

Peace Region Grass Seed Testing Program

Coordinated by:

**Peace Region Forage Seed Association
Agriculture and Agri-Food Canada**



2013 Report

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Sites in: Alberta and British Columbia

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Barenbrug USA

BrettYoung

Moore Seed Processors

Pickseed Canada

SeCan

Snow Brand Seeds

Viterra

Imperial Seed

Foster's Seed and Feed LTD

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Peace Region Forage Seed Association

Agriculture and Agri-Food Canada

Alberta Agriculture and Rural Development

We thank the following for their partnership and technical assistance at the Fort St. John, BC site:

Calvin Yoder, Alberta Agriculture

Parkland Strasky Farms

Owen Lee, Agriculture and Agri-Food Canada

BC Grain Producers Association Research Team

We especially appreciate the collaboration and support provided by the Peace River Forage Association of BC.

PRGST Co-operating Research Sites and Contacts

<p>Fort St. John, BC</p>	<p>Sandra Burton, PRFSA Coordinator Peace Region Forage Seed Association Box 685, Taylor, BC V0C 2K0 Phone 877 630 2198 or (250) 789 6885 Fax (250) 789 6884 Email : coordinator@peaceforageseed</p>	<p>Talon Johnson, c/o Peace Region Forage Seed Association Box 685, Taylor, BC V0C 2K0 Phone 877 630 2198 or (250) 789 6885 Fax (250) 789 6884 Email : coordinator@peaceforageseed.ca</p>
<p>Beaverlodge, AB</p>	<p>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</p>	<p>Pat Gansevles, Forage Seed Technician Agriculture and AgriFood Canada Box 29, Beaverlodge, AB. T0H 0C0 Phone (780) 354-5121 Fax (780) 354-5150 Email : Gansevlesp@agr.gc.ca</p>

Protocol for Peace Region Grass Seed Testing Program (PRGST)

Revised February 2014

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 Peace Region Grass Seed Testing Program. The PRFSA Office Manager will invoice each seed company annually.

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 bromegrass, 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 a **forage or turf type**.

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.

Peace Region Grass Seed Testing (PRGST) Program

2014 Application for Entry

1. Company: _____ Telephone: _____

Contact person: _____ Fax: _____

Mailing address: _____ Email: _____

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

There is only one testing site at Beaverlodge Alberta.

Send no later than April 1, 2014 to:

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

Introduction:

Several Peace Region Grass seed testing (PRGST) trials were conducted at Beaverlodge, AB (lat. 55°12'N) and Fort St John, BC. (Lat. 56°14'N, Long. 120°44'W). The trials were established in 2010, 2011, 2012 and 2013. The forage grass seeds varieties that tested in the trials were for Timothy (*Phleum pratense* L.), creeping red fescue (*Festuca rubra* L. var. *rubra*), smooth brome grass (*Bromus inermis* Leyss) and meadow brome grass (*Bromus biebersteinii*). These trials were conducted to evaluate the forage seed varieties for their agronomic performance and seed production potential under the peace region soil and weather conditions. The high quality seed production in the region are adversely affect by weeds affecting competition and dockage, insect pests, lack of registered herbicides/ insecticides and availability of registered herbicides and insecticides plus the availability of regionally adapted species and varieties. There is a need to increase potential seed production of widely adapted varieties in the region. Additionally, common seed quality standards, seed certification and registered herbicide and pesticide certification must be developed. The main objectives of forage grass seed varieties testing trail are to increase the consistency, quality and marketability of turf and forage grass seed in an internationally important growing region and to increase the opportunities for contract seed production of American and European turf and forage seed cultivars and to generate seed yield data for varieties grown at regional sites under local growing conditions. Ultimately, all included varieties that perform well are directed for domestic and international markets

MATERIALS AND METHODS

Several trials were conducted at two main locations in western Canada at Beaverlodge, AB and Fort St John, BC. The trials highlighted here were established in 2010, 2011 and 2012. The varieties in the trials were evaluated according to their agronomic performance that required two harvested years of seed production for fine fescue and three harvested years of seed production Timothy and Brome grass. The forage grass varieties and the checks included in the trials were obtained from Canadian and international seed companies and their foreign associates. At Beaverlodge, AB, the site had been fallowed for at least two crop years before seeding. At both sites preparation was modified to conserve soil moisture and the site is cropped in canola or cereal for two years prior to seeding. At all sites, the trials are direct seeded 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, inter-row cultivation, and recommended herbicides. Individual experimental plots were comprised of four rows, each 6 m long with row spacing of 30 cm apart. The yield was collected from the central two rows. The experimental design for each species was a randomized complete block with four replications.

Timothy trials were established in 2010 at Beaverlodge and Fort St. John sites. The trials are commitment to companies from 2010 to 2013. Three Moore Seed Processors varieties of timothy were tested and compared to Climax including: Alma, APH1001 & APH1002.

Smooth and Meadow Brome grass trials were established in 2010 at Beaverlodge and Fort St. John sites. The trials are commitment to companies from 2010 to 2013. Two varieties of brome grass from Barenbrug USA were tested: BAR BiF1GRL (Smooth) & BAR BcF1FRRL ((Meadow)). Two varieties from Viterra; AC Knowles (Hybrid) & AC Rocket (Smooth), and two SeCan varieties: AC Armada (Meadow) & AC Admiral (Meadow) were also tested. These 6 entries were compared to check varieties: Fleet (Meadow) and Carlton (Smooth).

