

In pelleted rations containing 63 percent ground or rolled milo, the addition of a complex mineral mix improved gains slightly.

In further experiments, mixed rations containing 50 percent milo in finely ground form proved superior to the same mixtures containing coarsely ground or steam-rolled milo. Less difference between milo preparation was apparent when the rations were pelleted. A ration containing 74 percent steam rolled milo and no roughage other than 8 percent dehydrated alfalfa meal proved superior to one containing only 50 percent steam-rolled milo, with dehydrated alfalfa meal and cottonseed hulls as the roughage. Approximately 13 percent less feed was required per cwt. gain with the "all concentrate" milo ration.

Implanting 8 to 9 month old calves with 24 mg. stilbestrol at the start of the trial improved gains, with no overall effect on carcass quality. Implanting with 12 mg. appeared to give less response than 24 mg. stilbestrol.

A Study of the Ratio of Concentrates to Roughage, Replacing Alfalfa Hay with Peanut Hulls, and Pelleting Vs. a Mixture for Fattening Lambs in Dry-Lot

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In recent years the acreage of peanuts in Oklahoma has increased considerably. In a few areas, peanut shelling factories are in operation and peanut hulls are available as a by-product. With the volume of peanut hulls now available, it was felt desirable to test their value in replacing alfalfa hay in a lamb fattening ration.

Also included in this year's work is a study of the ratio of concentrates to roughages, and pelleting versus the same ration fed ground and mixed.

Procedure

One hundred and forty-five western feeder lambs were used in this study. The lambs were produced in the range area of Western New Mexico. They were purchased at Roswell and shipped by truck to the Ft. Reno Station. During the first two weeks, the lambs grazed dry-native grass pasture around the station's headquarters. For the next month the lambs grazed small lots of wheat pasture in the swine area. On

December 30, the lambs were allotted to their dry-lot treatments as follows: (Approximately 18 lambs per lot.)

- Lot 1. 45 percent milo, 5 percent molasses, 50 percent alfalfa hay; ground and mixed.
- Lot 2. Same as for Lot 1, pelleted.
- Lot 3. 40 percent milo, 5 percent molasses, 5 percent cottonseed meal, 25 percent peanut hulls, and 25 percent alfalfa hay; ground and mixed.
- Lot 4. Same as for Lot 3, pelleted.
- Lot 5. 35 percent milo, 10 percent cottonseed meal, 5 percent molasses, 45 percent peanut hulls, and 5 percent dehydrated alfalfa meal; ground and mixed.
- Lot 6. Same as for Lot 5, pelleted.
- Lot 7. 60 percent milo, 5 percent molasses, and 35 percent alfalfa hay; ground and mixed.

All rations contained two pounds of Aurofax 10 per ton. A mixture of $\frac{2}{3}$ salt and $\frac{1}{3}$ steamed bone meal were available to all lambs. The lambs were started on feed gradually and turned loose on the self-feeders after five days.

Individual weights following an overnight period without access to feed and water were taken at the beginning and the end of the trial. Intermediate weights without shrinking the lambs were taken at approximately 30 day intervals. The lambs were weighed off the experiment and shipped to the Oklahoma City market as they reached 100 pounds.

Average weight gains, feed consumed, market data, and financial results are shown in Table 1.

Observations

1. The lambs of all lots made excellent gains during the dry-lot feeding period. The average time required to reach market weight varied less than seven days among the different lots.
2. It would appear that peanut hulls can satisfactorily replace from 50 to 90 percent of the alfalfa hay in a lamb fattening ration, if the peanut ration is nutritionally adequate in other respects.
3. Pelleting increased the average daily gain only with the ration composed of 45 percent milo, 5 percent molasses, and 45 percent alfalfa hay. In the other three comparisons, a slight decrease in gain is noted.

Pelleting did decrease the amount of feed required per cwt. gain in three comparisons out of four. However, due to the cost

Table 1.—Weight Gains, Rations Fed, and Financial Results Obtained with Fattening Lambs Self-Fed in Dry-Lot.

