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## Report for 1960

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### The Farms : Woburn

**J. R. Moffatt**

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### BUILDINGS AND ROADS

A timber-clad cattle shelter was built in Highfield.

The concrete apron around the farmstead was extended to serve all the implement sheds.

The racks and troughs of the two cedar-wood covered yards, designed for feeding hay and concentrated foods, were modified to facilitate the feeding of kale and silage from trailers, without entering the yards.

### ESTATE WORK

In addition to mechanical hedge-cutting and other routine estate maintenance, the work of clearing the old woodland areas of Claycroft, Longcroft and Appletree field, started in 1959, was completed. These areas were ploughed in late spring and sown to cereals; two of them produced satisfactory yields, but the crop on the third area was partially smothered by grassy weeds. The shelter belt of poplar trees parallel to the Redbourn Road was thinned, and the trees in Broadbalk Wilderness which overhung Broadbalk field were lopped.

### Woburn

Woburn suffered less than Rothamsted from the unfavourable weather. The autumn of 1959 favoured the early sowing of winter wheat and beans, and field work was up to schedule at the beginning of 1960. Ploughing was delayed by the wet winter, but conditions were excellent in spring, and all cereals and beans were sown before the end of March. April was very dry, which favoured the drilling of sugar beet and kale and the planting of potatoes, but retarded germination and growth of most crops; the heavy land also cracked badly. Crops grew well in May and June, though the sugar beet germinated unevenly. A heavy storm in late June benefited the root crops but lodged some wheat and barley. Heavy rain in July delayed the ripening of cereals and increased lodging. Harvesting was delayed by rain throughout August and September, and potato blight (*Phytophthora infestans*) spread rapidly. All experimental potato crops were lifted before the end of September and sugar beet soon afterwards, but the harvesting of the non-experimental potatoes and sugar beet was interrupted by the wet autumn, and some sugar beet was still in the ground at the end of the year. Ploughing was delayed, and no crops had been drilled by the end of the year.

### CROPPING

Of the 127 acres farmed, 27 carried wheat, 25 barley, 9 beans, 19 potatoes and 6 sugar beet. There were small areas of kale, carrots, lucerne, rye and market-garden crops. Temporary grass occupied 22 acres and there were 4 acres of permanent grass.

### CROPS

#### *Cereals*

The winter wheat on all non-experimental fields was Cappelle and the spring wheat July I. Herta barley was retained on the

long-term experiments, but Proctor was used on non-experimental areas. Drilled early and under good conditions, all crops grew well in late spring. The spring corn suffered from the dry weather in April, May and early June, and the crops were thin and the ears small. Fusarium disease appeared in spring wheat on a very light field, but the crop grew away from it in July. Cappelle wheat and Proctor barley after old grassland lodged severely, but elsewhere lodging was slight.

Winter wheat averaged 33 cwt./acre, but barley and spring wheat yields were disappointing, averaging only 20 cwt./acre.

### *Beans*

The winter crop on heavy land was so badly damaged by birds that it was ploughed in. The spring crop, sown early, made good growth in the wet summer and yielded about 17 cwt./acre. An unusually heavy bean aphid (*Aphis fabae*) attack was controlled by one spraying with "Metasystox". "Simazine" did not control weeds as well as in 1959, probably because the weather was dry after it was applied.

### *Potatoes*

A small area was grown of the early varieties Arran Pilot and Ulster Chieftain. Majestic was the "main-crop" variety in most experiments, and Ulster Supreme replaced King Edward on most non-experimental fields, as King Edward has recently yielded poorly.

Planting was finished by the end of April. Both early and main crops made excellent growth during the summer. On the long-term Green Manuring Experiment Ulster Chieftain yielded 10.8 tons/acre,  $2\frac{1}{2}$  times the 1959 yield. Despite early spraying, late blight (*Phytophthora infestans*) soon appeared, and a second spray was given before the end of July. The disease spread rapidly during August, despite a third spraying, and by the end of the month the tops were dying. On small experimental areas the haulm was destroyed mechanically, but concentrated BOV was used on non-experimental crops. Almost every Majestic plant showed symptoms characteristic of primary leaf-roll, as did many other crops of this variety. Tubers were saved to be grown next year to see whether this resulted from an exceptional spread of the leaf-roll virus or some other cause.

The Ulster Supreme were manured generously, and yielded up to 24 tons/acre with an average of 21 tons/acre. Many tubers failed to pass through the  $3\frac{1}{4}$ -inch riddle fixed by the Potato Marketing Board, and many were blighted. Majestic and King Edward VII yielded less, but the tubers were of better size and fewer were blighted. Very few tubers had common scab (*Actinomyces scabies*).

### *Sugar beet*

Irregular germination gave a rather uneven plant, but growth was rapid in the wet summer. A spray against aphids delayed the onset of sugar-beet yellows, but by September the disease was widespread. However, it came too late to have any serious effect on yield, and the crop continued to grow throughout the autumn.

