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## Rothamsted Report for 1951

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### The Farms : Rothamsted

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## THE FARMS

By J. R. MOFFATT

### Rothamsted

The year under review was one of the most difficult and disappointing ones ever experienced. We had hardly recovered from the disastrous weather conditions of the 1950 harvest before a prolonged wet spell set in again. This not only considerably reduced the area of winter corn that could be sown, but also considerably delayed the harvesting of the root crops in 1950 and the ploughing for spring crops. The wet spell continued almost unbroken until mid-April, 1951, and land work started six weeks later than usual. In the first four months of 1951 the rainfall was more than 6 in. above the average. Thereafter it was a rush to get the spring crops sown. Thanks are due to all members of the farm staff who willingly worked very long hours to get through the work. June and July were dry, during which time all crops made rapid growth, but the two main harvesting months of August and September were again very wet, and the crops had to be gathered as best they could. October brought a pleasant respite, and potato lifting and autumn ploughing and drilling got a good start in dry weather. However, before the end of the month the weather again broke, with corn drilling still far from completed. A three-day fine spell early in December presented the only opportunity for drilling between the end of October and the end of the year. The 1952 cropping scheme has therefore had to be revised because of the unfavourable autumn weather.

### FIELD EXPERIMENTS

The unfavourable weather conditions in autumn and spring caused the abandonment of one experiment, and the revision of some spring experiments, but even so, the number of experimental field plots increased by 440 to a total of 2,007. The late start of spring field work made the planning of the programme of work very difficult, but the whole programme was eventually carried through. The gradual increase in the mechanization of experimental field work over the past few years enabled this programme to be very much bigger than would have been possible a few years ago. The potato crops on three of the long-term rotational experiments were planted very successfully by dropper this year, but in order to retain the same relative position of seed and fertilizer as in the past, two of these experiments will revert to hand planting in future.

### CROPPING

Of the 474 acres farmed, 251 acres were under arable crops, and 111 acres under grass and clover leys. The main crops were ; wheat, 105 acres, barley 61 acres, oats 10 acres, linseed 12 acres, potatoes 23 acres, kale and mangolds 18 acres. Other crops included beans, rye, and sugar beet, lucerne and vegetables, while 8 acres of experimental land were under bare fallow.

### CROP VARIETIES

#### *Wheat*

Six varieties were grown. Squareheadsmaster 13/4 and Yeoman

were grown on experimental areas, Bersée and Nord Desprez on non-experimental fields, and a very small area of Petit Quin Quin was grown to keep a stock of the seed. A small area of Atle was sown in the spring. As Nord Desprez seems to be more suitable for combine harvesting than Bersée, the latter variety will not be grown in 1952, except on some experimental areas. Petit Quin Quin showed signs of acute nitrogen starvation, and consequently gave a low yield. This variety will be tried out again under the conditions of high fertility it seems to require.

#### *Barley*

Plumage Archer was grown on all areas except for a small 2-acre patch of Herta. This ripened earlier than did the Plumage Archer, stood better and gave an excellent yield. The area under this variety will be considerably increased in 1952.

#### *Oats*

Sun 11 was the only variety grown. The crop was sown very late, and consequently proved disappointing. The variety has done well in the past, however, and will be retained in the future. White Opus will also be tried out in 1952.

#### *Rye*

The small area of rye was planted with King II, as the shorter straw makes for easier harvesting than the long-strawed varieties.

#### *Linseed*

With the introduction of Valuta, a rapid-growing and heavy-yielding variety, bred at Svalof, it was decided to sow a field of this variety. A satisfactory crop resulted and some of the seed will be sown again in 1952. The crop was inspected by the Seed Production Committee under the new Linseed Certification Scheme.

#### *Potatoes*

Majestic is the only variety grown; as it is the standard variety grown on experimental plots it is also grown on non-experimental areas. It yields well, is less susceptible to Late Blight than some varieties, and stores well. New seed is purchased each year, and in past years Grade A has been used for experimental work, and for most of the non-experimental areas but with occasional areas of grade H seed. Starting in 1952, however, Stock Seed will be used on all experimental plots, and Grade A seed on all non-experimental areas.

### CROP GROWTH

#### *Wheat*

The winter wheat generally survived the wet winter very well, and only a few small patches which were under water for a long time failed to survive. The heavy rains caused severe leaching of nitrogen during the winter and many of the crops continued to show symptoms of this throughout the summer. The top-dressings of nitrogen were applied much later than usual, as it was considered more important to get the spring crops sown. The eventual application of these dressings coincided with a spell of dry weather, and the crops showed no response for some time. This dressing did not

appear to have been heavy enough, and further applications were given to several fields. Yields, however, were below average.

