

QUALITY OF THE DIET AND INTAKE OF STEERS
GRAZING A FOREST CLEARCUT

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Extensive areas in northeastern Oregon, Washington and Idaho are forested, privately owned lands that serve the dual purpose of timber production and grazing by livestock and big game.

Since multiple use is an important factor on these lands, methods of timber harvest and subsequent management must maximize not only future forest production but also forage production for cattle and big game.

In 1963 a mixed-conifer site on the Eastern Oregon Experiment Station's Hall Ranch was clear cut. The slash was broadcast over the cut area and burned one year later. Following the burn, the area was seeded to blue wildrye, mountain brome, orchardgrass, tall oatgrass, Manchar smooth brome, timothy and white Dutch clover. In 1965 two and three-year-old seedlings of ponderosa pine, Douglas fir, western larch, western white pine, Engelmann spruce and lodgepole pine were planted.

Following the burn, fifteen acres of the clearcut were divided into three, 5-acre pastures. Pasture 1 was fenced to exclude game; the other two had standard cattle fence construction. Grazing by cattle began in 1966 at the rate of 5 yearling heifers per unit for one month. Pastures 2 and 3 were grazed in common by cattle and big game. In 1972 cattle were excluded from pasture 3. During the period 1966 - 1971, average daily gain was $1\frac{1}{2}$ to 2 pounds per head.

Frequency of occurrence of selected plant species sampled prior to grazing suggested a difference between pastures 1 and 2. It was inferred from these data that the difference was due to previous grazing management of cattle and big game.

The following study, concluded in 1972, was initiated to determine if the difference in frequency of occurrence of those plants would influence the selection and quality of the diet selected by cattle.

EXPERIMENTAL PROCEDURE

Five steers, two equipped with esophageal forage collection devices, and two equipped with fecal collection bags grazed in each pasture. The steers grazed the clearcut from July 6 until August 9, 1972. Esophageal fistula samples were collected from the steers on two afternoons per week. Twenty-four hour fecal collections were also made twice a week. Collected fistula samples were analyzed for percent crude protein, acid detergent fiber, lignin, cellulose and in vitro digestibility. Intake was estimated from the fecal collections and corrected in vitro digestibility values. The steers were weighed on and off the clearcut.

RESULTS AND DISCUSSION

Chemical composition and intake data are listed in Table 2. Percent crude protein in the diets was similar in both pastures. Percentage of crude protein in the forage exceeded levels recommended by the National Research Council for both yearling cattle and pregnant lactating cows. Pregnant cows with suckling calves are the most common type of stock grazing similar range in northeastern Oregon.

Cattle in pasture 1 consumed a diet that was slightly higher in percent fiber, lignin and cellulose. Pasture 2 animals consumed a diet that was slightly more digestible, probably due to the lower fiber, lignin and cellulose content. However, differences between pastures for the chemical constituents measured were not great.

Daily dry matter intake per animal was about one pound greater for the steers grazing in pasture 1. The steers used in both pastures weighed approximately 900 pounds. Steers in both groups gained 1.2 pounds per day while on the clearcut. Steers in this trial gained less than animals used in previous years; perhaps because they were larger and in better condition at the start of the trial. However, fecal collection procedures may have depressed gains.

The absence of big game grazing and hence changes in plant frequency and possibly diet had little effect on nutrient quality of steer diets. Apparently, steers in pasture 1 were still able to select a diet comparable to those in pasture 2. The data indicate that similar clearcut and reseeded areas would provide sufficient nutrients for pregnant lactating cows grazing at this time of year.

Table 1. Frequency of occurrence of selected plant species in pastures 1 and 2.

GRASSES	Pasture 1	Pasture 2
orchardgrass	26.0	18.5
timothy	21.0	18.0
blue wildrye	22.0	15.0
tall oatgrass	11.5	8.5
smooth brome	3.0	12.5
Kentucky bluegrass	14.0	20.0
mountain brome	12.5	3.5
cheatgrass brome	12.5	7.5
elk sedge	7.5	25.5
Northwestern sedge	14.5	22.5
BROWSE		
snowbrush	2.0	4.0
red stem ceanothus	15.0	1.0
ninebark	5.5	0
little wildrose	2.0	0
snowberry	6.0	1.5
Scouler's willow	3.5	3.0
birchleaf spirea	11.0	4.0

Table 2. Chemical composition of the diet, digestibility and intake of steers grazing in pastures 1 and 2.

	Percent protein	Percent fiber	Percent lignin	Percent cellulose	Percent digestibility	Dry matter intake (lb/day)
Past. 1	9.7	48.3	14.4	28.1	56.0	16.9
Past. 2	9.0	47.5	14.0	26.5	57.0	15.6