

Summary

Data from 265 Hereford and Angus steers representing 47 sire groups were studied. The heritabilities obtained for carcass weight per day of age, rib-eye area per hundred weight, fat thickness, carcass grade and percentage retail cuts indicated that selection for any one would be effective. The genetic correlations between the traits suggested that selection for growth rate is compatible with the production of desirable carcasses.

Literature Cited

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Preliminary Studies on the Performance of Lambs Weaned at 30 - 45 Days of Age

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There is currently a lot of interest in management programs for sheep that involve weaning lambs at 30-45 days of age and carrying them to market weight under confinement conditions. Such a program might allow earlier rebreeding of the ewe, require less pasture per animal unit, and virtually eliminate internal parasites and adverse weather as problems in finishing lambs.

Studies are currently being conducted at this station to determine the feasibility of this type of program with ewes under Oklahoma conditions. However, before any program of this nature is successful, much information is needed on the nutrient requirements of this very young lamb. Morrison (1956) and N. R. C. (1957) do not list the nutrient requirements for lambs lighter than 50 lb. The purpose of these preliminary studies was to determine the response of lambs when weaned at 30-45 days of age.

Trial I—Procedure

Twenty-eight Rambouillet X Dorset wether lambs were weaned at a minimum weight of 30 lb. and a minimum age of 30 days and group-fed one of the two rations shown in Table 1. These lambs were already eating a small daily amount of a creep feed mixture of 28 percent alfalfa hay, 57 percent kafir grain, 10 percent soybean oil meal and 5 percent molasses. The lambs were weaned at two week intervals in groups of 8, 16 and 4, respectively, and allotted on the basis of weight per day of age to one of the two rations. Due to a lack of facilities and problems with urinary calculi, accurate feed consumption data were obtained only on the second group (16 lambs) weaned; thus the data in Table 2 represents those lambs.

At the end of 12 weeks, six of the lambs on each ration were placed in individual, slotted-floored pens and fed the same ration to a slaughter weight of 95-100 lb. The lambs were allowed to shrink 18 hours before slaughter and the carcasses were chilled 48 hours before the carcass measurements were taken. Loin-eye area was measured as an average of the urea in the right and left loins between the 12th and 13th rib. Average backfat thickness was taken as an average of three measurements over each loin-eye at the center of each loin-eye and one-half of the way from the center to each edge.

Results and Discussion

Five lambs, three on ration 1 and two on ration 2, developed urinary calculi before the sixth week on feed. Changing the calcium : phosphorus ratio and adding 0.25 percent ammonium chloride, as shown in Table 1, was effective in preventing further incidence of urinary calculi.

Table 1. Percentage Composition of Rations (Trial 1)

| Ration Period | 1 | | 2 | |
|--------------------------|---------|---------------|---------|---------------|
| | Initial | After 6 Weeks | Initial | After 6 Weeks |
| Ingredient | | | | |
| Alfalfa meal | | | 25.0 | 25.0 |
| Ground milo | 70.5 | 69.0 | 35.5 | 34.5 |
| Crimped oats | | | 15.0 | 15.0 |
| Soybean meal (50%) | 15.0 | 15.0 | 10.0 | 10.0 |
| Wheat bran | 10.0 | 10.0 | 10.0 | 10.0 |
| Molasses | 3.0 | 3.0 | 3.0 | 3.0 |
| Trace mineralized | | | | |
| Salt | 0.5 | 0.75 | 0.5 | 0.75 |
| Dicalcium phosphate | 0.5 | 0.5 | 1.0 | 0.5 |
| Calcium carbonate | 0.5 | 1.5 | | 1.0 |
| Ammonium chloride | | 0.25 | | 0.25 |
| Nutrient Analyses | | | | |
| Crude protein | 16.9 | 16.8 | 16.5 | 16.4 |
| TDN | 75.1 | 74.6 | 67.5 | 67.2 |
| Crude fiber | 3.1 | 3.1 | 8.2 | 8.2 |
| Calcium | 0.52 | 0.78 | 0.67 | 0.93 |
| Phosphorus | 0.50 | 0.50 | 0.58 | 0.49 |

The average daily gains and feed efficiencies of 16 of the lambs fed during the first 12 weeks are shown in Table 2. The rate and efficiency of gain on the two rations were quite similar for the 12 week period. Analysis of the biweekly data, however, indicates that the lambs fed ration 2 went on feed better and gained faster during the early stages than those on ration 1, but those on ration 1 were gaining faster and requiring less feed per lb. of gain during the last six weeks of the 12 week period.