Timothy Trials were established in 2011 and 2012 at Beaverlodge site. The trials are commitment to companies from 2011 to 2014 and 2012 to 2015. Ten timothy varieties are being tested for seed production potential and adaptability at Beaverlodge. The new varieties for 2011 include 4 new ones from Snow Brand Seeds entered by Dr. Hideki Yatsu: Horizon, SBT0002, SBT0314, & SBT1005. In addition, there are 3 AAFC varieties entered by Dr. Bruce Coleman: S9520, S9537 & BRF LAL1. Three Moore Seed Processors varieties of timothy are being reseeded (due to dry conditions and poor emergence in 2010 seeding) including: Alma, APH1001 & APH1002. A total of 10 different varieties in this trial are being compared to Climax as the check.

Bromegrass Trials were established in 2011 at Beaverlodge and Fort St. John sites. The trials commitment to companies: 2011 to 2014. Bromegrass varieties are being tested for seed production potential and adaptability. At Beaverlodge site, a new entry of hybrid bromegrass S9478B variety from AAFC entered by Dr. Bruce Coleman was added to the 6 varieties (to be reseeded from 2010 trial) including two varieties of bromegrass from Barenbrug USA: BAR BIF1GRL (Meadow) & BAR BcF1FRRL (Smooth); two varieties from Viterra; AC Knowles (Hybrid) & AC Rocket (Smooth), and two SeCan varieties: AC Armada (Meadow) & AC Admiral (Meadow). These entries were compared to check varieties: Fleet (Meadow) & Carlton (Smooth). At Fort St. John site, the varieties were being tested S9478B from AAFC and AC Knowles from Viterra.

Fine Fescue Trials were established in 2011 at Beaverlodge and Fort St. John sites. The trials commitment to companies: 2011 to 2013. Fine fescue varieties are being tested for seed production potential and adaptability at Beaverlodge. At Beaverlodge site, the new entries of fine fescue were BRF B1 & BRF B2 from AAFC and SR5250 & Garnet from Pickseed Canada. At Fort St. John site, the varieties were being tested are BRF B1 & BRF B2 from AAFC. Each variety was compared to Boreal as the check.

Fescue Establishment, Aberdeen Trials were established in 2011 and 2012 at Beaverlodge site and in 2011 at Fort St. John site. Trials commitment to companies: 2011 to 2013 and from 2012 to 2014. The fescue establishment trial is testing for more effective methods of establishing fine fescues in this region. The seeding methods include Aberdeen seed alone, Aberdeen seed with application of 30 kg P ha⁻¹, Aberdeen coated seed, Aberdeen coated seed with application of 30 kg P ha⁻¹ from BrettYoung Seed Company.

Fine fescue trial was established in 2012 at Beaverlodge site. The trials commitment to companies: from 2012 to 2014. The new entries (2012) of fine fescue were Two varieties BRF B1 and BRF B2 from AAFC, two varieties SR5250 and Garnet from Pickseed Canada, and six varieties MS0112, MSM0212, MS0312, MSG0412, MST0512 AND MSR0612 from Moore Seed Processors. Each variety was compared to Boreal as the check.

Results

The seed yield of forage grass varieties trials that established in 2011 and 2012 have been influence by drought during the first 3 weeks of May (Figure 1, 2 and 3) and the wet than normal weather condition during June and July (at Fort St John, BC) and June, July and August (Beaverlodge, AB site) in 2013 growing season at and also the crops damage by the hail storm that occurred on 20 July, 2013 at Beaverlodge site. The wet than the normal weather condition may keep upper soil layers near a constant saturation point. This condition encourages vegetative growth and reduced the seed production under all varieties. The data for plant height for all trials at Beaverlodge in 2013) were not reported due to the damage by the hail storm that occurred on 20 July 2013. The data for fine fescue trial and Aberdeen trial in 2013 at Fort St. John site (established in 2011) were not reported due to wet than normal weather conditions leading to little or no seed production and more vegetative

