could increase eyelid pigmentation without any appreciable effect upon the shade of hair color. The correlation between the scores for topline pattern and shade of hair color for 974 animals was —.07 and barely significant, meaning that there was a tendency for the animals with the most white along the topline to have the darkest shade of red color. Again the correlation is so small that one can assume that the two traits are independent for all practical purposes.

Summary

A study of the inheritance of topline color pattern and shade of hair color was made from scores obtained from 517 offspring and their 312 dams and 38 sires at the Ft. Reno station during 1956 and 1957. The results indicated that the amount of white along the topline of Herefords and the shade of hair color were sufficiently heritable (.35 to .67 for amount of white on topline and .36 to .59 for shade of hair color using different methods of analyses) that one could expect to make changes in either trait by selection for either more or less white on topline or for lighter or darker hair coat. A study of the data, however, indicates that the preferred amount of white on the topline of Herefords is the result of an intermediate genetic situation and that it is not likely that selection of breeding stock for this trait will fix the color pattern for this preferred intermediate. Additional data need to be obtained to determine more precisely the nature of the genetic situation with regard to the number of gene pairs involved and the specific mode of gene action concerned with the expression of this trait. The correlations between the two traits above and the amount of eyelid pigmentation were so small that one could assume the three items to be independent. One could, if he wished, increase the amount of eyelid pigmentation without disrupting the color pattern or changing the shade of hair color in his herd.

Fattening Trial with Western Feeder Lambs in Dry Lot

ROBERT L. NOBLE, RICHARD PITTMAN and
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The number of lambs fattened in Oklahoma varies from about 25,000 to 75,000, depending on feed availability and price outlook. Most of these lambs are fattened by grazing on wheat pasture, however, some are fed in dry lot. This project was initiated in the fall of 1952 at the Ft. Reno Station to study various methods of fattening feeder lambs, making maximum use of home-grown feeds.

Procedure

Two hundred and thirty-five grade Western feeder lambs were used in this study. The preliminary treatment of these lambs was discussed in the report "Trucking vs. Rail Shipment of Lambs".

The lambs were started on their experimental ration November 6. The treatments were as follows:

Lot 1—Pellets; 45% milo, 5% molasses, 50% alfalfa hay.

Lot 2—Pellets; same as for Lot 1 plus 20 grams of aureomycin per ton.

Lot 3—Mixture; 45% milo, 5% molasses, 50% alfalfa hay.

Lot 4—Mixture; same as for Lot 3 plus 20 grams of aureoymcin per ton.

Lot 5—Long alfalfa hay, whole milo; self-fed.

Lot 6—Long alfalfa hay, whole milo; self-fed. Plus aureomycin in drinking water.

Lot 7—2# mixture (same mixture as for Lot 3), plus silage, full-fed, and 1 pound of milo last 33 days.

Lot 8—Same as Lot 7 except mixture contained 20 grams of aureomycin per ton.

Lot 9—1.5# alfalfa hay, silage full-fed for first 70 days; then self-fed pellet (same as for Lot 1) for last 48 days.

Lot 10—1.5# alfalfa hay, silage full-fed with aureomycin in drinking water first 70 days; then self-fed pellet (same as for Lot 2) last 48 days.

One-half of the lambs of each lot were implanted with 6 mgs. of stilbestrol.

A mineral mix of 75% salt and 25% steamed bone meal was available to the lambs of all lots. The mixture and the pellets were as identical as possible, except for pelleting. The cost of pelleting was $3.00 per ton.

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 were taken about every 30 days. The lambs were topped-out as they reached market weight and were sold on the Oklahoma City market. The marketing dates and prices received were as follows: December 17, $20.50/cwt.; January 15, $23.25/cwt.; January 28, $24.00/cwt.; February 17, $23.00/cwt.; and March 4, $22.50/cwt.

Average weight gains, marketing data and financial results are shown in Tables 1 and 2. The effects of stilbestrol and aureomycin are shown in Table 3.

STANDARD FEEDING PROGRAM—Heavy Lambs

Table 1.—Weight gains, rations fed, and financial results obtained with fattening lambs fed in dry lot.

