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Report for 1957

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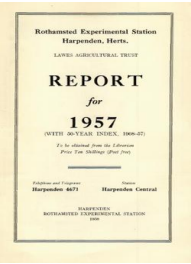
Rothamsted Experimental Station
Harpenden, Herts.

LAWES AGRICULTURAL TRUST

REPORT
for
1957

The Farms : Woburn

J. R. Moffatt

J. R. Moffatt (1958) *The Farms : Woburn ;* Report For 1957, pp 208 - 213 **- DOI: https://doi.org/10.23637/ERADOC-1-90**

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Sheep

The rather old Scotch Half-bred ewe flock was again mated to Suffolk rams. The lambing season was very successful in that lambs were plentiful, the ewes had plenty of milk, losses were low and weather conditions were good. There were 122 lambs from the 66 ewes put with the rams, a lambing percentage of 182, the highest for several years. Losses from Pulpy Kidney disease began to occur; the flock was inoculated immediately, and later vaccinated against the disease.

Twenty of the lambs have been sold fat, the remainder being retained for grazing on field plots here and at Woburn in 1958.

Thirty-four young home-bred ewes from the 1956 lamb crop have been retained for breeding and were put to the tup with the remainder of the old ewes in October. It is proposed to sell them with their lambs in the spring.

Fortunately no sheep-worrying has been observed this year.

Implements

The purchase of new implements was restricted, as much of the money available was spent on equipment needed for the grain-drying and storage plant. However, a few items were purchased, including a reversible plough and a fertilizer distributor for use on experimental plots. One of the old vaporizing-oil tractors was exchanged for the latest diesel-engined model.

Grain Drying and Storage Plant

The plant, consisting of four radially ventilated drying bins and eight square galvanized storage bins, was completed during the year and was put into operation for the first time for the 1957 harvest. It performed very well, and was about adequate to deal with the output of the two 10-foot combine-harvesters, one of which spends most of its time cutting the produce of experimental plots. No pre-cleaning was done, as this required an extra elevator, which it was hoped would not be needed. However, in the light of our experience in 1957 it has been decided to install this elevator during the year so that pre-cleaning can be carried out when necessary.

The relative humidity was constantly recorded so that the minimum amount of heat was used. As the volume of grain to be dried diminished towards the end of harvest, drying was only done when the relative humidity was such that no heat was required.

The fifty-hole platform drier was moved and re-erected adjoining the new plant so that the one fan and heater can be used for either the drying silos or the platform drier. On re-erection the platform was arranged with holes in banks of twelve so that any multiple of this number of sacks, up to forty-eight, can be dried at once. This greatly facilitates the drying of small quantities of grain from experimental field plots.

Estate Work

Following the inspection of the woodlands in 1956 by the Forestry Commission, a lot of tree thinning was carried out during the early

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and on spring beans on light soil. These wilted and lost some of their leaves prematurely. Growth of all the other crops was retarded, although they looked quite well.

There was a sudden change in the weather towards the end of June, and the wet spell lasted most of July. This transformed the appearance of all crops and grassland, and rapid growth took place.

The start of harvest was delayed by bad weather until the middle of August, and the operation lasted about a month.

The latter half of September was wet, but a fine spell of weather in the first half of October enabled good progress to be made with the potato harvest. After a stormy start, November developed into a mostly cloudy but dry month, and good progress was made with the lifting of the sugar-beet crop. Early December brought a spell of frosts and fogs, and during this time the harvesting of the sugar beet was completed. The weather later deteriorated, and not a great deal of land work was possible, so that by the end of the year quite a lot of ploughing remained to be done.

Cropping

Of the 127 acres farmed, 16 acres were under wheat, 29 under barley, 5 under oats, 8 under beans, 22 under potatoes and 5 under sugar beet. There were smaller acreages of kale, lucerne and turnips. Four acres were sown down under a nurse crop to a short-term ley.

Beans were grown again this year to lengthen the interval between white-straw crops and so reduce the risk of disease. Oats were included again after an interval of several years as an alternative to wheat and barley. The acreage of potatoes was limited by the presence of potato-root eelworm in several fields, and sugar beet by the absence of seasonal labour.

General Notes on Crops

Wheat

This is not a very satisfactory crop at Woburn, and, because of the risk of bird damage during the autumn, very little winter wheat was sown. The Koga II spring wheat was sown in good time, and, despite the adverse weather conditions, maintained reasonable growth during the season. However, the crops were rather thin, and estimated yields are about 25 cwt./acre.

