Providing Nutrients to Gestating Ewes

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Minnesota's 18,000 flock owners feed ewes a variety of ways. All producers wish they could feed their ewes cheaper and with more ease. A few basic rules that may be helpful in concocting easily fed and inexpensive rations that result in big strong lambs and heavy milking ewes are listed.

1. Hay—Alfalfa-brome hay is the standard—Four pounds per ewe daily will usually provide ample energy, protein, mineral and vitamins for 99% of the ewes in Minnesota. If they are wasting considerable hay, you are either feeding them too much (costly) or it is unpalatable or so low in protein that the ewe cannot digest it readily. The first situation is normally the problem, however.

2. A ewe should gain 15 to 25 lbs. in weight during gestation.

3. Fat ewes can be stricken with pregnancy disease just as easily as the thin ewe. The danger period is usually during the last 30 days of gestation.

4. Contrary to usual thought, the voluntary feed intake of a ewe decreases during late pregnancy. However, nutrient requirements increase tremendously.

5. To avoid pregnancy disease, have strong lambs and heavy milking ewes, .5 lb. of corn equivalent per ewe daily is almost an essential addition to the 4 lbs. of hay you are feeding.

6. Ewes lambing in January and February need 1-1.5 lbs. per ewe daily of grain plus forage free-choice for top milk production and marketable lambs by June 15.

7. Free-choice trace mineralized salt and dicalcium phosphate in the proportion of 2:1 is an ideal mineral mix irrespective of where you live. Exercise, vitamin supplements, molasses, oats and wheat germ meal all have their place but none of them are absolute essentials.

How to cut feed costs and/or produce better lambs is the aim of our ewe feeding research. The following report covers some recent work.
Will pelleting good quality hay reduce hay wastage sufficient to pay for the extra $10 cost per ton of pelleting? Will ewes utilize pelleted hay more efficiently than long hay? What effect does feeding a limited amount of pelleted hay or a high proportion of beet pulp pellets have on the ewe and her production of wool and lamb? An experiment was conducted at the Morris and St. Paul Stations during the years 1963-64 and 1964-65 to provide answers to these questions.

### TABLE 1. Effect of Feeding Pelleted Alfalfa Hay or Beet Pulp to Pregnant Ewes (Summary of Three Separate Trials Conducted at Morris and St. Paul, 1963-64 and 1964-65).

<table>
<thead>
<tr>
<th>Treatment&lt;br&gt;(pellet size 3/8&quot;)</th>
<th>Alfalfa hay</th>
<th>Hay pellets 60%</th>
<th>Hay pellets 80%</th>
<th>Alfalfa hay and beet pulp 1:1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot No.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>No. ewes fed</td>
<td>42</td>
<td>42</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>Initial wt., lbs.</td>
<td>176.4</td>
<td>176.3</td>
<td>176.9</td>
<td>177.7</td>
</tr>
<tr>
<td>Gain, lbs.</td>
<td>31.6</td>
<td>11.1</td>
<td>22.3</td>
<td>16.3</td>
</tr>
<tr>
<td>No. days fed</td>
<td>115</td>
<td>115</td>
<td>115</td>
<td>115</td>
</tr>
<tr>
<td>Av. daily feed consumed, lbs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sh. corn</td>
<td>.10</td>
<td>.10</td>
<td>.10</td>
<td>---</td>
</tr>
<tr>
<td>Beet pulp</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>.83</td>
</tr>
<tr>
<td>Hay, long</td>
<td>3.91</td>
<td>---</td>
<td>---</td>
<td>1.19</td>
</tr>
<tr>
<td>Pelleted hay</td>
<td>---</td>
<td>2.40</td>
<td>3.20</td>
<td>---</td>
</tr>
<tr>
<td>Soybean meal</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>.16</td>
</tr>
<tr>
<td>Salt &amp; dical 2.1</td>
<td>.074</td>
<td>.244</td>
<td>.251</td>
<td>.258</td>
</tr>
<tr>
<td>Av. fleece wt., lbs.</td>
<td>10.6</td>
<td>9.8</td>
<td>10.6</td>
<td>10.4</td>
</tr>
<tr>
<td>Total No. barren ewes</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Death loss, No.2</td>
<td>---</td>
<td>3</td>
<td>2</td>
<td>---</td>
</tr>
<tr>
<td>Abortions, No.</td>
<td>---</td>
<td>---</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Lambing percent&lt;sup&gt;3&lt;/sup&gt;</td>
<td>194.1</td>
<td>173.3</td>
<td>183.7</td>
<td>168.2</td>
</tr>
<tr>
<td>Av. birth wt., lbs.</td>
<td>10.4</td>
<td>10.4</td>
<td>10.4</td>
<td>10.3</td>
</tr>
<tr>
<td>Lamb wt., 30 days</td>
<td>28.5</td>
<td>27.8</td>
<td>28.4</td>
<td>28.1</td>
</tr>
<tr>
<td>Feed costs during exp. period&lt;sup&gt;4&lt;/sup&gt; $</td>
<td>5.56</td>
<td>5.03</td>
<td>6.59</td>
<td>4.08</td>
</tr>
</tbody>
</table>

