



Agriculture and
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Canada-Saskatchewan
Irrigation
Diversification
Centre

CROP VARIETIES FOR IRRIGATION



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Canada



UNIVERSITY OF
SASKATCHEWAN



Saskatchewan



**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 the Saskatchewan Ministry of Agriculture. Industry is represented by the Irrigation Crop Diversification Corporation (ICDC) and the Saskatchewan Irrigation Projects Association (SIPA). Academia is represented by the 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 used in the tables are 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, or 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 yield for this season, or 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 equals 10 site-years in both cases. Results from less than six site-years are reported only for those cases where data is limited.

Relative yield of varieties

All varieties are compared as a percent of a standard “check” variety. This 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 widely from year to year and from site to site.

**Interpreting
the Tables
(continued)**

Lodging ratings are subjective, based on the judgement of the researcher. The rankings at CSIDC 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.

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 2014, a publication of Saskatchewan Ministry of Agriculture, for disease ratings of specific varieties.**

**A Word of
Caution**

Occasionally the 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 than average during one year. 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 as compared to early May. This 20 percent spread is greater than the yield difference between flax varieties.

**Plant
Breeder's
Rights**



Plant Breeders' Rights (PBR) ensure that 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 the 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 at the time of printing are identified by the symbol . Varieties for which Plant Breeders' Rights have been applied for are identified by the symbol .

For more detailed information on specific varieties, refer to the Saskatchewan Ministry of Agriculture publication Varieties of Grain Crops 2014.

Canola (*B. napus*)

Producers may notice the numbers of varieties listed are reduced from prior publications. In consultation with seed companies those varieties no longer commercially available have been removed. For queries on variety comparisons of older (not listed) to newer 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 on the following website: www.clubroot.ca.

Variety	Type	Site Years	Yield as % of 45H21	Lodging Rating	Height (cm)	Days to Maturity
Conventional						
46A65	OP	43	83	G	118	99
Clearfield						
VR 9560 CL	HYB	5	107	VG	135	100
5525 CL	HYB	16	105	VG	127	99
45H73	HYB	20	102	G	124	98
45P70	HYB	16	97	G	123	99
Liberty Link						
5440	HYB	26	114	VG	129	99
L150	HYB	10	113	G	128	99
L130	HYB	13	113	VG	125	99
Roundup Ready						
45H29	HYB	14	114	G	133	99
6060 RR	HYB	11	113	VG	129	101
1990	HYB	7	110	G	106	99
V12-1*	HYB	6	109	G	124	100
45H31	HYB	5	108	G	129	99
45H26	HYB	17	107	G	124	99
45H28	HYB	13	106	G	126	99
1970	HYB	6	106	F	127	101
72-55 RR	HYB	5	104	F	119	98
46P50	HYB	16	103	G	128	100
VR 9553 G	HYB	12	103	G	125	98
D3150	HYB	13	102	G	125	98
VT 500G	HYB	10	101	VG	125	99
45H21	HYB	43	100	G	122	99
6040 RR	HYB	11	100	G	125	99
71-45 RR	HYB	20	100	F	118	97
45S51	HYB	10	100	G	122	97
VT Remarkable	COM	8	100	G	123	100
45S52	HYB	5	99	G	124	98
72-65 RR	HYB	7	98	G	119	99
83S01 RR	COM	6	98	G	123	98
4424 RR	HYB	5	97	G	125	99
93H01 RR	HYB	7	96	G	124	99
VT Desirable	COM	14	90	VG	117	97
73-45 RR	HYB	5	89	G	111	97

Average plot yield of 45H21 (check): 4,861 kg/ha (86.7 bu/ac)










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


* specialty oil profile

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

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 of non-listed hybrids please contact Garry Hnatowich (see contact page 1).

