	87	99	-1.2	Y
Faller	9	125	G	87	98	-1.3	Y
Unity VB 	11	113	F	95	94	+0.2	Y
Elgin ND 	7	108	VG	89	98	-0.2	Y
Canada Western Special Purpose (CWSP)							
CDC NRG003 	6	133	G	88	98	-1.6	Y
AAC Innova 	8	125	G	91	101	-2.8	Y
Pasteur 	8	120	VG	87	102	-1.6	N
Minnedosa 	10	119	G	89	95	-1.6	Y
Canada Western Hard White Spring (CWHWS)							
AAC Whitefox 	6	105	VG	98	95	-0.5	N
Whitehawk 	5	96	VG	97	95	-0.4	N
CDC Whitewood 	5	94	VG	88	96	-0.3	Y
Canada Prairie Spring Red (CPSR)							
AAC Foray VB 	9	118	G	91	98	-1.4	Y
AAC Penhold 	9	112	VG	78	97	-0.7	Y
AAC Ryley 	8	111	VG	87	96	-1.1	Y
AAC Crossfield 	5	104	VG	85	98	-1.6	Y
Canada Western Soft White Spring							
AAC Chiffon VB 	9	144	VG	99	100	-3.2	Y
AAC Indus VB 	10	143	VG	94	105	-3.4	Y
AAC Paramount VB	5	136	VG	91	101	-3.3	Y
AC Andrew	12	133	VG	87	100	-3.0	Y
Sadash 	12	126	VG	89	99	-2.5	Y

Average plot yield of Carberry (check): 5,338 kg/ha (79.3 bu/ac)

 PBR in effect or filed

Lodging: P = poor; F = fair; G = good; VG = very good

A number of newer registered varieties are not yet included in the spring wheat table due to insufficient site years of testing. However, these varieties may have been evaluated; for inquiries about those varieties that have not been listed above, please contact Garry Hnatowich (see page 1).

Malt Barley

Growers are reminded that the malting industry is cautious about using new varieties.













Information on recommended malting barley varieties for 2019-2020 can be found on the Canadian Malting Barley Technical Centre (CMBTC) website at www.cmbtc.com or call (204) 984-4399.

Lines under Test

Commercial acceptability of malting varieties is given only after two years of successful plant-scale evaluation. Several carload lots of barley are malted and brewed then subjected to 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.

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

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.

Malting Variety	2- or 6- Row	Site Years	Yield as % of AC Metcalfe	Lodging Rating	Height (cm)	Days to Maturity
Malting Acceptance: Recommended, in Development or Limited Demand						
AAC Synergy 	2	6	119	F	90	94
Newdale 	2	8	116	G	87	94
CDC Fraser 	2	4	115	G	92	96
Legacy 	6	9	114	F	87	96
CDC Copeland 	2	9	113	F	98	95
CDC Bow 	2	5	113	F	91	95
Tradition	6	10	112	G	87	96
Celebration 	6	5	105	G	90	93
CDC PlatinumStar 	2	5	105	F	96	96
Bentley 	2	6	104	F	93	95
AC Metcalfe 	2	11	100	F	90	95
Other: A malting market may exist, review CMBTC recommendation list for updates						
CDC Kindersley 	2	5	104	F	89	92
CDC PolarStar 	2	5	95	P	89	95

Average plot yield of AC Metcalfe (check): 6,492 kg/ha (120.6 bu/ac)

 PBR in effect or filed

* Limited site years, additional site years are required for accuracy

Lodging: P = poor; F = fair; G = good; VG = very good

Maturity: E = early; M = medium; L = late

The barley table is continued on the following page.

Feed & Food Barley

CDC Cowboy and **CDC Maverick** are 2-row forage varieties of barley. **CDC Carter** and **CDC McGwire** are 2-row normal starch hulless barleys suitable for food use.

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
















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

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


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

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

For additional information, refer to the Saskatchewan Ministry of Agriculture annual publication, *Varieties of Grain Crops, 2019*.

