

South Dakota State University

## Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange

---

Bulletins

South Dakota State University Agricultural  
Experiment Station

---

2-1-1950

# Rations for Wintering Breeding Ewes

R. M. Jordan

Follow this and additional works at: [http://openprairie.sdstate.edu/agexperimentsta\\_bulletins](http://openprairie.sdstate.edu/agexperimentsta_bulletins)

---

### Recommended Citation

Jordan, R. M., "Rations for Wintering Breeding Ewes" (1950). *Bulletins*. Paper 399.  
[http://openprairie.sdstate.edu/agexperimentsta\\_bulletins/399](http://openprairie.sdstate.edu/agexperimentsta_bulletins/399)

This Bulletin is brought to you for free and open access by the South Dakota State University Agricultural Experiment Station at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in Bulletins by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact [michael.biondo@sdstate.edu](mailto:michael.biondo@sdstate.edu).



BULLETIN 399  
FEBRUARY 1950

**RATIONS**  
*for*  
**WINTERING  
BREEDING  
EWES**



ANIMAL HUSBANDRY DEPARTMENT  
**AGRICULTURAL EXPERIMENT STATION**  
SOUTH DAKOTA STATE COLLEGE ❖ BROOKINGS, SOUTH DAKOTA



# Rations for Wintering Breeding Ewes

R. M. JORDAN<sup>1</sup>

The long and severe winters of the northern corn belt necessitate dry lot feeding of the ewe band from four to six months each year. It is during this winter feeding period that the greatest cost of producing lambs is encountered. Neither low feed cost accompanied by low production, nor high feed cost and high production necessarily return the maximum profit. An adequate, low-cost ration accompanied by high production is essential for best results.

Roughage is the main feed during this period, but there are vast differences in the quality of roughage fed and the results obtained. Alfalfa has long been considered the most desirable roughage for wintering pregnant ewes. However, alfalfa of good quality is not produced in sufficient quantity to meet all the demand, and is usually high in price. Furthermore, alfalfa contains about twice as

much protein as is needed in the ewe ration.

On the other hand, non-legume hays such as timothy, brome, prairie hay and wheat grass are more plentiful but are lacking in protein. From this it would appear that it might be possible to utilize a mixture of alfalfa and non-legume hay. This would enable sheepmen to take advantage of the high protein in the alfalfa and at the same time improve the value of the non-legume hay and lower the cost of the ration.

With this in mind, feeding trials were conducted to determine the practicability and economy of feeding alfalfa as compared to feeding brome, a mixture of brome and alfalfa, and brome hay supplemented with soybean oil meal at two different levels. The results of three trials are presented in this publication.

## Winter Management of Ewes

In these three trials, 85 No-Tail ewes of various ages were used. These ewes were exposed to five different rams over a period of five weeks before being placed on experiment. They were weighed and divided equally into five lots on the basis of their weight, type, age, and the ram they were bred to. During the breeding period they received a full feed of alfalfa-brome hay and one-half pound of oats per head daily. They were wintered in a semi-open building with an outside exercise lot 15 feet by 60 feet. (See Fig. 1.)

The ewes were put on the experiment early in January and were removed about 2 days before the first lamb was due, which was about April 15. Initial weights for each ewe were taken and weights every 28 days thereafter. Upon completion of the wintering phase of the experiment the ewes were put in one band to facilitate lambing. During lambing they received a full feed of hay, plus 1 pound of corn per head daily until they were turned on grass. During the summer the ewes were all fed and managed similarly.

<sup>1</sup>Assistant Animal Husbandman.

\*Acknowledgement is made to E. W. Klosterman and J. W. Wilson for their help in this project.

