

Malt Barley Pre-Registration Variety Performance Testing

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ABSTRACT

Malting is an important end use of barley and is a prime crop choice for producers in the Peace River region. Many currently registered high yielding barley varieties do not possess the characteristics for malt but rather are better suited for feed. This project is working to the end goal of finding new high yielding barley lines that do possess malt barley characteristics, giving local producers the option of growing high yielding barley crops for malt or feed. In Western Canada the barley breeding community collectively test their new materials as the final step before registration through a cooperate effort called the Western Barley Co-op trials. By working with barley breeders through growing these co-op trials, valuable information from the Peace River region is provided to the breeding community. In return, promising material is found for the Peace region. Such collaboration has resulted in numerous possible lines successful in the Peace River region: namely Selkirk, CDC Laurence and CDC Clyde. Other possibilities were seen, and will be monitored for future registration.

INTRODUCTION

Growing malt barely is an attractive alternative and as it is a specialty crop it pays premium pricing. In order to receive this premium pricing, the barley must meet the malt grade: the set requirements must be met. Utilizing the proper management techniques is vital, but without the right line, it will be in vain. In Western Canada the barley breeding community collectively test their new materials as the final step before registration through a cooperate effort called the Western Barley Co-op trials. It is therefore imperative that the BC Grain Producers become an active participant with the barley breeders by growing the small-plot co-op barley tests. This will allow new varieties to be tested against the traditional malt standards, identifying those lines which are best suited for the Peace River region, as well as those that do not perform well.

By growing these tests locally in the Peace River region, the barley breeding community becomes informed of just such information which in return helps them to select materials better suited to the Peace River region. It also allows the producers of the Peace River region to witness first hand how new materials perform in this region. While this occurs as a backdrop, the prime objective of this study is to identify those varieties that do excel here, track them and record if they become registered for commercial use. The hope is to see these successful varieties show-up in the regional performance testing trial system and eventually readily available to those producers interested in growing a high yielding barley crop with added value a malt grade would bring.

MATERIALS AND METHODS

Due to the size of the co-op trials, only one farm site was used to collect data: that being the site located in the South Peace at Dawson Creek. Plots are planted, maintained, analyzed and harvested according to proper research protocol and by the guidelines suggested by co-op coordinators.

Each plot has a total area of 8.4 meters squared at planting, six rows wide each at 20 cm spacing (eight inches) by seven metres long, which are trimmed back in season to ensure plot length, avoid treatment overlaps while providing a pathway between replicates for viewing and assessments. Fertility levels were maintained to represent levels expected for malt barley production in the Peace Region and guided by spring soil sampling results taken each spring prior to planting. Weeds were controlled with common herbicides used for malt grade barley in the Peace River area.

Physiological maturity was determined through the collection of whole-head dry-down samples that are weighed in-laboratory as soon after collection as possible, dried down completely using heated air, and re-weighted immediately upon completion of heated drying. Other whole head dry-down samples are taken repeatedly from non-test plots to calculate the rate of dry-down per day during the harvest period. Harvest is done as soon as conditions allow using a small-plot research combine. The yield samples are air-dried with ambient air in house to equalize grain moisture content before final analysis occurs.

The benchmark variety AC Metcalfe was grown only in the two-row trial and not in the six-row trial as well. However, both trials were grown adjacent to one another and under identical environmental conditions and cultural practices at the site. The exclusion of AC Metcalfe in the six-row trial was due to the fact that the Western Co-op trials are setup by a committee and alterations to the entry composition is not allowed by cooperator's protocol. Thus, AC Metcalfe could not be included in the six-row trial for the purpose of a better statistical comparison. Comparison of actual yield and maturity means against that of AC Metcalfe was accomplished after statistical analysis of each individual set of trials each year at the site.

