



Western Canadian Grass Seed Testing Program

Coordinated by: Peace Region Forage Seed Association



2011 Report

Compiled by: Sandra Burton and Rahman Azooz

Sites in: British Columbia Alberta Manitoba

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Introduction

There is potential to increase grass and legume seed production in the Peace Region for domestic and export markets. Factors that adversely affect high quality seed production in the region such as weeds affecting competition and dockage, insect pests, lack of registered herbicides/ insecticides, and the availability of regionally adapted species and varieties. The last limiting factor of production is addressed by grass seed variety testing trials, which are conducted under the Western Grass Seed Testing Program. The Western Grass Seed Testing program (WGST) provides information on the performance of turf and forage grass varieties grown in western Canada. The main objectives are to generate yield data for varieties grown at regional sites under local growing conditions. Ultimately, all included varieties that perform well are destined for domestic and international market. In 2008, 2009, 2010 and 2011, seed companies entered varieties of three main grass crops into the program at three main sites: Beaverlodge AB, Fort St. John BC and Arborg MB. This report provides a summary of the grass seed trials conducted under the Western Grass Seed Testing Program for the 2011 growing season.

WGST Co-operating Research Sites and Contacts

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Arborg, MB	Heather McBey, MFSA Administrator Manitoba Forage Seed Association Box 2000 Arborg, MB. R0C 0A0 Phone (204) 376-3309 Fax (204) 376-3311 Email: hmcbey@forageseed.mb.ca	



Materials and Methods

Trials were conducted at three main locations in western Canada:

- 1- Beaverlodge, AB (lat. 55°12'N, long. 119°24'W, 760 m ASL) (Dark Gray Solod [Esher clay] to Dark Gray Luvisol [Hythe fine loam])
- 2- Fort St John, BC (Lat. 56°14'N, Long. 120°44'W) Dark Gray Solod [Esher clay]
- 3- Alborg Manitoba (50° 54' 0" N, 97° 13' 0" W).

The weather conditions were drier than usual at the Beaverlodge and Fort St. John sites for several years, especially in 2010. The total precipitation for Fort St. John was 14.3mm in June and 36.0mm in July, 2010 compared with the 30-yr average of 69.2mm in June and 77.5mm in July. The total monthly precipitation at Beaverlodge were 18.2mm in June, 28.2mm in July, and 54.0mm in Aug, 2010 compared with the 30-yr average were 41.3mm in June, 63.7mm in July and 72.4mm in Aug.

The forage grass varieties and the checks included in the trials were obtained from Canadian and international seed companies and their foreign associates. Harvest is taken for two production years for fine-leaved fescue and three production years for timothy, tall fescue and brome grass. The trials highlighted here were established in 2007, 2008, 2009 and 2010.

The three sites are managed to a high standard based on the equipment and research team available for each site. At Beaverlodge, AB, the site had been fallowed for at least two crop years before seeding. At Fort St. John, the site preparation was modified to conserve soil moisture and the site is cropped in canola or cereal for two years prior to direct seeding. At all sites, the trials are seeded in the spring and fertilizer is applied in the fall and/or spring according to results from the soil testing laboratory. During the trials, weeds were controlled by a combination of trimming, hand weeding, inter-row cultivation, and recommended herbicides. The experimental design for each species was a randomized complete block with four replications. Individual experimental plots were comprised of four rows, each 6 m long with row spacing of 30 to 40 cm apart, depending on the seed drill at each site. The yield was collected from the central two rows. The harvested area of each plot was 3.6 m² at Beaverlodge site, 4.0 m² at Fort St John site and 3.0 m² at Alborg site.

Protocol for Western Grass Seed Testing (WGST) Program

As revised in Jan 2011 & sent to seed companies

1. Research Sponsorship

The research sponsorship of **\$240 CAN/entry/year/location** is requested on an annual basis, as years of production will vary with the species being tested, and applies to the establishment year as well. The Peace Region Forage Seed Association will administer funds for the Western Grass Seed Testing Program.

