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# The Growth of Cheaper Winter Food for Livestock

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## Account of the Discussion

### Rothamsted Research

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mill for grinding. It was, however, discovered that if a little crushed linseed was added to a cereal mixture there was no trouble with cattle going off their feed, and this has led to a considerable economy in feeding. At the present time the ration in use is as follows: 6 parts oats;  $1\frac{1}{2}$  parts barley;  $\frac{1}{4}$  to  $\frac{1}{3}$  part crushed linseed.

The ration has S.E. of 62, and costs about £7 per ton, whereas cakes with a S.E. of 70 to 73 cost from £12 to £14 per ton. Only first-class dry grain is used, and it is considered that it must not be kiln-dried. It is found that 4 to 5 lb. of this corn mixture, together with roots and straw, make an efficient fattening ration.

Rough tests on the farms tend to show that cattle can be finished rather earlier with a liberal use of cakes, but the type of ration mentioned has been used for at least three winters, and the results have been highly satisfactory.

On occasion a little linseed cake is added, and if cattle are on a heavy feed it has been found advisable to increase the quantity of linseed. The cattle purchased for feeding are not by any means outstanding, but the finished animals kill well, and hold a high reputation at Aberdeen auction, where the standard of fat cattle is high.

Now it is notoriously difficult to apply the findings obtained from consideration of farming methods of one area to another area. But there are certain general features which apply in both the areas under consideration. It is in the first place clear that there are limits to the dissection of farming costs and processes. The value of a crop can be judged only in the light of its position in the farming system as a whole. And secondly, cheap fodder, though doubtless less efficient than concentrated foods, is justified, or indeed necessitated, when the end-product commands a low price in the country's markets, or in other words—but we will refrain from quoting in this place the famous dictum of your illustrious founder,

## THE DISCUSSION

Mr HAROLD DREWITT, Colworth, Chichester, said: Nearly all the speakers have dealt with the provision of winter food for live stock from the intensive-production point of view, but it must not be forgotten that there is another aspect of the question as regards milk production—viz. the cheaper production of milk without so much regard being paid to the quantity produced. This system simplifies and cheapens milk production in several ways. No elaborate buildings are wanted to house the cows in, as they lie out day and night whatever the weather, and are only brought into a temporary yard with a movable milking-shed at milking time; no

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roots are grown, and straw is wanted only to thatch the hayricks which are built in the meadows the grass is grown in, the hay being scattered in winter on the ground for the cows to consume. It would be difficult to devise a cheaper system, particularly when the cost of buildings is taken into account. The essentials for success would seem to be a subsoil which is quite dry in winter, a hardy lot of cows, and a still hardier race of cowmen!

To a sheep breeder this Conference would seem to have paid but little attention to the provision of food for sheep in the winter time. Formerly in this district (South-West Sussex) the breeding ewes were kept on turnips until Christmas time, then a change would be made to swedes, while at lambing time swedes or turnips would be fed as the individual preference of the flockmaster might dictate; in all cases about 1 lb. of clover hay would be given all the winter. For the fattening tegs, swedes trimmed and cut in the field with cake and hay would be the usual practice. Nowadays high labour-costs have made this system of fattening tegs an impossibility; marrow-stem kale is largely grown in place of the swedes for feeding during the late autumn and early winter, after which those sheep which are not ready for the butcher have to gnaw the swedes for themselves. The cake and hay ration has been but little changed, although this season crushed oats, barley or maize are being largely used.

On those farms where sugar-beet is grown, reliance is placed on the tops for feeding up to the beginning of the new year. At first many tops were ploughed in for manure, but all growers who are accustomed to feed sheep seem to agree that feeding on the ground is the best and cheapest way of utilizing the beet tops. Care is taken not to feed the tops until about ten days after they have been trimmed off, and it is very desirable that 1 lb. of good hay or  $\frac{3}{4}$  lb. of dried beet-pulp should be given. Experience would seem to show that if these precautions are taken no troubles, digestive or otherwise, need be anticipated.

The amount of feed provided by the best tops varies with each season, the time of year it is consumed and the variety of beet; but an average crop would provide keep on each acre for 100 South-down ewes for twelve days with the daily addition of 1 lb. of hay per head.

Professor WIBBERLEY said: The preponderance of grass to arable results in an annual slump in prices for store stock in autumn and dear prices in springtime, when farmers wish to stock the land. The autumn slump is also accentuated because of the eleven-month grazing system in Ireland, by means of which large tracts of grazing land have to be cleared in early November.

Twenty years ago I promulgated a system of arable farming, designed chiefly for stock-feeding purposes. The system was making

considerable headway until the War demand for cereals side-tracked the farmers' interest in the system. To-day, in my opinion, the outlook for live-stock farming is decidedly brighter than it is for cereals. At present prices no man can produce milk, meat or mutton so long as he is almost entirely dependent on purchased foodstuffs for his supply of albuminoids.