RESULTS AND DISCUSSION

Table 1. Varieties, higher yielding and early maturing than AC Metcalfe, grown in the 2-row and 6-row Western Coop Trial between 2002 and 2006

Top Varieties	Possibilities	2002	2006	Dropped
C491-009 *	BM9856D-151	A415-22	6B01-2218	A363-3-20
H91041004	H92012004	BM9434-110	6B01-2513	BM9611-5
	H93103004	BM9645-12	A447D-17	BM9904DT-17-8
	H97092001	BM9711D-124	BM9831D-290	C434-077
	SB00575	BZ596-189 *	BM9836-73	C491-033
	SM01160	C316-019	BM9856D-236	CS1203B
	SM01376s	C434-040	BM9907-145	EX598-5
	SM01764	C436-165	BM9929-524	EX605-8
	SM02222	EX517-10	BZ502-265	H97097006
	SM03219	EX524-3	H94034003	OBS4986-2
	SM03374s	H90013004Z	H94061120	SB03700
	SM03602	H93181033	H98075009	SM01268-A
		H94004026	M109	SM01725-A
		SB00480	Oro306	SM01777
		SM00137	Sal/He 6890 37-1	SM01797-A
		SM00173	Sal/He 6890 4-1	SM02543
		SM00262 *	SB040372	SM02544
		SM00770	SM04164	SM02644
		SM00795	SM04166	TR256DT0020-3
		SM99142	SM04175	
		SM99750 *	SM04385	
			SM04412	
			SM04596s	

*Varieties that have been registered:

H91041004 and C491-009 are listed under top varieties, as they were grown for two years in the BCGPA Western Coop Trials and both years matured earlier than AC Metcalfe while producing a higher yield. Fortunately, this year 2007, C491-009 was registered as Selkirk. H91041004 has not yet been registered and will therefore be watched for over the next couple of years for its registration.

Twelve varieties are listed under the title Possibilities; these varieties have also been grown for two years over the five-year period. These varieties however, were only early and higher yielding than AC Metcalfe for one of those two years. None have yet to be registered; however they will also be watched for.

Those varieties grown in 2002, have had ample time to be registered, already three of the varieties have been in 2004 and 2005. Therefore it is to be assumed that the rest have been dropped: however they will be watched for registration just in case.

A large number of varieties were seen for the first time in 2006, since registration is a time consuming task, these varieties will not be seen registered for a few more years. It must be noted that the data in this column is based off of yield only, as due to drought conditions the crop died prematurely before proper physiological maturity could be reached. However, this list will still be monitored over the following couple of years.

The last column contains those varieties which did well over the one year that they were grown. There is a chance that in the coming years they will be tested again, but there is a greater possibility that these varieties were simply dropped, a common occurrence, therefore these varieties will be kept for reference and checked for registry but with little hope.

Table 2. Varieties grown in the BCGPA Western Coop trials 2002-2006 and now registered

Variety	Year	Type	Test #	Experimental #
Selkirk *	2007	6R Malt	BT 970	C491-009
CDC Laurence *	2005	6R Malt	BT 493	SM00262
McLeod *	2005	2R Feed	TR 710	BZ596-189
CDC Clyde *	2004	6R Malt	BT 490	SM99750
CDC Mindon	2007	2R	TR 04378	SB00106
Alston	2007	6R Malt	BT 974	C449-029
Champion	2007	2R Feed	TR 04719	YU501-385
CDC Coalition	2006	2R Feed	TR 03373	SB01145
Sundre	2006	6R Feed	BT 566	H92068001

* Varieties listed in Table 1.

The malting barleys are of particular interest for this trial, fortunately, three of the four, which excelled in this region are of malting type. The later five varieties listed in Table 2, include those varieties which were grown in the co-op trial, but which were not earlier or higher yielding than AC Metcalfe.

CONCLUSION

This trial was more successful than ever thought possible, with a total of nine varieties grown over the five-year trial period becoming registered. Four of these nine varieties placed earlier and higher yielding than the choice for check, AC Metcalfe, and thus represent good potential possibilities for Peace River region producers. Three out of those four varieties turned out to be of malting type, Selkirk, CDC Laurence and CDC Clyde. These varieties are all six-row varieties; this is of some concern as in recent years it has been the two-row types that have been favored by area producers, which was presumably what the malsters have preferred. Whether this is just coincidence or reason, only time will tell now that there are clearly better six-row options out there to choose from. In time perhaps these new six-row lines will prove to be just, or more, successful for Peace River producers.

