

Summary

Fattening trials were conducted with yearling steers to study the value of a high-urea supplement (containing ground milo, urea, and bone meal) vs. soybean meal in rations based on milo and sorghum silage. Further comparisons were made of the effect of adding trace minerals to each supplement.

Results show little difference in rate of gain among treatments, although there was a tendency for the soybean meal fed cattle to gain faster than those receiving urea. Although the urea supplement cost less per ton than soybean meal, net returns per steer favored the steers fed soybean meal by \$5.98 per head.

Trace minerals failed to increase performance when added to either supplement, with a tendency for reduction in gain when added to the urea supplement.

Rolled vs. Pelleted Milo and Certain Feed Additives For Fattening Steer Calves

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Cattle feeders must constantly seek new ways of cutting feed costs in the face of strong competition between beef and other meats. Even small differences in rate of gain and feed efficiency may mean the difference between profit and loss. New methods of preparing grain, such as pelleting, have shown promise in previous tests. With the use of new growth stimulants, such as stilbestrol, the protein requirements of fattening steer calves needs research.

Additional information is needed on the effect of new antibiotics and tranquilizers. Accordingly, a series of steer fattening trials have been conducted at this station since 1956*. This report gives results of the third test.

Procedure

Seventy choice, fall-dropped steer calves were purchased in September from the Lazy S Ranch at Springer. These calves were selected for uniformity from a large group. Upon arrival at Stillwater, they were given 3 weeks to recover from the effects of weaning and shipment, and to become accustomed to the feeds to be used during the trial. The calves were divided into 7 groups of 10 calves each on the basis of shrunk weight and feeder grade; the groups were then assigned to treatment at random.

The calves were gradually worked up to a full-feed of milo, plus protein supplement, one pound of dehydrated alfalfa meal pellets per head daily, and a limited amount of sorghum silage. All calves received 10 milligrams of stilbestrol in the daily protein supplement. A mineral mix of two parts salt and one part steamed bone meal was available to the cattle at all times.

By lots, the treatments were as follows:

- Lot 1—Rolled milo plus 1.5 pounds of cottonseed meal per head daily.
- Lot 2—Pelleted milo plus 1.5 pounds of cottonseed meal.
- Lot 3—Rolled milo plus 2.5 pounds of cottonseed meal.
- Lot 4—Pelleted milo plus 2.5 pounds of cottonseed meal.
- Lot 5—Rolled milo, 2.5 pounds of cottonseed meal plus 75 milligrams of antibiotic (Ilotycin)**.
- Lot 6—Pelleted milo plus 2.5 pounds of cottonseed meal plus 75 milligrams of antibiotic.
- Lot 7—Rolled milo plus 1.5 pounds of cottonseed meal plus 2.5 milligrams of tranquilizer (Hydroxyzine)**.

The test was designed to allow a comparison of three lots of calves fed dry, rolled milo and three lots fed finely ground and pelleted milo ($3/8$ inch cubes). Also, the effect of additional amounts of cottonseed meal or antibiotic could be compared with two lots per treatment.

All additives were mixed with their respective supplements in a large batch mixer prior to the start of the feeding trial. The rolled milo was ground to a medium degree of fineness, while the pelleted milo was finely ground prior to pelleting at a local mill. Milo proved somewhat difficult to pellet satisfactorily, and there was some difference in firmness of the pellets from batch to batch. Since silage was used as the roughage in this test, this did not seem to be of serious consequence.

The cattle were on feed for 172 days. They were drenched with phenothiazine prior to the experiment for control of stomach worms, and sprayed once with rotenone and BHC for grubs and lice. The appraised market value of each lot used in the following tables was placed on the steers by a committee from the Oklahoma City yards. The cattle will be slaughtered after Feeder's Day and further carcass data will be obtained.

Results

Average results, by lots, are summarized in Table 1, while a summary of data by the different possible comparisons are shown in Table 2.

* Results of the first two trials may be found in Oklahoma Agricultural Experiment Station Miscellaneous Publications MP-48 (1957) and MP-51 (1958).

**The Ilotycin (Erythromycin, Lilly) was supplied by Eli Lilly and Company, Indianapolis, Indiana, who also partially supported this project with a financial grant-in-aid. The hydroxyzine tranquilizer (Tran-Q) used was supplied by Chas. Pfizer and Co., Terre Haute, Indiana.

TABLE 1. Average results of steer feeding test by lots (172 days on feed).