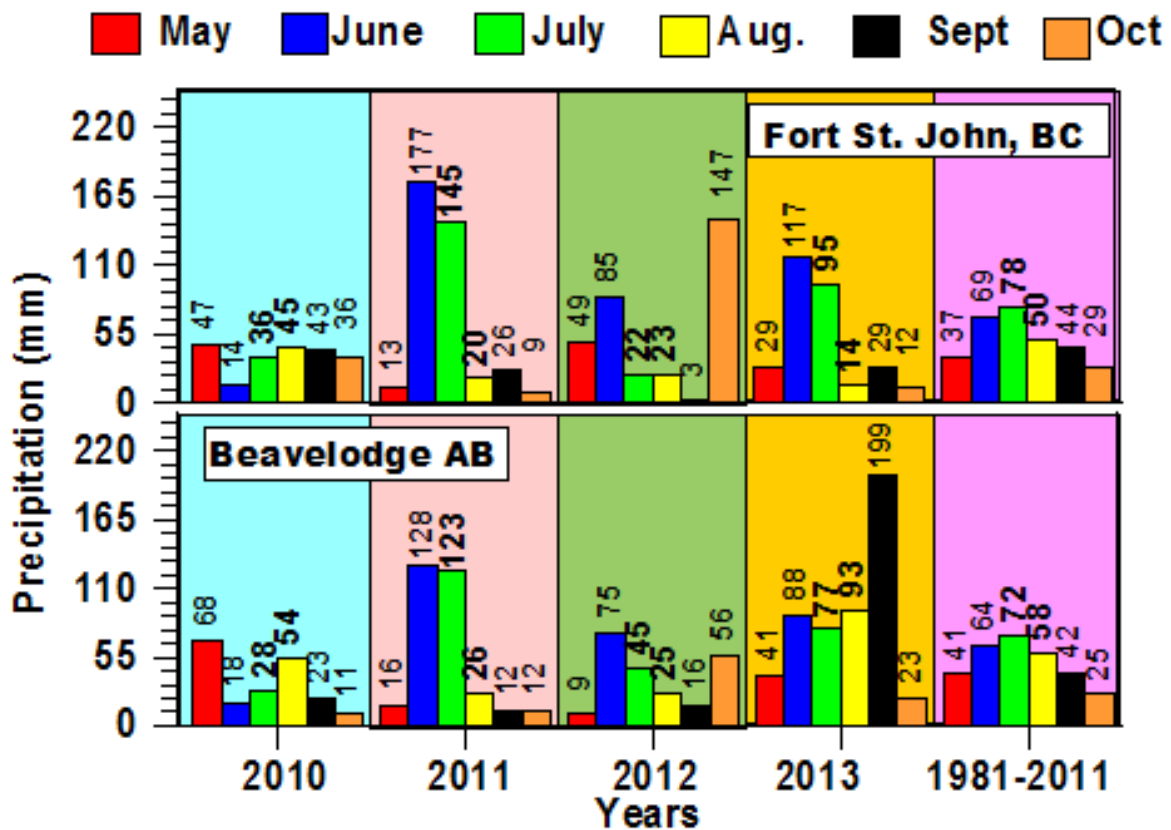


Figure 1. Total monthly precipitation during the growing season of 2010 to 2013 and 30-yr monthly average at Beaverlodge, AB and Fort St. John, BC.

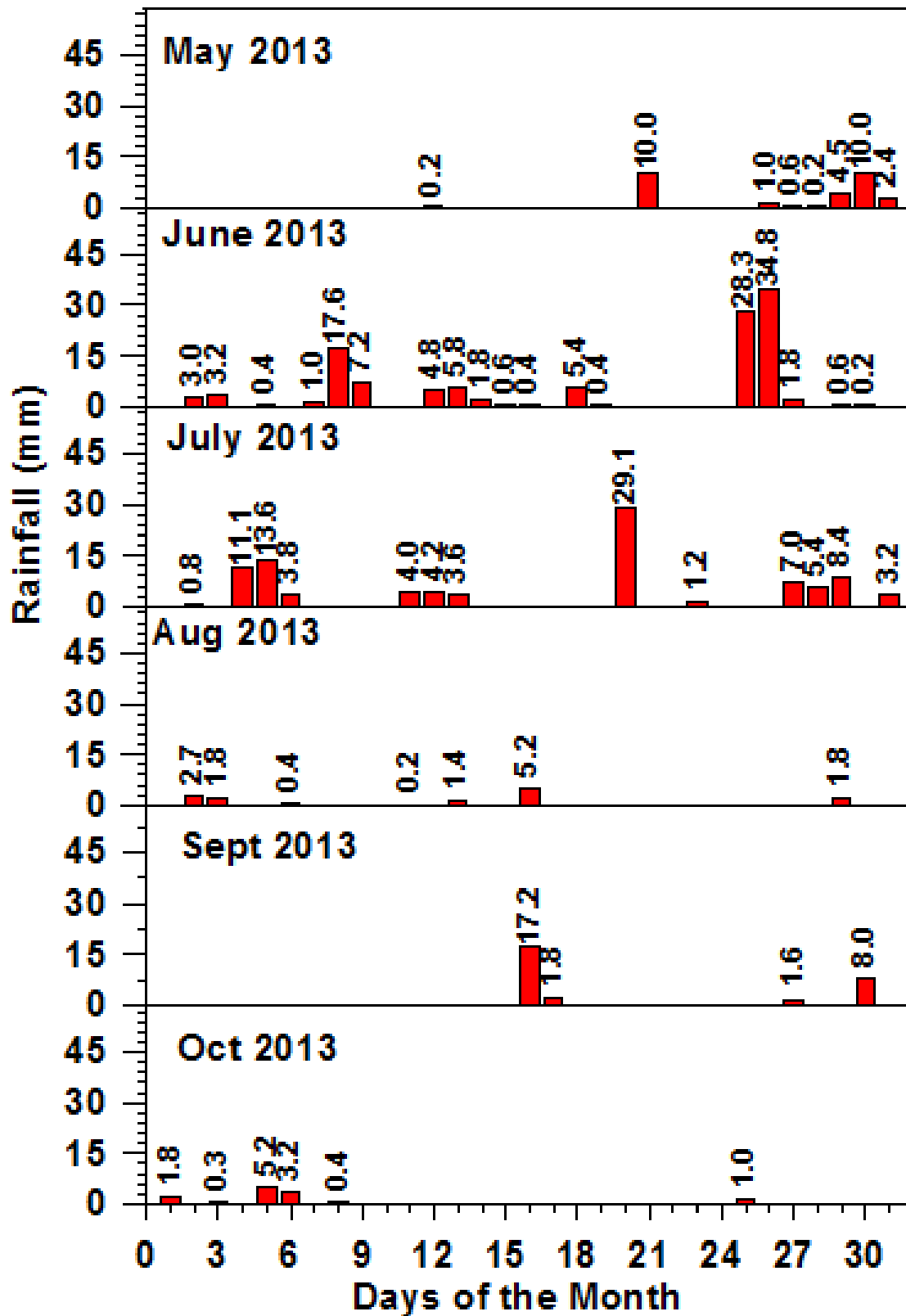


Figure 2. Daily rainfall distribution during the 2013 growing season at Fort St. John, BC.

