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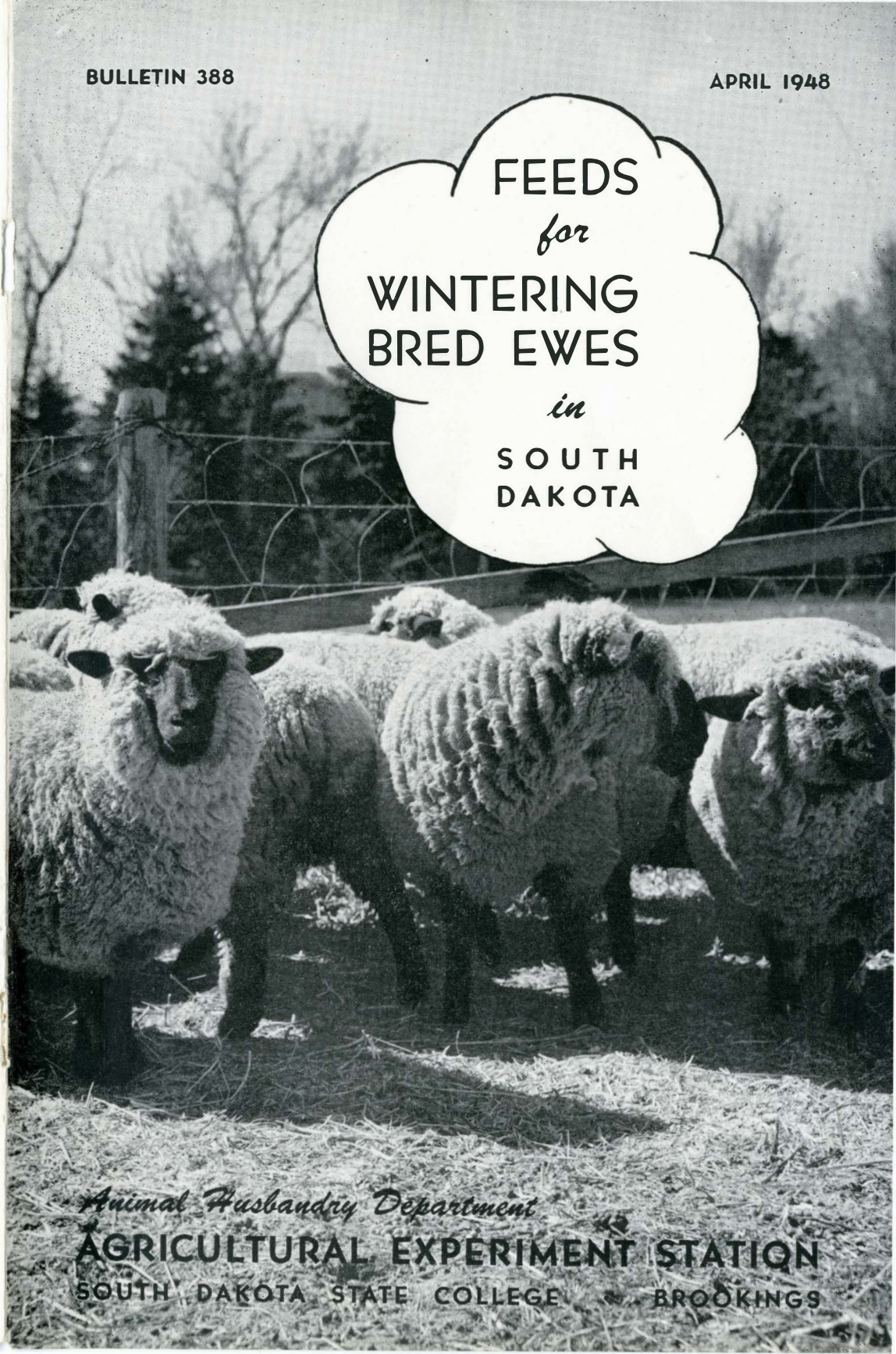
FEEDS *for* WINTERING BRED EWES *in* SOUTH DAKOTA



Animal Husbandry Department
AGRICULTURAL EXPERIMENT STATION
SOUTH DAKOTA STATE COLLEGE BROOKINGS

Feeds for Wintering Bred Ewes
in Eastern South Dakota

J. W. Wilson, Leslie E. Johnson *and* Turner Wright[1]

It is important to feed bred ewes right during the winter season to get the highest production of lambs and wool at the lowest cost. In the eastern part of South Dakota, bred ewes must be fed on winter rations from four to six months each year. Many grains, roughages and commercial concentrates can be bought for such rations. These differ greatly in feeding value and cost.

Corn, oats, alfalfa hay, and native hay are found plentifully throughout the eastern half of the state. In this experiment, these four feeds and cottonseed cake were fed in five different rations. The feeding experiments were made to find out which ration would produce the most lamb and wool at the lowest cost.

