

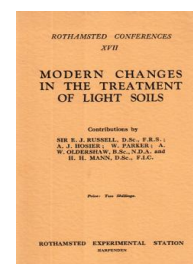
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## Modern Changes in the Treatment of Light Soils

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### Farming of Light Land in Norfolk

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## FARMING OF LIGHT LAND IN NORFOLK

BY W. PARKER  
(*King's Lynn*)

WHEN I received a request from Sir John Russell to read a paper on our farming of Narford Farm, in Norfolk, my first determination was to answer in the negative, as I did not feel I could write anything that would be of real interest to the agricultural community.

My life has been spent in real active and practical work, and I have had very little time to give to what I might term the "academic" side of agriculture.

When the letter arrived, I had staying with me three practical farmers from the counties of Leicester, Derby and Nottingham.

These gentlemen saw Narford Farm when we took it in hand and have visited this farm twice a year ever since, and to make a long story short, they prevailed on me to undertake the writing of a paper; in fact, they went as far as to state that, in their opinion, it was my duty to do so, as my experience might be helpful to farmers cultivating a similar class of land; so, gentlemen, if my paper fails to interest you must blame them, not me.

I started my farming career in Leicestershire, but having read much about the wonderful work done in Norfolk by the great Thomas William Coke, First Earl of Leicester, of Holkham, my imagination was fired, and for years I had a strong desire to farm in that county; and some sixteen years ago my desire was gratified, and with Mr. Richard Proctor of Spalding, as my partner, we embarked on our Norfolk venture.

As you are all aware of the hard nature of the times we farmers have been passing through, I will leave you to judge of the financial wisdom of such an undertaking.

Though I intend to deal more particularly with the Narford Farm, very similar methods are being adopted on some of our adjoining farms.

This farm is approximately 1,200 acres, and a big percentage of it had been allowed to fall out of cultivation. Many acres, called the "Sheep Walk," had never been cultivated, and was not reckoned in the tenancy.

This sheep walk was a mixture of gorse, heather, and bare-looking grass.

Many acres of the cultivated land was of such a light sandy nature that any winds would cause "blowing" of the sand, and very often would carry the seeds with it.

We decided largely to follow Norfolk lines, so started mainly with the four-course system, using artificials freely.

Unfortunately, potash was dear, and the dressings were not as heavy as we now know they should have been.

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We concentrated to a great extent on barley as a cereal crop and roots and seeds. Yields of barley, however, were low—not more than two to four quarters to the acre.

I might mention as a matter of interest that we tried the effect of ploughing up what I have called the Sheep Walk. The result was quite surprising.

We first took off a crop of barley and oats, followed by beet, then barley again, succeeded by another crop of beet, followed in some cases by a final crop of barley sown with long ley seeds.

We artificialled all these courses and were very pleased with the growth of a good quality herbage which is providing good grazing. A constant dressing of potash was given—kainit being preferred because of its salt content.

The old pasture land, of which there was about 120 acres, was given a dressing every third or fourth year, of 5 cwt. of kainit per acre.

It is close grazed with a mixed stock, including breeding sows. The close grazing has considerably improved it and it is surprising the number of stock it carries.

It is well harrowed with special spike harrows which remove the moss, and good ventilation is provided to the grass roots.

A splendid innovation on the part of the landlord (Admiral Fountaine) was the installation of hydraulic rams for water supply. The rams take their supply from the lake at Narford. Many miles of pipes were laid, and now water is supplied to an area of over 4,000 acres.

The great advantage of the ram system is that after the first cost of the plant and pipe lines, the cost of upkeep is small.

Admiral Fountaine has been personally responsible for many ingenious improvements in the system.

The crops were not improving to the extent we had hoped. Kainit however, was becoming cheaper, and we increased the amounts to 3-4 cwts. per acre with 2-4 cwts. of superphosphate, according to the strength of the field.

Although ploughing deeper than most Norfolk farmers, it is only during the last three and four years that we have really gone in for deep ploughing, which has been attended with great success.

The deep ploughing has brought up the hard pan lying next to the chalk, and has also brought up the chalk.

Let us consider the land as it was :

It had a thin layer of cultivated sandy soil with a hard pan lying between this and the chalk bed. This small depth of sandy soil could not hold sufficient reserve of moisture, the hard pan preventing penetration, and owing to the light sandy nature of the soil, the moisture soon dried up. The breaking up of the hard pan giving a greater depth of soil allowed the moisture to penetrate deeper and provided a greater reserve of moisture.

