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Report for 1972 - Part 1

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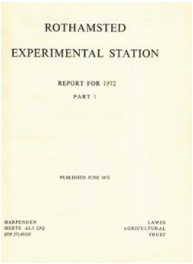
ROTHAMSTED
EXPERIMENTAL STATION
REPORT FOR 1972
PART 1

The Farms : Woburn

J. R. Moffatt

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unimportant. There was an average loss of 3·3% tubers left on the ground. A minimum path width of 1·5 m is needed to ensure sufficient separation of plot produce if the harvester is not stopped.

New items of equipment include a rotary harrow and a spiked rotary cultivator.

Woodlands

Some of the young trees underplanted on 1 ha woodland late in 1971 have been damaged by barking deer (*Muntiacus*). Patching will be done in autumn 1973.

The 30-year-old plantations of beech, ash and an oak/beech mixture have been thinned to remove mis-shapen and defective trees.

Fifteen elm trees, mainly small ones, which were affected with Dutch elm disease have been felled and burnt.

WOBURN

All winter-sown crops were drilled early and those spring-sown in good time; all grew rapidly in April and May. In the dull, cold and dry summer the potato crops showed the need for water by July. Much of the grass for hay was battered by rain and winds, and was cut late. The corn harvest was easy and cereal yields were about average; beans yielded more than in the past two years. In a mild, dry autumn root crops were lifted and winter cereals sown by the end of November. At the end of the year some ploughing remained to be done.

The effect of weather on crops

The winter at Woburn was very mild with few severe frosts and little snow. Rain falling in January on 20 days and in February on 16 days made the land very wet. The first ten days of March were mainly mild and wet culminating in a blizzard on 11 March. In subsequent drying winds and warm weather the ground dried rapidly; drilling started on 14 March and 11 days later all cereals and beans were sown. Sugar beet was sown and potato planting started by the end of the month. In April planting was delayed by rain, and herbicide spraying by winds but they were finished by early May. In this month rain fell on 20 days but gave 14 mm less rain than average. June was mainly dull and cold, and though it seemed wet there were only 27 mm of rain on 12 rain days; the mean temperature was 2·4°C below average and there was one ground frost. Haymaking was delayed and the grass became over-mature but cereals and potatoes grew satisfactorily. Corn crops changed colour rapidly in a hot, dry spell in mid-July and by the end of the month some potato crops on light land were dying.

August, September and October were dry, but dull and cool; cereal harvest was uninterrupted and finished on 1 September. Potato lifting followed immediately; this and sugar-beet lifting finished at the end of November.

The lack of rain made the ground in autumn very hard; little ploughing was done, most of the stubbles being deep-tine cultivated. A rotavator was needed to produce satisfactory tilths on heavy ground for winter wheat; most was drilled by the end of October and that following potatoes by the end of November.

Much rain in early December prevented field work until the middle of the month. In the mild, dry spell which followed good progress was made with ploughing which was not finished by the end of the year.

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Cropping

Of the 72·8 ha farmed 6·9 carried wheat, 15 barley, 10·9 potatoes, 9·7 beans, 1·0 sugar beet, and there were small areas of sainfoin, rye and maize. Temporary leys occupied 14 and permanent pasture 6·9 ha; there were 7·3 ha of fallow. An additional 3·6 ha were rented from the Bedford Estates from the end of September.

The light land is worked on a six-course rotation, and the heavy land on a four-course, to provide different intensities of soil-borne pathogens of cereals and to prevent those of potato and sugar beet reaching dangerous populations. 'Break' crops for cereals are potatoes, beans, ley or fallow.

During autumn magnesian limestone was applied on the stubble of light land and ground carbonate on the heavy land. A few areas were sprayed with paraquat to control couch grass and volunteer corn until ploughed. Areas after potatoes were deep-tine cultivated for winter wheat.

The few wild oats in cereal crops were hand-pulled; on some areas horsetails (*Equisetum*) were the main weed.

Field experiments and crops

There were 1791 field plots, 223 more than in 1971; all were sown in good time and in good conditions and most were harvested successfully. Two experiments on grain maize, two on French beans and one on barley, were damaged by birds or rabbits and were not harvested.