Feed and Food Variety	2- or 6- Row	Site Years	Yield as % of AC Metcalfe	Lodging Rating	Height (cm)	Days to Maturity
Hulled						
Claymore 	2	5	122	F	93	96
Champion 	2	7	121	F	85	94
CDC Austenson 	2	6	121	G	89	95
CDC Coalition 	2	6	117	G	86	94
Amisk 	6	5	116	F	91	95
Oreana 	2	5	114	F	80	97
Brahma 	2	5	113	G	89	93
Altorado 	2	4	112	G	87	96
Canmore 	2	5	103	F	91	97
CDC Cowboy 	2	8	102	F	105	99
Muskwa 	6	5	102	F	81	96
AC Metcalfe 	2	11	100	F	90	95
CDC Maverick 	2	5	93	P	105	96
Hulless						
CDC Clear	2	5	100	G	98	97
CDC Carter 	2	5	91	P	89	97
CDC McGwire 	2	7	88	P	91	97

Average plot yield of AC Metcalfe (check): 6,492 kg/ha (120.6 bu/ac)

 PBR in effect or filed

* Limited site years, additional site years are required for accuracy

Lodging: P = poor; F = fair; G = good; VG = very good

Maturity: E = early; M = medium; L = late






Field Pea

Growers should be aware that the check variety was changed from **CDC Golden** to **CDC Amarillo** in 2018, and the number of site years and relative performance of varieties has changed from past publications as a reflection of this.


The following varieties have purple flower colour and pigmented seed coats: **CDC Mosaic** and **CDC Dakota**. **CDC Mosaic** has a maple-patterned seed coat; **CDC Dakota** has a solid dun (tan) coloured seed coat. All other varieties have white flower colour and non-pigmented seed coats.

All pea varieties will lodge under irrigation. Those with better lodging tolerance will stand later into the season. These varieties tend to be less affected by disease, fill more fully, and generally produce a higher yield with superior seed quality.

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




Variety	Site Years	Yield as % of CDC Amarillo	Lodging Rating	Days to Maturity	Vine Length (cm)	Seed Weight (g/1000)
Green						
CDC Patrick	7	97	F	91	88	176
CDC Limerick	7	94	G	93	89	205
CDC Pluto	4	94	F	89	81	158
CDC Greenwater	5	92	G	93	96	233
CDC Raezer	7	90	G	91	92	230
CDC Tetris	7	86	G	95	92	217
CDC Striker	7	82	G	90	80	246
Cooper 	4	70	G	92	85	249
Yellow						
AC Earlstar 	5	119	G	88	94	212
CDC Inca 	5	118	G	92	94	238
Agassiz 	7	104	F	90	89	235
CDC Amarillo	7	100	G	92	95	238
Abarth	5	98	G	89	96	274
AAC Ardill	5	97	G	90	91	245
CDC Treasure	4	92	G	90	85	213
CDC Golden	7	90	F	89	85	207
CDC Saffron	7	87	G	90	83	237
CDC Meadow	7	84	G	89	85	203
CDC Hornet	4	78	G	93	92	188
Red						
Redbat 8 	5	100	P	91	85	199
Dun						
CDC Dakota	7	92	G	93	89	214
Maple						
CDC Mosaic	4	64	G	92	89	159
Forage/Silage						
CDC Horizon	4	62	G	92	90	157

Average plot yield of CDC Golden (check): 5,596 kg/ha (83.2 bu/ac)

 PBR in effect or filed

Lodging: VP = very poor; P = poor; F = fair; G = good

Dry Bean – Wide Row

Variety	Plant Type	Site Years	Yield as % of AC Island	Days to Maturity	Seed Weight (g/1000)	Pod Clearance (%)
Pinto						
AC Island	II	27	100	100	384	64
Medicine Hat 	II	10	99	100	368	67
AAC Burdett	II	8	99	95	385	78
Othello	III	9	91	100	364	na
CDC WM-2 	II	15	86	98	396	62
Winchester	II	25	85	97	361	73
AAC Explorer	II	7	79	99	375	65
CDC Pintium	I	4	72	95	401	na
Black						
AAC Black Diamond II	II	10	91	99	276	74
AC Black Diamond	II	27	88	99	279	78
Black Violet	II	12	86	101	198	na
CDC Blackcomb	II	9	76	97	193	78
CDC Jet	II	4	68	102	196	na
Great Northern						
AAC Tundra	II	16	88	98	373	68
AAC Whitehorse	II	11	87	97	393	70
AAC Whitestar	II	9	87	97	401	75
AC Rolute	II	26	76	97	360	72
Pink						
Viva	III	11	85	102	275	na
Small Red						
AC Redbond	II	15	87	95	333	64
Yellow						
AC Y015	I	7	57	101	407	66
AC Y012	I	7	56	101	397	65
CDC Sol 	I	11	54	101	427	68