Flax

Variety	Site Years	Yield as % of CDC Bethune	Lodging Rating	Days to Maturity	Height (cm)
CDC Bethune 	30	100	G	114	65
Prairie Thunder 	22	100	G	114	62
Prairie Sapphire	7	99	G	115	67
Prairie Blue 	30	95	G	118	66
Macbeth 	29	94	G	113	64
Prairie Grande 	19	94	G	113	59
Taurus 	14	93	G	114	65
CDC Sorrel 	23	93	F	115	69
Lightning 	15	92	G	115	65
AC Watson	18	92	G	114	59
Hanley 	29	92	G	112	60
CDC Arras	23	90	G	114	63
CDC Sanctuary	11	87	G	114	69
Vimy	17	83	P	114	64

Average plot yield of CDC Bethune (check): 3,176 kg/ha (50.6 bu/ac)  PBR in effect
Lodging: P = poor; F = fair; G = good; VG = very good

The flax industry is encouraging all flax producers to replace their existing seed stocks for the 2014 season so that all traces of Triffid can be removed from the grain supply. During the 2014 season, flax producers are encouraged to deliver all previous seed stocks and grain inventory to the elevator system to minimize the chance of cross contamination of new flax supplies with old inventory.

All varieties are immune to rust.

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

Spring Wheat

Producers are strongly encouraged to use a combination of the Canadian Food Inspection Agency's List of Registered Varieties (<http://www.inspection.gc.ca/plants/variety-registration/registered-varieties-and-notifications/eng/1300109081286/1300109176745>) and the Canadian Grains Commission's Variety Designation Lists (<http://www.grainscanada.gc.ca/legislation-legislation/orders-arretes/ocqcm-maccq-eng.htm>) to determine the registration and grade eligibility status of varieties.

Canada Western Red Spring

Fieldstar VB, Goodeve 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" will be used commercially. These varieties are not immune to wheat midge and can suffer midge damage when high infestation levels occur. More information on midge tolerant wheat can be found at <http://www.midgetolerantwheat.ca/farmers/faq.aspx>.

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

Lillian is a solid stem variety offering some resistance to wheat stem sawfly.

Canada Western Amber Durum

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

Durum wheat varieties are generally more susceptible than CWRS varieties to Fusarium Head Blight.

Canada Western Extra Strong

Glencross VB is the only CWES wheat midge tolerant variety using the "SM1" gene and will be marketed with an interspersed refuge (see above).

Canada Prairie Spring

Conquer VB and Enchant VB (limited site years of testing, data not shown) are CPS-red midge tolerant varieties using the "SM1" gene.

Canada Western General Purpose

Varieties in the General Purpose market class are intended for ethanol and livestock feed purposes.

Canada Western Soft White Spring

Soft white spring wheat may have potential demand as a feedstock in the production of ethanol. All soft white wheat varieties are eligible for both domestic and export markets. 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 the new variety **AAC Chiffon** will not be available in 2014.


Irrigated areas in south and central 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 and CWES are the most susceptible wheat types followed by CWSWS, CPS and CWRS. Information on tolerance levels in wheat varieties is available in the Saskatchewan Ministry of Agriculture publication:

Varieties of Grain Crops 2014.

