OKLAHOMA
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Corn, Barley and Grain Sorghums for Fattening Lambs

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SUMMARY

1. In these three tests barley was about 95 per cent as efficient as corn in amount of feed required for 100 pounds gain. However, barley is usually more expensive per pound than corn and the difference in profit returned by these two lots shows a greater difference between these two feeds in favor of corn. Where barley is available on the farm and corn has to be purchased and hauled to the farm, the feeder will find barley an excellent feed for fattening lambs.

2. Lot No. 2 where kafir was fed, both whole and ground, shows that kafir had a greater value than corn in these tests. Kafir should certainly be considered equal for corn and where it is available or can be purchased for less per pound than corn, it should be profitable to substitute it for corn in the ration.

3. Darso proved about 98% as good as corn on the pound for pound basis. In the western grain sorghum section of the state where corn is not available, the feeding of darso to fattening lambs should prove profitable. Grinding the darso in the 1928 test improved its efficiency slightly but not enough to pay for the cost of grinding. In other tests, grinding has proved to be no advantage whatever.

4. Cowpea hay used in Tests No. 2 and 3 was coarse and there was considerable waste. However, these tests indicate the possibility of a home grown ration as desirable for lamb feeding on farms that will not produce alfalfa.

5. The single trial in 1928 indicates the feeding of either darso heads or ground darso heads not to be advisable as the threshing and feeding of whole darso grain returned considerable greater profit.

INTRODUCTION

This publication reports the results of four feeding experiments conducted at the Oklahoma Experiment Station. The first three were conducted in 1925, 1926 and 1927 comparing corn, barley, kafir corn and darso as a feed for lambs. Test No. 1 conducted in 1925 was also for comparing the feeding of lambs on pasture and finished in a dry lot to dry lot feeding. This lot was eliminated in 1926 and 1927 and a lot receiving corn and cowpea hay was substituted.

Test No. 4 is a comparison of corn and darso, and also a study of methods of preparing darso for lamb feeding. The study of the preparation in the last test should not be considered conclusive evidence but the comparison of corn, kafir, barley and darso in the first three tests showed consistent results over a three-year period and can be considered as rather conclusive.

The method of computing gains, costs, etc., in case of death is as follows: The initial weight of dead lamb is subtracted from the initial weight of the pen and the subsequent weights of feed, etc. are compiled as though said lamb had not been included in the test. He is, however, charged with his proportion of feed fed up to time of his death. Then the feed and initial weight of lamb are stricken from the records as far as feed per head, cost per pound, etc. are concerned, but are charged against the project in figuring profit or loss on the entire undertaking.

FIRST TEST, 1925

One hundred twenty-five head of western lambs were purchased at Omaha, Nebraska, on August 20, 1925, through John Clay Commission Company. The lambs arrived in Stillwater August 23, 1925.

They were divided into five pens of twenty-five lambs each, division being made as equal as possible as to weight, conformation, etc. Each lamb was ear tagged and weighed separately on three successive days. The average weight for the three days was taken as the initial weight.

All lambs were put on creek and stubble pasture on September 3. Pen V was given a feed of corn night and morning (starting with 10 pounds per day). Pens I, II, III and IV received nothing in addition to pasture.

All lambs did well on pasture for the first fifty days, after which the lambs in Lots I, II, III and IV lost some in condition due to failing pasture.

The lambs were all put on grain, October 23 and continued until January 2, 1926.

Pen I was fed corn and alfalfa.
Pen II was fed barley and alfalfa.
Pen III was fed kafir and alfalfa.
Pen IV was fed darso and alfalfa.
Pen V was fed corn and alfalfa.

It should be remembered in this connection that Pen V was the pen receiving corn on pasture.

The alfalfa hay used in this test was on the whole of very inferior quality and this will perhaps partly account for small gains made, as well as for small amount of hay eaten during the first part of the feeding period. The hay fed the last twenty days was a better grade than that fed earlier.

FATTENING LAMBS
Experiment—Fall 1925

OBJECTS:

