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# Methods of Feeding and Grain Rations For Fattening Lambs

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# *Methods of Feeding and Grain Rations For Fattening Lambs*

**James W. Wilson, Turner Wright and F. U. Fenn**

This bulletin gives the results of an experiment extending over a period of three years on the methods of feeding and the grain rations for fattening lambs. Lambs are particular as to the condition of the feed they eat and the water they drink, probably more so than any other animal on the farm. If their grain is ground it is not as a rule as palatable as the unground. If the feed has been heated in the bin, lambs do not like it. If hay is coarse and woody or is moldy lambs will not eat it. If water has been contaminated in any manner by other animals or poultry lambs will not drink it. If lambs are crowded into a warm shed and shut in for the night there is great danger of them becoming too warm. Except in rainy weather or a cold blizzard lambs prefer to remain outside.

The fattening of lambs is usually a profitable business providing one understands lambs and is familiar with the feeding value of available feeds and the best way of feeding. There is however, a wide variation in the gains made by lambs receiving the same feeds and under the same conditions. These gains can be controlled to an extent by close observation of the lambs before the feeding period begins. Are all the lambs about the same size? If not the smaller ones will not receive their shares at the trough. Are lambs infested externally or internally with parasites? If so the sooner they are relieved the quicker they will begin to do well. If they have ticks they should be dipped. If they are wormy they should be treated for worms. We are including in this treatise a treatment for worms which we have used on college flocks for several years with excellent results. However, in giving this treatment directions must be followed closely.

Lambs purchased in the early fall are worth more to a farm than those obtained later because they destroy many weed seeds.

In addition to the results of this three years experiment we are including herein results of some former experiments at this station in fattening lambs, the results of which were printed in bulletin form but the editions of those bulletins are exhausted.

For convenience we are presenting these results under two separate headings as follows: Part I, the methods of feeding and grain rations for lambs and Part II, A review of results of former experiments.

## PART I

### Methods of Feeding and Grain Rations for Fattening Lambs.

This experiment was planned to obtain information on self-feeding as compared with hand-feeding, feeding ground feed as compared with feeding unground feed, using oats as a part of the grain ration, and using a concentrated protein feed to supplement a grain ration of corn and oats. The rations used in each of the three feeding tests were as follows:

Ration No. 1—Shelled corn and whole alfalfa hay, hand-fed.

Ration No. 2—Shelled corn and whole alfalfa hay, self-fed.

Ration No. 3—Ground corn and ground alfalfa hay, hand-fed.

Ration No. 4—Ground corn and ground alfalfa hay, self-fed.

Ration No. 5—A grain ration consisting of shelled corn one part and whole oats one part by weight and whole alfalfa hay, hand-fed.

Ration No. 6—A grain ration consisting of shelled corn four parts, whole oats four parts and linseed oil meal one part by weight and whole alfalfa hay, hand-fed.

The feeds used in each trial were purchased on the local market and were of good quality. The corn used for the ground feed lots was shelled and then ground to a medium degree of fineness. The alfalfa hay was ground a bit coarser than ordinary alfalfa meal but was considerable finer than what is ordinarily referred to as chopped alfalfa.

The lambs used in each trial were home grown, practically of the same age, and were developed under practically the same conditions. They were representative of the different breeds maintained in the college flocks and were considered good feeder lambs. They were treated for stomach worms before the feeding trials were started. All of them were apparently healthy and in good thrifty condition when put on feed.

It was planned when starting the experiment to conduct each test for a period of 90 days. During the first trial, however, dogs got into the feed yards and killed and crippled several of the lambs. For this reason the data for the first year's work have been computed on the basis of a 60 days feeding period which had closed the week preceding.

### What Are The Results Of Self-feeding As Compared With Hand-feeding For Fattening Lambs?

This experiment was planned to obtain information on this question with the use of both ground and unground feeds. The weights and gains of the lambs, the total amounts of feed consumed and the feed consumed for 100 pounds gain when unground feeds were used are given in Table No. 1.