The Experiment

The five rations compared were:

Lot 1—shelled corn and alfalfa hay
Lot 2—shelled corn and upland prairie hay
Lot 3—oats and upland prairie hay
Lot 4—oats and alfalfa hay
Lot 5—cottonseed cake and alfalfa hay

These rations were fed every year during the five-year period, 1936-41. Salt was kept before the lots at all times.

All of the feeds were purchased locally. An attempt was made to use feeds of average quality for the locality. The corn was mostly No. 2 and No. 3 grades. The oats weighed about 34 pounds per bushel. The alfalfa hay was of No. 2 and No. 3 grades. The native hay was bright and fairly leafy. An average chemical analysis of the feeds used is given in Table 1.

Table 1. Chemical Analyses of Feeds Used*

	Moisture	Ash	Ether Extract	Crude Protein	Crude Fiber	Nitrogen Free Extract	B Carotene Mg. lkg.
Corn	8.36	1.45	3.97	11.24	2.37	72.71	2.82
Oats	6.30	3.55	4.25	15.35	11.17	59.35	.97
Cottonseed cake	3.80	6.26	5.52	41.12	10.49	32.79	.89
Alfalfa hay	6.32	7.49	2.76	15.54	25.18	42.20	19.05
Upland prairie hay	5.86	9.75	3.17	6.52	25.48	46.48	3.98

*These analyses were made by Dr. A. L. Moxon, station chemist.

The ewes. High grade yearling Hampshire ewes were used for the experiment. These same ewes were used throughout the five years except for a few that died and had to be replaced. The original stock and the ewes that replaced them were alike in breeding and quality. Each year the ewes were bred to purebred Hampshire rams.

[1]Animal Husbandmen, South Dakota Agricultural Experiment Station.

Management. The ewes were started on feed on dates varying from the middle of December to early January. During the first two years they were fed the test rations from the day that they were bred until the day following lambing. In the last three years, however, all ewes were fed the rations from the beginning of the breeding season until the beginning of the lambing period. This made the feeding periods 147, 147, and 143 days for the three years.

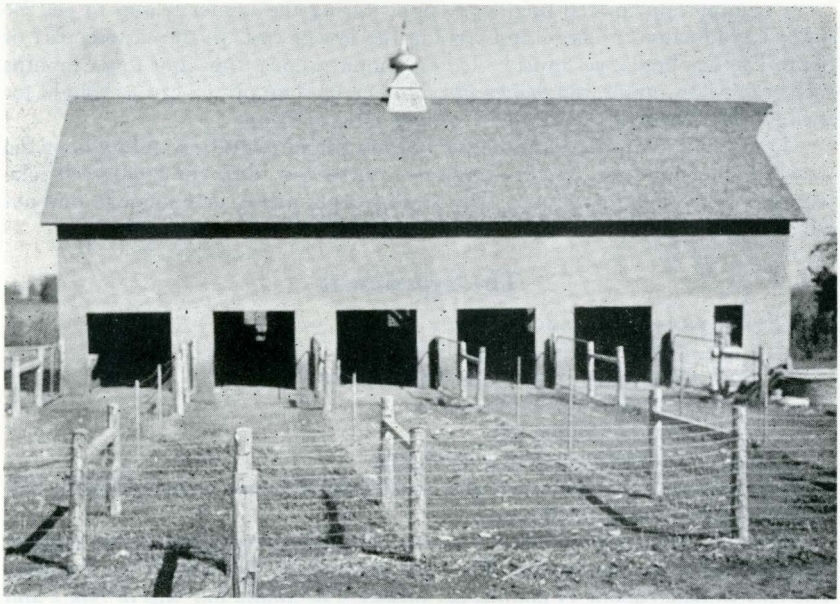


Fig. 1. Feeding barn and lot used for wintering the bred ewes.

The ewes were fed the concentrates and roughages from the beginning of the experiment until the end of the wintering period. The grain-fed lots were started on grain slowly. The amount was increased until they were getting about 1.2 pounds of grain per head daily. The ewes getting cottonseed cake were started on one-fourth pound per head daily and the feed increased until they were getting .7 pound. These amounts were fed until the end of the wintering period. All the ewes were getting as much hay as they would eat readily.

The ewes were kept in a semi-open sheep barn and small dry lot. The grains and roughages were fed in the barn twice a day in combination grain and roughage racks. Figure 1 shows barns and lots used.

All ewes and lambs were handled alike as soon as they were taken off the experimental wintering rations.

Records. Daily records were kept on all feeds offered and refused during the wintering period. Performance records were kept of the ewes initial weights, monthly weights, final weights, fleece weights, and breeding and lambing dates.

Birth weights of the lambs, their body measurements at birth, and their weight gain from birth to weaning were recorded.

