

FORAGE CULTIVAR TRIALS  
FOR SEED PRODUCTION  
IN THE PEACE REGION

1995 BULLETIN

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## INTRODUCTION AND EXPERIMENTAL PROCEDURES

This bulletin provides information on the agronomic performance of forage cultivars grown for seed production in the Peace River region of Canada. It is the sixteenth in a series of reports published cooperatively by Alberta Agriculture and the Northern Agriculture Research Centre of Agriculture & Agri-Food Canada at Beaverlodge, Alberta.

The primary objective is to provide information on the seed production potential of forage/amenity cultivars, especially those certified by the Organisation for Economic Co-operation and Development (OECD) for movement in international trade. The information is collected to assist local primary producers and agribusiness to establish equitable contracts for the production of seed of specific cultivars, the harvested seed of which is destined for export to other countries, or other regions of Canada, where the cultivar is adapted for herbage production, amenity use, or soil conservation/revegetation. In addition, plant breeders should find the information useful in the selection of parental germplasm for the development of new cultivars.

The seed trials were established in 1993 and were harvested for two production years, 1994 and 1995. The trials were located in the Peace region of Alberta, at the Northern Agriculture Research Centre in Beaverlodge, and at Falher. The trials were seeded in late May to mid June, 1993 at a seeding rate of 200 viable seeds/m<sup>2</sup>. Weeds were controlled by a combination of mechanical trimming, inter-row cultivation, and locally recommended herbicides. The legume seed was treated with *Rhizobia* inoculant immediately prior to seeding. The pollination of the legumes was ensured by the provision of leafcutting bees (*Megachile rotundata*) in addition to the other pollinating insects (*Apis*, *Bombus*, and *Megachile* species).

The experimental design for each trial/species was a randomized complete block with three replications. Individual plots were comprised of three rows, each 11 m long and spaced 30 cm apart. The seed was harvested from the central 10 m from the centre row of each plot (3 m<sup>2</sup>). Experimental observations included a rating of stand establishment in the fall of the seeding year, and the date of seed maturity/harvest and the cleaned seed yield for two consecutive production years.

1993 Fineleaf fescue seed trial at Beaverlodge, Alberta								
		1993	1994			1995		
		Establishment	Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>	(1-5 with 5=Good)	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Boreal crf	26	4	22	1288	100	20	813	100
Jasper crf	1	5	22	635	49	17	439	54
Dawson srf	14	4	15	166	13	14	172	21
Barcrown srf	7&21	3	15	186	14	14	68	8
Barskol srf	7&21	5	15	257	20	14	186	23
Barlotte srf	7&21	4	13	233	18	14	147	18
Bridgeport cf	7&21	4	15	519	40	17	857	105
Jamestown II cf	16	5	22	358	28	17	654	81
Longfellow cf	17	5	22	536	42	14	839	103
Bargreen cf	7&21	5	15	381	30	14	540	66
SR3100 hf	3	4	13	310	24	14	599	74
SR3000 hf	3	5	15	332	26	14	610	75
Exptl.18902 hf	4	4	15	581	45	16	1140	140
Exptl.18903 hf	4	4	19	587	46	17	1008	124
Exptl.18904 hf	4	4	19	566	44	14	909	112
Exptl.18905 hf	4	3	19	401	31	14	958	118
Exptl.18906 hf	4	3	19	522	41	14	1043	128
Exptl.18907 hf	4	4	19	498	39	14	985	121
Exptl.18909 hf	4	4	19	560	43	14	1057	130
Biljart hf	5	4	13	265	21	11	669	82
Aurora hf	23	3	14	249	19	14	665	82
MX-86 sf	12	4	13	343	27	14	879	108
SED <sup>c</sup>	-	0.5	0.2	95	-	0.3	118	-
CV(%) <sup>d</sup>	-	15	1.5	26	-	2.5	21	-
<sup>a</sup> Species: crf = creeping red fescue ( <i>Festuca rubra rubra</i> ); cf = Chewing's fescue ( <i>F. rubra commutata</i> ); srf = slender red fescue ( <i>F. rubra trichophylla</i> ); hf = hard fescue ( <i>F. longifolia</i> ); sf = sheep fescue ( <i>F. ovina</i> )								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								