The results show that there was practically no difference in the rate of gain for the hand-fed lambs and those self-fed. This was true for each feeding trial as well as for the summary of the three. In each case the

TABLE No. 1

Year Fed	1928		1931		1932		Summary	
	Hand-fed	Self-fed	Hand-fed	Self-fed	Hand-fed	Self-fed	Hand-fed	Self-fed
<b>Method of Feeding</b>								
Number of lambs	14	14	14	14	17	17	45	45
Number of days fed	60	60	90	90	90	90	81	81
Initial Wt. per lot	1062.0	1058.0	900.0	902.0	962.8	961.5	2924.8	2921.5
Initial Wt. per lamb	75.9	75.6	64.2	64.4	56.6	56.6	65.0	64.9
Final Wt. per lot	1374.0	1373.0	1373.0	1375.0	1622.0	1638.8	4369.0	4386.8
Final Wt. per lamb	98.1	98.1	98.1	98.2	95.4	96.4	97.1	97.5
Total gain per lot	312.0	315.0	473.0	473.0	659.3	677.3	1444.3	1465.3
Total gain per lamb	22.3	22.5	33.8	33.8	38.8	39.9	32.1	32.6
Av. daily gain per lamb	.37	.37	.38	.38	.43	.44	.40	.41
<b>Total feed consumed</b>								
Shelled corn	1449.0	1597.0	1949.0	2178.0	2683.0	2958.0	6081.0	6733.0
Whole alfalfa hay	1273.0	1201.0	1742.0	1600.0	2591.0	2279.0	5606.0	5080.0
<b>Feed consumed for 100 lbs. gain</b>								
Shelled corn	464.4	507.0	412.1	460.5	406.9	436.7	421.0	459.4
Whole alfalfa hay	408.0	381.3	368.3	338.3	393.0	336.5	388.2	346.7

self-fed lambs required more grain for 100 pounds of gain than the hand-fed lambs. This difference amounted to 43 pounds in 1928, 48 pounds in 1931 and 30 pounds in 1932 with an average difference of 38.4 pounds for the three trials. When considering the amount of hay required for 100 pounds of gain, however, the results were reversed. The self-fed lambs required a smaller amount of hay in each case for 100 pounds of gain than the hand-fed lambs. This difference in hay requirement for 100 pounds of gain in favor of the self-fed lambs amounted to 27 pounds in 1928, 30 pounds in 1931 and 57 pounds in 1932 with an average difference of 41.5 pounds for the three trials. Considering the averages for the years, there was a saving of 38.4 pounds of grain for 100 pounds gain in favor of the hand-fed lambs and a saving of 41.5 pounds of hay in favor of the self-fed lambs. Hence, the question of which is the more economical method of feeding resolves itself into a consideration of the amounts of grain and hay available and their relative prices.

Since grain is usually worth more per pound than hay, these results show in most cases it would be more economical to hand-feed rather than self-feed unground shelled corn and whole alfalfa hay to fattening lambs. A logical question, then, is would the same comparative results be obtained if these feeds were fed ground instead of unground? The weights and gains, the total amounts of feed eaten, and the feed eaten for 100 pounds gain for the lambs self-fed and hand-fed ground feeds are given in Table No. 2.

The data given in Table No. 2 show more variation in the rate of gain when ground feed rather than unground feed was fed. In the 1928 and 1932 trials the hand-fed lambs made slightly faster gains than the self-fed lambs while in the 1931 trial the self-fed lambs made a little more rapid gain. Comparing the feeds consumed for 100 pounds gain, the self-fed lambs, again in every case required more feed for 100 pounds gain than the hand-fed lambs. The saving in grain for the hand-fed lambs

TABLE No. 2

Year Fed	1928		1931		1932		Summary	
	Hand-fed	Self-fed	Hand-fed	Self-fed	Hand-fed	Self-fed	Hand-fed	Self-fed
Method of Feeding								
Number of lambs	14	14	14	14	16	16	44	44
Number of days fed	60	60	90	90	90	90	81	81
Initial Wt. per lot	1058.0	1061.0	895.0	904.0	891.0	910.5	2844.0	2875.5
Initial Wt. per lamb	75.6	75.8	63.9	64.5	55.6	56.9	64.6	65.3
Final Wt. per lot	1382.0	1356.0	1269.0	1321.0	1498.0	1482.3	4149.0	4159.3
Final Wt. per lamb	98.8	96.9	90.6	94.3	93.6	92.6	94.2	94.5
Total gain per lot	324.0	295.0	374.0	417.0	607.0	571.8	1305.0	1283.8
Total gain per lamb	23.1	21.0	26.5	29.8	38.0	35.7	29.7	29.2
Av. daily gain per lamb	.39	.35	.30	.33	.42	.40	.37	.36
Total feed consumed								
Ground corn	1486.0	1470.0	1751.0	2061.0	2253.8	2809.0	5490.8	6340.0
Ground alfalfa hay	1221.0	1285.0	1500.0	1580.0	2155.7	2128.0	4876.7	4993.0
Feed consumed for 100 lbs. gain								
Ground corn	458.0	498.3	468.2	494.2	371.3	491.2	420.8	493.8
Ground alfalfa hay	376.9	435.5	401.1	378.9	355.1	372.1	373.7	388.9

varied from 26 pounds in 1931 to 120 pounds in 1932, with an average of 73 pounds for the three trials. There was considerable variation in the hay requirement. The hand-fed lambs in the 1928 trial required 58 pounds less hay for 100 pounds of gain than the self-fed lambs. In 1931 and 1932 the differences were smaller and in favor of the self-fed lambs. Considering the average of the three years it is seen that the self-fed lambs required slightly more hay for 100 pounds gain than the hand-fed lambs. The results obtained from this experiment seem to indicate that when shelled corn and alfalfa hay are ground it would pay to hand-feed rather than to self-feed these feeds to fattening lambs.