Treatment	*Pellets* self-fed 45% milo 5% molasses 50% alfalfa hay		VS.	*Mixture* self-fed 45% milo 5% molasses 50% alfalfa hay		Whole milo Long alfalfa VS. hay; self-fed		VS.	2 lb. mixture silage; full feed 11b milo (last 33 days); hand-fed	
Lot No.	without Aureo. 1	with Aureo. 2		without Aureo. 3	with Aureo. 4	without Aureo. 5	with Aureo. 6		without Aureo. 7	with Aureo. 8
No. of lambs	23[1]	23		23	23	23[1]	23		23	23[1]
Initial weight	82.2	82.3		81.7	82.7	79.7	80.4		77.1	79.2
Final weight	103.7	105.6		105	105.3	97.1	100		107.8	108.2
Av. No. days on feed	41	41		53	41	50	50.5		104	104
Av. daily gain	.52	.57		.43	.55	.35	.40		.30	.28
Av. daily ration										
Pellet	4.0	3.8		—	—	—	—		—	—
Mixture	—	—		3.1	3.7	—	—		—	—
Alfalfa hay	—	—		—	—	1.36	1.33		2.	2.
Milo	—	—		—	—	2.06	1.82		—	—
Silage	—	—		—	—	—	—		3.	3.
Feed per cwt. gain										
Pellet	770	667		—	—	—	—		—	—
Mixture	—	—		720	673	—	—		—	—
Alfalfa hay	—	—		—	—	386	333		—	—
Milo	—	—		—	—	589	455		—	—
Feed cost per cwt. gain	15.79	13.67		13.68	12.79	16.53	13.26		19.97	21.30
Financial Results ($)										
Av. selling price/cwt.	20.50	20.50		21.50	20.50	21.30	21.20		23.00	23.00
Total value per lamb (minus actual shrink+wool credit)[2]	23.08	23.47		24.09	23.22	22.64	23.07		26.80	26.81
Initial Cost[3]	21.10	21.00		20.86	21.19	20.50	20.69		19.85	20.33
Misc. cost[4]	.60	.60		.60	.60	.60	.60		.60	.60
Feed cost/lamb	3.36	3.22		3.10	2.89	2.91	2.69		6.15	6.17
Loss per lamb	—1.98	—1.45		—.47	—1.46	—1.37	— .91		+ .20	— .29
Shrinkage to market, %	2.5	2.5		2.5	2.5	2.5	2.5		1.3	1.3
Dressing percent	50.5	49.2		49.5	50.0	51.3	50.5		49.0	50.6
Carcass Grade[5]	4.1	3.9		4.1	4.3	3.7	3.8		3.8	4.0

1 Two lambs in Lot 5, 2 lambs in Lot 9, and 1 lamb in Lot 8 died. (4 enterotoxemia, 1 urinary calculi)
2 Estimated wool return; 50c/pound which includes government incentive.
3 Initial cost: $21.00 F.O.B. Roswell, New Mexico; $24.00 on experiment—before shorn; includes death loss. (15 out of 1500 lambs died before the experiment began)
4 Includes cost of drenching, vaccinating, and marketing.
5 Carcass grade—numerical values of 6 5, 4, 3, 2, and 1 were assigned to the grades of av. choice, low choice, high good, av. good, low good, and high utility; respectively.

DEFERRED FEEDING PROGRAM (Medium wt. lambs)

Table 2.—Weight gain, rations fed, and financial results obtained with fattening lambs in dry lot.
(118 days, Nov. 6, 1957—March 3, 1958)

Treatment	Deferred Phase — 70 days Silage, full feed 1.5 lb. alfalfa hay	
	without Aureomycin	with Aureomycin
Lot No.	9	10
No. of lambs	26	25
Initial weight	74	74.1
Av. daily gain	.06	.07
Feed cost per lamb	2.58	2.54
	Full-feeding Phase — 48 days Self-fed Pellets	
	without Aureomycin	with Aureomycin
Initial wt.	78.3	79.1
Final wt.	96.6	102.0
Av. daily gain	.44	.48
Av. daily ration (pellets)	3.8	3.9
Feed per cwt. gain	864	812
Feed cost per cwt. gain	17.71	16.65
Financial Results:		
Av. selling price	22.50	22.50
Total value/lamb[1] (minus actual shrink to mkt. and wool credit)	24.22	24.85
Initial cost[2]	19.00	19.10
Misc. cost[3]	.60	.60
Total feed cost/lamb	6.35	6.41
Loss per lamb	—1.73	—1.26
Shrinkage to mkt., %	1.4	1.4
Dressing percentage	49.5	50.1
Av. carcass grade	3.9	3.4

1 Initial cost: $21.00 F.O.B. Roswell, New Mexico; $24.00 cwt. on experiment—before shorn; includes death loss prior to start of experiment.
2 Estimated wool return; 50c pound which includes government incentive.
3 Includes cost of drenching, vaccinating, and marketing.
4 Carcass grades—numerical values of 6, 5, 4, 3, 2, and 1 were assigned to the grades of av. choice, low choice, high good, av. good, low good and high utility, respectively.

Results

Pellets vs. mixture vs. self-feeding long alfalfa hay and whole milo—Pelleting the entire ration increased average daily gains by about .06 pound per day; however, the lambs fed the mixture required about 20 pounds less feed per cwt. gain. Average daily feed consumption was .5 pound higher for the lambs fed the pellets. Due to cost of pelleting ($3.00 per ton) and the increased efficiency of feed utilization, the feed cost per cwt. gain was about $1.00 cheaper for the lambs fed the mixture.

