ROTHAMSTED RESEARCH

Report for 1952

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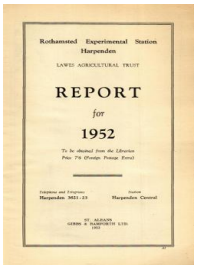

The Farms : Rothamsted

J. R. Moffatt

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THE FARMS

J. R. MOFFATT

Rothamsted

The year 1951-52 proved generally satisfactory, in spite of rather extreme fluctuations of weather conditions. Land work in autumn 1951, after a brief good start, was completely stopped by very heavy rainfall for over a month, and drilling of winter cereals was considerably delayed. A short fine spell early in December enabled some more wheat to be drilled, but the acreage sown was lower than had been planned.

The winter of 1951-52 was a mild one except for freak snows towards the end of March; January and February were reasonably dry, and good progress was made with winter ploughing. A very welcome burst of spring weather starting in the last week of February facilitated the preparation of good seedbeds much earlier than usual, and the drilling of spring cereal was completed by the middle of March.

The preparation of seed-beds for root crops followed, but the planting of these crops was delayed by the freak snows already mentioned. However the root crops were all planted under reasonably good conditions by mid-May. May saw the beginning of a long drought which lasted until the end of July. The hay crop did not suffer much as it was cut early before the drought became too severe. Although June and July were very dry the corn crops continued to grow well, though they ripened much earlier than usual. Mangolds and sugar beet made only very slow growth, but the drought was felt most by the potato crop which made very little growth.

The drought broke in early August, which month gave twice the normal rainfall. The corn harvest was seriously interfered with but the root crops took a fresh lease of life. Potato lifting started under ideal conditions about the middle of October, but before the operation was completed the weather broke and for the second successive year November was very wet. Towards the end of the month there was a spell of severe wintry weather, with a considerable fall of snow, which lasted well into December. The harvesting of the mangolds and sugar beet was delayed; the mangolds suffered considerable damage from frost, and the sugar beet crop was not disposed of until well into January 1953.

FIELD EXPERIMENTS

The number of experimental plots at Rothamsted totalled 2,419, an increase of over 500 above the 1951 figure. About 200 of these were drilled and harvested by departments of the Station, and not all the experiments needed carrying through to harvest. There was, however, a big increase in the amount of experimental work, which in itself is rapidly becoming more complicated each year. With such a very large programme of experimental work the planning of the operations is a formidable task, and any delay caused by the weather or breakdown of machinery is likely to upset

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the orderly execution of the work. The programme of field experiments is now so full, and the work is so spread over the year, that it is most unlikely that any leeway caused by a delay can be made up subsequently. It is therefore difficult to see that there can be any great expansion of field work which can be guaranteed close supervision and proper execution, without considerable risk that some of the work will suffer.

Extra managerial and supervisory staff are being engaged, and more of the experimental work is being mechanized each year in order to keep pace with the ever-increasing amount of experimental field-work.

Cropping

The farm consists of about 475 acres, of which 368 acres were under arable crops. There is still about 75 acres of old grassland which is either under experiments, or reserved for future experiments, or unploughable. On the tillage acreage sixteen different crops were grown, the main ones being wheat 69 acres, barley 87 acres, oats 16 acres, potatoes 40 acres, kale, mangolds and sugar beet 18 acres, with 11 acres of experimental land under fallow.

Crops, Varieties and Growth

Wheat

Squareheads Master 13/4, Yeoman and some Bersée were grown on experimental areas, but Nord Desprez was the only variety grown on non-experimental fields. Although several fields were sown late, the mild winter resulted in rapid germination and good growth. Heavy nitrogenous top dressings were used and most of the crop was sprayed against weeds. Despite the drought good growth was maintained through the season, and the crop ripened earlier than usual. Yields from the areas threshed are very satisfactory.

The Nord Desprez was severely attacked by Yellow Rust which must have reduced the yield. A varietal trial on land where lodging was foreseen indicated that Hybrid 46 and Cappelle had stiffer straw than the Nord Desprez, and were not susceptible to the strain of Yellow Rust present in 1952. Cappelle will, therefore, replace Nord Desprez as the main wheat for non-experimental fields. The drilling of Broadbalk, the Classical wheat field, was delayed until early December, but the crop made good growth subsequently, and at harvest looked better and cleaner than it has for many years. Practically no lodging occurred and yields on most plots were above average. Wild oats, the presence of which threatened the extinction of the experiment a few years ago, have been very greatly reduced in number by hand-pulling each year, and the weed was hand-pulled again in 1952.