### Does It Pay To Grind Shelled Corn And Alfalfa Hay For Fattening Lambs?

Ground corn and ground alfalfa hay were compared with unground corn and unground alfalfa hay for both hand-fed and self-fed lambs in this experiment. The weights and gains of the lambs, the total amounts of feed eaten and the feed eaten for 100 pounds gain when lambs were hand-fed ground and unground feed are given in Table No. 3.

The lambs fed ground feed in 1928 made slightly faster gains than those fed unground feed, while in the other two years the lambs getting the unground feed made more rapid gains. The average for the three trials shows a faster rate of gain for the lambs fed whole feeds than for those fed ground feeds.

In the 1928 and 1932 trials the grain consumed for 100 pounds gain was less for the lambs hand-fed ground feeds than for the lambs hand-fed whole feeds, while in 1931 the lambs hand-fed unground feed had the

TABLE No. 3

Year Fed	1928		1931		1932		Summary	
	Ungr'd Feed	Gr'd Feed	Ungr'd Feed	Gr'd Feed	Ungr'd Feed	Gr'd Feed	Ungr'd Feed	Gr'd Feed
	Hand- fed	Hand- fed	Hand- fed	Hand- fed	Hand- fed	Hand- fed	Hand- fed	Hand- fed
<b>Method of Feeding</b>								
Number of lambs	14	14	14	14	17	16	45	44
Number of days fed	60	60	90	90	90	90	81	81
Initial Wt. per lot	1062.0	1058.0	900.0	895.0	962.8	891.0	2924.8	2844.0
Initial Wt. per lamb	75.9	75.6	64.2	63.9	56.6	55.6	65	64.6
Final Wt. per lot	1374.0	1382.0	1373.0	1269.0	1622.0	1498.0	4369.0	4149.0
Final Wt. per lamb	98.1	98.8	98.1	90.6	95.4	93.6	97.1	94.2
Total gain per lot	312.0	324.0	473.0	374.0	659.3	607.0	1444.3	1305.0
Total gain per lamb	22.3	23.1	33.8	26.5	38.8	38.0	32.1	29.7
Av. daily gain per lamb	.37	.39	.38	.30	.43	.42	.40	.37
<b>Total feed consumed</b>								
Shelled corn	1449.0		1949.0		2683.0		6081.0	
Ground corn		1486.0		1751.0		2253.8		5490.8
Whole alfalfa hay	1273.0		1742.0		2591.0		5606.0	
Ground alfalfa hay		1221.0		1500.0		2155.7		4876.7
<b>Feed consumed for 100 pounds gain</b>								
Shelled corn	464.4		412.1		406.9		421.0	
Ground corn		458.0		468.2		371.3		420.8
Whole alfalfa hay	408.0		368.3		393.0		388.2	
Ground alfalfa hay		376.9		401.1		355.1		373.7

lower feed requirement. These differences amounted to approximately 6 pounds in 1928 and 36 pounds in 1932 in favor of the lambs fed ground feeds, while in 1931 the difference was 56 pounds in favor of the lambs fed the unground feeds. As shown by the summary this gave an average grain requirement for 100 pounds gain which was practically equal. There was a similar variation in the hay requirement. The lambs fed ground hay in the 1928 and 1932 trials required 31 and 38 pounds less hay, respectively, for 100 pounds gain than the lambs fed unground hay. In the 1931 trial the lambs hand-fed whole hay required 33 pounds less hay for 100 pounds gain than the lambs hand-fed ground hay. The average for the three years shows the hay required for 100 pounds gain to be 15.5 pounds less for the lambs fed ground feeds. According to data given in Bulletin No. 252 of this Station entitled, "Value of Grinding Grains and Roughages for Livestock", the value of this small amount of hay saved as a result of grinding the feeds for hand-fed lambs would not be sufficient to offset the extra costs incident to grinding.

The next question is—would the ground feed make a better showing if the lambs were self-fed? The weights and gains of the lambs, the total amounts of feed eaten, and the feed eaten for 100 pounds gain for lambs self-fed on ground and unground feeds are given in Table No. 4.