Wide Row Trials

Commercial row crop production is typically on 55 cm (22 in.) or 75 cm (30 in.) centres. The wide row bean trials are grown on 60 cm (24 in.) rows to evaluate varieties under conditions similar to conventional practice.


Yield and days to maturity are important factors when choosing a bean variety. Spring or fall frost can destroy a dry bean crop. It is important to select a variety that will mature during the normal frost-free season for your region.

CDC WM-2 is a slow-darkening pinto dry bean variety.

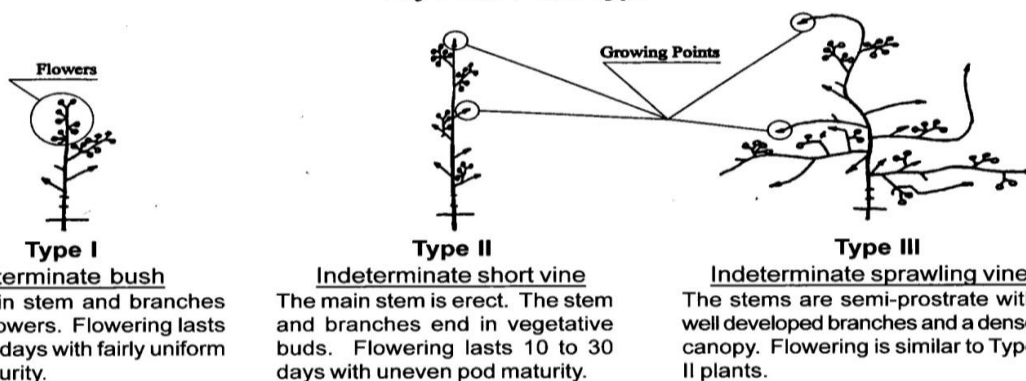
AC Black Diamond and **AAC Black Diamond II** have large shiny seeds. **Black Violet** has smaller, buff-coloured seeds.

Pod Clearance is the estimated % of pods that would clear the cutter bar in a direct combine harvest system.

Average plot yield of AC Island (check): 4,196 kg/ha (3,743 lb/ac)

 PBR in effect or filed na – not assessed

Dry Bean Plant Type



Graphic courtesy Colorado Dry Bean Production and IPM Bulletin 548A. Colorado State University Co-operative Extension and Agricultural Experimental Station. 1990.







Dry Bean – Narrow Row

The narrow row dry bean trials are sown on 20 cm (8 in.) row spacing to evaluate performance in a solid seeding management practice.

The pod clearance rating is a measure of the proportion of pods held 5 cm (2 in.) or more above ground level. This gives an indication of the suitability for harvest using a direct cut harvest system. Varieties with higher pod clearance ratings will normally have lower harvest losses.


The narrow row variety trials are a separate test from the wide row trials. These tests are not designed to compare conventional wide row and solid seeded management. **Narrow row yields and variety rankings cannot be compared to Wide Row yields and variety rankings in these tables.**

For other Market Type Varieties not listed here, please contact Garry Hnatowich (see contact page 1).