The lambs self-fed long alfalfa hay and whole milo gained approximately .15 of a pound less than the groups fed the mixture or pellets. These lambs also required more feed per cwt. gain and the feed cost per cwt. was greater.

Table 3.—The effects of stilbestrol (6 mg. implant) and aureomycin on gain, yield, and carcass grade

	without Aureomycin without Stilbestrol	without Aureomycin with Stilbestrol	with Aureomycin without Stilbestrol	with Aureomycin with Stilbestrol
Pellets: self-fed (41 days)				
No. of lambs	11	12	11	12
Total gain	19	23.9	21.8	24.8
Yield	51.3	49.6	50.2	48.2
Grade	4.4	3.9	4.1	3.8
Mixture: self-fed (41 days)				
No. of lambs	11	12	11	12
Total gain	16.8[1]	18.8[1]	17.7	25.5
Yield	49.3	49.7	50.4	49.7
Grade	4.2	4	4.4	4.2
Long alfalfa hay & whole milo: self-fed (Aureomycin in drinking water) (50 days)				
No. of lambs	11	12	11	12
Tital gain	15.3	19.4	17.1	21.3
Yield	50.8	51.7	51	50
Grade	3.6	3.7	4.1	3.5
Deferred lambs: (roughage alone first 70 days; then self-fed pellets 48 days)				
No. of lambs	13	13	13	12
Total gain (last 48 days only)	19.1	22.8	21.7	23.9
Yield	49.9	49	50.7	49.4
Grade	3.8	4	3.5	3.3
High roughage ration: (2lb mixture, silage free choice (3lb), and 1lb milo last 33 days) (104 days)				
No. of lambs	11	12	11	12
Total gain	27.2	34.3	25.2	32.5
Yield	50.6	47.5	50.7	50.5
Grade	4.4	3.3	4	4.1

1 Adjusted to 41 days.

Limited gain feeding and deferred feeding—Lots 7, 8, 9, 10—The average daily gains of these two groups of lambs this year were considerably lower than for similar groups fed the same rations last year; perhaps due to the quality of alfalfa hay. The feed required and the feed cost per cwt. of gain were considerably higher for these lambs than those self-fed. The marketing date on these lambs was later and they sold for $2-$3 per cwt. higher.

The effect of stilbestrol and aureomycin (see Table 3)—Considering all lots of lambs, stilbestrol increased average daily gain by about 21%.

One lamb out of the 255 implanted (this includes those implanted on wheat pasture) died from a blockage of the urinary tract. Most of the increase in gain due to stilbestrol came during the first part of the feeding period. Stilbestrol decreased dressing percentage and carcass grade (less than 1/6 grade) slightly in most instances.

Aureomycon increased average daily gains and feed efficiency of each group of lambs except those fed the high roughage ration (Lots 7 and 8).

The average daily gain of all groups was satisfactory, and the feed slightly on the high roughage ration and also decreased feed efficiency.

Theaverage daily gain of all groups was satisfactory, and the feed cost per cwt. of gain, in most instances, was considerably lower than the selling price; however, due to initial cost, death loss, shrinkage, miscellaneous costs, and negative margin, practically all groups showed a net loss.

Effect of Different Levels of Winter Supplement and Age at First Calving Upon the Performance of Beef Cows and Replacement Heifers

J. E. ZIMMERMAN, L. S. POPE AND DWIGHT STEPHENS

The most common system of cow herd management in the Southwest is to graze year-long on native grass pasture, with supplemental feed during the winter as required. The amount of winter supplement required is dependent upon the length of the lactation period before spring grass appears, the type and amount of forage available, the quality of supplemental feed provided, and weather conditions. Since winter supplemental feed is the major cash cost in the operation of a commercial cow herd, it is important to feed the most economical quantity of supplement in terms of the number, size and quality of calves at weaning as well as the condition, thriftiness and longevity of the cows.

A study was initiated at this station with 90 weanling Hereford heifer calves in the fall of 1948 to study the effect of the level of winter supplement and age at first calving on the lifetime performance of range beef cows. This report gives the results of the ninth year (1956-57) of this experiment and contains a summary of results obtained to the fall of 1957.

In the fall of 1954, more carefully controlled studies were undertaken to evaluate the effects of different levels of supplemental feed with heifers bred to calve at two years of age. By repeating these range trials several years, variations in climate and range conditions could be minimized. Thus, a series of repetitions was initiated using weanling Hereford heifer calves, the majority of which were from the original cows. From the records available, it was possible to allot the calves according to age, sire, dam's average productivity, body weight and grade. Four groups of heifers have now been included in the study. Results obtained to the fall of 1957 are reported.