Treatment	45% Milo 5% Molasses 50% Alf. Hay 1	Same as 1	40% Milo 5% Molasses 5% C.S.M. 25% Peanut Hulls 25% Alf. Meal 3	Pelleted Same as 3	35% Milo 10% C.S.M. 5% Molasses 45% Peanut Hulls 5% Dehy. Alf. Meal 5	Same as 5	60% Milo 5% Molasses 35% Alf. Hay 7	Same as 7
		Pelleted 2				Pelleted 6	Pelleted 8	
Lot Number:								
No. of lambs/lot	18	19	18	18	18	17	19	18
Initial weight	72.2	72.7	73.2	72.2	74.9	75.7	72.2	74.2
Av. No. days on feed	53.3	47.9	48.7	51.1	48.9	50.1	54.5	52.9
Final weight	100.5	100.4	101.2	100.4	100.7	101.8	98.8	99.4
Average daily gain	.54	.58	.58	.55	.53	.52	.49	.48
Av. daily feed intake	3.92	4.05	4.35	3.81	3.76	3.91	3.89	3.56
Feed per lamb	206	194	211	195	184	196	212	188
Lbs. feed/lbs. gain	7.11	7.00	7.54	6.90	7.12	7.52	7.98	7.47
Financial Results								
Av. Pur. Price, del. ¹	15.75	15.75	15.75	15.75	15.75	15.75	15.75	15.75
Av. Selling price	15.88	15.88	15.88	15.88	15.88	15.88	15.88	15.88
Total value/lamb ²	15.32	15.31	15.44	15.31	15.36	15.53	14.88	15.15
Initial cost/lamb	11.37	11.45	11.52	11.37	11.80	11.92	11.37	11.69
Feed cost/lamb ³	3.34	3.63	3.20	3.56	2.87	3.54	3.60	3.66
Wheat pasture 1 mo.	.50	.50	.50	.50	.50	.50	.50	.50
Misc. cost ⁴	.85	.85	.85	.85	.85	.85	.85	.85
Loss per lamb	.74	1.12	.63	.97	.66	1.28	1.44	1.55

¹ \$14.50 F.O.B. Roswell, New Mexico, \$15.75 cwt. delivered, includes cost of transportation, commission, and miscellaneous expenses.

² Deducts 4% shrinkage to market.

³ Cost of ration per ton; for Lot 1., \$32.40; Lot 2, \$37.45; Lot 3, \$30.45; Lot 4, \$36.50; Lot 5, \$31.25; Lot 6, \$36.25; Lot 7, \$34.00; and Lot 8, \$39.00.

⁴ Included into this cost; grinding, 15¢ cwt.; mixing, 15¢ cwt.; and pelleting, 25¢ cwt.

⁵ Includes 60¢ per lamb for marketing and 25¢ per head for transportation to market.

Feed Prices: Milo, \$1.60 per cwt.; alfalfa hay, \$20.00 per ton; peanut hulls, \$10.00 per ton; cottonseed meal, \$65.00 per ton; dehydrated alfalfa meal, \$80.00 per ton; molasses, \$40.00 per ton.

of pelleting (\$5.00 per ton), the lambs fed the pelleted rations lost more money than the lambs fed the mixture.

4. A concentrate to roughage ratio of 50 : 50 (Lot 1 and 2) produced greater gains with less feed per cwt. gain than a ratio of 65 percent concentrate and 35 percent roughage (Lot 7 and 8).
5. All lots of lambs lost from \$.63 per head to \$1.55 per head. Even with excellent gains and feed efficiency, it is almost impossible to profitably feed lambs in dry-lot without a positive margin of two cents per pound considering selling price over delivered purchase price.

Progeny Testing Beef Bulls for Growth

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Growth rate is one of the important economic traits in beef cattle. It is a trait which can be expressed by bulls, steers, and heifers. Under standard conditions on suitable tests, differences in growth rate among individuals have been reported to be highly heritable. In 1955 (Okla. Agr. Exp. Sta. Misc. Pub. 43) data were presented which indicated that different beef bulls, when bred to cows with similar records of productivity, sired calves which differed markedly in ability to gain weight under comparable conditions. In 1956 (Okla. Agr. Exp. Sta. Misc. Pub. 45) it was shown that bull calves which gained the most rapidly on a five month post-weaning growth test were the most efficient in the use of feed. No antagonisms were found between post-weaning rate of gain and pre-weaning growth rate or between growth rate and appraisals of these bulls at the end of the test by experienced livestock judges.

Most of the heritability estimates for growth rate in beef cattle have been based upon differences in growth rate which have been observed between groups of offspring sired by different bulls. These estimates have usually been higher than the few estimates reported based upon data from selection experiments.

Experimental Procedure

In 1956 a cooperative agreement was reached between the Ft. Reno Livestock Experiment Station and the Federal Reformatory located near Ft. Reno which permitted the progeny testing of a number of