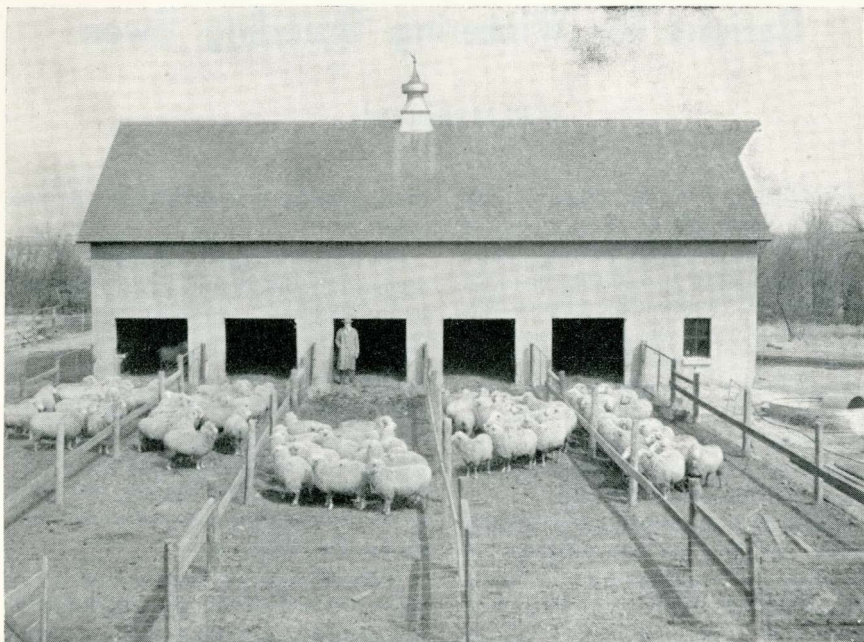


Fig. 1. Barn and lots where ewes were wintered.

### Rations Fed

Each year the ewes were reallocated. Thus, ewes that received alfalfa the first year would not necessarily receive it the second year. The rations fed the ewes in each lot each year supplied an equal amount of total digestible nutrients. The variables were the amount of protein fed and the sources of protein, the sources being alfalfa, brome and soybean oil meal. All the ewes received approximately .4 pounds of shelled yellow corn the last 28 days of the experiment. The amount of feed offered varied slightly from year to year depending upon the quality of the hays fed but were approxi-

mately as follows:

Lot I 3.5 pounds alfalfa per head per day.

Lot II 1 pound of alfalfa and 2.5 pounds of brome per head per day.

Lot III 3.5 pounds of brome per head per day.

Lot IV 3.2 pounds of brome and .20 pounds of soybean oil meal per head daily. (This ration furnished enough protein to equal that fed in Lot II)

Lot V 2.4 pounds of brome hay and .68 pounds of soybean oil meal. (This ration furnished enough protein to equal that fed in Lot I.)

### The Effect of Rations on Ewes' Productivity

There was considerable variation between lots and between years in the

amount of feed refused. This variation between lots was possibly due to the

amount of protein the ewes were getting and the total amount of dry matter offered them. The effect of the protein on palatability is particularly noticeable when one examines the feed refusal in Lots II and III as given at the bottom of Table 1. The lack of total dry matter in the ration of the ewes in Lot V apparently was the greatest factor in reducing their hay weigh back. This experiment indicates that when the dry matter and protein content are equal, mixed hay is more palatable than brome when supplemented with soybean oil meal. (Lots II and IV.) The variation in hay refusal between years appears to be due to the

variation in palatability of the hays fed.

During the three years of the feeding trial there were no cases of pregnancy disease even though the ewes had little opportunity for exercise. While there were great differences in the gains made by the ewes in the various lots, there were no cases of sickness or malnutrition. A summary of the three years' wintering results is given in Table 1.