Table 1 indicates the success that was seen with varieties being grown in the Peace. The two with the greatest potential, having two years of data placed earlier and above AC Metcalfe, include H91041004 and C491-009; the later became registered as Selkirk in 2007. CDC Laurence and CDC Clyde are both varieties, which were seen to excel in this region. H91041004 was grown in 2002 and 2003: hopefully it will be registered over the following year, otherwise it will be assumed dropped. The possibilities of varieties available for malt barley in the Peace region, has grown immensely over the past five-years and will hopefully continue to grow over the following years. Until then, the three varieties listed above, will hopefully show up in the regional trials for further testing post-registration.

LITERATURE CITED

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APPENDIX I

B.C. Grain Producers Association**2002 Western Co-op 2-Row Barley**

Trial ID: WestCo-op 2R DC02

Study Dir.:

Location: Dawson Cree

Crop: OTHER

Rating Data Type		Yield	Maturity
Rating Unit		kg/ha	days to
Entry No.	Entry Rate Name Unit	1	2
1	Harrington	4065.3 a-f	87 e-h
2	CDC Dolly	4049.3 a-f	89 c-h
3	AC Metcalfe	3847 b-f	91 a-h
4	CDC Kendall	3809.7 c-f	85 gh
5	BZ596-189	3944.3 b-f	90 b-h
6	SM99342	3523.7 f	85 h
7	SM99428	3974.7 a-f	92 a-h
8	SB99111	4307.7 a-f	94 a-g
9	SB99066	4173.3 a-f	91 a-h
10	H92020115X	3897.3 b-f	97 abc
11	H93003006Z	4405.7 a-f	98 ab
12	H93167228Z	4076.3 a-f	92 a-h
13	H93170006X	4868.3 a	92 a-h
14	T337-013	4528.3 a-e	94 a-g
15	BZ596-273	3735 def	90 b-h
16	2B97-4299	4360 a-f	92 a-h
17	Merit	4211.7 a-f	97 abc
18	CS1200A	3830 b-f	90 b-h
19	CS1200G	4024 a-f	93 a-h
20	CS1200J	3682.3 ef	93 a-h
21	SM00112	4600.7 a-d	94 a-f
22	SM00132	4435.7 a-f	95 a-e
23	SM00392	3793.7 c-f	88 d-h
24	SM00593	4217.7 a-f	91 a-h
25	SM00599	4706.3 abc	93 a-h
26	SM00066	3970.7 a-f	96 a-d
27	BM9711D-124	3898.7 b-f	88 e-h
28	BM9647D-43	4145 a-f	91 a-h
29	BM9430-50	3692.3 def	91 a-h
30	BM9434-110	4077.3 a-f	89 c-h
31	BM9503-171	3786 def	90 a-h
32	BM9645-12	4042 a-f	88 d-h
33	SB00575	3868.7 b-f	90 a-h
34	SB00389	4731.7 ab	95 a-e
35	SB00339	3709 def	89 c-h
36	SB00480	4170.3 a-f	85 gh
37	SB00584	3921.7 b-f	99 a

38	F396-7	3885.7 b-f	92 a-h
39	EX517-10	3910.3 b-f	86 fgh
40	H91011001	3942 b-f	91 a-h
41	H94062095X	4223.7 a-f	91 a-h
42	BZ598-095	3780 def	91 a-h
43	SM00467s	4304.7 a-f	98 ab
44	SM00530s	4244.3 a-f	93 a-h
LSD (P=.05)		497.73	4.72
Standard Deviation		304.8	2.89
CV		7.48	3.16
Bartlett's X2		37.631	34.576
P(Bartlett's X2)		0.703	0.785
Replicate F		0.837	1.496
Replicate Prob(F)		0.4363	0.2298
Treatment F		3.019	4.281
Treatment Prob(F)		0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

B.C. Grain Producers Association**2002 Western Co-op 6-Row Barley**

Trial ID: WestCo-op 6R DC02

Study Dir.:

