

CATTLE PERFORMANCE ON FORESTED AND GRASSLAND RANGE<sup>1</sup>

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Currently, little information is available regarding the change in livestock performance and diet quality during the grazing season on forest and grassland plant communities found in Oregon's Blue Mountains. Livestock production could be increased if each plant community was used at a nutritional peak.

This study was designed to determine when forest and grassland plant communities could be used to maximize livestock production through proper grazing.

In the summer of 1975 forest and grassland pastures of equal grazing capacity were delineated and fenced at the Starkey Experimental Range and Forest in northeastern Oregon. These pastures were moderately stocked using 18 yearling heifers per pasture during the 1976 grazing season. Weight data was collected at 28-day intervals using portable corrals and scales. The grazing season lasted 120 days extending from June 20 to October 10.

Four heifers equipped with esophageal forage collection devices were grazed in each pasture. Esophageal fistula samples were collected twice per week every other week in each pasture. These samples were analyzed for percent crude protein and lignin. In vitro digestibility was determined and daily intake calculated.

#### RESULTS AND DISCUSSION

Crude protein percentages in the diet of cattle are listed in Figure 1. There was little variation in crude protein percent between the two pastures during the entire grazing season. Heavy rainfall in August resulted in considerable regrowth on the grassland. This probably accounts for the high percentage of crude protein in the diet of cattle on the grassland throughout the grazing season.

The protein requirements for growing yearling heifers, as outlined by the National Research Council, indicate that 700 pound yearling heifers require 8.2% crude protein for a one pound per day gain. This requirement was more than satisfied on both pastures throughout the 1976 grazing season (Table 1, Figure 1).

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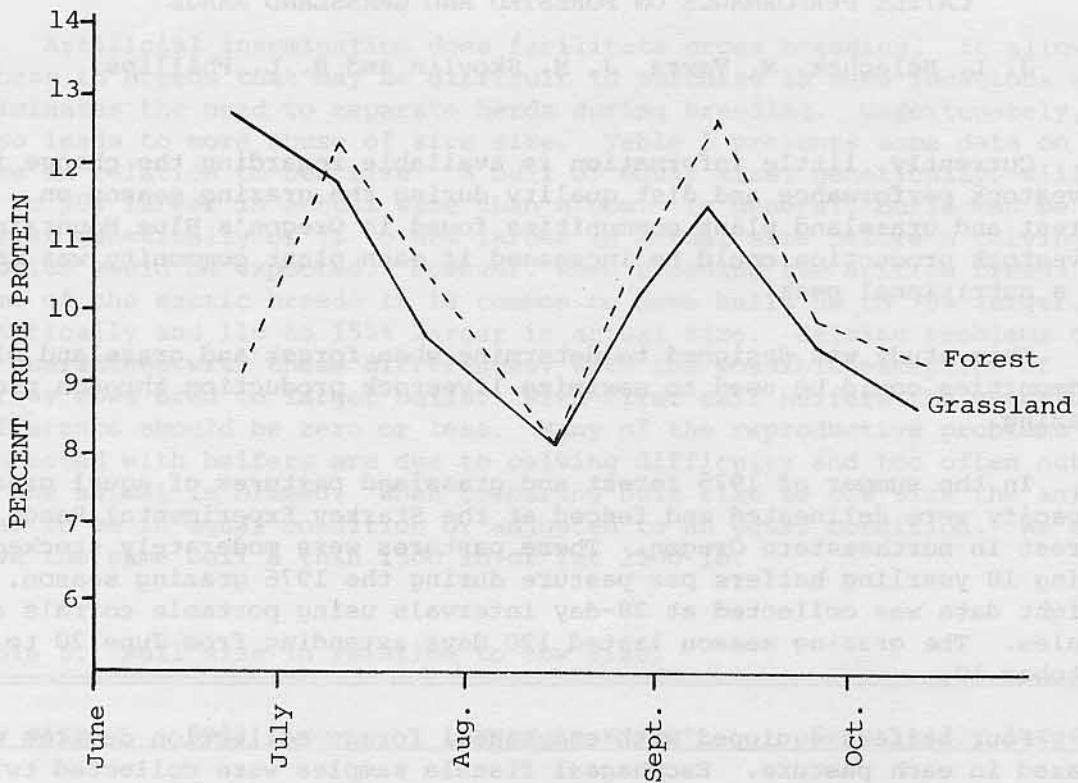


Figure 1. Average change in the crude protein content of the diet on forest and grassland plant communities.

Table 1. Average daily gain (pounds) for cattle during the 1976 grazing season.

Sampling Period	Grassland	Forest
6/21-7/19	+0.48	-0.13
7/20-8/21	+0.95	+1.34
8/22-9/14	+0.90	+1.12
9/15-10/11	+1.25	+0.92
Average Daily Gain	0.88	0.84

Lignin was much higher on the forest than on the grassland during the latter part of the grazing season (Figure 2). An increase in lignin content results in a decrease in forage quality. The rapid rise in lignin values on the forest during the last half of the grazing season suggest both a decline in diet quality and an increase in the browse content of the diet. On the forest in vitro digestibility and daily intake were adversely affected by rising lignin values during the last period (Table 2). As would be expected, average daily gain was likewise affected (Table 1).