The two lots of ewes receiving about 10.5 percent digestible protein, namely Lots I and V, gained about twice as much during the feeding period as did ewes in Lots II and IV. The ration fed the ewes in Lots II and IV contained

**Table 1. Results of wintering ewes on protein from alfalfa, brome, and soybean oil meal fed at two levels. Summary of 1946-47, 1947-48, 1948-49**

	Lot I Alfalfa, Corn	Lot II Alfalfa, Brome, Corn	Lot III Brome, Corn	Lot IV Brome, SBOM, Corn	Lot V Brome, SBOM, Corn
Average number of ewes per lot	16.7	16.7	16.7	16.7	16.3
Number of days in trial	102	102	102	102	102
Average weight per ewe					
Initial weight (lbs.)	121.8	123.3	122.3	123.0	122.5
Final weight (lbs.)	141.8	133.1	125.9	133.3	144.7
Gain per ewe (lbs.)	20.0	9.8	3.5	10.4	22.2
Fleece weight (lbs.)	7.7	7.1	6.5	6.9	7.4
Percent of digestible protein in ration	10.5	5.5	3.5	5.3	10.4
Pounds of total digestible nutrients	1.75	1.75	1.75	1.76	1.76
Pounds of digestible protein	.334	.195	.141	.195	.325
<b>Average Daily Ration</b>					
Alfalfa (lbs.)	3.5	1.0			
Brome (lbs.)		2.5	3.5	3.2	2.4
Corn (lbs.)*	.42	.42	.43	.43	.42
Soybean oil meal (lbs.)				.20	.68
Bonemeal (lbs.)	.005	.007	.007	.008	.009
Salt (lbs.)	.0135	.0186	.0198	.0215	.0136
<b>Total Feed per Ewe</b>					
Alfalfa (lbs.)	354.6	100.5			
Brome (lbs.)		254.1	354.6	324.7	245.4
Corn (lbs.)	15.8	16.0	16.9	16.2	15.9
Soybean oil meal (lbs.)				20.5	68.4
Bonemeal (lbs.)	.51	.72	.72	.82	.92
Salt (lbs.)	1.37	1.90	2.02	2.20	1.39
Feed costs per ewe	\$4.26	\$3.68	\$3.34	\$3.94	\$5.28
Hay weight back (lbs.)	34.5	36.0	52.8	43.2	13.1
Hay weight back percent	9.7	10.2	14.9	13.6	5.5

\*Corn fed last 28 days.



about 5.5 percent digestible protein, which provided the amount of protein that is specified in Morrison's Feeding Standards. The ewes in both of these lots gained equally well.

The ration fed the ewes in Lot III contained only 3.5 percent digestible protein and provided about 75 percent as much digestible protein as furnished the ewes in Lot II or IV. The ration fed Lot III gave the poorest performance of any of the rations. When measuring the value of a feed by ewe gains, the results in Table 1 suggest that the source of protein is not too important, provided total digestible nutrients fed are equal, as indicated by the similarity of the results obtained in Lots II and IV and I and V. However, the amount of protein is highly important as indicated by the large difference between Lots I, II and III.

There was some difference in the fleece weights of the ewes in Lots I and III. Again it appears that when equal amounts of protein are fed, regardless of the source of protein, the results are very similar. (Compare Lots I and V and Lots II and IV.)

The feed costs, as given in Table 1, show that the mixture of alfalfa and brome can be fed for about 15 percent

lower costs than alfalfa alone. This is more than twice the value of the extra one-half pound of wool sheared by the ewes receiving alfalfa.

The results of the effect of the various rations on lamb production are given in Table 2.

The results in Table 2 indicate differences in lambing percentage between lots, but as the feeding trial did not commence until after the ewes were bred and since results from other research workers indicate little or no effect of rations during pregnancy on lambing percentage, no definite conclusions can be drawn from these differences.

Other experiments have shown that there will be a higher death loss when a larger number of twins is born and this is apparent in these data. The death losses in these data include all deaths occurring during the first 50 days. When a discount is made for the higher lambing percentage it appears that the ration did not affect lamb survival. This is to be expected after one analyzes the data covering vitality of the lambs at birth. Rations did not affect that factor. However, the ewes receiving alfalfa, only, did give birth to lambs that were slightly fatter.