Table 2. Feeds consumed and their effect on productiveness of lambs and ewes—5 year average.

	Lot 1 Shelled corn, Alfalfa hay	Lot 2 Shelled corn, Upland Prairie hay	Lot 3 Oats, Upland Prairie hay	Lot 4 Oats, Alfalfa hay	Lot 5 C.S.C. Alfalfa hay
FEEDS CONSUMED					
Days fed	145	146	146	146	146
Grain or cake fed per ewe daily	1.2	1.2	1.3	1.3	.7
Roughage fed per ewe daily	2.6	2.1	2.0	2.5	2.5
Grain or cake fed per ewe during period	175	181	193	190	99
Roughage fed per ewe during period	371	303	298	361	370
Feed cost per ewe for period					
EWE PRODUCTION DATA					
Ewes fed (total no. during five years)	50	49	48	49	49
Initial weight	120.8	123.0	127.9	121.7	118.6
Final weight	168.0	150.1	154.5	163.6	152.0
Gain	47.2	27.1	26.6	41.9	33.4
Death loss (percent)	6.0	4.1	2.1	2.0	0.0
Ewes lambing (percent)	92.0	89.8	89.6	91.8	93.9
Lamb crop born (percent)	118.0	108.2	116.7	116.3	116.3
Lamb crop raised (percent)	92.0	85.7	77.1	93.9	91.8
Fleece weights	9.3	8.5	8.8	8.8	8.5
Gestation period (days)	145.8	146.5	145.9	147.1	146.1
LAMB PRODUCTION DATA					
Lambs raised	46	42	37	46	45
Weight at birth	10.1	9.7	8.9	9.9	9.3
Condition at birth	1.1	1.0	0.9	1.1	1.0
Vitality at birth	2.8	2.9	2.3	2.9	2.4
Weaning weight per lamb	70.4	60.7	64.6	64.4	63.8
Pounds lambs weaned per ewe bred	64.8	52.0	49.8	60.5	58.6
PRODUCTION ABOVE OR BELOW LOT 1					
Wool (pounds)	0	—.8	—.5	—.5	—.8
Lambs (pounds)	0	—12.8	—15.0	—4.3	—6.2

*All weights in pounds.

†Gains and fleece weights include only those ewes that lambed.

‡Death loss, ewe lambing, lamb crop born, and lamb crop raised are figured on basis of ewes started on experiment.

Results

A summary of the five winter feeding trials is given in Table 2, divided into four parts: feed consumed, ewe production data, lamb production data, and production above or below Lot 1.

The feed cost per ewe for the period is left blank so that each producer can figure his costs at current prices. To figure the wintering feed cost for each ewe, simply multiply the total amount of feed consumed by the price of those feeds per pound. For instance, suppose that corn were selling at $2.24 a bushel and alfalfa hay at $20 a ton. At these prices the corn (56-pound bushel) would cost .04 per pound; a ton (2000 lbs.) of alfalfa would cost .01 per pound. You would calculate the cost of feeding the ewes in Lot 1 by multiplying 175 by .04, and 371 by .01. Then add the two figures you get. In this case, the ration would cost $10.71 per head for all ewes fed.

After figuring the feed costs for each ration, the producer can decide which ration produces the most for the money invested by comparing these costs with production differences in part 4 of Table 2.

In the lots comparing roughages and grains, about two pounds of roughage to one pound of grain was fed. On this combination of feeds, each ewe ate approximately 190 pounds of grain and 325 pounds of roughage during the gestation period. In ration 5, where cake and alfalfa hay were fed, each ewe was given one pound of concentrate to about three pounds of hay.

The native hay fed in these trials was not highly palatable to the ewes, and it was impossible to get them to eat much more than two pounds per head daily with the amount of grain being fed. The ewes getting alfalfa, however, readily ate 2.5 pounds of hay per day with their grain.

The value of the rations in mutton, wool and lamb production is shown in the middle part of Table 2. In general, the rations had no significant effect on death loss of ewes, the percent of ewes lambing, the size of lamb crop born, or the length of time the ewes carried their lambs. There were significant differences, however, in the lots in gains of ewes, birth weight of lambs, strength of lambs at birth, body width of lambs at birth, and the lambs' rate of gain from birth to weaning. There were also differences in fleece weights and percent of lambs raised. These latter differences, however, were not consistent enough over the years to be definitely attributed to the rations.

The rations did not seem to affect the skeletal measurements of the lambs. The muscle and fat measurements, however, were consistently affected by the rations. The rations seemed to be related to liveability of the lambs. That is, a well-nourished lamb up to the time of birth seemed to have a better chance of living to weaning time than one poorly nourished.

