A COMPARISON OF LONG VS CHOPPED ALFALFA OR MEADOW HAY FOR WINTERING WEANER CALVES

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In much of the west wintering weaner calves are generally fed a hay based ration by most ranchers. The ration is usually a native grass hay with an energy and/or protein supplement, or alfalfa which may be supplemented.

Hay quality will vary considerably depending on such factors as harvest date, plant composition, and haying conditions. Physical form and other factors may influence response of growing calves to these hays. Many ranchers feed loose hay either out of bales or directly from a loose stack; others chop the hay to better facilitate mechanical handling.

These studies were undertaken both to compare the native meadow hay to alfalfa as well as look at the effect of chopping the hay on the performance of wintering weaner calves.

EXPERIMENTAL PROCEDURE

Trial 1. Forty-eight weaner calves, averaging about 390 pounds, were stratified by sex and weight and allotted to one of four treatments with six animals per lot and two replications per treatment. Meadow and alfalfa hay were fed as long or chopped hay in a 2 x 2 factorial trial (Table 1).

Table 1. Experimental design

	Trial 1		Trial 2	
	Form fed		Form fed	
	long	chopped	long	chopped
Alfalfa	12[1/]	12	26	26
Meadow	12	12	10	10

1/ Represents numbers of animals.

The alfalfa hay fed was a 13.1% protein and the meadow hay 8.2% protein. Table 2 shows the daily dietary intakes. The hay was fed free choice since voluntary intake was one of the objectives of this study. The grain portion of the ration was fed daily in feed troughs and the hay was fed in mangers. The hay was weighed in daily with refusals weighed out weekly.

Table 2. Composition of daily ration per head - Trial 1

Form	Ingredient			
	Meadow hay	Alfalfa hay	Barley	Cottonseed meal
	(lb.)	(lb.)	(lb.)	(lb.)
Alfalfa[1/]				
long	--	12.1	2	--
chopped	--	13.2	2	--
Meadow				
long	9.6	--	2	1
chopped	9.4	--	2	1

1/ All hay was fed free choice daily with refusals weighed back weekly.

Fresh water, salt, and a salt-bonemeal mix were available in the lots at all times. The animals were weighed at 28-day intervals after an overnight restriction from water. Hay samples were taken daily and composited for analysis. The trial was initiated on November 6, 1968 and completed on March 12, 1969. The results given here are for this 126 day period.

Trial 2. Seventy two weaner calves were allotted on the basis of sex and weight to one of eight pens. Four pens of 8 head each were fed long or chopped first or second cutting alfalfa. Four pens of 10 each were fed either third cutting alfalfa or meadow hay in long or chopped form. Unequal numbers were used based on the amount of hay available. All alfalfa fed cattle were summarized together (chopped vs. long) for this article. A summary of differences in hay quality will be presented in a later report. Table 1 shows the design of the experiment.

The protein level in the alfalfa hay was about 18% indicating a considerably better quality hay than in Trial 1. The meadow hay was 8.0% protein which was about the same quality as the meadow hay used in Trial 1. Composition of the daily diet is shown in Table 3.

The grain supplement was fed daily in troughs with the hay fed to all cattle in sheltered bunks. The hay was weighed in daily with refusals weighed back weekly. The hay samples in this trial were taken by 3/4 inch bale core of a representative number of bales each week.

Fresh water, salt and salt-bonemeal mix were available at all times in each lot. The animals were weighed each 28 days after an overnight restriction from water.

Table 3. Composition of daily diet per head - Trail 2

Diet	Ingredient			
	Meadow hay[1/]	Alfalfa hay[1/]	Barley	Biuret
Alfalfa				
long	--	14.1	--	--
chopped	--	15.3	--	--
Meadow				
long	9.0	--	2.8	2 oz
chopped	8.8	--	2.8	2 oz

[1/] All hay was weighed in daily and fed free choice with refusals weighed back weekly.

RESULTS AND DISCUSSION

Past studies at this station have shown that weaner calves consuming native meadow hay without supplement will gain about 1/2 to 2/3 of a pound per day for the winter period. Research also indicates that calves should gain 1 - 1.6 pounds per head per day for best gains on pasture the following summer. Production and cost data from Trial 1 are presented in Table 4.

