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Report for 1962

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REPORT FOR 1962

Woburn

Rothamsted Research

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WOBURN

At Woburn the autumn of 1961 was favourable to farm work. The early part of November was stormy, but the root crops were lifted before the end of the month, though the last of the beet were not despatched until January.

Two of the heavier fields, in good condition after potatoes, were grubbed with a rigid-tined cultivator and drilled with winter wheat. About 31 acres of light land were sub-soiled before ploughing to break a pan about 15 in. below the surface, and experiments in 1962 showed that spring wheat and barley benefited but sugar beet did not. Ploughing would have been finished by the end of the year but for the hard frost towards the end of December. During this time dung was carted out, but spreading and ploughing in was delayed by frost, a heavy fall of snow on 31 December 1961 and heavy rain in January.

February had only 0·34 in. of rain, and after strong, drying winds, seedbed preparations started about the middle of the month. The land broke down easily, and corn drilling was well forward when it was stopped by snow and frost at the end of the month. Neither frost nor snow were as severe as at Rothamsted, and corn drilling was finished by 5 March. Wintry weather returned in March with frost and some snow, and keen North-East winds, but there was little rain. Field operations were restricted, but early potatoes were planted in the middle of March and sugar beet was drilled by the end of the month. Cold weather in April delayed germination and retarded growth of all crops and grass during May.

Even with this slow start, and the dry weather in June (0·29 in. of rain), all crops looked well towards the end of the month, and a small quantity of excellent hay was made. The weather remained dry until about mid-July, when the effects of the long drought were apparent. Several areas of barley and oats were uneven, because many plants stopped growing just before ear emergence was completed; the lower bean leaves turned yellow and dropped, but the rain in late July kept the upper leaves green. The heavy storms laid several areas of spring wheat. The dull, wet weather delayed the start of harvest until 22 August, and it was finished on 22 September. Most of the corn had to be dried.

Potato lifting was completed, in dry weather, by 19 October, and a small part of the area was sown with winter wheat. Sugar-beet harvesting followed, and though interrupted by the wet weather in November and the onset of wintry weather early in December, it was finished on 17 December. At the end of the year there was still about 50 tons of beet awaiting despatch to the factory.

Ploughing was well forward before the early December frosts, during which dung was carted to arable land. This, and the ground after the last-lifted sugar beet, are the only areas still to be ploughed. Very frosty weather started on 23 December and continued until the end of the year, and 6 in. of snow fell on 30 December.

Cropping

Of the 127 acres farmed, 24 carried wheat, 29 barley, 7 oats, 21 potatoes and 8 sugar beet. There were small areas of rye, beans, lucerne, and

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carrots and other market-garden crops. Temporary grass occupied 16 acres and permanent grass 4 acres.

As potato-root eelworm (*Heterodera rostochiensis*) is now widespread, the interval between potato crops must be extended to 3 years. The acreage under sugar beet cannot be increased unless the harvesting is fully mechanised, and, without irrigation, beans cannot be used on the light land as a break from cereals. The provision of suitable sites for experiments now presents a difficult problem, but it will be eased now that we are renting 44 acres of land forming part of the Dairy Farm, Husborne Crawley. Except for 4 acres under kale, this land was under long-term leys or permanent grass, 4 acres of which was ploughed and sown with winter wheat in autumn 1962.

Experiments

The number of experimental plots under grain and pulse crops increased by 148, and root crops by 116, to give a total of 1,064, 264 more than in 1961.

The excellent soil conditions in autumn and spring enabled all crops to be sown in good time. The corn harvesting by combine presented no great difficulties, and in the good weather of autumn 1962 potato and sugar-beet plots were harvested quickly and easily.

Crops

Cereals. As soil conditions in autumn 1961 were good, the acreage of Cappelle wheat was larger than usual. One small area was destroyed by birds, but the rest did well and averaged 34 cwt/acre. The Jufy I spring wheat looked well before it was badly lodged by storms in late July, and yielded 32 cwt/acre. The Condor oats and some of the Proctor barley were affected by drought and were uneven, with dwarf and normal plants side by side; the difference in height of oats was as much as 12 in. Many aphids infested the oat panicles, and the yield was small. The average barley yield of 33 cwt/acre was better than usual.

All crops were sprayed with a herbicide with great success. Polygonum spp. were the main weeds on most areas and were sprayed with MCPA/MBA or MCPA/2,4-DP. Where mayweed (*Matricaria inodora*) was present, TBA/MPCA was used.

Beans. Beans were grown only in experiments. The late-sown winter beans on the Irrigation Experiment were destroyed by birds and replaced by spring beans. Irrigation increased their yield from 21·0 to 33·5 cwt/acre. An experiment on the control of aphids gave a patchy crop and poor yield, but there were few aphids to control. On the long-term liming experiment on an acid soil the beans showed very little early response to lime, phosphate or potash, but later improved colour and increased height from liming was obvious; liming increased yield from 14·8 to 22·0 cwt/acre.

Potatoes. Most of the early varieties were grown in experiments. They were sown in mid-March, but were slow to come through the ground, and

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there were many gaps. They grew slowly, and although lifting was delayed until late July to increase bulk, yields averaged only 3·5 tons/acre. In the Market Garden experiment dung increased yield by 2·0 tons/acre and irrigation by 3 tons/acre. Potato-root eelworm (*Heterodera rostochiensis*), now present on the Green Manure Experiment in Stackyard field and in the Market Garden Experiment in Lansome field, probably contributed to the small yield.