On the average farm the ratio of albuminoids to non-albuminoids produced is about 1 to 13. I am convinced—more from practical observation than direct experiments—that by using a complete mixture of artificials on forage crops, and consuming or cutting earlier than is usual, the albuminoids of the crops can be very much increased. In December of 1919 I submitted a sample of vetch and cereal hay for analysis to the Department of Agriculture, Dublin. The crop was manured in early spring with a dressing of :

3 cwt. superphosphate	}	per acre.
3 „ kainit		
1½ „ nitrate of soda		

It was cut just as the vetch was coming into flower and, though the crop wilted considerably, the yield of hay was 3½ tons per acre. The Department's analysis was :

Moisture . . . . .	14.62
Oil . . . . .	2.72
Albuminoids . . . . .	15.12
Carbohydrates . . . . .	41.12
Fibre . . . . .	20.87
Ash (including sand and silica) . . . . .	5.55
	100.00

Due to the introduction of efficient tractors and cheap fertilizers especially, forage cropping was a much simpler matter, and capable of being carried out on a larger scale than it was twenty years ago. One feature of the system was to under-sow a crop of trefoil and rye-grass or trifolium and rye-grass in corn. Other sowings of rye and vetch mixture were sown on the stubble after harvest. By using complete fertilizers containing nitrate these crops could be made available for folding and cutting from two to three weeks earlier than would be the case if the crops were not fertilized.

Apart from the great advantage of early-spring feed, the speeding up of the crops meant that the succeeding crops of marrow-stem kale, rape, and other crops of a like nature, could be sown much earlier, to be ready for autumn, winter and early-spring consumption.

As regards tractors and tractor implements, these speed up the cultivation of the land and, through the quick cultivation, the soil moisture is conserved, and results in the immediate germination of the seeds of the following-on crops of kale, etc.

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Another important feature in connection with the use of complete fertilizers on such crops as mixed vetch and cereal, lucerne and sainfoin, is, given a sufficient rainfall, at least an extra cut per season, and sometimes two, could be obtained.

The intensive grass-land treatment, in my opinion, is only going to make our farming still more lop-sided, and cause a greater disparity between the autumn and spring store prices. Probably this fact has been recognized by those responsible for the promulgation of the system, and now greater attention is being given to increasing the yield of arable crops by the more lavish use of fertilizers.

As you are all aware, the subject of obtaining a winter supply of digestible albuminoids, by drying grass and compressing the dried material into cakes, is being investigated at present. I personally do not think such a system will ever be a success. In saying so I hope sincerely that events will prove me to be in the wrong. Setting aside for the moment the high cost of a drying plant, and the painful slowness of drying and making young grass into cake, a farmer would have to go over his land so often, to cut and carry sufficient young grass for his winter requirements, that he would never have time for anything else. Also, in a dry season like the past, there would be no grass for either cutting or grazing. Dry weather does not affect forage crops in the same way as young grass. The former keep the land covered in and conserve the moisture. On a farm a few miles from Rothamsted we have been experimenting with complete fertilizers on lucerne, and in the past dry season have increased the yield of lucerne from about 25 cwt. to over 50 cwt. per acre. The part unmanured has been cut in the ordinary matured stage, that manured has been cut several times in what would be considered the unmanured state. Samples have been forwarded to the I.C.I., who have very kindly undertaken to analyse same, with a view to determining not the yields in produce per acre but the quantity of nutriment per acre.

It was considered unorthodox to apply nitrogenous manure to leguminous crops, but in my experience I feel convinced that by so doing, and cutting in a young state, the solution of the problem of cheap albuminoids would be found.

As compared with dried-grass experiments, such crops as vetch cereal mixtures, lucerne, sainfoin, could be dried and saved as hay with the ordinary implements on the farm, and could, by being allowed to wilt a little, be saved as silage.

Given cheap home-grown albuminoids, farmers, even at present prices, could produce all animal products at a profit. Through the introduction of synthetic nitrogen they have solved the problem of greater and cheaper crop production. By using nitrogen with other fertilizers on such crops as I have referred to, we should be able to produce synthetic albuminoids through the medium of the plants,

and when that is accomplished we shall see that the classic statement relative to high farming and low prices is but a fetish.

Mr WATT drew attention to the fact that economics were one of the most important factors in farming, and that a close study of farming economics was the only way to keep down labour-costs. By labour-costs he did not mean lower wages. Every effort should be made, by using all the machinery possible, to produce a large output per man. On Ford's farm in Essex he was required to pay Ford's wages—*i.e.* 2s. 6d. to 3s. per hour, and all work had to be done by tractor. It enabled him to keep as few men as possible and obtain the best work from them. They had at this farm just completed the threshing of 80 acres of wheat. The yield was over 8 qrs. per acre. Straw sold in the stack made £4, 6s. per acre. Hay sold in the stack, £7 per ton.