Spring Wheat

Variety	Site Years	Yield as % of AC Barrie	Lodging Rating	Height (cm)	Days to Maturity	% Protein +/- AC Barrie	Head Awns Present
Canada Western Red Spring							
AAC Brandon	4	119*	G	83	105	-1.3	Y
Vesper VB	6	117	G	93	103	-0.6	Y
5604HR CL	7	116	G	92	102	-0.7	Y
Cardale	5	114	G	89	101	-0.9	Y
CDC Kernen	11	114	G	97	105	-0.3	Y
AAC Redwater	4	114*	G	88	100	-0.1	Y
Glenn	15	113	G	91	107	-0.9	Y
CDC ABOUND	19	113	G	86	107	-0.5	Y
WR859CL	16	112	G	86	103	-0.5	Y
Unity VB	22	112	F	93	103	-0.5	Y
Muchmore	15	111	G	80	105	-1.3	Y
CDC Utmost VB	11	111	G	93	103	-0.6	N
CDC VR Morris	5	110	G	95	104	-0.4	N
Goodeve VB	20	110	G	92	103	-0.3	N
5603HR	13	110	G	95	105	-0.7	Y
Shaw VB	15	110	G	99	103	-0.6	N
CDC Stanley	11	109	G	92	104	-0.4	N
Stettler	20	109	G	91	104	+0.3	Y
Carberry	15	108	G	83	105	-1.0	Y
Fieldstar VB	19	108	F	95	103	-0.3	Y
CDC Thrive	9	106	G	97	103	-0.3	N
5602HR	29	103	G	93	106	+0.3	Y
SY433	5	102	G	99	101	-0.4	Y
KANE	17	101	G	88	103	-0.5	Y
AC Barrie	61	100	G	94	104	15.8%	N
Waskada	17	99	G	95	104	+0.3	Y
AAC Bailey	5	99	G	97	101	-0.8	N
CDC Imagine	17	97	G	92	104	-0.1	N
Lillian	23	96	F	93	104	+0.5	N
Harvest	15	94	G	90	102	-0.3	N
Canada Western Amber Durum							
Enterprise	19	113	F	92	109	-0.4	Y
Brigade	22	109	G	96	111	-0.7	Y
Strongfield	46	108	G	90	108	-0.1	Y
CDC Verona	22	104	G	91	111	-0.3	Y
Navigator	33	103	G	82	107	-1.2	Y
Eurostar	22	102	G	94	110	-0.6	Y
Transcend	13	102	G	99	107	-0.2	Y

Average plot yield of AC Barrie (check): 5,678 kg/ha (86 bu/ac)
















 PBR in effect or filed

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


Lodging: F = fair; G = good

Wheat Table continued following page.

Spring Wheat

Variety	Site Years	Yield as % of AC Barrie	Lodging Rating	Height (cm)	Days to Maturity	% Protein +/- AC Barrie	Head Awns Present
Canada Western General Purpose							
AAC Innova 	3	146*	G	90	109	-3.9	Y
Pasteur 	7	142	VG	88	109	-2.5	N
NRG010 	11	136	G	89	108	-3.4	Y
CDC NRG003 	11	135	G	88	105	-2.6	Y
Minnedosa 	15	126	G	87	104	-2.6	Y
Canada Western Hard White							
Snowstar 	17	106	G	86	103	-1.5	N
Snowbird 	32	93	G	95	104	-0.3	N
Canada Prairie Spring Red							
Conquer VB 	15	136	G	92	106	-1.8	Y
5702PR 	19	119	G	86	106	-1.2	Y
AC Crystal 	46	114	G	85	106	-2.3	Y
Canada Western Extra Strong							
Burnside	29	102	G	102	105	-0.6	N
Glencross VB	20	101	G	103	105	-0.6	N
Canada Western Soft White Spring							
AAC Chiffon 	8	140	F	93	107	-3.7	Y
Sadash 	44	134	G	87	108	-4.0	Y
AC Andrew	61	125	G	85	108	-3.7	Y
Bhishaj 	48	122	G	86	107	-3.8	Y
AC Meena 	32	120	G	86	107	-3.9	Y
AC Reed 	43	117	G	80	106	-3.8	Y

Average plot yield of AC Barrie (check): 5,678 kg/ha (86 bu/ac)

 PBR in effect or filed

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

Lodging: F = fair; G = good

A number of newer registered varieties are not yet included in the Wheat Table due to insufficient site years of testing. However, these varieties may have been evaluated, for inquiries of non-listed varieties please contact Garry Hnatowich (see contact page 1).

Malt Barley

Malt Barley

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






















Information on recommended malting barley varieties for 2013–2014 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 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.


Malt varieties Norman, Lacey and CDC Kamsack will be removed from the 2015 *Crop Varieties For Irrigation*.

