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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 2017***, 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, 2017*. You can find it at the following link:

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

Canola (B. napus)

Producers should note the change in the **check** variety to 5440 in 2015. Consequently, the number of site years listed has declined. 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. 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.

A number of newer registered hybrids are not yet included in the canola table due to insufficient site years of testing. However, these hybrids may have been evaluated. For inquiries about unlisted hybrids, please contact Garry Hnatowich (see page 1).

Variety	Type	Site Years	Yield as % of 5440	Lodging Rating	Height (cm)	Days to Maturity
Clearfield						
VR 9560 CL	HYB	7	96	G	132	100
45H73	HYB	12	94	G	125	98
CS 2200 CL	HYB	5	93	VG	127	100
5525 CL	HYB	18	92	G	130	99
45P70	HYB	12	84	G	119	99
Liberty Link						
L252	HYB	11	103	VG	123	99
SY4135	HYB	4**	103	F	119	99
L140P	HYB	4**	103	G	124	99
L261	HYB	7	100	VG	138	100
5440	HYB	30	100	VG	129	99
L150	HYB	9	98	G	129	99
L130	HYB	15	97	VG	126	99
Roundup Ready						
6074RR	HYB	7	101	VG	125	101
45H29	HYB	17	99	G	132	98
45H26	HYB	11	97	G	124	99
CS 2000	HYB	8	97	G	132	100
CS 2100	HYB	6	97	G	122	100
83S01 RR	COM	4**	97	G	131	99
6060 RR	HYB	12	96	G	130	101
Canterra 1990	HYB	11	96	G	124	99
VR 9562 GC	HYB	6	96	VG	131	99
45H28	HYB	10	95	G	129	99
46P50	HYB	12	93	G	127	100
73-75 RR	HYB	5	93	F	115	98
45H31	HYB	7	92	VG	131	99
PT 530 G	HYB	4**	92	VG	129	98
V12-1*	HYB	11	91	G	127	100
D3150	HYB	11	91	G	128	99
Canterra 1970	HYB	8	91	G	128	100
72-55 RR	HYB	4**	91	G	119	98
SY4114	HYB	4**	91	F	116	98
45H21	HYB	30	90	G	122	99
VR 9553 G	HYB	9	90	G	126	99
V12-2*	HYB	4**	90	VG	124	101
71-45 RR	HYB	12	89	F	119	97
6040 RR	HYB	11	89	G	128	100
4424 RR	HYB	5	89	G	132	100
45S51	HYB	9	87	G	125	97
45S52	HYB	6	86	G	124	98

Average plot yield of 5440 (check): 5,366 kg/ha (95.7 bu/ac) Lodging: F = fair; G = good; VG = very
HYB = Hybrid; COM = Composite Hybrid; OP = Open Pollinated
















* Specialty oil profile

** Limited site years, caution should be used and other information sources sought.

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)
WestLin 71 	8	104	G	116	60
CDC Neela 	8	102	G	114	66
Prairie Sapphire 	13	101	G	114	66
CDC Bethune 	30	100	G	113	66
Prairie Thunder 	22	100	G	113	62
CDC Glas 	8	98	G	115	65
AAC Bravo 	6	97	G	116	63
Prairie Blue 	30	95	G	117	67
Prairie Grande 	19	94	G	112	60
Taurus 	14	93	G	113	65
CDC Sorrel 	24	93	F	114	70
Lightning 	15	92	G	115	65
AC Watson 	18	92	G	113	60
Hanley 	29	92	G	111	60
CDC Sanctuary 	13	88	F	114	69
Vimy	17	83	P	113	65

Average plot yield of CDC Bethune (check): 3,118 kg/ha (49.7 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/plants/variety-registration/registered-varieties-and-notifications/eng/1300109081286/1300109176745>

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

<http://www.grainscanada.gc.ca/legislation-legislation/orders-arretes/ocgcm-maccg-eng.htm>

to determine the registration and grade eligibility status of varieties.

Canada Western Red Spring

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/farmers/faq.aspx>.

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

Canada Western Amber Durum

CDC Carbide VB and CDC Marchwell VB are wheat midge tolerant. CDC Fortitude and AAC Raymore 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. All durum varieties are susceptible to two new races of loose smut.

Canada Prairie Spring Red

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

Canada Northern Hard Red

Some registered varieties have not yet been placed into this new wheat class by the Canadian Grain Commission.

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

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, 2017***.

