FORAGE CULTIVAR TRIALS FOR SEED PRODUCTION IN THE PEACE REGION

1998 BULLETIN

N.A. Fairey

Beaverlodge Research Farm
Agriculture & Agri-Food Canada
P.O. Box 29, Beaverlodge
Alberta, T0H 0C0, Canada

Phone: (780) 354-5116 Fax: (780) 354-8171

Internet Email: faireyn@agr.gc.ca

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INTRODUCTION AND EXPERIMENTAL PROCEDURES

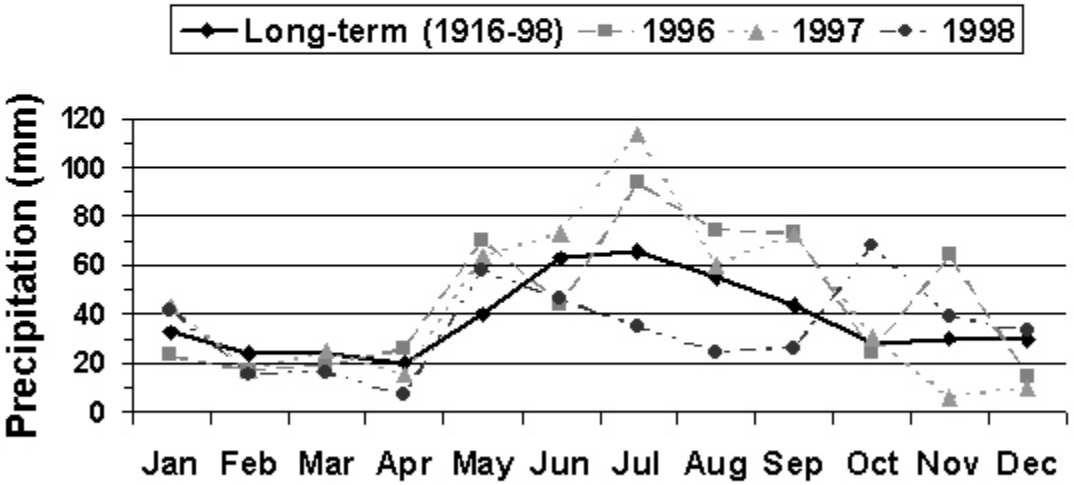
This bulletin provides information on the agronomic performance of forage and amenity grass cultivars grown for seed production in the Peace River region of Canada. It is the seventeenth in a series of reports published cooperatively by Alberta Agriculture and the Beaverlodge Research Farm of Agriculture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

The primary objective is to provide information on the seed production potential of forage and amenity grass 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.

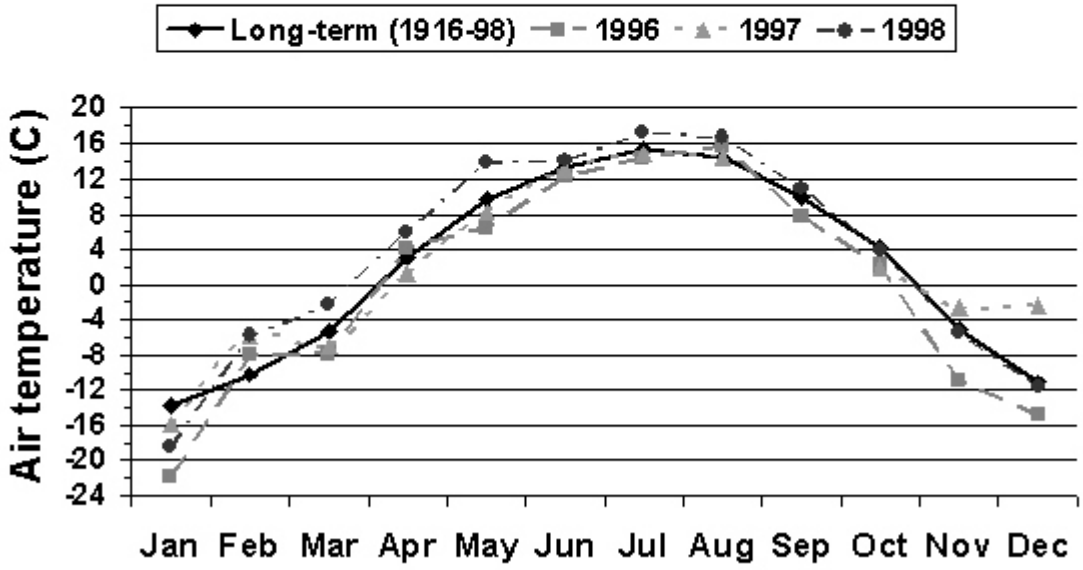
The seed trials were established in 1996 and were harvested for two production years, 1997 and 1998. The trials were located in the Peace region of Alberta, at the Research Farm of Agriculture & Agri-Food Canada in Beaverlodge and at the Peace Region Forage Seed Association's site near Rycoft. The trials were seeded in late May to mid June, 1996, at a seeding rate of 200 viable seeds/m^2. Weeds were controlled by a combination of mechanical trimming, inter-row cultivation, and locally recommended herbicides.