Variety	2 or 6 Row	Site Years	Yield as % of AC Metcalfe	Lodging Rating	Height (cm)	Days to Maturity
Malting Varieties						
Malting Acceptance: Recommended						
Newdale 	2	8	116	G	89	96
CDC Copeland 	2	8	114	G	98	97
Legacy 	6	9	114	G	88	98
Tradition	6	10	112	G	89	98
Major 	2	5	109	G	90	94
Steller ND 	6	3	105	VG	85	95
CDC Meredith 	2	5	104	F	89	98
Bentley 	2	6	104	G	94	97
Celebration 	6	4	103	G	90	95
CDC Kindersley 	2	4	102	G	91	94
AC Metcalfe 	2	11	100	G	92	96
Merit 57 	2	6	100	G	91	100
Malting Acceptance: Under Test						
CDC Mayfair 	6	5	115	G	86	99
Cerveza 	2	4	107	VG	91	96
CDC Kindersley 	2	4	102	G	91	94
CDC Anderson 	6	4	100	G	89	97
CDC Landis 	2	5	99	G	90	96
Norman 	2	4	94	G	88	94
Other: A malting market may exist, review CMBTC recommendation list for updates						
CDC Clyde 	6	6	125	VG	84	99
CDC Laurence 	6	8	117	G	94	101
Lacey	6	5	115	G	87	99
CDC Kamsack 	6	5	110	VG	83	101
CDC Kendall 	2	10	100	P	89	96
Harrington	2	11	84	P	87	95

Average plot yield of AC Metcalfe (check): 6,305 kg/ha (119 bu/ac)

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

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

 PBR in effect or filed

Barley Table continued following page.

Feed & Food Barley

Feed and Food Barley

















CDC Cowboy is a forage variety.
CDC McGwire is a normal starch hulless barley 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. For additional information refer to the Saskatchewan Ministry of Agriculture "Variety of Grain Crops 2014."

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 on a regular nature.

CDC ExPlus will be removed from the 2015 *Crop Varieties For Irrigation*.

Variety	2 or 6 Row	Site Years	Yield as % of AC Metcalfe	Lodging Rating	Height (cm)	Days to Maturity
Feed and Food						
Hulled						
AC Rosser 	6	9	128	P	86	95
Alston	6	5	123	G	86	101
Champion 	2	7	121	G	87	96
CDC Austenson	2	5	121	VG	91	97
Xena 	2	6	121	F	92	96
CDC Coalition 	2	6	117	VG	88	96
CDC Bold	2	7	117	F	86	96
McLeod 	2	8	116	G	82	94
CDC Trey 	2	7	114	VG	92	96
Brahma 	6	5	113	VG	91	95
Sundre 	6	7	110	G	91	100
CDC Helgason 	2	7	108	G	92	95
CDC Mindon 	2	7	107	G	88	94
CDC Dolly	2	9	105	P	83	94
Chigwell 	6	5	105	VG	86	98
Busby 	2	5	104	G	99	96
CDC Cowboy 	2	8	102	G	107	101
AC Metcalfe 	2	11	100	G	92	96
Hulless						
Enduro	2	5	100	VG	84	98
CDC Carter 	2	5	91	F	91	99
Millhouse	2	6	88	P	96	99
CDC McGwire 	2	7	88	F	93	98
CDC ExPlus	2	5	85	G	94	99

Average plot yield of AC Metcalfe (check): 6,305 kg/ha (119 bu/ac)

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

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

 PBR in effect or filed











Field Pea

All Green, Yellow and Maple varieties listed in the table are semi-leafless types. **CDC Sonata** and **40-10** are normal leaf silage varieties. Normal leaf varieties are not generally recommended for irrigated production.