Barley

Both Herta and Procter varieties were grown. Germination was reasonably good, but subsequent growth was uneven, and the crops had a patchy appearance early in the season. Some quite severe yellowing occurred in patches—possibly due to potash deficiency—and much of the barley also developed a rather peculiar prostrate habit, probably connected with the drought. As the season advanced the appearance of the crop improved, and it came into ear rather earlier than usual. However, ear emergence was very uneven, and towards harvest, when most of the ears were ripening, some were still emerging. Even at harvest there was

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quite a proportion of green ears which made harvesting more difficult, and spoilt the sample of grain. Yields are expected to be about 26 cwt./acre.

Oats

This crop was grown for the first time for many years. The crop was sown early and looked quite promising in the early summer, but later developed symptoms of severe cereal-root eelworm. This was confirmed and the crop was almost a complete failure.

Beans

This was also a disappointing crop. It got away to a good start, but by mid-April the heavy land had set so hard that inter-row cultivations were impossible. The soil then cracked badly, yet weeds continued to grow. Hoeings were attempted in the middle of May after rain had fallen, but by this time the weeds were so big that they drove up in front of the hoes, and the crop was so forward that some damage was unavoidable. At this time the spring beans on the light soil of the Irrigation experiment looked exceptionally well, and the ground was clean.

During June neither the winter nor the spring strains made the growth that was expected, and the latter strain on the light land suffered from lack of moisture, and wilted badly. Many of the lower leaves had dropped off by mid-June, and many of the flowers seemed to wither up and fall, without having set seed.

There was an early infestation of bean aphids (*Aphis fabae*), heavy on the winter strain but much heavier on the spring strain. All crops were sprayed with " Metasystox " early in June, and while this gave an appreciable benefit to the winter crop, it was applied too late to be of any great benefit to the spring strains. Yields were therefore low, as was expected.

Potatoes

The planting of both early and maincrop varieties was delayed by unsuitable conditions, and the latter were not finished until well into May. By this time the early varieties were well through the ground, and some slight frost damage occurred. Growth was very slow during May and June, and rooks and jackdaws did some damage to the young tubers of the earlies, even after earthing up had been done. One area of earlies was sprayed with dieldrin in the hope that this would deter the birds. Lifting was done in the first half of July, and the average yield was about 4 tons/acre.

The maincrop varieties, which consisted mainly of King Edwards, grew rapidly during the damp weather of July, August and early September. Three preventive sprayings were given against Late Blight (*Phytophthora infestans*), and these succeeded in keeping the haulm green until it was burnt off in the latter half of September. Yields were very satisfactory, the Majestic and Ulster Supreme yielding between 13 and 14 tons/acre, and the King Edwards about 9 tons/acre. The tubers of the two former varieties were large and somewhat mis-shapen, but they were not badly split, and there was little evidence of blight on them. The size of the King Edwards

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was almost ideal, but as there was more blight in evidence, they are being disposed of before secondary rots set in.

The weather conditions were excellent for most of the lifting operations, though they deteriorated towards the end.

Sugar beet

This crop was drilled by mid-April in reasonably good seedbeds. Germination and early growth were as good as could be expected under the conditions prevailing, but singling was somewhat delayed by the rather backward state of the plant. A threatened attack by the Mangold Fly (*Pegomyia betae*) was averted by spraying with miscible DDT, and later an attempt was made to prevent the spread of sugar-beet yellows disease by spraying against the aphids with " Metasystox ". However, this was only partially successful, and the disease became widespread, though not severe.

The crop made very rapid growth in the latter half of the summer, and lifting commenced as soon as potato lifting was finished. The roots were of good size and shape, and yields averaged about 17 tons of beet, with a sugar content of almost 18 per cent. The yield per acre of sugar was therefore about 62 cwt.

Market-garden crops

The lifting of the leeks was delayed, owing to pressure of spring drilling operations, until late March, and then liftings took place weekly until early May. The individual plants were of good size, and yields were well above the average. Unfortunately, however, there was little demand for them. The leeks planted out in late July had an excellent start, and good growth has been maintained.

The red beet on the market-garden experiment grew well despite the long drought, and, after thinning, had a better plant than for some years. This was reflected in the average yield, which was the highest for many years.