In these comparisons the lambs fed on whole feeds made faster gains in every case than those fed the ground feeds. In the 1928 trial the lambs fed ground feed required less grain for 100 pounds gain than those fed the whole feeds, but in the other two trials the advantage was with the lambs self-fed the whole feeds. In each trial the lambs fed the whole feeds

TABLE No. 4

Year Fed	1928		1931		1932		Summary	
	Ungr'd Feed	Gr'd Feed	Ungr'd Feed	Gr'd Feed	Ungr'd Feed	Gr'd Feed	Ungr'd Feed	Gr'd Feed
	Self- fed	Self- fed	Self- fed	Self- fed	Self- fed	Self- fed	Self- fed	Self- fed
<b>Method of Feeding</b>								
Number of lambs	14	14	14	14	17	16	45	44
Number of days fed	60	60	90	90	90	90	81	81
Initial Wt. per lot	1058.0	1061.0	902.0	904.0	961.5	910.5	2921.5	2875.5
Initial Wt. per lamb	75.6	75.8	64.4	64.5	56.6	56.9	64.9	65.3
Final Wt. per lot	1373.0	1356.0	1375.0	1321.0	1638.8	1482.3	4386.8	4159.3
Final Wt. per lamb	98.1	96.9	98.2	94.3	96.4	92.6	97.5	94.5
Total gain per lot	315.0	295.0	473.0	417.0	677.3	571.8	1465.3	1283.8
Total gain per lamb	22.5	21.0	33.8	29.8	39.9	35.7	32.6	29.2
Av. daily gain per lamb	.37	.35	.38	.33	.44	.40	.41	.36
<b>Total feed consumed</b>								
Shelled corn	1597.0		2178.0		2958.0		6733.0	
Ground corn		1470.0		2061.0		2809.0		6340.0
Whole alfalfa hay	1201.0		1600.0		2279.0		5080.0	
Ground alfalfa hay		1285.0		1580.0		2128.0		4993.0
<b>Feed consumed for 100 pounds gain</b>								
Shelled corn	507.0		460.5		436.7		459.4	
Ground corn		498.3		494.2		491.2		493.8
Whole alfalfa hay	381.3		338.3		336.5		346.7	
Ground alfalfa hay		435.5		378.9		372.1		388.9

required less hay for 100 pounds gain than the lambs fed the ground feeds. This saving in favor of feeding the unground hay was 54 pounds for every 100 pounds of gain in 1928, 41 pounds in 1931 and 36 pounds in 1932. The average for the three trials showed a saving in favor of the whole feeds of 34.4 pounds of grain and 42.2 pounds of hay for every 100 pounds gain. These results indicate that if one self-feeds lambs it is more economical to use shelled corn and whole alfalfa hay rather than ground corn and ground alfalfa hay.

### What Is The Value Of Oats And A Combination Of Oats And Linseed Oil Meal As Supplements To A Ration Of Shelled Corn And Alfalfa Hay For Fattening Lambs?

The lambs used in these comparisons were hand-fed and unground feeds were used. The linseed oil meal was what is known as pea size.

The rations fed, the weights and gains of the lambs, the total amounts of feed eaten and the amounts of feed eaten for 100 pounds gain for the 1928 feeding trial are given in Table No. 5.

The results given in this tabulation show that substituting whole oats for one-half the shelled corn increased the amount of grain required for 100 pounds of gain by 37 pounds but decreased the amount of hay required by 120 pounds. Substituting the combination of whole oats and linseed oil meal for a little more than one-half of the shelled corn likewise increased the amount of grain required for 100 pounds gain, in this case by 28 pounds and decreased the amount of hay required by 152 pounds. The whole oats and whole oats and linseed oil meal combinations, while being slightly more expensive from the standpoint of grain alone, resulted in a decided saving in hay.



TABLE No. 5

Lot No.	1	5	8
Ration Fed	Shelled corn Whole alfalfa hay Hand-fed	Grain mixture consist- ing of shelled corn one part and whole oats one part by weight. Whole alfalfa hay Hand-fed	Grain mixture consisting of shelled corn four parts, whole oats four parts and linseed oil meal one part by weight. Whole alfalfa hay Hand-fed
No. of lambs	14	13	14
Av. No. of days fed	60	60	60
Av. initial Wt. per lot	1062.0	980.0	1064.0
Av. initial Wt. per lamb	75.9	75.4	76.0
Av. final Wt. per lot	1374.0	1284.0	1442.0
Av. final Wt. per lamb	98.1	98.8	103.0
Total gain per lot	312.0	304.0	378.0
Total gain per lamb	22.3	23.4	27.0
Av. daily gain per lamb	.37	.39	.45
<b>Total feed consumed</b>			
Shelled corn	1449.0	762.5	826.4
Whole oats		762.5	826.4
Linseed oil meal			206.2
Whole alfalfa hay	1273.0	875.6	966.0
<b>Feed consumed for 100 pounds gain</b>			
Shelled corn	464.4	250.8	218.6
Whole oats		250.8	218.6
Linseed oil meal			54.6
Whole alfalfa hay	408.0	288.0	255.6

The results of these feed combinations for the 1931 trial are given in Table No. 6.