Barley

Plumage Archer was grown on all experimental areas and on a few areas of non-experimental barley, but Herta replaced Plumage Archer on most of the non-experimental land. The Herta, a stiff-strawed, heavy-yielding variety, was liberally top-dressed with nitrogen and grew extremely well throughout the year. Yields

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averaged over 32 cwt. per acre and it was all sold for seed purposes. No lodging occurred with the Herta but some of the Plumage Archer was lodged by the heavy rain just before harvest. One late-sown area of Plumage Archer which followed a crop of linseed destroyed by flea-beetles, suffered severely from the drought and a heavy attack of mildew. This area ripened very late and unevenly, and the yield was low.

Hoosfield, the Classical barley field, was so very badly infested with wild oats that most of each plot was cut green before the wild oats ripened, a small area of each plot being left for harvest. It was hoped to hand-pull the wild oats from the harvested area, but the oats were so numerous and the dry weather so accelerated their ripening, that this was not accomplished.

Oats

Sun II has been the variety used in the past, but in 1952 Blenda, another cross of the same parentage, was tried out, together with White Opus. In the early part of the season the Blenda was thinner and more backward than the Opus, but it subsequently filled out and yielded 36 cwt. per acre. The Opus grew well and looked a thick even crop, but it has not yet been threshed. Yields from a varietal trial indicated that there was little to choose this season between Sun II and White Opus, which were slightly better than Blenda. Marne gave slightly the highest yield; the mean of the four varieties was 36 cwt. per acre.

Linseed

About 11 acres of Valuta linseed were sown with seed saved from the 1951 crop. The germination was known to be low and though allowance was made in the seed rate the ensuing plant was thin. An attack by flea beetles followed which decimated the plant, so the area was worked for another crop. A small area in another field was carried through to harvest, but here again the plant was very thin and the crop was weedy. As the crop is not an economic one it is unlikely to be grown again unless to meet special circumstances or conditions.

Potatoes

As in previous years, Majestic potatoes only were grown, as this is the standard variety for all experimental field work. The non-experimental areas were planted with the same variety. Stock Seed was used on all experimental areas and Class ' A ' seed was purchased for non-experimental areas. The seed was obtained from Northern Ireland.

The seed went further than was anticipated so the acreage was increased to use all of it. This brought the acreage to the biggest for many years. As planting was mostly done by dropper attached to the tool bar of a ridging plough, and subsequent clearing operations were mostly mechanized, the increased acreage was easily handled until it came to lifting. A mechanical weeder was used to keep the crop clean. Schoolchildren picked the crop from the plots, which were harvested first, and gave some help with the non-experimental crop. They were recalled to school before lifting was completed,

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and though a supply of gang labour was subsequently found in Bedford, the weather broke before this could be organized. There were still about 2 acres of potatoes in the ground at the end of the year. In view of the considerable difficulty in getting pickers in this area, where casual labour is non-existent, the area of the crop will be reduced considerably in future. The possibility of mechanical harvesting has been investigated, but the heavy, stony soil at Rothamsted mitigates against it. There is certainly no machine capable of handling small experimental plots.

The crop was seriously retarded by the summer drought but when the rain came in August, vigorous growth took place. This resulted in many of the tubers becoming mis-shapen and brought on an attack of Late Blight. Two copper sprayings at medium volume were given and the haulm remained green until well into October. It was burnt off early in October and the lifting started about the middle of the month. The crop was stored in large heaps in the barns and will be sorted throughout the winter.

A large-scale trial was carried out to test whether Late Blight could be controlled by spraying with copper compounds at volume as low as 10 gallons per acre. Results indicated that in a season such as 1952 when the epidemic was not severe, the protection afforded to the leaves by some materials when applied at 10 gallons per acre could be as good as at 40 gallons.

Sugar beet, fodder beet and mangolds

The area of each of these crops was limited to the experimental areas, as the labour demands at singling time clash with the requirements of other work, and no seasonal labour is available. The crop also prevents difficulties on our heavy soil at lifting. The hard weather in late November and early December did considerable damage to the mangolds and much of the crop will have to be used earlier than usual to prevent losses by rotting. The leaves of the sugar beet were likewise damaged, and the weighing of the tops was abandoned; the roots were not damaged though lifting was delayed until early January 1953. A variety trial with four varieties of fodder beet of different types was carried out, but yields were almost identical at 26 tons per acre.

Kale

Both Marrow-stem and Thousand-head kale were grown for use during the winter. The Marrow-stem is cut and fed to cattle in yards while the Thousand-head is folded by sheep. The area was reduced this year to keep pace with the reduction in sheep numbers.

Flea beetles were active throughout the summer and one small early sown area was destroyed. This was redrilled and the beetles on this and on the other area of kale were controlled by two medium volume sprayings using a 15 per cent emulsion of D.D.T.