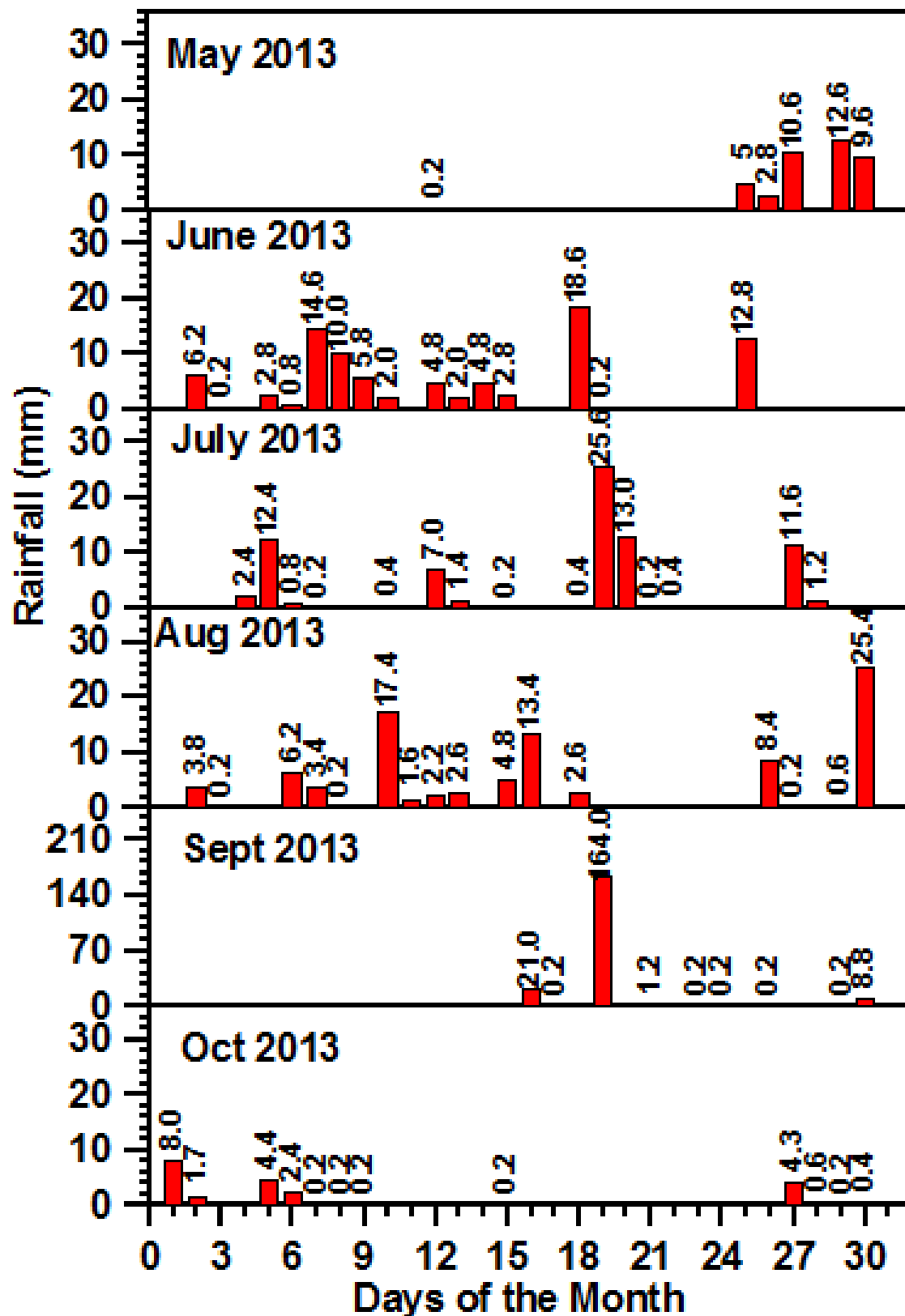


Figure 3. Daily rainfall distribution during the 2013 growing season at Beaverlodge, AB.

Fine Leaved Fescue Seed Yield Trials:

Fine Leaved Fescue Seed Yield Trials:

Table 1. Seed Yield in 2012 and 2013 for the Fine Fescue Trials Established in 2011 at Beaverlodge AB. and Fort St. John, BC.

Company	Variety	Beaverlodge			Fort St. John		Beaverlodge		Fort St. John		
		2012	2013	total	2012	2013	2012	2013	2012	2013	
		kg ha^{-1}					% of Boreal				
AAFC	BRF B1	1090	290	1369	1746	-	98	106	104	-	
	BRF B2	1103	314	1432	1786	-	99	115	106	-	
Pickseed	Garnet*	627	128	757	-	-	57	47	-	-	
	SR 5250	719	112	789	-	-	65	41	-	-	
Check	Boreal	1111	273	1335	1685	-	100	100	100	-	
CV%		8	27	8	2	-					
LSD _{0.05}		114	114	167	64	-					

The harvesting date was 25-Jul in 2012 at Beaverlodge and 23-Jul in 2012 at Fort St. John

Note: all varieties have been damaged by the hail storm that occurred on 20 July, 2013 in Beaverlodge and above normal precipitation in 2013 growing season at both sites. At Fort St John trial not harvested as no seed head production occurred.



