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During the past several years considerable experimental work has been performed at the University of Nebraska in fattening western lambs. The attractiveness of fattening lambs at prices existing during a series of recent years has caused a material increase in the interest in this work, and we have felt justified in experimenting rather extensively to ascertain the most satisfactory combination of feeds to use under our Nebraska conditions.

The objects in view have been chiefly to ascertain the most satisfactory rations where corn and alfalfa hay constituted the basal feeds. We have used these two feeds extensively because of the fact that they are grown in practically all districts of Nebraska where lamb feeding is practiced and are, generally speaking, our most economical feeds. Corn, of course, sells in most parts of the state at market prices which in the main run from 13 to 17 cents per bushel under Chicago quotations. Alfalfa hay on the other hand in most seasons has a very low value on the farm. An average figure for alfalfa hay in the mow or stack would be but little above $5.00 per ton, and even this year with all grain prices abnormally high alfalfa can be purchased in most localities at from 6 to 7 dollars per ton. Consequently we feel justified in depending upon alfalfa as our chief roughage and upon corn as our chief concentrate.

We have, in the main, followed three projects in testing our corn and alfalfa rations. One problem has been that of ascertaining the amount of corn necessary to produce the most economical gains where alfalfa hay is fed at will. Another problem is that of the justification of adding protein supplements to a corn and alfalfa ration and a third has been to ascertain the advisability of adding corn silage to the corn and alfalfa ration. A second major problem which we have dealt with is that of the relative economy of producing gains in the late summer and fall months under dry lot conditions vs. pasture or field conditions. A third problem with which we have dealt rather extensively is the use of the self feeder in fattening lambs.

As regards the amount of corn to use with alfalfa hay, our figures are a trifle contradictory. During last winter's experimental work

we succeeded in getting a very satisfactory gain on a lot of lambs fed an average of .86 pounds corn per day as compared with a lot fed 1⅓ pound corn per day. The daily gain was ⅓ pound in each lot and the cost of gain $4.90 in the case of the lambs on a light corn ration and $5.54 for those on the heavy corn ration and the net profit was $2.27 on the former and $2.13 on the latter.

During an experiment just closed we found, however, that the cost of 100 pounds gain was practically the same, namely, $7.45 where lambs were fed in one case ⅔ pound corn per day, in the other 1⅓ pound of corn per day. This may be attributed, however, to a certain extent to the fact that the experiment was carried on during the warm weather of the early fall months and that the lambs receiving the light feed of corn consumed but very little more alfalfa hay than those receiving the heavy feed of corn.

We feel that with high priced grain and relatively cheap alfalfa hay there is a limitation which can be placed on the amount of corn fed and shall continue working on this project until we ascertain definite results. In Colorado and other western states the idea is quite prevalent that 1¼ pounds of corn per day produces the most economical gains. I am of the opinion, however, that at least during the winter months there is a possibility of reducing the average corn consumption per day to the benefit of the profit per lamb.

In adding protein supplements to a corn and alfalfa ration we have found that the daily gain was materially increased and that the cost of 100 pounds gain was increased somewhat but that the profit per lamb was likewise increased materially. Our efforts have been confined to the use of pea-size oil meal, cottonseed nut cake, 41-43% protein, and cold-pressed cottonseed cake. We aim to feed ⅕ pound per day of the oil meal and the cottonseed nut cake and ⅓ pound per day of the cold-pressed cake. Profits per lamb in our last winter's experiment were as follows: $2.13 with corn and alfalfa; $2.48 with oil meal; $2.65 with cottonseed nut cake; $2.60 with cold pressed cake; showing but little difference in the relative value of the three supplements, altho a slight advantage to the nut cake. In this trial corn was valued at 60c per bushel, oil meal at $40.00 per ton, cottonseed cake at $29.000 per ton, cottonseed nut cake at $35.00 per ton, and alfalfa at $8.00 per ton. All of these prices would appear low at the present time, altho oil meal has increased in value the least of any.

We have started an experiment within the past two weeks to check the use of the protein supplements, the idea being to have an exact duplicate of last year's experiment in this respect.

As regards *the addition of corn silage to the corn and alfalfa ration* our results have not been materially beneficial to the use of the silage. In four trials we find only one instance in which the silage lambs returned a profit very much greater than where corn and alfalfa were used alone. We have valued corn silage at $4.00 per ton in comparison with alfalfa hay at $8.00. The appraising committee at the end of last winter's experiment considered the condition of the silage-fed lambs to be superior to that of any group in the experiment.

