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# The Growth of Cheaper Winter Food for Livestock

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## The Growth of Cheaper Winter Food for Dairy Cows

**R. Stallard**

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The productions of my farm will chiefly be milk and milk products, beef, pork and mutton. Those will have to be turned into hard cash. At the present values it is impossible to get back what they have already cost.

## THE GROWTH OF CHEAPER WINTER FOOD FOR DAIRY COWS

BY CAPTAIN R. STALLARD  
*Pershore, Worcestershire*

I do not propose to touch on the dairy farm run entirely for the sake of the dairy (by that I mean the farm which looks for its income entirely from the sale of dairy products and draft dairy cattle, where the cattle are managed with a view to getting very high milk records), for two reasons: (1) that I know nothing of such farming; (2) I am very strongly of the opinion that a farm should be of sufficient size to enable general farming to be carried out, for the reason that the by-products of one branch, such as vegetable and fruit growing, dairy and poultry, corn or live stock, may be the very life-blood of another branch.

Looking at the subject from the point of view of the general farmer—after good pasture, what is the next crop the farmer with a dairy will be most anxious to have? The answer indubitably is lucerne. Not only will he have two good crops of hay and a good aftermath for the dairy cattle to graze in late September, when milk yields are going down with a bump, but in the case of a dry summer he can fall back upon his lucerne to help out the bare pasture. In a wet summer he can make ensilage with alternate loads of lucerne and seeds.

The ground for lucerne must be selected with great care, for the following are absolutely essential:

- (1) It must be well drained.
- (2) It must be perfectly clean.
- (3) It should be reasonably accessible to the buildings.

Taking my farm as having 200 acres of arable, I will select 60 acres as probably the maximum which will answer to these requirements.

I will now take you over a twelve-year rotation by which 30 acres of this 60 acres will be constantly under lucerne. I put down a fresh 10 acres of lucerne every other year in preference to 5 acres every year, because there is one thing quite certain, that, with present costs, it is uneconomical to work a ground of less than 10 acres. I would prefer 20 acres.



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### TWELVE-YEAR ROTATION

YEAR	A 10 acres	B 10 acres	C 10 acres	D 10 acres	E 10 acres	F 10 acres
1st . . .	Lucerne	Lucerne	Lucerne	Winter beans	Winter oats	Peas and kale
2nd . . .	Winter beans	Lucerne	Lucerne	Winter oats	Peas and kale	Lucerne
3rd . . .	Winter oats	Lucerne	Lucerne	Peas and kale	Spring oats and seeds	Lucerne
4th . . .	Peas and kale	Winter beans	Lucerne	Lucerne	Seeds	Lucerne
5th . . .	Oats and seeds	Winter oats	Lucerne	Lucerne	Beans	Lucerne
6th . . .	Seeds	Peas and kale	Winter beans	Lucerne	Lucerne	Lucerne
7th . . .	Winter beans	Oats and seeds	Winter oats	Lucerne	Lucerne	Lucerne
8th . . .	Lucerne	Seeds	Peas and kale	Lucerne	Lucerne	Beans
9th . . .	Lucerne	Winter beans or winter oats	Oats and seeds	Lucerne	Lucerne	Oats
10th . . .	Lucerne	Lucerne	Seeds	Winter beans	Lucerne	Peas and kale
11th . . .	Lucerne	Lucerne	Winter beans	Oats	Lucerne	Oats and seeds
12th . . .	Lucerne	Lucerne	Lucerne	Peas and kale	Beans	Seeds



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Going through the rotation in detail : when the lucerne is due to be burst up I like to get it ploughed before starting harvest, and this ploughing should be at least 8 in. deep. I put the ground into beans in preference to wheat, because it will be too hollow, and after the lucerne there will be pests, which are more likely to take wheat than beans, though wherever possible poultry should be kept on this ploughing, in Worcestershire Arks, so that they can clean up the pests. I follow the beans with winter oats, these again with early peas. The peas will be drilled early in February, and after horse-and hand-hoeing, just before the peas fall over, drill kale in between. When the peas have been picked the haulm is harvested as winter fodder for the cows, the kale horse-hoed several times, and given 2 cwt. of mixed nitrates to the acre, to be followed by another 2 cwt. in August. These peas should pay for the haulm and the crop of kale. Spring oats follow, with seeds broadcast among them, unless the ground is due to come into lucerne, in which case the ground is worked as often as possible in order to get it perfectly clean. Lucerne can be drilled any time between the middle of May and the end of July. If the land, however, is perfectly clean, the lucerne can be broadcast in the spring oats, but in this case horse-hoeing the lucerne in its first year is out of the question. Should wet weather prevent cleaning, broadcast grass seeds and alsike clover with rape rather than plant dirty land.

As you, no doubt, are all aware, one of the secrets of successful lucerne-growing is keeping the lucerne absolutely clean in its first year, after that, with heavy harrowing several times in the spring and after cutting, the lucerne will look after itself.

