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Feeding **DAKOTA LAMBS**

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ANIMAL HUSBANDRY DEPARTMENT



AGRICULTURAL EXPERIMENT STATION

SOUTH DAKOTA STATE COLLEGE, BROOKINGS

AND THE

BUREAU OF PLANT INDUSTRY, SOILS AND
AGRICULTURAL ENGINEERING, UNITED
STATES DEPARTMENT OF AGRICULTURE
COOPERATING



FEEDING DAKOTA LAMBS

Results of Feeding Trials at the Newell Field Station

R. M. JORDAN and HARRY WEAKLY¹

The experience of many successful farm operators has shown that the fattening of lambs, when properly integrated in the production program of corn belt and irrigated farms in South Dakota, can increase the net profits of the farm enterprise. Lambs provide one of the best outlets for the marketing of grains and roughages produced, utilize a larger amount of farm-grown roughages in proportion to grain than any other fattening animals, return much-needed fertility to the soil, and stabilize farm labor as well as farm income in many instances.

In addition, lamb feeding fits into the general agriculture of the state. With a supply of high quality feeder lambs from South Dakota ranges, an abundance of corn and high quality alfalfa hay, and, in general, nearness to large markets, this enterprise has the basic factors to permit it to grow in magnitude.

Many problems have arisen regarding the use of suitable combinations of feeds and fattening rations and the method of handling the feeds and the lambs. To answer such questions the South Dakota Agricultural Experiment Station and the United States Department of Agriculture have cooperated in lamb feeding experiments at the Newell Field Station during the past 22 years. The first 16 years of this work are summarized in Bulletin 373, and the main purpose of the present bulletin is to summarize and analyze the results that have been obtained since the first bulletin was published.

Management of the Lambs Prior to the Trials

For the most part, the lambs used in these experiments have been typical western South Dakota range lambs. During the first three years of experiments the lambs were purchased from ranchers in western South Dakota, and during the last three years the lambs used were raised at the Antelope Range Station near Buffalo. All of the lambs used in the six trials were taken off the range and brought to the Newell Station during the month of October, though there has been considerable variation in the dates of the commencement of the trials. During the period between moving the lambs from the range until the start of the trials, the lambs were pastured on stubble and beet tops.

All of the lambs in the experiment were weighed individually at the beginning of the trials, and were allotted to their respective lots on the basis of their weight and type. They were weighed periodically during the trials and again at the end of the trials, and the gain was figured on the basis of the number of the lambs finishing the trials. Feeding was done in a yard surrounded by a 10-foot high board fence. The feeds were of average grade and quality and were obtained locally. For convenience in reporting the experimental results, the data will be grouped according to the treatment, and not all of the work done in any one year will appear in the same table.

¹Assistant Animal Husbandman and Superintendent of the Newell Field Station, respectively. Acknowledgement is made to Dr. Carl Larson, former superintendent of the Newell Field Station, Dr. Earle Klosterman, and Thomas Dowe, Assistant Animal Husbandmen at the South Dakota Agricultural Experiment Station.

Experimental Results

The Effect of Size of Group and Feedlot Area per Lamb on Gain and Daily Feed Consumption

Many inexperienced feeders, who are contemplating feeding out lambs, wonder whether small groups of lambs can be fed effectively, or whether lambs do better when they are fed in large groups. Further, they do not know the amount of yard space a lamb requires and what effect it may have on his daily gains, or his total feed consumption. Some of the trials that were conducted during 1943, 1944, 1945, and 1946 were arranged to provide answers to these questions.

The results of the findings are summarized in Table 1. Each year 100 lambs were fed in Lot I and were allotted 20 square feet per lamb. In Lot II, 50 lambs were fed and allotted 20 square feet per lamb. In Lot III, 25 lambs were allotted 80 square feet per lamb, and in Lot IV, 25 lambs were allotted 20 square feet per lamb. There were large differences in the average daily gain made from year to year, but no differences occurred between lots within any one year.

Since death loss is a paramount problem of the lamb feeder, it is interesting to note that neither the number of lambs fed per lot nor the space allotted per lamb

had any effect on that factor. Though the tabulated data do not show it, it was found that in some lots in some years the death loss was considerably higher than in others, but no pattern developed.

The data also indicate that the feeder does not have to have a large number of lambs in a lot to obtain satisfactory average daily gains. The difference in the average daily gains made by the lambs in Lot I, in which each year a hundred lambs were fed and allotted 20 square feet per lamb, was not greatly different from Lot IV, in which only 25 lambs were fed and 20 square feet per lamb was allowed. There was considerable difference between Lot I and Lot II in 1943, but a similar difference did not occur in 1944, 1945 or 1946. Throughout the four years, the lambs in Lot IV, in which only 25 lambs were fed and allotted 20 square feet per lamb, made slightly lower gains than any of the other lots. However, the differences were not great and it is questionable whether they were due to the factors being considered.

