

WINTERING BREEDING EWES IN ALASKA

By

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Matanuska Experiment Station

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Hampshire Rams at the Matanuska Station

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INTRODUCTION

Forage production for wintering livestock in Alaska has long been a problem where cleared land is limited. In the vicinity of the Knik Arm of Cook Inlet there are tide flats where native grasses grow in such abundance that they are utilized for hay. To determine the relative feeding value of this tide flat hay as compared with other locally-grown roughages for wintering pregnant ewes, the Matanuska Experiment Station carried out a series of five one-year feeding trials. The tests were conducted for an average of 151 days' feeding period each year, using the bred ewes of the Station flock of pure-bred Hampshires.

Results were based on the condition of the ewes at the conclusion of each year's trial, on the size and vigor of the lambs, on the weight and quality of the fleece and on the cost of the respective rations over the five-year period.

Sheep are consumers of large amounts of roughage, and much of their popularity as farm animals is due to this characteristic. The economic importance of sheep lies in their wool and lamb-producing abilities, influenced to a great degree by the roughage they consume. To determine whether nourishing roughage could be grown locally at a reasonable cost, trials were made using native tide flat hay and oat and pea hay, both separately and in various combinations.

Although the climate in many parts of the Territory is favorable for sheep raising, no previous experiments of this nature have been conducted in Alaska.

PURPOSE AND PLAN OF THE EXPERIMENT

A series of five one-year trials was outlined to determine results of wintering pregnant ewes on locally-grown roughages. The Station flock of pure-bred Hampshires was divided as equally as possible, considering body weight and age. Three lots of five ewes each were used for the first three years, four lots the fourth year and five lots the last year. The extra groups were necessary the last two years because of the introduction of silage into the experiment.

Transporting the tide flat hay presented several problems.

The hay was secured from settlers near the tide flats and had to be hauled by truck to the Station. This required time and labor. Curing the hay properly was difficult. Minor problems were encountered, such as securing separate feeding and watering facilities for each lot and sheltering the ewes from winter storms.

The experiment was conducted for a period of 151 days each winter for five successive years. Trials started in late fall and continued until April 15, just prior to lambing. The ewes were confined in lots 18 feet by 90 feet, under an open shed. Rams were placed with the ewes on the first of December of each year.

In each case the chopped hay was fed in tight bunks, while the unchopped hay was fed in racks. Salt was provided as needed. Individual weights of the ewes were taken at the beginning of the trial, and on the first and fifteenth of each month during the trial.

It required, on the average, one and one-half hours per day to feed and care for the ewes in the experimental lots.

During the five years' trial, seven different rations were fed, but all seven were not supplied for the full five years. The following rations were used:

1. Chopped tide flat hay.
2. Chopped tide flat hay; $\frac{1}{4}$ lb. barley.
3. Chopped tide flat hay; 5 lb. silage.
4. Chopped oat-pea hay.
5. Chopped oat-pea hay; 5 lb. silage.
6. Unchopped oat-pea hay.
7. Silage only.

RESULTS

In determining the comparative merits of the seven rations, the following factors were considered: over-all condition of the ewes, condition and vigor of the lambs, weight of the lambs at birth, weight and quality of the fleece, amount of feed consumed, amount of feed refused or wasted, total cost of feed and miscellaneous considerations such as amount of water required, parasitic infestation and exercise needed for the ewes.

Depending on the rations received, the condition of the ewes during the five years of feeding varied from "very good" to "poor".

The ration of chopped tide flat hay as the only roughage was given to one lot each year for five years. In every case the ewes finished in poor condition. They were usually thin at lambing time and lost weight rapidly after the lambs were born.

Results showed that the type of roughage fed the ewes has a direct effect on the condition and strength of the lambs regardless of the condition of the ewes. For, while the tide flat hay left the ewes thin, the lambs were always strong, healthy and of good weight.