Intake of meadow hay was similar whether it was chopped or long, however, the cattle on the long hay did consume a little more. The calves consuming the chopped meadow hay appeared to have more problems with sore mouths possibly due to the short stiff pieces of grass stems.

Chopping of alfalfa increased the hay intake by about 10% which was reflected in the gain made by these animals. Gain followed the intake pattern with the best gains exhibited by the calves on chopped alfalfa (1.17 lbs/day), followed by the long alfalfa (1.04 lbs/day), long meadow hay (.98 lbs/day), and chopped meadow hay (.94 lbs/day).

Efficiency of gain could not be compared across hay types since the grain portion was different. It can be noted that hay efficiency followed the gain pattern. The cost of gain was higher on the alfalfa rations mainly because of the relatively poor gains made on this poor quality hay. The net return over feed cost, however, was still best on the chopped alfalfa treatment.

Table 4. Production and cost data on weaner calves fed long and chopped meadow and alfalfa hay - Trial 1

	Meadow hay		Alfalfa hay	
	long	chopped	long	chopped
Initial wt., lb. 1/	397	381	390	395
Average daily gain lb.	.98	.94	1.04	1.17
Efficiency of gain 2/	9.8	10.0	11.6	11.3
Feed cost/head/day ¢ 3/	23.0	22.7	27.2	29.1
Feed cost/lb gain ¢ 4/	23.5	24.2	26.1	24.9
Return over feed cost ¢	16.2	14.9	14.4	17.7

1/ Initial weight was taken on November 6, 1968 and data are summarized to March 12, 1969 for a total of 126 days.

2/ Hay efficiency only - not including grain supplement.

3/ Costs of feed based on following prices (1972 estimates, $/ton).

Barley	60
Meadow hay	25
Alfalfa hay	35
Cottonseed meal	100

4/ Gain was estimated at 40¢ per pound.

Trial 2. The intakes on the second trial followed the trend of the first with the chopping of meadow hay slightly lowering intake whereas chopping of alfalfa resulted in an 8% increase in intake (Table 3).

Table 5 shows the production and cost data on Trial 2. Gains on meadow hay were similar to the first trial with the chopped hay fed cattle gaining 20% less than the long hay group. Again, the chopped alfalfa fed group gained better than the long hay fed group, 1.56 as compared to 1.38 pounds per day. This group ate 8% more and gained 13% better.

The alfalfa fed group gained considerably better in Trial 2 as compared to Trial 1, particularly considering that the animals in Trial 1 had two pounds of barley per head per day. This difference can be attributed mainly to increased quality of hay and increased intake.

The efficiency of conversion of hay to gain reflects the same trend in both trials. Cost of gain in Trial 2 followed the trend of gain with chopped alfalfa being the cheapest followed by long alfalfa, long meadow and finally the chopped meadow hay.

Table 5. Production and cost data on weaner calves fed long and chopped meadow and alfalfa hay - Trial 2

	Meadow hay		Alfalfa hay	
	long	chopped	long	chopped
Initial wt., (lb.)[1]	358	373	364	366
Average daily gain	1.09	.91	1.38	1.56
Efficiency of gain[2]	8.29	9.69	10.20	9.84
Feed cost/head/day ¢[3]	21.7	21.4	24.6	26.7
Feed cost/lb. gain ¢[4]	19.9	23.5	17.8	17.1
Return over feed cost ¢/day	21.9	15.0	30.6	35.7

1/ Trial started on December 7, 1971 and ran until March 1, 1972 for a 113 day trial.

2/ Hay efficiency only not including grain supplement.

3/ Costs of feed based on following prices:

Meadow hay - $25/ton
Alfalfa - $35/ton
Barley - $60/ton
Biuret - 1¢/oz.

4/ Gain was evaluated at 40¢/lb. gain.

The return over feed costs indicated that the chopped alfalfa returned about $5.75 per head more than the long hay. In addition to this one must consider the added cost of grinding. In comparing the chopped alfalfa to long meadow hay, a return of $12.20/head would be realized for the 113 day trial.

From these trials one would conclude that poor alfalfa hay is not much better than average quality meadow hay, whereas good quality alfalfa is much superior to either. Also, from these data one would not recommend chopping meadow hay, while chopping alfalfa appears to be a good practice.