TABLE No. 6

Lot No.	7	11	12
Ration Fed	Shelled corn Whole alfalfa hay Hand-fed	Grain mixture consist- ing of shelled corn oats one part by weight. Whole alfalfa hay Hand-fed	Grain mixture consisting of shelled corn four parts, whole oats four parts and linseed oil meal one part by weight. Whole alfalfa hay Hand-fed
No. of lambs	14	14	14
Av. No. of days fed	90	90	90
Av. initial Wt. per lot	900.0	903.0	908.0
Av. initial Wt. per lamb	64.2	64.5	64.8
Av. final Wt. per lot	1373.0	1462.0	1476.0
Av. final Wt. per lamb	98.1	104.4	105.4
Total gain per lot	473.0	559.0	568.0
Total gain per lamb	33.8	39.9	40.6
Av. daily gain per lamb	.38	.44	.45
<b>Total feed consumed</b>			
Shelled corn	1949.0	1203.0	1088.4
Whole oats		1203.0	1088.4
Linseed oil meal			272.1
Whole alfalfa hay	1742.0	1706.0	1613.0
<b>Feed consumed for 100 pounds gain</b>			
Shelled corn	412.1	215.2	191.6
Whole oats		215.2	191.6
Linseed oil meal			47.9
Whole alfalfa hay	368.3	305.2	284.0

The results obtained in this second trial in general correspond with those obtained in the first trial, although the differences are less. Substituting oats for one-half of the shelled corn in the ration increased the grain required for 100 pounds gain by 18 pounds but decreased the amount of hay required by 63 pounds. Using the combination of oats and linseed oil meal to replace slightly more than half of the shelled corn increased the grain required for 100 pounds gain by 19 pounds but reduced the hay required by 84 pounds. As in 1928 the use of oats and the oats and linseed oil meal combination increased the rate of gain.

The results of the third comparison of these rations made in 1932 are given in Table No. 7.

TABLE No. 7

Lot No.	13	17	18
Ration Fed	Shelled corn Whole alfalfa hay Hand-fed	Grain mixture consist- ing of shelled corn one part and whole oats one part by weight. Whole alfalfa hay Hand-fed	Grain mixture consisting of shelled corn four parts, whole oats four parts and linseed oil meal one part by weight. Whole alfalfa hay Hand-fed
No. of lambs	17	17	17
Av. No. of days fed	90	90	90
Av. initial Wt. per lot	962.8	974.5	956.5
Av. initial Wt. per lamb	56.6	57.3	56.3
Av. final Wt. per lot	1622.0	1617.0	1627.0
Av. final Wt. per lamb	95.4	95.1	95.7
Total gain per lot	659.3	642.5	670.5
Total gain per lamb	38.8	37.8	39.4
Av. daily gain per lamb	.43	.42	.44
<b>Total feed consumed</b>			
Shelled corn		1444.0	1372.8
Whole oats	2683.0	1444.0	1372.8
Linseed oil meal			343.4
Whole alfalfa hay	2591.0	2263.0	2263.0
<b>Feed consumed for 100 pounds gain</b>			
Shelled corn		224.0	204.7
Whole oats	406.9	224.0	204.7
Linseed oil meal			51.2
Whole alfalfa hay	393.0	352.2	337.5

The results given in Table No. 7 show practically the same rates of gain for the lambs fed the three rations. Again as in the two previous trials the use of the oats and oats and oil meal combinations increased the grain requirement and decreased the hay requirement for 100 pounds of gain. In each case in this trial the increase in pounds of grain required for 100 pounds of gain was practically the same as the decrease in the amount of hay required, the increases being 41 and 53.6 pounds of grain, respectively, and the decreases being 40.8 and 55.5 pounds of hay, respectively.

The summary of the three trials is given in Table No. 8.

