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COMPARATIVE RATIONS FOR WINTERING BREEDING EWES

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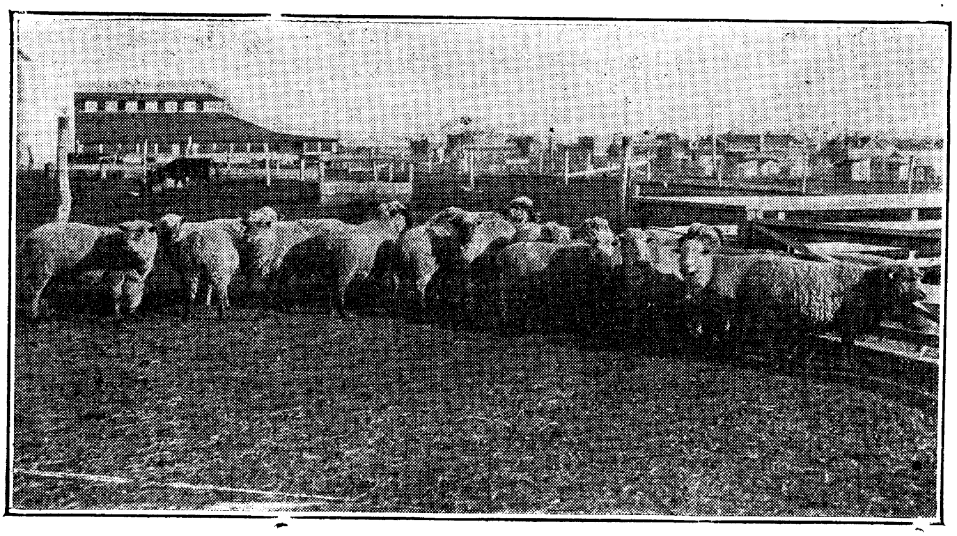

A REPRESENTATIVE GROUP (LOT 4) OF THE EWES USED IN THE TEST

COMPARATIVE RATIONS FOR WINTERING BREEDING EWES

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INTRODUCTION

During the past year many inquiries have come into this office in regard to wintering breeding ewes. It was with this object in mind, together with the lack of experimental data from this Station relative to the cost of the best feeds for pregnant ewes, that the following experiment was conducted.

The sheep industry in Oklahoma is a comparatively new phase of animal husbandry, and on account of the large amount of waste land, or land that is not suited for cultivation, the sheep is destined to become one of the leading farm animals.

One of the vital phases of flock management is the proper feeding of the breeding flock during winter. It is a known fact that sheep will consume a larger amount of rough feed more economically, when supplemented with a nitrogenous concentrate, such as cottonseed meal, than any other farm animal. It is well to bear in mind that if the rations are scanty and insufficient during pregnancy the lambs in embryo must be grown at the expense of the mother's vitality. While if the feeding is too generous, exercise limited and too much starchy feeds, such as kafir, are given, the effects are more pronounced. In the former case the ewe becomes weakened and will not secrete a normal milk flow for the lamb's support after birth. While in the latter, weak lambs and trouble in lambing may be expected. In either case, when the feed is not properly balanced, or the necessary amount given, the health and vigor of the flock are not maintained, and its future usefulness is greatly injured. Economy in the selection of the ration and preventing a useless waste are the two most important considerations in the feeding of pregnant ewes.

OBJECTS OF EXPERIMENT

1. To determine the comparative value of some Oklahoma feeds for wintering breeding ewes.
2. To find out the cost of wintering breeding ewes.
3. To determine the adaptability of this kind of work for Oklahoma conditions.
4. To compare rations which contain silage with rations that contain no silage.
5. To compare cottonseed meal with alfalfa hay as a protein supplement.
6. To compare ground kafir with kafir heads when combined with cottonseed meal and sudan hay.

It is the purpose of this bulletin to present, in as clear and practical form as possible, the results of this feeding test.

Animals Used

One hundred and one head of black-faced ewes were purchased on the Kansas City market, November 6. 1918, at $14.00 per hundred. Total weight of the flock was 10,380 pounds, or on average weight of 102.77 pounds. The cost of the ewes on foot was $1,453.20, dip $5.05, commission $12.00, freight and feed $48.00, making a total cost of $1,518.25 laid down at Stillwater. The quality and uniformity of these ewes were above the average for western sheep.

