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Report for 1956

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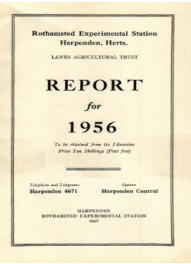
Rothamsted Experimental Station
Harpenden, Herts.
LAWES AGRICULTURAL TRUST
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The Farms : Woburn

J. R. Moffatt

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Staff

B. Weston retired from the post of Field Superintendent on 31 December 1956. J. M. Bidgood has been appointed to the vacant post, which in future will be known as that of Chief Recorder.

Woburn

The work of the Woburn Farm is directed and managed by the staff of the Rothamsted Farm. The field experiments are planned by the Field Plots Committee, while the day-to-day planning is done by the bailiff at Woburn.

The effects on crops of the appalling weather of 1956 were similar to, though perhaps not so severe as, those at Rothamsted. For cereals it was a disappointing year, but it suited potatoes and sugar beet. In addition, serious damage was caused by birds to some crops.

The Effect of Weather on Crops

The mild autumn of 1955 enabled the winter ploughing, which included a piece of grassland on the heavy soil, to be completed before the end of the year.

In January 1956 the weather was very changeable, and a severe spell of frost lasted throughout most of February. After the land had dried out in March a long spell of fine weather enabled the spring corn and beans to be sown reasonably early and under good conditions. The continuation of the dry spell throughout April facilitated the preparation of the ground for, and the planting of, the potatoes and sugar beet. The dry spell continued throughout most of May, and it was accompanied by cold winds. Germination of root crops was delayed and growth was retarded on all crops. There was a very sharp frost in mid-May which caused considerable damage to several areas of early potatoes, and early sown maincrops were also damaged. The leaves of the spring beans also suffered damage. The total rainfall for the four months February–May was only just over 3 inches, less than half the normal.

Throughout June, July and August the weather was very wet. Early in June all crops made a spurt of growth, and a second germination occurred of all root crops and small seeds. Good growth was maintained throughout July, especially by potatoes and sugar beet. The cereal crops came into ear earlier than usual and when the straw was rather short. Despite this, ripening started later than usual and was a very slow process.

The heaviest rainfall of the year was experienced in August when 4·19 inches was spread over 22 days. The start of harvesting was consequently delayed. Only one field of barley was badly laid, and this had to be cut with a mower.

All the barley crops ripened very unevenly, and the grain was badly discoloured and of very uneven quality. Spring wheat was very slow to ripen, and quite a lot of sprouting took place in the ears of the standing crops. The spring beans looked as though they would never ripen and were not cut until the third week of October.

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Late blight began to spread rapidly under the damp conditions of early September, so the haulm on all areas was burnt off with sodium arsenite. Fortunately the weather improved in the latter half of the month, and the harvesting of the cereals was completed before the end of the month.

The improved weather conditions lasted throughout October and November, and this greatly helped the harvesting of the heavy crops of potatoes and sugar beet. Good progress was also made with the autumn ploughing, while the small acreage of winter corn was sown under good conditions. There were two very sharp frosts in the middle of November, which did some damage to sugar beet which were pulled and ready for topping.

Cropping

Of the 127 acres farmed 20 acres were under wheat, 24 under barley, 27 under potatoes and 8 under beans. There were smaller acreages of sugar beet, kale and lucerne. Seven acres of ley were ploughed and sown to spring wheat, while 4 acres were undersown with a ley mixture.

Beans were introduced into the rotation this year, since too frequent cropping with cereals and potatoes has led to rather frequent attacks of eyespot and take-all, while many of the fields are affected to a moderate extent with potato-root eelworm. Oats will probably be grown again in 1957 as an alternative to wheat or barley.

Field Experiments

The classical wheat and barley plots were all fallowed in 1956 in order to eliminate the twitch *Holcus mollis* from the wheat ground and *Agrostis gigantea* from the barley ground. Half of each of the wheat and barley plots was sprayed with TCA at 40 lb./acre in the winter of 1955–56, and as this appeared very successful in reducing the amount of twitch, the other half of each plot was sprayed at the same rate during the late summer of 1956. Both wheat and barley areas will be fallowed during 1957 to try to eliminate the twitch, and supplementary applications of carbonate of lime will be applied if necessary to bring all the plots to the same pH status.

Several of the long-term experiments were modified. The six-course rotation testing several levels of fertilizers over a long series of seasons had the level of nitrogen doubled, and this had a very marked effect on the yields of most crops in the rotation. In the market-garden experiment testing the effect of heavy dressings of bulky organic manures, the very vulnerable crop of spring cabbage was replaced by early potatoes. In the ley and arable rotation experiment, because of the presence of potato-root eelworm on some plots, the potato test crop was replaced by sugar beet, while carrots took the place of sugar beet in the arable rotation. Modifications were also made to the rates of manuring.

The number of short-term experiments increased considerably, as harvesting is simplified by being able to use one of the self-propelled combine-harvesters from Rothamsted. Three large cereal experiments were handled in this way. For the first time there

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was an experiment on spring beans, and there was also a big increase in the number of potato and sugar-beet plots.

The cereal crops from the long-term experiments were all cut by binder and were carted in good condition. They were threshed during periods of bad weather, and the operation was completed before the end of September.

The first-year lucerne on the ley–arable experiment was severely attacked by the pea and bean weevil (*Sitona lineata*) at an early stage, and the plots had to be dusted and sprayed with DDT.