1. To compare grain on pasture to pasture alone and finishing on grain.
2. To compare darso, corn, kafir and barley.

	Pen I	Pen II	Pen III	Pen IV	Pen V
	Pasture Finished Corn and Alf. Hay	Pasture Finished Barley and Alf. Hay	Pasture Finished Kafir and Alf. Hay	Pasture Finished Darso and Alf. Hay	Corn on Pasture Finished Corn and Alf. Hay
Initial weight per lamb average	63.8	64	63.68	64	63.6
Average wt. at end of pasture period when put on grain ration	60	60	58	60.7	70
Corn fed for 100 lbs. gain on pasture					552.7
Final weight	88.5	87	87.8	88.27	97.5
Gain per head on feed	28.5	27	29.8	27.57	27.5
Feed for 100 lbs. gian:					
Grain	364.7	405.2	361.2	398.7	378.5
Hay	386.1	400	357.8	400.5	400
Buying price per 100 lbs.	14.50	14.50	14.50	14.50	14.50
Cost per head at feed yards	10.00	10.00	10.00	10.00	10.00
Feed cost per head	2.48	2.91	2.40	2.47	2.50
Labor cost per head	.40	.40	.40	.40	.40
Cost per 100 lbs. gain	8.36	10.78	8.06	8.94	8.67
Shipping and selling cost per head	.72	.72	.72	.72	.72
Total cost per head at Kansas City yards	13.60	14.03	13.52	13.59	13.62
Necessary selling price per 100 lbs. to break even	16.50	17.32	16.47	16.69	14.93
Weight at stock yards	82.4	81	82.1	81.9	91.2
Selling price per 100 lbs.	15.35	15.35	15.35	15.35	15.35
Gain or loss per head	−.95	−1.60	−.92	−1.02	+.37

Corn	75c per bu.
Barley	85c per bu.
Kafir corn	75c per bu.
Darso	75c per bu.

This table gives figures based on the feeding period after being placed in dry lot. It will be noted that the cheapest gains were made in Pen III receiving the threshed kafir and alfalfa hay. The second best was Pen I, on corn and alfalfa hay. The poorest pen both in rate of gain and cost of gain was Pen II. receiving barley.

Pen II required about 4% more hay and about 11% more grain than Pen I, on corn and alfalfa hay. Pen III on kafir required 7% less hay and 1% less grain than Pen I.

Pen V fed corn on pasture required 4% more hay and 3% more grain than Pen I, while all lots were on feed but figured on a basis including the pasture period, Pen V made money while the other pens in the test showed a loss. The pen receiving darso required 12% more hay and 10% more grain for 100 pounds gain than the pen receiving kafir.

Carcass Grade

Pen	Dressing %	Good	Medium	Cull	Heavy	Val. Dress %
1	48.20	17	4	1		100.00
2	47.42	17	5		1	98.518
3	47.16	19	4	1		98.02
4	48.20	19	3			100.00
5	48.03	17	3		4	99.67

Although all pens sold at the same price per hundred pounds, the difference in dressing percentage between Pens I and IV and Pen III would make a difference of about thirty cents per hundred live weight, in favor of Pen I and IV.

SUMMARY

1. The pen fed grain on pasture made cheaper gains during the entire period than those fed no grain on pasture.
2. The pen fed kafir required less hay and grain for 100 lbs. gain than the pen fed corn.
3. The pen receiving barley required more grain and hay for 100 lbs. gain with greater cost per 100 lbs. gain than any other pen.
4. Pen IV, receiving darso, required 12% more hay and 10% more grain for 100 lbs. gain than Pen III, receiving kafir and the cost per 100 lbs. gain was 88c higher for the darso lot.

SECOND TEST, 1926

A feeding test started in the fall of 1926 is a repetition of the work carried on in 1925-26, with the exception that the grain was fed whole in the first test and was fed ground in this test, and no pen received grain on pasture.

One hundred and fifty head of lambs were purchased on the Fort Worth market on October 10, 1926 and arrived in Stillwater, October 17. They were placed on volunteer oat pasture until November 15, at which time they were brought to the feed lot.

The lambs were divided into five pens of thirty lambs each, the division being made as uniformly as possible, as to size, conformation, etc. Each pen was ear marked. They were put on feed on November 18. Pen I was fed corn and alfalfa hay; Pen II kafir and alfalfa hay; Pen III, darso and alfalfa hay; Pen IV, barley and alfalfa hay; Pen V, corn and cowpea hay. All of the grain was fed ground.

When the lambs were unloaded, they averaged 53.7 lbs. and when put on feed, they averaged about 55 pounds. The method of adjustment in cases of death was the same as in the first test.

The alfalfa hay used in this test was of considerably better quality than the hay used in Experiment I, which may partly account for the fact that the lambs consumed more hay.

Method of Feeding. The lambs were fed twice daily, the grain being fed first and the lambs allowed to eat it before hay was fed. They were started on a full ration of hay, grain being gradually added and increased and the hay decreased until the lambs refused to take any more grain. It was endeavored at all times to keep the grain ration to the maximum and to feed all the hay they would consume in addition.