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It is my opinion, also, that the hard pan has a lot of good nature in it, and being slightly heavier than the upper soil, increased slightly the heaviness of the sandy soil.

The most important factor was probably the effect of bringing up the chalk, thus providing the soil with the necessary lime.

This leads us to the question of the acidity of the soil, and it would appear that generally the soil needed correction in this respect.

This would partly be substantiated by previous poor results with the root crops, which apparently are more likely to be affected by acid soils.

There is, however, as one may expect, a great variation in the soils even in the same field.

I have with me copies of the analyses of some of the soils which I shall be pleased to show to anyone afterwards.

As regards roots, excepting for sugar beet, we soon found out they were not profitable, and have grown no mangolds or turnips for years.

Our first attempts at sugar beet were not very successful—the yields being not more than 7 tons per acre on the better land.

The effect of the deep ploughing is evidenced probably more in the beet crop than any. We have averaged up to 9 tons 18 cwts. of washed beet per acre—the poorest land averaging 8 tons 16 cwts.

After eating up the tops, our barleys were heavier than they were after swedes.

The barley yields have increased from 2 to 4 quarters per acre to an average on the total acreage of over 5 quarters.

Accompanying the deep ploughing, we broadcast before drilling  $1\frac{1}{2}$  cwts. of sulphate of ammonia, 4 cwts. potash (kainit) and 4 cwts. of superphosphate per acre.

There appears to be no doubt that more attention should be given by the farmer in studying the different degrees of acidity in the soils.

History shews that our forefathers evidently valued the importance of liming, as records show that great attention was given to liming. In the last 30 to 40 years, however, there appears to have been quite a decline in liming, probably due to economic reasons.

Dealing with recent work on the Narford Farm, the following is representative of the cropping records for the last four years :

Barley, barley, carrots, barley.

Seeds, barley, sugar beet, lucerne.

Barley, barley, sugar beet, winter wheat.

We have cut out the hay crop.

For the second time barleys, a dressing was given according to the nature of the soil.

Last year we made rather a revolutionary change, and put down on this farm 350 acres of lucerne, which is part of a total crop of 2,000 acres of lucerne on our three farms, Narford and the two

Southacre farms, Hall Farm and Church Farm. These three farms being adjoining, are all worked together under the one manager.

The object of this large acreage of lucerne I shall refer to later.

The dressings for the lucerne land were :

- 1 cwt. Sulphate of Ammonia.
- 3 cwts. Superphosphate, 35 per cent.
- 2 cwts. N.A. Phosphate.
- 1½ cwts. Muriate Potash.

This gives a total of 7½ cwts. per acre. For the poorer fields the amount was increased to 8 cwts.

As lucerne requires a lot of lime, it was agreed that the soil with its chalk subsoil should prove very suitable.

The land was ploughed up to 14 inches deep and seeded last April and May.

A crop was taken from it during August and September, but owing to the exceptional drought the yield was very light.

Though a good part of the total 2,000 acres was seeded during a dry spell and has had very little rain ever since, the plant has become well established with a very even and thick growth, and there is every prospect of good crops next season.

The type of seed was mainly Hungarian, with a small amount of French Provence, all being inoculated.

I have been lately very interested in the question of young grass in connection with artificial drying, to which I shall refer later.

Investigations by Dr. Woodman and Professor Stapleton on the high nutritive value of young grass has shewn me that we have a fodder on our doorsteps which can replace to a great extent the expensive concentrated foods.

We have, therefore, seeded last autumn about 100 acres of Italian rye grass, and we have also about 70 acres of meadow pasture land which we are reserving for the same purpose.

The dressing we are using for the young grass is :

- 2 cwts. Superphosphate.
- 2 cwts. N.A. Phosphate.
- 2 cwts. Muriate of Potash.

This dressing was given in December, and was followed in the latter part of February with 1 cwt. of sulphate of ammonia.

A word on the implements we use will perhaps prove interesting.

We use Ransome ploughs fitted with broad skims. With these ploughs the top 3 to 4 inches of the soil, together with weeds, twitch, is carried to the bottom of the deep furrow and remains at the bottom, and thus has a certain amount of manurial value.

The light harrowing that follows fills in the crevices, preventing air getting down to the buried weeds and thus preventing their growth.