1993 Fineleaf fescue seed trial at Falher, Alberta								
		1993	1994			1995		
		Establishment	Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>	(1-5 with 5=Good)	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Boreal crf	26	4	19	457	100	14	150	100
Jasper crf	1	4	19	283	62	12	39	26
Dawson srf	14	4	11	71	16	12	14	10
Barcrown srf	7&21	5	11	146	32	12	8	5
Barskol srf	7&21	4	11	105	23	12	16	10
Barlotte srf	7&21	4	11	53	12	12	5	3
Bridgeport cf	7&21	4	11	164	36	12	81	54
Jamestown II cf	16	4	11	111	24	12	25	17
Longfellow cf	17	4	11	149	33	12	78	52
Bargreen cf	7&21	4	11	121	27	12	35	24
SR3100 hf	3	3	11	133	29	12	35	23
SR3000 hf	3	4	11	167	37	12	36	24
Exptl.18902 hf	4	4	11	261	57	12	339	227
Exptl.18903 hf	4	4	11	264	58	12	295	197
Exptl.18904 hf	4	3	11	193	42	12	290	194
Exptl.18905 hf	4	4	11	302	66	12	237	158
Exptl.18906 hf	4	3	11	230	50	12	382	255
Exptl.18907 hf	4	4	11	311	68	12	388	259
Exptl.18909 hf	4	4	11	189	41	12	499	333
Biljart hf	5	3	11	61	13	12	26	17
Aurora hf	23	4	11	195	43	12	23	15
MX-86 sf	12	4	11	244	53	12	78	52
SED <sup>c</sup>	-	0.5	0	67	-	0.7	46	-
CV(%) <sup>d</sup>	-	17	0	43	-	7.6	40	-
<sup>a</sup> Species: crf = creeping red fescue ( <i>Festuca rubra rubra</i> ); cf = Chewing's fescue ( <i>F. rubra commutata</i> ); srf = slender red fescue ( <i>F. rubra trichophylla</i> ); hf = hard fescue ( <i>F. longifolia</i> ); sf = sheep fescue ( <i>F. ovina</i> )								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								

1993 Tall fescue seed trial at Beaverlodge, Alberta								
		1993	1994			1995		
		Establishment	Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>	(1-5 with 5=Good)	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Alta	25	5	29	648	100	25	944	100
Austin	7&21	5	29	1212	187	33	1288	136
Aztec	15	5	26	917	142	33	1029	109
Exptl. FSG TF1	18	5	29	1095	169	33	1442	153
Exptl. FSG TF2	18	5	26	1134	175	33	1325	140
Avanti	1	5	29	996	154	33	1196	127
Crossfire	1	5	29	1046	161	33	1457	154
Guardian	2	5	29	1327	205	33	1070	113
Exptl. PE7	6	5	29	1038	160	33	1431	152
Shenandoah	6	5	29	1227	189	33	1488	158
Phyter	24	5	26	878	136	25	841	89
Amigo	12	5	29	1199	185	33	1330	141
Cochise	20	5	29	1362	210	33	1546	164
SED <sup>c</sup>	-	0.3	0	122	-	0	140	-
CV(%) <sup>d</sup>	-	7.4	0	14	-	0	14	-
<sup>a</sup> Species: <i>Festuca arundinacea</i>								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								

1993 Tall fescue seed trial at Falher, Alberta								
		1993	1994			1995		
		Establishment (1-5 with 5=Good)	Seed maturity Day 1 = July 1	Seed yield @ 12% moisture		Seed maturity Day 1 = July 1	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>			kg/ha	% check		kg/ha	% check
Alta	25	5	27	256	100	34	101	100
Austin	7&21	5	27	567	222	34	177	175
Aztec	15	5	27	481	188	34	201	199
Exptl. FSG TF1	18	5	27	595	233	34	256	254
Exptl. FSG TF2	18	5	27	498	195	34	291	288
Avanti	1	5	27	569	223	34	263	260
Crossfire	1	5	27	626	245	34	261	258
Guardian	2	5	27	601	235	34	299	296
Exptl. PE7	6	4	27	345	135	34	403	399
Shenandoah	6	5	27	765	299	34	359	356
Phyter	24	5	27	409	160	34	145	143
Amigo	12	5	27	564	220	34	335	332
Cochise	20	5	27	497	194	34	264	262
SED <sup>c</sup>	-	0	0	107	-	0	68	-
CV(%) <sup>d</sup>	-	0	0	25	-	0	32	-
<sup>a</sup> Species: <i>Festuca arundinacea</i>								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								