The Peace Region Forage Seed Association and Manitoba Forage Seed Association will honor the commitment made to companies for entries prior to 2009, and will continue to collect data on those entries for the originally agreed upon \$120 CAN/entry/year/location.

2. Eligibility of Entries

Released and experimental lines of all tame and native grass species will be considered if they are of interest to commercial seed companies. We reserve the right not to initiate tests:

- If seed arrives late
- If there is lack of space in any year at a particular location
- If there are too few entries in any year for a particular location

3. Seed Requirements and Deadline for Seed Entry

The applicant will provide for **EACH TEST LOCATION**:

- 50 gm of bentgrass, Kentucky bluegrass or timothy
- 100 gm of orchardgrass; creeping red, chewings, hard, meadow, sheep or tall fescue; annual or perennial ryegrass
- 200 gm of meadow or smooth brome grass, wheatgrasses

Submitted seed shall be supplied by **March 31** of the establishment year and **will include the percent germination and relative maturity** (early, medium or late) of each variety. Please indicate whether the submission is **forage or turf type**. For fescues please indicate whether the submission is a creeping, chewings, hard, meadow, sheep or tall fescue.

4. Use of Seed

Seed submitted will only be used to establish the agreed upon trials. The seed will **NOT** be used for increase, selection or distribution.

5. Test Locations in 2012

1. Fort St. John, British Columbia
2. Beaverlodge, Alberta
3. Arborg, Manitoba

The applicant selects the locations where their material is to be tested.

**Western Grass Seed Testing (WGST) Program
2012 Application for Entry**

1. Company: _____
 Contact person: _____
 Mailing address: _____

Telephone: _____
 Fax: _____
 Email: _____

Species	Type forage or turf	Variety name/code	% Germ	Relative maturity early, medium, late

3. Please indicate at which locations you wish your entries tested (refer to map). The applicant will be invoiced once test sites for the current test year are finalized.

Fort St. John, BC _____
 Beaverlodge, AB _____
 Arborg, MB _____

Send no later than April 1, 2011 to:

1- Sandra Burton, Coordinator
 Peace Region Forage Seed Association
 Box 6135
 Fort St. John, British Columbia
 Canada V1J 4H6
 Telephone 1 877 630 2198 or (250) 789 6885
 Fax (250) 789-6884
coordinator@peaceforageseed.ca

or

2- Rahman Azooz
 Seed Production Program
 Agriculture and Agri-Food Canada
 Box 29, Beaverlodge, AB. T0H 0C0
 Phone (780) 354-5114
 Cell (780) 832-5947
 Fax (780) 354-5150
 Email : azoozr@agr.gc.ca

Results

Fine Fescue Seed Trials:

Table 1. Seed Yield in 2010 and 2011 for the Fine Fescue Trials Established in 2009 at Fort St. John, BC.

Company	Variety	2010	2011	Total	2010	2011	Avg
		kg ha ⁻¹			% of Boreal		
Pickseed	Garnet	703	87	790	105	23	64
	SR 5250	788	177	965	117	47	82
Check	Boreal	671	380	1051	100	100	100
CV%		39	49				
LSD _{0.05}		485	180				

The harvesting date was 19-Jul in 2010 and 29-Jul in 2011.

Table 2. Plant Height in 2010 and 2011 for the Fine Fescue Trials Established in 2009 at Fort St. John, BC.

Company	Variety	2010	2011
		Plant Height (cm)	
Pickseed	Garnet	59	56
	SR 5250	62	65
Check	Boreal	63	72
CV%		6	6
LSD _{0.05}		6	7

Table 3. Summary of Seed Yield (% of Boreal) for the Fine Fescue Trials at Fort St. John 2010 to 2011.