The carrots in this same experiment grew very slowly at the start. Rapid growth took place later, but when they were lifted the roots were badly fanged, and about 90 per cent of them were badly split. They can only be used as stockfeed.

The seeds undersown in the experiments all took well, as did those after early potatoes in the green manuring experiment. The leys in the ley–arable experiment were very productive, and extra sheep had to be used to keep on top of the growth.

General Notes on Crops

Wheat and barley

Owing to the risk of damage by birds during the winter, very little winter corn was sown. This survived the winter well. The spring corn was all sown in good time, but early growth was severely checked by the cold, dry spring. The dressings of nitrogen to the non-experimental crops were delayed by pressure of experimental operations and did not go on until towards the end of April. It is hoped to overcome this difficulty in future by combine-drilling the nitrogen with the seed. The crops looked a little patchy in May, probably because the nitrogen had not had time to produce any effect. Most of the crops were sprayed with a hormone weed-killer. All the crops, especially the barleys, came into ear much earlier than usual and while the straw was still short. Had it not been for this, lodging might have been more serious. They ripened very slowly and unevenly in the wet, cool summer, and the quality of the grain is poor. Both varieties of spring wheat, Koga II and Peko, stood well despite the adverse conditions. Of the two barley varieties Herta stood better than did the Proctor, one piece of which was very badly laid. No threshing has yet been done, but the yields are not expected to be very high.

Beans

A small area of winter beans was sown, but this was completely destroyed by birds during the winter. The spring beans grew well, and there was no infestation with black fly (*Aphis fabae*). The crop grew very tall and was very slow to ripen. Yields were quite satisfactory from the heavy soil, and it remains to be seen what the crop does on the light, sandy soils.

Potatoes

This crop made excellent growth throughout the summer and was kept clean without any hand hoeing. Majestics were grown on all experimental areas, but once-grown King Edwards from stock

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seed grown the previous year at Rothamsted and Woburn were used on non-experimental areas. These plants looked quite healthy throughout the season. The Majestics were of good size and shape; wireworm damage and scab was negligible. The individual tubers of the King Edwards were rather small, though relatively free from blemish, and even after sorting, the appearance of the sample was disappointing. Yields were also below expectations. Three precautionary sprayings against late blight (*Phytophthora infestans*) were given to the King Edwards and two to the Majestics, and though the disease spread rapidly in the early September, only a little disease reached the tubers.

On one small area growth was affected by an application of TCA at 20 lb./acre just under 4 weeks before planting.

Kale and sugar beet

The very small acreage of kale grown for the pigs grew well after a slow start, and gave an extremely heavy yield.

As in 1955, the germination of the sugar-beet seed was very slow and uneven. When the early germinated plants were fit for singling others were about an inch high, while some clusters had not germinated at all. In order to keep down weeds these small plants had to be hoed out, and so the final plant was far from perfect. A large number of eggs of the leaf miner (*Pegomyia betae*) were seen on the leaves, but damage was prevented by spraying with parathion as soon as the larvae hatched out. The crop made good growth during the summer and developed large tops, but there were very few bolters. Yields were well above normal, and the sugar content averaged about 18 per cent, except for one load which contained beet which had been caught by frost, and the sugar then dropped to 15 per cent.

Market-garden crops

The spring cabbage were completely destroyed by frost and birds, and were replaced by early potatoes. These suffered badly from the mid-May frost, and lifting was delayed by bad weather until 24 July. They yielded over 8 tons/acre.

The germination of the red beet was very irregular, but it was apparent that there was a much more regular and vigorous plant on the plots which had received organic manures.

The hard weather in February delayed the start of lifting the leeks until March, and the crop was lighter than usual. Those planted out in early August looked very yellow and sick for a time after planting out, but subsequently recovered. The crop was damaged by hares taking the flag when the snow was on the ground at Christmas.

Grassland

The grass made very little growth in the early part of the season owing to the cold, dry spring. There was no spring flush. Fortunately the few cattle that were there were being finished off in the yards, and fresh stock was not purchased until early May. Throughout the summer months the grassland made excellent growth, which was quite adequate for the stock.

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The fields shut for hay grew rapidly in June after a slow start, but cutting was delayed by bad weather until the end of the month. The making of the hay was interrupted by the weather, but it was saved eventually in quite good condition.

Livestock

Cattle

The policy of buying in young store cattle and fattening them on the grass after overwintering in yards was continued. Owing to the drought in 1955 and the subsequent scarcity of keep, those bought in 1955 were not all sold by the end of that year. They were therefore finished off in the yards early in 1956. A fresh lot was bought fairly late in the spring, and throughout May there was just sufficient grass to keep them going. The plentiful supply of grass throughout the later summer months enabled them to be fattened and sold by the autumn, when a fresh lot of attested cattle was bought for overwintering. Altogether 27 cattle were sold fat during the year.

It is hoped to qualify for the Attested Herds Scheme in 1957, and to this end a first test was carried out in the autumn. There were no reactors.

Pigs

Following upon the rather disappointing results of 1955, the housing conditions have been considerably improved this year. In addition, the old stable has been converted into pig-fattening pens, three new farrowing pens have been made and four more are under construction.

Some of the older sows, and those with unsatisfactory records, have been disposed of. It is hoped to replace these by new stock early in 1957 and to build up the herd to about 20 sows.

These, and other changes, are bearing fruit, as the litter weights and numbers are already showing an improvement. It is confidently hoped that the full value of the improvements and the reorganization of the pig herd will be felt in 1957.

Staff

W. A. McCallum retired at the end of September after twenty-seven years' service as stockman and, for part of the time, as foreman.