Average daily feed consumption was not affected by the number of lambs fed in the lot and the space allotted to them. In summarizing the data, it was apparent that there was considerable difference between years, but there were no signifi-

**Table 1. Effect of Size of Group and Area per Lamb on Gains in the Feedlot On Feed 110—130 Days
4-Year Summary 1943, 44, 45, 46**

	I 20 sq. ft. per lamb	II 20 sq. ft. per lamb	III 80 sq. ft. per lamb	IV 20 sq. ft. per lamb
Total number lambs	393	194	99	99
Total number died	10	6	5	4
Average daily gains, lb. ....	.29	.28	.29	.26
Average daily consumption				
Grain, lb.	1.19	1.09	1.19	1.15
Hay, lb. ....	.85	.85	.86	.86
Beet top silage, lb.	1.67	1.71	1.71	1.70
Feed per 100 lb. gain				
Grain (Barley), lb.	366	373	385	406
Hay, lb.	347	369	357	399
Beet top silage, lb.	592	651	617	686

cant differences between lots. The feed efficiency or feed required for each hundred pounds of gain was not affected by the number of lambs fed per lot or the area allotted each lamb.

Under the feeding conditions present during this trial each lamb had ample room at the grain and hay bunk and no extreme crowding occurred at feeding time. (A 14-foot grain bunk provides room for 25 to 30 lambs when both sides of the bunk are used.) One can conclude from the data presented in Table 1, that when adequate room in the feed lot is allotted to each lamb, the number of lambs fed within a lot and the space allotted each lamb will not seriously affect the death loss, average daily gain, average daily feed consumption, or feed required per hundred pounds of gain. However, many feeders feel that one thousand lambs make about as large a group as it is convenient to handle in one lot.

Merit of Three-Times-a-Day Feeding

The lamb feeder's major concern, in addition to controlling the death loss, is to increase the average daily gain on the lambs and thereby increase the feed efficiency and profits as well. Whether hand feeding of feeder lambs more than twice a day is warranted has often been ques-

tioned by the large feeder. In fact, there is a tendency on the part of some feeders to keep grain in front of the lambs at all times even though the grain and hay are not mixed together.

To answer this problem, trials conducted during 1943, 1944, 1945 and 1949 were arranged to compare twice-a-day feeding with three-times-a-day feeding. The results of the trials conducted during those four years on this particular phase are summarized in Table 2. Comparisons were made on a full-feeding basis, between corn fed three times a day, and corn fed twice a day, between barley fed three times a day and barley fed twice a day. Chopped alfalfa of fair quality was fed to all lots in each experiment. The lambs fed twice daily were given equal amounts of feed morning and evening, while those fed three times daily were given equal amounts morning and evening and a lighter feed at noon.

The data show that feeding three times a day apparently does not reduce the death loss in fattening lambs. This might have been expected, since ruminating animals have feed in their paunch for a considerable period after they have eaten, and it is possible in some instances, that feeding three times a day would put an increased burden on the digestive sys-

Table 2. Effect of Feeding Fattening Lambs Three Times a Day (Hand-Fed) Versus Feeding Twice a Day
4-Year Summary 1943, 44, 45, 49

	I Corn 3X daily chopped alfalfa	II Corn 2X daily chopped alfalfa	III Barley 3X daily chopped alfalfa	IV Barley 2X daily chopped alfalfa
Total number lambs started	190	150	149	146
Total number died	10	8	11	9
Average daily gain, lb. ....	.30	.29	.29	.28
Average daily consumption				
Grain, lb.	1.25	1.11	1.28	1.14
Hay, lb.	1.27	1.31	1.04	1.27
Feed required per 100 lb. gain				
Grain, lb.	434	419	458	415
Hay, lb.	467	500	418	475

tem of lambs. While no great differences occurred between the lots in death loss, there is a slight pattern or tendency for the lambs that were fed three times a day to have a little higher death loss than the lambs fed twice a day. This was particularly noticeable in the years 1945 and 1949. However, in summarizing the four years' work, it can be concluded that one can expect no difference in death loss by feeding three times a day as compared with twice a day.

The average daily feed consumption of the lambs fed three times a day, whether they were fed corn or barley, shows little difference, and what slight advantage the lambs fed three times a day had during the years 1943, 1944 and 1949 was due to the fact that during the early part of the feeding period these lambs consumed slightly more feed than those fed twice a day. Once the lambs reached a full feed, regardless of whether they were on twice-a-day or three-times-a-day feeding, the total amount eaten per day was similar. The efficiency of converting feed into gain was about equal when one compares the three-times-a-day corn-fed lambs with the twice-a-day corn-fed lambs, or the three-times-a-day barley-fed lambs with the twice-a-day barley-fed lambs.