Lot number Preparation of milo Supplement	1 Rolled 1.5 # C.S.M.		2 Pelleted 1.5 # C.S.M.		3 Rolled 2.5 # C.S.M.		4 Pelleted 2.5 # C.S.M.		5 Rolled 2.5 # C.S.M. Plus 75 mg. Ilotycin		6 Pelleted 2.5 # C.S.M. Plus 75 mg. Ilotycin		7 Rolled 1.5 # C.S.M. Plus 2.5 mg. Hydroxyzine	
	10	10	10	10	10	10	9 ¹	10	9 ¹	9 ¹	9 ¹	10	10	10
Number of steers/lot	10	10	10	10	10	10	10	10	9 ¹	9 ¹	9 ¹	9 ¹	10	10
Ave. weights (lb.)														
Initial 10/13/58	499	503	504	501	504	504	501	491	497	497	497	497	502	502
Final 4/3/59	912	936	892	927	892	892	927	906	903	903	903	903	907	907
Total gain	413	433	388	426	388	388	426	415	406	406	406	406	405	405
Ave. daily gain	2.40	2.52	2.26	2.48	2.26	2.26	2.48	2.41	2.36	2.36	2.36	2.36	2.35	2.35
Ave. daily ration (lb.)	12.8		11.5		11.5		10.9		11.3		10.2		12.8	
Rolled milo		11.8					10.9				10.2			
Pelleted milo		1.5	2.5				2.5		2.5		2.5		1.5	
C. S. meal	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Dehyd. alf. meal	12.5	12.5	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.7	12.7
Sorghum silage	.09	.08	.09	.08	.09	.09	.08	.09	.09	.09	.09	.09	.09	.09
2-1 mineral mix														
Feed required/cwt. gain (lb.)														
Milo	533	468	509	440	509	509	440	469	432	432	432	432	545	545
C. S. meal	63	60	111	101	111	111	101	104	106	106	106	106	64	64
Dehyd. alf. meal	42	40	44	40	44	44	40	41	42	42	42	42	43	43
Silage	524	496	558	508	558	558	508	523	534	534	534	534	540	540
Feed cost per cwt. gain (\$) ²	17.48	16.22	18.71	16.94	18.71	18.71	16.94	17.64	17.40	17.40	17.40	17.40	17.88	17.88
Financial data (\$):														
Total feed cost	72.19	70.24	72.60	72.18	72.60	72.60	72.18	73.20	70.64	70.64	70.64	70.64	72.43	72.43
Initial feeder costs	169.66	171.02	171.36	170.34	171.36	171.36	170.34	166.94	168.98	168.98	168.98	168.98	170.68	170.68
Total cost of steer plus feed	247.18	241.55	244.29	242.81	244.29	244.29	242.81	240.47	239.95	239.95	239.95	239.95	243.44	243.44
Appraised mkt. value per cwt.	26.80	27.00	26.70	26.80	26.70	26.70	26.80	27.70	27.45	27.45	27.45	27.45	27.40	27.40
Net return per steer	2.24	11.17	-6.13	5.63	-6.13	-6.13	5.63	10.49	7.92	7.92	7.92	7.92	5.08	5.08

¹ One steer removed from Lot 5 early in the trial for urinary calculi, another from Lot 6 for founder.
² A charge of \$3.00 per ton was made for rolling milo and \$5.00 per ton for fine grinding and pelleting. Costs of stilbestrol added to C.S. meal was \$0.74, and for antibiotic \$1.20, per steer. A \$3.00 per ton mixing cost was made for adding stilbestrol or antibiotic to supplements fed each lot.
³ Initial feeder cost of the calves was \$34.00 per cwt.

TABLE 2. Average results by comparisons.