Picture 1. Fine fescue trial at Beaverlodge that established in 2012 before the hail storm (Picture date: 15 July, 2013).



Picture 2. Fine fescue trial at Beaverlodge that established in 2012 after the hail storm (Picture date: 22 July, 2013).

Table 2. Plant Height in 2012 and 2013 for the Fine Fescue Trials Established in 2011 at Beaverlodge AB. and Fort St. John, BC

Company	Variety	Beaverlodge		Fort St. John	
		2012	2013	2012	2013
cm					
AAFC	BRF B1	59	-	64	-
	BRF B2	61	-	64	-
Pickseed	Garnet	57	-	-	-
	SR 5250	59	-	-	-
Check	Boreal	63	-	64	-
CV%		6	-	3	-

LSD_{0.05} 6 - 3 -

Table 3. Seed yield in 2013 for the fine fescue Trials Established in 2012 at Beaverlodge, AB

Company	Variety	2013 kg ha ⁻¹	2013 % of Boreal
Moore Seed Processors	MSE0112	359	37
	MSM0212	298	30
	MS00312	313	32
	MSG0412	398	41
	MST0512	146	15
	MSR0612	476	49
Pickseed	Garnet	244	25
	SR 5250	377	38
AAFC	BRF B1	620	63
	BRF B2	823	84
Check	Boreal	980	100
CV%		37	
LSD _{0.05}		246	

Seeding date was 16-May-2012 and harvesting date was 7-Aug., 2013.

Note: all varieties have been damaged by the hail storm that occurred on 20 July, 2013 and above normal precipitation in 2013 growing season.

Table 4. Summary of Seed Yield (% of Boreal) in 2012 and 2013 for the Fine fescue Trials Established in 2011 and 2012 at Beaverlodge, AB and Fort St. John, BC.

Seeding	Company	Variety	Beaverlodge		Fort St John	
			2012	2013	2012	2013
			% of Boreal			
2011	AAFC	BRF B1	98	106	104	-
		BRF B2	99	115	106	-
	Pickseed	Garnet*	57	47	-	-
		SR 5250	65	41	-	-
	Check	Boreal	100	100	100	-
			Seed yield (kg ha ⁻¹)			
			1111	273	1685	
			% of Boreal			
			2013	2014	2013	2014
			% of Boreal			
2012	Moore Seed Processors	MSE0112	37		-	
		MSM0212	30		-	
		MS00312	32		-	
		MSG0412	41		-	
		MST0512	15		-	
		MSR0612	49		-	
	Pickseed	Garnet	25		-	
		SR 5250	38		-	
	AAFC	BRF B1	63		-	
		BRF B2	84		-	
333	Check	Boreal	100		-	
			Seed yield (kg ha ⁻¹)			
			980			

Note: all varieties have been damaged by the hail storm that occurred on 20 July, 2013 and above normal precipitation in 2013 growing season.

Establish Fescue Seed Yield Trials:

Table 5. Seed yield in 2012 and 2013 for seed coated and seed placed phosphate trial using Aberdeen creeping red fescue (Abrdn) that established in 2011 at Beaverlodge, AB. and Fort St. John, BC

Company	Variety	Beaverlodge			Fort St. John		Beaverlodge		Fort St. John		
		2012	2013	total	2012	2013	2012	2013	2012	2013	
		kg ha ⁻¹					% of Aberdeen				
BrettYoung	Aberdeen	862	133	995	1163	-	100	100	100	-	
	Aberdeen coated	883	134	1017	1163	-	102	101	100	-	
	Aberdeen coated+30P	931	172	1102	1221	-	108	129	105	-	
	Abrdn+30P	896	151	1047	1174	-	104	113	101	-	
CV%		7	14	4	11	-					
LSD _{0.05}		99	34	75	203	-					

The seeding date was 1-June-2011 at Beaverlodge site and 2-June-2011 at Fort St. John site and the harvesting date was 25-Jul-2012 and 26-Jul-2013 at Beaverlodge and 23-Jul-2012 at Fort St. John

Note: all varieties have been damaged by the hail storm that occurred on 20 July, 2013 in Beaverlodge and above normal precipitation in 2013 growing season at both sites. At Fort St John trial not harvested as no seed head production occurred.

Table 6. Plant Height in 2012 and 2013 for seed coated and seed placed phosphate trial using Aberdeen creeping red fescue that established in 2011 at Beaverlodge AB. and Fort St. John, BC

Company	Variety	Beaverlodge		Fort St. John	
		2012	2013	2012	2013
		Cm			
BrettYoung	Aberdeen	57	-	64	-
	Aberdeen coated	59	-	64	-
	Aberdeen coated+30P	59	-	60	-
	Aberdeen+30P	58	-	60	-
CV%		6	-	4	-
LSD _{0.05}		6	-	4	-



Picture 3. Establish Fine fescue trial (Aberdeen trial) at Beaverlodge that established in 2011 before the hail storm (Picture date: 3 July, 2013).



Picture 4. Establish Fine fescue trial (Aberdeen trial) at Beaverlodge that established in 2011 after the hail storm (Picture date: 22 July, 2013).

Table 7. Seed yield in 2013 for seed coated and seed placed phosphate trial using Aberdeen creeping red fescue that established in 2012 at Beaverlodge, AB.