It should be noted that these lambs did not gain as rapid as normal for this age of lamb, due primarily to the poor gains during the first two weeks postweaning. The feed efficiencies, however, were quite satisfactory and suggest that efficient weight gains can be obtained with early-weaned lambs. Handling of the lambs at the 76 lb. weight at 12 weeks indicated that many of the lambs had already reached choice grade finish. This suggests that feeding high energy rations may cause an early onset of fattening in young lambs. Whether this would have occurred with other breed crosses is not known, but it is well established that the Dorset is a relatively early maturing breed.

The data on the lambs fed from 12 weeks to slaughter are shown in Table 3. Both rate of gain and feed efficiency decreased during this period, in comparison to the first 12 weeks. This would be expected since much of the weight gain during this period was probably fat, and fattening requires more feed per lb. of gain than does any other tissue.

Table 2. Average Daily Gains and Feed Efficiencies of Lambs, First 12 Weeks (Trial 1)

| Ration | 1 | 2 |
|------------------------------------|------|------|
| Number of lambs | 8 | 8 |
| Average weaning age | 39.6 | 38.4 |
| Average weaning wt., lb. | 34.0 | 34.0 |
| Wt. after 12 weeks, lb. | 75.7 | 76.4 |
| Average daily gain, lb. | | |
| 0-2 weeks | 0.33 | 0.46 |
| 2-4 weeks | 0.72 | 0.65 |
| 4-6 weeks | 0.48 | 0.66 |
| 6-8 weeks | 0.48 | 0.49 |
| 8-10 weeks | 0.50 | 0.49 |
| 10-12 weeks | 0.55 | 0.38 |
| Total | 0.51 | 0.52 |
| Feed efficiency, lb. feed/lb. gain | | |
| 0.2 weeks | 3.40 | 3.15 |
| 2-4 weeks | 2.50 | 3.02 |
| 4-6 weeks | 4.52 | 3.89 |
| 6-8 weeks | 5.32 | 5.96 |
| 8-10 weeks | 5.51 | 6.44 |
| 10-12 weeks | 5.63 | 8.05 |
| Total | 4.34 | 4.83 |

The carcass information on these lambs is shown in Table 3. These data indicate that, by all criteria studied, ration 1 produced a more desirable carcass than ration 2. Lambs on ration 1 had a slightly higher dressing percent, significantly less shrink, and significantly larger loin-eye areas. The slightly lower backfat thickness and higher specific gravities also indicate that lambs on ration 1 had leaner carcasses than those on ration 2. The superior performance of ration 1 is surprising, but may be due to the higher TDN content in combination with a high protein content that would be considered as high-quality protein.

These factors may have been especially important during the early part of the trial. The carcass data indicate that the lambs on both rations were too fat at 95-100 lb., and that lambs raised under this regime may need to be marketed at a lighter weight, or from a later maturing breed or breed cross. Another significant observation was that three of the lambs on ration 1 and one on ration 2 had oily, soft carcass fat. This has also been observed at other stations when early-weaned lambs were fed in confinement.

Table 3. Average Daily Gain, Feed Efficiency, and Various Carcass Measurements, 12 Weeks to Slaughter (Trial 1)

| Ration | 1 | 2 |
|------------------------------------|--------|--------|
| Number of lambs | 6 | 6 |
| Wt. after 12 weeks, lb. | 76.2 | 76.5 |
| Slaughter wt., lb. | 96.5 | 97.0 |
| Average daily gain, lb. | 0.41 | 0.40 |
| Feed efficiency, lb. feed/lb. gain | 6.66 | 6.78 |
| Dressing percent | 58.2 | 57.1 |
| Percent shrink | 4.8 | 9.8 |
| Loin-eye area, sq. in. | 2.37 | 1.95 |
| Backfat thickness, in. | 0.35 | 0.38 |
| Carcass specific gravity | 1.0271 | 1.0247 |

