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THE WINTER FEEDING OF BREEDING EWES

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During recent years steady progress has been made in the collection of information concerning the nutritional requirements of the breeding ewe. Unfortunately, the application of many of the findings of nutritional research has been slow, and consequently much of the disease associated with faulty nutrition is still far too prevalent.

If the seasonal production of grass growth was constant from year to year the problem of the feed supply and the feed requirements would be much simplified. Similarly, if one could rely on getting definite yields from turnip crops year after year; if green fodder crops never failed to give good returns; and if variations in weather conditions were regular so that growth was checked or stimulated at approximately the same time each year, then many of the stock feeding problems would cease to exist. Unfortunately this is

not the case. The food supplies of one year may be capable of supporting only one half of the stock of a more favourable year. This point is clearly brought out in the following table which indicates the distribution of grass growth throughout the year as determined over a period of years at Canterbury Agricultural College.

Normally two peak periods of pasture growth occur under Canterbury conditions—the main one from October to November, and a smaller peak about March. The former coincides with the peak period in the feed requirements whilst the ewe is still suckling her lamb; the latter peak will assist in a normal year in providing extra feed to assist in flushing of the ewes prior to turning out the rams and also will serve to provide a carry-over for surplus rough grazing during the winter.

TABLE SHOWING MONTHLY PRODUCTION OF GRASS
(Average, Maximum, and Minimum)
AND MONTHLY FEED REQUIREMENTS OF A FLOCK
(All figures as percentages of total year)

Month	Percentage of total Grass Growth Monthly			Feed Consumption Monthly.
	Average of 5 yrs. Per Cent.	Maximum Per Cent. month. for each	Minimum for each month. Per Cent.	No change in the live weight of ewe but her lamb sold fat at end of four month. Per cent.
August	2	6	1	6.8
September	6	10	1	9.5
October	15	30	10	12.0
November	25	35	10	13.4
December	20	30	10	15.1
January	7	40	2	6.0
February	5	20	2	6.0
March	8	20	2	6.2
April	5	10	0	6.2
May	3	10	0	6.2
June	2	10	0	6.2
July	2	6	1	6.4

Necessity for Supplementary Feed

Unfortunately, these two peak periods in the feed supply cannot be relied upon in all years. The maximum and minimum columns of grass growth in the above table indicate the extent of the variation which may be expected, depending, of course, upon the climatic conditions. Thus in some years one may expect 35 per cent of the total year's grass growth to occur in November; in other years it may be as low as 10 per cent. Or again during the winter months when growth is very retarded under normal Canterbury conditions, a mild season may result in as much as 10 per cent. of the total year's growth taking place in May or June; with less favourable conditions growth may be almost at a standstill. The information contained in the above table becomes still more valuable if the data in the first three columns (the grass growth) are compared with the data in the last column giving the flock or ewe requirements under ideal conditions. No set of figures can be drawn up to cover all conditions. The above merely indicate trends, and a careful study of them will draw attention to those periods where the farmer should be able to save surplus growth as hay or silage, or should make provision for supplementary feeding.

Winter Feeding of Ewes

The most serious feed shortage is liable to occur from April until September, or where Spring growth is delayed, even into October. The feed requirements during this period, on a farm stocked reasonably near to capacity, will be approximately 6 per cent each month of the total year's feed requirement of the ewes. The grass growth may range from 6 per cent down to 0 per cent per month. Thus ample provision for supplementary feeding must be made. This can be done in a variety of ways.

The carry-over of rough grazing into the winter from surplus growth during the more favourable growing periods assists to a large extent in meeting the maintenance requirements of the ewe during the early winter period. Such food is comparable to fairly good hay in feeding

value. Hay made during the Spring peak period of growth from grass, grass and clover, clover or lucerne, is being used more extensively to help the ewe flock through the winter, although not to the extent to which it should be used. Oat sheaf chaff, straw, silage, turnips, green feed and grain are also used.

