

the level of phosphorus in the ration tended to increase appetite. There was no apparent indication of such an effect in this test. Since the gains of all lots were similar, and the average daily feed consumption was essentially the same, little difference was observed in the feed required per 100 lb. of gain. Feed cost per 100 lb. gain was lowest for the basal lot, even though no charge was made for the additional minerals added to rations fed Lots 2 and 3. There was no apparent difference in appearance or slaughter condition of the cattle at the end of 150 days on feed.

Summary

A fattening trial was conducted involving sixty, long-yearling steers fed high-silage rations containing approximately 0.2, 0.3 and 0.4 percent phosphorus in the dry matter of the ration. Results from the 150-day test indicate that the basal ration, containing about 0.2 percent phosphorus, was adequate, as evidenced by daily gains, feed consumption, and feed required per 100 lb. gain.

Effect of Pelleting Roughage for Beef Calves

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Increasing the consumption and utilization of roughage by beef cattle has been a critical problem for many years. Recent tests have indicated that pelleting feeds may increase feed consumption and efficiency of utilization. At present prices, the cost of fine grinding and pelleting of feeds limits the practical use of this method of feed preparation for cattle and sheep. However, increased costs of feed processing may be offset by greater gains and feed efficiency. A pilot trial was initiated at the Fort Reno station in the fall of 1957 to test the effect of pelleting a roughage mixture containing equal parts of finely ground alfalfa hay and cottonseed hulls on the consumption and utilization of roughage by steer and heifer calves.

Procedure

This test was designed so that comparisons could be made between pelleted and chopped roughage when either mixture was fed free choice, or in equal and controlled amounts. In addition, a palatability test was made to determine which form of roughage the calves preferred when both were offered on a free-choice basis. The roughage mixture was composed of equal parts of average quality alfalfa hay and cottonseed hulls, with 5 percent molasses added to each mixture. In order to pellet the roughage, fine grinding of the alfalfa hay was necessary. Pellets ($\frac{3}{4}$ inch in diameter) were made from the mixture. The chopped roughage was identical to the pelleted roughage mixture except that the alfalfa hay was coarsely ground.

All lots received equal amounts of a concentrate mixture composed of milo and cottonseed meal to assure normal gains. A small

amount of dried molasses was added to the concentrate mixture about mid-way through the trial in order to increase consumption by the calves. A mineral mixture of 2 parts salt and one part steamed bone meal was available to all calves.

Twenty-eight, spring-dropped, Hereford calves from the station herd were selected at weaning. The calves were divided into four lots of six calves each on the basis of sex, age, shrunk weight, and sire. Each lot contained three steers and three heifers. An extra lot of four calves (three steers and one heifer) was used for the free-choice test of chopped vs. pelleted roughage.

The calves were started on feed in early November, after a short adjustment period following weaning. Two groups of calves were fed the pelleted roughage while two other groups received the same roughage in the chopped and mixed form. One group within each type of roughage preparation was fed roughage free choice, while the other received a controlled amount. The extra group of four calves had access to both forms of roughage in self-feeders placed side by side to determine which form they preferred. Initially the calves were fed in large dirt pens. Later they were moved to smaller paved lots with an open shed for protection. The trial lasted for a period of 108 days, at the end of which a shrunk weight (off feed and water for 12 hours) was taken.

Results

Table 1 shows the average gains, feed consumption, and feed required per cwt. gain for each lot, together with the cost per cwt.

Table 1.—Effect of pelleting roughage for beef calves.

Feeding system Lot number Roughage form	Roughage ad. lb.		Roughage controlled	
	1 Pelleted	2 Chopped	3 Pelleted	4 Chopped
Number of calves/lot	6	6	6	6
Days on feed	108	108	108	108
Average weights (lbs.)				
Initial 11-8-57	410	405	410	413
Final 2-24-58	589	613	578	592
Total gain	178	207	168	178
Average daily gain	1.65	1.92	1.56	1.65
Average daily feed consumption				
Roughage	15.3	15.1	11.2	11.2
Concentrate	3.7	3.7	3.7	3.7
Total	19.0	18.8	14.9	14.9
Feed per cwt. gain (lbs.)	1155	983	956	902
Feed cost per cwt. gain (\$)¹	19.63	13.58	16.85	13.19

¹ An additional cost of \$6.00 per ton for pelleting the roughage fed Lots 1 and 3 was used in arriving at feed costs per cwt. gain.

gain. The gains were not improved by the use of a pelleted roughage in this test. Greatest gains were exhibited by the lots fed chopped and mixed roughage, whether fed ad lib. or at equal intakes.

In comparing pelleted roughage (Lot 1) vs. chopped roughage (Lot 2) when the calves were allowed to consume all they wanted, it is evident that although the cattle fed the pellets ate slightly more roughage, their gains were less than those of Lot 2. Also, in the lots which received a controlled roughage intake (Lots 3 and 4), calves gained slightly more when fed roughage in the chopped form. The reason for this difference is not apparent. However, changes may occur in the food nutrients during the pelleting process, or in the efficiency of utilization by the ruminant.

These results indicate it is not practical to pellet roughage for beef calves when rate of gain and cost of pelleting are considered. The quality of roughage may have a bearing on whether or not pelleting will increase performance. Probably lower quality roughages are more favorably affected by pelleting than high quality roughages. The quality of alfalfa in this roughage mixture was rather good, which might partially explain why pelleting failed to increase consumption and rate of gain.

Free-Choice selection of roughages.—Results with 4 extra cattle show that they preferred the roughage mixture in the pelleted form. These calves consumed an average of 9.5 lb. of pellets and 4.3 lb. of chopped roughage per head daily. Thus they ate 2.2 times as much pellets as chopped roughage. For the first few weeks of the trial, however, they ate about 5 times as much pellets as chopped roughage. These data indicate an improvement in palatability through pelleting.

Summary

Four lots of six calves each were used to test the effects of pelleting roughage on rate and efficiency of gain. During the 108-day feeding period the calves were fed roughage on a free-choice basis and in controlled amounts, both in the pelleted and chopped forms. One lot of four calves was given a choice of both forms of roughage, free-choice. Cattle that were fed pelleted roughage, free-choice, ate only slightly more feed than those fed chopped roughage. Greatest gains were obtained from cattle fed roughage in the chopped form, either when fed in controlled amounts or on a free-choice basis. When given a choice of pellets and chopped roughage, the calves preferred the pelleted form about 2.2 to 1.

Effect of Stilbestrol Implants on Gains of Steers Grazing Native Grass and Their Subsequent Feed-Lot Performance

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The majority of the cattle fed fattening rations are receiving stilbestrol, either in the feed or as implants in the ear. Experiments have indicated that greatest response to stilbestrol administration occurs