Spring Wheat

Variety	Site Years	Yield as % of Carberry	Lodging Rating	Height (cm)	Days to Maturity	% Protein +/- Carberry	Head Awns Present
Canada Western Red Spring							
Goodeve VB 	11	113	VG	94	98	+0.2	N
Unity VB 	11	113	F	95	98	+0.2	Y
5604HR CL 	8	110	VG	93	98	+0.1	Y
CDC Kernen 	12	109	VG	98	101	+0.6	Y
CDC Utmost VB 	14	108	G	94	99	+0.2	N
Vesper VB 	9	107	F	92	100	+0.3	Y
WR859CL 	15	106	G	87	99	+0.5	Y
CDC Stanley 	12	106	G	93	100	+0.5	N
Glenn 	17	105	VG	92	103	+0.1	Y
Stettler 	15	105	G	92	100	+1.2	Y
AAC Brandon 	7	105	VG	82	102	-0.2	Y
CDC VR Morris 	6	105	G	95	101	+0.6	N
CDC Thrive 	10	104	G	99	99	+0.6	N
Muchmore 	16	103	VG	81	100	-0.4	Y
5603HR 	12	103	F	96	100	+0.3	Y
Cardale 	8	103	G	88	98	+0.2	Y
Shaw VB 	16	102	G	100	99	+0.3	N
Carberry 	19	100	VG	84	101	15.1%	Y
AAC Redwater 	7	99	VG	86	97	+0.6	Y
AAC Elie 	7	97	VG	81	102	0.0	Y
SY433 	6	97	P	98	98	+0.5	Y
AC Barrie 	19	96	G	96	99	+0.8	N
AAC Prevail VB 	5	96	F	100	102	+0.4	N
Waskada 	6	93	F	98	97	+1.2	Y
5602HR 	5	93	G	92	99	+1.0	Y
CDC Plentiful 	6	92	F	93	98	+0.1	N
AAC Bailey 	8	88	G	96	97	+0.3	N
Canada Western Amber Durum							
AAC Durafeld 	5	125	F	94	102	+0.4	Y
AAC Spitfire	7	121	G	92	102	+0.6	Y
CDC Carbide VB 	5	118	F	97	102	+0.5	Y
Enterprise 	10	114	P	94	105	+0.6	Y
Transcend 	6	112	G	101	105	+0.7	Y
Brigade 	8	110	G	99	105	+0.2	Y
CDC Fortitude 	5	109	G	91	102	-0.1	Y
CDC Verona 	8	106	G	93	105	+0.5	Y
Strongfield 	12	106	F	93	103	+0.8	Y
AAC Current 	8	102	F	98	101	+0.6	Y
Eurostar 	8	101	F	98	105	+0.2	Y
AAC Raymore 	8	101	F	95	101	+0.6	Y
AAC Marchwell VB 	7	96	F	93	101	-0.1	Y



















Average plot yield of Carberry (check): 5,271 kg/ha (78.4 bu/ac)

Lodging: F = fair; G = good


 PBR in effect or filed

The spring wheat table continues on the following page.

Spring Wheat

Variety	Site Years	Yield as % of Carberry	Lodging Rating	Height (cm)	Days to Maturity	% Protein +/- AC Barrie	Head Awns Present
Canada Northern Hard Red							
Faller	7	126	G	89	102	-1.1	Y
Prosper	7	124	G	88	102	-1.2	Y
Elgin ND	5	107	G	89	102	-0.1	Y
Canada Western Special Purpose							
NRG010 	6	134	G	90	105	-2.4	Y
CDC NRG003 	6	133	G	89	102	-1.6	Y
AAC Innova 	8	125	G	92	105	-2.9	Y
Pasteur 	8	120	VG	88	106	-1.6	N
Minnedosa 	10	119	G	89	99	-1.6	Y
AAC Proclaim 	5	97	G	93	101	-2.4	Y
Canada Western Hard White Spring							
AAC Whitefox 	5	103	G	98	99	-0.6	N
Snowstar 	5	102	VG	89	96	-0.7	N
Whitehawk 	5	96	VG	97	98	-0.4	N
CDC Whitewood 	5	94	G	89	100	-0.3	Y
Canada Prairie Spring Red							
Conquer VB 	10	124	G	94	101	-0.7	Y
AAC Foray VB 	8	115	G	90	101	-1.4	Y
5702PR 	6	115	G	88	99	-0.1	Y
AAC Penhold 	8	112	VG	78	100	-0.7	Y
AAC Ryley 	8	111	G	87	100	-1.1	Y
Canada Western Soft White Spring							
AAC Chiffon 	7	144	G	99	102	-3.2	Y
AC Andrew	10	131	VG	89	102	-2.9	Y
Sadash 	10	125	VG	90	102	-2.3	Y
Bhishaj 	4	117	G	90	102	-2.9	Y

Average plot yield of Carberry (check): 5,271 kg/ha (78.4 bu/ac)

 PBR in effect or filed

Lodging: F = fair; G = 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 2017-2018 can be found on the Canadian Malting Barley Technical Centre (CMBTC) website at www.cmbtc.com.

