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## Report for 1950

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### The Farms : Rothamsted

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J. R. Moffatt (1951) *The Farms : Rothamsted* ; Report For 1950, pp 121 - 125 - **DOI:**  
**<https://doi.org/10.23637/ERADOC-1-72>**

## THE FARMS

By J. R. MOFFATT

The year under review brought no major change either in policy or direction of work, but will long be remembered because the execution of the work was made very difficult by the very wet summer and the atrocious weather during the corn harvest, which ruined what had promised to be a bumper one. The gradual relaxation of restrictions and controls, and the more plentiful supplies of farm necessities considerably eased the work of management, but the labour position gave cause for anxiety at certain times.

### FIELD EXPERIENTS

The number of experimental field plots in 1950 again showed an increase over the previous year, but despite the very unfavourable weather conditions during the summer and autumn, the full programme was carried through. The staff was just able to keep abreast of the ever-increasing number and complexity of plots with the aid of increased mechanisation and by working long hours of overtime.

The scarcity of seasonal workers will in the very near future limit the amount of experimental work which can be undertaken, as they are needed for the singling of the root crops, potato picking, and to help with the rush of work at harvest time.

Details of the field experiments are given in the report of the Field Plots Committee.

### CROPPING

The area farmed remained at 475 acres, with about 65 acres of woodland in addition. The main crops grown were wheat 104 acres, barley 36 acres, oats 10 acres, potatoes 35 acres, other root crops 20 acres, with smaller acreages of rye, linseed, beans, lucerne and vegetables, and bare fallow. The acreage under the various crops was very similar to previous years except that the area under wheat was increased at the expense of the barley. About 106 acres were under leys and 96 acres remained under permanent grass. This latter figure is gradually being reduced each year as it is ploughed up for experimental field plots.

### WEATHER AND CROPS

The increased wheat acreage was sown by mid-November, 1949 under fairly good conditions. Two new French wheats, Nord Desprez and Petit Quin Quin, were tried and proved very successful in the very wet season.

The weather during December 1949 and early January 1950 was much warmer and drier than usual and land work was carried on without interruption. Ploughing, including a second ploughing of many of the fields, was completed by the middle of the month. Advantage was taken of a frosty spell later in January to apply and plough in farmyard manure for potatoes.

During February the rainfall was very heavy and land work was impossible. The land dried out in early March and good spring

seedbeds were obtained. Conditions remained good during April and May, and all crops were sown in good time in good tilths.

Haymaking started in early June in excellent weather, but the crops were rather light and cutting was delayed for a short while to enable more growth to take place. The crop from the early-cut fields was made in good condition, but with the deterioration in weather conditions the later cut crops were only made with difficulty, and the quality was poorer. A pick-up baler was used in 1950 for the first time. This reduced considerably the labour required to handle the crop, and freed labour for root singling. The whole hay crop was carted to the farmstead and stored under Dutch barns.

The wet weather in the latter half of June enabled all crops to make excellent growth, and at the end of the month harvest prospects were good. July, however, had a rainfall of more than twice the average and there were several very heavy storms. This, although encouraging the growth of root crops, also encouraged weeds, which became difficult to control, even in the root crops, under the continuous wet conditions. The corn crops suffered badly, many of them being severely laid and battered, from which they never recovered. The Nord Desprez and Petit Quin Quin remained standing and yielded exceptionally well.

Conditions for the corn harvest in August and September could hardly have been worse. Both months had rainfalls well above the average, spread over most days of the months. The laid crops and the bad weather made harvesting an extremely long and tedious operation which was not finished until early in October. The experimental corn crops were harvested early and in fairly good condition, but the preferential treatment afforded to these crops delayed the harvesting of the non-experimental crops. Further delay was caused by the fact that, having no means of drying corn, the small combine harvester could only be used to a very limited extent. Only about 30 acres were combined, but it is hoped by next harvest to have a sack drier. However losses were not as heavy as was at one time feared, despite the fact that one field had to be cut by mowers and carted loose. Losses from sprouted and shed grain were reduced by carting the corn as soon as it was fit, even though other corn still awaited cutting. By this system, during long spells of bad weather the crops were either under cover or still standing in the field. All the barley sold fetched the maximum price and the oats and much of the wheat was sold for seed. A small lot of wheat was found to be unfit for milling and will be used for stock feed.

