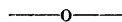


OKLAHOMA
AGRICULTURAL EXPERIMENT STATION

ANIMAL HUSBANDRY DEPARTMENT

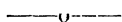
STILLWATER, OKLAHOMA



SHEEP
FEEDING INVESTIGATIONS

*Comparative Rations For
Wintering Breeding Ewes*

BY A. E. DARLOW



Station Bulletin No. 136

STATION STAFF

NOVEMBER, 1921

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SHEEP FEEDING INVESTIGATION

Wintering Breeding Ewes—90-Day Test, December 18 to March 18.

INTRODUCTION

Of the inquiries concerning the sheep industry in Oklahoma the greatest number are on the care and handling of breeding ewes during the winter months. It was to answer this and to get further data concerning an experiment previously conducted here that the following experiment was conducted.

The State of Oklahoma is particularly suited to sheep husbandry and due to this suitability the sheep industry is destined to be one of the leading industries of the State.

The feeding and care of the breeding animals will to a great extent determine the profit obtained from any venture in livestock. This is particularly true of sheep and especially is this true of the wintering of the flock. Sheep will ordinarily consume a considerable amount of forage but of course this forage must be fed in connection with grain, and the grain must be supplemented with a nitrogenous food in order that the animal receive a balanced ration. If the ration is limited the lambs will be born weak and small, the ewes will be in very poor flesh, the milk flow will be light, and as a result the mortality of ewes and lambs will be high. If the ration is high in carbohydrates when large amounts are fed as corn, kafir, etc., the ewes will become fat and the lambs will not show the desired development.

The protein is the most expensive part of the ration, therefore, any excess of protein above requirements of the flock is extremely expensive. Economy in selection and balancing the ration is of prime importance in wintering the breeding flock.

OBJECTS OF EXPERIMENT

1. To determine the value of grain in a ration for breeding ewes.
2. To determine comparative value of whole and ground kafir.
3. To determine the comparative value of ground kafir and ground darso.
4. To determine the comparative value of darso silage and sunflower silage.

ANIMALS USED

Sixty-five head of black faced western ewes were purchased on the Kansas City market October 28th through Clay, Robinson Commission Company for \$8.50 per hundred. Average weight, 104.8, total weight 6810 @ \$8.50 is \$578.85; hay, \$6.75; dipping, \$4.55; commission, \$14; a total of \$604.05 at Kansas City; \$66.00 freight made a total cost of \$670.05 laid down at Stillwater. Ten ewes were added from Station flock.

The original plan was to turn these ewes on kafir stubble, but when they were unloaded it was discovered that they had a very bad infection of lip and leg ulceration (*Necrobacillosis*) consequently it was necessary to isolate these ewes and treat them. They were not weighed because of the danger of spreading this disease among our regular flock. These ewes were given individual treatment, consisting of scraping the lips and applying silver nitrate. Ninety-five percent of the ewes were infected when they arrived.

When this trouble was under control, but before it was cured, two purebred

Shropshire rams were turned with the ewes. This was November 10th. Some of the ewes were bred before they reached the Station and the first lamb was born January 25th. A total of 22 lambs were born before the test was closed March 18th.

METHODS OF FEEDING AND HANDLING

The ewes were fed twice daily at 7:00 a. m. and 5:30 p. m. The rations were divided equally into two feeds. The combination hay and grain racks were used for feeding. These consist of hay racks with tight grain troughs at bottom. This reduces waste. Small outside runs were provided for exercise but the feeding was done under cover. They were taken outside and given thirty minutes of exercise every second day.

Salt and water were before the ewes at all times. The feeding started December 18th and was finished March 18th, making a feeding period of 90 days. Weights were taken 3 days in succession at beginning and end of experiment and every 10 days for the first two months.

RATIONS USED

The ewes were divided as uniformly as possible into 5 pens of 15 ewes each and fed the following rations:

| Pen I | Pen II | Pen III |
|---------------|------------------|--------------|
| Darso Silage | Whole Kafir | Ground Kafir |
| Alfalfa Hay | Darso Silage | Alfalfa Hay |
| | Alfalfa Hay | Darso Silage |
| Pen IV | Pen V | |
| Ground Darso* | Ground Kafir | |
| Darso Silage | Sunflower Silage | |
| Alfalfa Hay | Alfalfa Hay | |

*The darso grain used in this test was not of the best, showing some mold.