Preliminary Handling

Weights were taken immediately after the ewes were unloaded, before they were allowed any feed or water. Th total wight was 9,308 pounds, or an avrage weight of 92.17 pounds. There was a shrinkage in transit of 10.60 pounds per head. This loss in weight was due to the fact that the ewes were on the road from Thursday until Monday morning, and were practically empty when weighed. After weights were taken the ewes were turned on a bermuda pasture and allowed to fill and water before being turned on a kafir stubble. One purebred registered Shropshire ram was turned with the ewes on November 11, and two more on November 14. Too much stress cannot be put on the purebred ram for the breeding of grade ewes. It is never advisable to use a "scrub" or grade ram. A purebred ram will pay for himself several times by the superior quality of lambs produced.

The ewes were allowed to run on a kafir pasture field during the day and placed in a pen at night. This precaution was necessary on account of the possible raveges of "curs" and wolves. Pneumonia caused the death of one of the ewes the third day after arrival. A few ewes were bred before the Station purchased them. The first lamb was dropped December 14, 1918; a total of twenty-six lambs were dropped before the experiment was completed. As most of the twentysix lambs were dropped near the close of the experiment, their weights are not considered in computing the data.

Methods of Feeding and Handling

The ewes were fed twice daily at 7 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 consisted of hay racks with tight grain troughs at bottom. This reduced the wastage to a minimum. Outside runs were provided for exercise, but the rations were fed under cover. Salt and water were before the ewes at all times. The feeding experiment started January 4, 1918, and closed April 4, 1918, making a feeding period of ninety days. Weights were taken three days in succession at the beginning and at the close of the experiment, and as a check the ewes were welghed every thirty days.

Rations Used

The ewes were divided uniformly into five lots of twenty each and fed the following rations:

Lot 1—Alfalfa hay	Lot 3—Wheat straw	Lot 5—Sudan hay
Wheat straw	Cane fodder	Ground kafir
Kafir silage	Cottonseed meal	Cottonseed meal.
Lot 2—Wheat straw	Lot 4—Sudan hay	
Kafir silage	Kafir heads	
Cottonseed meal	Cottonseed meal	

Costs of Feeds.—Alfalfa hay cost $25.00 a ton; cottonseed meal $55.00 a ton; kafir silage $6.50 a ton, wheat straw $10.00 a ton, cane fodder $15.00 a ton, sudan hay $18.00 a ton, kafir heads $1.75 a bushel of 72 pounds, and ground kafir $2.00 a bushel of 56 pounds.

The following table summarizes the results, showing the comparative value of kafir silage, *kafir fodder, sudan hay, wheat straw, kafir heads, kafir grain, when combined with the protein supplements, cottonseed meal and alfalfa hay, for breeding ewes.

*Cane fodder was substituted.

TABLE I

	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5
Number days on test	90	90	90	90	90
Number ewes	20	20*	20**	20	20
Total initial weight	2015	2015	2016	2037	2015
Total final weight	2222	2024	2147	2307	2304
Total gain in weight	207	9	131	270	289
Average gain per ewe	10.35	.45	6.55	13.50	14.45
Average daily gain per ewe	.11	.005	.072	.15	.16
Total feed consumed—					
Alfalfa	3554				
Kafir silage	3289	5061			
Wheat straw	1062	1244	972		
Cottonseed meal		737	828	444	445
Cane fodder			4776		
Sudan hay				3667	3663
Kafir heads				1149	
Ground kafir heads					758
Bran		450	210		
Average daily ration per ewe—					
Alfalfa	1.97				
Kafir silage	1.82	2.81			
Wheat straw	.58	.68	.54		
Cottonseed meal		.49	.49	.24	.24
Cane fodder			2.65		
Sudan hay				2.03	2.03
Kafir heads				.63	
Ground kafir heads					.42
Bran		1.5	1.5		
Total cost of feed	$ 60.42	$ 54.18	$ 68.70	$ 73.13	$ 71.26
Average cost of feed per ewe	$ 3.021	$ 2.709	$ 3.435	$ 3.656	$ 3.563
Average cost per head per	.0335	$ .0301	$ .0381	$ .0406	$ .0395

*Two ewes died on 75th day. **One ewe died on 85th day.

DISCUSSION OF RESULTS

Feeds that are commonly grown in Oklahoma were used in this test. On every Oklahoma farm the above feeds can be grown with the exception of cottonseed meal, and even this concentrate is easily obtained in almost every town. It will be necessary to conduct more experiments along this line before definite conclusions can be drawn in regard to some of tthe results. Especially the amount of cottonseed meal that it is advisable to feed pregnant ewes.