FATTENING LAMBS

Experiment—Fall, 1926

	I Alfalfa and Corn	II Alfalfa and Kafir	III Alfalfa and Darso	IV Alfalfa and Barley	V Cowpea Hay and Corn
Average initial weight	54.3	55	55.17	54.8	55
Average final weight	84.3	86.2	85.43	84.13	83
Gain per head	30	31.23	30.27	28.9	28.1
Daily gain per head	.314	.328	.318	.303	.3
Gain per pen	868.	937.	908.	868.	843.
No. days on feed	95	95	95	95	95
Feed consumed per head per day:					
Grain	1.25	1.26	1.26	1.23	1.26
Hay	1.828	1.834	1.834	1.77	1.846
Feed required for 100 lbs. gain:					
Grain	397.4	379	391.1	396.6	420.8
Hay	577.6	550	567.6	574.4	615.6
Feed cost per 100 lbs. gain	$9.44	$7.92	$8.19	$10.31	$9.10
Buying price 100 lbs.	11.50	11.50	11.50	11.50	11.50
Cost per head at feed yard	7.38	7.38	7.38	7.38	7.38
Average weight, Kansas City	79.7	81	80.2	79.4	78.3
Feed cost per head	$2.73	$2.47	$2.51	$2.98	$2.56
Selling and frieght charges per head	.66	.66	.66	.66	.66
Labor	.50	.50	.50	.50	.50
Necessary selling price per 100 lbs. to break even	14.15	13.59	13.77	14.51	14.17
Selling price per 100 lbs.	13.60	13.60	13.60	13.60	13.60
Gain or loss per head	−.44	+.08	−.11	−.73	−.35

Cost of Feeds used:

Corn	72c per bu.
Kafir	56c per bu.
Darso	56c per bu.
Barley	72c per bu.
Alfalfa	$15.00 per ton
Cowpea Hay	12.00 per ton

The dressing per cent of the various lots was as follows:

Lot I	49.5
Lot II	49.7
Lot III	48.6
Lot IV	49.2
Lot V	50.8

Pen II receiving kafir and alfalfa hay, required 5% less hay and 5.2% less grain than Pen I, on corn and alfalfa hay, to produce 100 lbs. gain. Pen III, receiving darso and alfalfa hay, required 2% less hay and 1.5% less grain per 100 lbs. gain than Pen I. Pen V, receiving corn and cowpea hay, required 6% more hay and about 6% more grain than Pen I. Pen IV, receiving barley required slightly less hay and grain for 100 lbs. gain than the corn pen.

THIRD TEST, 1927

A lamb feeding test in 1927-28 was an exact duplicate of the test conducted in 1926-27. All grains in the test were fed ground. One hundred five head of feeding lambs were purchased on the Fort Worth market in the Fall of 1927, shipped to Stillwater, and fed for a period of sixty days.

The lambs were divided into five pens of twenty-one lambs each. Salt and water were kept before them at all times. Hay and grain were fed twice daily, in a combination hay and grain rack.

FATTENING LAMBS

Experiment—Fall 1927
(60 day test)

	I	II	III	IV	V
	Barley and Alfalfa	Darso and Alfalfa	Kafir and Alfalfa	Corn and Alfalfa	Corn and Cowpea Hay
No. lambs per pen	21	21	21	21	21
Average initial weight	63.1	62.8	62.8	63.4	63.1
Average final weight	80	80.8	82	80	80.5
Average daily gain	.281	.3	.313	.277	.29
Feed consumed per head per day:					
Grain	1.2	1.2	1.2	1.2	1.2
Hay	1.6	1.6	1.6	1.6	1.6
Feed required for 100 lbs. gain:					
Grain	433	433	384.3	444	424
Hay	577	577	508	587	560
Cost per 100 lbs. gain	$10.06	$8.39	$7.43	$8.96	$8.56
Init. cost per 100 lbs.	11.50	11.50	11.50	11.50	11.50
Necessary selling price per 100 lbs. to break even	13.70	13.26	12.91	13.52	13.34
Estimated value per 100 lbs.	13.60	13.60	13.60	13.60	13.60
Profit or loss per lamb	−7.5c	+25.7c	+53c	+6c	+19.6c

Cost of Feed:

Barley	70c per bu.
Corn	65c per bu.
Darso	60c per bu.
Kafir	60c per bu.
Alfalfa Hay	$13.00 per ton
Cowpea Hay	12.00 per ton

SUMMARY

1. Barley was equal to darso and slightly better than corn in feed required per 100 lbs. gain, but gains were more expensive because of the greater cost per pound of barley. .
2. The pen receiving kafir required less feed per 100 lbs. gain and made cheaper gains than the pen receiving corn.
3. The pen receiving cowpea hay made gains on slightly less feed and cheaper gains than the pen receiving alfalfa hay.
4. Darso was slightly better than corn on a basis of pounds of feed required for 100 lbs. gain.
5. Barley, darso, and kafir, according to this and previous tests, should be rated about equal to corn for fattening lambs when fed in connection with alfalfa hay.
6. Every pen, except the one receiving barley, showed a profit.