Variety	Plant Type	Site Years	Yield as % of AC Island	Pod Clearance Rating*	Days to Maturity
Pinto					
Medicine Hat 	II	18	106	77	100
Winmor	II	10	103	70	100
AC Island	II	35	100	69	99
AAC Burdett	II	10	98	90	95
Winchester	II	35	95	79	97
CDC WM-2 	II	26	88	74	98
Mariah 	II	8	91	72	103
CDC Pintium	I	23	84	81	93
CDC Marmot	I	16	77	73	92
Black					
Carmen Black	II	7	103	81	104
AC Black Diamond	II	21	97	83	99
CDC Jet	II	18	97	82	102
AAC Black Diamond II	II	9	91	84	100
CDC Superjet	II	9	91	78	103
CDC Blackcomb	II	19	87	81	99
CDC Blackstrap 	II	11	86	82	98
Great Northern					
AAC Tundra	II	15	91	74	98
AAC Whitestar	II	7	90	83	99
Resolute	II	20	85	76	98
AAC Whitehorse	II	9	84	79	98
AAC Explorer	II	5	79	67	100
Small Red					
AC Redbond	II	10	98	74	95
Navy					
Bolt	II	6	98	83	103
Lightning	II	8	83	82	102
Portage	II	8	80	81	102
Envoy	I	16	76	74	97
OAC Spark	I	9	75	79	100
Skyline 	I	7	69	69	103
Yellow					
CDC Sol 	I	15	72	73	101

Average plot yield of Winchester (check): 4,788 kg/ha (4,271 lb/ac)


*Pod clearance rating = % of pods that completely clear the cutter-bar at time of swathing.

 PBR in effect or filed

Faba Bean

Variety	Site Years	Yield as % of CDC Fatima	Days to Maturity	Seed Weight (g/1000)
Coloured Flower				
Florent	5	114	114	635
CDC Fatima	11	100	112	526
CDC Blitz	7	98	116	428
FB9-4	5	97	111	759
FB18-20	4	93	112	788
Orion	6	91	117	349
Taboar 	5	91	114	499
White Flower				
Imposa 	3	111	115	667
Tobasco 	3	93	115	522
Snowbird 	8	86	114	483

Average plot yield of CDC Fatima (check): 5,054 kg/ha (4,508 lb/ac)

 PBR in effect

Faba bean is late maturing and should be sown early for best results.

CDC Fatima combines earlier maturity and shorter height with high yield potential. Its large seed size is preferred in some markets. White-flowered types are zero tannin. All coloured flower types have seed coats that contain tannins and are considered suitable for food markets if seed size and quality match customer demand.




Soybean

As of 2017 the **check** variety for the Saskatchewan Soybean Regional Variety Trials was changed to TH 33003 R2Y. ICDC has limited consecutive growing season years of trials with this variety. Therefore the following table provides soybean results from both our irrigated and dry land trials to increase site years of observations. Producers are cautioned on the limited number of test years in the soybean table and to use this information as a guide but seek further information on any variety. Yield values are subject to vary highly until additional site years are obtained.

Soybean is a potential new legume crop that may have promise within the irrigated areas of Saskatchewan. By definition, they are not a “pulse crop.” The Food and Agricultural Organization (FAO) categorizes pulse crops as those harvested solely for the dry seed, such as field pea, dry bean, and lentil. Soybean is primarily grown for its oil content, although its meal is also a commodity. In practical terms, consider soybean as an oilseed crop with the ability to fix nitrogen!

The soybean table begins on next page.

Soybean (continued)

