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Report for 1977 - Part 1

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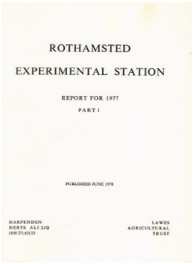

The Farms

R. Moffitt

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THE FARMS

R. MOFFITT

Staff

Head of Farms R. Moffitt, B.SC.

Bailiff (Woburn)
A. W. Neill

Personal Secretary
Brenda M. Simpson

Shorthand Typist
Mrs. Josephine Eaton

Recorders (Rothamsted)
M. N. Rogers
K. L. Sykes, B.SC.
H. L. Jones
Heather Dunning, B.SC.
N. Cowlishaw

Recorders (Woburn)
G. T. Pearce
Q. D. Pope

Foreman (Rothamsted)
J. M. Smith

Farm Workers
T. E. Ablewhite
T. J. H. Battams
V. Bowes
J. Bygrave
R. Fearn
R. W. Gibson
R. Goldsmith
T. D. Macknight
G. Onions
A. V. Pawson
G. N. Talbot

ROTHAMSTED

The weather this year was more normal, but the season was not without its problems. Spring sowings were protracted because of rain but crops subsequently grew well. Yields were better than in 1976 but not outstanding and the cereal harvest was late. Fortunately a fine autumn enabled lost time to be made up.

General

Weather in January and February was unfavourable for field work. Although rainfall in January was about average, February was much wetter than average, 110 mm of rain falling, 61 mm above average, and this delayed the start of spring work.

However, drying weather in early March enabled a start to be made on drilling cereals, but the weather broke in the middle of the month bringing arable work to a halt. Although March rainfall was only just above average, most fell in the last half of the month and it was not until April that sowing could be continued.

Most sowings were completed by the first week in April which was drier than usual with 33 mm of rain, 17 mm less than average. Winter cereals were top dressed and potato planting started. However, a wet end to the month and a wet start to May seriously interfered with potato planting and cereal spraying.

The last half of May was dry and the first cut was taken from grass experiments in good conditions, and useful silage was made.

June was a wetter month, 79 mm of rain falling, 24 mm above average, and there was much less sun than usual. A good yield of hay was obtained with little damage from weather. This was very welcome as stocks had been completely exhausted during the 1976/77 autumn and winter.

July was very dry with average sunshine and for the second year in succession wheat was sprayed with 'Aphox' (pirimicarb) to control aphid.

August was very wet and dull with twice the normal rainfall, most of which fell in the latter half of the month (122 mm, 58 mm above average). Harvest consequently was late

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and difficult. The winter barleys were cut before the rain and these are of good quality, but both spring barley and winter wheat germinated in the ear.

Fortunately September and October were drier than average. The cereal harvest was completed by mid-September but beans were late and were not finished until the end of the month.

Winter barley straw was burnt but all spring barley and much of the wheat was baled and carted.

Potato harvesting was done in good conditions in the fine October. Hand pickers were more plentiful this year and the crop was cleared rapidly.

Sowings of winter cereals were done in October and November but were prolonged because of a large experimental programme. A final cut was taken from grass experiments and ploughing was completed by the year's end.

Field experiments

There were 3604 large plots managed by the farm and yields were taken from 2892.

Although not greatly different in number from 1976, many experiments were more complex and demanded additional work, which is not indicated by the plot numbers. In unfavourable seasons it is becoming more difficult to ensure timeliness of operations on field experiments.

Broadbalk was drilled late in the 1976 autumn in poor conditions and 'Prebane' (terbutryne) had to be omitted because of ground conditions. There was some flooding on Section 9 during the winter, and the crop on this section suffered in consequence.

For the second year running 'Aphox' (pirimicarb) was used to control aphid.

In the autumn of 1977 the field was subsoiled to a depth of 40 cm in the hope that drainage would be improved and flooding lessened.

Conditions for sowing in 1977 were very much better and the 1978 crop was sown in good conditions on 19 October and 'Prebane' (terbutryne) applied.

Barnfield continued in grass, except for Sections 1 and 2 which were fallowed as the work on simazine residues in the bean crop had ended.

On Hoosfield there was some couch grass (*Agropyron repens*) and the stubble was sprayed with 'Roundup' (glyphosate) in the autumn.

Crops

There were 264 ha farmed. Cereal crops occupied 143 ha, potatoes 11 ha and beans 18 ha. There were 68 ha of grass and a few small areas of oilseed rape, sugar beet and fallow.

Wheat. There were 44·9 ha mostly winter sown. A little Cappelle was still grown but only on Broadbalk and some long-term experiments where a variety change is undesirable. The main varieties were Maris Huntsman and Atou with some Flanders.

Most was sown in late November and lay wet throughout the winter. However, most crops recovered and grew well but yield was lost due to late sowing. The best yield was in an experiment where sowing dates were included as a treatment. September sowing yielded 7·73 t ha^{-1}, whilst November sowing gave 1·79 t ha^{-1} less.

