

Grazing of Alfalfa Varieties and Observations on Bloat

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Highlight

Cattle grazed four alfalfa varieties grown on dryland at Swift Current, Saskatchewan, from 1963 to 1965. No severe symptoms of bloat occurred in any year and there was no evidence that any one variety had a greater tendency to cause bloat than another. The variety Rambler yielded the most forage and provided the most cattle days of grazing per acre, followed by Siberian, Grimm and Alfa. The stands of Grimm and Alfa were considerably thinner than those of Rambler and Siberian indicating that their persistence was poorer.

The value of alfalfa in mixtures for dryland pastures in Western Canada has been reported by Campbell (1961, 1963), Kilcher et al. (1966), Clark and Heinrichs (1957), and Lawrence and Heinrichs (1966). The pasture yields of grass-alfalfa mixtures were substantially higher than when grasses were grown alone, and livestock gains were greater. Clark (1960) and Kilcher and Heinrichs (1966) showed that Rambler alfalfa (Heinrichs and Bolton, 1958) developed for use in the prairie provinces of Canada persisted better than other varieties under clipping, as well as when grazed by cattle and sheep. In a review article Heinrichs (1963) presents a case for the use of creeping alfalfa for pasture.

Although certain alfalfa varieties such as Rambler persist quite well under grazing, few livestock growers in Western Canada include alfalfa in pasture mixtures, partly because they doubt that alfalfa will persist under grazing and partly because they fear bloat.

This study was undertaken to compare the performance of two *Medicago sativa* L. varieties with two *M. media* Pers. varieties un-

der grazing by cattle, and make observations on the occurrence of bloat.

Materials and Methods

The alfalfa varieties in the test were:

Rambler (*M. media*)—A creeping-rooted, very winter-hardy variety recommended for hay and pasture use on dryland in the Canadian Prairie region.

Siberian (*M. media*) — A branch-rooted, very winter-hardy strain which originated on the farm of Claude Foster, Meadow, South Dakota, from a *Medicago falcata* strain which became partly mixed with *M. sativa* over the years (not a licensed variety).

Grimm (*M. sativa*) — A tap-rooted, winter-hardy variety widely used in Canada and Northern United States during the period 1930 to 1960.

Alfa (*M. sativa*) — A tap-rooted, hay-type variety from Sweden.

The soil on the test site is a clay loam. The test was seeded on summerfallow in May 1961. It was of the randomized block design with four replications. The separately fenced paddocks (plots) were 180 x 75 ft.

The varieties were seeded in 8-inch rows at the rate of 8 lb/acre. Grazing was delayed until the spring of 1963 because growth was very slow in 1961 and 1962, a result of very dry climatic conditions during those two years.

Sixteen cattle were used each year to graze the test. In 1963 and 1964, Hereford steers weighing about 700 lb were used in the study, whereas in 1965 dry Holstein cows were used. A group of four was placed in each paddock of the first replicate when the alfalfa was in the early bud stage and moved to the second, third, and fourth replicate in sequence when the alfalfa became grazed down. By the time the alfalfa was grazed in the fourth replicate it had reached the flowering stage. The groups were

placed into the various paddocks in the replicates in such a manner that each group grazed each variety during one period of grazing. Grazings were made during two periods each year as follows:

1963: 1st grazing—June 24 to July 22; 2nd grazing—July 22 to July 25

1964: 1st grazing—June 4 to June 14; 2nd grazing—July 27 to August 2

1965: 1st grazing—June 8 to June 23; 2nd grazing—July 19 to August 5

Dry matter yields were measured by sampling each paddock just before the cattle were turned in and the carrying capacity was determined by recording the days of grazing on each paddock.

The persistence of the varieties was obtained by measuring the basal ground cover by the point-quadrat method as modified by Clarke et al. (1942).

Cattle were rated for signs of bloat daily in 1963 and 1964, throughout the season. A bloat index on a 0 to 5 scale was used to indicate the degree of bloat (0 = none, 1 = slight, 2 = mild, 3 = moderate, 4 = severe requiring treatment, 5 = terminal unless treated).

Results and Discussion

The bloat incidence among the steers was very low in both 1963 and 1964 (Table 1). The majority of the ratings fell into 0, 1, and 2 categories. At no period and in no animal did bloat reach the severe stage (rating 4). Several steers showed more tendency to bloat than the majority, especially when they were introduced into a fresh paddock. The alfalfa variety, the presence or absence of surface moisture on the plants, or the stage of maturity at either the first or second grazing did not appear to have any bearing on the incidence of bloat in this experiment. Among the Holstein cows used in 1965, virtually no bloat was observed throughout the season and no bloat ratings

Table 1. Number of individual observations and average bloat ratings on steers, 1963 and 1964.

Variety	1963		1964	
	No. obs.	Ave. rating	No. obs.	Ave. rating
Rambler	544	0.3	108	0.3
Siberian	528	0.4	104	0.2
Grimm	464	0.5	84	0.4
Alfa	452	0.3	80	0.3

were made. Moisture conditions were quite good in 1965, with growth nearly twice as great as in the previous two years (Table 2).

In all three years, Rambler was superior to Grimm and Alfa in yield and carrying capacity, and in 1963 and 1964 its yield exceeded Siberian also (Table 2). The lower production of Grimm and Alfa was likely due to an inadequate ground cover which at the end of the experiment was: 14.8% for Rambler, 15.6% for Siberian, 11.5% for Grimm and 7.6% for Alfa. Alfa and Grimm established as well as Rambler and Siberian but in subsequent years suffered a considerable amount of winter injury which reduced the vigor of the plants. The biennial weed, flixweed (*Descurainia sophia* (L.) Webb) invaded the plots of

Table 2. Average dry matter yields and carrying capacities of four alfalfa varieties.

Variety	1963		1964		1965		Mean	
	Yield ¹	CD/A ²	Yield	CD/A	Yield	CD/A	Yield	CD/A
Rambler	2300	109	1520	56	3140	131	2320	99
Siberian	1940	103	1100	47	3140	130	2060	93
Grimm	1700	93	1100	43	3000	114	1933	83
Alfa	1900	90	840	41	2180	104	1640	78

¹Dry matter in lb/acre.

²Cattle days/acre.

Grimm and Alfa extensively during the wet year of 1965 but not the plots of Rambler and Siberian.

The results indicate that alfalfa can be used successfully for pasture, and that certain varieties are more suitable for this purpose than others.

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