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Published by: Great Plains Agricultural Committee.

Preferential grazing of leafy spurge by sheep

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A field study was conducted in central Montana during the summer of 1981 to determine whether the intake of leafy spurge by sheep would be influenced by the level of pasture infestation. The study was also designed to determine whether preconditioning sheep with a leafy spurge hay would influence leafy spurge intake when placed in summer pasture.

Three 10-acre pastures were established with a natural leafy spurge gradient: light (18.5% leafy spurge composition), moderate (24.1%) and heavy infestations (41.1%). Three paired 10-acre pastures were established as controls by applying 2 lbs of 2,4-D per acre to eliminate leafy spurge topgrowth. Four esophageal fistulated ewes were placed in each infested pasture to determine grazing preference. The percent forb, grass, shrub and leafy spurge ingested was determined by analyzing fistula bag contents every other day using the microscopic point technique (Harker, *et al.* 1964).

Four esophageal fistulated ewes were placed in each infested pasture for the entire study period. Two of the fistulated sheep had previous experience with leafy spurge hay during a winter feeding trial. Two unfistulated ewes were also placed in each infested pasture. Each control pasture contained 6 unfistulated ewes. Weekly weights were taken on individual animals.

Table 1. Percent leafy spurge in diet.

Group	Mid June			July							August					Avg.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
I	5	2	7	12	5	14	19	21	23	21	33	38	37	47	46	24
II	7	16	17	17	18	20	26	27	40	29	42	34	44	43	49	28
III	3	2	1	5	9	4	15	11	22	25	42	46	38	40	41	20

Table 2. Preference index^a for leafy spurge intake.

Group	Mid June	Early July	Late July	Late August
I light infestation	0.3	0.3	1.2	2.5
II moderate infestation	0.3	0.7	1.6	2.0
III high infestation	0.1	0.2	0.5	1.0

$$^a\text{Index} = \frac{\% \text{ composition of leafy spurge in diet}}{\% \text{ composition of leafy spurge in pasture}}$$

Table 3. Average group weight gains (pounds) over a 3-month summer field study.

	I Light infestation	II Moderate infestation	III Heavy infestation
Sheep on infested pasture	+15	+ 6	+13
Sheep on corresponding control pasture	+17	+18	+17

There were no significant differences between means at 5% level.

Results

There was a 1-3 week adjustment period before the sheep consumed a significant amount of leafy spurge (Table 1). The percent of leafy spurge in the diet increased steadily throughout the summer. The preference index (Table 2) indicates that the animals in group I had the highest preference for leafy spurge even though their pasture contained the lowest spurge infestation. Group III had the lowest preference for leafy spurge. There were no significant differences between the weights of the sheep in the infested pastures and their respective control pastures (Table 3).

The results indicate that sheep will consume an average of 40 to 50% leafy spurge in their diet.