Location: Dawson Cree

Crop: OTHER

Rating Data Type			Yield	Maturity
Rating Unit			kg/ha	days to
Entry No.	Entry Name	Rate Unit	1	2
1	CDC SISLER		4141.3 abc	85.3 cd
2	EXCEL		4355.3 abc	88 a-d
3	AC LACOMBE		4520.7 abc	87.3 bcd
4	AC ROSSER		4470.3 abc	88.3 a-d
5	SM99142		4575.7 abc	90.3 a-d
6	SM99750		4170.7 abc	87 bcd
7	H90013004Z		5217.3 a	85.7 cd
8	C434-040		4161.7 abc	84.3 d
9	F370-5		4004 bc	92.3 abc
10	A415-22		4917.7 ab	89.7 a-d
11	EX705D-26		3535.3 c	95 a
12	AB183-4		4200.3 abc	93.3 ab
13	EX524-3		4015 bc	89.7 a-d
14	SM00137		4631.3 abc	88.7 a-d
15	SM00173		4253.7 abc	87.3 bcd
16	SM00262		4608 abc	90.3 a-d
17	SM00716		4488.7 abc	91.7 a-d
18	SM00770		4746.3 ab	89.7 a-d
19	SM00795		4365.3 abc	89.7 a-d
20	H91041004		4889.7 ab	84.7 d
21	H93181033		4320 abc	88.3 a-d
22	H94004026		3976.3 bc	88.3 a-d
23	C436-165		4690.3 ab	88 a-d
24	C491-009		3862.7 bc	85.7 cd
25	C316-019		4197.3 abc	88 a-d
LSD (P=.05)			617.4	4.04
Standard Deviation			374.15	2.45
CV			8.56	2.76
Bartlett's X2			17.506	31.151
P(Bartlett's X2)			0.826	0.149
Replicate F			4.303	3.837
Replicate Prob(F)			0.0191	0.0285
Treatment F			2.969	3.461
Treatment Prob(F)			0.0007	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

B.C. Grain Producers Association**Western 2-Row Co-op Barley Trial - 2003**

Trial ID: WestCoop 2R DC03

Study Dir.:

Location: Dawson Cree

Crop: OTHER

Rating Data Type			Yield	Maturity
Rating Unit			kh/ha	days to
Entry No.	Entry Name	Rate Unit	1	2
1	Harrington		6116.55 a	98 c-j
2	CDC Dolly		6465.42 a	93.3 j
3	AC Metcalfe		6180.75 a	97.3 d-j
4	CDC Kendall		6328.22 a	94.7 hij
5	SM00112		5824.19 a	105 a
6	SM00599		6614.19 a	103 a-d
7	SB00575		6174.83 a	94.3 ij
8	SB00389		6256.61 a	101.3 a-f
9	SB00584		6797.58 a	102 a-e
10	SM00601		6129.73 a	99.7 a-i
11	SM01013		6329.13 a	100.3 a-h
12	SM01409		6193.22 a	99.3 b-i
13	SM01641		6085.48 a	100 a-i
14	SM01517		6174.19 a	95.3 g-j
15	SM01067		6504.94 a	101.3 a-f
16	BM9829D-202		6344.13 a	98.3 b-j
17	BM9751D-82		5995.26 a	97.7 c-j
18	BM9611-7		4268.74 a	97.7 c-j
19	BM9611-216		6343.22 a	100.3 a-h
20	BM9802D-30		5775.21 a	99.3 b-i
21	BM9521-145		5510.1 a	98.7 b-j
22	SB01226		6040.32 a	96.3 e-j
23	SB01145		7015.86 a	99 b-j
24	SB01050		5646.18 a	95 hij
25	SB01119		7290.91 a	99 b-j
26	SB01463		5674.57 a	98 c-j
27	H92012004		6733.92 a	95.7 f-j
28	H92015003		5855.21 a	100 a-i
29	H92033013		6302.41 a	101 a-g
30	H92066207		6633.71 a	101.7 a-e
31	BZ598-043		6086.29 a	101 a-g
32	SM01376s		6131.02 a	97.3 d-j
33	SM01711s		6022.41 a	99 b-j
34	CS1202X		6098.27 a	103.3 abc
35	CS1203B		6279.3 a	96.3 e-j
36	B5312		6796.34 a	104 ab
LSD (P=.05)			1153.261956	3.13

Standard Deviation	706.22584	1.92
CV	11.4	1.94
Bartlett's X2	110.88	50.777
P(Bartlett's X2)	0.001*	0.014*
Replicate F	2.8	2.072
Replicate Prob(F)	0.0676	0.1336
Treatment F	1.521	6.435
Treatment Prob(F)	0.0684	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