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^2). Experimental observations included a rating of stand establishment in the fall of the seeding year, and the date of seed maturity/harvest and cleaned seed yield for the two consecutive production years.

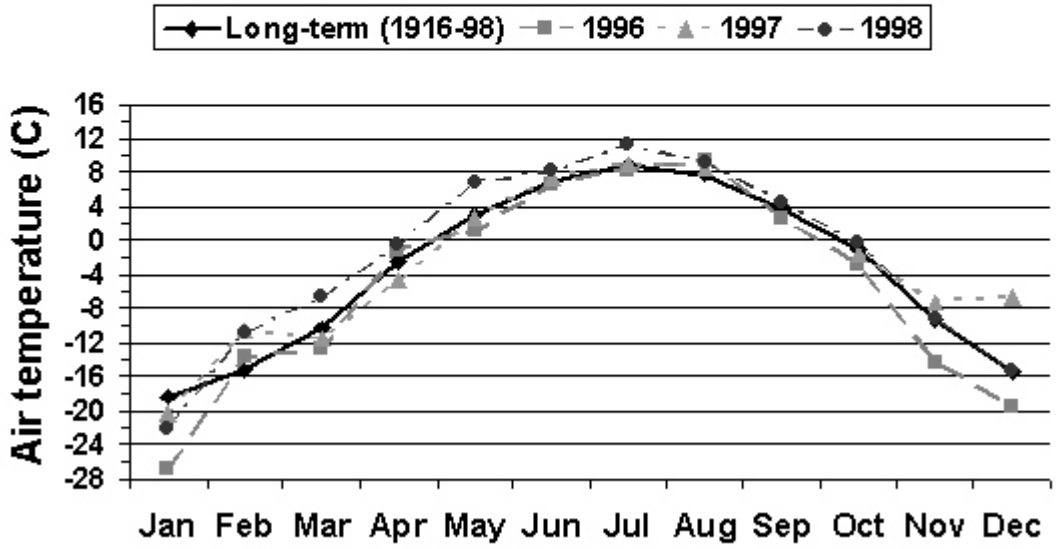
Precipitation at Beaverlodge, Alberta (long-term annual average = 456 mm)



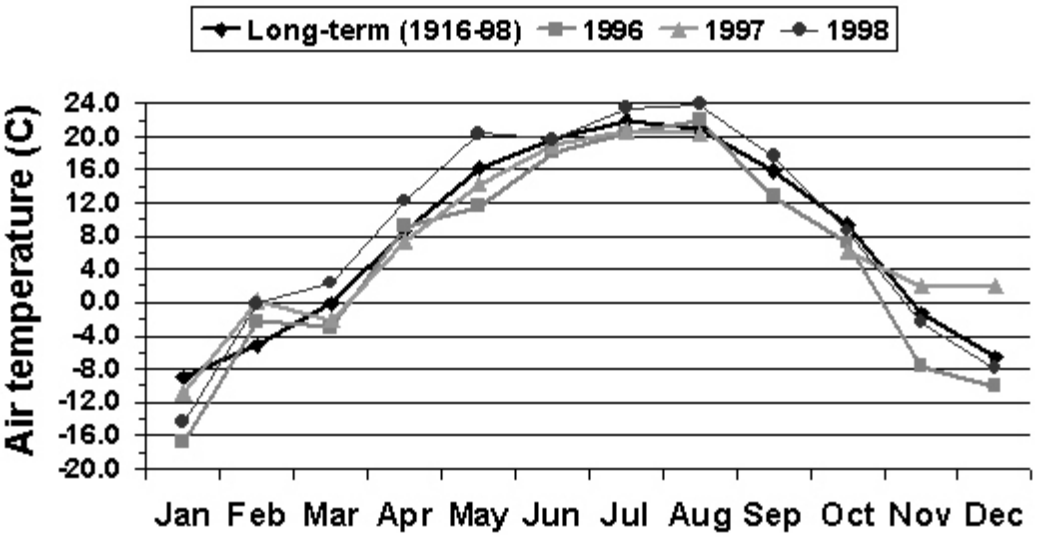
Mean air temperature at Beaverlodge, Alberta