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1. Ewes were group fed daily. Shelled corn was actually fed at .5 lb. per ewe daily during the last 3-4 weeks of the experiment. Hay or hay pellets contained 16%-17% protein and all rations provided adequate protein.

2. Four of the 5 ewes choked to death. The other ewe died of pneumonia (pellet size 3/8").

3. Lambing percent is based on ewes lambing.

4. Feed costs: Alfalfa hay, $23; hay pellets, $33; shelled corn, $40; beet pulp pellets, $32; and soybean meal, $80 per ton.
Experimental Procedure

In each of the two years that the experiment was conducted at the Morris Station, 4 lots of 16 ewes each were fed. At the St. Paul Station, 4 lots of 10 ewes each were fed. Prior to the initiation of the trials, the ewes were in moderately good condition. At the Morris Station the ewes were bred prior to the start of the experiment. In the St. Paul trial ewes were placed on trial one week prior to the time the ram was turned in. All ewes were allotted to treatment on the basis of their age, weight and the rams they were bred to.

The alfalfa hay fed, as either long hay or pelleted hay, was produced at the Morris Experiment Station and was cut from the same field and at the same time each year.

The following treatments were employed in each of the three trials:

1. Alfalfa hay--Four pounds per ewe daily.

2. Alfalfa hay pellets fed in amounts equal to 60% by weight of that fed to the ewes in lot 1.

3. Alfalfa hay pellets fed in amounts equal to 80% by weight of that fed to the ewes in lot 1.

4. Hay-beet pulp--A ration consisting of 50% alfalfa hay (not pelleted) and 50% beet pulp pellets was fed. Supplemental soybean meal was fed to provide adequate protein. The ration was fed at a level equal to 50% by weight of that fed to the ewes in lot 1.

In the Morris trials, an additional .5 lb. of shelled corn was fed during the last 21 days of the experiment to ewes in lots 1, 2 and 3 and an additional 1 lb. of hay was fed per ewe daily in lot 4. In the St. Paul trial, the same amount of additional feed was fed during the last 28 days of the trial. Trace mineralized salt and dicalcium phosphate was provided free-choice.

The three trials were terminated prior to lambing. The ewes were sheared, run as one band and fed alfalfa-brome hay and approximately 3/4 lb. of grain per ewe daily prior to lambing. Following lambing the ewes received 1/2 lbs. of grain per ewe daily in addition to alfalfa hay. The lambs were creep fed in all trials and were individually weighed at 30 days of age.

Results

There was good agreement in the weight gains, feed consumption and production traits studied between the three trials for a given treatment. Therefore, the data from the three separate trials have been pooled together and are presented in table 1, opposite page.

Pregnant ewes offered 4 lbs. of long alfalfa brome hay and consuming
3.91 lbs. of hay per ewe daily, gained appreciably faster than ewes on any other treatment in each of the three trials. As expected, the ewes fed pelleted hay at 80% by weight of the amount fed in lot 1 gained the next most rapid. In two trials (one at Morris, one at St. Paul) the difference in weight gains during the gestation period between ewes in lots 1 and 3 amounted to about 6 lbs. in favor of the alfalfa-fed ewes. In the third trial, however, ewes fed 80% pellets gained about 50% less than those fed hay. Ewes fed hay pellets at the 60% level gained about 50% as much as the ewes fed hay pellets at the 80% level. Hay pellets fed at the 80% level resulted in about 70% as much gain and hay pellets fed at the 60% level resulted in about 35% as much gain as ewes fed long hay. This confirms the lamb feeding data which indicate that increased weight gains occurring among lambs fed pelleted rations are due to increased feed intake and not an increase in the utilization of the pelleted ration.