Seeding	Company	Varieties	Fort St John		
			% of Boreal		
Year			2010	2011	Avg
2009	Pickseed	Garnet	105	23	64
		SR 5250	117	47	82
	Check	Boreal	100	100	100
			Seed yield (kg ha ⁻¹)		
	Check	Boreal	671	380	

Tall Fescue Seed Trials:

Table 4. Seed Yield in 2008 and 2009 for the Tall Fescue Trials Established in 2007 at Beaverlodge AB.

Company	Variety	2008	2009	2010	Total	2008	2009	Avg
						kg ha ⁻¹		
Barenbrug USA	BARFA 1005	1305	454	-	1759	133	56	94
	BAR 3FABTR9	780	420	-	1200	79	52	66
	Bariane	713	504	-	1217	73	62	67
	Barcarella	903	381	-	1284	92	47	69
Check	Courtenay	982	814	-	1796	100	100	100
CV%		10	20	-	44			
LSD _{0.05}		144	159	-	673			

The harvesting date was 28-Jul in 2008 and 11-Aug in 2009.

Table 5. Plant Height in 2008 and 2009 for the Tall Fescue Trials Established in 2007 at Beaverlodge AB.

Company	Variety	2008	2009
		Plant Height (cm)	
Barenbrug USA	BARFA 1005	64	51
	BAR 3FABTR9	89	94
	Bariane	93	92
	Barcarella	95	90
Check	Courtenay	105	99
CV%		6.3	12.3
LSD _{0.05}		8.3	16.0

Table 6. Seed Yield in 2009 and 2010 for the Tall Fescue Trials Established in 2008 at Fort St John BC.

Company	Variety	2009	2010	2011	Total	2009	2010	Avg
kg ha⁻¹						% Courtenay		
Barenbrug USA	BARFA 1005	555	523	-	1078	143	103	123
	BAR 3FABTR9	496	387	-	883	128	76	102
	Bariane	651	279	-	930	168	55	112
	Barcarella	383	371	-	754	99	73	86
Check	Courtenay	387	507	-	894	100	100	100
CV%		21.2	23	-	31			
LSD _{0.05}		162	148	-	142			

The harvesting date was 11-Aug in 2009 and 20-Jul in 2010

The data for seed yield in 2011 for tall fescue trials at Fort St. John site (established in 2008) was not reported due to winter kill in the winter of 2010-2011 and no seed production in the 2011 growing season.

Table 7. Plant Height in 2009 and 2010 for the Tall Fescue Trials Established in 2008 at Fort St John BC.

Company	Variety	2009	2010
Plant Height (cm)			
Barenbrug USA	BARFA 1005	45	48
	BAR 3FABTR9	77	64
	Bariane	86	65
	Barcarella	76	63
Check	Courtenay	90	68
CV%		4.5	5.2
LSD _{0.05}		5.3	5.0

Table 8. Seed Yield in 2009, 2010 and 2011 for the Tall Fescue Trials Established in 2008 Arborg MB.

Company	Variety	2009	2010	2011	Total	2009	2010	2011	Avg
						kg ha ⁻¹			
Barenbrug USA	BARFA 1005	2072	39	117	2228	85	36	25	49
	BAR 3FABTR9	1314	40	155	1509	54	37	33	41
	Bariane	1102	26	162	1290	45	24	34	35
	Barcarella	1393	32	339	1764	57	30	72	53
Check	Courtenay	2430	108	473	3011	100	100	100	100
CV%		26.6	91.6	36.6					
LSD _{0.05}		681	NS	140.7					

The harvesting date was 13-Aug in 2009, 26-Jul in 2010 and 27-Jul in 2011

Table 9. Plant height in 2009, 2010 and 2011 for the Tall Fescue Trials Established in 2008 Arborg MB.

Company	Variety	2009	2010	2011
Barenbrug USA	BARFA 1005	112	107	115
	BAR 3FABTR9	112	108	112
	Bariane	122	108	111
	Barcarella	118	112	112
Check	Courtenay	126	122	115
CV%		6.6	8.5	3.4
LSD _{0.05}		12.0	NS	6.0

Table 10. Summary of Seed Yield (% of Courtenay) for the Tall Fescue at Beaverlodge, Fort St. John & Arborg from 2008 to 2011.