Treatment	Rolled vs. Pelleted Milo		1.5 vs. 2.5 lb. C. S. meal		Control vs. Antibiotic	
	Lots 1, 3, 5 (Rolled)	Lots 2, 4, 6 (Pelleted)	Lots 1 and 2 (1.5 lbs. C.S.M.)	Lots 3 and 4 (2.5 lbs. C.S.M.)	Lots 3 and 4 (No Antibiotic)	Lots 5 and 6 (75 mg. Ilotycin)
Ave. daily gain (lb.)	2.36	2.45	2.46	2.37	2.37	2.39
Ave. daily ration (lb.)						
Milo	11.9	11.0	12.3	11.2	11.2	10.8
C. S. meal	2.17	2.17	1.5	2.5	2.5	2.5
Dehyd. alf. meal	1.0	1.0	1.0	1.0	1.0	1.0
Silage	12.6	12.6	12.5	12.6	12.6	12.6
Feed required per cwt. gain (lb.)						
Milo	504	447	501	475	475	451
C. S. meal	93	89	62	106	106	105
Dehyd. alf. meal	42	41	41	42	42	42
Silage	534	513	509	533	533	529
Feed cost per cwt. gain (\$)	17.94	16.85	16.85	17.83	17.83	17.52
Appraised value/cwt. (\$)	27.07	27.08	26.90	26.75	26.75	27.58
Net return per steer (\$)	2.20	8.24	6.71	-0.25	-0.25	9.21

Two calves were removed from the data, one for urinary calculi in Lot 5 and one for founder in Lot 6.

While there was some variation among the lots in daily gain, a comparison of the performance of all lots fed rolled milo versus those fed pelleted milo (Table 2) shows that the latter method of preparation resulted in slightly faster gains. Apparently rolled milo was more palatable, as shown by greater daily grain consumption. With better performance on less grain, calves fed pelleted milo were 11.3 percent more efficient in conversion of milo, with \$1.09 less feed cost per 100 pounds of gain. The appraised market value of the cattle was essentially the same. Due to greater feed efficiency and gain, a greater net return of \$6.04 per head was shown by calves fed pelleted milo.

Previous tests at this station with heifers and at Kansas with steers have shown an advantage for pelleting sorghum grain. Since this grain must be either ground or rolled for fattening calves, the added cost of pelleting is not prohibitive. In fact, these tests show it to be distinctly profitable.

A comparison can be made of performance of calves of Lots 1 and 2 fed 1.5 pounds of cottonseed meal per head daily with that of calves fed 2.5 pounds (Lots 3 and 4). Average results showed no advantage in gain from the increased amount of cottonseed meal fed.

Milo intake was less for calves fed the extra pound of cottonseed meal. Feed efficiency values showed a slightly lower milo requirement per 100 pounds of gain, but this was offset by more cottonseed meal required. Thus, feed costs per 100 pounds of gain were \$.98 more for calves on the 2.5 pound cottonseed meal level, and appraised market value showed little difference. These small differences resulted in a greater net return for the 1.5 pound level. Two previous trials have given variable results.

It appears that about 13 percent crude protein in the dry matter, as would be supplied by 1.5 pounds of 41 percent cottonseed meal as the supplement in this type of ration, is sufficient even when calves are stimulated by stilbestrol, which has been shown to increase protein deposition in the body. Previous tests where calves were not fed stilbestrol have shown that 1.5 pounds of cottonseed meal is ample, but that lesser amounts will result in reduced gains and lowered market value.

A comparison of the performance of Lots 3 and 4 vs. 5 and 6 show the effect of adding 75 milligrams of antibiotic (Ilotycin) to the daily ration. There was little difference in performance, and feed efficiency values between the groups were similar. Appraised market value favored the antibiotic-fed steers, which resulted in a considerable increase in net return.

In several tests at this and other stations, steers fed antibiotics have tended to grade slightly higher. Whether or not the difference in appraised market value in this trial is real will be brought out by carcass data obtained when the cattle are slaughtered. In a previous trial, the

antibiotic slightly improved gain and dressing percentage.

Adding a low level of tranquilizer (hydroxyzine) to the ration of Lot 7 calves gave no improvement in gain or feed efficiency over Lot 1 (see Table 1). Net returns slightly favored calves fed the tranquilizer. In a similar test the previous year, little indication of an advantage for feeding tranquilizers was observed. Thus, at this station, results have not been encouraging for use of this product in fattening rations.

Summary

A fattening trial with steer calves full-fed milo and limited amounts of cottonseed meal, dehydrated alfalfa meal pellets, and sorghum silage showed that finely ground and pelleted milo was approximately 11 percent more efficient in producing gain than rolled milo.

Increasing the protein level of the ration of calves fed stilbestrol above that supplied by 1.5 pounds of cottonseed meal and other ingredients, gave no improvement in performance or feed efficiency. Although calves fed 75 milligrams of a new antibiotic (Ilotycin) performed similarly to their controls, an increase in appraised market value made the addition profitable.

Low levels of a hydroxyzine tranquilizer did not improve feedlot performance in one lot of calves.