TABLE No. 8—Summary

Lot No.	1, 7 and 13	5, 11 and 17	6, 12 and 18
<b>Ration Fed</b>	<b>Shelled corn Whole alfalfa hay Hand-fed</b>	<b>Grain mixture consist- ing of shelled corn one part and whole oats one part by weight. Whole alfalfa hay Hand-fed</b>	<b>Grain mixture consisting of shelled corn four parts, whole oats four parts and linseed oil meal one part by weight. Whole alfalfa hay Hand-fed</b>
No. of lambs	45	44	45
Av. No. of days fed	81	81	81
Av. initial Wt. per lot	2924.8	2857.5	2928.5
Av. initial Wt. per lamb	65.0	64.9	65.0
Av. final Wt. per lot	4369.0	4363.0	4545.0
Av. final Wt. per lamb	97.1	99.2	101.0
Total gain per lot	1444.3	1505.5	1616.5
Total gain per lamb	32.1	34.2	35.9
Av. daily gain per lamb	.40	.42	.45
<b>Total feed consumed</b>			
Shelled corn	6081.0	3409.5	3287.6
Whole oats		3409.5	3287.6
Linseed oil meal			821.7
Whole alfalfa hay	5606.0	4844.6	4842.0
<b>Feed consumed for 100 pounds gain</b>			
Shelled corn	421.0	226.5	203.4
Whole oats		226.5	203.4
Linseed oil meal			50.8
Whole alfalfa hay	388.2	321.8	299.5

The data given in this summary show that the ration of shelled corn, whole oats and alfalfa produced slightly faster gains than the ration of shelled corn and alfalfa hay. The ration of shelled corn, whole oats, linseed oil meal, and alfalfa hay likewise produced slightly faster gains than the ration of shelled corn, whole oats and alfalfa hay. The summary also shows that substituting oats and the oats and linseed oil meal combination for 50 per cent to slightly more than 50 per cent of the shelled corn in the ration increased the amount of grain and lowered the amount of hay eaten for 100 pounds of grain. In general, these results indicate that in those cases where only a limited amount of alfalfa hay is available it can be made to extend over a longer feeding period by using oats as a part of the grain ration. The economy of the three rations depends on the relative prices of feeds. If we value shelled corn at 22.5 cents a bushel or .4 of a cent a pound, oats at 16 cents a bushel or ½ cent a pound, linseed oil meal at \$1.75 a cwt. or 1¾ cents a pound, and alfalfa hay at \$5.00 a ton or ¼ cent a pound the gains made by the lambs fed shelled corn and alfalfa hay cost \$2.65 a cwt., those made by the lambs fed shelled corn, whole oats and alfalfa hay \$2.84 a cwt., and those made by the lambs fed shelled corn, whole oats, linseed oil meal and alfalfa hay \$2.72 a cwt.

## PART II

### A Review of Former Experiments on Lamb Feeding At This Station

Beginning with bulletin 80 the object of this experiment was to ascertain the relative feeding value for lambs of some of the newly introduced grains into South Dakota, such as speltz and macaroni wheat.

Wheat is not used to any great extent as a fattening grain for lambs because as a rule it is too valuable. In this experiment two different kinds of wheat were fed, the macaroni and the ordinary bread wheat. Each kind of wheat produced 12.28 pounds of gain on lambs for each bushel fed. The results showed that the two kinds of wheat were equal for fattening lambs. In the same experiment the lot of lambs that received shelled corn gave a yield of 12.17 pounds of gain for each bushel. These wheats were both more valuable than corn for fattening lambs. The record shows that all the lambs made good gains, which is evidence in itself that the whole grains were palatable for the lamb.

With two other lots of lambs in this experiment, one was fed ground macaroni wheat and the other whole macaroni wheat and bran. The nine head that received the whole macaroni wheat and bran made a return of 335 pounds as compared to 274 pounds for the lot that received ground macaroni wheat and bran. Again two other lots of lambs were fattened on speltz. For one the grain was ground and for the other the speltz was fed whole. The lot that received the whole speltz made a return of 309 pounds as compared to 304 pounds for the lot that received the ground speltz. In other words a bushel of speltz when fed whole gave a return of 7.7 pounds of gain and when the speltz was ground the bushel yielded 6.9 pounds of gain.

Without exception each lot of lambs made a larger gain daily after shearing than before shearing, showing that it is a good practice to shear—especially the late lambs. When lambs are shorn they ship better, more can be loaded into a car, and the death loss is reduced. The butcher can tell more about the condition of the lamb when shorn than when bought with the wool on, and as a rule the price of live lambs is not as much per pound as the price of wool.

The results reported in bulletin No. 86 on fattening range lambs show that the 100 head were divided into lots of 10 head each on January 2d, and fed for a period of 111 days. On April 2d they were shorn and held for three weeks before shipping to market. The feeds fed were similar to those for the previous experiment, but in addition a lot was fed oats, another barley and another millet seed. The variety of millet used was Black voronezh (*Panicum miliaceum*). This is one of the heavy seeded varieties of millet introduced by the United States department of agriculture, through this station, and has proved to be a comparatively heavy yielder. A good yield was obtained on the spring breaking of the prairie sod and also on a field where it was too wet to plant corn in season on the college farm.