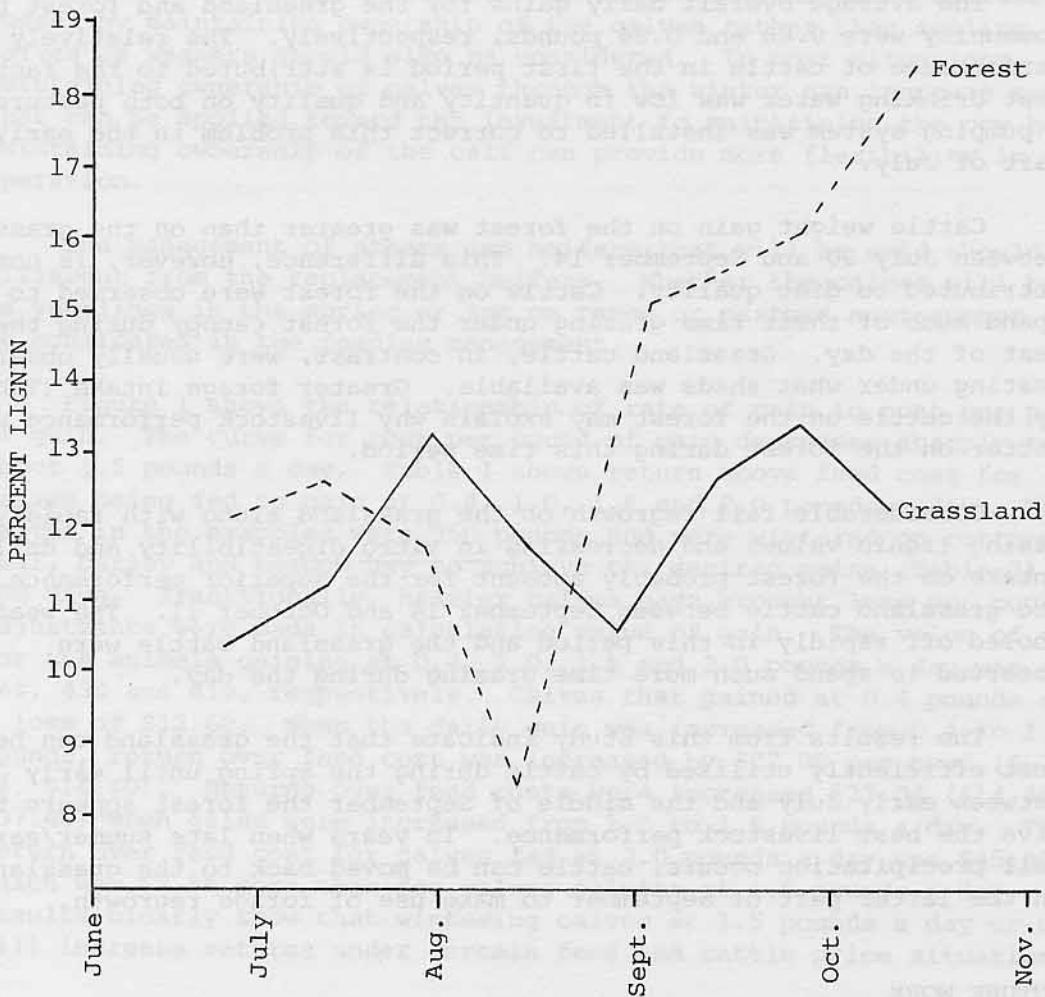


Figure 2. Average change in lignin content of the diet on forest and grassland plant communities.

Table 2. In vitro digestibility (IVDMD) and daily intake values for the 1976 grazing season.

Sampling Period	Grassland		Forest	
	IVDMD(%)	Intake (lb.)	IVDMD(%)	Intake (lb.)
6/21-7/19	50.7	11.2	56.2	8.4
7/20-8/21	51.3	15.0	52.4	16.1
8/22-9/14	49.2	15.6	46.3	16.5
9/15-10/11	46.3	16.1	41.8	15.2

The average overall daily gains for the grassland and forest plant community were 0.88 and 0.84 pounds, respectively. The relatively poor performance of cattle in the first period is attributed to the fact that drinking water was low in quantity and quality on both pastures. A pumping system was installed to correct this problem in the early part of July.

Cattle weight gain on the forest was greater than on the grassland between July 20 and September 14. This difference, however, is not attributed to diet quality. Cattle on the forest were observed to spend much of their time grazing under the forest canopy during the heat of the day. Grassland cattle, in contrast, were usually observed resting under what shade was available. Greater forage intake (Table 2) by the cattle on the forest may explain why livestock performance was better on the forest during this time period.

Considerable fall regrowth on the grassland along with rapidly rising lignin values and decreasing in vitro digestibility and daily intake on the forest probably account for the superior performance of the grassland cattle between September 14 and October 11. The weather cooled off rapidly in this period and the grassland cattle were observed to spend much more time grazing during the day.

The results from this study indicate that the grassland can be most efficiently utilized by cattle during the spring until early July. Between early July and the middle of September the forest appears to give the best livestock performance. In years when late summer/early fall precipitation occurs, cattle can be moved back to the grassland in the latter part of September to make use of forage regrowth.

#### FUTURE WORK

Data for this study was also collected during the 1977 grazing season and will be collected in 1978. Since diet quality samples for 1977 had not yet been analyzed, only 1976 data was included in this report.