B.C. Grain Producers Association**Western 6-Row Barley Co-op Trial - 2003**

Trial ID: WestCoop 6R DC03

Study Dir.:

Location: Dawson Cree

Crop: OTHER

Rating Data Type	yield	maturity	
Rating Unit	kg/ha	days to	
Entry No.	Entry Name	Rate Unit	
	1	2	
1	CDC SISLER	6783.93 a-g	94.3 de
2	EXCEL	6130.2 g	97.3 cde
3	AC LACOMBE	6452.8 d-g	93.7 e
4	AC ROSSER	6945.37 a-g	97.7 b-e
5	SM00262	7126.73 a-f	100.3 abc
6	SM00770	7201.4 a-e	97.7 b-e
7	H91041004	6962 a-g	94.3 de
8	H94004026	7497.27 ab	98.7 a-e
9	C491-009	6341.83 d-g	93 e
10	EX605-8	7229.23 a-d	96.3 cde
11	EX584-13	7010.37 a-g	98 b-e
12	EX598-5	6191.93 fg	96.3 cde
13	OBS4986-2	6264.8 efg	94 de
14	A414-7	7397.37 abc	99.7 a-d
15	A419-52	6881.6 a-g	97.7 b-e
16	SM01160	6263.73 efg	95 cde
17	SM01268-A	6853.63 a-g	95.3 cde
18	SM01725-A	6492.53 c-g	94.7 de
19	SM01764	6957.5 a-g	93 e
20	SM01777	6955.9 a-g	97 cde
21	SM01797-A	6847.8 a-g	96.7 cde
22	H92068001	7588.4 a	102.7 a
23	W92068004	7095.87 a-f	102.3 ab
24	C434-077	6571.93 b-g	96.3 cde
25	C491-033	6731.63 a-g	94.7 de
LSD (P=.05)	511.258	3.1	
Standard Deviation	309.827	1.88	
CV	4.54	1.94	
Bartlett's X2	28.007	32.816	
P(Bartlett's X2)	0.26	0.108	
Replicate F	3.202	3.638	
Replicate Prob(F)	0.0495	0.0338	
Treatment F	5.217	5.916	
Treatment Prob(F)	0.0001	0.0001	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

B.C. Grain Producers Association

Western Co-op 2-Row Barley - DC - 2004

Dawson Creek

Trial ID: WCoop2rDC-04

Study Dir.:

Location: Dawson Cree

Crop: OTHER

Investigator: Clair Langlois

Rating Data Type			Yield	Maturity
Rating Unit			kg/ha	days to
ARM Action Codes				
Entry No.	Entry Name	Rate Unit	3	5
1	Harrington		5495.7 d-j	100.058 ab
2	Xena		6091.4 a-j	99.9153 ab
3	AC Metcalfe		5813.44 b-j	94.0367 b
4	CDC Kendall		5509.14 d-j	96.7813 b
5	SM01409		5947.31 a-j	96.0746 b
6	SM01517		5439.25 f-j	92.729 b
7	BM9829D-202		5748.92 c-j	96.3176 b
8	SB01145		6329.57 a-d	97.7836 ab
9	SB01119		6266.13 a-f	98.9298 ab
10	H92012004		6183.87 a-i	97.064 b
11	H92015003		5939.25 a-j	94.5231 b
12	BZ598-043		5386.02 g-j	108.179 a
13	SM01376s		5302.69 j	95.5164 b
14	B5312		6007.53 a-j	99.3863 ab
15	SM02414		6023.12 a-j	99.4684 ab
16	SM02492		6121.51 a-j	100.578 ab
17	SM02543		6043.55 a-j	92.2503 b
18	SM02592		6077.96 a-j	94.1704 b
19	SM02639		5479.57 e-j	95.525 b
20	SM02644		6191.4 a-h	93.5821 b
21	BM9751-130		5308.6 j	98.9041 ab
22	BM9751-287		5340.32 ij	98.5705 ab
23	BM9765-120		6025.81 a-j	97.8601 ab
24	BM9856D-13		6101.61 a-j	97.881 ab
25	BM9856D-200		5366.13 hij	97.7005 ab
26	BM9611-5		5977.42 a-j	93.6619 b
27	SB01513		6264.52 a-f	96.2601 b
28	SB00106		5808.07 b-j	95.5045 b
29	SB02122		6101.61 a-j	96.6875 b
30	SB02305		6148.39 a-j	97.7479 ab
31	SB02065		6230.65 a-g	100.463 ab
32	SB02352		5555.91 c-j	95.2847 b
33	H93014003		6212.9 a-h	95.7106 b
34	H93014014		5732.26 c-j	96.3294 b
35	H93016013		6376.34 abc	100.448 ab