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 is 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						
AAC Synergy 	2	5	121	G	90	95
Newdale 	2	8	116	G	88	95
Legacy 	6	9	114	G	87	98
CDC Copeland 	2	8	114	G	97	96
Tradition	6	10	112	G	88	97
Celebration 	6	5	105	G	90	94
Bentley 	2	6	104	G	93	96
CDC Meredith 	2	5	104	F	88	97
CDC Kindersley 	2	5	104	G	90	93
AC Metcalfe 	2	11	100	G	91	96
Merit 57 	2	6	100	G	90	99
CDC PolarStar 	2	5	95	P	89	96
Other: A malting market may exist, review CMBTC recommendation list for updates						
CDC Clyde 	6	6	125	VG	83	98
CDC Battleford 	6	8	110	G	92	98
Major 	2	5	109	G	88	94
Cerveza 	2	5	109	VG	89	96
CDC Anderson 	6	5	101	G	89	97
CDC Landis 	2	5	99	G	89	96
Harrington	2	11	84	P	86	95

Average plot yield of AC Metcalfe (check): 6,451 kg/ha (119.9 bu/ac)

 PBR in effect or filed

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

Lodging: P = poor; F = Fair; G = 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, 2017*.

Feed and Food Variety	2- or 6- Row	Site Years	Yield as % of AC Metcalfe	Lodging Rating	Height (cm)	Days to Maturity
Hulled						
AC Rosser 	6	9	128	P	85	95
Alston	6	5	123	G	85	101
Champion 	2	7	121	G	86	95
CDC Austenson	2	6	121	VG	89	97
Xena 	2	6	121	F	91	95
CDC Coalition 	2	6	117	VG	87	95
McLeod 	2	8	116	G	81	94
Amisk 	6	4	114*	G	93	96
CDC Trey 	2	7	114	VG	91	95
Brahma 	2	5	113	VG	90	94
Sundre 	6	7	110	G	90	100
Breton 	6	3	110*	F	92	96
CDC Helgason 	2	7	108	G	91	94
CDC Dolly	2	9	105	P	82	93
Chigwell 	6	5	105	VG	85	97
Canmore 	2	4	102*	G	93	97
CDC Cowboy 	2	8	102	F	105	100
AC Metcalfe 	2	9	100	G	91	96
Muskwa 	6	4	100*	G	80	95
CDC Maverick 	2	5	93	P	106	97
Hulless						
Enduro	2	5	100	VG	83	97
CDC Clear	2	5	100	G	99	98
CDC Carter 	2	5	91	F	90	98
CDC McGwire 	2	7	88	F	92	98
Taylor 	2	5	80	VG	95	97

Average plot yield of AC Metcalfe (check): 6,451 kg/ha (119.9 bu/ac)

 PBR in effect or filed

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

Lodging: P = poor; F = Fair; G = Good

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





Field Pea

Please note that the **check** variety has been changed to **CDC Golden**, replacing **Cutlass** in 2015, and the number of site years and relative performance of varieties may have changed from past publications as a reflection of this. Growers should be aware that **CDC Golden** will be replaced as the check variety by **CDC Amarillo** in 2017.


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 Golden	Lodging Rating	Days to Maturity	Vine Length (cm)	Seed Weight (g/1000)
Green						
CDC Raezer	11	110	G	99	89	224
CDC Limerick	7	107	G	101	86	196
CDC Pluto	8	106	F	99	83	153
CDC Patrick	14	104	G	100	86	166
CDC Tetris	14	101	G	104	89	206
Cooper 	21	100	G	101	83	252
CDC Striker	27	99	G	98	78	233
CDC Greenwater	5	93	VG	102	94	221
CDC Sage	9	92	G	99	81	180
Yellow						
AC Earlystar	5	121	G	95	92	201
CDC Inca	5	119	VG	100	91	227
CDC Amarillo	7	118	G	99	92	228
Agassiz 	14	116	G	98	87	217
CDC Treasure	11	112	G	97	84	203
CDC Meadow	23	108	G	97	85	198
CDC Hornet	11	107	G	101	91	194
CDC Saffron	11	105	G	98	82	232
Thunderbird 	7	104	G	102	85	201
CDC Mozart	17	103	P	97	73	214
CDC Golden	30	100	G	97	82	198
Eclipse 	23	100	G	100	81	227
Abarth	5	99	VG	97	93	261
AAC Ardill	5	98	G	98	89	233
CDC Bronco	23	95	G	101	81	190
CDC Prosper	9	86	G	102	83	140
Dun						
CDC Dakota	10	108	G	102	88	211
Maple						
CDC Mosaic	7	68	G	102	87	149
Forage/Silage						
CDC Leroy	4	100	G	101	86	136
CDC Horizon	7	71	G	102	93	151

