

Summary of ewe flushing performance as affected by pre-flushing treatment (flushing period, 5-14-61 to 6-22-61)¹

| Ewe flushing lot ² | Ewe pre-flushing lot ² | No. of ewes | Av. total gain per ewe, lbs. | Av. daily gain (40-day flushing period), lb. |
|--|-----------------------------------|-------------|------------------------------|--|
| 1 | A | 29 | 19.2 | .480 |
| | B | 29 | 15.4 | .385 |
| 2 | A | 29 | 11.4 | .275 |
| | B | 28 | 8.4 | .210 |
| 3 | A | 29 | 10.2 | .255 |
| | B | 27 | 5.4 | .135 |
| 4 | A | 29 | 11.9 | .298 |
| | B | 28 | 4.0 | .100 |
| 5 | A | 28 | 13.1 | .328 |
| | B | 29 | 9.3 | .233 |
| 6 | A | 28 | 12.9 | .323 |
| | B | 29 | 11.3 | .283 |
| All lots | A | 172 | 13.1 | |
| | B | 170 | 9.0 | |
| Flushing increase for pre-flushing A ration +4.1 | | | | |

1. Weighed May 11, allowed to adjust to flushing ration until May 14.
2. Rations during flushing period:
 - Lot 1. $\frac{3}{4}$ lb. whole sorghum grain; full feed of alfalfa hay. (Average daily alfalfa hay consumption per ewe, 4.8 lbs.)
 - Lot 2. $\frac{3}{4}$ lb. whole sorghum grain; $1\frac{1}{4}$ lbs. alfalfa hay; full silage. (Average daily silage consumption per ewe, 5.5 lbs.)
 - Lot 3. $\frac{1}{2}$ lb. whole sorghum grain, cereal crop pasture.
 - Lot 4. Cereal crop pasture only.
 - Lot 5. $\frac{1}{2}$ lb. whole sorghum grain, buffalograss pasture.
 - Lot 6. Buffalograss pasture only.
3. Daily rations during pre-flushing:
 - Lot A. $\frac{2}{3}$ lbs. alfalfa hay only.
 - Lot B. 2 lbs. alfalfa hay; $\frac{1}{4}$ lb. whole sorghum grain; 2 lbs. silage.

Lamb Feeding Tests (1961-1962, Winter)

Experimental Procedure: To study the value of various feeding rations in fattening suckling lambs for spring market, ewes and lambs were divided into six lots (lots 1 to 6) as nearly as possible according to lamb age and prior ewe treatment. Following lamb birth, approximately one week was taken to adjust ewes to feed and lambs before placing them into their respective lots. Lambs were docked with elastic bands when one to two days old and knife castrated when about five to seven days of age.

The lot treatments were:

| Lot no. | Nursing ewe daily ration | Lamb ration creep |
|---------|---|--|
| 1 | 1 lb. whole sorghum grain | Whole sorghum grain |
| | $1\frac{1}{4}$ lbs. alfalfa hay Full silage | Alfalfa hay |
| 2 | 1 lb. whole barley grain | Whole barley grain |
| | $1\frac{1}{4}$ lbs. alfalfa hay Full silage | Alfalfa hay |
| 3 | 1 lb. whole sorghum grain | Whole sorghum grain |
| | $1\frac{1}{4}$ lbs. alfalfa hay Full silage | Wheat hay |
| 4 | 1 lb. whole sorghum grain | Complete pelleted ration (45% ground sorghum grain and 55% ground sun-cured alfalfa hay) |
| | $1\frac{1}{4}$ lbs. alfalfa hay Full silage | Alfalfa hay |
| 5 | Rye pasture (when not on rye fed same as lot 1) | Rye pasture (when weather permitted) |
| | | Whole sorghum grain Alfalfa hay |

| | | |
|---|---------------------------------|---|
| 6 | 1 lb. whole sorghum grain | Whole sorghum grain |
| | $1\frac{1}{4}$ lbs. alfalfa hay | Alfalfa hay |
| | Full silage | (Weaned lambs at 8 to 10 weeks of age) |

Results of the above tests now in progress will be summarized as completed, and reported in the 1962 annual report.

Corn, Sorghum Grain, Wheat, Rye and Barley Each as a Concentrate in Complete Pelleted Rations Compared with a Standard Nonpelleted Sorghum Grain and Alfalfa Hay Ration for Self-feeding Fattening Lambs (Project 236).

Myron Hillman, D. Richardson and R. F. Cox

This test duplicates one last year, which was designed to study various grains in complete pelleted rations compared with a standard nonpelleted ration. Previous work has shown that a complete pelleted ration composed of 30 to 40 percent concentrate produced faster, more efficient lamb gains than a nonpelleted ration of the same composition.