36 H93102002	6615.05 ab	95.9161 b
37 YU501-385	6302.69 a-e	102.681 ab
38 YU501-163	6697.85 a	95.2737 b
39 SM02439s	5939.79 a-j	99.4348 ab
40 2B97-4004	5782.8 b-j	102.9 ab
LSD (P=.05)	460.512223	5.8997456
Standard Deviation	282.004972	3.6128415
CV	4.75	3.71
Bartlett's X2	27.539	31.894
P(Bartlett's X2)	0.915	0.783
Replicate F	11.408	3.04
Replicate Prob(F)	0.0001	0.0536
Treatment F	4.959	2.2
Treatment Prob(F)	0.0001	0.0016

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

B.C. Grain Producers Association

Western Co-op 6-Row Barley - DC - 2004

Dawson Creek

Trial ID: WCoop6r-DC04

Study Dir.:

Location: Dawson Cree

Crop: OTHER

Investigator: Clair Langlois

Rating Data Type	Yield	Maturity
Rating Unit	kg/ha	days to
ARM Action Codes		
Entry No.	2	3
Entry Name		
Rate Unit		
1 CDC SISLER	5805.38 ab	99.4737 a
2 EXCEL	5120.43 bc	104.813 a
3 AC LACOMBE	5705.38 ab	105.815 a
4 AC ROSSER	6306.45 ab	104.595 a
5 A419-52	5567.74 ab	102.613 a
6 SM01160	5218.82 abc	102.629 a
7 SM01764	6110.22 ab	103.823 a
8 H92068001	5950.54 ab	100.77 a
9 OB5109-2	5923.66 ab	102.053 a
10 EX680-7-12	5538.17 ab	98.1221 a
11 SM02222	5778.5 ab	102.971 a
12 SM02229	5716.67 ab	101.474 a
13 SM02736	6412.9 a	99.7631 a
14 SM02232	5209.14 abc	98.5892 a
15 SM02271	5877.96 ab	101.655 a
16 SM02720	4456.45 c	101.99 a
17 H93043204	5402.15 ab	105.996 a
18 H93072001	5927.96 ab	102.7 a
19 M92039001	4367.74 c	105.113 a
20 M92081001	5666.67 ab	107.746 a
21 C449-029	5679.57 ab	107.709 a
22 C517-004	5994.09 ab	98.3803 a
23 C491-032	5737.63 ab	103.017 a
LSD (P=.05)	646.063358	6.2289559
Standard Deviation	391.520425	3.7748057
CV	6.96	3.68
Bartlett's X2	15.993	25.531
P(Bartlett's X2)	0.816	0.272
Replicate F	0.643	3.461
Replicate Prob(F)	0.5308	0.0402
Treatment F	4.888	1.62
Treatment Prob(F)	0.0001	0.0857

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

B.C. Grain Producers Association

Western Co-op 2-Row Barley - Dawson Creek, BC - 2005

Trial ID: WCoop2r-DC05

Study Dir.:

Location: DawsonCreek

Crop: OTHER

Investigator: Clair Langlois

Rating Data Type			Yield	Maturity
Rating Unit			kg/ha	days to
Entry No.	Entry Name	Rate Unit	2	3
1	Harrington		5941.93 c-h	105.23 a-j
2	Xena		6746 b-e	107.17 a-d
3	AC Metcalfe		6136.2 b-h	102.97 f-l
4	CDC Kendall		6097.37 b-h	103.47 d-l
5	SM02592		6109.83 b-h	102.33 h-l
6	SB01513		6910.97 abc	107.1 a-e
7	SB00106		6036.77 b-h	105.33 a-j
8	SB02122		6656.67 b-f	104.03 c-l
9	YU501-385		6572.93 b-f	106.23 a-g
10	YU501-163		7114.7 ab	108.17 ab
11	SM02544		6463.97 b-g	101.9 jkl
12	SM03451		5897.57 c-h	100.33 l
13	SM03620		6293.8 b-g	105.17 a-j
14	SM03003		6093.8 b-h	104.5 b-k
15	SM03641		6222.5 b-h	108.03 ab
16	SM03602		7729.1 a	108.47 a
17	SM03638		5898.5 c-h	107.9 ab
18	BM9856D-151		5723.2 e-h	102.23 h-l
19	BM9856D-176		6228 b-h	103.4 e-l
20	BM9857-144-1		5747.97 d-h	101.2 kl
21	BM9836-73		6573.53 b-f	105.6 a-j
22	BM9904DT-17-8		6436.37 b-g	101.17 kl
23	BM9924D-152		5910.53 c-h	103.03 f-l
24	TR256DT0020-3		6224.73 b-h	100.93 kl
25	SB03700		6556.4 b-f	100.87 kl
26	SB03726		6311.37 b-g	103.5 d-l
27	SB03633		5165.47 h	100.5 l
28	SB02420		6047.93 b-h	102 i-l
29	SB03833		5617.07 fgh	102.5 g-l
30	SB02680		5675.37 e-h	100.37 l
31	H93103004		6658.2 b-f	105.77 a-i
32	H93174001		6258.4 b-g	105.5 a-j
33	H93174006		6910.13 abc	106.53 a-f
34	H97006005		6587.6 b-f	108.63 a
35	Scarlett		6809.53 bcd	107.43 abc
36	Boulder		5940.6 c-h	103.9 c-l

37 2B99-2316	6577.13 b-f	105.9 a-h
38 2B99-2657	7061.67 ab	108.7 a
39 SM03374s	6360.3 b-g	102.9 f-l
40 KA3X1-18	5414 gh	100.47 l
41 CA3X2-9	6231.8 b-h	104.97 a-j
42 KendallDT002-4	5656.17 fgh	101.07 kl
LSD (P=.05)	587.194	2.083
Standard Deviation	359.581	1.276
CV	5.73	1.22
Bartlett's X2	23.913	29.631
P(Bartlett's X2)	0.985	0.906
Replicate F	2.194	11.46
Replicate Prob(F)	0.118	0.0001
Treatment F	5.75	12.862
Treatment Prob(F)	0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

B.C. Grain Producers Association

Western Co-op 6-Row Barley - Dawon Creek - 2005

Trial ID: WCoop6r-DC05

Study Dir.:

Location: DawsonCreek

Crop: OTHER

Investigator: Clair Langlois

Rating Data Type	YIELD	Maturity
Rating Unit	kg/ha	days to
Entry No. Entry Name Rate Unit	5	3
1 CDC SISLER	5653.53 b-f	102.1 bcd
2 EXCEL	5717.68 a-f	101.6 b-e
3 VIVAR	6295.83 abc	100.17 c-g
4 AC ROSSER	5609.56 b-f	102.97 ab
5 SM02222	6448.82 ab	102.47 abc
6 SM02229	6118.86 a-d	103.03 ab
7 M92081001	5605.18 b-f	104.83 a
8 C449-029	5586.49 b-f	97.57 hi
9 C491-032	5843.96 a-f	101.43 b-e
10 A363-3-20	6351.87 abc	100.8 b-f
11 A429-12	5295.94 d-g	101.5 b-e
12 A430-10	5952.72 a-f	99.2 e-h
13 SM03147	6066.08 a-e	99.63 d-h
14 SM03152	5215.49 efg	102.63 abc
15 SM03185	5482.75 c-f	99.27 e-h
16 SM03219	5517.47 c-f	98.6 f-i
17 SM03715	4723.18 g	100.1 c-g
18 SM03784	5602.51 b-f	101.5 b-e
19 H97092001	6559.45 a	96.93 i
20 H97093008	5864.48 a-f	101.27 b-e
21 H97097001	6035.95 a-e	103.13 ab
22 H97097006	6267.9 abc	101.4 b-e
23 C491-008	5142.74 fg	103.2 ab
24 C517-010	5872.97 a-f	98.1 ghi
LSD (P=.05)	496.7933	1.56
Standard Deviation	301.0614	0.945
CV	5.2	0.94
Bartlett's X2	15.207	22.65
P(Bartlett's X2)	0.887	0.481
Replicate F	39.396	6.72
Replicate Prob(F)	0.0001	0.0028
Treatment F	6.59	13.365
Treatment Prob(F)	0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