Average plot yield of CDC Golden (check): 5,148 kg/ha (76.6 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 Winchester	Days to Maturity	Seed Weight (g/1000)
Pinto					
Medicine Hat 	II	10	122	100	361
AC Island	II	23	120	100	382
AAC Burdett	II	6	108	96	374
CDC WM-2 	II	15	107	99	389
Othello	III	14	103	102	361
Winchester	II	26	100	98	359
CDC Pintium	I	6	76	95	374
Black					
AC Black Diamond	II	26	104	100	277
AAC Black Diamond II	II	6	103	100	273
Black Violet	II	14	101	102	195
CDC Blackcomb	II	9	84	100	195
CDC Jet	II	6	71	107	189
Great Northern					
AAC Tundra	II	12	109	99	370
AC Polaris	III	17	100	101	336
AAC Whitehorse	II	7	99	97	394
Resolute	II	24	89	99	355
Pink					
Viva	III	15	103	104	268
Early Rose	II	5	88	97	304
Small Red					
AC Redbond	II	18	107	97	332
AC Earlired	III	5	98	97	319
Yellow					
Arikara Yellow	I	5	76	94	406
CDC Sol 	I	9	64	102	420
Myasi	I	4	59	105	344

Average plot yield of Winchester (check): 3,480 kg/ha (3,104 lb/ac)

 PBR in effect or filed

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.

Dry Bean Plant Type



Type I

Determinate bush

The main stem and branches end in flowers. Flowering lasts 10 to 20 days with fairly uniform pod maturity.



Type II

Indeterminate short vine

The main stem is erect. The stem and branches end in vegetative buds. Flowering lasts 10 to 30 days with uneven pod maturity.



Type III

Indeterminate sprawling vine

The stems are semi-prostrate with well developed branches and a dense canopy. Flowering is similar to Type II plants.

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 Winchester	Pod Clearance Rating*	Days to Maturity
Pinto					
AC Ole	II	7	125	76	103
Medicine Hat	II	16	120	71	101
Winmor	II	10	112	74	101
AC Island	II	32	110	69	100
AAC Burdett	II	8	106	84	96
Winchester	II	32	100	77	98
CDC WM-2 	II	24	95	72	98
Mariah 	II	8	94	74	103
CDC Pintium	I	21	87	85	93
CDC Marmot	I	15	87	70	93
Black					
AC Black Diamond	II	18	106	79	100
AAC Black Diamond II	II	6	106	85	102
CDC Jet	II	16	105	84	104
CDC Superjet	II	7	105	78	104
Carmen Black	II	7	105	84	104
Black Violet	II	7	99	82	102
CDC Blackcomb	II	19	96	78	100
Great Northern					
AAC Tundra	II	12	109	68	98
AC Polaris	III	10	106	72	100
Alert	II	4	101	79	105
AAC Whitehorse	II	6	96	80	100
Resolute	II	18	92	73	99
Small Red					
AC Redbond	II	10	102	78	98
Navy					
Cargo	I	4	96	81	97
Portage	II	6	86	80	102
Envoy	I	14	84	77	98
OAC Lightning	II	8	85	85	102
OAC Spark	I	9	75	80	100
Skyline	I	7	70	72	103
Yellow					
CDC Sol 	I	13	79	77	101
Arikara Yellow	I	6	71	74	93

Average plot yield of Winchester (check): 4,229 kg/ha (3,773 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

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.