I will now leave the lucerne for a time and tell you how to deal with the remainder of the farm.

### SEVEN-YEAR ROTATION

*20 acres of each Crop*

First year . . .	Winter beans
Second year . . .	Winter wheat
Third year . . .	Sprouts
Fourth year . . .	Potatoes
Fifth year . . .	Wheat, Yeoman II.
Sixth year . . .	Winter oats, with seeds broadcast
Seventh year . . .	Seeds or ensilage mixture

The 140 acres are worked on a seven-year rotation. Starting with seeds broken up deep, winter beans are drilled. The next year the bean stubble should be skimmed with a two-horse skim about four times. This is much cheaper than ploughing and working down the ploughing for a seed-bed, and also gives you an ideal seed-bed for wheat, for I am certain that wheat likes a little mould to cover the seed, with the undersoil quite firm.



A piece of wheat similarly planted last winter showed up to great advantage compared with wheat following ploughing and duckfooting. This wheat, before the frost came, was anchored into a firm bottom and did not rise, whereas that on land which had been ploughed got very hollow indeed.

Wheat is followed by the most important crop by far on the farm—namely, sprouts. As soon as autumn drilling has been finished, if the ground is firm, muck should be applied up to a maximum of 40 loads to the acre, and then ploughed 10 in. deep, if possible. Early in the spring the ground is ploughed back again, but not so deep. As soon as the soil is sufficiently dry for the horses not to pad the ground a heavy six-horse scuffle is worked across it both ways, followed by the duckfeet. This scuffling is most important, as it helps to conserve the moisture throughout the summer.

The sprouts are planted on the square, a yard each way (when the weather is favourable), from early May until the end of June. Should it be impossible to plant 20 acres by the end of June, any land over should go into savoys. As soon as the plants have caught hold they should be hand-hoed, and the horse-hoe should practically live in the field. This last summer I must have horse-hoed and skimmed my sprouts over six times each way, and, in addition to cleaning the ground better than any fallow could do, all the moisture has been conserved. Picking goes on from September, but by early in January the picking of the first sprouts will be finished. Then comes the cows' turn. The stems which are left bare of all sprouts and leaves will put up the milk-yield of the cows, whatever they have been receiving. Why, I cannot tell you. But the fact remains that there is something in a sprout stem which you cannot get in roots, and which you cannot buy in bags. These stems follow on the kale, which has been growing on the other part of the farm, and any stems not fed to the cows by the first week in March start growing from the top and all down the stem, and if a few acres are left for this period of the year a large bulk of ideal food is available for the cows. In fact, you must be very careful not to leave too much to start growing or there will be more bulk available than you will care to draw off.

As the stems are drawn off to the cows, the empty ground is kept ploughed up deep. This goes into potatoes. Whereas it may be difficult to get it down in time fine enough for a spring corn crop, the potatoes can be planted in very rough ground, and the alternative wet and dry will bring the necessary mould. If there is not sufficient female labour about for picking up the potatoes in the autumn, the first 10 acres can be put into spring barley, although this must sound impossible to the barley-grower. My answer is that I have done so successfully for four years.

The potatoes are dug with Ransome's heavy plough (or digger),



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the ground then being duckfooted crossways, with women leasing behind, and then drilled with Yeoman II. wheat, harrowed, and again leased. Sufficient potatoes will be picked up to pay for the duck-footing and harrowing, so that you have your wheat planted for the cost of seed and drilling. This is the most important operation on the farm, and the weather must be watched very carefully, because it will go only when quite dry. Should the autumn be wet, and the seed-bed be impossible to obtain, it will have to be ploughed and drilled with Little Joss wheat in late January. I insist on Yeoman II. wheat, as this is the only wheat which will stand up after the previous crops. I have not threshed, but the last two years from Yeoman II. wheat I have had 60 bushels to the acre. In addition, on this ideal seed-bed it stools out so well that no weeds can grow.

These three crops—sprouts, potatoes and Yeoman II. wheat—will clean the dirtiest land imaginable; and, gentlemen, when I started on my present farm I should think it was the dirtiest in the county, but with this rotation I am gradually cleaning it without bare fallow.

Yeoman II. wheat is followed by winter oats, in which seeds are broadcast in April. The reason for having two white-straw crops following is that the Yeoman II. wheat will be so dense that no seeds can grow in it. Should the seeds fail, the land must be ploughed after harvest for an ensilage mixture; but, although ensilage mixture brings in more bulk than seeds, I would always rather have the seeds, because 20 acres of ensilage mixture will mean one team of horses occupied for over a month in September–October—which is the rush time on a heavy clay farm.

For white-straw crops to do any good, they must be drilled by the end of October, and the beans by Guy Fawkes' Day.

You will notice I have, as far as possible, eliminated all spring corn crops, for whereas winter corn drilled early is almost certain to do well, spring corn is always a gamble.