It can be concluded (Table 2) that

three-times-a-day feeding has no advantage over the normal twice-a-day feeding system and that the feeder can expect no additional advantage in economy of gain, average daily gain, feed consumption, or any reduction in death loss.

Corn vs. Barley and Chopped Hay vs. Long Hay

The relative merits of corn versus barley and chopped hay versus long hay have been discussed pro and con by many lamb feeders. In order to cast some light on this subject, lamb feeding trials were set up during the years 1943, 1944 and 1945 to study it more thoroughly. The findings of those trials are shown in Table 3. For ease of discussion the data on the corn and barley feeding will be treated separately from the long and chopped hay. The data in Table 3 show that barley had an advantage over corn in lowering the death loss when self-fed (Lot I and Lot II), whereas when hand-fed, corn appeared to have an advantage.

Corn shows a superiority over barley in respect to average daily gains. This was particularly noticeable in the year 1943, as the lambs self-fed on corn gained .4 pound and the lambs self-fed on barley gained a little over .3 pound daily (Lots I and II). Smaller but consistent differences are evident in all of the lots, except one, when barley is compared

Table 3. The Value of Corn vs. Barley and Chopped Hay vs. Long Hay for Fattening Lambs
3-Year Summary 1943, 44, 45

	Lot I Corn 70% alfalfa 30% self-fed	Lot II Barley 70% alfalfa 30% self-fed	Lot III Barley, long alfalfa hand-fed	Lot IV Barley chopped alfalfa hand-fed	Lot V Corn, long alfalfa hand-fed	Lot VI Corn chopped alfalfa hand-fed
Total number lambs	148	148	149	146	148	150
Total number died	13	6	8	9	5	4
Average daily gain, lb. ....	.36	.27	.27	.28	.31	.30
Average daily feed consumption						
Grain, lb.	1.50	1.35	1.10	1.14	1.08	1.05
Hay, lb.	1.30	1.13	1.65	1.27	1.89	1.27
Feed required per 100 lb. gain						
Grain, lb.	418	515	411	432	340	386
Hay, lb.	368	410	630	475	606	474

with corn, whether the lambs have been self-fed, fed long hay, or fed chopped hay.

The average daily feed consumption was not affected seriously by the kind of grain fed. Therefore, since the corn-fed lambs made greater daily gains than the barley-fed lambs, their efficiency and economy of gain also excelled the barley-fed lambs. In every instance the lambs receiving corn in their ration required less grain and hay to make a hundred pounds of gain than did the lambs receiving barley in their ration.

Data pertaining to the value of chopped hay are presented in Table 3 for Lots III, IV, V, and VI. There is no evidence in the data presented to indicate that chopped hay, whether it was fed with barley or corn, had any effect on the death loss. There was a slight tendency for the lambs receiving chopped hay to gain slightly faster than those receiving long hay, but these differences are inconsistent and not great.

The apparent daily feed consumption was higher when long hay was fed than when chopped hay was fed, with the greatest part of the difference being in hay consumption, as grain consumption was about the same. This would indicate that comparable gain can be obtained with less hay when the hay is chopped. The feed required per hundred pounds of gain was slightly lower for the lambs receiving the chopped hay regardless of whether they were receiving corn or barley. This was particularly true in the case of hay. The grain required per hundred pounds of gain varied considerably. It would appear that in a normal year with normal feed prices the cost of the feed required per hundred pounds of gain should not be greatly different regardless of whether long hay or chopped hay was fed, particularly when the cost of chopping hay is considered.

Summary

Data gathered in lamb feeding trials over a period of six years warrant the following conclusions:

1. The number of lambs fed in a group, or the feedlot area per lamb, did not significantly affect the death loss, average daily gains, average daily feed consumption, or feed required per hundred pounds of gain.

2. Feeding lambs three times a day in comparison to feeding them twice a day showed no advantage in regards to average daily gains, average daily feed consumption, or reduction in death loss.

3. Lambs self-fed 70 percent barley and 30 percent chopped alfalfa hay had a lower death loss than lambs self-fed 70 percent corn and 30 percent chopped alfalfa, but the corn-fed lambs made greater average daily gains and were more efficient in feed utilization.

4. There was no difference in the death loss of lambs hand-fed corn and alfalfa when compared with lambs hand-fed barley and alfalfa. In addition the hand-fed corn lambs made equal, or greater, gains than the barley-fed lambs and required less grain and hay per hundred pounds of gain.

5. In these trials chopping the hay reduced the daily hay consumption and slightly reduced the feed required per hundred pounds of gain. There was very little difference in the average daily gain made by the lambs fed chopped hay and long hay, and the costs of chopping the hay would exceed the returns obtainable from feed saved.

6. There is no object in grinding either the grain or hay finer than is necessary to prevent the grain from separating from the hay. Cracked corn and chopped alfalfa self-fed satisfactorily.