Variety	Type	Site Years	Yield as % of TH 33003 R2Y	Relative Maturity	Days to Maturity	Height (cm)	Lodge Rating	Seed Weight (g/1000)	Hilum Colour
Sampsa RR	R2Y	6	118	00.8	121	92	VG	161	BL
NSC Gladstone RR2Y	R2Y	7	115	00.4	120	93	VG	195	BL
Lono R2 	R2Y	8	113	00.5	118	88	VG	160	Y
Hero R2	R2Y	6	113	00.4	120	88	G	155	BL
P006T46R 	RR1	6	113	00.6	119	86	VG	155	BR
S007-Y4	R2Y	10	112	00.5	117	83	VG	156	IY
Akras R2	R2Y	10	112	00.3	119	81	VG	160	BL
McLeod R2	R2Y	14	111	00.3	118	92	VG	177	BL
Pekko R2	R2Y	7	111	00.8	116	99	VG	155	BL
23-60RY	R2Y	10	111	00.2	121	95	VG	163	BL
LS 002R23	R2Y	6	110	00.2	119	89	VG	152	BL
TH 32004R2Y	R2Y	14	108	00.4	119	85	G	156	BL
TH 33005R2Y	R2Y	7	108	00.5	121	92	VG	169	BL
NSC Reston RR2Y	R2Y	11	107	00.1	117	83	VG	141	BL
900Y71	RR1	6	107	00.7	121	85	VG	164	TN
22-60RY	R2Y	10	104	000.9	116	74	VG	155	BL
LS 002R24N	R2Y	10	104	00.2	117	95	VG	175	BL
S003-L3	R2Y	6	104	00.3	113	77	VG	154	IY
PS 00095 R2	R2Y	6	104	000.9	113	79	G	153	BL
HS 006RYS24	R2Y	10	103	00.6	120	97	VG	172	BL
Mahony R2	R2Y	8	103	00.3	119	88	VG	155	BL
TH 37004 R2Y	R2Y	6	102	00.4	123	89	VG	156	BL
PS 0035 NR2	R2Y	10	101	00.3	118	90	VG	155	BL
NSC Watson RR2Y	R2Y	8	101	000.8	110	77	VG	155	IY
S0009-M2	R2Y	8	101	000.9	110	76	VG	154	IY
TH 33003R2Y	R2Y	15	100	00.3	118	89	VG	162	BR
NSC Tilston RR2Y	R2Y	11	100	00.4	118	92	VG	156	BL
P002T04R 	RR1	8	100	00.2	113	82	VG	155	TN
NSC Anola RR2Y	R2Y	7	100	00.2	119	84	VG	151	BL
23-11RY	R2Y	8	99	000.9	117	87	G	156	BL
LS NorthWester	R2Y	8	99	00.2	117	101	VG	155	BL
TH 35002R2Y	R2Y	6	99	00.2	117	85	VG	156	BL
NSC Moosomin RR2Y	R2Y	7	98	000	114	73	VG	157	BL
Bishop R2	R2Y	12	97	00.2	114	88	VG	153	BL

Average plot yield of TH 33003R2Y (check): 3,506 kg/ha (3127 lb/ac).

Varieties are either RI = Roundup Ready 1 or R2Y = Genuity Roundup Ready 2 Yield TM.

Hilum is the point where the seed attaches to the pod: BR = Brown, BL = Black, TN = Tan, IY = Imperfect Yellow, Y = Yellow

In North America, soybean varieties are classified into maturity groupings from 9 in the 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.

For a complete list of commercial varieties see **Seed Manitoba 2019** (www.seedmb.ca).

Soybean—Notes

Experience in commercial production in Saskatchewan is limited. However, the following considerations, based upon established soybean producing areas, should be considered:

- Limit first time acreage, start slowly.
- Select an early maturing variety. Relative Maturity ratings are assigned by individual seed companies; growers should not rely on only one source for judging maturity.
- Best suited to medium to light (irrigated) soils, heavy textured soils may cause planting and emergence problems such as compaction and crusting. However, heavier textured soils can produce soybean well once the crop is established.
- Despite their long maturity, do not seed too early! Soil temperatures need to warm to, or exceed, 10°C, the warmer the soil, the quicker the emergence, similar to dry bean. Cool soil temperatures can result in seed rot and pathogenic seedling diseases. Treat with a recommended fungicide seed treatment.
- Target a plant population of 445,000 to 495,000 plants/ha (180,000 – 200,000 plants/ac). Emergence should ensure 40 plants/m² (4 plants/ft²). Soybean varieties differ in seed size. Equipment calibration is required to achieve successfully established populations.
- Seeding depth should be approximately 2.0–3.8 cm (0.75–1.5 inches), soybean are sensitive to deep seeding.
- **INOCULATE** – soybean require a specific species of rhizobia not native to our soils. Failure to inoculate with a “soybean” specific inoculant will result in complete nitrogen fixation failure! For the first & second time soybean is planted on any field growers are advised to use a full rate of granular inoculant coupled with a liquid seed-applied inoculant. Though inoculant costs exceed those of pea/lentil, they are warranted.
- Generally, soybean are not as efficient as pea/lentil/faba bean in terms of nitrogen fixation, being more similar to dry bean. Should plants start yellowing by or during flowering, consider a top-dress application of 45–55 kg/ha N (40–50 lbs/ac N) and irrigate with 0.6–1.25 ml/ha (0.25–0.5 inch/ac).
- Do not exceed 22 kg/ha P₂O₅ (20 lbs/ac P₂O₅) seed-placed phosphorus in solid seeded production. Soybean is an efficient “scavenger” of soil phosphorus, but these phosphorus rates may be insufficient for soils with low soil phosphorus reserves. Higher rates need to be side banded. For row cropped production reduce seed row rates. Side band applications are recommended.
- Weed control is essential, as soybean seedlings are non-competitive. Cultivation can be used in wide row production. For both conventional and herbicide tolerant varieties, refer to the Saskatchewan Ministry of Agriculture annual publication, **Guide to Crop Production, 2019** for herbicide options.
- Wireworms and grasshoppers may be the primary insect pests in irrigated areas.
- Sclerotinia (white mold) can affect soybean. Sufficient separation from pulses and canola in crop rotation is important.
- A killing frost will likely dictate time of harvest. A killing frost will not degrade the oil quality of the crop, but will diminish seed size of later maturing top pods. Soybean varieties tested have excellent lodging resistance, so can be direct combined. Combine when seed moisture is less than 20% and adjust cylinder speed and concave clearance to minimize cracking or splitting of seed. Safe seed storage is 12% moisture or less.