Ewe Maintenance Requirements

Only in exceptional circumstances should any one of the above foodstuffs form the sole ration of the ewes. Thus turnips may be associated with rough grazing, or oat-sheaf chaff and chaffed oat straw. Or silage and hay may be fed as a supplement to any other food which is available. Mixed diets are particularly desirable. Modern nutritional research has emphasised the necessity for variety in the ration of all farm animals. Variety improves the quality of a ration, deficiencies in one food will be balanced up by surpluses in another, mineral deficiencies are less likely to occur, protein quality is improved and a mixed ration is usually more palatable than an individual foodstuff. All these factors are of considerable importance in considering the health and well-being of the ewe, her freedom from disease, her prolificacy, the effect on lamb losses and the age at which the lambs will be ready to draft away as fats.

Although during recent years in Canterbury the supplementary feeding of the ewe flocks has improved, many cases are brought to the notice of the College each year where farmers, although feeding oat sheaf chaff, hay, or some other crop, still experience heavy losses among their ewe flocks near lambing time or later. They have hoped that their losses would be reduced, if not practically eliminated, but such has not always been the case. The reason, in some instances, has been that supplementary feeding has been insufficient in quantity or too long delayed. The following table sets out the approximate quantities of individual foodstuffs which a ewe would require to eat in order to maintain her live weight more or less constant:—

MAINTENANCE REQUIREMENTS FOR A EWE OF 140LBS. LIVE WEIGHT.

	Foodstuff	Maintenance requirement per week
Too Bulky	{	Wheat Straw 85lbs.
		Oat Straw 52lbs.
		Barley Straw 44lbs.
		Poor Hay 50lbs.
Suitable	{	Good Hay 30lbs.
		Rough Grazing 30lbs.
		Very good hay 23lbs.
		Oat-sheaf Chaff 28lbs.
Too Watery	{	Swedes 150lbs.
		Soft Turnips 250lbs.
		Mangolds 160lbs.
Too Concentrated	{	Linseed cake 15lbs.
		Meat Meal 11.5lbs
		Oats 18.5lbs
		Wheat 15lbs.
		Barley 15lbs.
		Peas 16lbs.

The above table must be regarded merely as a guide in estimating nutritional requirements. A wide range of variations exists among individuals of any class of animal, but if one appreciates this fact fully the information in the above table can then be used as a basis for sound rationing.

Numerous feeding experiments have shown that a ewe of 140lb. live weight can consume about 30lb. of dry matter per week. If fed much below this level on excess of concentrates it is probable that she will not have that feeling of fullness and well-being which is usually associated with adequate and well-balanced feeding. A certain amount of roughage or bulk is always desirable. If fed considerably above the 30lb. level it is just as probable that she will suffer from a continual "Christmas dinner" feeling.

A study of the above table shows the extent to which roughages such as wheat, oat, or barley straw, through being too bulky, fail to satisfy her needs; on the other hand, linseed cake, meat meal, oats, wheat, barley, or peas are all too concentrated. Adequate and balanced nutrition consists of a suitable mixture of foodstuffs. The figures for swedes, soft turnips, and mangolds are particularly interesting. Each contain about 9 to 11 per cent of dry matter and from the viewpoint of dry matter content, are well within the capacity of a ewe. If

they formed the sole ration they would, however, supply from 13 to 22 gallons of water per week. Sheep require from 2 to 10 gallons of water weekly, the quantity depending on the feed received, the weather and the condition of the pasture. Excess of roots such as turnips or mangolds must, therefore, be regarded as excessively watery foodstuffs and should be balanced up with a certain amount of drier roughage such as straw, oat-sheaf chaff, hay or silage. Also, if the ewes are poor in condition a ration consisting largely of roots would be still further improved by the addition of a quarter or a half-pound of grain per day. A further disadvantage of heavy root feeding is that insufficient protein is provided, particularly during the last month or six weeks before lambing. Such a ration should be supplemented by foodstuffs richer in protein. One to two ounces of meat meal mixed with oat-sheaf chaff or with oat-sheaf chaff and grain will satisfy all protein requirements and should ensure healthier ewes and better lambs.