Company	Variety	Beaverlodge	
		kg ha ⁻¹	% of Aberdeen
BrettYoung	Aberdeen	328	100
	Aberdeen coated	389	119
	Aberdeen coated+30P	506	154
	Aberdeen+30P	313	96
CV%		15	
LSD _{0.05}		114	

Note: all varieties have been damaged by the hail storm that occurred on 20 July, 2013 and above normal precipitation in 2013 growing season.

Table 8. Summary of Seed Yield (% of Aberdeen) in 2012 and 2013 for the Establish Fine fescue Trials that Established in 2011 at Fort St. John, BC. and 2011 and 2012 at Beaverlodge, AB.

Seeding	Company	Variety	Beaverlodge		Fort St John	
			2012	2013	2012	2013
			% of Boreal			
2011	BrettYoung	Aberdeen	100	100	100	-
		Aberdeen coated	102	101	100	-
		Aberdeen coated+30P	108	129	105	-
		Aberdeen+30P	104	113	101	-
			Seed yield (kg ha ⁻¹)			
		Aberdeen	896	151	1174	-
			2013		2014	
			% of Boreal			
2012	BrettYoung	Aberdeen	100		-	
		Aberdeen coated	119		-	
		Aberdeen coated+30P	154		-	
		Aberdeen+30P	96		-	
			Seed yield (kg ha ⁻¹)			
		Aberdeen	328			

Note: all varieties have been damaged by the hail storm that occurred on 20 July, 2013 and above normal precipitation in 2013 growing season.

Bromegrass Seed Yield Trials:

Table 9. Seed Yield in 2011, 2012 and 2013 for the Bromegrass Trials Established in 2010 at Fort St. John, BC.

Company	Variety		2011	2012	2013	Total	2011	2012	2013	
			kg ha ⁻¹					% of Fleet		
SeCan	AC Admiral	Meadow	871	854	61	1785	73	98	69	
SeCan	AC Armada	Meadow	1171	717	53	1941	98	82	60	
Barenbrug USA	BAR BcF1FRRL	Meadow	1056	591	84	1732	88	68	95	
Viterra	AC Knowles	Hybrid	490	601	278	1369	41	69	315	
Check	Fleet	Meadow	1197	871	88	2156	100	100	100	
								% of Carlton		
Viterra	AC Knowles	Hybrid	490	601	278	1369	91	79	66	
Viterra	AC Rocket	Smooth	868	856	315	2039	162	112	75	
Barenbrug USA	BAR BiF1GRL	Smooth	213	443	240	896	40	58	57	
Check	Carlton	Smooth	537	764	422	1724	100	100	100	
CV%			27	28	41	19				
LSD _{0.05}			320	298	116	481				

The seeding date was 26-May in 2010. The harvesting date 1 Aug., 2011, 26 July, 2012 and 1 Aug in 2013

Table 10. Seed Yield in 2011, 2012 and 2013 for the Bromegrass Trials Established in 2010 at Beaverlodge, AB.

Company	Variety		2011	2012	2013	Total	2011	2012	2013	
			kg ha ⁻¹					% of Fleet		
SeCan	AC Admiral	Meadow	1105	84	19	1209	77	22	47	
SeCan	AC Armada	Meadow	1212	102	21	1335	84	27	50	
Barenbrug USA	BAR BcF1FRRL	Meadow	1134	138	9	1282	79	36	21	
Viterra	AC Knowles	Hybrid	833	285	88	1206	58	75	211	
Check	Fleet	Meadow	1442	381	42	1865	100	100	100	
								% of Carlton		
Viterra	AC Knowles	Hybrid	833	285	88	1206	79	232	147	
Viterra	AC Rocket	Smooth	656	121	49	826	62	99	83	
Barenbrug USA	BAR BiF1GRL	Smooth	368	24	17	408	35	20	29	
Check	Carlton	Smooth	1058	123	60	1241	100	100	100	
CV%			39	42	78	27				
LSD _{0.05}			556	96	44	476				

The seeding date was 7-June, 2010. The harvesting date was 9 Aug for AC Armada and Fleet, 10 Aug for AC Admiral and BAR BcF1FRRL and 11 Aug the remaining varieties in 2011,30 July, 2012 and 7 Aug in 2013 .

Table 11. Plant Height in 2011, 2012 and 2013 for the Bromegrass Trials Established in 2010 at Beaverlodge, AB. and Fort St. John, BC.

Company	Variety		Beaverlodge		Fort St John	
			2012	2011	2012	2013
			cm			
SeCan	AC Admiral	Meadow	108	125	121	121
SeCan	AC Armada	Meadow	112	123	120	118
Barenbrug USA	BAR BcF1FRRL	Meadow	108	128	120	119
Viterra	AC Knowles	Hybrid	115	126	124	131
Check	Fleet	Meadow	111	119	119	120
Viterra	AC Knowles	Hybrid	115	126	124	131
Viterra	AC Rocket	Smooth	114	127	121	124
Barenbrug USA	BAR BiF1GRL	Smooth	111	119	116	118
Check	Carlton	Smooth	121	121	119	121
CV%			6	8	6	7
LSD _{0.05}			10	14	11	12

Table 12. Seed Yield in 2012 and 2013 for the Bromegrass Trials Established in 2011 at Beaverlodge, AB