Experimental Procedure

The 144 fine-wool type wether lambs used in these tests were obtained at Clovis, N.M., October 28. They were shorn and drenched with a commercial fine particle-size Phenothiazine drench. November 16, the lambs were ear tagged, weighed, divided into six lots of 24 lambs each and self-fed the following rations for 65 days.

- Lot 1. 35% sorghum grain and 65% alfalfa hay, pelleted.
- Lot 2. 35% corn and 65% alfalfa hay, pelleted.
- Lot 3. Mixed nonpelleted ration of 45% ground sorghum grain and 55% chopped alfalfa hay.
- Lot 4. 35% barley and 65% alfalfa hay, pelleted.
- Lot 5. 35% wheat and 65% alfalfa hay, pelleted.
- Lot 6. 35% rye and 65% alfalfa hay, pelleted.

All lambs were implanted with 3 mgs. of stilbestrol¹ at start of test. In addition to the above ration each lot received 5 lbs. of chopped alfalfa hay each day. Salt was supplied free choice.

The grain used in rations was purchased in bulk. The sorghum grain used in lot 3 was run through a coarse screen grinder. Hay used in the pellets was average quality, first cutting, ground through $\frac{1}{4}$ -inch screen. The hay used in lot 3 was of the same quality, but chopped.

Feed prices and processing charges used in determining feed cost per cwt. gain were: sorghum grain, \$1.70 per cwt.; corn, \$1.08 per bu.; barley, \$.96 per bu.; wheat, \$1.95 per bu.; rye, \$.93 per bu.; baled alfalfa hay, \$15 per ton; grinding hay, \$5 per ton; chopped hay for lot 3, \$3 per ton; grinding grain for lot 3, \$2 per ton; grinding grain, mixing and pelleting rations, \$6 per ton. With prices and charges indicated, feed costs per ton for each lot were: Lot 1, \$30.90; lot 2, \$32.51; lot 3, \$29.30; lot 4, \$32.93; lot 5, \$41.75; lot 6, \$30.62. These are bulk prices; if bags were used, they would increase cost \$2 to \$3 per ton.

Results and Discussion

Results are shown in Table 39. There was little difference in rate of gain among lambs fed different pelleted rations. Lambs fed wheat consumed more feed per head daily, gained faster, and gained most efficiently of all. However, gains on the wheat ration cost most because of high wheat prices.

Lambs in lot 3, fed the loose ration, consumed less feed per head daily, but gained as efficiently as those in lot 1. Gains in lot 3 were cheaper than those of any lambs fed pelleted rations. There were more deaths in this lot due to overeating. The ration was self-fed and the lambs presumably separated the concentrate from the roughage.

The pelleted ration requires less labor to feed and the management

¹ Furnished by Chas. Pfizer and Co., Inc., Terre Haute, Ind.

Table 30

Corn, sorghum grain, wheat, rye, and barley in complete pelleted rations vs. a standard nonpelleted ration for self-feeding fattening lambs.

November 16, 1961, to January 21, 1962—65 days.

| Lot number | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
|---|---|---------|---|---------|--|---------|---|---------|--|---------|--|---------|
| | Pelleted: 35% sorghum grain, 65% alfalfa hay | | Pelleted: 45% corn, 45% alfalfa hay | | Nonpelleted: 45% ground sorghum grain, 35% chopped alfalfa hay | | Pelleted: 45% barley, 45% alfalfa hay | | Pelleted: 45% wheat, 45% alfalfa hay | | Pelleted: 35% rye, 65% alfalfa hay | |
| No. lambs per lot ¹ | 20 | 21 | 18 | 24 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| Initial wt. per lamb, lbs. | 65.8 | 65.2 | 64.7 | 65.7 | 66.5 | 64.9 | 66.5 | 66.5 | 66.5 | 64.9 | 64.9 | 64.9 |
| Final wt. per lamb, lbs. | 101.2 | 103.3 | 90.9 | 104.6 | 106.6 | 100.9 | 106.6 | 106.6 | 106.6 | 100.9 | 100.9 | 100.9 |
| Total gain per lamb, lbs. | 35.4 | 38.1 | 26.2 | 38.9 | 40.1 | 36.0 | 40.1 | 40.1 | 40.1 | 36.0 | 36.0 | 36.0 |
| Av. daily gain per lamb, lbs. | .54 | .59 | .40 | .60 | .62 | .55 | .62 | .62 | .62 | .55 | .55 | .55 |
| Lbs. feed per lamb daily: | | | | | | | | | | | | |
| Complete pelleted ration | 3.69 | 3.87 | ..... | 3.92 | 4.00 | 3.77 | 4.00 | 4.00 | 4.00 | 3.77 | 3.77 | 3.77 |
| Chopped alfalfa hay | .18 | .17 | 1.56 | .15 | .15 | .16 | .15 | .15 | .15 | .16 | .16 | .16 |
| Ground sorghum grain | ..... | ..... | 1.30 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Total feed per lamb daily | 3.87 | 4.04 | 2.86 | 4.07 | 4.15 | 3.93 | 4.15 | 4.15 | 4.15 | 3.93 | 3.93 | 3.93 |
| Lbs. feed per cwt. gain | 712.3 | 690.8 | 711.5 | 683.8 | 672.1 | 709.8 | 672.1 | 672.1 | 672.1 | 709.8 | 709.8 | 709.8 |
| Feed cost per cwt. gain | \$11.01 | \$11.13 | \$9.83 | \$11.25 | \$14.03 | \$10.86 | \$14.03 | \$14.03 | \$14.03 | \$10.86 | \$10.86 | \$10.86 |
| Av. % yield ² | 49.5 | 48.1 | 49.0 | 48.3 | 48.5 | 49.3 | 48.5 | 48.5 | 48.5 | 49.3 | 49.3 | 49.3 |
| Av. U.S.D.A. carcass grade ³ | 9.5 | 9.6 | 8.7 | 9.7 | 9.3 | 9.4 | 9.7 | 9.7 | 9.3 | 9.4 | 9.4 | 9.4 |

