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Gestation and Lactation Rations for Ewes
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In 1964, research was conducted at Purdue to determine the value of low moisture legume silage or haylage in the gestation ration for ewes. The haylage used in this study was made by adding 400 pounds of dried ground shelled corn to each 1,600 pounds of wilted alfalfa cut in the pre-bud stage. Thus each ton of the ensiled product contained approximately 20% ground shelled corn. Haylage made in this manner proved to be a satisfactory gestation ration for ewes when compared to alfalfa hay and corn silage. The cost of the ration for 100 days was \$4.06 for the haylage, \$4.25 for the corn silage, and \$4.34 for the alfalfa hay. It was noted that haylage made with shelled corn was a satisfactory lactation ration for ewes although this was not included in the study in 1964.

In 1964-65, similar research was conducted to compare haylage made with corn to haylage made without corn as well as alfalfa hay in the gestation and lactation ration for ewes.

The purpose of this study is to determine whether these two forms of haylage are satisfactory both nutritionally and economically in the lactation as well as the gestation period.

Experimental Procedure

This research was conducted in two trials. In Trial 1, 100 pregnant grade Columbia and Rambouillet ewes were randomly divided by breed into three lots. Alfalfa hay, plain haylage, and haylage with shelled corn added were the sources of the roughage in these three lots.

The ewes were weighed on December 10, 1964, and placed on the gestation ration on December 11. They remained in dry lot during the period of the experiment. After the ewes had lambed, they were fed the lactation ration in the same lot for approximately 60 days. At this time, the ewes and lambs were weighed and removed from the experiment. The weight loss in the ewes is the difference between the initial weight on December 10, 1964, and the final weight when their lambs were 60 days of age. Feed consumption was determined for both the gestation and the lactation period and lambing data and growth rate of the lambs were obtained.

In Trial II--60 pregnant purebred ewes were divided into three lots with the same source of roughage as in Trial 1. These included Hampshire, Shropshire, and Southdown ewes equalized by lots. These ewes were placed on the gestation ration on January 15, 1965 and weighed on January 27. At lambing, they were placed on the lactation ration in a manner similar to Trial 1 and fed for approximately 30 days when the ewes and lambs were weighed and removed from the experiment. Feed consumption was obtained for both the gestation and lactation period and lambing data and the growth rate of the lambs were obtained as in Trial 1.

The lambs in both trials were weighed at birth, identified with ear tags and weighed again either at 60 days in Trial I or at 30 days in Trial II. The rate of gain is determined from the initial and final weight in each trial. None of the lambs were creep fed.

The ewes in both trials were sheared at the close of the trial. Each fleece was identified by ewe number and the grease weight obtained. All fleeces were evaluated on the basis of grade, length, strength, and handling qualities by a wool grader from the Wool Marketing Division of the Indiana Farm Bureau Cooperative, Inc., Indianapolis, Indiana.

All lots were allowed free-choice consumption of bonemeal and trace mineralized salt in addition to the following rations.

The ewes were allowed to consume as much roughage as they would. The shelled corn was limited to one-half pound per ewe daily during the gestation period and one pound per day during lactation. Feeding of both the roughage and the corn was done once a day.

The treatments were as follows for all ewes in both trials:

<u>Lot</u>	<u>Gestation Ration</u>
1	Alfalfa hay plus $\frac{1}{2}$ pound of shelled corn per day.
2	Legume haylage without corn plus $\frac{1}{2}$ pound of shelled corn per day.
3	Legume haylage made with 400 lbs. of dried shelled corn added to 1600 lbs. of wilted alfalfa.

<u>Lot</u>	<u>Lactation Ration</u>
1	Alfalfa hay plus 1 lb. of shelled corn per day.
2	Legume haylage without corn plus 1 lb. of shelled corn per day.
3	Legume haylage made with 400 lbs. of dried shelled corn added to 1600 lbs. of wilted alfalfa.