King Edward VII occupied the biggest acreage of the main crop, though some Majestic were grown. Planting started in mid-March, but growth was slow until mid-July. About the end of August most of the King Edward turned yellow very rapidly, and the plants soon died. The cause was diagnosed as *Verticillium* wilt; this disease has not previously been recognised at Woburn, but similar yellowing and rapid death has occurred, though it spread unusually rapidly in 1962. The Majestic hardly seemed affected. What little King Edward haulm was left was removed mechanically, but in the mild, wet weather in September weeds, mainly chickweed (*Stellaria media*), grew rapidly. This interfered with lifting, which had to be postponed until the weeds had been killed by spraying with diquat, but the fibrous root system still proved a nuisance. The haulm of the Majestic was killed by diquat. Blight (*Phytophthora infestans*) came early; the first spraying was done on 16 July, and the King Edward were given two further sprayings. The Majestic were sprayed twice.

Lifting was done without interruption in an excellent spell of weather, and for the first time the crop was handled by the pallet system. The King Edward yielded 10 tons/acre and the Majestic 12 tons/acre. Common scab (*Actinomyces scabies*) was less prevalent than usual.

In the experiment on weed control in potatoes, trietazine plus paraquat was the only treatment to control weeds satisfactorily and gave a yield of 1·5 tons/acre more than the plot given conventional cultivations. In the Cultivation–Weedkiller Experiment early spraying with prometryne alone failed to control weeds, and in the Irrigation Experiment trietazine alone also failed to control groundsel (*Senecio vulgaris*), mayweed (*Matricaria inodora*) and chickweed (*Stellaria media*).

Sugar beet. This crop was drilled before the end of March into a fine seedbed. Germination was slow and uneven, but eventually a good plant developed. Singling was done early, and in the dry weather weeds were controlled easily. Spraying was not needed against leaf miner (*Pegomyia betae*) or aphids. The crop grew rapidly after mid-July, but the many bolters caused trouble at lifting. This started early in October, but frost delayed the finish until mid-December. Frost did some damage to the roots still in the ground in December, but when clamped the beet were protected against frost. Yield of washed beet was about 20 tons/acre, with a sugar content which varied between 14·4 and 18·8%. The largest plot yield was 78·3 cwt/acre total sugar.

Carrots. Carrots were grown in two experiments. In one, testing the effect of controlling aphids which spread motley dwarf virus, the crop grew well in a year remarkably free from aphids, and gave yields of over 25

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tons/acre of good-quality carrots. Three routine "Metasystox" sprayings were given to Series D carrots, which also gave a good yield.

Market-garden crops. The leeks grew well in autumn 1961, but the first lifting was delayed by bad weather until January 1962. The second lifting was in early March. Yields were about average. The crop planted out in 1962 had a favourable autumn, and the first lifting will be made as soon as the soil thaws.

The red beet were uneven, but as this seemed to reflect manurial treatments, they were left. As many bolters developed, the beet were harvested early, and the area was resown about mid-July. This sowing was damaged by cutworms and aphids, and when harvested at the end of November there were very few marketable beet.

Lucerne. In the Irrigation Experiment lucerne drilled about mid-April grew well and gave three useful cuts, the first on 17 July. The Ley–Arable Experiment was drilled a few days earlier and was the first crop of lucerne after soil sterilisation, but it was not ready for cutting until 14 August, and only two cuts were taken. The second- and third-year crops on this experiment grew slowly in the early part of the season, and they looked patchy and unhealthy. Only three cuts were taken.

Grassland. Grass grew very slowly, and there was no spring flush. After the sheep were returned to Rothamsted in May 10 acres were shut for hay, but 4 acres of this had to be grazed. The other 6 acres gave about 8 tons of hay, and as no rain fell on it, the quality was excellent. "Keep" remained scarce until the latter half of July, when rain and a top dressing of nearly 5 cwt/acre "Nitro-Chalk" produced rapid growth, which gave abundant grass in late summer and autumn.

In the Ley–Arable Experiment grazing started in mid-May, 3 weeks later than average, and the mid-season drought affected grazing, so that the second- and third-year leys were grazed only five times and the first-year leys only four times. The 1-year seeds hay produced such a dismal second cut that there was not enough to weigh.

Livestock

Cattle and sheep. Eighty-eight tegs for grazing experiments at Rothamsted and Woburn were over-wintered at Woburn in 1961/62. Sugar-beet tops were fed until Christmas, when, because of the severe frosts and snow, hay was fed. In 1962, 60 lambs after weaning were sent for over-wintering and were fed in the same way. During the cold weather at the end of December, the lambs were brought in to the covered yard at the farmstead recently rented.

Fourteen dehorned Hereford bullocks were wintered in covered yards, and were not turned out until early May. Five were transferred to Rothamsted in early May and the remainder fattened on the grass during the summer. Thirty-one bullocks were bought early in October 1962 to deal with the flush of autumn grass, and they were later given sugar-beet tops

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or carrots. Hay was fed when the frost became severe, and brock potatoes replaced the frozen sugar-beet tops. They were brought into covered yards towards the end of December.

Pigs. The Large White pig herd was maintained at about 25 by keeping home-bred gilts. The use of farrowing crates increased the average litter size at weaning from 7·3 in 1961 to 8·2 in 1962, and pig sales, mostly as pork, increased from 215 in 1961 to 332 in 1962.

Implements

A small market-garden track-laying tractor with individual seeder units was used to drill carrot and red-beet seed on experimental plots. This eliminated the variation in sowing depth associated with the tracks of a wheeled tractor. A front-mounted bale carrier and rear buckrake saved time and labour in carting hay and straw bales, as did a pallet-handling system for potato carting.

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