1. Four lambs in lot 1; 3 from lot 2; 6 from lot 3; and 1 from each of lots 4 and 6 died from overeating.

2. Based on hot dressed carcass weight and individual lamb weight at Manhattan just prior to shipment.

3. Based on prime, 14; choice, 11; good, 8; utility, 5; and cull, 2.

of feeding lambs is less difficult. Lambs will consume more pounds of feed per day; therefore, gains are higher than when a loose ration is fed, but the cost of gains is higher because of the processing cost.

Fifteen lambs died from overeating during the test—6 in lot 3; 4 in lot 1; 3 in lot 2; 1 each in lots 5 and 6, and 0 in lot 4. The lambs were not vaccinated for overeating when put on feed. There was about $\frac{1}{2}$ U.S.D.A. carcass grade variation among lots and 1.4 percent variation in yield among lots.

Heritabilities, Genetic, and Phenotypic Correlations Between Carcass and Live Animal Traits in Sheep (Project 847).

Myron Hillman, Carl Menzies, John D. Wheat, D. L. Mackintosh and R. A. Merkel

This is a contributing project to the North-Central-50 Regional Sheep Breeding Project. The Kansas State Project was initiated to determine relationships between various carcass measurements and live animal traits, to estimate heritability of these traits, and to determine how findings may be applied to selection and breeding of meat-type lambs.

Experimental Procedure

In 1959-60, 10 Hampshire rams were bred to 100 yearling Western ewes. The ewes were divided into 10 equal lots and one ram was randomly assigned to each lot. One ram was sterile, so his ewes were randomly assigned to the other nine lots. The nine rams sired 77 lambs.

In 1960-61, 10 different Hampshire rams were used on the same ewes and 99 lambs resulted from these matings. Experimental rams were used from June 1 to August 15, each year, and then clean-up rams were turned with the ewes, hence the relatively small experimental lamb crop.

The ewes were on a bromegrass pasture during the spring and summer months and were on rye pasture from the last week in September until they lambled. Three weeks before lambing, each ewe received $\frac{1}{2}$ pound of grain daily. After the ewes lambled, they were put into a drylot and fed sorghum silage free choice, and approximately 1.5 pounds of alfalfa hay and 1 pound of grain per head daily.

As soon as the lambs would eat it, they were started on a pelleted creep ration, and remained on it until they were slaughtered. All lambs were slaughtered when their unshorn feedlot weights were from 95 to 100 pounds. They were shorn and held off feed approximately 12 hours before slaughter.

In August, when the rams were taken from the ewes, each was subjectively scored for certain conformation traits by a five-man committee. At that time each ram was weighed and in 1960-61 the rams were probed for fat and muscle depth over the second lumbar vertebra. The probe depth for each ram was corrected for weight (by regression).

Five scores (among those taken for each ram), weight, and loin depth probe were used in correlating ram scores with each other and with some production and carcass traits in the lambs. Before they were slaughtered, the shorn lambs were subjected to 13 objective measurements to the nearest tenth of an inch. Birth weight, average daily gain, and market age were corrected for type of birth, sex, and type of rearing.

These 176 lambs also were used in a lamb carcass quality study (Project 580) conducted by meats researchers at Kansas State University. From this study subjective carcass scores, carcass measurements and weights of cuts were obtained. The rack was physically separated and the lean, fat and bone were weighed to the nearest gram. Loin eye area and back fat thickness were measured from tracings.

Procedure followed in handling ewes and rams the past two years is outlined in Kansas Circulars 378 and 383.

Results and Discussion

There were only a few significant correlations between ram scores and lamb traits. The depth of loin probe had the highest relationship with lamb traits. It was negatively correlated with lamb's market age (-.60);