Company	Variety		2012	2013	Total	2012	2013
			kg ha ⁻¹			% of Fleet	
SeCan	AC Admiral	Meadow	1318	321	1638	105	91
SeCan	AC Armada	Meadow	1309	344	1654	104	98
Barenbrug USA	BAR BcF1FRRL	Meadow	1227	371	1598	98	106
Viterra	AC Knowles	Hybrid	1165	246	1412	93	70
AAFC	S9478B	Hybrid	1131	337	1468	90	96
Check	Fleet	Meadow	1254	351	1605	100	100
						% of Carlton	
AAFC	S9478B	Hybrid	1131	337	1468	96	165
Viterra	AC Knowles	Hybrid	1165	246	1412	99	121
Viterra	AC Rocket	Smooth	1325	248	1573	112	122
Barenbrug USA	BAR BiF1GRL	Smooth	708	187	895	60	92
Check	Carlton	Smooth	1181	204	1385	100	100
CV%			11	41	12		
LSD _{0.05}			191	181	267		

Seeding date was 1-June in 2011 and harvesting date was 30-July in 2012 and 7-Aug. in 2013

Table 13. Seed Yield in 2012 and 2013 for the Bromegrass Trials Established in 2011 Fort St. John, BC.

Company	Variety		2012	2013	Total	2012	2013
			kg ha ⁻¹			% of Fleet	
SeCan	AC Admiral	Meadow					
SeCan	AC Armada	Meadow					
Barenbrug USA	BAR BcF1FRRL	Meadow					
Viterra	AC Knowles	Hybrid	788	630	1418	48	115
AAFC	S9478B	Hybrid	1153	398	1551	70	73
Check	Fleet	Meadow	1647	546	2193	100	100
						% of Carlton	
AAFC	S9478B	Hybrid	1153	398	1551	142	110
Viterra	AC Knowles	Hybrid	788	630	1418	97	175
Viterra	AC Rocket	Smooth					
Barenbrug USA	BAR BiF1GRL	Smooth					
Check	Carlton	Smooth	814	360	1173	100	100
CV%			15	29	17		
LSD _{0.05}			267	222	427		



Picture 5. Bromegrass trial at Beaverlodge that established in 2011 before the hail storm (Picture date: 3 July, 2013).



Picture 6. Bromegrass trial at Beaverlodge that established in 2011 after the hail storm (Picture date: 22 July, 2013).

Table 14. Plant height in 2012 and 2013 for the Bromegrass Trials Established in 2011 at Beaverlodge, AB and Fort St. John, BC.

Company	Variety		Beaverlodge		Fort St John	
			2012	2012	2013	
			cm			
SeCan	AC Admiral	Meadow	121			
SeCan	AC Armada	Meadow	121			
Barenbrug	BAR					
USA	BcF1FRRL	Meadow	120			
Viterra	AC Knowles	Hybrid	119	147	136	
AAFC	S9478B	Hybrid	114	138	130	
Check	Fleet	Meadow	117	130	123	
AAFC	S9478B	Hybrid	114	138	130	
Viterra	AC Knowles	Hybrid	119	147	136	
Viterra	AC Rocket	Smooth	111			
Barenbrug						
USA	BAR BiF1GRL	Smooth	113			
Check	Carlton	Smooth	114	134	128	
CV%			4	3	8	
LSD _{0.05}			7	7	16	

Table 15. Summary of Seed Yield (% of Fleet or Carlton) in 2011 to 2013 for the Bromegrass Trials Established in 2010 and 2011 at Beaverlodge, AB and Fort St. John, BC.

Seeding	Company	Variety	Beaverlodge			Fort St John						
			2011	2012	2013	2011	2012	2013				
				% of Fleet								
2010	SeCan	AC Admiral	Meadow	77	22	47	73	98	69			
	SeCan	AC Armada	Meadow	84	27	50	98	82	60			
	Barenbrug USA	BAR BcF1FRRL	Meadow	79	36	21	88	68	95			
	Viterra	AC Knowles	Hybrid	58	75	211	41	69	314			
	Check	Fleet	Meadow	100	100	100	100	100	100			
					% of Carlton							
		Viterra	AC Knowles	Hybrid	79	232	147	91	79	66		
		Viterra	AC Rocket	Smooth	62	99	83	162	112	75		
		Barenbrug USA	BAR BiF1GRL	Smooth	35	20	29	40	58	57		
		Check	Carlton	Smooth	100	100	100	100	100	100		
				Seed yield (kg ha ⁻¹)								
		Fleet	Meadow	1442	381	42	1197	871	88			
		Carlton	Smooth	1058	123	66	537	764	422			
				2012			2013			2014		
				% of Fleet								
2011	SeCan	AC Admiral	Meadow	105	91							
	SeCan	AC Armada	Meadow	104	98							
	Barenbrug USA	BAR BcF1FRRL	Meadow	98	106							
	Viterra	AC Knowles	Hybrid	93	70		48	115				
	AAFC	S9478B	Hybrid	90	96		70	73				
	Check	Fleet	Meadow	100	100		100	100				
					% of Carlton							
		AAFC	S9478B	Hybrid	96	166		142	111			
		Viterra	AC Knowles	Hybrid	99	121		97	175			
		Viterra	AC Rocket	Smooth	112	122						
	Barenbrug USA	BAR BiF1GRL	Smooth	60	92							
	Check	Carlton	Smooth	100	100		100	100				
				Seed yield (kg ha ⁻¹)								
		Fleet	Meadow	1254	351		1647	546				
		Carlton	Smooth	1181	204		814	360				

Timothy Seed Yield Trials:

Table 16. Seed yield in 2011, 2012 and 2013 for the Timothy Trials Established in 2010 at Beaverlodge, AB

Company	Variety	2011	2012	2013	Total	2011	2012	2013
		kg ha ⁻¹				% of Climax		
Moore Seed Processors	Alma	716	544	396	1656	129	228	229
	APH001	587	401	315	1303	105	169	181
	APH1002	676	255	228	1158	121	107	131
Check	Climax	557	238	173	968	100	100	100
CV%		26	16	16	14			
LSD _{0.05}		262	96	74	296			

The seeding date was 7-June-2010 and the harvesting date was 19-Aug in 2011 and 7-Aug in 2012 and 2013

Table 17. Seed yield in 2011, 2012 and 2013 for the Timothy Trials Established in 2010 at Fort St John BC.