Regarding *the fall feeding of lambs under dry lot vs. field and pasture conditions* two years' work seems to indicate strongly that much cheaper gains can be secured on blue grass pasture with corn and oil meal added during the last month to finish than can be secured under any other tried method of feeding. While lambs fed in this manner on grass tend to grow rather than finish and are subjected to a discrimination on the market, yet the profit per head has shown consistently in favor of the grass lambs, there being but one exception to this and that being the lambs fattened in the corn field this year. These lambs sold at $1.00 per 100 pounds more than the grass lambs and as they had made a very satisfactory gain the profit per head showed somewhat in their favor.

In the case of corn field feeding we have found it very necessary that alfalfa be placed at the lambs' disposal at the time of the first freeze and we feel convinced that we would be justified in keeping this available to the lambs during the entire feeding period. We have been able to feed lambs successfully in a corn field with no material loss by cutting some of the corn and feeding it to the lambs for several days before turning them into the field.

This year our corn field lambs showed the most finish, sold at the highest price, and returned the largest net profit, the profit being $2.46 per head. The average daily gain was a trifle over ⅓ pound per day and the cost $5.80 per 100 pounds as compared with $3.55, the cost of gain made on grass and $9.62, the other extreme representing the cost of gains on the self feeder. These lambs were fed approximately ⅓ pound oil meal per day during the last month of the experiment and we feel that the addition of this supplement was justifiable.

For two seasons we have attempted to fatten lambs by the use of *rape pasture* supplemented with grain at the finish. Results in neither case have been satisfactory, the rape seeming to fail in sustaining the lambs' weight or at least in increasing the weight as compared with the blue grass pasture. Packers have discriminated

against the rape-fed lambs and the dressing sheet has shown them to be poor dressers.

Lambs fed in the dry lot as compared with lambs fed on green feed have been inclined to show a somewhat higher cost of gain. Comparing, for instance, the grass and corn field lambs in the recent experiment with the lambs fed corn and alfalfa hay, we find that the cost of 100 pounds gain in the latter was $7.45 vs. $5.80 in the corn field lot and $3.55 in the grass lot. The profits, however, show $1.65, $2.46 and $1.77 respectively indicating that the dry fed lambs returned almost as great a profit as the pasture lambs. The experimental work a year ago showed a somewhat greater profit in favor of the grass lambs. The prevailing opinion exists among most sheep men and men handling other classes of animals that grass grains are always much cheaper than dry lot gains and our results would seem to verify this opinion.

During recent years a number of our largest feeders have followed a system of feeding comparable to the *self feeder* used in feeding other farm animals. In other words, men who have been buying both their roughness and grain and making short feeds on lambs have resorted to a system whereby in forty to fifty days they can turn a lamb back on the market in finished condition with upwards of ½ pound daily gain. We have experimented with this method of feeding in two trials and have at the present time started a third trial. In the two trials we have found the self feeder to give very satisfactory but the most expensive gains. Possibly a brief review of the method of handling the lambs when fed in this manner would be of interest.

We use a box made 2 ft. wide and 8 ft. long with a tight bottom and 12 in. boards around the sides, to contain the grain feed. We fill this from ½ to ⅔ full of oil meal and turn the lambs into their lot. They proceed to eat this oil meal at once and as near as we can tell consume on an average of 2½ pounds per head during each of the first two days. We then sprinkle a few kernels of corn into the oil meal and gradually increase the amount of corn until at the end of two weeks we have the lambs consuming all of the corn that they wish along with considerable oil meal. Then as the feeding period continues we decrease the oil meal, aiming to put in the mixture 200 pounds of corn and 80 pounds of oil meal or about 5 parts corn to 2 parts oil meal. We allow the lambs virtually to use their own judgment in the matter of the proportion of corn to oil meal.

We have now experimented with six different pens of lambs with this self feeder method and have not as yet had any loss or sickness

during the first month of feeding. In fact, up to date we have only lost one lamb in any of our self feeder lots, and this lamb died near the close of the recent experiment, apparently from no cause attributable to the feed. We have never noted a lamb scouring and strange to say have not seen a lamb off feed. It would seem that turning these western lambs right off of grass or roughness onto 2½ pounds of oil meal per day would prove fatal. However there seem to be absolutely no harm from the use of oil meal in this manner, whereas corn would prove a deadly poison under similar conditions.

We have fed prairie hay largely because we wish to discourage the consumption of roughness. At the present time we are starting an experiment, however, in which one self feeder lot will have prairie hay and another alfalfa with the object in view of seeing what difference the roughness will make in the results. This method of feeding is not to be recommended for the average farmer as it embodies the use of large quantities of concentrated feeds and a minimum amount of roughness. We have some farmer feeders, however, who have used this method during the past year and who are very well satisfied with their results, as they were desirous of putting a quick finish on their lambs.