The addition of one-fourth pound of barley per head per day in two years' trial proved of no benefit to the ewes and added to the total feed cost. Lambs born to ewes fed the tide flat hay with barley were of good size. However, some were born dead and others did not make as large monthly gains for the first 30 days after birth as did lambs from other lots. This happened because the ewes depended upon the more palatable barley and less on the tide flat hay, consequently not getting maximum nutrition from the hay. The amount of grain fed was not sufficient to be of appreciable benefit.

Ewes receiving the oat-pea hay, either chopped or unchopped, were in good health and held their weight and flesh well after lambing. For the full five years, the chopped oat-pea hay gave the best results as far as condition of ewes and lambs were concerned. Lambs from the lots fed the unchopped oat-pea hay were above standard birth weight for the Hampshire breed,* but they were not so vigorous as they should have been.

Desirability of chopping the hay depends upon the value of the hay and whether there is a use for the refused portion of the unchopped hay. Approximately 20 per cent of the hay is saved by chopping. More of the unchopped hay is wasted when the animals pull it from the feeder and trample it underfoot than when they refuse to eat the hay because it is coarse or unpalatable.

Silage is an excellent feed for wintering dry ewes or yearlings, either as the only roughage or in combination with other roughages. However, silage as the only roughage for wintering pregnant ewes will not produce a satisfactory lamb crop. In one lot fed only silage, the majority of the lambs were born dead or died shortly after birth.

During the last year of the experiment, two ounces of local marl were fed daily to each ewe receiving silage as the only roughage, but no particular improvement was noted.

Ewes fed silage in combination with oat-pea hay for five years finished the test in better condition than those fed the tide flat hay and silage or those fed silage as the only roughage. However, the chopped oat-pea hay fed with five pounds of silage caused the ewes to grow fat to the detriment of the lambs. Lambs from this lot did not average as strong and vigorous as those of other lots.

Table I shows the relative feeding value of the different rations used in the experiment. This is the average for five years feeding, although all the rations were not used the full five years. Silage alone was fed for two years, and chopped tide flat hay with one-fourth pound barley for two years.

*Hultz and Hill, Range Sheep and Wool.

TABLE I
Condition of Ewes and Lambs

Type of Ration	Condition of Ewes	Condition of Lambs
Chopped tide flat hay	Thin	Strong
Chopped tide flat hay; ¼ lb. barley	Thin	Fair
Chopped tide flat hay; 5 lb. silage	Fair	Strong
Chopped oat-pea hay	Good	Strong
Chopped oat-pea hay; 5 lb. silage	Very good	Fair
Unchopped oat-pea hay	Good	Fair
Silage only	Good	Weak or dead

While heredity provides the basis for the size of the lambs, the type of ration fed the ewes has a definite control over the lambs' weight.

The weight and quality of the fleece is affected to a lesser extent by the ration, and more by inheritance characteristics. However, the type of feed the ewe receives will be reflected to some degree in the fleece, especially if the ration goes to one or another extreme.

There was scarcely enough difference in the fleece weights, and apparently none in the quality of the fleece, to make distinctions as to which of the rations is best in that respect.

The greatest difference in average fleece weights was in the lots fed tide flat hay with one-fourth pound barley.

Table II shows the weights of the lambs at birth and the fleece weights for the five-year test, as influenced by the different rations.

TABLE II
Weights of Lambs and Fleeces

Type of Ration	Lambs (Weight at birth)	Fleeces
Chopped tide flat hay	8.99	6.55
Chopped tide flat hay; ¼ lb. barley	8.80	6.18
Chopped tide flat hay; 5 lb. silage	7.74	7.80
Chopped oat-pea hay	8.76	6.86
Chopped oat-pea hay; 5 lb. silage	7.90	7.42
Unchopped oat-pea hay	10.75	7.40
Silage only	7.30	6.93

Table III shows the amount of silage needed per ewe to winter the various lots. This table records only the silage, while Table IV shows the amount of hay used in hay-silage combinations.

Some hay was used to get the ewes safely started on silage. Ewes started on large amounts of silage are likely to have digestive disturbances. Also, sheep not accustomed to silage may eat very little at first, not enough to meet their body requirements.

