

## **Seed Yield Performance of Oracle Creeping Red Fescue December, 2006**

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### **Background**

The creeping red fescue variety, Boreal, was developed in 1966 at the Agriculture and Agri-Food Canada Research Station at Beaverlodge. Boreal has a broad genetic base that makes it a widely adaptable turf grass to many areas throughout the world. It is the standard creeping red fescue variety in Canada to which all other creeping red fescue varieties are compared.

To this day Boreal continues to be the main creeping red fescue variety grown in the Peace River Region of Alberta and BC. It continues to be one of the highest seed yielding creeping red fescue cultivars.

In 1993, a project was initiated by Brian Holl of Lamorna Enterprises Ltd., to develop creeping red fescue varieties that had genetic background similar to Boreal but with improved turf quality characteristics (leaf texture, color and disease resistance) and better stem eyespot resistance. The new variety would also maintain similar seed yields to Boreal. The project has been supported by the BC Branch of the Canadian Seed Grower's Association, the BC Grain Producers' Association, the Peace Region Forage Seed Association, Agricore, and the BC Ministry of Agriculture, Food and Fisheries Applied Research Partnership Program.

Plants from Boreal creeping red fescue fields were selected for stem eyespot resistance, shattering resistance, growth habit and seed production. These plants were crossed with other fescue cultivars that had high quality turf characteristics. After several years of plant breeding, a line was selected which has since been named Oracle. Breeder and Foundation seed of Oracle has been propagated by Canterra Seeds. Foundation seed of Oracle was made available to growers in the spring of 2005.



*Figure 1. Sod cultivar trial located in Oregon.*

Oracle was placed in the fine-leaved fescue National Turfgrass Evaluation Program trials (NTEP) in the fall of 2004. First year data on the turf performance of Oracle can be found at <http://www.ntep.org/contents2.shtml>. It was also placed in European turf trials in 2005. Data collected from the turf trials will provide the end users with information on how the turf characteristics of Oracle compare to other fine-leaved fescue varieties.

### **Methods**

In the spring of 2002, 2003 and 2004 several trials were established across the Peace River Region of Alberta and BC to compare seed yields of Oracle and Boreal creeping red fescue. A few additional sites were established in Saskatchewan and Manitoba in 2004 as part of the Western Canadian Grass Seed Testing Program. Plot size varied among locations, but were typically 1.5m wide by 7 m long. Each cultivar was replicated four times in a randomized complete block design. Seeding rates were 300 seeds/m<sup>2</sup> (approximately 4.1 kg/ha).

Herbicides were applied on seedling and established stands as required. Plots were fertilized in the fall with 70 kg/ha of actual nitrogen. Yields were collected the year following seeding at all sites. Second year seed yields were collected at most of the sites. The area harvested ranged from 3-5 m<sup>2</sup> depending on location.



*Figure 2. Oracle vs. Boreal seed yield trial at Falher, 2004.*

## Results

Seed yields and plant heights collected from the various locations are shown in the following tables.

**Table 1. Seed yields (kg ha<sup>-1</sup>) and plant heights (cm) of Boreal and Oracle creeping red fescue established at Beaverlodge in 2002.**

	Seed Yield		Plant Height	
	2003	2004	2003	2004
<b>Boreal</b>	1017	754	70	62
<b>Oracle</b>	1073	811	65	53
<b>CV%</b>	17.8	9.8	17.8	4.5
<b>LSD.05</b>	NS	NS	NS	NS

**Table 2. Seed yields (kg ha<sup>-1</sup>) of Boreal and Oracle creeping red fescue established at Falher in 2003.**

	2004	2005
<b>Boreal</b>	1070	411
<b>Oracle</b>	1111	436
<b>CV%</b>	7.9	17.3
<b>LSD.05</b>	NS	NS

**Table 3. Seed yields (kg ha<sup>-1</sup>) and of Boreal and Oracle creeping red fescue established at Fairview in 2003.**

	2004
<b>Boreal</b>	1329
<b>Oracle</b>	1360
<b>CV%</b>	5.5
<b>LSD.05</b>	NS

**Table 4. Seed yields (kg ha<sup>-1</sup>) and plant heights (cm) of Boreal and Oracle creeping red fescue established at Beaverlodge in 2003.**

	Seed Yield		Plant Height	
	2004	2005	2004	2005
<b>Boreal</b>	1208	696	70	91
<b>Oracle</b>	1430	909	71	84
<b>CV%</b>	19.9	29.5	9.2	9.5
<b>LSD.05</b>	NS	NS	NS	NS

**Table 5. Seed yields (kg ha<sup>-1</sup>) of Boreal and Oracle creeping red fescue established at Baldonnel in 2003.**

	2004	2005
<b>Boreal</b>	573	386
<b>Oracle</b>	667	387
<b>CV%</b>	23.4	35.4
<b>LSD.05</b>	NS	NS

**Table 6. Seed yields (kg ha<sup>-1</sup>) and plant heights of Boreal and Oracle creeping red fescue established at Beaverlodge in 2004.**

	Seed Yield		Plant Height (cm)	
	2005	2006	2005	2006
<b>Boreal</b>	1176	228	81	47
<b>Oracle</b>	1271	247	77	45
<b>CV%</b>	17.7	49.6	5.9	8.5
<b>LSD.05</b>	NS	NS	NS	NS

**Table 7. Seed yields (kg ha<sup>-1</sup>) of Boreal and Oracle creeping red fescue established at Baldonnel, Melfort, Arborg and Fairview in 2004.**

	Baldonnel		Melfort		Arborg		Fairview	
	2005	2006	2005	2006	2005	2006	2005	2006
<b>Boreal</b>	998	405	812	*	177	226	1315	*
<b>Oracle</b>	751	559	747	*	186	227	1407	*
<b>CV%</b>	17.6	30.3	12.4	*	49.0	35.6	16.6	*
<b>LSD.05</b>	NS	NS	NS	*	NS	NS	NS	NS

\* No data collected in 2006.

**Table 8. Summary of seed yields of Boreal and Oracle creeping red fescue from nine sites across western Canada.**

Location	Seeding Year	Harvest Year	Boreal kg ha <sup>-1</sup>	Oracle kg ha <sup>-1</sup>	Oracle Yield % of Boreal
Beaverlodge	2002	2003	1017	1073	105
		2004	754	811	108
Beaverlodge	2003	2004	1208	1430	118
		2005	696	909	130
Falher	2003	2004	1070	1111	104
		2005	411	436	106
Baldonnel	2003	2004	573	667	116
		2005	386	387	100
Fairview	2003	2004	1329	1360	102
Beaverlodge	2004	2005	1176	1271	108
		2006	228	247	108
Baldonnel	2004	2005	998	751	75
		2006	405	559	138
Fairview	2004	2005	1315	1407	107
Melfort	2004	2005	812	747	92
Arborg	2004	2005	177	186	105
		2006	226	227	100
<b>Average of all sites</b>			<b>751</b>	<b>798</b>	<b>107</b>

## **Conclusions**

Seed yields comparing Oracle and Boreal creeping red fescue have been collected from ten locations which has translated into seventeen site years of data over a three year period. Seed yields from Oracle have been similar to slightly higher than Boreal. Oracle is also slightly shorter in height than Boreal.