There was again much aphid in July and as much as possible was sprayed with 'Aphox' (pirimicarb). However the yield benefit was disappointing. In the variety experiment where this was tested the mean yield increase was 0·11 t ha^{-1}.

In this same experiment the best yield on a pathogen-free site was from Maris Sportsman (4·83 t ha^{-1}), and the next best from Armada (4·42 t ha^{-1}) and Maris Kinsman (4·43 t ha^{-1}). Cappelle yielded 3·73 t ha^{-1}.

This site suffered from late sowing (25 November) after a preceding crop of potatoes lifted in wet conditions.

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In a similar experiment on a diseased site after cereals, surprisingly, the mean yields were better by 0·5 t ha^{-1}.

The cultivation work done in conjunction with NIAE was brought to an end. In the final year the best yields were obtained from ploughed plots. Direct drilling into stubble gave the least yield and tined cultivations were intermediate. Where straw was burnt prior to cultivation, yields were as good as those from the ploughed plots.

Barley. There were 12·1 ha of winter barley, all Maris Otter, and 61·8 ha of spring barley, mostly Julia. A little Porthos, intended for seed production, was grown but subsequently proved to be unusable due to sprouting.

Although sowing was done in good conditions it was somewhat protracted, starting in March and finishing in mid-April because of interruption by rain.

The season was more favourable than 1976 and yields on experiments were greater by 0·83 t ha^{-1} (4·76 t ha^{-1} in 1977 compared with 3·93 t ha^{-1} in 1976).

All spring barley suffered from sprouting which worsened as harvest progressed; all needed much drying and is only of feed quality.

Results from the barley variety experiment are suspect as it was harvested late and shedding losses caused variation in yields. The best yield was obtained from Lofa Abed (5·79 t ha^{-1}) and, where mildew was controlled, Julia outyielded several newer and supposedly higher yielding varieties.

Where 'Milstem' (ethirimol) seed dressing on Julia was used, yield was increased from 4·36 to 4·61 t ha^{-1}. When a spray of 'Calixin' (tridemorph) was used, yield was increased to 5·27 t ha^{-1}.

Oats. There were 23·5 ha of winter oats. Most were sown late in poor conditions and grew slowly at first but recovered well. They were badly laid when harvested and suffered much ear loss. Yields from one experiment testing the effect of insecticides and sowing date on virus diseases gave a mean yield of 5·36 t ha^{-1}.

Potatoes. About 1·5 ha of the 1976 crop remained in the ground; a few were lifted in January but conditions then became impossible. Those remaining were badly frosted, only about 30% were sound, and as the price dropped in the spring it was hardly economic to lift them. As other work was pressing they were lifted by elevator digger and left on the surface just prior to a frosty spell which killed the sprouts.

There were 10·80 ha of potatoes in 1977. A few earlies (Arran Comet) were grown for experimental requirements. The heavy and late Rothamsted soil is not really suitable for earlies. Lifted in July they yielded approximately 20 t ha^{-1}.

Soil conditions were not good at planting time; the soil was cloddy and wet. Consequently, although yields were good, there was a higher than normal percentage of misshapen tubers.

There was much less aphid and virus spread than in 1976 and all the seed crop was usable for seed, whereas in 1976 and 1975 the King Edward was unsuitable.

Potatoes were given a fortnightly spraying against blight (*Phytophthora infestans*) but the season was generally unfavourable to the disease. As there was little haulm infestation the normal practice of burning off with B.O.V. was not necessary, mechanical pulverising being sufficient.

Harvest conditions were good and the crop was rapidly lifted with few interruptions from weather.

Yields were average, the best plot on Broadbalk yielded 34·9 t ha^{-1} and in an experiment comparing the various forms of nitrogen fertiliser, the mean yield of Pentland Crown was 44·9 t ha^{-1}, despite late planting.

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Beans. There were 16·6 ha of spring beans and 1·0 ha of winter beans were grown in an experiment to test the effect of fungicides and irrigation on chocolate spot (*Botrytis fabae*). These plots gave a mean yield of 3·67 t ha^{-1}, but the irrigated plots were very tall and harvesting was difficult. Spring beans yielded well, an experiment comparing various factors affecting yield gave a mean yield of 4·06 t ha^{-1}, but irrigation included as a treatment caused lodging and lessened yield. Also, the irrigated plots were very late to harvest.

There was some black aphid (*Aphis fabae*) and spring beans were sprayed once with 'Aphox' (pirimicarb).

Oilseed rape. A little winter rape was grown and was successfully combined direct after desiccation with 'Reglone' (diquat).

Sugar beet. A little was grown for experimental purposes. It was sown in good conditions but suffered in the dry, late May and emerged patchily. Subsequent recovery was good and a useful crop was grown.

Grass. There was ample grass throughout the summer and all grass experiments were cut three times. The last cut was delayed until November because of pressure of work caused by the late harvest, potato lifting and a large autumn experimental programme. Good quality silage was made in the fine weather of late May. Weather later became catchy but about 140 t of hay were made with little weather damage.

Cattle

One hundred and thirty-eight cattle were sold fat during the year and 142 stores were bought.