The harvesting of the potato crop followed immediately after the corn harvest. The crop had made excellent growth during the wet season, although the plant was rather gappy as a result of the Scotch seed tubers being affected by Dry Rot. Weather conditions improved for lifting and as the ground dried out the speed of lifting increased but the work remained slow because of the heavy yield. The experimental plots were lifted by schoolchildren, and after considerable difficulty labour for the non-experimental areas was found at Bedford, and was transported each day to and from work. The lifting was completed just as the weather broke. On all areas yields were high, and the tubers were of good size and shape, with very little disease. The crop was stored under Dutch barns to a depth of 14 ft. to provide wet-day work for the staff during winter.

November again was a very wet month, with a rainfall of over twice the normal, spread over 24 days. The lifting of the mangold and sugar beet crops was seriously delayed, but fortunately the weather remained reasonably mild, and the mangolds suffered no harm. The yield of this crop, however, was disappointing. Conditions improved slightly in December, although a spell of hard frost prevented sugar beet lifting for about a week. However, this crop was all lifted by the end of the year. Yields and sugar content were satisfactory.

#### PESTS AND DISEASES

The pest causing most damage in 1950 was undoubtedly Wheat Bulb Fly, a not unexpected occurrence in view of the hot, dry summer of 1949. The wheat on the section of Broadbalk field after fallow in 1949, and on the classical Half Acre strip after fallow was seriously damaged. On the former area weeds grew freely with little competition from the wheat, while the latter area was so badly damaged that it was redrilled late in spring with Fylgia wheat. Parts of some of the non-experimental fields where late-planted potatoes were grown in 1949 were also so severely damaged that they had to be ploughed up.

Late Blight attacked the potato crop earlier than ever before, but this was controlled until early September by spraying. The first spraying was done before the end of July, all areas being sprayed twice, and some three times. A low-volume sprayer fitted with large jets was used to apply the proprietary materials used, at about 60 gallons per acre under fairly high pressure. This worked very successfully. The haulm was burnt off about mid-September with sulphuric acid. These measures resulted in a crop almost free from blighted tubers. Several other materials were tested as possible substitutes for sulphuric acid, using both high and low volume machines, but acid proved by far the superior.

Fleabeetles caused very little trouble to the kale crop but spraying with a 15 per cent emulsion of D.D.T. was done as a precautionary measure. No damage was done to sugar beet or mangolds.

Aphids were far less prevalent than usual, caused little damage to the bean crop, and resulted in less virus yellows disease in sugar beet than usual.

#### GRASSLAND AND LIVESTOCK

The wet season made the grassland very productive and found us rather understocked with cattle to cope with the rapidly growing grass. Twenty-seven cattle were sold off fat from the grass and another four were sold at the local Christmas Fat Stock Show.

For the past few years Irish cattle have been purchased as stores, yarded in the winter to make farmyard manure, and fattened during the following summer. In future the policy will remain the same, except that Hereford-cross cattle will be used instead of the Irish Shorthorn type of cattle. The colour-marked cattle will present rather a less motley appearance than has been the case in the past. This autumn twenty-four Hereford-cross calves and thirty-four older cattle of the same cross were purchased.

The mixtures of grasses and clovers sown on the various experimental areas all took very well. The seeds sown in 1949, which were rather thin, thickened out well during the summer and gave excellent yields of hay, greencut grass, and pasture grass.

#### SHEEP

The breeding flock of 151 ewes consisted in the main of sheep bred on the farm by mating an Oxford and Suffolk ram with Scotch Half-bred ewes. There are now very few of the original flock of Scotch Half-breds left. All the ewes were mated to Oxford rams for the production of fat lambs, but the lambing average of just over  $1\frac{1}{4}$  lambs per ewe was lower than usual. The lambs did well in the early part of the season, but later a large proportion of them suffered from a severe attack by the sheep lung worm and several deaths occurred.