Company	Variety	2011	2012	2013	Total	2011	2012	2013
		kg ha ⁻¹				% of Climax		
Moore Seed Processors	Alma	1143	223	554	1920	216	156	145
	APH001	813	213	401	1427	154	149	105
	APH1002	513	146	317	976	97	102	83
Check	Climax	528	143	381	1053	100	100	100
CV%		20	29	11	13			
LSD _{0.05}		278	98	79	335			

The harvesting date was 16-Aug in 2011, 3-Aug in 2012 and 10-Aug in 2013.

Table 18. Plant Height in 2011, 2012 and 2013 for the Timothy Trials Established in 2010 at Beaverlodge, AB and Fort St. John, BC.

Company	Variety	Beaverlodge		Fort St. John		
		2011	2012	2011	2012	2013
		cm				
Moore Seed Processors	Alma	-	85	103	93	111
	APH001	-	77	108	90	103
	APH1002	-	74	97	83	97
Check	Climax	-	85	109	93	108
CV%		-	7	4	7	5
LSD _{0.05}		-	9	7	10	9

Table 19. Seed yield in 2012 and 2013 for the Timothy Trials Established in 2011 at Beaverlodge, AB

Company	Variety	Seed yield				
		2012	2013	Total	2012	2013
		kg ha ⁻¹			% of Climax	
Snow Brand Seed	Horizon	614	412	1026	155	138
	SBT0002	475	352	827	120	118
	SBT0314	513	481	994	130	162
	SBT1005	286	225	511	72	75
Moore Seed Processors	Alma	717	433	1150	181	145
	APH001	606	370	976	153	124
	APH1002	573	362	935	145	122
AAFC	BRF LAL1	667	323	989	169	108
	S9537	622	308	930	158	103
	S9520	714	465	1180	181	156
Check	Climax	395	298	693	100	100
CV%		12	22	10		
LSD _{0.05}		95	119	137		

The harvesting date was 7-Aug in 2012 and 7-Aug in 2013

Table 20. Plant height in 2012 for the Timothy Trials Established in 2011 at Beaverlodge, AB

Company	Variety	Plant height
		2012
		Cm
Snow Brand Seed	Horizon	91
	SBT0002	92
	SBT0314	88
	SBT1005	90
Moore Seed Processors	Alma	84
	APH001	79
	APH1002	86
AAFC	BRF LAL1	88
	S9537	89
	S9520	89
Check	Climax	84
CV%		4
LSD _{0.05}		5

The harvesting date was 7-Aug in 2012



Picture 7. Timothy trial at Beaverlodge that established in 2011 before the hail storm (Picture date: 3 July, 2013).



Picture 8. Timothy trial at Beaverlodge that established in 2011 after the hail storm (Picture date: 22 July, 2013).

Table 21. Seed yield in 2013 for the Timothy Trials Established in 2012 at Beaverlodge, AB

Company	Variety	2013	
		kg ha ⁻¹	% of Climax
Snow Brand Seed	Horizon	715	147
	SBT0002	549	113
	SBT0314	596	123
	SBT1005	265	55
Moore Seed Processors	Alma	500	103
	APH001	575	118
	APH1002	338	70
AAFC	S9537	598	123
	S9520	555	114
Check	Climax	486	100
CV%		21	
LSD _{0.05}		160	

Table 22. Summary of Seed Yield (% of Climax) in 2011 to 2013 for the Timothy Trials Established 2010, 2011 and 2012 at Beaverlodge and 2010 at Fort St. John, BC.

Seeding	Company	Variety	Beaverlodge			Fort St John		
			2011	2012	2013	2011	2012	2013
			% of Climax					
2010	Moore Seed Processors	Alma	129	228	229	216	156	145
		APH001	105	169	181	154	149	105
		APH1002	121	107	131	97	102	83
	Check	Climax	100	100	100	100	100	100
			kg ha ⁻¹					
Check	Climax		557	238	173	528	143	381
			2012	2013	2014	2012	2013	2014
			% of Climax					
2011	Snow Brand Seed	Horizon	155	138				
		SBT0002	120	118				
		SBT0314	130	162				
		SBT1005	72	75				
	Moore Seed Processors	Alma	181	145				
		APH001	153	124				
		APH1002	145	122				
	AAFC	BRF LAL1	169	108				
		S9537	158	103				
		S9520	181	156				
		Climax	100	100				
			kg ha ⁻¹					
Check	Climax		395	298				
			2013	2014	2015	2013	2014	2015
			% of Climax					
2012	Snow Brand Seed	Horizon	147					
		SBT0002	113					
		SBT0314	123					
		SBT1005	55					
	Moore Seed Processors	Alma	103					
		APH001	118					
		APH1002	70					
	AAFC	S9537	123					
		S9520	114					
	Check	Climax	100					
			kg ha ⁻¹					
Check	Climax		486					