Minimum air temperature at Beaverlodge, Alberta



Maximum air temperature at Beaverlodge, Alberta



1996 Kentucky bluegrass seed trial at Beaverlodge, Alberta									
		1996		1997			1998		
		Establishment (1-5 with 5=Good)		Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar[a]	Seed agent[b]	Vigour	Uni-formity	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Troy (check)	5	5	5	30	51	100	13	81	100
Banff	8	5	5	30	75	148	13	208	258
Blacksburg	11	5	5	30	51	100	13	175	217
Bluestar	11	5	5	30	147	289	13	414	514
Midnight	11	5	5	30	76	150	13	242	300
Unique	11	5	5	30	365	718	13	326	405
Rita	9	5	5	30	81	159	13	224	278
Exptl. 3500	9	5	5	30	65	127	13	355	441
Exptl. A83-285	9	5	5	30	38	75	13	173	214
Exptl. B4-130	9	4	5	30	311	611	13	303	376
Exptl. B4-124	9	4	5	30	320	630	13	309	383
Exptl. B4-243	9	3	5	30	90	178	13	265	329
Exptl. B4-236	9	3	5	30	95	186	13	214	266
Exptl. 0514	9	5	5	30	134	264	13	176	219
Exptl. BO-141	9	5	5	30	246	483	13	246	305
SED[c]	-	0.4	0	0	37.7	-	0	43.4	-
CV(%)[d]	-	10.6	0	0	32.2	-	0	21.5	-

[a] Species: *Poa pratensis*

[b] See Appendix 1 for the name of the seed maintainer/agent

[c] Standard error of difference for cultivar means

[d] Coefficient of variation

1996 Fineleaf fescue seed trial at Beaverlodge, Alberta									
		1996		1997			1998		
		Establishment (1-5 with 5=Good)		Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar[a]	Seed agent[b]	Vigour	Uni-formity	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Boreal crf (check)	CP	5	5	21	216	100	7	635	100
Bargena crf	1	5	5	24	657	304	7	214	34
Bargena 2 crf	1	5	5	24	725	335	7	596	94
Barpusta crf	1	5	5	24	705	326	8	425	67
Exptl. JH CRF crf	6, 10	4	5	23	781	361	6	357	56
Exptl. 90-ST crf	6, 10	5	5	24	632	292	6	472	74
Shademaster II crf	11	5	5	24	550	254	8	295	46
Barnica cf	1	5	5	21	386	178	8	712	112
Baroxi cf	1	5	5	21	247	114	6	253	40
Baruba cf	1	5	5	18	191	88	8	509	80
Tiffany cf	11	5	5	21	444	205	8	742	117
Seabreeze srf	11	5	5	23	160	74	8	403	63
Discovery hf	11	5	5	15	502	232	3	479	76
SED[c]	-	0.3	0.3	0	90.5	-	0.5	62.7	-
CV(%)[d]	-	8.3	7.7	0	23.2	-	8.3	16.4	-

[a] Species: crf = creeping red fescue (*Festuca rubra rubra*)
cf = Chewing's fescue (*Festuca rubra commutata*)
srf = slender red fescue (*Festuca rubra trichophylla*)
hf = hard fescue (*Festuca longifolia*)

[b] See Appendix 1 for the name of the seed maintainer/agent

[c] Standard error of difference for cultivar means

[d] Coefficient of variation

1996 Fineleaf fescue seed trial at Rycroft, Alberta									
		1996		1997			1998		
		Establishment (1-5 with 5=Good)		Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar[a]	Seed agent[b]	Vigour	Uni-formity	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Boreal crf (check)	CP	5	5	23	414	100	0	252	100
Bargena crf	1	5	5	23	1100	266	7	135	54
Bargena 2 crf	1	5	5	23	1211	292	7	336	134
Barpusta crf	1	5	5	23	1086	262	7	307	122
Exptl. JH CRF crf	6, 10	5	5	23	1130	273	7	176	70
Exptl. 90-ST crf	6, 10	5	5	23	935	226	7	222	88
Shademaster II crf	11	5	5	23	946	228	7	142	57
Barnica cf	1	5	5	23	400	97	0	286	114
Baroxi cf	1	5	5	23	325	78	2	96	38
Baruba cf	1	5	5	23	213	51	0	154	61
Tiffany cf	11	5	5	23	781	188	0	350	139
Seabreeze srf	11	5	5	16	365	88	0	165	66
Discovery hf	11	5	5	16	629	152	-5	525	209
SED[c]	-	0.3	0	0	84.2	-	0.9	50.1	-
CV(%)[d]	-	7.4	0	0	14.1	-	37.0	25.3	-