We are not believers of rolling on the light land under any conditions.

For deep ploughing we have found the Marshall Diesel tractors very economical, the fuel bill being very low. We also use them for

threshing, and now have seven of these on our Norfolk farms.

For row crop work we use high clearance caterpillar tractors.

We have made a close study of hoes for these tractors, and have had hoes constructed for us by Ransomes which have proved very satisfactory.

For the cutting and haulage of the lucerne we use International tractors, the haulage tractors being fitted with pneumatic tyres. We are also using these pneumatic-tyred tractors for harrowing.

On the stock side the light land seeded to long leys previously referred to has proved first class grazing for cross-bred poll angus stock. These are grazing with North country breeding sheep and hoggets, commonly known as Massam.

We also keep on the older pasture lands a breeding herd of cows crossed with poll angus bulls and Lincolnshire cows.

Owing to the low price of beef, we have given lately more attention to pigs, and we have a herd of about 1,000 large black sows which we are crossing with large white boars.

We have erected near the water supply points pigsties constructed of pressed straw. The roofs, which are very thick, are made of hedge trimmings covered with straw and barley awns. They are cool in the summer and warm in the winter.

On the farms there are many old disused chalk pits, and we endeavour to establish the pigs near these as they form very useful shelter in summer and winter.

Turning to our harvesting operations :

Our harvesting methods are, I certainly think, more revolutionary than any of the operations on the farm.

The corn, immediately after cutting, is taken to the threshing drum standing in the corner of the field, and it is surprising how clean the damp corn can be threshed. From the thresher the grain is taken straight to artificial driers, of which we have three by British Crop Driers, Ltd., for whom Ransomes are manufacturing.

The driers are situated at central points, each drier dealing with the product of two or three farms. The damp grain is put through the drier, which is continuous in operation, and dried down to a safe keeping moisture content. The dried grain is in first class condition with a high germination.

From the drier the grain is delivered straight into a dressing machine, and then is either bagged or elevated to storage bins.

We have found this method of harvesting not only to be certainly expeditious, but it reduces the amount of labour and losses attendant on ordinary harvesting methods such as :

Losses due to shedding the grain when handling dry sheaves in the ordinary way.

No stooking of sheaves and the lowering of the quality of the grain due to exposure to the weather.

No heating in the stack and loss due to rats.

No loss due to the top and bottom of the stack being damp, and, of course, there is no thatching.

A very important advantage is that we are able to work to a definite harvest programme without the costly delays one has to put up with due to our inclement weather.

Probably the most important factor is that as the grain is harvested and ready for sale in the one day, you can have your money in the bank instead of lying in the stack through the greater part of the winter.

There is a certain apprehension as to whether artificial drying affects germination. I can only say that with the type of plant we use, there is definitely no lowering of the germinating qualities and that it is quite common to have an increase of 1 or 2 per cent.

The straw, which is in varying stages of dampness is stacked in narrow stacks. The narrowness of the stacks allows the wind to get through and dry them out.

It is our intention to go a step further this coming harvest and try to do away with the self-binder which has been a valuable friend for many years.

Instead of tying the corn into sheaves we propose to elevate it loose from the cutter bar into trailers for transport to the thresher.

This type of drier is also used for the young grass to which I have previously referred so that the farmer is not only in a position to harvest his grain crops in good condition, but he is able to dry a product such as young grass and thus produce a concentrated food which our agricultural scientists confirm as being remarkable in all round nutritive value.

We have established the large acreage of lucerne to supply the South Acre Drying Station.

This drying station was erected last year for the production of Lucerne Meal.

The drying station is as near as possible in the centre of the crop to minimise the length of transport of the green crop.

The drying station is capable of dealing with 200 tons per day of the green lucerne which produces approximately 50 tons of meal.

The crop is cut with combine cutters and loaders, the crop being elevated straight from the cutting knife into trailers which are drawn alongside the cutting machine.

The trailers are fitted with pneumatic tyres and are hauled with the International tractors previously referred to. A trailer holds about three tons of green lucerne.

We estimate on getting three crops a year with a total life of 7 years.

I must ask your forgiveness in dealing rather at length with the harvesting side which perhaps is rather straying from the true subject of the paper, *i.e.*, The Farming of Light Land in Norfolk. As harvesting is, however, an important factor on the farm I can only hope my description of our methods has proved interesting.