Wheat. There was much mildew (*Erysiphe graminis*) but little yellow rust (*Puccinia striiformis*) as, except for the variety experiment, Cappelle-Desprez was the only winter wheat grown. In the variety experiment on light land the mean yield was 4·12 tonnes/ha. Champlein gave most yield with 4·77 tonnes/ha, Cappelle and Maris Nimrod about 4·58 tonnes and Maris Huntsman 4·27 tonnes. Corresponding yields of four varieties grown in each of the past four years were 4·27 tonnes in 1972, 5·45 tonnes in 1971, 6·69 tonnes in 1970 and 4·98 tonnes in 1969. The mean yield of Cappelle from plots measuring the residues of chemicals applied to potatoes in 1970 was 7·72 tonnes/ha, the greatest treatment yield being 7·82 tonnes, the best recorded at Woburn.

Barley. Julia was the only variety of barley grown except on the variety trial. The seed used on experiments was treated with ethirimol which controlled mildew, which elsewhere was rife. The uneven growth due to compaction in wheel tracks disappeared. Some ripened rather prematurely in the dry, hot spell in July; on other areas the crop lodged badly and was damaged by pigeons. However, some fields yielded more than 5·02 tonnes/ha. In the variety experiment the mean yield of six varieties was 4·97 tonnes/ha, Julia, Vada and Berac all yielding more than 5·02 tonnes.

Beans. Despite the lack of water the spring beans grew vigorously on most areas, probably due to the inactivity of vectors able to spread virus disease. The only exception was on Warren Field II where the 'giant race' of stem eelworm (*Ditylenchus dipsaci*) caused distortion and browning of the lower parts of the stem and stunted the plants. The mean yield of an experiment here was 2·27 tonnes/ha whereas two similar experiments where the attack was slight yielded 2·99 and 3·04 tonnes. On heavy land simazine again failed to control common orache (*Atriplex patula*) which covered the ground to the almost total exclusion of all other weeds. An early and moderate infestation of bean aphids (*Aphis fabae*) was controlled by an application of phorate granules; a lighter

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infestation in July was controlled by a 'Metasystox' spray to headlands. The plants were generally tall and they retained their leaves later than in the past two years. They were slow to ripen, some being harvested at the end of September, others in October. The yield from non-experimental areas varied between 3·1 and 3·8 tonnes/ha.

Potatoes. Pentland Crown was the main variety but Maris Piper was grown on land infested with potato-root eelworm (*Heterodera rostochiensis*). Most of the Pentland Crown seed was grown at Rothamsted but the Maris Piper were Foundation Stock from Scotland. Chitting, early planting, with weeds controlled by linuron, gave the crop a good start. Growth was rapid in June and early July but by the end of July the haulm on some areas began to die. They were sprayed twice against blight, 'Metasystox' being incorporated in the second. The soil was very dry when lifting started on 4 September and with little soil on the lifter web the tubers were liable to damage, but rain improved matters. The 974 potato plots were lifted by 16 October but the large areas of discards and non-experimental crops were not finished until the end of November. The largest Pentland Crown tubers and those with deep growth cracks will be unsaleable; the Maris Piper are smaller but the skins are affected by common scab (*Streptomyces scabies*), though less seriously than in the past few years. There is very little tuber blight but some soft rots.

In an experiment comparing varieties Majestic yielded 56·0 tonnes/ha, Pentland Crown 56·2, Maris Piper 47·2 and Record 41·7. In 1971 yields were Majestic 55·2 tonnes/ha, Pentland Crown 47·5 tonnes and Record 35·4 tonnes.

Sugar beet. Variety Klein E was grown on several experiments. Sown in March and sprayed with 'Solubor' (66·2% diboron trioxide) it grew reasonably well until it was lifted in November, but yields were below average though the sugar content was slightly greater.

Grassland. A high-nitrogen compound fertiliser given in March caused rapid growth in the warm weather. The grass in the fields shut for hay was rather battered by rain in June but haymaking finished on 6 July; yields were about 7·5 tonnes/ha. Aftermaths were late in becoming available to cattle, which had to be turned into one field which had been shut for hay. An NK mixture hastened recovery; 'Nitro-Chalk' was given to the grazed fields. Several fields were sprayed with asulam to control docks (*Rumex* spp.). There was ample autumn grass until well into November.

Cattle

Forty young Hereford-cross beasts were yarded in early winter and fed on hay and potatoes. Later some were transferred to Rothamsted for fattening from yards, the remainder being fattened from grass during the summer.

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