

AEC Blueridge Alpine bluegrass

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Darroch, B. A. and Acharya, S. N. 1996. **AEC Blueridge Alpine bluegrass**. Can. J. Plant Sci. **76**: 349–351. AEC Blueridge alpine bluegrass (*Poa alpina* L.) is a reclamation variety developed for use in reclaiming and revegetating disturbed sites at high elevations. It is the first variety of alpine bluegrass released in Canada. Its primary advantage over varieties of other bluegrass species is its ability to thrive under the harsh environmental conditions found at high elevations.

Key words: Cultivar description, AEC Blueridge Alpine bluegrass

Darroch, B. A. et Acharya, S. N. 1996. **Cultivar de pâturin alpin ACE Blueridge**. Can. J. Plant Sci. **76**: 349–351. AEC Blueridge est un cultivar de pâturin alpin *Poa alpina* L. destiné à la restauration et au reverdissement des sites dégradés en haute altitude. C'est la première variété de cette espèce à être mise au commerce au Canada. Son principal avantage sur les cultivars des autres espèces de pâturin est son aptitude à prospérer dans les dures conditions de croissance qu'on retrouve en haute montagne.

Mots clés: Description de cultivar, AEC Blueridge, pâturin alpin

Table 1. Performance of AEC Blueridge alpine bluegrass, Nugget Kentucky bluegrass, and Reubens Canada bluegrass in small plot trials seeded in 1990 at Columbia Icefields (elevation 1860 m, Jasper National Park, Alberta) and Mountain Park (elevation 1800 m, south of Hinton, AB)

Location	Year harvested	Variety	Percent cover (%)	Seed yield (mg m ⁻¹)	Plant height (cm)
Columbia Icefields	1992	AEC Blueridge	81.7	4.6	21.0
		Nugget	14.2	0.0	—
		Reubens	60.8	1.2	21.0
		SE ^z	7.8	3.8	1.0
Columbia Icefields	1993	AEC Blueridge	17.5	— ^y	—
		Nugget	2.8	—	—
		Reubens	14.2	—	—
		SE	3.9	—	—
Columbia Icefields	1994	AEC Blueridge	45.0	4.3	20.0
		Nugget	4.2	0.0	—
		Reubens	20.8	0.5	17.0
		SE	10.0	5.0	1.3
Mountain Park	1992	AEC Blueridge	20.0	34.3	20.8
		Nugget	6.7	5.6	—
		Reubens	18.3	12.2	23.8
		SE	2.1	8.5	1.4
Mountain Park	1993	AEC Blueridge	32.5	33.8	19.3
		Nugget	12.0	0.0	14.5
		Reubens	27.5	0.0	19.6
		SE	2.7	7.7	1.2
Mountain Park	1994	AEC Blueridge	56.7	174.2	18.7
		Nugget	10.8	5.8	13.0
		Reubens	40.8	23.2	28.0
		SE	9.4	25.3	1.7
Mean		AEC Blueridge	42.2	50.2	20.0
		Nugget	8.4	2.3	13.8
		Reubens	30.4	7.4	21.9

^zStandard error based on 45 degrees of freedom.

^yNo or few seed heads produced.

Table 2. Performance of AEC Blueridge alpine bluegrass, Nugget Kentucky bluegrass, and Reubens Canada bluegrass in small plot trials at Vegreville (elevation 640 m), Beaverlodge (elevation 730 m), and Plamondon (elevation 560 m), Alberta

Location	Year		Variety	Seed yield (kg ha ⁻¹)	Time to maturity (d ²)	Plant height (cm)
	Seeded	Harvested				
Vegreville	1990	1991	AEC Blueridge	155	79	30.5
			Nugget	282	87	36.0
			Reubens	234	99	52.5
			SE ^y	29	0.4	1.0
Vegreville	1990	1992	AEC Blueridge	17	82	34.2
			Nugget	18	95	35.0
			Reubens	228	103	46.2
			SE	19	1.3	1.5
Vegreville	1991	1992	AEC Blueridge	124	85	30.2
			Nugget	75	96	36.8
			Reubens	207	103	39.5
			SE	28	1.0	1.1
Vegreville	1991	1993	AEC Blueridge	118	75	35.6
			Nugget	325	96	42.7
			Reubens	288	116	69.0
			SE	41	0.3	1.0
Vegreville	1992	1993	AEC Blueridge	613	82	36.8
			Nugget	538	98	39.4
			Reubens	351	115	61.7
			SE	54	1.6	1.4
Vegreville	1992	1994	AEC Blueridge	60	87	37.9
			Nugget	69	95	47.5
			Reubens	55	104	62.0
			SE	13	2.2	1.7
Beaverlodge	1991	1992	AEC Blueridge	56	82	29.3
			Nugget	45	97	23.8
			Reubens	238	97	42.2
			SE	29	1.5	1.1
Beaverlodge	1991	1993	AEC Blueridge	242	68	32.5
			Nugget	152	104	36.3
			Reubens	166	117	39.6
			SE	39	0.0	1.3
Plamondon	1992	1993	AEC Blueridge	108	83	32.9
			Nugget	25	92	30.2
			Reubens	107	92	48.3
			SE	21	0.0	1.5
Plamondon	1992	1994	AEC Blueridge	202	83	43.0
			Nugget	53	109	43.9
			Reubens	101	109	70.6
			SE	37	0.0	1.9
Mean			AEC Blueridge	170	81	34.3
			Nugget	158	97	37.2
			Reubens	198	106	53.2

²Days from 15 April to seed maturity.³Standard error based on 45 degrees of freedom.