Corn

The Alberta Corn Committee (ACC) irrigated grain and silage corn hybrid performance trials were conducted at CSIDC from 2003–2015. Results from the trials for each individual year, as well as a multi-year summary, are available on the ACC website at www.albertacorn.com.

A second silage corn hybrid performance trial was initiated in 2012, specifically on behalf of ICDC. For this trial, seed company representatives were invited to submit silage hybrids they deemed adapted to the Lake Diefenbaker Development Area and that were commercially available at the local level.










On the basis of these two trials, the following **silage** corn hybrid performance results were generated specifically for the irrigated area of West Central Saskatchewan.

Hybrid	Company	CHU Rating	Site Years	Dry Matter		Whole Plant Moisture (%)	Days to Anthesis	Days to Silking
				Yield (T/ac)	% of Baxxos RR (check)			
HL R219 RR	Hyland	2350	9	8.0	114	66.5	77	78
SiEx Bt RR	Pickseed	2200	5	8.0	114	68.9	75	78
A4705HMRR	Pride Seeds	2350	3	8.0	114	68.6	75	77
P7443R RR	Pioneer	2100	4	7.8	111	58.2	73	77
39M26 RR	Pioneer	2100	4	7.6	109	62.4	67	74
HL 3085 RR	Hyland	2400	7	7.3	104	67.8	77	80
HL B22R	Hyland	2400	3	7.3	104	74.7	76	81
39F57	Pioneer	2200	4	7.2	103	64.7	75	77
Fusion RR	Elite	2200	4	7.3	103	66.6	74	77
2791RR	Seeds 2000	2250	3	7.3	103	68.8	77	78
P8210HR	Pioneer	2475	4	7.1	102	66.6	75	79
Baxxos RR	Hyland	2250	9	7.0	100	66.3	71	75
N05C-GT	Syngenta	2250	4	7.0	100	65.5	73	76
DKC30-07RIB	Monsanto	2325	8	7.0	99	69.2	76	81
39V05	Pioneer	2350	4	6.9	98	62.7	73	79
HL 2093	Hyland	2300	5	6.8	97	62.7	70	75
X14008GH	Dow Seeds	2450	4	6.8	97	70.3	81	86
DKC27-55RIB	Monsanto	2200	3	6.8	97	68.2	70	77
DKC26-78	Monsanto	2150	3	6.7	96	63.7	69	73
X13002S2	Dow Seeds	2300	4	6.7	95	69.5	75	82
DKC33-78RIB	Monsanto	2500	4	6.6	94	69.4	76	80
39D95	Pioneer	2150	5	6.3	90	65.1	73	78
39F45	Pioneer	2000	3	6.3	90	54.9	63	70

Select a variety with a Corn Heat Unit (CHU) rating suitable to your area. A CHU map of Saskatchewan is available on the Saskatchewan Ministry of Agriculture website at <http://publications.gov.sk.ca/documents/20/83796-c62b9cc6-955c-4989-9064-928369ffb44d.pdf>.