Most years there will be 30 acres of beans on the farm. It would be a very profitable proposition to select the 10 acres which had come through the winter worst, and, after hoeing, drill one to two bushels per acre of Grey Jack peas between the rows. This will give a very bulky crop, leaving some good pea and bean straw for the store cattle.

I expect you are all wondering why I have the audacity to read a paper on this subject without mentioning roots, but I think the word "cheaper" in the heading of the paper cuts them right out.

My first three years I grew roots, but have now cut them out, for the following reasons: (1) I never succeeded in growing the type of crop one sees illustrated in the seedsmen's catalogues; (2) they require considerable hand-work in May and early June, when every man available is required for sprout-planting in wet weather, and for hand-hoeing soft fruit when dry.



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Then, at the other end, roots are a nuisance on our heavy clay. They are not ready to lift until the middle of October, when there is a risk of frost on that part of the root exposed above the ground. Then, should the weather be wet, untold damage would be done to your ground in drawing them off. Three horses on a cart, pulling their guts out, with wheels cutting right in, is not only very expensive, but the ill effects on the ground would be seen in the succeeding crops for at least two or three years. In addition, if the roots are in burrows, wet and smothered with clay, the expense of cleaning them is out of proportion to their value. Whereas there is something essential in greenstuff, or even its stem, grown above the ground, which I cannot explain, not being a scientist, there is nothing in a root which cannot be obtained from some other source, and I think that one of the reasons why roots at times appear so successful is the fact that the cow, tied up for a long time without access to water, benefits from the water in the mangold rather than the solids, and it is the water which puts up a cow's record on the weighing-sheet.

You will see that to a certain extent I have provided a substitute for the mangolds at an infinitesimal cost.

Peas in an average year should pay for the cultivation of the kale, and the sprout stems and seconds and old leaves of savoys—which to the market-gardener are a liability in that he has to get rid of them before he can work his land—could be food to the dairy cows at the cost of cutting and carting.

One word of warning: I hope you will not go home thinking you are going to make your fortunes sprout-growing. There is such an under-consumption of green vegetables in the country at the moment that sufficient are grown at present. They are a costly crop to grow, and cost in an ordinary year £20 an acre, and in a year like this, when money has had to be spent on spraying, £25. So, before you start, you must organize an "Eat More Sprouts" campaign.

To summarize the total product for one year off the arable you have roughly:

Lucerne hay (cut twice)	. . . . .	30 acres
Seeds ,, (cut once or twice)	. . . . .	20-30 ,,
Bean and pea straw	. . . . .	20-30 ,,
Oat straw	. . . . .	20-30 ,,
Pea haulm	. . . . .	10 ,,
Wheat straw	. . . . .	20 ,,
Kale	. . . . .	10 ,,
Sprout stems and savoys	. . . . .	20 ,,
Beans	. . . . .	off 20-30 ,,
Oats	. . . . .	,, 20-30 ,,
Wheat	. . . . .	,, 40 ,,



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The wheat not required for poultry can usually be exchanged for bran, to advantage, with the local miller, and if I could dispose of the oats profitably to the local hunt I should not hesitate to do so, buying maize germ meal or dried grains with the money.

## GROWING OF FODDER ROOTS IN DENMARK

BY HARALD FABER

*Agricultural Commissioner to the Danish Government*

DANISH farmers were late in learning to grow roots. They saw root-growing in England and Scotland, where several progressive Danish farmers in the sixties and seventies of last century went to study practical agriculture. The growing of sugar-beets was introduced into Denmark from Germany in the late seventies. By the year 1881, roots for feeding occupied only 45,000 acres, being two-thirds of 1 per cent. of the arable land, while Great Britain devoted 13 per cent. of her arable land to all root-crops. Danish farmers at that time had no faith in the feeding value of roots, such as mangolds and turnips, as they considered them worth little more than water. A series of very practical feeding experiments by the late N. J. Fjord, carried out on large farms in various parts of the country, showed that 1 lb. of dry matter in roots has the same feeding value as 1 lb. of corn when fed to pigs or to cows in milk. With the usual yields of roots and barley this meant that on 1 acre of land you can produce two and a half times as much foodstuffs by growing swedes or mangels as by growing barley. That opened the eyes of the farmers to the value of roots, and before the War the acreage of roots for feeding had increased to 630,000 acres. In thirty years the acreage had been multiplied by 14.

The roots were grown from seeds sold by merchants under a variety of names, either imported or grown in Denmark, and with little or no guarantee as to yield or purity, until a society was formed for improving cultivated plants. This society aimed at growing roots from selected stock seed, and tried to do away with the many trade names for really identical kinds of roots, thereby helping farmers in their selection when buying seed. At the same time, the analysis of seed for purity and germination at the (at first private) seed-testing station, which was opened in 1871, was becoming more general.

From about 1890 a most important series of field trials was begun for the purpose of improving the growing of roots so as to obtain the largest possible yield of foodstuffs per acre. The different kinds