At harvest the ground was so wet that nearly all the roots had to be hand-pulled and cleaned; small areas had even to be hand dug. The yield averaged 16 tons/acre of washed beet with a sugar content of 15.3%, giving an average sugar yield of 49 cwt./acre.

#### *Market-garden crops*

The leeks grew well during the mild winter, and the average yield, 7.25 tons/acre, was larger than usual. The early potatoes grew vigorously, and although their growing season was slightly shorter than in 1959, the yield was 9.1 tons/acre, 3.6 tons/acre more than in 1959. The red beet was rather uneven and gappy because germination was irregular and the average yield of 6.8 tons/acre is about 1 ton/acre lower than in the past two years.

#### *Lucerne*

A small experiment on lucerne was drilled in August, and germination was rapid. However weeds, mainly chickweed (*Stellaria media*) and Shepherd's purse (*Capsella bursa-pastoris*), grew even more rapidly; the weather prevented cultivations, and the crop was in danger of being smothered. The area was sprayed in mid-December with the desiccant "Diquat" when the lucerne was 4-5 inches high. The result seems satisfactory, as the weeds were killed and, although the tall lucerne stems were killed, the crowns appear to be undamaged.

#### *Grassland*

Given fertiliser early in March, the grass made good initial growth, but after grazing late growth was retarded by the dry weather. Grass was scarce in May and June, but from July onwards was plentiful.

The small area of hay was made, baled and carted without rain falling on it. The yield was good and the quality excellent.

Eight cuts were taken from the S.22 Italian ryegrass sown on the Irrigation experiment in October 1959, equalling the number taken from the old cocksfoot sward in 1959.

### LIVESTOCK

#### *Cattle and sheep*

Fifteen Hereford-cross bullocks were bought in autumn 1959 and were outwintered. They were brought to Rothamsted in June and July to be finished and sold, and were replaced, when grass became plentiful in July, by 22 from Rothamsted. Most of these were sold at the end of September, and were not replaced because of the foot-and-mouth disease restrictions. The land was used to over-winter the store lambs needed for the grazing experiments at Rothamsted and Woburn. These 90 lambs were given sugar-beet tops and some fattened so readily that they were sold and were replaced by others from Rothamsted.

*Pigs*

Some of the older Large White sows were sold. The litter size and weight at weaning was low, and it is hoped to get better results in future. If so, the herd will be increased to its previous size of 20-25 sows. Most of the pigs were sold as pork.

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

#### *Second Report*

J. R. Moffatt and M. J. Hill

The results of four experiments in 1959 on the effect of "Simazine" as a pre-emergence weed-killer on beans and potatoes were given in the 1959 Report. A range of crops was grown on the same sites in 1960 to determine any residual effects. Two further experiments on the use of "Simazine" on potatoes and two on beans were done in 1960.

#### *Residual effects of 1959 experiments*

Cappelle winter wheat, Proctor barley, Condor oats, Thousand-head kale and Kleine E sugar beet, were grown in 1960 in strips across the 1959 plots at Rothamsted and Woburn. Observations were made throughout the growing season and yields were taken. There was no room for replication on individual experiments, and Table 1 gives the mean yields of all sites. Birds did some damage

TABLE 1  
*Rothamsted and Woburn*

Test crops	Mean yields/acre over 4 experiments					
	O	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	A <sub>2</sub>	Mean
Winter Wheat (1), cwt. (at 85% D.M.)	46.6	47.8	46.7	46.4	48.5	47.2
Spring Barley (1), cwt. (at 85% D.M.)	34.9	35.1	36.6	33.8	34.2	34.9
Spring Oats (1), cwt. (at 85% D.M.)...	26.2	27.4	26.8	25.5	26.6	26.5
Kale (1), tons (total weight) ...	22.4	24.6	24.1	21.5	23.3	23.2
Sugar beet, tons (roots, washed) ...	17.2	18.7	15.6	17.1	16.3	17.0

Treatments applied 1959.

O = No weed control.

S<sub>1</sub> = Simazine.  $\frac{1}{2}$  lb. active material in 40 gallons/acre.

S<sub>2</sub> = Simazine. 1 lb. active material in 80 gallons/acre.

S<sub>3</sub> = Simazine.  $1\frac{1}{2}$  lb. active material in 120 gallons/acre.

A<sub>2</sub> = Atrazine. 1 lb. active material in 80 gallons/acre.

(1) = Mean of 3 experiments, the fourth was damaged by birds.

at Woburn, and damaged crops were not harvested for yield. No effects of the weed-killer were observed on germination or the subsequent growth of any of the crops. Yields of each crop were similar over all the experiments, except that on one, kale after the highest level of "Simazine" yielded 25% less than the control.

The yields of all crops except sugar beet were slightly higher where the two lower levels of "Simazine" had been given than