Seeding	Company	Varieties	Beaverlodge			Fort St John			Arborg			
			2008	2009	Avg	2009	2010	Avg	2009	2010	2011	Avg
2007	Barenbrug USA	BARFA 1005	133	56	94							
		BAR 3FABTR9	79	52	66							
	Bariane	73	62	67								
	Barcarella	92	47	69								
	Check	Courtenay	100	100	100							
		Seed yield (kg ha⁻¹)										
	Courtenay	982	814									
2008	Barenbrug USA	BARFA 1005				2009	2010	Avg	2009	2010	2011	Avg
		BAR 3FABTR9				% of Courtenay			% of Courtenay			
		Bariane	143	103	123	85	36	25	49			
		Barcarella	128	76	102	54	37	33	41			
		Courtenay	168	55	112	45	24	34	35			
	Check	Barcarella	99	73	86	57	30	72	53			
		Courtenay	100	100	100	100	100	100	100			
	Check	Seed yield (kg ha⁻¹)										
		Courtenay	387	507		2430	108	473				

Bromegrass Seed Trials:

Table 11. Seed Yield and Plant height in 2011 for the Bromegrass Trials Established in 2010 at Fort St. John, BC.

Company	Variety		2011	2011	2011
			Seed	Seed	Plant Height
			kg ha ⁻¹	% of Fleet	cm
SeCan	AC Admiral	Meadow	871	73	125
SeCan	AC Armada	Meadow	1171	98	123
Barenbrug USA	BAR BiF1GRL	Meadow	213	18	119
Viterra	AC Knowles	Hybrid	490	41	126
Check	Fleet	Meadow	1197	100	119
			% of Carlton		cm
Viterra	AC Knowles	Hybrid	490	91	126
Viterra	AC Rocket	Smooth	868	162	127
Barenbrug USA	BAR BcF1FRRL	Smooth	1056	197	128
Check	Carlton	Smooth	537	100	121
CV%			27.2		7.9
LSD _{0.05}			320.4		5.6

The harvesting date 1 Aug, 2011

Table 12. Seed Yield in 2011 for the Bromegrass Trials Established in 2010 at Beaverlodge, AB.

Company	Variety	Type	2011	2011
			kg ha ⁻¹	% of Fleet
SeCan	AC Admiral	Meadow	1105	77
SeCan	AC Armada	Meadow	1212	84
Barenbrug USA	BAR BiF1GRL	Meadow	368	26
Viterra	AC Knowles	Hybrid	833	58
Check	Fleet	Meadow	1442	100
			% of Carlton	
Viterra	AC Knowles	Hybrid	833	79
Viterra	AC Rocket	Smooth	656	62
Barenbrug USA	BAR BcF1FRRL	Smooth	1134	107
Check	Carlton	Smooth	1058	100
CV%			38.7	
LSD _{0.05}			555.7	

The harvesting date was 9 Aug for AC Armada and Fleet, 10 Aug for AC Admiral and BAR BcF1FRRL and 11 Aug for the remaining varieties in 2011.

Table 13. Summary of Seed Yield (% of Fleet or % of Carlton) for the Bromegrass at Beaverlodge and Fort St. John 2011.

Seeding	Company	Variety	2011	2011
Year			Beaverlodge	Fort St John
			Seed	Seed
2010			% of Fleet	
	SeCan	AC Admiral	77	73
	SeCan	AC Armada	84	98
	Barenbrug USA	BAR BiF1GRL	26	18
	Viterra	AC Knowles	58	41
	Check	Fleet	100	100
			% of Carlton	
	Viterra	AC Knowles	79	91
	Viterra	AC Rocket	62	162
	Barenbrug USA	BAR BcF1FRRL	107	197
	Check	Carlton	100	100
			kg ha⁻¹	
	Check	Fleet	1442	1197
	Check	Carlton	1058	537

Timothy Seed Trials:

Table 14. Seed Yield in 2009, 2010 and 2011 for the Timothy Trials Established in 2008 at Arborg, MB.