The carrots grown as a test crop on the ley–arable experiment were sown late, owing to the difficulty in obtaining a suitable seed-bed. Sowing took place after rain, but germination was poor and slow, and the young plants just died off in the drought. They were replaced by white turnips, which grew vigorously and yielded well.

Grassland

The grass made very good growth in the early spring, but this had slowed down by mid-April. By mid-May growth had stopped, and thereafter no growth took place until rain fell towards the end of June. During this period there was insufficient " keep " for the number of livestock there. An application of nitrogen had no effect, as there was no rain to wash it in. During July, however, the grass grew very vigorously and provided an ample supply for the stock. Growth was maintained until the end of the year.

Only a small area was shut for hay owing to the shortage of grass in the late spring. However, this gave quite a good yield of hay, which was made and carted in lovely condition.

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Field Experiments

The classical wheat and barley plots were fallowed again in 1957, to eliminate the twitch *Holcus mollis* from the wheat ground and *Agrostis gigantea* from the barley ground. The season favoured the cleaning operations, and it is to be hoped that the land is now clear of these weeds. A further supplementary liming was also given to even out the pH values.

For the 1957–58 season the plots are being divided into strips giving a comparison of winter and spring wheats, and winter and spring barleys. This should provide the answer as to whether the crop failures in past years can be ascribed to acidity, weed competition or some other form of crop sickness, as has been suggested.

Unfortunately the two winter-sown crops were drilled rather late, and have already been damaged by birds. It is probable that bird damage will occur on the early ripening winter barley just before harvest.

Some of the long-term experiments were modified. In the irrigation experiment spring wheat replaced barley as the cereal crop, and spring beans were introduced into the rotation. These proved a remarkably interesting crop to grow on light land, as irrigation doubled the yield, whereas spraying against bean aphis (*Aphis fabae*) had little effect. For the sugar beet, the manurial dressings, which were low according to modern practice, were increased by half.

A minor modification to the green manuring experiment was that the basal fertilizers were applied by drill, instead of by hand.

On the ley–arable experiment the treatment crop of carrots failed owing to the drought, and was replaced by white turnips. Stem eelworm of lucerne was found to be the cause of the poor colour and stunted growth of this crop, which were so noticeable in the spring. All infected plots were ploughed up, and if necessary in future, the crop will be changed to sainfoin.

In the six-course rotation experiment the trifolium, which has replaced the undersown clover, was sown in the autumn of 1957 for the 1958 crop, in an attempt to get better yields. Previously this seed has been sown in the spring of the harvest year.

The number of annual cereal plots has increased rapidly over the past few years. Wherever possible these have been harvested by a combine-harvester sent from Rothamsted, as was done this year. Owing to the increasing number of plots at Rothamsted, this will no longer be possible, and it is hoped to have a suitable machine at Woburn for the 1958 harvest.

In 1957 on three cereal experiments the crop failed to come through the ground. Soil tilths were satisfactory and the seed germinated well enough, but the shoots died off just before they emerged. This can only be ascribed to a late spraying with TCA against twitch, applied at 20 lb./acre a month before sowing. Had weather conditions been more normal, this damage might not have occurred.

Livestock

Cattle

A small number of Galloway-cross cattle were purchased in the autumn of 1956. These were yarded during the winter, and most

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of them sold fat in early spring. A bunch of Hereford cattle were bought in early spring, and did well on the abundant grass. However, as the drought increased in severity and the grassland became less productive, there was insufficient grass, and 10 cattle were transferred to Rothamsted. The remaining cattle thrived on the abundant grass in late summer. They, too, were transferred to Rothamsted in the late autumn, to facilitate their marketing and to make room for younger stock.

The herd had two clear tuberculin tests during the year, and so qualified for the Attested Herds Scheme.

Pigs

The improvements to the housing for pigs, started in 1956, were completed during the year by the addition of four farrowing pens.

Several of the older sows, and those with unsatisfactory records, were disposed of, and 7 in-pig Large White gilts, and a boar, were purchased from well-known herds. In addition, 9 home-bred gilts and 1 boar were kept. The breeding herd now totals 20 sows, which is about the size aimed at.

The use of infra-red heat, the creep-feeding of pelleted food and the use of antibiotics in conjunction with the improved housing, have all played their part in improving the size and weight of litters. However, there is still considerable room for improvement.

During the year 163 pigs were sold, mainly for bacon, but grading returns were disappointing.