

**Field-conditioned Alfalfa Hay As It Affects the Winter Performance of Weaned Heifer Calves, 1961-62 (Project 370).**

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Through cooperative efforts of the Departments of Agronomy and Agricultural Engineering, fourth-cutting alfalfa hay was made available to winter-feed weaned heifer calves. The object of the experiment was to determine the effects of various field-conditioned alfalfa hays on the winter performance of heifer calves.

The following methods and/or conditioning machines were used on fourth-cutting alfalfa hay:

1. Control—mowed, raked, baled.
2. Crimped—mowed, crimped with corrugated steel rolls, raked, baled.
3. Crushed—mowed, crushed with one smooth steel roll and a spiral-grooved rubber roll, raked, baled.
4. Rotary Cut—a 12-foot trail behind twin-rotor rotary mower, which cut, lacerated, and windrowed the hay all in one operation, baled.
5. Swathed—a 12-foot self-propelled windrower with a crimper-crusher conditioning attachment, baled.

Fifty head of choice Hereford heifer calves from the Jeff Ranch, Ft. Davis, Texas, were used in this study. They were allotted, 10 head per lot, on the basis of quality and weight. Alfalfa hay was fed free choice to all lots of heifers. They were also fed 3.4 pounds of rolled sorghum grain per head per day. Salt was available to all lots.

**Observations**

The results of this experiment are reported in Table 8. Gains made by the heifers in lots 13, 14, 16, and 17 were not significantly different. However, gains made by heifers in lot 15 were significantly lower than in the other lots.

Although these data are from only one year's work and more experimental evidence is needed to draw positive conclusions, some observations can be made from the chemical analysis data presented in Table 9. These data were obtained by the Department of Agricultural Engineering from the five test-groups of alfalfa hay.

The lower protein content of crimped and crushed hay was apparently due to leaf-loss during raking, baling, and sampling. This characteristic was especially noticeable with crushed hay. Carotene loss was very rapid during the first 24 hours after mowing the hay. During this period approximately 40% of the initial carotene was lost and by the end of the winter feeding period (March 1, 1962) 70% of the carotene was lost. Although this is a considerable loss in carotene, the loss caused no apparent effect on average daily gains, under the conditions of this feeding trial. At the level of hay consumed, carotene intake still was over 10 times the recommended allowance.

Average daily gain was apparently affected more by level of protein than of carotene, with the higher protein hay producing the greatest average daily gain irrespective of carotene. Crude fiber appeared to affect gain. The greater the crude fiber, the less the gain.

**Table 8**

**Winter performance of weaned heifer calves fed alfalfa hay field conditioned by various methods.**

November 21, 1961, to March 1, 1962—93 days. (Progress Report.)

Lot no. ....	13	14	15	16	17
No. heifers per lot ..	10	10	10	10	10
Hay-conditioning method .....	Control	Crimped	Crushed	Rotary cut	Swathed crimped
Initial wt. per heifer, lbs. ....	393	401	396	397	395
Final wt. per heifer, lbs. ....	558	543	509	565	550

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**Table 8 (Continued)**

Av. gain per heifer, lbs. ....	165	142	113	168	155
Av. daily gain, lbs. ..	1.68	1.45	1.15 <sup>1</sup>	1.71	1.58
Av. daily ration, lbs.:					
Alfalfa hay .....	13.18	11.02	11.36	12.62	12.27
Ground sorghum grain .....	3.39	3.39	3.39	3.39	3.39
Lbs. feed per cwt. gain:					
Alfalfa hay .....	784.52	760.00	987.53	738.01	776.58
Ground sorghum grain .....	201.79	233.79	294.78	198.25	214.56
Total feed required per cwt. gain, lbs. ....	586.31	999.79	1282.61	936.26	991.14
Feed cost per cwt. gain <sup>1</sup> .....	\$10.69	\$11.05	\$14.20	\$10.21	\$10.85

1. Feed cost: Alfalfa hay, \$18 per ton, ground sorghum grain, \$1.80 per cwt.  
2. Av. daily gain significantly lower than other gains.

**Table 9**  
**Chemical analysis of alfalfa hay.<sup>1</sup>**

	Control	Crimped	Crushed	Rotary cut	Swathed crimped
Crude protein (NX6.25), % ..	15.96	13.06	12.73	18.41	19.33
Crude fiber, % .....	24.63	31.82	30.91	22.61	21.12
Carotene, mgs. per lb. ....	15.4	33.4	21.5	34.7	34.5

1. Average of 4 samples.

**Diethylstilbestrol<sup>1</sup> Implant Plus Oral Chlortetracycline<sup>2</sup> vs. Oral Chlortetracycline Alone for Fattening Steers (Project 430).**

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**Experimental Procedure**

Hereford steers used in this study were fed in outdoor dirt lots without shelter. Each steer in lot 23, described in a trace-mineral study reported elsewhere in this publication, received a 24-mg. implant of diethylstilbestrol on the first day of the feeding period. Steers in both lots received 70 mgs. of oral chlortetracycline each day during the feeding period.

The fattening ration included sorghum grain, soybean oil meal, and prairie hay. During the first 20 days each steer also received 10 pounds of sorghum silage per day. The sorghum grain fed was gradually increased until the steers went on self-feed. The soybean oil meal was spread over the grain each morning. Initially 10 pounds of prairie hay per head per day were fed. This was cut to 4 pounds per head per day after the cattle were on full feed. Each pound of soybean oil meal contained 70 mgs. of chlortetracycline (Aureomycin).

All animals had free-choice access to salt and to a mixture of salt and bonemeal. Water was always available from automatic waterers.

Shrink data were obtained under conditions outlined in the trace-mineral study reported elsewhere in this publication.

1. Stilbestrol implants were furnished by Chas. Pfizer & Co., Inc., Terre Haute, Ind.

2. Aureomycin (chlortetracycline) supplied by American Cyanamid Corp., Pearl River, N.Y.

3. Present address: Department of Animal Husbandry, Panhandle A & M College, Goodwell, Okla.

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