Food Mixtures for Ewes

The following food mixtures should also assist in determining the extent of supplementary feeding desirable. In all cases a full ration, i.e., no grazing available, is given. Where the flock is obtaining a part of their ration from grazing, roots, or some other source, suitable adjustments would, of course, be made.

A—Daily Requirements of Pregnant Ewes (weight 120-140lbs) up to 4 to 6 Weeks before Lambing.

- (1) Good quality legume hay or mixed legume-and-grass hay containing 50 per cent legumes, 3.4 to 4lbs. per day.
- (2) Legume hay 2.6 to 3.3lbs. + Silage 2lbs.
- (3) Oat straw 1lb. + Legume hay 2lbs. It may be necessary to add $\frac{1}{4}$ to $\frac{1}{2}$ lb. of grain to this ration to keep the ewes in the desired condition.
- (4) Roots 2 to 3 lbs. + Legume hay 3.1 to 3.6lbs.
- (5) Good grass hay 1.7 to 2lbs. + Legume hay 1.7 to 2lbs.
- (6) Oat-sheaf chaff 2.3lbs. + Peas 0.5lb. + Wheat 0.5lb.
- (7) Oat-straw chaff 2lbs. + Bran 0.7lb. + Barley 0.7lb. + Oats 0.3lb. + Meat meal 0.1lb.

B—Daily Requirements of Pregnant Ewes during 4 to 6 weeks before Lambing.

To one of the preceding roughage allowances, add $\frac{1}{2}$ lb per head daily of oats or $\frac{1}{2}$ lb. of one of the following concentrate mixtures:—

- (1) Oats 67lbs.
Bran 33lbs.
- (2) Oats 50lbs.
Wheat 20lbs.
Bran 20lbs.
Linseed meal or Meat meal 10lbs.

As has already been pointed out, the above must merely be regarded as a guide. Such factors as the condition of the ewes prior to the commencement of supplementary feeding, the amount of other feed such as grazing, roots and so on available, the weather conditions, and the provision or lack of shelter are some of the factors which will help to modify the amount of extra food a ewe will require to ensure that she is maintained in a healthy, thriving condition.

Increase Winter Feeding up to Lambing

Frequently losses among ewes at or near lambing time can be traced to faulty adjustment of the feed supply during the pregnancy period.

In a recent experiment carried out at the College, foetal growth was studied at different stages of development from shortly after conception until lambing. It was shown that the weight of the foetus at 100 days was approximately 3lbs. and at full development at 148 days had increased to 10lbs. Thus 70 per cent of the total growth of the foetus took place during the last 45 days. This emphasises the necessity for careful adjustment of supplementary feeding. The feed supply of the ewe should be increased steadily up to lambing and especially during the last six weeks of pregnancy care should be taken to avoid any serious check in the food supply. Where losses from "dopiness" or "twin disease" occur they can frequently be traced to a food check at this critical period.

Will Extra Feeding Pay?

With supplementary feeding as with every other aspect of farming, the main consideration of the farmer is, "Will it pay?" This is a point which the farmer must decide for himself under his own local conditions. He can rest assured, however, that where ample food of the right type is fed to his flock, his losses should be reduced to a minimum, his ewes should give high-lambing percentages, be capable of milking to capacity and so doing their lambs well, and also the lambs should be well developed at birth. This last point is of considerable importance in successful fat-lamb raising since experiments have shown that the heavier a lamb is at birth the better it will thrive subsequently and the sooner it will be ready to kill. This suggests one means of avoiding the heavy lamb losses which have been associated with heavy parasitic infestation in Canterbury during the last two seasons. Extra feeding of the right type of foodstuffs would ensure that the ewes would come through the winter in good condition, and that their lambs would be up to or above standard weights at birth. Consequently they should reach maturity in the minimum of time and so escape many of the troubles which are associated with retarded lambs.