The ewes fed corn and alfalfa hay consistently did better than all others in the production measurements. They made the most gains during pregnancy, sheared the most wool, produced the heaviest lambs, reared the second largest lamb crop (practically the same as the top group) and had the heaviest lambs at weaning. Thus it appears that corn and alfalfa hay are better feeds than the oats and alfalfa hay combination that has long been considered one of the best possible rations for bred ewes. Then, corn is usually cheaper per pound than oats and can be fed in slightly smaller amounts because it contains more digestible nutrients per pound.

On the basis of production alone, the oats-alfalfa hay group ranked second among the five rations tested. The ewes in this group stayed in good health and condition all through the experiments.

The oats and prairie hay ration was the poorest combination fed when ranked on the basis of production. This was due chiefly to death losses among lambs during a part of the experiment. In some years the lambs on this ration lived practically as well as those in the other lots. In other years, however, they did not have enough vitality to carry them through some of the more severe conditions. It may be that these lambs were suffering from a slight deficiency of vitamin A; the upland prairie hay fed contained only a relatively small amount of this vitamin.

The ewes fed corn and native hay did slightly better than those fed oats and native hay, but the differences were not large. The records show clearly, however, that oats did no better job in balancing the low protein native hay than the corn did.

The cottonseed cake and alfalfa hay ration was somewhat expensive, but produced fairly good lambs. However, the large amount of protein showed no extra benefits in production. One would seldom, if ever, want to feed such a high protein ration.

Discussion

The results of this experiment clearly show that shelled yellow corn, oats, prairie hay, alfalfa hay and cottonseed cake are all good feeds for wintering bred ewes. It appears that they can be used in combinations in which the protein content varies from small to large amounts without disastrous results, as long as enough feeds are fed to put some gains on the ewes. The balanced rations, however, got far better results in every case.

Lamb producers have commonly believed that a mixture of oats-alfalfa hay was the best ration that could be fed to pregnant ewes during the winter months. This experiment shows, however, that shelled yellow corn and alfalfa hay is better than oats and alfalfa hay for wintering bred ewes. In eastern South Dakota and much of the corn belt, corn is usually cheaper per pound than oats. It also has more digestible nutrients per pound than oats. So the use of corn instead of oats in the ration makes a considerably cheaper feed for the ewes.

Using corn instead of oats in a grain and alfalfa hay ration does not make an unbalanced ration for the ewes. Alfalfa hay is high in protein, calcium, and Vitamin D if it is of good leafy quality and has been cured in the sun. Shelled yellow corn is high in total digestible nutrients, phosphorus, and Vitamin A. Thus, the two feeds make an excellent combination that will supply the major needs of bred ewes.

If a ration will put 30 to 40 pounds on an ewe during the gestation period, satisfactory production will usually result. If a ewe does not gain 20 pounds, she is actually losing weight from her body because the lamb, membranes and fluids usually average this much or more.

If a producer has enough good quality hay, he can put enough weight on the ewes by feeding grain during the last 50 days of the gestation period. The unborn lamb makes most of its growth during the last one-third or one-fourth of the pregnancy period. Under most conditions, a good ration for ewes weighing 120 pounds at breeding time is 3.5 to 4 pounds of good quality alfalfa hay with one-half pound of shelled yellow corn added daily during the six weeks before lambing.

It is hard to tell the condition of ewes with long fleeces just by looking at them. If the sheep grower does not have a scale for weighing them, he can get a good idea of the ewes' gain and condition by handling them often over the back. If some ewes are quite a bit thinner than others, they should be put into a separate lot and fed more grain.

Most producers agree that when the ewes are in good condition, they have fewer lambing troubles and profits are higher.

Exercise is usually considered necessary for a good lamb crop. In this experiment, each lot of ewes was penned in a 10 x 60 foot lot with 10 x 26 feet of shed space. There were usually 15 ewes per lot. There was no trouble in these lots from lack of exercise; so it seems that the ewes need not be driven long distances every day. They should, however, have a lot where they can run in and out of the barn,

and they should do so every day. They should not be forced to crowd through narrow doors or at the feed trough. This is important because such crowding can easily result in injury.

Summary

1. Shelled yellow corn, oats, prairie hay, alfalfa hay and cottonseed cake can all be used satisfactorily in rations for wintering bred ewes.

2. The ration of corn and alfalfa hay got better results than corn and prairie hay, oats and alfalfa hay, oats and prairie hay, and cottonseed cake and alfalfa hay as a wintering ration for bred ewes. Ewes fed corn and alfalfa hay sheared the most wool, lambed the heaviest lambs, and produced the heaviest lambs at weaning time.

3. Alfalfa hay was a better feed than upland prairie hay in all comparisons. Rations containing alfalfa hay and either corn or oats gave better results than rations containing native hay and either corn or oats.

4. An excessive amount of protein, as supplied by a ration of alfalfa hay and cottonseed cake, did not improve production.