Possibly the fact that the ewes received an adequate ration from lambing time

Table 2. Results of lamb productivity from pregnant ewes wintered on alfalfa, brome and soybean oil meal fed at two levels. Summary of 1946-47, 1947-48, 1948-49

	Lot I Alfalfa, Corn	Lot II Alfalfa, Brome, Corn	Lot III Brome, Corn	Lot IV Brome, SBOM, Corn	Lot V Brome, SBOM, Corn
Total ewes fed .....	50	50	50	50	50
Average lambing percentage .....	95.8	89.1	99.8	114.8	132.4
Average lambs weaned, percent* .....	87.8	79.5	83.8	87.4	105.9
Average death loss, percent .....	8.0	9.6	16.0	27.4	26.5
Average birth weight (lbs.) .....	9.31	8.76	8.71	8.58	8.62
Average condition of lambs at birth† .....	2.04	1.79	1.89	1.76	1.84
Average vitality of lambs at birth† .....	2.89	2.62	2.96	2.74	2.89
Average daily lamb gain for first 50 days ..	.772	.743	.720	.726	.687

\*Based on the number of ewes.

†Visual estimates were taken at time of birth and numerical values were assigned to facilitate statistical analysis. Values assigned as follows: Condition: Fat—3, Average—2, Thin—1, Dead—0. Vitality: Good—3, Average—2, Poor—1, Dead—0.

on had an effect of masking, to a considerable extent, the influence of poor rations on these various production factors. If this is true, it means that the sheep operator can economize on feed during the early part of the winter feeding period and then feed a milk stimulating feed after lambing and realize good gains on his lambs. Thus it offers the sheepmen flexibility during the winter feeding period and makes it possible for him to utilize feeds of little commercial value.

Analysis of variance was calculated on several factors that have a direct bearing on the ewe productivity. This was done in order to determine whether the differences found were due to chance or whether differences actually did exist.

From this analysis it was found that there was a highly significant difference in gain made by the ewes in the various lots, indicating that this difference was caused by the rations fed. There was a significant difference in the condition of the lambs at birth.

The analysis further shows that the rations did not greatly affect the factors that influence the productivity of the ewe, namely, weight of fleece, ability of the lamb to gain rapidly, and vitality or liveability of the lamb at birth. None of these important factors were found to be significant, indicating that the rations fed had little effect on those factors, and that the ewes that gained twice as much as the others were not more productive.

## Discussion and Conclusions

The results of this trial show the excellence of alfalfa hay as a sheep feed. In addition they indicate that brome hay, when supplemented with one-third to one-half alfalfa, makes an excellent sheep ration at considerably lower cost. Brome hay alone did not supply sufficient protein; the ewes actually lost weight and sheared about one pound lighter fleeces. One-fourth pound of soybean oil meal supplemented the brome hay ration effectively and was about equivalent to the alfalfa-brome hay. This experiment indi-

cates that when adequate total digestible nutrients are supplied, satisfactory production can be obtained if the ration provides from 5.5 to 10 percent digestible protein. With an ever increasing need for more legumes and grasses in our farm rotation, most farmers in the eastern part of the state will find the combination of alfalfa and brome hay the most profitable and practical. In an area where wheatgrass is grown, these same results can be expected.

## Summary

1. Alfalfa is excellent feed for pregnant ewes.

2. Ewes gained during the winter feeding period in relation to the amount of protein they received.

3. One pound of alfalfa was equivalent to one-fourth pound of soybean oil meal when either was fed in combination with brome hay.

4. A ration consisting of one-third alfalfa and two-thirds brome supplied

pregnant ewes with a balanced ration.

5. In this experiment feed costs were lowered 15 percent by feeding a mixed hay and still did not affect the productivity of the ewe.

6. Rations fed did not significantly affect the rate of gain the lambs made or their liveability. There was no significant difference in the fleece weight of the ewes fed the various rations.