Lots 2 and 3 receiving .5 pound of cottonseed meal per head per day showed symptoms of cottonseed poisoning. In Lot 2 the first symptoms were noticed at the end of the seventieth day, two ewes dying on the seventy-fifth day. Three more ewes in this lot showed similar signs on the seventy-fifth day, when the cottonseed meal was discontinued and bran used as the protein supplement, after which the three sick ewes improved and became normal by the eightieth day. In Lot 3 conditions were somewhat different. The bad effects of cottonseed meal were not present until the eighty-fourth day. One ewe aborted and one died. Bran was substituted immediately and no more losses occurred. The symptoms were staggers, blindness and weakness. No loss of appetite was noticeable, but the ewes were helpless and unable to stand, about twenty-four hours before death. Lot 2, receiving kafir silage, wheat straw and cottonseed meal, showed the bad effects of cottonseed meal nine days before Lot 3, receiving cane fodder, wheat straw and cottonseed meal. This experiment indicates that it is not safe to feed .5 pound cottonseed meal to pregnant ewes when exercise is limited, nor for a long period. No bad effects resulted from feeding .25 pound of cottonseed meal per head per day to Lots 4 and 5.

The largest gains were made in Lots 5, 4 and 1 in the order named. The ewes in Lot 5 receiving sudan hay, ground kafir and cottonseed meal, made an average gain of 14.45 pounds per head during the test, or an average daily gain of .16 pound per head per day. Lot 4, receiving sudan hay, kafir heads and cottonseed meal, made a gain of 13.5 pounds per head, and an average daily gain of .15 pound per head per day. Lot 1, receiving alfalfa, wheat straw and kafir silage, made an average gain per head of 10.35, an average daily gain of .11 pound per head per day. Lot 2, receiving wheat straw, kafir silage and cottonseed meal, made a gain of only .9 pound for the twenty head, an average daily gain of .005 pound. This was nothing more than a maintenance ration. Lot 3, receiving cane fodder, wheat straw and cottonseed meal, made a total gain of 131 pounds, or an average gain per head per day of .072 pound. The health and vigor of the ewes in Lots 4 and 5 was far superior to that of Lots 2 and 3, and slightly above Lot 1 at the close of the test.

TABLE II

Cost of winter feeding.

	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5
Total cost of feed	$ 60.42	$ 54.18	$68.70	$ 73.13	$ 71.26
Average cost of feed per ewe	$ 3.021	$ 2.709	$ 3.435	$ 3.656	$ 3.563
Average cost per head per day	$ .0335	$ .0301	$ .0381	$ .0406	$ .0395
Average cost per 100 lbs. live weight	$ .0301	.0300	$ .0336	$ .0352	$ .0343

Lot 2 was wintered cheapest, costing $54.18, but the gain was less and health impaired by feeding cottonseed meal to liberally, together with the lack of exercise. Taking everything into consideration, Lot

1 proved the most economical. The health of these ewes was good, as also was the gain. The cost per head per day for this lot was $.03.35 as compared to $.03.01 for Lot 2, $.03.81 for Lot 3, $.04.06 for Lot 4, and $.03.95 for Lot 5. Although the cost is slightly greater, it will pay to feed the pregnant ewe some grain with her roughage.

Comparison of Rations that Contain Silage, with Rotations that Contain no Silage

Lots 1 and 2 received silage in their ration, while Lots 3, 4 and 5 did not receive silage. Lot 1 proved to be the most econocimal and received 1.82 pounds of silage per head per day. No ill effects were observed from the feeding of silage. Too much stress cannot be laid upon the feeding of some succulent feed to the pregnant ewe, such as silage. It is best to use care in feeding silage to pregnant ewes and not use any moldy or spoiled silage. If these precautions are observed, no bad results will be forthcoming. The results obtained in Lot 2 was due to cottonseed meal and not to the feeding of too much silage, because the same thing happened in Lot 3, where the ewes received no silage, but the same amount of cottonseed meal. Lot 2 received 2.8 pounds silage, or practically one pound more per head per day than Lot 1. It was the object of the experiment to compare kafir silage with kafir fodder. This could not be done because the fodder could not be obtained, and cane fodder was substituted for the kafir. Where silage was used the cost of wintering was greatly reduced. An increase in the amount of silage in the ration lowered the cost of keep.