AVERAGE PERCENTAGE COMPOSITION OF FEEDS

| | Water | Ash | Protein | Fiber | N. Free Ext. | Fat |
|------------------|-------|------|---------|-------|--------------|------|
| Sunflower silage | 71.96 | 3.23 | 2.96 | 8.67 | 12.36 | 0.81 |
| Darso silage | 73.11 | 1.54 | 1.91 | 6.46 | 16.65 | 0.34 |
| Kafir grain | 12.8 | 1.7 | 11.1 | 2.3 | 70.1 | 3.0 |
| Darso grain | 11.75 | 1.6 | 10.94 | 3.44 | 65.53 | 3.74 |
| Alfalfa hay | 8.6 | 8.6 | 14.9 | 28.3 | 37.3 | 2.3 |

COST OF FEEDS

Alfalfa hay, \$22.50 a ton
 Darso silage, \$8.00 a ton
 Kafir grain, 60c a bushel
 Sunflower silage, \$8.00 per ton
 Darso grain, 60c per bushel

The sunflower silage was made from Russian tame sunflowers planted the middle of April. They were planted in rows 30 inches apart and 6 inches apart in the row. They were grown on rather poor upland. They were harvested with a corn binder when the head was in the milk stage and were put in the silo in the usual way.

The silage packed tighter than kafir or corn. There was no trouble in getting the ewes started on this silage but they became tired of it and did not clean it up so well as the other pens near the close of the test.

Darso Silage.—Darso is a new sorghum developed and named at the Oklahoma Experiment Station. Its origin is unknown. It is probably a cross between a non-saccharine and a saccharine sorghum. It is a dwarf plant about four feet in height, heavily foliated with large stalks that are usually tinted with red. The forage contains a higher percentage of total sugars in the juice than does black hulled white kafir or feterita. Darso is early maturing, drought resistant, uniform in height and yields rather a heavy foliage.

The following table summarizes the results in a general way:

| | Pen I | Pen II | Pen III | Pen IV | Pen V |
|-------------------------------------|-------|--------|---------|--------|-------|
| No. of days on test | 90 | 90 | 90 | 90 | 90 |
| Number of ewes | 15 | 15 | 15 | 15 | 15 |
| Total initial weight | 1722 | 1722 | 1722 | 1714 | 1716 |
| Total final weight | 1922 | 2042 | 1992 | 1894 | 1743 |
| Total gain in weight | 200 | 320 * | 270 | 180 | 27 |
| Average gain per ewe | 13.33 | 21.33 | 18 | 12 | 1.8 |
| Average daily gain per ewe | .148 | .236 | .2 | .144 | .02 |
| FEED CONSUMED PER HEAD PER DAY: | | | | | |
| Alfalfa hay | 2.425 | 2.02 | 2.02 | 2.06 | 2.06 |
| Darso silage | 4. | 3.4 | 3.43 | 3.43 | |
| Whole kafir | | .615 | | | |
| Ground kafir | | | .615 | | .615 |
| Ground darso | | | | .615 | |
| Sunflower silage | | | | | 3.43 |
| TOTAL FEEDS— | | | | | |
| Alfalfa hay | 3274 | 2729 | 2720 | 2786 | 2786 |
| Darso silage | 5479 | 4310 | 4310 | 4633 | |
| Whole kafir | | 831 | | | |
| Ground kafir | | | 831 | | 831 |
| Ground darso | | | | 831 | |
| Sunflower silage | | | | | 4633 |
| Total | 8753 | 7870 | 7861 | 8300 | 8300 |
| Total cost of feed | 59.19 | 57.10 | 57.00 | 59.11 | 59.11 |
| Average cost per ewe | 4.00 | 3.97 | 3.97 | 4.00 | 4.00 |
| Average cost per head per day | 4.44 | 4.3 | 4.3 | 4.44 | 4.44 |

*One ewe died in Pen II, weight 132 lbs. One ewe died in Pen III, weight 161 lbs.

The weights and gain given in above table are of ewes only and do not include weight of lambs born. Pen I had 4 lambs, weight 60 lbs. Pen II had 2 lambs weighing 30 lbs. Pen III had 5 lambs, weight 90 lbs. Pen IV had 5 lambs, weight 50 lbs. Pen V had 6 lambs, weight 100 lbs.

DISCUSSION OF RESULTS

The feeds included in this test are those common in almost every part of Oklahoma, except Sunflower silage, and it is easily produced as sunflowers grow well in this State.

Pen I receiving no grain but a ration composed of Darso silage and alfalfa hay made very satisfactory gains, each ewe gaining 13.33 pounds while on test, but they did not show the bloom or vitality of the other ewes and the lambs born were not as strong.

The gains in Pen II were 21.33 pounds per head, and in Pen III 18 pounds per head. The cost of these two pens was the same and there was no apparent difference as to vitality, etc. The advantage in gain was in favor of whole kafir, unless the weight of lambs born is considered, then the advantage is slightly in favor of ground kafir.