TABLE III

Amount of Silage Needed Per Ewe to Winter Pregnant Ewes

Type of Ration	Silage Eaten	Silage Refused	Total Silage Needed	Amt. Silage Per Ewe Per Day
Chopped tide flat hay; 5 lb. silage	634 lb.	34 lb.	668 lb.	4.42 lb.
Chopped oat-pea hay; 5 lb. silage	591	81	672	4.45
Silage alone	1090	283	1373	9.09

The total feed cost shown in Table IV includes all items of feed: hay, silage and grain. Feed costs will vary considerably with the economy of production and individual method of feeding. Also, the lots receiving silage were on experiment the last two of the five-year series when feed prices were higher than average for the full five-year period.

TABLE IV

Amount of Hay Required Per Ewe, and Total Feed Cost Per Ewe

All Hay Chopped Unless Otherwise Designated	Hay Eaten	Hay Refused	Total Hay	Per Ewe Daily	Total Feed Cost
Tide flat hay	561 lb.	111.8 lb.	672.8 lb.	4.47 lb.	\$5.50
Tide flat hay; ¼ lb. barley	472	125.4	597.4	4.40	6.03
Tide flat hay; 5 lb. silage	249	94.4	343.4	2.27	5.11
Oat-pea hay	623	95.6	718.6	4.75	6.64
Oat-pea hay; 5 lb. silage	374	57.6	431.6	2.85	7.62
Unchopped oat-pea hay	684	181.1	865.1	5.72	5.56
Silage alone	93	8.2	101.2	0.67	5.80

Tables III and IV show that, in the two lots where silage and hay were combined (tide flat hay with 5 lb. silage and oat-pea hay with 5 lb. silage), there was less oat-pea hay refused or wasted than tide flat hay, and more silage refused in the oat-pea hay-fed lot. This indicates that the oat-pea hay is more palatable than tide flat hay when fed with silage though the total cost of the tide flat hay-silage combination was less.

However, both of these rations were used for only one year. That year the tide flat hay was very dusty and of poor quality. In view of these circumstances, the results from these lots may not be conclusive. Further experiments using silage are being conducted at the Matanuska Station.

MISCELLANEOUS REMARKS

The following observations were recorded during the experiment:

1. The groups fed silage as the only roughage required considerably less water than other lots. This was natural, as silage is a succulent feed.

2. The type of ration has no great influence on the amount of salt consumed, as the quantity needed varied from year to year among the various groups.

3. Desirability of chopping the hay depends upon the value of the hay and whether there is a use for the refused portion of the unchopped hay. The saving of hay by chopping is approximately 20 per cent. More of the unchopped hay is wasted by the animals' pulling it from the feeder and trampling it under foot than by the animals' refusing to eat it because it is coarse or unpalatable.

However, chopping the hay had the disadvantage of causing the wool about the head and neck of the ewes to become matted from bits of hay and straw. This made shearing more difficult and lowered the quality of the wool. The ewes in the lots which received chopped hay only were the worst in this respect. In rare cases, sore eyes also resulted.

4. The feet of ewes in all lots grew excessively long through the winter feeding period and had to be trimmed. This was done at shearing time.

5. Confining the ewes in small lots may have caused at least one case of pregnancy disease*. This is brought about principally by lack of sufficient exercise and by improper nutrition. Animals thus affected almost invariably were carrying twins†. The ewe with the disease was in the lot fed tide flat hay as the only roughage.

6. One dipping operation for the control of sheep ticks was all that was necessary during the five years. Likewise, one treatment for stomach worms was sufficient for the five-year period.

7. On the average, one and one-half hours per day were required for feeding and caring for the ewes.

CONCLUSION

This series of feeding tests definitely established that breeding ewes can be wintered successfully on locally-grown roughages, or a combination of roughages. In addition, the ewes will produce a good fleece and a crop of healthy, vigorous lambs.

*Dr. E. F. Graves, Territorial Veterinarian.
†1942 Year Book of Agriculture.