CDC Acer, **CDC Rocket** and **40-10** have purple flower colour and pigmented seed coats. **CDC Acer** and **CDC Rocket** have a maple patterned seed coat, **40-10** has a speckled 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 from 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 Cutlass	Lodging Rating	Days to Maturity	Vine Length (cm)	Seed Weight (g/1000)
Green						
CDC Raezer	8	111	G	98	88	225
CDC Pluto	8	110	F	97	85	154
CDC Patrick	20	105	G	99	87	164
CDC Tetris	13	103	G	101	93	206
CDC Striker	40	102	G	96	82	231
Cooper 	36	102	G	100	83	257
CDC Sage	14	93	G	99	81	174
SW Sergeant	14	92	F	99	82	187
Yellow						
Agassiz 	20	122	G	96	90	216
CDC Centennial	14	120	P	98	77	249
Argus 	6	118	G	97	84	233
Hugo 	7	116	P	95	74	202
Reward 	12	114	G	97	91	237
CDC Meadow	29	113	G	95	88	198
SW Midas 	14	113	F	95	80	201
Sorento 	14	113	F	98	81	226
CDC Treasure	20	112	G	95	87	200
Polstead 	22	110	F	94	74	256
CDC Hornet	15	110	G	99	94	196
Thunderbird 	16	109	G	99	87	204
CDC Saffron	8	108	G	97	84	234
CDC Mozart	26	108	P	97	76	213
CDC Golden	30	105	F	96	85	199
Eclipse 	43	101	G	98	82	227
Cutlass	43	100	G	97	82	207
CDC Bronco	23	99	F	99	82	191
CDC Prosper	18	88	G	99	84	136
Dun						
CDC Dakota	7	120	G	100	90	209
Maple						
CDC Rocket	11	92	G	97	86	188
CDC Mosaic	7	72	G	101	89	150
Forage/Silage						
CDC Leroy	11	91	G	99	85	136
CDC Tucker	11	88	G	100	94	160
CDC Horizon	7	76	G	100	95	152

Average plot yield of Cutlass (check): 5,100 kg/ha (76 bu/ac)
Lodging: VP = very poor; P = poor; F = fair; G = good

 PBR in effect or filed

Dry Bean – Wide Row

Variety	Plant Type	Site Years	Yield as % of Winchester	Days to Maturity	Seed Weight (g/1000)
Pinto					
AC Island	II	16	124	102	376
Medicine Hat 	II	7	122	101	364
CDC WM-2 	II	11	113	100	388
Othello	III	14	103	103	353
Winchester	II	19	100	99	351
Black					
AC Black Diamond	II	19	102	102	271
Black Violet	II	13	98	104	192
CDC Blackcomb	II	5	82	102	193
CDC Jet	II	6	71	108	185
Great Northern					
AAC Tundra	II	6	112	100	362
AC Polaris	III	17	100	103	329
Resolute	II	18	88	100	347
Pink					
Viva	III	15	103	106	262
Early Rose	II	5	88	98	298
Small Red					
AC Redbond	II	17	108	98	323
AC Earlired	III	5	98	99	312
Yellow					
Arikara Yellow	I	5	76	96	397
CDC Sol 	I	4	67	105	425

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 in the normal frost-free season for your region.

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

AC Black Diamond has large shiny seeds. **Black Violet** has smaller, buffed coloured seed.

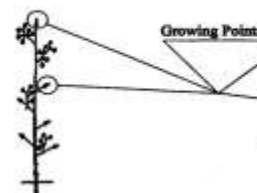
Average plot yield of Winchester (check):
3,295 kg/ha (2,939 lb/ac)

 PBR in effect or filed

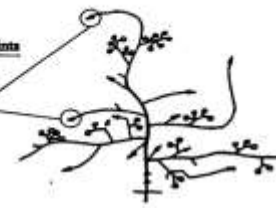
Dry Bean Plant Type



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

Narrow Row Trials

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. **Yields and variety rankings cannot be compared between the Narrow Row and Wide Row Tables.**





Variety	Plant Type	Site Years	Yield as % of Winchester	Pod Clearance Rating*	Days to Maturity
Pinto					
AC Ole	II	7	125	77	105
Winmor	II	10	112	75	103
AC Island	II	21	109	72	102
Winchester	II	21	100	78	100
CDC WM-2 	II	15	93	73	98
CDC Pintium	I	17	92	88	94
Black					
AC Black Diamond	II	11	106	82	101
CDC Jet	II	12	106	88	106
Carmen Black	II	7	105	85	106
Black Violet	II	7	99	83	103
CDC Blackcomb	II	10	96	80	102
Great Northern					
AAC Tundra	II	5	114	67	100
AC Polaris	III	9	104	72	102
Alert	II	4	101	80	106
Resolute	II	11	88	73	100
Pink					
Viva	III	2	79	68	107
Small Red					
AC Redbond	II	9	98	79	99
Navy					
Envoy	I	10	90	79	99
OAC Lightning	II	8	85	86	104
Yellow					
CDC Sol 	I	7	79	78	102
Arikara Yellow	I	6	71	74	95