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In a preliminary feeding trial it was found that a large per cent of the seed was voided undigested, and the lambs did not thrive as they should; consequently the seed was ground coarsely for this lot of lambs in the experiment. During the entire feeding period lambs of this lot were as thrifty and consumed their ground seed with as high a degree of relish and the gains were quite uniform as for lambs in any other lot in the experiment. The record shows that for each bushel of both macaroni and bread wheat fed 10.8 pounds of gain was made; for each bushel of oats fed 4.8 pounds; for each bushel of barley 7.8 pounds; for each bushel of speltz 6.1 pounds; for each bushel of ground millet 8.6 pounds and for each bushel of shelled corn 10 pounds of gain were made.

Bulletin No. 119 includes the results of two experiments in fattening lambs, one to determine the value of alfalfa and upland prairie hay with the same grain ration, and the other, the value of adding grain to the lambs' ration while on rape pasture. By feeding shelled corn there was a loss each year, as the gains were not so large as they were for the lambs that received the rape pasture alone.

Our results of pasturing sheep and lambs on rape have been very satisfactory. An experiment was conducted to determine what conditions must be present to cause bloat when first turning in on rape, as follows:

Lot No. 1 was put in on the clear rape without any forage accessible, and kept there day and night; Lot No. 2 was turned in on a field of rape where they had access to grass; Lot No. 3 was turned on the rape when the dew was on early in the morning; Lot No. 4 was turned on rape when it was dry. These lambs were raised on the range and were not accustomed to this forage.

The result was the same for each lot, all coming through in a healthy condition. In this connection we believe that care should be taken when turning in on any kind of new forage, as there is danger of the animal gorging itself.

The following is the summary of these experiments: The 10 lambs receiving alfalfa hay gained 79 pounds more in 44 days than did the same number of lambs receiving the upland prairie hay, each lot consuming the same quantity of grain. The grain ration used for these lambs was a mixture of 100 pounds of oats, 100 pounds of shelled corn and 25 pounds of linseed oil meal. It required only 3.08 pounds of the grain mixture and 3.95 pounds of alfalfa hay for a pound of gain as compared to 4.12 pounds of grain mixture and 4.01 pounds of upland prairie hay to make a pound of gain, with lambs, during the same length of feeding period and with lambs of practically the same weight. Larger and more uniform gains were made with lambs that received the alfalfa hay than with lambs that received the prairie hay. Figuring the price of alfalfa and prairie hay the same, it cost one and one-tenth of a cent more to make a pound of gain with the lambs receiving the prairie hay than it did with the lot receiving the alfalfa hay. Lambs fed a grain ration of whole oats while on rape pasture made larger gains than did lambs fed a grain ration of shelled corn or barley while on rape pasture.

In bulletin 127 we find the results of the use of six purebred rams on western bred ewes for six years. The object of this experiment was to ascertain which of the six breeds was the best to use on the western bred ewe, both mutton and wool being considered.

In 1904 sixty head of western Montana bred ewes were purchased and divided into six lots of ten head each. Each bunch of ewes was bred to an average purebred ram of the following breeds: Cotswold, Hampshire, Oxford, Shropshire, Southdown and Rambouillets. Each year the ewes were rotated in order that records would be based on lambs out of the same ewe but different rams. Ewes were bred to lamb the later part of April or the first part of May. Lambs were allowed to run with dams until early fall when they were weaned and turned into a field of rape. They grazed this rape until it froze in early winter. On January 1 the lambs were separated as to breeds and given a fattening ration consisting of a mixture of 100 pounds of shelled corn, 100 pounds of whole oats and 25 pounds of linseed oil meal, and upland prairie hay, until April 1 when they were sheared, shipped to the Chicago market and sold on their merits.

The average grain requirement for a pound of gain varied from 5.24 for the Cotswolds to 5.89 for the Hampshire cross.

The lambs made an average daily gain per head during the six years as follows:

Cotswolds	from	.29	to	.43	of a pound.
Hampshires	"	.26	"	.36	" " "
Oxfords	"	.28	"	.38	" " "
Southdowns	"	.21	"	.32	" " "
Shropshires	"	.21	"	.40	" " "
Rambouillets	"	.26	"	.40	" " "

The average yield of wool per head of lambs for six years also varied as follows:

Cotswolds	from	6.6	to	9.7	pounds.
Hampshires	"	5.5	"	8.2	"
Oxfords	"	5.5	"	7.5	"
Southdowns	"	5.1	"	6.4	"
Rambouillets	"	5.7	"	8.5	"
Shropshires	"	5.4	"	7.7	"

From the above results it is evident that the difference in the feeding ability of the different crosses is not great.

