

PROLIFIC FLOWERING YEAR FOR PLAINS ROUGH FESCUE AT THE KERNEN PRAIRIE

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Figure 1. *Plains Rough Fescue* in flower at Kernen Prairie

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Plains Rough Fescue (*Festuca altaica* Trin. ssp. *hallii* (Vasey) Harms) is the dominant grass of the fescue grassland of Saskatchewan.¹ Flowering and seed set are relatively uncommon in this perennial grass. Johnston and MacDonald reported that ungrazed fescue in southern Alberta produced a good seed crop in 1902, 1952, 1964 and 1966 and a poor crop in 1965 and 1967.² Moss noted that John Macoun, an early botanist, had failed to record Plains Rough Fescue in the aspen parkland in the 1880s.³⁻⁵ He considered Western Porcupine Grass (*Stipa spartea* var. *curtiseta*) to be the dominant species of the area. Perhaps the typically small

number of seed heads present, if any may explain Macoun's omission of Plains Rough Fescue, as well as the failure to recognize the fescue association in early grassland community classifications.¹⁻⁵

At the Kernen Prairie natural area, a 130 ha grassland dominated by Plains Rough Fescue near Saskatoon, vigorous flowering was observed in 1987 (Fig. 1). Flowering was initiated around 10 May 1987 for a large number of fescue plants over the entire grassland, especially in unburned portions (Table 1). Flowering lasted from about 25 May until 7 June. Numbers of seed heads were counted on 30 quadrats

Table 1. DENSITY OF SEED HEADS FOR PLAINS ROUGH FESCUE AT KERNEN PRAIRIE, SASKATCHEWAN.*

Treatment	Seed heads/m ²	
	Mean	Standard Deviation
Unburned	224	4.66
Fall 1986 burn	112	5.21
Early (27 April) spring burn	24	8.90
Late (6 May) spring burn	3	0.54

* Counts of seed heads were made in early June 1987 on 30 quadrats 25 cm square¹¹

25 cm square, on different treatments of unburned and fall or spring burned.

Plant ecologists and botanists familiar with the area reported that they had not observed this plant flowering so prolifically in the past.⁶ Documentation of this flowering will help determine future flowering intervals, and will help to determine what controls flowering in this grass species.⁷ Production of new individuals through seed production allows hybridization to occur which can increase the gene pool of the species, a factor which may enhance that species' survival.

Johnston and MacDonald found that the vegetative apices of rough fescue appeared to initiate floral primordia in late August to early September.² The mild Saskatoon winter and spring of 1986-87 may have been a factor in the increased survival of the floral primordia and subsequent floral development. They also found that heading occurred in late June when the soil temperature at a 20 cm depth reached 12.7° C.² The warmer than normal spring weather may have brought the soil temperature to 12.7 earlier than normal. Another factor might have been the low frequency of killing frosts during the spring.

Table 1 illustrates that burning reduced the density of inflorescences. Both spring and fall burning disrupted the flowering; the spring burns caused the most detrimental effect. In this case it appears that the high temperatures during

the fires may have killed many floral primordia, thereby reducing flowering.

Although there is abundant floral development, not all the flowers may produce viable seed. Preliminary sampling on 22 June showed most spikelets at the milk stage of seed development, indicating that the plants are producing seed. Further observations will be carried out to determine seed productivity and viability.

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- ¹ COUPLAND, R.T. and T.C. BRAYSHAW 1953. The fescue grassland in Saskatchewan. *Ecology* 34:386-405.
- ² JOHNSTON, A. and M.D. MacDONALD 1967. Floral initiation and seed production in *Festuca scabrella* Torr. *Can. J. Plant Science* 47:577-583.
- ³ MACOUN, J. 1882. Manitoba and the Great North-west. World Publ. Co., Guelph, Ont.
- ⁴ MOSS, E.H. 1932. The vegetation of Alberta. 1V. The poplar association and related vegetation of central Alberta. *J. Ecol.* 20: 380-415.
- ⁵ MOSS, E.H. 1955. The vegetation of Alberta. *Bot. Rev.* 21:493-567.
- ⁶ PYLYPEC, B. 1986. The Kernan Prairie - A relict fescue grassland near Saskatoon, Saskatchewan. *Blue Jay* 44:222-231.