#### *Barley*

Spring barley looked more promising than did the wheat, but it came into ear later than usual and some fields ripened very unevenly. Yields varied from field to field, but were generally satisfactory, and although not of very good quality, all the grain was sold for malting.

#### *Oats*

This was the most disappointing crop of the year. Growth was slow after a very late start, and the crop appeared stunted throughout the season. This was probably due to a shortage of nitrogen, although the crop received  $1\frac{3}{4}$  cwt. per acre of sulphate of ammonia early in June, in addition to  $1\frac{1}{4}$  cwt. per acre of superphosphate at time of sowing. The ears seemed to ripen prematurely while the straw was still unripe, which led to difficulty at harvest time.

#### *Potatoes*

Nearly all the planting of this crop was done with a dropper attached to the toolbar of a ridging plough. Despite their late start, growth of the plants was maintained at a satisfactory rate, and two sprayings with a low-volume sprayer against Light Blight kept the tops green until almost the end of September. Burning off was then carried out using sulphuric acid. Tests were also made with several alternative materials for burning off, and also with a mechanical haulm destructor, but sulphuric acid proved easily the most effective. The lifting of the crop was completed before the end of November, the picking being done by school children. Yields were below normal, but the tubers were of good size and shape. They were stored as usual in a large heap in the barns.

Experiments in progress indicate that the yields from plots planted with a dropper are superior to those from hand-planting, probably partly due to the fact that a bigger proportion of the tubers survive when a dropper is used.

#### *Sugar beet*

Only a very small acreage was grown, as there is always difficulty in getting the singling done at the proper time because of the pressure of experimental work, and the expense of getting the crop lifted, cleaned, and carted off our heavy soil is considerable. The crop maintained good growth throughout the summer, and there was little Virus Yellows disease. The leaf:root ratio was rather higher than usual; the sugar content averaged about 16.5 per cent.

#### *Kale*

This crop made splendid growth throughout the season, and was one of the heaviest ever grown. The seedlings were sprayed with a low-volume machine using 15 per cent D.D.T. emulsion to ward off a threatened flea beetle attack.

#### *Mangolds*

This crop is only grown on the classical experiment on Barnfield

where it has been grown since 1876. The application of fertilizers to plots and the drilling occupy a full week. Consequently in recent years this work has been left until towards the end of the spring programme, and the crop has been sown late for many years. In future the crop will be given a certain amount of precedence over annual experiments. In 1951 it was sown very late (May 26th) and subsequent growth was slow. Together, this affected the yield, which was very low.

#### *Linseed*

The new Swedish variety Valuta grew rapidly after a late start. A rather late inspection of the field showed a considerable growth of Cleavers (*Galium aparine*) and creeping thistles, so the crop was sprayed with M.C.P.A. weedkiller at a rather forward state of growth. The tractor wheels and the spray both caused some damage to the crop, and although it recovered, the yield was probably affected. A dressing of nitrogen was given in early June.

#### *Harvesting*

All crops ripened much later than usual and very unevenly. Weather conditions during harvest were very bad, and the operation was prolonged until early in October. A 50-hole platform-type grain drier proved a tremendous boon, as nearly all the combined grain needed drying. The provision of the drier enabled fuller use to be made of the combine than has been possible in the past. No moisture meter was used, but difficulty in estimating the moisture content of the grain showed the need for one.

The potato harvest was carried out under excellent conditions in October although an increase in the number of experimental plots prolonged this operation beyond the usual length of time.

For the sugar beet and mangold lifting, weather conditions were atrocious, the month of November having a rainfall of almost twice average. Lifting was completed by mid-December.

#### *Grassland*

The season suited the grassland well, and there was ample keep throughout the season. The heavy rainfall in August and September enabled the grass to maintain growth well into the autumn, and supplementary feeding was not needed until later than usual.

About 10 acres of old grassland were ploughed up and will be put through an arable rotation, and about the same acreage of arable land was put down to a long-term ley.

Several fields were sprayed with a hormone-type weedkiller, to control buttercups and thistles.

Hay crops were mostly very satisfactory; they were mainly baled and carried to the barns.

The wet spring caused a big flush of grass on the 2nd and 3rd year grazing plots on the Ley-arable experiments, but owing to pressure of other work in the late spring, the experimental grazing of these plots could not be undertaken immediately, and it was therefore decided to take an early hay crop from them and graze them subsequently.

All the under-sown seeds took very well, both on experimental plots and on non-experimental areas.

