

Bruce birdsfoot trefoil

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Papadopoulos, Y. A., McRae, K. B., Gehl, D. and Fillmore, S. A. E. 2008. **Bruce birdsfoot trefoil**. Can. J. Plant Sci. **88**: 1093–1094. Bruce birdsfoot trefoil (*Lotus corniculatus* L.) is a 71-clone synthetic variety developed at the Nappan Research Farm, Agriculture and Agri-Food Canada, Nappan, Nova Scotia. Bruce was developed through two cycles of mass selection for plant vigour (top and root growth) and winterhardiness, and one cycle of mass selection for re-growth vigour under grazing. In Atlantic Canada, Bruce produced more forage than the check cultivar Leo during three post-seeding years. It was also superior in spring growth with high first-cut herbage yields.

Key words: Birdsfoot trefoil, *Lotus corniculatus*, cultivar description

Papadopoulos, Y. A., McRae, K. B., Gehl, D. et Fillmore, S. A. E. 2008. **Le lotier corniculé Bruce**. Can. J. Plant Sci. **88**: 1093–1094. Bruce est une variété synthétique de lotier corniculé (*Lotus corniculatus* L.) issue de 71 clones. Elle a été créée à la Ferme expérimentale d'Agriculture et Agroalimentaire Canada à Nappan, en Nouvelle-Écosse. La variété a été développée au terme de deux cycles de sélection massale pour la vigueur (croissance des organes aériens et souterrains) et la rusticité, et d'un troisième cycle pour la repousse après paissance. Dans la région de l'Atlantique canadien, Bruce a donné plus de fourrage que le témoin Leo au cours des trois années suivant les semis. Le cultivar se caractérise aussi par une meilleure croissance au printemps avec un rendement élevé d'herbages à la première coupe.

Mots clés: lotier corniculé, *Lotus corniculatus*, description de cultivar

Bruce birdsfoot trefoil (*Lotus corniculatus* L.) is a 71-clone synthetic variety developed at the Nappan Research Farm, Agriculture and Agri-Food Canada, Nappan, Nova Scotia. The name “Bruce” was chosen to honour the late Mr. Bruce Petipas (1960–2003) for his contribution to forage and livestock technology transfer in Nova Scotia. This cultivar was tested under the code name NB90-109 and registered for sale in Canada by the Variety Registration Office, Canadian Food Inspection Agency, on 14 August 2007 (Registration no. 6326).

Breeding Methods and Pedigree

Parental clones were originally selected from a 1983 evaluation trial of birdsfoot trefoil cultivars/selections established at the Nappan Research Farm. Fifty vigorous plants were selected from eight diverse populations: Leo (Bubar 1964), Empire, Upstart, CH1, 0101-13, wit-001, 790-6, and Leo2-1. Plant vigour was based on a visual assessment for freedom from root and crown rot, size of root system, nodulation, and above-ground plant vigour. In 1988, 50 plants from each of the eight populations were established in a space-planted nursery at the Nappan Research Farm. Dry matter yield (DMY) was determined for cuts 1 in 1989 and 1990. To simulate rotational grazing, stand re-growth following first harvest was mob-grazed by a small flock of sheep for

two growing seasons (1989 and 1990). In the fall of 1990, 10 vigorous plants were selected from each population and the roots were rated for vigour and nodulation.

Based on a sequential ranking of the above measurements, up to 10 genotypes from each cultivar/synthetic were selected. These 71 genotypes were intercrossed in the greenhouse to produce Syn-1 and Syn-2 seeds of a new experimental synthetic, NB90-109. A limited number of Syn-2 seeds were produced in the greenhouse for a field screening trial. In 1992, NB90-109 was established in the field with other experimental synthetics developed at the Nappan Research Farm. Plots contained 25 plants of each synthetic in three replicates. Stands were rotationally grazed in 1993 and 1994.

Bruce showed good seedling vigour based on early spring vigour, re-growth vigour following grazing, winterhardiness, and plant morphological characteristics. In 2002, Syn-2 seeds were used to establish a 0.67-acre plot to produce breeder seeds at the Research Farm of Agriculture and Agri-Food Canada in Indian Head, Saskatchewan.

Performance

Bruce was evaluated in trials seeded at Charlottetown, Prince Edward Island, and Nappan and Truro, Nova Scotia. Forage DMY is summarized in Table 1.

Table 1. Post-establishment year yield performance of NB90-109 birdsfoot trefoil in Atlantic Canada^z

Cultivar	1998 dry matter yield (t ha ⁻¹)		1999 dry matter yield (t ha ⁻¹)		2000 dry matter yield (t ha ⁻¹)		Mean (t ha ⁻¹)	
	First cut	Seasonal	First cut	Seasonal	First cut	Seasonal	First cut	Seasonal
NB90-109	6.33	10.13	4.17	6.88	4.93	7.54	5.01	8.20
Leo	5.99	9.68	4.09	6.91	4.84	7.38	4.89	8.00
SEM ^y	0.217	0.270	0.149	0.187	0.151	0.177	0.112	0.152

^zSeeded at three locations in 1997: Charlottetown, PE; Truro, NS; Nappan, NS. The 2000 yields were recorded only in one location – Charlottetown, PE. The 1998 and 1999 yields were recorded at three locations. The mean values are for seven location-years.

^yStandard error of the mean based on cultivar × location mean square.

Compared with the check cultivar Leo, Bruce yielded, on average, 105% in the first harvest year, 100% in the second, 102% in the third, and 103% overall (Table 1). Bruce was also superior to Leo in spring growth with higher first-cut herbage yields.

Other Characteristics

In general, plant characteristics of Bruce were similar to the cultivar Leo. Spring growth started 5–10 d earlier, fall dormancy dates were similar, and the date of blooming was the same. In spring growth (late vegetative stage) Bruce plants were more erect than Leo.

Maintenance and Distribution of Pedigreed Seed

Breeder seed will be produced by the Indian Head Research Farm, Agriculture and Agri-Food Canada, in Indian Head, Saskatchewan, in collaboration with Agriculture and Agri-Food Canada, Soils, Crops and

Livestock Research Centre, in Charlottetown, Prince Edward Island. Seeds of Bruce will be increased through Breeder, Foundation, and Certified Seed Classes. The distribution rights to this cultivar have been assigned to Semican Atlantic Inc. (366, Rang 10 Plessisville, Québec, Canada G6L 2Y2) and Interlake Forage Seeds Ltd. (Box 190, Fischer Branch, Manitoba, Canada R0C 0Z0).

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