Each year now about half the lamb crop of the previous year is retained to provide animals for grazing experimental plots at Rothamsted and Woburn.

#### LABOUR

The labour position in 1950 was less satisfactory than last year. The number of permanent workers engaged was greater than in 1949, but the increase in the number of experimental plots, and the increasing complexity of the work upon them, many requiring operations throughout the summer, made extra demands upon the labour force. Extra work was also needed to keep weeds under control in the wet season. The labour available was about sufficient to meet normal demands, but was not sufficient to deal satisfactorily with root singling and potato lifting. Seasonal labour is needed for both these operations but is almost impossible to secure. There appears to be no alternative but to reduce the area of these crops.

#### MACHINERY

The implements and machinery on the farm have been kept up-to-date by replacing obsolete or badly worn items. A new tractor was purchased during the year, but the old one it replaced is being kept mainly for belt-pulley work. The only fresh equipment purchased was an engine-driven pick-up baler, which was used successfully for hay and combined straw, and a saw bench for cutting up home-grown timber.

#### BUILDINGS

Early in the year a new open-fronted implement shed and farm workshop was completed, though this latter still has to be equipped. Plans are in hand for a general purpose building which will serve partly as a fertilizer and grain store, and partly as further storage accommodation for implements.

#### ESTATE WORK

During the winter months maintenance work on the farm and estate was carried out, and part of the re-afforested area of Knott Wood was cleared of weeds and hazel coppice.

#### LOCAL SHOW SUCCESSES.

At the local ploughing match the two horse men secured two 1st and two 2nd prizes, and two tractor drivers received 2nd and 4th prizes.

At the local Christmas Fat Stock Show 1st and 3rd prizes were secured for fat cattle.

### Woburn

The work at the Woburn Farm was directed and managed by the staff of the Rothamsted Farm, and though the farms are about 25 miles apart the system worked satisfactorily.

The number of field experiments carried out was again restricted by the shortage of permanent staff. A total of 498 experimental plots were laid out and drilled, but an extremely heavy infestation of spurrey necessitated the 12 plots of the Permanent Barley area being ploughed in during the summer. Of this total all except 40 plots were either classical experiments or modern long-term experiments.

The area farmed remained at 127 acres, of which 60 acres were under cereal crops, 33 acres under sugar beet or potatoes, 24 acres under grass and the remainder under experimental crops and fallow. The Woburn soil is well suited to the growth of potatoes and sugar beet, and the acreage devoted to these crops is as large as can be handled in a district where labour conditions are difficult.

The mechanization of field and farmstead operations and the re-equipping of the farm with modern implements, was carried a stage further during the year. New implements included a tractor-mounted hoe, a sugar beet topper and a tractor-mounted beet digger. After some initial difficulties these machines worked reasonably well until very bad weather conditions made it impossible to use them. The narrow row spacing (18 in.) increased the difficulties with the tractor-mounted machines, and a wider spacing of rows will be used in future. A reversible mounted plough was used during the year, making possible the cross-ploughing of the steeply sloping fields and eliminating the ridges and furrows on experimental and potential experimental areas. The mechanization of most of the operations on the farm enabled a very small permanent staff to carry through a somewhat larger programme of experimental work than in 1949, as well as a large area of labour-consuming crops, with less reliance on part-time workers. It is hoped to complete the mechanization in 1951 by the introduction of a small combine-harvester for non-experimental crops, and later to use a specially designed machine for harvesting experimental corn crops.

A much-needed new Dutch barn was erected at the farmstead during the year and this greatly increased the area of covered storage and working space. A range of open-fronted implement sheds and tractor garages was also erected which enables the implements to receive proper attention during storage. The one cottage let with the farm was modernized.

The facilities for the preparation and mixing of rations for livestock have been greatly improved by the provision of an automatic grinding mill, a food mixing machine and an electric pig food