#### LIVESTOCK

##### *Cattle*

The cattle policy is to purchase young Hereford-cross cattle, winter them fairly cheaply on home-grown produce, and fatten them off the grass at about two and a half years old. They are wintered mainly in covered yards where they are fed on oat and barley straw, hay and kale, with a small supplement of home-produced grains. They produce sufficient farmyard manure for experimental plots and for the 20-30 acres of potatoes grown each year. During 1951, 60 beasts were sold fat.

##### *Sheep*

The ewe flock of about 150 ewes, originally a flock of Scotch Half-breds, is now composed almost entirely of second cross ewes (Oxford and Suffolk  $\times$  Scotch Half-bred). They are mated with rams of Down breeds for the production of fat lambs.

The lambs did not thrive as they should have done, and very few were sold fat by the end of September. Many of them were sold as store lambs in October, though sufficient were retained for stocking the grazing plots at Rothamsted and Woburn in 1952.

After the 1952 season the flock will be reduced to the minimum size needed to produce the sheep required for grazing experiments.

#### MACHINERY

The range of implements has been increased during the year by the purchase of a third tractor fitted with hydraulic lift, which will mainly be used on experimental field work. An electrically-heated platform-type grain drier with a capacity of 50 sacks has been installed, and a grain cleaner has also been purchased, to enable grain to be cleaned well enough for seed purposes. Other new items include a mounted 2-furrow reversible plough, a mounted low-volume spraying machine, and a mounted weeder.

#### BUILDINGS

The only addition to the range of buildings has been a large general purpose building 150 feet long by 33 feet deep. This now houses the grain drier, but it is mainly used as an implement shed. It will also be used to store grain and fertilizers.

#### ESTATE WORK

A considerable amount of estate maintenance work was carried out during the year. This included hedging, fencing, and the felling of dead trees for cutting into timber.

#### STAFF

Mr. H. P. Carrant, the farm bailiff, was awarded the Long Service Medal of the Royal Agricultural Society of England for 40 years' service with the Station. This long period of cheerful and unstinted service has greatly facilitated the smooth running of the farm.

Mr. J. Bidgood and Mr. W. Cooper joined the staff as recorders of experimental field plot work.

Mr. L. Wright, a horseman of 7 years' service, died after a long illness.

Mr. J. R. Moffatt was given a grant by the Agricultural Research

Council to enable him to make a tour of research stations and experimental farms in Holland, Denmark and Sweden.

### Woburn

The Woburn Farm was directed and managed by the staff of the Rothamsted Farm, the day-to-day planning being left largely to the foreman at Woburn.

Owing to the shortage of permanent staff, no annual experiments were undertaken, but the number of experimental plots was increased by 96 plots on a new long-term experiment testing the value of overhead irrigation for farm crops. The total number of experimental plots scheduled was 538, and, despite the late spring, the full programme of work was carried through.

Of the 127 acres farmed, cereals occupied 60 acres, potatoes 22 acres, sugar beet 6 acres, and grass 24 acres. The remaining area was under experimental crops and fallow. The singling and harvesting of the small acreage of sugar beet presented difficulties because of the labour shortage, and the quality of the work was poor. As labour difficulties become more acute each year, the growing of sugar beet, in future, will be restricted almost entirely to experimental areas. The potato crop does not present such great labour problems, and the area under this crop will probably be increased.

Further progress was made with the mechanization of field and farmstead operations by the purchase of a mechanical dung loader and a dung spreader, while a sack elevator has greatly facilitated the handling of sacks of corn, potatoes, and feeding stuffs around the farmstead.

The buildings were patched and painted during the summer for the first time for over 20 years. Plans are now well forward for the erection of a pair of farm workers' cottages on the farm, and when these materialize many of the immediate labour problems should be solved.

The very heavy rain during the winter caused some of the heavier fields to become waterlogged, but cleaning many of the ditches considerably eased the position. Many of the badly overgrown hedges received attention during the winter, and it is hoped that during 1952 the last of them will have been dealt with.

The year was generally a very difficult and disappointing one. The abnormally long wet autumn and winter of 1950-51 considerably retarded normal winter land work, and delayed the start of spring operations by about six weeks. When land work started in the middle of April there were considerable arrears to be made up, as well as normal spring cultivations and sowing to be done. The lateness of the season made necessary a revision of cropping plans as it was considered too late to sow spring oats or wheat.

The surface of the land dried out very rapidly during April and May, until a point was reached where the seed-beds were too rough for sowing because of the too rapid drying of the surface, while other fields were too wet below the surface even for ploughing. However, by the middle of June work was up to schedule, although all crops were backward as a result of late sowing.