[a] Species: crf = creeping red fescue (*Festuca rubra rubra*)
cf = Chewing's fescue (*Festuca rubra commutata*)
srf = slender red fescue (*Festuca rubra trichophylla*)
hf = hard fescue (*Festuca longifolia*)

[b] See Appendix 1 for the name of the seed maintainer/agent

[c] Standard error of difference for cultivar means

[d] Coefficient of variation

1996 Tall fescue seed trial at Beaverlodge, Alberta									
		1996		1997			1998		
		Establishment (1-5 with 5=Good)		Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar[a]	Seed agent[b]	Vigour	Uni-formity	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Mustang (check)	8	5	5	31	694	100	20	836	100
Exptl. Bar FA 2AB	1	5	4	37	690	99	20	507	61
Barcel	1	5	5	37	325	47	20	368	44
Barfelix	1	5	5	33	600	87	20	428	51
Bartes	1	5	5	37	670	97	20	689	82
Bartucca	1	5	4	31	149	22	13	616	74
Dovey	1	5	4	31	266	38	13	421	50
Matador	11	5	4	37	989	142	20	824	99
Tarheel	11	5	4	37	868	125	20	664	79
SED[c]	-	0	0.7	1	131	-	0	61	-
CV(%)[d]	-	0	21.4	3.4	27.4	-	0	12.5	-

[a] Species: *Festuca arundinacea*

[b] See Appendix 1 for the name of the seed maintainer/agent

[c] Standard error of difference for cultivar means

[d] Coefficient of variation

1996 Tall fescue seed trial at Rycroft, Alberta									
		1996		1997			1998		
		Establishment (1-5 with 5=Good)		Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar[a]	Seed agent[b]	Vigour	Uni-formity	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Mustang (check)	8	5	5	32	1524	100	16	576	100
Exptl. Bar FA 2AB	1	5	5	32	1268	83	16	294	51
Barcel	1	5	5	32	876	57	16	329	57
Barfelix	1	5	5	32	1069	70	16	224	39
Bartes	1	5	5	32	1091	72	16	411	71
Bartucca	1	5	5	32	737	48	16	344	60
Dovey	1	5	5	32	800	52	16	234	41
Matador	11	5	5	32	1748	115	16	405	70
Tarheel	11	5	5	32	1455	95	16	319	55
SED[c]	-	0	0	0	165	-	0	56	-
CV(%)[d]	-	0	0	0	17.2	-	0	19.8	-

[a] Species: *Festuca arundinacea*

[b] See Appendix 1 for the name of the seed maintainer/agent

[c] Standard error of difference for cultivar means

[d] Coefficient of variation

1996 Perennial ryegrass seed trial at Beaverlodge, Alberta									
		1996		1997			1998		
		Establishment (1-5 with 5=Good)		Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar[a]	Seed agent[b]	Vigour	Uni-formity	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Norlea (check)	CP	5	2	Although the plants emerged somewhat unevenly within the rows, they were very well established and healthy going into the 1996-97 winter. However, winter survival was poor so this trial was discontinued in spring, 1997.					
Brightstar	11	5	3						
Charger	11	5	1						
Exptl. GH-94	11	5	2						
NightHawk	3, 4	5	1						
Prizm	12	5	2						
SED[c]	-	0	0.6						
CV(%)[d]	-	0	40						

[a] Species: *Lolium perenne*

[b] See Appendix 1 for the name of the seed maintainer/agent

[c] Standard error of difference for cultivar means

[d] Coefficient of variation

1996 Perennial ryegrass seed trial at Rycroft, Alberta									
		1996		1997			1998		
		Establishment (1-5 with 5=Good)		Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar[a]	Seed agent[b]	Vigour	Uni-formity	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Norlea (check)	CP	5	4	37	1073	100	Trial discontinued because of poor winter survival		
Brightstar	11	5	4	37	477	44			
Charger	11	5	4	32	562	52			
Exptl. GH-94	11	5	4	32	917	85			
NightHawk	3, 4	5	4	37	656	61			
Prizm	12	5	4	32	880	82			
SED[c]	-	0	0.3	0	177	-			
CV(%)[d]	-	0	8.2	0	29	-			

