

FEEDING CHOPPED HAY IMPROVES LIVESTOCK GAINS

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Calves fed chopped hay made significantly higher gains at a lower feed cost per hundred-weight of gain than those fed natural long hay in trials at the Dickinson Experiment Station.

This is a report of trials conducted from 1965 through 1969 to compare the efficiency and utilization of chopped and long hay.

Feeding Trials with Replacement Heifers

Feeding trials with heifers, begun in 1966, were continued in the winter feeding periods of 1967-68 and 1968-69. Table 1 summarizes data on rations fed and feed costs. Weights and gains for this trial are presented in Table 2.

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Table 1. Rations and Feed Cost in the Trial Comparing Chopped to Long Hay When Fed to Replacement Heifers.

	Long Hay Pounds/head/day			Chopped Hay Pounds/head/day		
	1966-67	1967-68	1968-69	1966-67	1967-68	1968-69
Crested brome-hay	9.8	12.6	10.7	10.8	13.7	13.6
Rolled barley	2.9	2.0	2.76	2.9	2.0	2.0
Alfalfa hay	1.0	1.0	1.0	1.0	1.0	1.0
Corn silage	3.0	—	—	3.0	—	—
Soybean oilmeal	0.69	—	—	0.69	—	—
Minerals	0.2	0.2	0.2	0.2	0.2	0.2
Feed cost/ cwt. gain	\$14.53	\$14.23	\$14.10	\$15.99	\$12.68	\$13.89

Table 2. Summary of Weights and Gains in the Trial Comparing Chopped to Long Hay When Fed to Replacement Heifers.

	Long Hay				Chopped Hay			
	1966-67	1967-68	1968-69	3-Yr. Avg.	1966-67	1967-68	1968-69	3-Yr. Avg.
Avg. initial wt.	385.9	388.6	416.4	397.0	374.5	394.5	413.6	394.2
Avg. final wt.	647.7	590.9	620.9	619.8	640.5	652.7	652.7	648.6
Ave. gain	261.8	202.3	204.5	222.8	266.0	258.2	239.1	254.4
Days fed	195	163	170	176	195	163	170	176
Avg. daily gain	1.34	1.24**	1.20**	1.27	1.36	1.58**	1.41**	1.45

**Highly significant difference.

Consumption of chopped hay was 0.94 pounds per head per day higher than the consumption of long hay in this trial over the three-year period.

Feeding Trials With Steers

Feeding trials with steers were begun in 1966 and continued through the 1967-68 feeding period. Table 3 summarizes data on rations fed and feed costs. Weights and gains for the trials with steers are presented in Table 4.

Table 3. Rations and Feed Costs in the Trial Comparing Chopped to Long Hay When Fed to Fattening Steers.

	Long Hay		Chopped Hay	
	Pounds per day 1965-66	1966-67	Pounds per day 1965-66	1966-67
Crested brome hay	8.2	13.7	9.0	13.8
Rolled barley	3.2	2.9	3.2	2.9
Corn silage	2.5	3.0	2.5	3.0
Soybean oilmeal	0.7	0.9	0.7	0.9
Minerals	0.2	0.2	0.2	0.2
Feed cost/cwt. gain	\$12.50	\$13.77	\$11.65	\$12.89

Table 4. Summary of Weights and Gains in the Trial Comparing Chopped to Long Hay When Fed to Fattening Steers.

	Long Hay			Chopped Hay		
	1965-66	1966-67	2-Yr. Avg.	1965-66	1966-67	2-Yr. Avg.
Avg. initial wt.	324.0	316.2	320.1	324.0	313.1	318.6
Avg. final wt.	811.0	823.1	817.1	891.0	886.9	889.0
Avg. gain	487.0	506.9	497.0	567.0	573.8	570.4
Days fed	325	279	—	325	279	—
Avg. daily gain	1.50**	1.82**	1.66	1.74**	2.06**	1.90

**Highly significant difference.

Feeding chopped hay instead of long hay to fattening steers significantly improved their rate of gain. The improved daily gain of .24 pounds per head was almost identical for both years, and was statistically significant at the .01 percent level.

Consumption of chopped hay was .40 pounds per head per day higher than was the consumption

of long hay when fed to fattening steers over the two-year trial period.

Chopped hay fed in both trials was processed through a hammermill fitted with a one-inch mesh screen.

Summary

Chopping hay does not improve its quality, but does increase consumption and reduce the amount wasted by cattle through picking and sorting. The increase in consumption results from a faster passage of the hay through the rumen and digestive tract. Thus, the capacity of the rumen of the growing calves is not limiting, and the calves eat more. This results in greater energy intake and, consequently, gain. Too fine chopping or grinding may have an opposite effect because of dustiness or a too-rapid rate of passage through the rumen to allow proper breakdown or digestion by the rumen bacteria. Too fine chopping of hay fed to producing dairy cows often reduces the milk fat percentage, because of a change in rumen fermentation resulting in less acetic acid and more propionic acid formed.

The quality of hay fed is an important factor. If poor quality hay is chopped and fed, poor gains and digestive problems can result. Cattle cannot sort chopped hay and cannot leave the poorly digestible roughage which contributes little to the nutrient needs of the animal, except to maintain body temperatures of mature cattle. A suitable supplement should be added when poorer roughages are used to supply the nutrients that are lacking.

Increasing hay consumption of growing animals increases gains and reduces cost per hundred-weight of gain. This is because a greater amount of energy is available above the maintenance needs of the calf.

The use of chopped hay also lends itself to mechanical handling.

Table 5. Summary of Feed Prices and Costs for Chopping Hay Used in These Trials.

Feed	1965-66	1966-67	1967-68	1968-69	Average
Crested brome-hay	\$18.00/ton	\$18.00/ton	\$18.00/ton	\$18.00/ton	\$18.00/ton
Rolled barley	\$ 0.90/bu.	\$ 0.90/bu.	\$ 1.00/bu.	\$ 0.95/bu.	\$ 0.94/bu.
Alfalfa hay	\$21.00/ton	\$21.00/ton	\$25.00/ton	\$25.00/ton	\$23.00/ton
Corn silage	\$ 7.20/ton	\$ 7.20/ton	\$ 7.20/ton	\$ 7.20/ton	\$ 7.20/ton
Soybean oilmeal	\$95.00/ton	\$95.00/ton	\$90.00/ton	\$90.00/ton	\$92.50/ton
Minerals	\$0.041/lb.	\$0.041/lb.	\$0.048/lb.	\$0.048/lb.	\$0.0445/lb.
Chopping hay	\$ 2.00/ton	\$ 2.00/ton	\$ 2.00/ton	\$ 2.00/ton	\$ 2.00/ton