Average plot yield of Winchester (check): 3,630 kg/ha (3,238 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

CSIDC and ICDC began soybean performance adaptability and performance evaluations in 2006. Table 1 is a summary of better adapted varieties tested during this time period. However as of 2013 RR Rosco will no longer be commercially available necessitating a change to the check variety. As of 2013 the Saskatchewan Advisory Council on Grain Crops adopted the soybean variety 23-10RY as an alternative check variety. ICDC has therefore started the development of a new data base of soybean variety performance, as shown in Table 2. **Producers are cautioned on the limited number of test years within Table 2 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.

Table 1: Performance of Soybean Varieties Pre - 2012

Variety	Site Years	Yield as % of RR Rosco	Corn Heat Units*	Height (cm)	Lodge Rating	Seed Weight (g/1000)	Hilum Colour
Apollo RR	9	110	2375	75	VG	139	BR
NSC Warren RR	6	110	2375	79	VG	136	BR
LS 0036RR	6	106	2425	71	VG	129	BR
RR Rosco	9	100	2450	76	G	148	IY
Isis RR	4	92	2400	79	VG	136	BR
NSC Argyle RR	4	90	2450	73	G	140	BR
LS 0028RR	4	89	2400	62	VG	114	BR

Average plot yield of RR Rosco (check): 2,925 kg/ha (2,609 lb/ac)

Hilum is the point where the seed attaches to the pod: BR = Brown; IY = Imperfect Yellow

For a complete list of commercial varieties see **Seed Manitoba 2014** (www.seedmb.ca).

* Refer to the **Corn** section in this bulletin for information on corn heat units in Saskatchewan.

Soybean continued on next page.

Soybean

Table 2: Performance of Soybean Varieties Post 2012

Variety	Type	Site Years	Yield as % of 23-10RY	Corn Heat Units*	Days to Maturity	Height (cm)	Lodge Rating	Seed Weight (g/1000)	Hilum Colour
Sampsa RR	RR2	6	120	2425	126	73	VG	177	IB
TH 32004R2Y	RR2	6	119	2425	125	76	VG	174	BL
24-10RY	RR2	4	114	2425	129	75	VG	177	IB
004R21	RR2	4	114	2425	130	78	VG	178	BL
NSC Reston RR2Y	RR2	5	112	2325	124	85	VG	165	BL
TH 33003R2Y	RR2	5	108	2400	124	97	VG	177	BR
NSC Libau RR2Y	RR2	5	107	2375	127	98	VG	188	BL
NSC Tilston RR2Y	RR2	5	105	2375	124	86	VG	174	BL
900Y61	RR1	6	104	2425	126	75	VG	195	BR
900Y71	RR1	6	100	2450	127	74	VG	189	IY
23-10RY	RR2	7	100	2325	121	73	VG	195	IY
Vito R2	RR2	5	99	2350	122	96	VG	167	BL
Pekko R2	RR2	5	99	2325	121	77	VG	175	BL
29002RR	RR1	4	99	2375	122	75	VG	149	Y
Bishop R2	RR2	4	95	2450	121	NA	VG	166	BL

Average plot yield of 23-10RY (check): 2,938 kg/ha (2,620 lb/ac).

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

Hilum is the point where the seed attaches to the pod: BR = Brown; IY = Imperfect Yellow; BL = Black; IB = Imperfect Black

For a complete list of commercial varieties see **Seed Manitoba 2014** (www.seedmb.ca).

* A corn heat unit map of Saskatchewan is available on the Saskatchewan Agriculture website at [www.agriculture.gov.sk.ca/Corn Heat Units](http://www.agriculture.gov.sk.ca/Corn_Heat_Units).

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!

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 Corn Heat Unit (CHU) variety. CHU's 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 plants/ha (180,000 plants/ac). Emergence should ensure 40 plants/m² (4 plants/ft²). Soybean varieties differ in seed size. Equipment calibration is required to achieve successful 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 lb/ac N), irrigate with 0.6 – 1.25 ml/ha (0.25 – 0.5 inch/ac).
- Do not exceed 22 kg/ha P₂O₅ (20 lb/ac P₂O₅) seed placed phosphorus in solid seeded production. Soybean is an efficient “scavenger” of soil phosphorus but these phosphorus rates may be insufficient on 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 publication 2014 Guide to Crop Production 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 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 2003-2013. 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 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 2013 ICDC dry land silage corn hybrid trial are available upon request.