Company	Variety	2009	2010	2011	Total	2009	2010	2011	Avg
		kg ha ⁻¹				% of Climax			
Snow Brand Seed	Hokuei	411	416	113	939	48	123	53	75
	Horizon	958	441	300	1698	113	131	140	128
	Sirius	419	335	152	1178	49	99	71	76
	Zepher	816	242	122	906	96	72	57	73
	SBT0001	792	266	120	1180	93	79	56	75
	SBT0301	732	239	160	1131	86	71	75	77
	SBT0308	702	397	169	1268	83	118	79	93
	SBT0309	602	408	120	1139	71	124	56	84
	SBT0310	787	457	123	1366	93	135	58	95
Check	Climax	850	337	214	1401	100	100	100	100
CV%		10	31	33	57				
LSD _{0.05}		105	162	51	649				

The harvesting date was 13-Aug in 2009, 27-Jul in 2010 and 25-Jul for SBT0001, SBT0301 and Zepher, 2-Aug, for SBT0310, SBT0309 and Horizon, 5-Aug. for SBT0308, 8-Aug for Climax and 10-Aug for Hokuei and Sirius in 2011.

Table 15. Plant height in 2009, 2010 and 2011 for the Timothy Trials Established in 2008 at Arborg, MB.

Company	Variety	2009	2010	2011
		Plant Height (cm)		
Snow Brand Seed	Hokuei	122	133	102
	Horizon	120	131	106
	Sirius	128	130	101
	Zepher	121	127	109
	SBT0001	124	125	101
	SBT0301	123	127	101
	SBT0308	121	130	95
	SBT0309	124	134	105
	SBT0310	126	132	105
Check	Climax	117	116	96
CV%		3.2	4.1	4.9
LSD _{0.05}		5.6	6.0	7.2

Table 16. Seed Yield in 2010 and 2011 for the Timothy Trials Established in 2009 at Beaverlodge, AB.

Company	Variety	2010	2011	Total	2010	2011	Avg
					kg ha ⁻¹		
Snow Brand Seed	Hokuei*	449	186	635	61	35	48
	Horizon	545	726	1271	75	138	101
	Sirius	368	295	663	50	56	53
	Zepher	303	524	827	41	100	66
	SBT0001	381	588	969	52	112	77
	SBT0301	317	437	753	43	83	60
	SBT0308	477	480	957	65	91	76
	SBT0309	405	505	911	55	96	73
	SBT0310	622	586	1208	85	112	96
Check	Climax	731	525	1256	100	100	100
CV%		20.3	17.0	14.6			
LSD _{0.05}		136	119.8	199.6			

The harvesting date was 11-Aug in 2010 and 19 Aug for SBT0001, Zepher and SBT0301 and 22 Aug for Hokuei and Sirius and 24 Aug in 2011 for the remaining varieties

Table 17. Plant Height in 2010 for the Timothy Trials Established in 2009 at Beaverlodge, AB.

Company	Variety	2010
		Plant height (cm)
Snow Brand Seed	Hokuei	103
	Horizon	93
	Sirius	97
	Zepher	90
	SBT0001	87
	SBT0301	86
	SBT0308	95
	SBT0309	87
	SBT0310	98
Check	Climax	95
CV%		5.8
LSD _{0.05}		7.8

Table 18. Seed Yield in 2009 and 2011 for the Timothy Trials Established in 2008 at Fort St John BC.