TABLE COMPARING A RATION CONTAINING GRAIN TO ONE WITHOUT GRAIN

| | Pen I | Pen II |
|--------------------------------|--------|--------|
| Initial weight per head | 115 | 115 |
| Final weight per head | 128.33 | 136.33 |
| Gain in weight per head | 13.33 | 21.33 |
| Cost of feed | 4.00 | 3.97 |
| Advantage in gain (lbs.) | | 8 |

It will be noted in the preceding table that there were 4 lambs in Pen I weighing 60 pounds and two lambs in Pen II weighing 30 pounds. This will to a certain extent offset the advantage shown in Pen II. If this were figured in, the advantage in favor of Pen II would amount to 6 pounds per head.

It should be understood that gain in weight was not of prime importance as fattening was not the object of this feeding.

The ewes in Pen II finished the test in strong, healthy condition and in good lambing condition, while those in Pen I were hardly as strong, one ewe in particular yeaned twin lambs and was in very poor condition, refusing to eat and showing weakness for over a week.

COMPARING WHOLE AND GROUND KAFIR

| | Pen II | Pen III |
|----------------------------|--------|---------|
| Number on test | 15 | 15 |
| Number days on test | 90 | 90 |
| Average gain per ewe | 21.35* | 18* |
| Average cost per ewe | 3.97 | 3.97 |
| Cost per ewe per day | .043 | .043 |

*There were two lambs in Pen II, weight 30 lbs., and five in Pen III, weight 90 lbs., when test finished.

The cost of wintering Pen II and Pen III is practically the same as the feed was identical excepting the preparation of kafir.

The advantage in gain is 3.33 in favor of Pen II which received whole kafir. If the gain in weight of lambs is figured in, the advantage is slightly in favor of Pen III or ground kafir. There is apparently little or no advantage in grinding kafir for feeding sheep.

COMPARING GROUND KAFIR TO GROUND DARSO

| | Pen III | Pen IV |
|----------------------------------|---------|---------|
| Number of days on test | 90 | 90 |
| Number of ewes | 15 | 15 |
| Initial weight per ewe | 115 | 114 |
| Final weight per ewe | 133* | 126* |
| Average gain per ewe | 18 | 12 |
| Average cost per ewe | \$ 5.97 | \$ 4.00 |
| Average daily cost per ewe | .43 | .444 |
| RATION USED AILY— | | |
| Alfalfa hay | 2.02 | 2.06 |
| Darso si'age | 3.43 | 3.43 |
| Ground kafir | .615 | |
| Ground darso | | .615 |
| Advantages in gain (lbs.) | 6.00 | |

There were five lambs, weight 90 pounds, in Pen III, and three in pen IV, weight 50 pounds.

Comparing ground kafir and ground darso we note that it cost .03 per head or 45c less per lot in the case of ground kafir over darso.

The gain made was 18 pounds for ground kafir and 12 pounds for ground darso. Considering the weight of lambs the advantage is still more in favor of ground kafir. Kafir is slightly more satisfactory than darso for feeding sheep.

TABLE COMPARING DARSO SILAGE TO SUNFLOWER SILAGE

| | Pen III | Pen V |
|------------------------------|---------|-------|
| Number of days on test | 90 | 90 |
| Number of ewes on test | 15 | 15 |
| Average initial weight | 115 | 115 |
| Average final weight | 133 | 116 |
| Alfalfa hay | 2.02 | 2.06 |
| Darso silage | 3.43 | |
| Sunflower silage | | 3.43 |
| Ground kafir | .615 | .615 |
| Gain in weight | 18 | 12 |
| Cost per ewe | 3.97 | 4.00 |

It will be seen from the preceding table that it cost slightly less to winter the ewes getting darso silage than the ones getting sunflower silage.

Pen III, darso silage, gained an average of 18 pounds per head or 16.2 pounds more than the sunflower silage.

The ewes in Pen V, sunflower silage, presented a general unthrifty appearance although the lambs born were with two exceptions fairly strong.

There was no hesitancy on the part of the ewes about starting on the sunflowers but they became tired of it and would not clean it up so well near the finish of the test.

SUMMARY

1. Sunflower silage proved rather unsatisfactory for wintering pregnant ewes.
2. There is no advantage in grinding kafir for ewes.
3. Darso is of less value than kafir for feeding ewes.
4. Grain should be included in a ration for pregnant ewes.
5. The average cost was as follows:
 - Pen I, 3.94
 - Pen II, 3.81
 - Pen III, 3.91
 - Pen IV, 3.94
 - Pen V, 3.94
6. The ewes wintered on whole kafir showed an advantage over those wintered on ground kafir.