The alfalfa hay was of average quality estimated to be U.S. No. 2 grade. It was made in early summer. The haylage was made from a third-cutting alfalfa, cut in the pre-bud stage on September 22 and 23, 1964. This material was cut by a combination mower-windrower and after wilting was picked up, chopped as fine as possible, and blown into trucks. Part of the crop was stored in a gas-tight silo and served as the source of the plain haylage. To the remainder, 400 lbs. of dried ground shelled corn was added to each 1600 lbs. of wilted alfalfa at the time of ensiling in a manner similar to that in 1963-64.

Results and Discussion

In both trials, the cost of the ration utilizing haylage with corn (Lot 3) proved to be the most economical followed by the haylage (Lot 2) and then by alfalfa hay (Lot 1). Since the number of days varied with each lot, the costs are standardized to cents per day. The average cost

per day for both trials is 5.90¢ for Lot 3, 6.53¢ for Lot 2, and 7.58¢ for Lot 1.

During the experiment, it was noted that the ewes in Lot 3 were not consuming as much haylage plus corn as was expected. It appeared to be less palatable than the alfalfa hay (Lot 1) and to some extent this was also true of the plain haylage (Lot 2). There was more wastage in the alfalfa hay lot than in the haylage lots. Under these conditions, the ewes in Lot 3 were consuming considerably less dry matter than the ewes in Lot 1. More than adequate protein was supplied by all rations at the levels of consumption, however. The lower rate of roughage consumption may account for the lower cost of the ration in Lot 3 and also for the greater loss of weight in the ewes.

In both trials, the percentage of lambs lost is greater in the rations utilizing haylage (Lots 2 and 3) than in the lot utilizing alfalfa hay (Lot 1). The high percentage of lambs born and lambs raised in Lot 1 of Trial II very probably accounts for the higher loss of ewe weight in this group. The lambs in Lot 3 showed a slightly lower average daily gain than those in the other two lots but this does not appear to be significant considering the number involved. The gains in all lots could have been increased by the use of a lamb creep but the effects of the rations would have been masked under these conditions.

The wool grade was determined by USDA spinning counts. The strength, color, and handling qualities were scored from 1 to 10 by the wool grader and are expressed as an average number for the lot. There appears to be no effect of the ration on any of these measures of wool quality but the grease weight of the fleece was slightly higher in the lot receiving alfalfa hay (Lot 1) than in the two lots receiving haylage.

Summary

Three roughages were compared in the gestation and lactation rations of two groups of ewes totaling 160 head during the winter and spring of 1964-65. These roughages included alfalfa hay, low moisture legume silage or haylage, and haylage made with 20% shelled corn added at the time of ensiling. The alfalfa hay and plain haylage was supplemented with $\frac{1}{2}$ lb. of shelled corn during the gestation period and with one lb. of shelled corn during the lactation period. All lots received bonemeal and trace mineralized salt free choice.

The alfalfa hay appeared to be the most palatable ration as measured by greater consumption on a dry matter basis and the haylage with corn added was the least palatable. The two haylage rations were more economical than the alfalfa hay. The costs of the rations for the combined gestation and lactation periods, expressed as cents per day, were 7.58 for the alfalfa hay, 6.53 for the plain haylage and 5.90 for the haylage with corn added. This relationship agrees with the results obtained in a

similar study on gestation rations made during 1963-64.

The ewes receiving the alfalfa hay had a lower lamb loss and a slightly higher weight of grease wool than the ewes on the haylage rations. The ewes receiving haylage with corn added at the time of ensiling showed the greatest weight loss at the close of the lactation period. This is related to the reduced consumption of dry matter. There appeared to be no significant difference in the birth weight of the lambs or the average daily gain of the lambs on the three rations.

This study indicates that haylage can serve as a satisfactory and economical roughage in the gestation and lactation rations for ewes. It must be supplemented with a source of energy similar to alfalfa hay. When corn is used as the energy supplement, the results indicate that it is better to add it at the time of feeding rather than at the time of ensiling so that the consumption of dry matter can be maintained.