AEC Blueridge (PO-1760) alpine bluegrass (*Poa alpina* L.) was released by the Alberta Environmental Centre in 1994. AEC Blueridge is well adapted to elevations up to 2500 m and was developed for use in reclaiming disturbed sites in the mountains and foothills of Alberta. It has the capability to grow rapidly and produce seed under the short growing seasons encountered at high elevations. This grass lives long

(> 7 yr) in high elevations but when grown at low elevations on the prairies, AEC Blueridge is short-lived (4–5 yr).

AEC Blueridge was selected from a collection of alpine bluegrass plants from 235 sites in the eastern slopes of the Rocky Mountains. It was derived from a single plant collected in 1985 from a site (elevation 2150 m) near the Alberta–British Columbia border. The seed from this plant

has been multiplied and tested through successive generations. Breeder seed was first bulked in 1989 (in the third generation from collected plants).

AEC Blueridge alpine bluegrass is a perennial bunch grass which reproduces apomictically. Many biotypes of alpine bluegrass have been reported to produce apomictic seed and apomixis is more common in northern countries (Müntzing 1954; Müntzing and Müntzing 1971). Alpine bluegrass accessions collected from high elevations (>2000 m) of the Rocky Mountains of Alberta showed a propensity to produce viviparous propagules under stressful environmental conditions (Hermesh and Acharya 1987). Plants are generally 15–35 cm tall and leaves are mostly basal. Leaf blades have a distinct boat-shaped tip. The head is an open panicle, pyramidal in shape. There are 5–6 florets per spikelet and spikelets have a purplish colour. Glumes are unequal and have short tip awns less than 1 mm long. Lemmas are hairy, especially on the keel and marginal nerves and lemma tips have no awns.

Performance

In field evaluation trials, AEC Blueridge alpine bluegrass was compared with Nugget Kentucky bluegrass (*Poa pratensis*) and Reubens Canada bluegrass (*Poa compressa*) because there are no commercial varieties of alpine bluegrass. This complicated the evaluation because alpine bluegrass is a bunch grass whereas Kentucky bluegrass and Canada bluegrass have rhizomatous growth habits (Hodgson et al. 1971; Jacklin 1976). In trials at mountain sites, AEC Blueridge clearly outperformed both check varieties, producing greater cover and higher seed yields (Table 1). In some cases, AEC Blueridge produced seed when the check varieties could not. At the mountain sites, it ripened by late July to early August while seed of Nugget or Reubens did not ripen until the second week of September. At elevations as high as 2400 m,

AEC Blueridge produced seed heads (data not shown) which ripened during favourable years with longer growing seasons (60 d or more). At plains locations, mean seed yield of AEC Blueridge was 170 kg ha⁻¹ (10 site-years) which was greater than that of Nugget (158 kg ha⁻¹) but less than that of Reubens (198 kg ha⁻¹, Table 2). Under prairie conditions, AEC Blueridge seeds matured approximately 2 wk earlier than Nugget and 3–4 wk earlier than Reubens. It also tended to be shorter than the check varieties.

Seed Distribution

Breeder seed of AEC Blueridge will be maintained by the Alberta Environmental Centre, Vegreville, Alberta. The multiplication and distribution of Foundation and Certified seed will be handled by Prairie Seeds Ltd., RR # 1, South Edmonton, Alberta, Canada T6H 4N6.

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Hermesh, R. and Acharya, S. N. 1987. Reproductive response to three temperature regimes of four *Poa alpina* populations from the Rocky Mountains of Alberta, Canada. *Arctic Alp. Res.* **19**: 321–326.

Hodgson, H. J., Taylor, R. L., Wilton, A. C. and Klebesadel, L. J. 1971. Registration of Nugget Kentucky bluegrass (Reg. No. 5). *Crop Sci.* **11**: 938.

Jacklin, A. W. 1976. Canada bluegrass plant. United States Patent. Plant Pat. 3,828.

Müntzing, A. 1954. The cytological basis of polymorphism in *Poa alpina*. *Hereditas* **40**: 459–516.

Müntzing, A. and Müntzing, G. 1971. An apomictic biotype of *Poa alpina* in the Koster islands of Sweden. *Hereditas* **67**: 143–144.