B.C. Grain Producers Association

Western Co-op 2-Row Barley - DC - 2006

Trial ID: WCoop2r-DC06

Study Dir.:

Location: DawsonCreek

Crop: OTHER

Investigator: Clair Langlois

Rating Data Type			YIELD
Rating Unit			kg/ha
Entry No.	Entry Name	Rate Unit	3
1	Harrington		1095.15 a-d
2	Xena		1317.29 abc
3	AC Metcalfe		1031.71 a-d
4	CDC Kendall		1006.8 a-d
5	SM03620		1005.22 a-d
6	SM03003		916.633 bcd
7	SM03602		1065.28 a-d
8	BM9856D-151		1034.62 a-d
9	BM9856D-176		759.267 d
10	BM9836-73		1109.37 a-d
11	SB02420		833.217 cd
12	H93103004		1376.98 ab
13	H93174006		955.183 bcd
14	2B99-2316		996.234 a-d
15	2B99-2657		1025.92 a-d
16	SM03374s		1050.53 a-d
17	KendallDT002-4		847.443 cd
18	SM04291		1018.26 a-d
19	SM04385		1100.33 a-d
20	SM04412		1143.56 a-d
21	SM04269		845.157 cd
22	BM9856D-30		837.977 cd
23	BM9856D-236		1048.73 a-d
24	BM9831D-290		1062.41 a-d
25	BM9907-145		1146.97 a-d
26	BM9904-503		966.81 a-d
27	BM9929-524		1123.15 a-d
28	SB040372		1170.48 a-d
29	SB03274		810.767 cd
30	SB03823		1016.98 a-d
31	H94034003		1089.44 a-d
32	H94035132		1006.98 a-d
33	H94050005		808.267 cd
34	H94061120		1106.35 a-d
35	BZ502-265		1328.46 abc
36	Sal/He 6890 4-1		1488.27 a

Note: No maturity data
due to severe drought

37 Sal/He 6890 37-1	1211.96 a-d
38 Oro306	1301.21 abc
39 2B99-2763-10	859.537 bcd
40 2B99-2771-1	985.85 a-d
41 KBXX	827.49 cd
42 SM04596s	1103.67 a-d
LSD (P=.05)	284.796049
Standard Deviation	174.401247
CV	16.71
Bartlett's X2	52.931
P(Bartlett's X2)	0.1
Replicate F	15.646
Replicate Prob(F)	0.0001
Treatment F	2.647
Treatment Prob(F)	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

B.C. Grain Producers Association

Western Co-op 6-Row Barley - Dawson Creek - 2006

Trial ID: WCoop6r-DC06

Study Dir.:

Location: DawsonCreek

Crop: OTHER

Investigator: Clair Langlois

Rating Data Type	YIELD		
Rating Unit	kg/ha		
Entry No.	Entry Name	Rate Unit	4
1	CDC SISLER		855.951 a
2	EXCEL		1001 a
3	VIVAR		1057.99 a
4	AC ROSSER		1062.51 a
5	LEGACY		859.899 a
6	SM03152		873.072 a
7	SM03219		1063.37 a
8	H97092001		859.391 a
9	H97093008		967.089 a
10	A447D-50		1026.59 a
11	A447D-17		1035.71 a
12	SM04164		1167.31 a
13	SM04077		510.7 b
14	SM04166		1114.85 a
15	SM04112		912.911 a
16	SM04171		1015.9 a
17	SM04175		1107.66 a
18	H94004128		942.265 a
19	H98075009		1051.6 a
20	M109		1168.08 a
21	6B01-2218		1171.26 a
22	6B01-2513		1089.71 a
23	C533-111		1005.52 a
24	C520-019		999.674 a
LSD (P=.05)			174.0716574
Standard Deviation			105.4890547
CV			10.58
Bartlett's X2			23.978
P(Bartlett's X2)			0.405
Replicate F			1.121
Replicate Prob(F)			0.3347
Treatment F			5.416
Treatment Prob(F)			0.0001

Note: No maturity data
due to severe drought

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.