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

 PBR in effect

Soybean

As of 2016 the **check** variety for the Western Canada Soybean Trials was changed to NSC Reston RR2Y. ICDC has only four 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 NSC Reston RR2Y	Relative Maturity	Days to Maturity	Height (cm)	Lodge Rating	Seed Weight (g/1000)	Hilum Colour
Sampsa RR	R2Y	6	113	00.8	123	90	VG	169	BL
McLeod R2	R2Y	10	111	00.3	121	94	VG	187	BL
TH 32004R2Y	R2Y	10	107	00.4	122	88	VG	163	BL
NSC Gladstone RR2Y	R2Y	7	107	00.4	123	90	VG	204	BL
LS 002R23	R2Y	6	107	00.2	121	87	VG	160	BL
HS 006RYS24	R2Y	8	106	00.6	125	98	VG	182	BL
Pekko R2	R2Y	7	106	00.3	118	93	VG	161	BL
Lono R2	R2Y	6	106	00.5	122	88	VG	149	BL
Akras R2	R2Y	6	105	00.3	120	82	VG	149	BL
900Y71	RR1	8	104	00.7	123	83	VG	171	TN
S007-Y4	R2Y	6	103	00.5	119	84	VG	145	IY
Hero R2	R2Y	6	103	00.4	124	87	G	145	BL
22-60RY	R2Y	6	102	000.9	119	77	VG	145	BL
23-60RY	R2Y	8	101	00.3	125	95	VG	176	BL
NSC Reston RR2Y	R2Y	10	100	00.1	119	83	VG	145	BL
TH 33005R2Y	R2Y	7	100	00.5	125	91	VG	181	BL
23-10RY	R2Y	10	98	000	117	77	VG	186	BL
NSC Libau RR2Y	R2Y	5	98	00.4	123	96	VG	165	BL
NSC Tilston RR2Y	R2Y	12	96	00.4	121	91	VG	162	BL
TH 33003R2Y	R2Y	11	96	00.3	121	90	VG	163	BR
900Y61	RR1	8	94	00.6	123	81	VG	180	BR
LS 002R24N	R2Y	8	94	00.2	120	97	VG	189	BL
PS 0035 NR2	R2Y	6	94	00.3	120	90	VG	146	BL
P002T04R	RR1	6	94	00.2	115	83	VG	145	TN
23-11RY	R2Y	6	93	000.9	121	87	G	146	BL
Bishop R2	R2Y	10	92	00.2	118	88	VG	162	BL
NSC Anola RR2Y	R2Y	8	91	00.2	120	80	VG	157	BL
LS NorthWester	R2Y	6	91	00.2	121	100	VG	145	BL
Vito R2	R2Y	10	90	00.3	119	92	VG	154	BL
NSC Moosomin RR2Y	R2Y	8	89	000	115	69	VG	163	BR

Average plot yield of NSC Reston RR2Y (check): 3,616 kg/ha (3225 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

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 2017** (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 (low Relative Maturity & Corn Heat Unit [CHU]) variety. Relative Maturity and CHU 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! First-time growers in Manitoba were 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.
- 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, 2017*** 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. Results of the 2016 ICDC silage corn hybrid trial are available upon request.

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	8.1	114	65.4	78	78
SilEx Bt RR	Pickseed	2200	5	8.1	114	67.7	75	78
A4705HMRR	Pride Seeds	2350	3	8.1	114	67.5	75	77
P7443R RR	Pioneer	2100	4	7.9	111	57.2	73	77
39M26 RR	Pioneer	2100	4	7.7	109	61.4	67	75
HL 3085 RR	Hyland	2400	7	7.3	104	66.7	77	80
HL B22R	Hyland	2400	3	7.3	104	73.5	76	81
39F57	Pioneer	2200	4	7.3	103	63.7	75	78
2791RR	Seeds 2000	2250	3	7.3	103	67.7	77	78
P8210HR	Pioneer	2475	4	7.2	102	65.6	76	79
Baxxos RR	Hyland	2250	9	7.1	100	65.2	71	76
N05C-GT	Syngenta	2250	4	7.1	100	64.4	73	77
DKC30-07RIB	Monsanto	2325	6	7.1	100	68.1	77	82
39V05	Pioneer	2350	4	6.9	98	61.7	73	80
HL 2093	Hyland	2300	5	6.9	97	61.7	71	76
DKC26-78	Monsanto	2150	3	6.8	96	62.7	69	74
DKC33-78RIB	Monsanto	2500	4	6.6	94	68.3	77	81
39D95	Pioneer	2150	5	6.4	90	64.1	74	78
39F45	Pioneer	2000	3	6.4	90	54.0	64	70
HL SR06	Hyland	2250	4	6.2	88	70.3	72	79

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* (annual newsletter)

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

www.irrigationsaskatchewan.com/icdc



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