Information on corn production can be found in ***Corn Production in Manitoba***, published by the Manitoba Corn Growers Association. To order the manual, go to the Manitoba Agriculture website at <http://www.gov.mb.ca/agriculture/crops/guides-and-publications/#cpm>.

Annual Cereal Forage

Variety	Site Years	Dry Matter Yield (% of check)	% CP	% NDF	% ADF	% TDN
Barley 2-row						
Newdale 	8	108	12.3	48.4	29.7	63.9
CDC Cowboy 	9	108	12.4	51.2	31.9	62.6
CDC Copeland 	9	102	11.6	51.1	32.6	62.4
Stockford 	6	103	13.3	52.2	32.8	61.8
CDC Bold	10	95	12.9	49.3	30.5	64.1
Barley 6-row						
Binscarth	6	110	12.9	48.0	29.3	63.9
AC Ranger (check)	12	100	12.5	49.5	30.7	63.4
AC Rosser 	12	102	13.0	47.4	29.2	64.8
AC Hawkeye	11	96	12.7	51.9	32.6	62.2
Vivar 	11	96	11.8	48.9	29.7	64.4
Trochu 	11	94	12.7	48.1	29.8	60.5
CDC Battleford 	9	93	12.1	47.3	30.5	64.4
Oats						
Pinnacle 	11	105	11.0	52.5	34.6	60.2
Calibre	11	104	11.5	51.8	35.3	59.2
AC Morgan	11	102	11.1	51.0	33.7	60.3
CDC Baler* (check)	11	100	11.5	56.5	37.0	58.4
Triticale						
Comet*	12	101	12.1	58.5	40.0	55.3
Banjo	12	100	13.4	59.6	39.4	55.5
Viking*	12	98	12.2	59.5	40.1	55.2
Pronghorn (check)	12	100	13.9	57.9	38.3	55.8
AC Ultima	12	94	12.6	55.3	35.8	58.9

Average dry matter yield of check: AC Ranger = 15,248 kg/ha (6.80 tons/ac)

CDC Baler = 15,703 kg/ha (7.00 tons/ac)

Pronghorn = 13,908 kg/ha (6.00 tons/ac)

 PBR in effect


Barley and oat varieties harvested at soft dough; triticale varieties harvested at late milk – early dough.

CP = Crude Protein NDF = Neutral Detergent Fibre ADF = Acid Detergent Fibre TDN = Total Digestible Nutrients


*Varieties available for annual forage production.

Alfalfa

Variety	Site Years	Yield as % of Beaver
Steak	3	118
Approved	3	114
Forecast 1001	3	112
WinterGold	3	112
AC Nordica	4	111
WL 327	3	110
Starbuck	3	109
54V46	4	109
WL 232 HQ	3	109
Spredor 4	3	108
Gibraltar	3	107
Perfect	3	107
AC Blue J	22	106
Survivor	3	106
AC Longview	7	106
Pickseed 2065MF	7	106
54V54	7	106
Pickseed 8925MF	4	105
421Abacus	3	105
AmeriStand 201+Z	7	105
AgriMaster	3	105
Geneva	7	104
HybriForce-400	3	104
134	3	104

Variety	Site Years	Yield as % of Beaver
Atomic	3	104
WL 319 HQ	3	104
Equinox	3	103
53Q60	7	103
AC Grazelander Br 	7	103
Dakota	3	103
Tophand	3	103
StockWell	10	102
Proleaf	3	102
Barrier	11	102
Gala	4	102
Magnum 3801 Wet	3	101
Quattro HR	3	101
Beaver	34	100
Rhino	3	98
Magnum III-WET	3	97
Rangelander	22	96
HayGrazer	3	96
Convoy	3	95
53Q30	3	94
54Q25	3	93
Dalton	3	93
Runner	6	93
Rambler	34	91

Average dry matter yield of Beaver (check): 11,444 kg/ha (5.10 tons/ac)

 PBR in effect

Alfalfa varieties were evaluated in the Western Forage Testing (WFT) System trials from 1996 to 2009 and in the ICDC/Saskatchewan Forage Council trials established under irrigation in 2002 at CSIDC and in 2003 at Osler, Saskatchewan. WFT variety trials are established each year, and forage yields are measured for each of the following three years. All data is for a two-cut system, except for 2001 to 2003, when three cuts were taken.

