

Utilization of Fringed Sagewort on a Winter Sheep Range¹

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FRINGED sagewort (*Artemisia frigida*) is known for its high protein content, but the species varies considerably in forage value within its extensive distribution. The Range Plant Handbook (1937) indicates that, on western ranges, fringed sagewort usually rates as good forage for sheep, fairly good for cattle and fair for deer and elk, especially in late fall, winter and early spring. The forage value of this plant is rated highest in the South-

west, where it is fairly good in palatability for cattle and very good for sheep and goats, especially during the winter and spring. The greater degree of aridity, the decreased abundance and the protracted utilization of this species on fall, winter and spring range by sheep and goats, have been cited as reasons for the higher forage value of fringed sagewort in the southern regions. On cattle ranges of the northern plains and foothills, the species is generally considered as practically worthless except in late fall and winter.

In southern Alberta and Saskatchewan, Clarke and Tisdale (1945) reported that fringed sagewort was eaten fairly readily in the winter, particularly by sheep. Coupland (1950) and Sarvis (1941) considered the plant an indicator of heavy grazing and stated that it was not eaten readily by cattle except in early spring, autumn and winter, in the Northern Great Plains. Clarke, Tisdale and Skoglund (1947) called fringed sagewort "unpalatable" to cattle during the summer and an indicator of overgrazing, when eaten to any extent.

Sheep grazing studies conducted by the Montana Agricultural Experiment Station afforded an opportunity to investigate the forage value and utilization of fringed sagewort by sheep on a winter range (Fig. 1). The area under study was a typical foothill grass

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FIGURE 1. Fringed sagewort typical of the experimental area.

range near Livingston, Montana, in which fringed sagewort was estimated to comprise less than one percent of the plant cover (weight basis).

Methods

Determinations of utilization were made from plant samples collected before and after grazing from three concentric sampling rings spaced at quarter-mile intervals from a central bedding camp. The entire area adjacent to the camp was grazed from February 1 to March 22, 1952 by a band of 1,100 sheep. Because of the complexity of the corral arrangements needed for other experimental work, one central camp was used and the band trailed into camp each evening and out in the morning.

The sampling ring nearest camp consisted of three transects; the central and outer rings were composed of four transects each. Approximately 25 plants were collected at 5-pace intervals on each transect on February 7, at the initiation of grazing, and on April 1, after the animals were removed. The transects were not permanently staked so that the second series of samples was collected from the same general

location as the first, but not on identical transect lines.

After separation of dead branch material, the plants were air-dried and weighed to the nearest $\frac{1}{100}$ gram. Calculations of utilization percentages were based upon air-dry weights of living plant material on a plant-unit basis.

Results

Table 1 presents data on individual plant weights before and after grazing and the percentage utilization. Utilization measurements at $\frac{1}{4}$ and $\frac{3}{4}$ mile from camp were approximately 62 percent. The central sampling ring at $\frac{1}{2}$ mile distance showed an average use of 54 percent. The lower value obtained

Table 1. Forage yields before and after grazing, and utilization of fringed sagewort

Sampling Ring	Average Weight per Plant		Utilization
	Before grazing	After grazing	
	<i>gms.</i>	<i>gms.</i>	<i>percent</i>
1	.333	.126	62.2
2	.520	.240	53.8
3	.635	.240	62.2
Average			59.4

in this sample appeared to be due to the topography of the area; a portion of the sampled area was subject to heavy snow drifts which restricted the period of grazing.

The average percentage of utilization of fringed sagewort for the range sampled was approximately 60 percent. The plant may be considered as choice feed for sheep under the existing grazing conditions.

The differences in the average weight of plants prior to grazing noted in Table 1 are believed to be the response to several years of use of the same central camp, with the subsequent effect upon the vigor of fringed sagewort. The less readily available growth on the smaller plants may account for the utilization near camp being similar to that in the outer ring of samples.

Summary

The utilization of fringed sagewort by sheep on winter range was determined by weight-sampling before and after grazing.

The average utilization of fringed sagewort on the range studied was 60 percent. This degree of use is higher than previously reported for this species in the Northern Great Plains area.

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