Grassland

The grassland was very productive in the early part of the year. The hay crop was cut and baled during June under good weather conditions and a heavy crop of good quality hay was secured. A

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top-dressing of " Nitrochalk " was given to all fields after the removal of the hay crop but the dry weather prevented this from having any immediate effect. During the latter half of June grass became very scarce and during July many of the fields were badly scorched. They rapidly improved with rain during August and fair growth was maintained until the end of the growing season.

Most of the grass on fields were sprayed with M.C.P.A. weedkiller which had a marked influence on buttercups and thistles.

Cereal Harvest

Owing to the drought all cereal crops ripened much earlier than usual. Cutting starting on 22nd July and continued without a break for ten days and excellent progress was made. Carting and combining of barley started before the end of the month. However, a spell of very wet weather then occurred and for a fortnight only intermittent work could be done, but a fine spell in the last week of August enabled the harvest to be completed before the end of the month.

All the wheat and oats were cut by binder and stacked under the Dutch barns at the farmstead. All the non-experimental barley was combined and the straw baled. The barley was all stored either in bags or in small plywood grain bins until the end of the year when it was sold without further cleaning. The platform drier was not used as much as in 1951 as none of the early-combined corn needed any drying; only about 22 tons needed drying this year.

During the harvest, trials were carried out to compare a standard Massey-Harris 726 combine, and the experimental combine of the National Institute of Agricultural Engineering with the present method, using a binder for harvesting experimental cereal plots. A preliminary examination of the results indicates that both combine-harvesters have great possibilities for the work, and effect a very great saving in time.

Livestock

Cattle

During the year 26 Irish black polls and 17 Hereford-cross store cattle were purchased for fattening, bringing the number of feeding cattle to 88. It was hoped to fatten about 50 of these from the grass during the year, but grass keep became so scarce during July and August that only 37 were sold by the end of the year. The remainder will be overwintered, some in covered years, and some outside. Feeding will consist of hay, oat and barley straw, and kale, with a small supplement of home-grown grains.

Sufficient farmyard manure will be made for the experimental plots and for the non-experimental area of potatoes.

Sheep

The rather mixed home-bred flock of 152 ewes produced 220 lambs at tailing time, a percentage of 145. Some were sold fat or at store sales in the autumn, but sufficient were retained for stocking the grazing plots at Rothamsted and Woburn in 1953. In the autumn many of the older ewes were drafted from the flock which was reduced to 80. These will probably be replaced in 1953 by a

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small number of Scotch Half-bred ewes which will be kept solely to rear sheep for the grazing experiments.

Machinery

The purchase of new equipment was confined mainly to replacing worn-out equipment, and by duplicating some items to enable full use to be made of fine spells of weather in busy seasons. A semi-mounted side-delivery rake and a bale sledge were purchased and these considerably expedited the handling of both hay and straw in conjunction with the pick-up baler. The baler was tried out for harvesting crops of hay from experimental plots which, in the past, were weighed loose in the field or carted to the weighbridge. The scheme worked very satisfactorily and will be extended wherever possible. Two dung spreaders were purchased for use with a dung loader, which worked very efficiently in the cattle yards.

Buildings

No major building work was undertaken but some modifications and adaptations were made. The farm cottages were modernized, all now being fitted with modern sanitary conveniences, including baths.

Plans are in hand for the bulk handling of grain; in outline they consist of the erection of 4 bins with a framework of timber and with plywood sides, each bin to hold about 18 tons of grain. It is planned to fill these by using a pneumatic conveyor; and to empty them by fitting a suction attachment to the conveyor and bagging off direct.

Estate Work

A considerable amount of general estate duties were carried out during the year. This included hedging, fencing, and the felling of dead trees for use as timber. The gradual replacement of old fences by concrete post and wire fence was considerably accelerated during the year.

Woburn

The work of Woburn Farm was directed and managed by the staff of the Rothamsted Farm.

The experimental work at Woburn could not be extended owing to the shortage of permanent farm staff, and the non-experimental cropping schedule had to be altered for the same reason. Conditions at Woburn are ideal for the sugar beet but the large labour demands made by this crop necessitated its exclusion, except for small experimental areas. A considerable acreage of potatoes was grown as the casual labour needed for lifting the crop can be obtained from the neighbouring town of Bedford. Plans are now passed for the erection of a pair of farm workers' cottages and building should commence almost immediately. This should overcome the difficulties of permanent staff.

The mechanization of the field operations both on experimental and non-experimental areas is almost completed, though one horse is kept for odd work and light operations on experimental plots. Most of the operations at the farmstead are also mechanized, electricity being used as the source of power where possible. For major operations such as threshing and baling hay and straw, the

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