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Report for 1959

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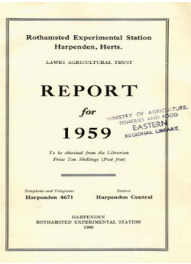
Rothamsted Experimental Station
Harpenden, Herts.

LAWES AGRICULTURAL TRUST

REPORT
for
1959

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1960

The Farms : Woburn

J. R. Moffatt

J. R. Moffatt (1960) *The Farms : Woburn ;* Report For 1959, pp 174 - 177 **- DOI: https://doi.org/10.23637/ERADOC-1-92**

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of maiden ewes, the lambing percentage was lower than last year; the Half-breds gave 139% and the home-bred sheep 105%. Some trouble was experienced at lambing time, and the ewes seemed rather short of milk. The use of rubber rings for tailing and castration was less satisfactory this year. Most of the lambs are being over-wintered and will be used on grazing plots in 1960.

As grass was scarce, the ewes were flushed on a lucerne–cocksfoot mixture in the autumn and were fed some oats.

Equipment

The concrete-sided silo built in 1958 was doubled in length and provided with a concrete floor and a suitable drainage system. It now holds about 150 tons.

A new 10-foot self-propelled combine-harvester enabled the older of our two machines to go to Woburn, and greatly facilitated harvest.

The platform corn drier was converted for use as a hay-bale drier. The 10-foot-high sides were made of hardboard, and a false floor of weldmesh was laid above the sack gratings. The fan of the radial-flow drying bins alongside was connected to the bale drier because the platform-drier fan provided too little air. About 10 tons of hay can be dealt with at each loading.

The use of a flail-type forage harvester for cutting and collecting the grass from hay and grass plots was studied carefully. It seemed that the method might be satisfactory, and the manufacturer co-operated in preliminary trials, after which minor modifications were made to the machine. Further trials through the season proved the success of the 40-inch-wide machine, both as a normal forage harvester and for plot work.

Buildings

A new general-purpose pitched-roof shed was built to store implements, trailers and timber.

Estate Work

In addition to routine estate maintenance and mechanical hedge cutting, the 8½ acres of derelict orchard in Delafield were cleared and ploughed, so finishing the clearance of land acquired in 1955. Several thousand larch- and spruce-tree stumps were bulldozed from 15½ acres in Claycroft and Longcroft fields, where the timber was felled about 25 years ago, and which have been under grass since. It is hoped to clear the areas and plough in time for cropping in 1960. A small area between Appletree and Park Grass plots is being cleared in a similar manner.

Woburn

Woburn suffered more than Rothamsted from the hot, dry summer, partly because much of the soil is sandy, and partly because there was less rain. From May to September, it averaged about 1 inch per month, about half the normal, and the total for the

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year was 21·31 inches. Potato and sugar-beet crops, and the grassland were affected most by the drought. Conditions for the hay and corn harvest were excellent.

Although the wet autumn of 1958 meant we started the year with land work much in arrears, weather in late winter and early spring was so favourable that arrears were made up and spring cultivations started earlier than usual.

Drought continuing into the autumn made ploughing slow and difficult, and seedbeds for winter corn were secured only after many cultivations. Conditions improved in November and, as work was well forward, the planned acreage of winter wheat was increased.

At the end of the year most of the land after potatoes and sugar beet had still to be ploughed, and several areas ploughed early needed reploughing.

Cropping

Of the 127 acres farmed, 26 were wheat, 26 barley, 11 beans, 21 potatoes and 7 sugar beet, much as in previous years. There were small areas under kale, lucerne, rye and market-garden crops.

Crops

Cereals

Most of the wheat was spring-sown Koga II, and the barley was Herta. Drilled early, germination was rapid, and crops grew well in the early summer. They came into ear early when the straw was quite short, and there was little lodging.

Harvest was early and conditions ideal. The local storms missed the farm and the moisture content of the grain was low enough for it to be stored without drying. The Koga wheat yield averaged 28 cwt./acre and the barley 25 cwt./acre.

Beans

Most of the area was spring-sown tick beans, which got started well, but by the end of June the leaves of crops on the light land were withering and dropping off. Irrigation doubled the height of plants. Drought had less obvious effects on the heavy land, but the crop was not vigorous. Bean aphis (*Aphis fabae*) attack was less severe than at Rothamsted, but a spraying with " Metasystox " was deemed advisable. One field heavily infested with weeds was sprayed with DNBP. This killed the weeds, but severely checked the beans, which never completely recovered. The yield averaged 16 cwt./acre.