The feeding value of different roughages for fattening lambs was reported in Bulletin 143. There were six different kinds of roughages fed with the same kind of grain ration. This grain ration consisted of equal parts by weight of shelled corn and whole oats. The feeding period of this experiment included 67 days and the roughage rations were as follows: Yellow-flowered Siberian alfalfa, common alfalfa, white sweet clover, pea hay, shredded cornfodder and upland prairie hay.

The average gains per head daily varied from .32 to .56 of a pound. The largest gains were made by lambs receiving common alfalfa hay and the smallest gains by those receiving shredded corn fodder.

Because of the excellent gains received the previous year with yearling steers in feeding corn silage as the sole ration an additional lot of lambs was fed in this manner to determine its value for lambs. The results show that corn silage as the sole ration, for lambs, was not the best of feeds. The lambs were thrifty during the feeding period but would not eat enough silage to fatten. Only five of the ten head made a gain during the 67 days feeding period.

The largest gains for feed consumed were with lambs that received common alfalfa hay with their grain. It required 1.06 pounds more of grain and .17 pounds more white sweet clover hay than it did alfalfa for a pound of gain.

The smallest gains were made by lambs that received shredded corn fodder, and these gains varied from 6 to 33 pounds per head during the feeding period of 67 days. It required 2.29 pounds more of grain than it did with lambs that received alfalfa hay as a roughage.

These results show that the kind of roughage the lamb with his grain ration is an important factor.

The results of two experiments in feeding corn silage to lambs and reported in Bulletin 165 show, that corn silage is not suitable as the sole roughage with grain for fattening lambs. However, the results further show that corn silage can be used to advantage in fattening lambs. More uniform and larger gains were made than with lambs in other lots not receiving corn silage. Evidently, the corn silage increased the appetites of lambs as they consumed more hay and made cheaper gains than did lambs where no corn silage was fed.

### **Tape Worms In Sheep**

(E. L. Moore in Press Bulletin No. 2)

The frequent number of cases in which loss of lambs from parasites is reported, the predominance of tapeworms in most of the cases which have been submitted for autopsy, and the exhaustion of Bulletin No. 78, entitled "A Preliminary Report on the Fringed Tapeworm of Sheep," indicates the necessity for publishing the essential features of this bulletin in press bulletin form. While the copper sulphate treatment has been employed by us for tapeworms alone, the indications are that the same treatment will prove efficient for stomach worms and other round worms also.

**Symptoms**—Lambs which should be thrifty do not do well, scour badly, and gradually die. A more careful examination shows that the mucous membranes of the eyes are pale and bloodless; soft swellings, in the more advanced and chronic cases, appear under the throat and in the neighborhood of the neck; the gait becomes feeble, and the body emaciated. Such symptoms are not characteristic of any one particular parasite, but may be found in any parasitic disease of sheep that is accompanied by mortality. If affected with tapeworms, however, segments of these worms will appear with more or less regularity in the droppings, as distinct whitish masses. Post mortem examinations should be made to verify the diagnosis.

**Treatment**—Treat each individual of the flock. It may not itself be seriously suffering from the worms, but it may aid in further infestation of the flock and occasion additional loss.

Keep the sheep shut up and away from food for twenty-four hours before treating.

Dissolve 1 ounce of copper sulphate (bluestone) to 2 quarts of water and give to each individual a dose as indicated in the following table:

For a lamb 3 months old give two-thirds of a fluid ounce (20 cc.)

For a lamb 6 months old give 1½ fluid ounces (40 cc.)

For a sheep 1 year old give 2½ fluid ounces (60 cc.)

For a sheep 2 years old give 3½ fluid ounces (90 cc.)

**Precautions**—Use copper sulphate of a uniform blue color, without any whitish crusts, or in conglomerate lumps.

Do not guess at weights or measures. Have your druggist weigh the bluestone; and have him graduate your drenching bottle by making the appropriate doses with a file.

Do not allow the sheep to have access to water for several hours after dosing.

Should any of them receive an overdose, indicated by lying apart from the rest of the flock, purging, and showing symptoms of pain, place in a shady place and give a teaspoonfull of laudanum in a tumbler full of milk.

Provide your sheep with a rotation of pasture. This does not mean that the sheep should be changed from one pasture to another every few weeks or months, but every year or so put them on a pasture on which no sheep have ranged for at least one year. While no one has as yet discovered the intermediate host or hosts of any of the tapeworms of the herbivora, yet they probably pass part of their life in some of the lower animals or insects. This is why a rotation of pasture is so strongly emphasized in trying to rid a flock of sheep from parasites.