[a] Species: *Lolium perenne*

[b] See Appendix 1 for the name of the seed maintainer/agent

[c] Standard error of difference for cultivar means

[d] Coefficient of variation

1996 Timothy seed trial at Beaverlodge, Alberta									
		1996		1997[e]			1998		
		Establishment (1-5 with 5=Good)		Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar[a]	Seed agent[b]	Vigour	Uni-formity	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Climax (check)	CP	4	5	53	170	100	36	513	100
Exptl. BOR 9Y 309	2, 7	5	5	53	315	185	36	704	137
Exptl. BOR 9Y 315	2, 7	5	5	52	408	239	36	651	127
Exptl. BOR 9Y 329	2, 7	5	5	52	378	222	36	627	122
Exptl. BOR 9Y 333	2, 7	5	5	53	349	205	36	684	133
Tuuklea	2, 7	5	5	53	375	220	36	614	120
Exptl. BOR 9Y 330	2, 7	5	5	52	323	189	36	633	123
Exptl. BOR 89 102	2, 7	5	5	52	332	195	36	514	100
Exptl. BOR 9Y 311	2, 7	4	5	53	380	223	36	776	151
Exptl. BOR 96 001	2, 7	5	5	53	347	204	36	701	137
Exptl. BOR 0212	2, 7	5	5	53	298	175	36	618	121
SED[c]	-	0.4	0.1	0.3	39	-	0	43	-
CV(%)[d]	-	10	3.5	0.6	14.3	-	0	8.1	-

[a] Species: *Phleum pratense*

[b] See Appendix 1 for the name of the seed maintainer/agent

[c] Standard error of difference for cultivar means

[d] Coefficient of variation

[e] Seed yields suppressed by herbicide applied on 29th May, 1997

1996 Timothy seed trial at Rycroft, Alberta									
		1996		1997			1998		
		Establishment (1-5 with 5=Good)		Seed maturity	Seed yield @ 12% moisture		Seed maturity	Seed yield @ 12% moisture	
Cultivar[a]	Seed agent[b]	Vigour	Uni-formity	Day 1 = July 1	kg/ha	% check	Day 1 = July 1	kg/ha	% check
Climax (check)	CP	5	5	51	569	100	29	237	100
Exptl. BOR 9Y 309	2, 7	5	5	51	828	146	29	346	146
Exptl. BOR 9Y 315	2, 7	5	5	51	794	139	29	325	137
Exptl. BOR 9Y 329	2, 7	5	5	51	939	165	29	414	175
Exptl. BOR 9Y 333	2, 7	5	5	51	1113	196	29	353	149
Tuuklea	2, 7	5	5	51	1045	183	29	304	128
Exptl. BOR 9Y 330	2, 7	5	5	51	621	109	29	363	153
Exptl. BOR 89 102	2, 7	5	5	51	466	82	29	225	95
Exptl. BOR 9Y 311	2, 7	5	5	51	1061	186	29	331	140
Exptl. BOR 96 001	2, 7	5	5	51	836	147	29	370	156
Exptl. BOR 0212	2, 7	5	5	51	1113	195	29	263	111
SED[c]	-	0	0	0	77	-	0	45	-
CV(%)[d]	-	0	0	0	11.0	-	0	17.1	-

[a] Species: *Phleum pratense*

[b] See Appendix 1 for the name of the seed maintainer/agent

[c] Standard error of difference for cultivar means

[d] Coefficient of variation

APPENDIX I: SEED MAINTAINERS AND/OR AGENTS

ID #	SEED MAINTAINER/AGENT	TEL #	FAX #
CP	Canadian Public cultivar	-	-
1	Barenbrug Holland Wolfheze, Holland	(0)8308-21440	(0)8308-21812
2	Boreal Plant Breeding Jokioinen, Finland	358/3-418-71	358/3-418-7715
3	Forbes Seed & Grain Junction City, Oregon, USA	503/998-8086	503/998-1091
4	Hannas Seeds Lacombe, Alberta	403/782-6671	403/782-6503
5	Montana Agricultural Experiment Station Bozeman, Montana, USA	406/994-3681	406/9956579
6	Olsen-Fennell Seeds, Inc. Salem, Oregon, USA	503/371-2940	503/399-7119
7	Parsons Seeds Beeton, Ontario	905/729-2202	905/729-2623
8	Pickseed Canada Inc. Edmonton, Alberta	403/464-0350	403/464-0305
9	Pure-Seed Testing, Inc. Canby, Oregon, USA	503/651-3300	503/651-2351
10	Seed-Link Inc. Lindsay, Ontario	705/324-0544	705/324-2550
11	Turf-Seed Inc. Hubbard, Oregon, USA	503/651-2130	503/651-2351
12	Zajac Performance Seeds North Haledon, New Jersey, USA	201/423-1660	201/423-6018