Company	Variety	2009	2010	2011	Total	2009	2011	Avg
					kg ha ⁻¹	% of Climax		
Snow Brand Seed	Hokuei	65	-	283	348	49	41	45
	Horizon	72	-	604	676	54	86	70
	Sirius	26	-	444	470	20	63	41
	Zepher	124	-	390	514	93	56	75
	SBT0001	89	-	329	418	67	47	62
	SBT0301	75	-	336	411	56	48	52
	SBT0308	79	-	375	454	59	54	57
	SBT0309	68	-	341	409	51	49	50
	SBT0310	93	-	425	518	70	61	65
Check	Climax	133	-	699	832	100	100	100
CV%		65.6	-	14	80			
LSD _{0.05}		78.8	-	83	206			

The harvesting date was 14-Aug in 2009 and was 22-Aug for Climax, Hokuei, Zepher and was 17-Aug in 2011 for the remaining varieties

The data for seed yield in 2010 for timothy trials at Fort St. John site (established in 2008) were not reported due to drier and hotter than normal weather conditions leading to little or no seed production. The total precipitation was 14.3mm in June and 36.0mm in July, 2010 compared with the 30-yr average of 69.2mm in June and 77.5mm in July.

Table 19. Plant Height in 2009 and 2011 for the Timothy Trials Established in 2008 at Fort St John BC

Company	Variety	2009	2011
		Plant height (cm)	
Snow Brand Seed	Hokuei	93	109
	Horizon	73	106
	Sirius	82	109
	Zepher	71	110
	SBT0001	74	113
	SBT0301	75	106
	SBT0308	73	110
	SBT0309	71	110
	SBT0310	74	114
Check	Climax	73	102
CV%		8.9	4.4
LSD _{0.05}		10.0	7.0

Table 20. Seed Yield in 2011 for the Timothy Trials Established in 2010 at Beaverlodge, AB

Company	Variety	Seed	Seed
		kg ha ⁻¹	% of Climax
Moore Seed Processors	Alma	716	129
	APH001	587	105
	APH1002	676	121
Check	Climax	557	100
CV%		26	
LSD _{0.05}		262	

The harvesting date was 16-Aug in 2011.

Table 21. Seed Yield and Plant Height in 2011 for the Timothy Trials Established in 2010 at Fort St John BC.

Company	Variety	Seed	Seed	Plant height
		kg ha ⁻¹	% of Climax	cm
Moore Seed Processors	Alma	1143	216	101
	APH001	813	154	103
	APH1002	513	97	105
Check	Climax	528	100	107
CV%		20.1		7.3
LSD _{0.05}		240.3		12.1

The harvesting date was 19-Aug for APH1002 and 22-Aug for the remaining varieties in 2011.

Table 22. Summary of seed yield (% of Climax) for the Timothy at Beaverlodge, Fort St. John and Arborg from 2009 to 2011.

Seeding			Arborg				Fort St John				Beaverlodge	
			2009	2010	2011	Avg	2009	2010	2011	Avg	2010	2011
			% of Climax				% of Climax				% of Climax	
2008 & 2009	SBS*	Hokuei	48	123	53	75	49	-	41	45	61	35
		Horizon	113	131	140	128	54	-	86	70	75	138
		Sirius	49	99	71	76	20	-	63	41	50	56
		Zepher	96	72	57	73	93	-	56	75	41	100
		SBT0001	93	79	56	75	67	-	47	62	52	112
		SBT0301	86	71	75	77	56	-	48	52	43	83
		SBT0308	83	118	79	93	59	-	54	57	65	91
		SBT0309	71	124	56	84	51	-	49	50	55	96
		SBT0310	93	135	58	95	70	-	61	65	85	112
	Check	Climax	100	100	100	100	100	-	100	100	100	100
			kg ha ⁻¹				kg ha ⁻¹				kg ha ⁻¹	
Check	Climax	850	337	214		133	-	699		731	525	
Seeding							Fort St John				Beaverlodge	
							2011				2011	
							% of Climax					
2010	MSP*	Alma					216				129	
		APH001					154				105	
		APH1002					97				121	
		Climax					100				100	
							kg ha ⁻¹					
Check	Climax					528				557		

SBS* = Snow Brand Seeds

MSP* = Moore Seed Processors