Hybrid	Company	CHU Rating	Site Years	Dry Matter Yield (T/ac)	% of Baxxos RR Check	Whole Plant Moisture (%)	Days to Anthesis	Days to Silking
HL R219 RR	Hyland	2350	7	7.6	115	62.4	78	78
SilEx Bt RR	Pickseed	2200	5	7.5	114	64.4	76	79
P7443R RR	Pioneer	2100	4	7.4	111	54.5	73	77
HL 3085 RR	Hyland	2400	5	7.2	109	62.9	78	81
39M26 RR	Pioneer	2100	4	7.2	109	58.4	67	75
HL B22R	Hyland	2400	3	6.9	104	69.9	77	81
39F57	Pioneer	2200	4	6.8	103	60.6	75	78
Baxxos RR	Hyland	2250	7	6.6	100	62.1	71	76
N05C-GT	Syngenta	2250	4	6.6	100	61.3	73	77
HL 2093	Hyland	2300	5	6.4	97	58.7	71	76
DKC26-78	Monsanto	2150	3	6.3	96	59.6	69	74
39D95	Pioneer	2150	5	6.0	90	61.0	74	78
39F45	Pioneer	2000	3	6.0	90	51.4	64	70
HL SR06	Hyland	2250	4	5.8	88	66.9	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 [www.agriculture.gov.sk.ca/Corn Heat Units](http://www.agriculture.gov.sk.ca/Corn_Heat_Units).

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 www.gov.mb.ca/agriculture/crops/cropproduction/qaa01d22.html.

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)  PBR in effect
 CDC Baler = 15,703 kg/ha (7.00 tons/ac)
 Pronghorn = 13,908 kg/ha (6.00 tons/ac)

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	Variety	Site Years	Yield as % of Beaver
Steak	3	118	Atomic	3	104
Approved	3	114	WL 319 HQ	3	104
Forecast 1001	3	112	Equinox	3	103
WinterGold	3	112	53Q60	7	103
AC Nordica	4	111	AC Grazelander Br 	7	103
WL 327	3	110	Dakota	3	103
Starbuck	3	109	Tophand	3	103
54V46	4	109	StockWell	10	102
WL 232 HQ	3	109	Proleaf	3	102
Spredor 4	3	108	Barrier	11	102
Gibraltar	3	107	Gala	4	102
Perfect	3	107	Magnum 3801 Wet	3	101
AC Blue J	22	106	Quattro HR	3	101
Survivor	3	106	Beaver	34	100
AC Longview	7	106	Rhino	3	98
Pickseed 2065MF	7	106	Magnum III-WET	3	97
54V54	7	106	Rangelander	22	96
Pickseed 8925MF	4	105	HayGrazer	3	96
421Abacus	3	105	Convoy	3	95
AmeriStand 201+Z	7	105	53Q30	3	94
AgriMaster	3	105	54Q25	3	93
Geneva	7	104	Dalton	3	93
HybriForce-400	3	104	Runner	6	93
134	3	104	Rambler	34	91

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

 PBR in effect

The 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 in which 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 (www.agriculture.gov.sk.ca/Forage-Crop-Production-Guide).

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
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 the 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 Bromegrass		
Carlton (check)	3	100
AC Rocket ☪	3	100
Radisson	3	99
Meadow Foxtail		
Dan (check)	3	100
Mountain	3	87

☪ PBR in effect

Variety	Site Years	Yield as % of check
Orchard Grass		
Tundra	3	121
Early Arctic	3	118
Kootenay	3	106
Killarney	3	105
Kay	3	100
Kayak	3	91
Meadow Bromegrass		
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:

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/ac (7.14 tons/ac)

Dan = 10,155 kg/ha (4.53 tons/ac)
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)