The ewes fed the mixture of alfalfa hay and beet pulp in a ratio of 1:1 (lot 4) received about 77% as much energy as that in lot 1 and gained approximately 52% as much as ewes in lot 1.

The most striking aspect of the trial was the fact that ewes fed limited amounts of either hay pellets or a mixture of long hay and beet pulp pellets exhibited a depraved appetite and consumed significantly more salt and mineral mixture (over 3 times as much). In addition, considerable choking occurred among the ewes fed the hay pellets at either the 60% or 80% level in all three trials. Out of a total of 84 ewes fed the hay pellets, 4 died from choke and more would have died had it not been for the good shepherding.

In spite of the great disparity in weight gains, other traits measured were not markedly affected. For example, in one trial ewes fed the alfalfa hay had slightly heavier fleece weight though in the other two trials their fleece weight was not greatly different. The relatively lower fleece weight among the ewes fed hay pellets at the 60% level is due entirely to the significantly lower fleece weights of ewes fed in the St. Paul trial. This difference did not occur in either of the trials conducted at Morris. Number of ewes failing to lamb did not appear to be affected by treatment. In the St. Paul trial in which the ewes were placed on treatment prior to breeding, no difficulty due to treatment was experienced in getting the ewes to come into estrus and conceiving. The differences in total number of barren ewes is likely due to chance rather than treatment. In the first trial conducted at Morris, three ewes aborted in lot 4, whereas, in the St. Paul trial, one ewe aborted in each of lots 3 and 4. This is a very high percent of abortion and the exact explanation is not known but it is theorized that these abortions were due more to the depraved appetite and the high consumption of salt rather than the specific ingredients in the rations.

While differences in lambing percentage appear, these differences are not significant due to variations between years. Nevertheless, there was
a trend for the ewes fed the long alfalfa hay or the hay pellets at the 80% level to have higher lambing percentages in the majority of the trials.

Treatment had no affect on birth weight. The similarity in lamb weights at 30 days of age indicates: 1) that the gestation treatment, while causing decided differences in weight gains of the ewe, did not affect the vigor of the lamb and the amount of milk the ewe produced; or 2) that adequate feed during the lactation period enabled all the ewes, irrespective of gestation treatment, to give sufficient milk to result in normal lamb weights at 30 days.

Other than differences in weight gains of the ewes, the second greatest difference occurred in the feed cost per ewe. The lowest cost ration was the alfalfa hay-beet pulp pellet ration. We are not suggesting such a stringent feeding regime as we practiced in lot 4, but the low feed costs and the performance of the ewes indicate that beet pulp can be used in relatively liberal amounts when purchased at economical rates. (In this trial beet pulp pellets cost 80% as much as shelled corn.)

In general, one can expect to expend approximately $10 per ton to have hay ground and pelleted. At this charge, feed costs for ewes fed long alfalfa hay were $5.56 and ewes fed hay pellets at 60% level, $5.03. Hay pellets fed at the 80% level resulted in feed costs of $6.59 per ewe. When hay sells for $20 per ton and ewes are fed at the 80% level, $5 per ton for hay grinding and pelleting appears to be the maximum amount one can pay.

The difficulty experienced with high salt consumption and choking suggests that restricted intakes of rations consisting solely of alfalfa pellets cannot be recommended. Alfalfa pellets when fed in liberal amounts, while expensive, should result in excellent performance.

Summary

Under the conditions existing in these trials, the following comments appear to be warranted.

1. Ewes fed 4 lbs. of long alfalfa hay made appreciably greater weight gains than ewes fed pelleted alfalfa hay when the pellets were fed at a level equivalent to 80% of that fed the ewes that received long hay.

2. Feeding hay pellets in restricted amounts (either 60% or 80% hay) or feeding a mixture of hay and beet pulp pellets in restricted amounts resulted in depraved appetites with the ewes consuming about three times more salt and mineral mixture. Furthermore, four out of a total of 84 ewes died from choking on hay pellets. This occurred when the ewes tried to eat the small amount of pellets in too rapid an order.
3. Pelleting the hay increased the cost about $10 per ton and when fed at the 80% level, resulted in appreciably higher feed costs. The alfalfa-beet pulp ration resulted in the least costly ration but performance was not equivalent to that of the ewes fed alfalfa hay.

4. Pelleting high quality alfalfa and feeding in restricted amounts appears to offer little possibility as a means of feeding ewes economically. Beet pulp pellets, when purchased at 80% to 90% the price of shelled corn, show considerable promise.