FEED PREPARATION TEST, 1928

Purpose of this trial. This trial was conducted with two primary objects in mind: (1) to compare darso with corn for fattening lambs, and (2) to secure more information on the preparation of darso for fattening lambs.

Lambs used. The lambs used in this feeding trial were Texas lambs purchased through John Clay Commission Company of Fort Worth, Texas, and were shipped from Barnhardt, Texas. They were received in Stillwater the middle of September, but were not started on the test until October 1, 1928, because of lip and leg ulceration which involved about ninety per cent of the lambs. They were treated daily for two weeks and at the time the test was started, they were sound.

This test was supervised by Prof. W. A. Craft.

Experiment—Fall 1929
(70 days)

	I Alfalfa and Corn	II Alfalfa Whole Threshed Darso	III Alfalfa Ground Threshed Darso	IV Alfalfa and Darso Heads Ground	V Alfalfa and Darso Heads
Average initial weight	56.6	57	56.5	57.9	56.6
Average final weight	85	85	85.2	84.1	82.9
Gain per head	28.4	28	28.7	26.2	26.3
Daily gain per head	.405	.40	.41	.374	.375
Gain per pen	681.6	672	688.8	628.8	631.2
No. lambs per pen	24	24	24	24	24
Daily Ration:					
Grain	1.08	1.08	1.08	1.21	1.21
Hay	1.65	1.65	1.65	1.65	1.65
Feed required to produce 100 lbs. gain:					
Grain	266	270	262	323	323
Hay	409	414	402	441	441
Feed cost per 100 lbs. gain	$6.39	$6.48	$6.43	$6.74	$6.45
Shrink, shipping to Kansas City, Mo.	4%	4%	4%	4%	4%
Labor per head	$0.50	$0.50	$0.50	$0.50	$0.50
Selling price per 100 lbs. in Kansas City	$12.50	$12.50	$12.50	$12.50	$12.50
Freight and Selling cost per head	$0.70	$0.70	$0.70	$0.70	$0.70

The lambs were divided into five lots of 24 head each and fed for 70 days.

Lot I received shelled corn and alfalfa hay.
Lot II received whole threshed darso and alfalfa hay.
Lot III received threshed ground darso and alfalfa hay.
Lot IV received ground darso heads and alfalfa hay.
Lot V received whole darso heads and alfalfa hay.

All lots averaged practically fifty-seven pounds per head at the beginning and were as nearly equal in every other consideration as was possible to determine. They were fed twice daily, at 7:00 in the morning and at 5:00 in the afternoon. Water was provided throughout the day in a tank, and block salt was in the feed rack throughout the test. The lambs in Lot I were fed all the shelled corn they would clean up in about thirty minutes and all the alfalfa hay they would clean up from one feed to another. Lots II and III were fed the same amount as Lot I and the appetite of these three lots was apparently equal. It was planned to feed Lot IV and Lot V the same amount of both grain and hay as was fed to each of the other lots, but Lot IV on ground heads would not consume enough of the ground heads during the last thirty days of the trial to keep the grain equal to that consumed by the first three lots. Consequently, it was considered best to feed the same weight of whole heads to Lot V as was consumed by Lot IV. Alfalfa hay was kept equal for all lots, however.

The first three lots consumed 1.08 pounds of grain per lamb per day. Lots IV and V consumed 1.21 pounds of heads per day. This is 12 per cent more weight than was consumed by the other lots. Samples were taken at different times and threshed to determine the percentage of grain in the heads and these gave 85 per cent. Therefore, Lots IV and V would have had to eat 15 per cent more weight than the other lots to get an amount of grain equal to each of the first three lots. All lots consumed an average of 1.65 pounds of hay per lamb per day.

Results secured. The first three lots showed practically the same gain, approximately .4 of a pound per lamb daily, as shown in the table. Likewise, Lots IV and V showed practically the same gain, .37 pounds per lamb daily, but slightly less than the first three lots. Lot III on ground threshed darso, made the largest gain but not enough larger to be significant. This lot also required less feed to make 100 pounds of gain than was required by any of the other lots.

Lot I made the cheapest gains and the gains made by Lot IV were most expensive. The cost of gains made by Lots I, II, III and V were practically equal. The higher cost of gains for Lot IV over Lot V is explained by the cost of grinding the heads, which is figured at 6 cents per bushel of grain. This is the same as the cost of threshing. Grinding the grain for Lot III cost 3 cents per bushel. Therefore, preparation of grain for this lot cost (threshing and grinding) 9 cents per bushel more than the grain in the heads cost for Lot V.

The gains made were very satisfactory for all lots and the amount of feed required for 100 pounds gain was les than is often required. Therefore, the cost of gains was very favorable in this trial.