TABLE III

Comparing silage to no silage for wintering breeding ewes.

	SILAGE LOTS		NO SILAGE		
	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5
Total cost of feed	$ 60.42	$ 54.18	$ 68.70	$ 73.13	$ 71.26
Silage fed per head per day	$ 1.82	$ 2.81			
Average cost	$ 57.30			$ 71.03	
Advantage in total cost of feed	$ 13.73				

Comparing Lots 1 and 2, that received silage, to Lots 3, 4 and 5, that received no silage, there was an advantage of $13.73 in favor of the silage lots. It pays, therefore, to feed silage to pregnant ewes from an economical standpoint.

TABLE IV

Comparing cottonseed meal to alfalfa hay as protein supplement.

Lot	Avg. Gain per Ewe, 90 Days	Total Feed Consumed		Ave. Daily Ration per Ewe		Ave. Cost of Feed per Ewe	Advantage in Cost of Feed per Ewe 90 Days
Lot 1	10.35	Alfalfa	3554	Alfalfa	1.97	$3.021	
		Wheat Straw	1062	Wheat Straw	.58		
		Kafir Silage	3289	Kafir Silage	1.82		
Lot 2	.45	Kafir Silage	5061	Kafir Silage	2.81	$2.709	$31.20
		Wheat Straw	1244	Wheat Straw	.68		
		Cottonseed Meal	737	Cottonseed Meal	.49		

The cost of wintering the ewes in Lot 2 was $.31.20 less per head than Lot 1. However, the gain in weight offsets the cheaper keep. Lot 1 gained 10.35 pounds per head, and Lot 2 gained .45 pounds per head, a difference of 9.9 pounds per head in favor of Lot 1. The health of Lot 1 was far above that of Lot 2. Lot 2 consumed .1 pound more wheat straw per head per day than Lot 1.

TABLE V

Comparing ground kafir with kafir heads when combined with cottonseed meal and sudan hay.

Lot	No. Days on Test	Av. Gain per Ewe	No. Ewes	Total Feed Consumed		Avg. Days Ration per Ewe		Total Cost of Feed	Av. Cost per Head per Day	Advantage in Total Cost of Feed per Lot
4	90	20	13.50	Sudan Hay	3667	Sudan Hay	2.03	$73.13	$.0406	
				Kafir Heads	1149	Kafir Heads	.63			
				Cottonseed Meal	444	Cottonseed Meal	.24			
5	90	20	14.45	Sudan Hay	3662	Sudan Hay	2.03	$71.26	$.0395	$1.86
				Ground Kafir	758	Ground Kafir	.42			
				Cottonseed Meal	445	Cottonseed Meal	.24			

It cost $1.86 less to winter Lot 5, that received ground kafir, than it did to winter Lot 4, that received kafir heads. Lot 5 also made a gain of .9 pound per ewe more than Lot 4. The amount o fsudan hay and cottonseed meal was practically the same in both lots. The sudan hay could not be reduced in Lot 4 because of the added roughage furnished from the kafir heads. There is a slight advantage in favor of the ground kafir.

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SUMMARY

1. No ill effects were observed from the feeding of kafir silage, and it is a very desirable form of succulence for the winter feeding of pregnant ewes.

2. In this test, cottonseed meal did not prove successful when as much of .5 pound per head per day was fed, but was very efficient as a protein supplement when .25 pound per head per day was used.

3. Sudan hay was consumed readily and proved to be a good roughage for pregnant ewes.

4. Alfalfa hay is a more desirable source of protein than cottonseed meal.

5. The lot receiving ground kafir was wintered $1.86 cheaper for the twenty head of ewes than the lot that received kafir heads.

6. The average cost of feed per ewe for 90 days was:

Lot 1—$3.021
Lot 2—$2.709
Lot 3—$3.435
Lot 4—$3.656
Lot 5—$3.563.

7. The health of the ewes in Lots 4, 5 and 1 was far superior to Lots 2 and 3.

8. Pregnant ewes must have plenty of exercise.

9. The ewes were sold at the close of the experiment for $22.50 per head.

10. Economy in the selection of rations and preventing a useless waste are the two most impnrtant considerations in feeding pregnant ewes.

11. This work is well adapted to Oklahoma conditions and should be carried further to obtain definite results.