Equipment

A Bettinson direct drill was bought to forward the experiments on minimum cultivation.

The grain handling plant was rebuilt for the 1977 harvest. Storage has been increased to 700 t in 18 floor-ventilated silos which have provision for in-bin drying, cooling and self-emptying. The existing continuous flow drier was retained for use when grain is very moist, and the elevators, conveyors and the pre-cleaner have been replaced with higher capacity ones so as to cope adequately with incoming grain from the combines, and to allow rapid loading of lorries.

The plant performed very well during the difficult 1977 harvest.

Staff

J. M. Smith was appointed farm foreman in October.

J. M. Bidgood, who gave invaluable service for 26 years, 20 years as chief recorder, retired in March. M. N. Rogers was promoted to succeed him.

J. P. Dickinson left to take up a post as Assistant Farm Manager at the Institute for Research in Animal Diseases at Compton.

P. L. Dixon left the recorder staff in July, and Heather Dunning and N. Cowlishaw were appointed.

C. Stitchman, C. Bygrave and R. Burlinge left. R. Goldsmith was appointed in August.

Mrs. Enid Mackney left, and Mrs. Josephine Eaton was appointed.

WOBURN

General

The weather was generally similar to that at Rothamsted and suited the light land better than the abnormal season of 1976.

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There were less spring cereals than usual as a higher proportion of winter cereals were sown. Cereal yields were average, but grain quality was poor because of the wet harvest.

After harvest the weather improved enabling all straw to be baled and carted, potatoes lifted in good conditions and winter cereals sown in good time.

Total rainfall for the year was 692 mm compared with the average of 624 mm. Rainfall was well above average in February and August.

There were 1680 experimental plots managed by the farm and yields were taken from 1608. In addition there were 969 microplots and other plots largely managed by departments.

Crops

Wheat. There were 11·4 ha, the main varieties being Maris Huntsman and Maris Kinsman. A little Cappelle was still grown on long-term experiments.

Most grew well but some, sown late after potatoes, suffered severely from the wet winter, and was sprayed with 'Gramoxone' (paraquat) in the spring and resown to spring cereal. Winter wheat was sprayed with 'Aphox' (pirimicarb) in early July against aphid. There was little effect on an experiment testing this, the increase in yield being only 0·21 t ha^{-1}.

Yields from an experiment comparing different forms of nitrogen averaged 4·54 t ha^{-1} and this was typical. In the variety experiment, sown on 10 November after potatoes, the best yield was obtained from Maris Sportsman which gave a mean yield of 4·83 t ha^{-1}.

The next best were Armada and Maris Kinsman, yielding 4·42 t ha^{-1} and 4·43 t ha^{-1} respectively. The worst yielding variety, surprisingly, was Flanders which gave a lower yield (3·56 t ha^{-1}) than Cappelle (3·73 t ha^{-1}).

Barley. There were 15·0 ha, nearly all Julia, grown from Rothamsted-grown seed dressed with 'Milstem' (ethirimol). Drilling of barley started on 7 March and most was done by mid-March when rain prevented further work. The remainder was sown when weather improved in April.

Yields were better than in 1976. The mean yield of the variety experiment was 4·52 t ha^{-1} compared with 3·67 t ha^{-1} last year. The best yielding variety was Sundance (5·31 t ha^{-1}) followed by Lofa Abed (4·97 t ha^{-1}).

There was little benefit from mildew control. Julia, when sprayed with 'Calixin' (tridemorph), gave only an extra 0·17 t ha^{-1}, and a 'Milstem' (ethirimol) seed dressing slightly depressed yield when compared with untreated seed. Generally mildew is less troublesome at Woburn than at Rothamsted.

Oats. There were 6·8 ha, all winter sown, and a useful yield was obtained, but grain was discoloured because of fungal infection resulting from the wet summer.

Beans. Very few were grown as they are attacked by stem eelworm which is a problem on many fields at Woburn. Eelworm resistant varieties of winter oats are grown instead.

Potatoes. There were 7·3 ha, mostly Pentland Crown. Seedbeds were satisfactory except for one field on the heavy land which was cobbly but nevertheless yielded well.

For the first time at Woburn an opportunity was taken to use an isolated field for seed production. 'Temik' (aldicarb) was used at planting and three aphicide sprays were applied. A yield of 46·5 t ha^{-1} was obtained.

There was little blight (*Phytophthora infestans*) and for the second year running the haulm was not desiccated. It was sufficient to use a haulm pulveriser.

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Grass. Grassland was more productive this year except during the very dry July when some cattle were transferred to Rothamsted to relieve pressure on grazing.

A 1-year ley on Great Hill was broken up in mid-summer after applying dung, and a weedy grass field at the Dairy Farm was sprayed with 'Gramoxone' (paraquat) in the autumn with the intention of resowing in spring 1978.

Cattle

Fourteen were sold fat. Twenty-two were transferred to Rothamsted for finishing, and 53 stores were bought.

Staff

C. Waghorn resigned, and G. Onions and T. D. Macknight were appointed.

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