1993 Miscellaneous grass seed trial at Beaverlodge, Alberta								
		1993	1994			1995		
		Establishment	Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>	(1-5 with 5=Good)	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Exptl. AG-279 slender wheatgrass	13	5	22	1929	-	25	695	-
Exptl. AG-299 bearded wheatgrass	13	5	35	245	-	25	178	-
Exptl. PO-1760 alpine bluegrass	13	3	7	48	-	6	63	-
Squaw rapids reflexed saltgrass	4	4	15	84	-	25	38	-
Westlund reflexed saltgrass	4	4	15	377	-	25	75	-
Fults reflexed saltgrass	4	5	15	149	-	25	51	-
SED <sup>c</sup>	-	0.4	0.2	89	-	0	43	-
CV(%) <sup>d</sup>	-	10	1.3	23	-	0	29	-
<sup>a</sup> Species: slender and bearded wheatgrass ( <i>Elymus trachycaulus</i> ) alpine bluegrass ( <i>Poa alpina</i> ) reflexed saltgrass ( <i>Puccinellia distans</i> )								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								



1993 Miscellaneous grass seed trial at Falher, Alberta								
		1993	1994			1995		
		Establishment	Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>	(1-5 with 5=Good)	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Exptl. AG-279 slender wheatgrass	13	4	27	601	-	19	523	-
Exptl. AG-299 bearded wheatgrass	13	5	36	428	-	41	161	-
Exptl. PO-1760 alpine bluegrass	13	4	11	11	-	32	155	-
Squaw rapids reflexed saltgrass	4	5	19	189	-	34	31	-
Westlund reflexed saltgrass	4	4	19	313	-	34	18	-
Fults reflexed saltgrass	4	5	19	169	-	34	42	-
SED <sup>c</sup>	-	0.7	0	39	-	0	46	-
CV(%) <sup>d</sup>	-	19	0	17	-	0	36	-
<sup>a</sup> Species: slender and bearded wheatgrass ( <i>Elymus trachycaulus</i> ) alpine bluegrass ( <i>Poa alpina</i> ) reflexed saltgrass ( <i>Puccinellia distans</i> )								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								

1993 Perennial ryegrass seed trial at Beaverlodge,								
		1993	1994			1995		
		Establishment	Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>	(1-5 with 5=Good)	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Norlea	26	5	35	1229	100	Trial discontinued because of poor winter survival		
Yorktown III	16	5	35	610	50			
Prelude II	16	5	35	787	64			
Exptl. FSG PR1	18	5	35	909	74			
Exptl. FSG PR2	18	5	35	700	57			
APM	12	5	35	856	70			
SED <sup>c</sup>	-	0	0	162	-			
CV(%) <sup>d</sup>	-	0	0	23	-			
<sup>a</sup> Species: perennial ryegrass ( <i>Lolium perenne</i> )								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								

1993 Perennial ryegrass seed trial at Falher, Alberta								
		1993	1994		1995			
		Establishment	Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>	(1-5 with 5=Good)	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Norlea	26	5	Trial discontinued because of poor winter survival					
Yorktown III	16	5						
Prelude II	16	5						
Exptl. FSG PR1	18	5						
Exptl. FSG PR2	18	5						
APM	12	5						
SED <sup>c</sup>	-	0						
CV(%) <sup>d</sup>	-	0						
<sup>a</sup> Species: perennial ryegrass ( <i>Lolium perenne</i> )								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								

1993 Timothy seed trial at Beaverlodge, Alberta								
		1993	1994			1995		
		Establishment	Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>	(1-5 with 5=Good)	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Climax	26	5	43	754	100	42	483	100
Exptl. T120	9	5	55	923	123	42	807	167
Exptl. SVTT 8423	10	5	43	777	103	42	746	154
Exptl. HJA 1077	11&19	5	55	930	123	42	800	166
SED <sup>c</sup>	-	0.4	0	89	-	0	89	-
CV(%) <sup>d</sup>	-	9.1	0	13	-	0	15	-
<sup>a</sup> Species: timothy ( <i>Phleum pratense</i> )								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								

1993 Timothy seed trial at Falher, Alberta								
		1993	1994			1995		
		Establishment (1-5 with 5=Good)	Seed maturity Day 1 = July 1	Seed yield @ 12% moisture		Seed maturity Day 1 = July 1	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>			kg/ha	% check		kg/ha	% check
Climax	26	5	39	319	100	41	294	100
Exptl. T120	9	5	39	317	99	41	375	127
Exptl. SVTT 8423	10	5	39	249	78	41	333	113
Exptl. HJA 1077	11&19	5	39	556	175	41	463	157
SED <sup>c</sup>	-	0	0	79	-	0	58	-
CV(%) <sup>d</sup>	-	0	0	27	-	0	19	-
<sup>a</sup> Species: timothy ( <i>Phleum pratense</i> )								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								