Potatoes

This crop was planted by machine during April. Growth was rapid but this slowed later, especially on the lighter soils, as the drought developed. It restarted after rain in July, but by early August growth had almost stopped. The haulm then died quickly, from a combination of drought, late blight (*Phytophthora infestans*) and, in places, a severe aphis (*Aphis nasturtii*) attack. What remained of the tops was destroyed mechanically. Lifting conditions were ideal.

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King Edward VII was the main variety grown. Yields averaged 8 tons/acre on the light land and 9½ tons/acre on the heavier land. However, on one area where there was an attack by the potato-root eelworm (*Heteroderea rostochiensis*), the yield was only 5 tons/acre. Not only were the tubers from the light land rather small and badly shaped, but about 16% were partially dehydrated and soft. The percentage ware (1⅝-inch riddle) from these areas was about 57%.

Sugar beet

The seed germinated rapidly and evenly, and the crop grew well at first. It wilted badly during the hot spells in late June and July, but recovered after the July rain. During August and September many of the lower leaves withered and died. However, the plants continued to grow until they were lifted, and the roots were large and of good shape. The average yield of 17½ tons/acre was far higher than was expected; the sugar content averaged about 16%.

The crop was sprayed with dieldrin against the leaf miner (*Pegomyia betae*), and twice with " Metasystox " against virus yellows.

Market-garden crops

The leeks were harvested over a period of several weeks in the spring, and substantial gains were made between each lifting. The average yield was 5½ tons/acre. Red beet, with a yield of almost 8 tons/acre, did as well as in the wet year of 1958, but the yield of early potatoes (5½ tons/acre) was considerably lower. The dry weather enabled weeds to be controlled far more easily than usual. The planting-out of the leeks in July coincided with a short period of rain, and they established themselves without difficulty.

Grassland

After rapid initial growth in the spring, recovery from early grazing, and subsequent growth, was slow. The grassland remained bare and burnt throughout the latter part of the summer and autumn.

The small area cut for hay gave a fair crop, which was made and carted in good condition.

Livestock

Cattle

Twenty Hereford-cross cattle were bought in December 1958 to consume sugar-beet tops, and make dung. It was hoped that these would fatten during the summer, but grass was so scarce that 10 were transferred to Rothamsted. To fatten off the rest by late autumn, the grass, from September onwards, was supplemented by hay. A further 15 cattle were bought in the autumn of 1959.

Pigs

The breeding herd of 20 Large White sows was maintained. The length of the progeny sold for bacon increased following the use of a longer boar, but the grading returns were disappointing, only 40% being in the AA+ or AA grades. The low prices for bacon pigs meant that more than usual were sold at pork weights.

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Implements

This was the first year in which the Woburn farm had its own combine-harvester and baler, and all cereal and bean crops were harvested with them. When the drier is installed the farm will be equipped with all except the most specialised machinery.

The use of "Simazine" to control weeds in field beans and potatoes

Preliminary report

J. R. Moffatt & M. J. Hill

Field beans are rather a "dirty" crop, as they do not grow vigorously enough to smother weeds; though inter-row cultivations can control the weeds between the rows, expensive hand hoeing is needed to kill those in the rows. The many cultivations that make potatoes a good cleaning crop are similarly expensive, and there seems evidence that they may harm the crop. The triazine derivatives, "Simazine" and "Atrazine", which showed promise as pre-emergence herbicides with these two crops, were tested in experiments at Rothamsted and Woburn.

Both substances are poorly soluble in water, "Simazine" only 5 p.p.m. and "Atrazine" 70 p.p.m., so they are not readily washed down into the soil. Crops whose roots draw water from below the surface soil are unlikely to be affected, and whether seedlings growing in the surface soil take up toxic doses depends largely on the amount of water there.

Experimental details

Tick beans were grown on heavy loam soil at Rothamsted and Woburn and were drilled 3–4 inches deep; Ulster Supreme potatoes were grown on heavy soil at Rothamsted, and King Edward VII on a sandy loam at Woburn. All crops were treated as usual up to planting, but shortly after weed-killer was sprayed on the soil by a tractor-mounted sprayer. The soil was left undisturbed by surface cultivations through the growing season.

All the experiments were in a single randomised-block design with threefold replication. The treatments consisted of three levels of "Simazine" ($\frac{1}{2}$ lb., 1 lb., and $1\frac{1}{2}$ lb. active material/acre), one level of "Atrazine" (1 lb. active material/acre), and plots on which weeds were not controlled. Difficulties in the layout prevented the inclusion of plots given customary cleaning operations, but the yield to be expected from such plots could be estimated from the surrounding potato crop at both Rothamsted and Woburn.

Full agricultural details of these experiments are given in Results of Field Experiments 1959.

Discussion

Weeds were counted and identified on 6 random sample areas of 180 sq. in. on each plot in June, except on the Woburn potato

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