Trial II—Procedure

In another trial 16 of 32 January born lambs were weaned when they were within one to three days of 30 days of age and weighed about 30 pounds. Prior to weaning and during their feeding period the weaned lambs received the following rations:

| | Ration up Until About 55 lb. | Ration From 55 to 70 lb. | Ration From 70 lb. - 85 lb. |
|----------------------------|---------------------------------|-----------------------------|--------------------------------|
| Feeds | | | |
| Kafir grain % | 57 | 63 | 45 |
| Alfalfa hay (high qual.) % | 28 | 32 | 50 |
| Soybean meal % | 10 | -- | -- |
| Molasses % | 5 | 5 | 5 |

The non-weaned lambs had the same feeds as a creep ration and were weaned at about 75 days of age after which time they were full fed the appropriate rations also.

The 30-day weaning of the young lambs was accomplished by removing the lambs from their mothers and placing them in a small pen with feed and water. The pen was located in an area where the lambs could neither see nor hear any other sheep. It is thought that this is an important factor in the management of very young weaned lambs.

The lambs (weaned and non-weaned) were weighed at frequent intervals to get a picture of the influence of early weaning on the growth pattern. Only the total feed eaten by the early weaned lambs could be measured.

Results

The results relative to the growth pattern are illustrated in Figure 1. The weaned lambs actually lost a little weight during the first eight days after weaning. After this adjustment period, they gained very well.

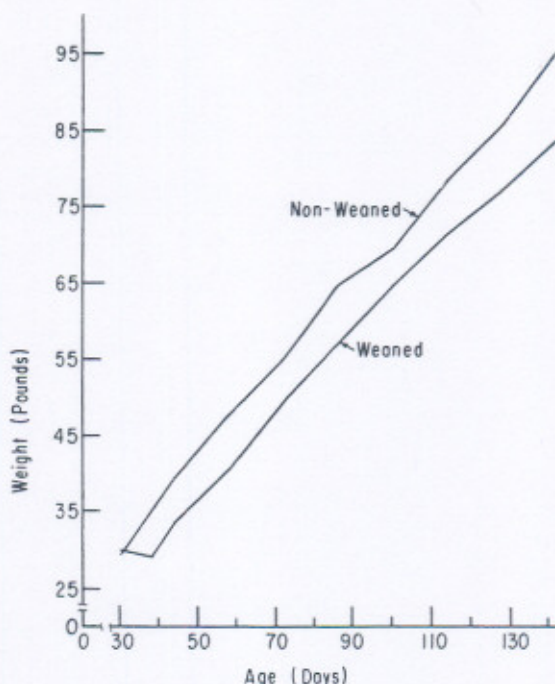


Figure 1. The average growth pattern of weaned and nonweaned lambs when weaning occurred at about 30 days of age.

At an average age of 142 days the weaned lambs averaged about 83 pounds compared to 95 pounds for the non-weaned lambs.

One of the early weaned lambs weighed only 20 pounds at weaning time and responded poorly. This and other experiences suggest that lambs weighing less than 25 pounds at 30 days of age may need better rations, care or something than these lambs received.

Other than the growth pattern, the data of interest from this trial concerned the feed efficiency of the weaned lambs. These 16 lambs gained 855 pounds and consumed 4,125 pounds of feed. Thus, they gained a pound for each 4.8 pounds of feed consumed.

Addenda

The results presented in this preliminary report are not presented as recommendations, but to indicate to anyone interested that on those occasions when it seems necessary to wean lambs at young ages it can be done. There is much that is not known about how to best feed and manage such lambs before, during and after weaning; but this record of some experiences may serve as a guide for those who wish to try such a management scheme. It is believed that either ration 2 of trial one or the ration used in trial two will give satisfactory results up until the lambs weigh 55-65 pounds after which time any good lamb fattening ration should be satisfactory.

The Effect of Pre-Weaning Plane of Nutrition on the Growth and Development of Beef Calves

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Among the majority of modern consumers, beef is considered not only the king, but also the whole royal family of appetite appeal. Thus, from the standpoint of product demand the beef producer occupies an enviable position among his fellow food provisioners. Yet, if beef is to maintain its esteemed position in the market-place and if beef is to withstand growing competition from other protein foodstuffs, the beef producer must constantly strive to keep abreast of consumer demands, to increase his production efficiency and to improve the quality of his product.