1993 Red clover (diploid) seed trial at Beaverlodge, Alberta								
		1993	1994			1995		
		Establishment	Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>	(1-5 with 5=Good)	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Altaswede	26	5	84	77	100	73	106	100
Exptl. CRS-1	8	5	84	104	135	73	20	19
Exptl. CRS-2	8	5	84	171	222	73	33	31
Exptl. CRS-6	8	4	84	162	210	73	40	38
Exptl. CRS-10	8	5	84	111	144	73	28	27
Exptl. CRS-12	8	5	84	165	215	73	24	22
SED <sup>c</sup>	-	0.2	0	30	-	0	10	-
CV(%) <sup>d</sup>	-	4.8	0	28	-	0	29	-
<sup>a</sup> Species: red clover ( <i>Trifolium pratense</i> )								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								

1993 Red clover (diploid) seed trial at Falher, Alberta								
		1993	1994			1995		
		Establishment	Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar <sup>a</sup>	Seed agent <sup>b</sup>	(1-5 with 5=Good)	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Altaswede	26	5	69	200	100	Trial discontinued because of poor winter survival		
Exptl. CRS-1	8	5	69	82	41			
Exptl. CRS-2	8	5	69	111	56			
Exptl. CRS-6	8	5	69	80	40			
Exptl. CRS-10	8	5	69	65	33			
Exptl. CRS-12	8	5	69	50	25			
SED <sup>c</sup>	-	0.2	0	38	-			
CV(%) <sup>d</sup>	-	4.8	0	48	-			
<sup>a</sup> Species: red clover ( <i>Trifolium pratense</i> )								
<sup>b</sup> See Appendix 1 for the name of the seed maintainer/agent								
<sup>c</sup> Standard error of difference for cultivar means								
<sup>d</sup> Coefficient of variation								

## APPENDIX I: SEED MAINTAINERS AND/OR AGENTS

ID #	SEED MAINTAINER/AGENT	PHONE #	FAX #
1	Pickseed West Inc. Tangent, Oregon, USA	503/926-8886	503/928-1599
2	Roberts Seed Company Tangent, Oregon, USA	503/926-8891	503/926-8372
3	Seed Research of Oregon Inc. Corvallis, Oregon	503/757-2663	503/758-5305
4	J.D. Smith, University of Saskatchewan Saskatoon, Saskatchewan	306/374-5165	-
5	Mommersteeg International BV Wolput 72, 5250 AA Vlijmen, Netherlands	-	-
6	Willamette Seed Company Albany, Oregon, USA	503/926-2728	503/926-1975
7	Barenbrug USA Tangent, Oregon, USA	503/926-5801	503/926-9435
8	B.R. Christie, Agriculture Canada Charlottetown, PEI	902/566-6800	902/566-6821
9	United Grain Growers Ltd. Edmonton, Alberta	403/479-2051	403/479-6027
10	Svalof Seed Ltd. Lindsay, Ontario	705/324-3293	705/324-2550
11	Moore Seed Processors Inc. Debolt, Alberta	403/957-3964	403/957-2580
12	Jacklin Seed Company Post Falls, Idaho, USA	208/773-7581	208/773-4846
13	Alberta Environment Centre Vegreville, Alberta	403/632-8209	403/632-8379

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## APPENDIX I: SEED MAINTAINERS AND/OR AGENTS continued

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ID #	SEED MAINTAINER/AGENT	PHONE #	FAX #
14	Advanta Seeds West Albany, Oregon, USA	503/967-8923	503/967-8223
15	O.M. Scott & Sons Gervais, Oregon, USA	503/792-3633	503/792-3637
16	Lofts Seed Inc. Bound Brook, New Jersey, USA	908/356-8700	908/356-6640
17	International Seeds Inc. Halsey, Oregon, USA	503/369-2251	503/369-2640
18	Forbes Seed & Grain Junction City, Oregon, USA	503/998-8086	503/998-1091
19	Anttila Plant Breeding Farm FIN-04300, Tuusula, Finland	-	-
20	Ampac Seed Company Tangent, Oregon, USA	800/547-3230	503/928-2430
21	Barenbrug Holland BV Box 4, 6678 AC Oosterhout, Netherlands	-	-
23	Turf-Seed Inc. Hubbard, Oregon, USA	503/651-2130	503/651-2351
24	FFR Cooperative Battle Ground, Indiana, USA	-	-
25	Seed Research of Oregon Inc. Corvallis, Oregon	503/757-2663	503/758-5305
26	Canadian public cultivar	-	-

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