FEEDING ALTERNATIVES FOR WINTERING STEER CALVES

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Roughages and supplements available to ranchers vary with each operation. This study was conducted to observe the performance and intake (roughage and supplements) of steer calves on three different feeding regimes. Roughage, roughage plus barley, and roughage plus a protein-energy block were fed.

EXPERIMENTAL PROCEDURE

Thirty-six Hereford steer calves born in the spring of 1975 were allotted equally into three treatment groups:

Treatment 1: Second-cutting alfalfa-orchardgrass hay

Treatment 2: First-cutting alfalfa-orchardgrass hay + energy (barley) supplement

Treatment 3: First-cutting alfalfa-orchardgrass hay + protein-energy block

Cattle were fed in lots and had access to a heated water fountain and a salt-dicalciumphosphate mixture at all times. All roughage was fed in covered bunks. Barley was fed daily in an open bunk. The protein-energy block was fed daily in elevated boxes that were sheltered from precipitation. Cattle were weighed at the beginning, at 28-day intervals and at the termination of the trial.

All animals were subjected to a 28-day pre-trial adaptation period. During the first two weeks only hay was fed to establish intake. For the last two weeks supplements were included to the appropriate cattle. The study itself ran for 112 days.

Feed consumption was calculated so that daily gains would be about one pound per day and similar among treatment groups. Nutritional values used in computations are presented in Table 1. Gains during the initial 28 days of the trial were lower than expected so roughage was increased to improve gains. The protein-energy block was to be available at all times, however, consumption was such that daily feeding was required to prevent overconsumption.

Table 1. Nutritional value of feeds

Feed	C. P.	TDN
	%	%
1st cutting hay	12	53
2nd cutting hay	16	56
Barley	12	74
Protein-energy block	20	70

RESULTS AND DISCUSSION

Performance of calves during the trial is presented in Table 2. Daily gains of all treatment groups was less than expected during the first period. Calves on the protein-energy block did not perform as well as the other two groups. Since gains were less than expected (1.0 lb/day) roughage levels of all groups were increased 2 pounds per head per day. Additionally, more protein-energy block (an additional 2 lb per head per day) was made available to treatment 3 calves to see if consumption would remain constant or increase with increased availability. Gains during the subsequent periods were higher than expected for all groups. Heavy precipitation and the resulting muddy conditions during the first period probably influenced gains during that time. Daily gains summarized over the four periods were the same (1.53 lb/day) for all groups.

Table 2. Performance of calves during each period and overall

Period	Average daily gain		
	Lot 1	Lot 2	Lot 3
	lb	lb	lb
Pre-test	1.25	0.88	0.55
1	0.73	0.76	0.51
2	1.98	2.27	2.24
3	1.63	1.66	1.73
4	1.81	1.45	1.65
Overall average (not incl. pre-test)	1.53	1.53	1.53

Average daily feed consumption and feed costs are presented in Table 3. Feed costs of treatments 1 and 2 were similar. The low cost of barley made it an attractive supplement. The increase in consumption of the protein-energy block made it an expensive alternative. However, if consumption had been limited to 2 pounds per head per day, daily feed costs would have been 49¢ per head per day which is more in line with the other treatments. If block fed calves and barley-fed calves perform equally, the block treatment would be an attractive alternative in years of high cost barley. Uncontrolled intake of a protein-energy supplement can become an expensive proposition, as Table 3 indicates.

Table 3. Average daily feed consumption and costs per head by treatment

Treatment	Ave. daily rough. consump.	Ave. daily supl. consump	Feed cost
	lb	lb	$
1	16.2	0	.45
2	14.0	2	.44
3	13.9	3.5	.60

Alfalfa-orchardgrass hay, 1st cutting--$50/ton; 2nd cutting--$55/ton; Barley--$90/ton; protein-energy--$139/ton.

PRODUCTION AND CHEMICAL ATTRIBUTES OF *KOCHIA PROSTATA*

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Investigations of *Kochia prostata*, introduced from Russia, have been in progress at the Squaw Butte Experiment Station since 1971. This species appears to have the potential of becoming a valuable forage plant on western ranges. It is widely distributed throughout the arid and semiarid regions from Russia to the Mediterranean Sea and central Europe. *Kochia* has been described as a long-lived, morphologically variable half shrub having thick roots with numerous branches penetrating deeply into the soil. The Russians report that *Kochia* is exceptionally drought resistant and is valued as a fattening feed for sheep, goats, and camels.

Several important questions require answers before *Kochia* is considered for use on western rangeland. First, how productive is *Kochia* under western rangeland conditions? Second, what are the seasonal variations in nutrient content and third, what oxalate content does the plant contain? The oxalate content is important because this is the substance that makes hologeton poisonous.