Varieties with rapid re-growth after cutting are best suited to intensive management. For more information on alfalfa varieties, including disease resistance, consult the latest **Forage Crop Production Guide** available from Saskatchewan Ministry of Agriculture (<http://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/crops-and-irrigation/forage-production-annual-native-perennial/forage-crop-production>).

The contribution and co-operation of Dr. B. Coulman of the Department of Plant Sciences, University of Saskatchewan, toward the alfalfa, timothy, and forage grass variety testing is gratefully acknowledged.

Timothy

Variety	Site Years	Yield as % of Climax
AC Alliance	5	116
Dolina	3	114
Express	3	113
Grinstad	11	112
Joliette	5	112
Jonatan	5	111
Richmond	8	109
Timfor	6	108
Turku	3	104
Winnetou	3	103
TimPro	3	102
Tenho	3	102

Variety	Site Years	Yield as % of Climax
Alexander	6	101
Drummond	8	100
Nike	6	100
Climax	11	100
Argus	6	97
Toro	6	97
Glacier	3	96
Carola Champ	6	93
Topi	3	91
Bottnia II	6	89
Tuukka	3	87

Average dry matter yield of Climax (check): 11,040 kg/ha (4.92 tons/ac)

Irrigated timothy trials were conducted at CSIDC and at the Semiarid Prairie Agricultural Research Centre (SPARC) in Swift Current from 1995 to 1997. Western Forage Testing (WFT) System trials were conducted at CSIDC from 1996 to 2007. AAFC Timothy Performance Trials were conducted at CSIDC in 2004 and 2005. Results from all trials are included in the table.

The trials were harvested in early July and in late August of each year. Export markets prefer high leaf content and long seed heads. **Drummond** had the longest seed heads and the second highest leaf content in the trials conducted from 1995 to 1997. **Richmond** had a lower fiber content and higher nutritive value, making it better suited to the domestic dairy hay market than other varieties tested in the 1995 to 1997 trials.

Perennial Forage

Variety	Site Years	Yield as % of check
Birdsfoot Trefoil		
AC Langille	3	117
Leo (check)	3	100
Cicer Milkvetch		
Windsor	2	101
Oxley (check)	2	100
AC Oxley II	2	90
Crested Wheatgrass		
AC Goliath	2	109
Kirk (check)	3	100
Smooth Brome		
Carlton (check)	3	100
AC Rocket ☹	3	100
Radisson	3	99
Meadow Foxtail		
Dan (check)	3	100
Mountain	3	87

Average dry matter yield of check:

Leo = 10,743 kg/ha (4.79 tons/ac)
 Oxley = 9,496 kg/ha (4.24 tons/ac)
 Kirk = 14,493 kg/ha (6.46 tons/ac)
 Carlton = 16,004 kg/ha (7.14 tons/ac)
 Dan = 10,155 kg/ha (4.53 tons/ac)

Variety	Site Years	Yield as % of check
Orchard Grass		
Tundra	3	121
Early Arctic	3	118
Kootenay	3	106
Killarney	3	105
Kay (check)	3	100
Kayak	3	91
Meadow Brome		
Montana	3	112
MBA	3	104
Fleet (check)	3	100
Tall Fescue		
Courtney (check)	3	100
Kokanee	3	88

Average dry matter yield of check:

Kay = 10,137 kg/ha (4.52 tons/ac)
 Fleet = 13,433 kg/ha (6.09 tons/ac)
 Courtney = 13,958 kg/ha (6.23 tons/ac)
 ☹ PBR in effect

The research ICDC conducts is summarized in several useful publications, including:

- Annual Research and Demonstration Program Report
- Irrigated Alfalfa Production in Saskatchewan
- Management of Irrigated Dry Beans
- Corn Production
- Irrigation Economics and Agronomics
- Crop Varieties for Irrigation (annual update)
- Irrigation Scheduling Manual
- *The Irrigator* (newsletter)

For these and other publications concerning irrigation in Saskatchewan, see our web site:

www.irrigationsaskatchewan.com/icdc



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