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Rothamsted Experimental Station Report for 1965

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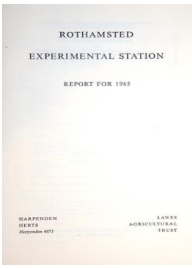

Woburn

Rothamsted Research

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Because of hard frosts, hay was fed from mid-November, and towards the end of the year silage was fed and was eaten with relish.

The ewes were injected before lambing with a combined vaccine that protects them and the lambs against many diseases. Ewes and lambs were sprayed once or twice against sheep maggot fly and were dosed against worms regularly.

Equipment

To deal with the output of the bigger combines and the more grain to come from the extra land at Scout Farm, a vertical-flow grain drier was ordered and air-sweep floors will be fitted to the Simplex drying bins to empty them pneumatically.

Cottages

Four new cottages for farm workers are being built and should be finished in spring 1966.

WOBURN

After the fine autumn of 1964 land work was well forward at the beginning of 1965. Spring seedbeds were good, and all sowings were done before the end of April. The four summer months were abnormally cold, dull and wet; most of the hay was spoilt and the corn lodged badly, but potatoes, sugar beet and grass grew well. Harvest was late and yields were lessened by the lodging. In the dry October all potatoes were lifted and some sugar beet. Most of the winter corn was sown early, but some drilling and a lot of ploughing remained to be done at the end of the year.

The Effect of Weather on Crops

The autumn and early winter of 1964 was dry and mild; the land after potatoes was cultivated deeply for winter wheat, and the seedbeds were almost too fine, but the wheat was drilled late in October. The heavy land was hard and the ploughing rough, and drilling was delayed until rain in November softened the clods.

The winter was mostly dull and dry, with a few short spells of snow and frost. January had average rain, but February only 0·55 in.; as the ground became dry some barley was sown about the middle of the month, but rain soon stopped drilling, and snow and hard frosts early in March delayed the resumption until 11 March. Seedbeds were good, and all cereals were drilled by the end of the month.

There were 3 days of hot, sunny weather at the end of March. April was cold with average rain, but there was little interference with land work, and all potatoes, sugar beet and small seeds were planted before the end of April. May was wet and windy, which delayed cereal spraying, but encouraged the growth of potatoes, sugar beet and grass.

June was dull, cool and wet with 2·12 in. of rain and less than average

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sunshine. Haymaking was interrupted and the hay was badly leached and of little value. One field of winter wheat was badly lodged in the middle of the month and never recovered.

July gave 3·19 in. of rain in 17 days, but hours of sunshine were about half the average. Hay cut early in the month was still lying in the field at the end, and was burnt. Potatoes and sugar beet grew rapidly; potato blight appeared despite frequent sprayings.

August and September were cold, wet and dull; September had well over twice the average rainfall (4·67 in.), and it rained on 17 days. Corn ripening was delayed; harvest began on 18 August, and the tedious operation was not finished until 23 September. Most of the winter wheat and spring barley was lodged badly, and there was a lot of second growth in the barley; grass weeds flourished in the lodged wheat. The 6 months April–September all had less than average sunshine, giving a total deficit of 182 hours.

October gave little rain (0·61 in.) and above average sunshine. Potatoes were lifted in excellent conditions and yielded well; sugar beet lifting started.

The first week of November was dry; good progress was made with sugar-beet lifting, wheat drilling and ploughing, then three severe frosts (16° F on 14 November) and rain prevented work. Rain was less than average, but it fell on 23 days. Early December was mild and wet, and little land work was done. Rain was twice the average (4·05 in.) and there were 21 wet days; frost at the end of the month also prevented land work, so at the end of the year there was some sugar beet unharvested, a field of wheat to drill and much land unploughed.

Field Experiments

There were 1,343 full-scale field plots, fewer than in 1964, and several hundred microplots. The full programme was completed. Many of the cereal plots were badly lodged, but the combine-harvester dealt with them all satisfactorily. All potato plots and most sugar beet were lifted quickly and easily, but frosts in November damaged some sugar beet and delayed the lifting on the last experiment.

Grazing on the Ley–Arable experiment started earlier and finished later than usual; the second-year leys were grazed 10 times, the third-year 9 times and the first-year, where grazing started in June, 8 times. The barley was damaged by birds and was redrilled. The haulm of the Majestic potatoes began to die early in August, so it was burnt off, and the poor crop was lifted later in the month. The lucerne coming into its third year in 1965 was ploughed, and sainfoin sown at the same time as the first-year sainfoin. Both gave two cuts late in 1965. The second-year sainfoin became very weedy, so was killed with paraquat, the land was rotary cultivated and drilled again in August. The seed germinated well, but there was much chickweed.

In the Market-Garden experiment the leeks planted during the dry summer of 1964 failed. The early carrots grew fast, as did weeds, which were

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suppressed by a post-emergence spray with linuron. There were two liftings 12 days apart, and in this interval the yield of many plots doubled. The main-crop carrots germinated rapidly, grew well and yielded 24 tons/acre. The roots were well shaped, but could not be sold, so most were fed to cattle.

The undersown seeds in the experiments established themselves well, except on the plots in the Green Manuring experiment given the most nitrogen.

The S22 ryegrass sown on the Irrigation Experiment in March grew rapidly throughout the season and gave five cuts, the last in mid-October. Three good cuts were taken from the Dorset Marl clover.

A barley experiment, comparing broadcast seed with seed drilled at two spacings and seed rates, gave an average yield of 49 cwt/acre. Broadcasting and close spacing of rows yielded more than wide spacing, and the small seed rate (108 lb) did better than the large.

The barley in the long-term Cultivation–Weedkiller experiment on very light land has yielded poorly for several years. In 1965 three amounts of N were compared, but yields were twice those in the part with the smallest amount of N, which was about the same as given previously.

Cropping

Of the 172 acres farmed, 21 carried wheat, 45 barley, 16 potatoes and 7 sugar beet. There were small areas of rye, sainfoin, carrots and other market-garden crops. There were 39 acres of temporary grasses and clovers, and 15 acres of permanent grass.

Because of root-eelworm in the light land, the rotation is being extended to a six-course one consisting of two cereals, two "break" crops, a cereal and another "break" crop. The double "break" crops will be a 1-year ley or fallow in the first year, and potatoes in the second; the 1-year "break" will be sugar beet, 1-year ley or eelworm-resistant potatoes. Sugar-beet acreage will be small, because labour for singling is scarce. This rotation provides land for cereal experiments after either a 1- or 2-year break, which gives different intensities of soil-borne diseases. The heavy land will have a similar six-course rotation, except that spring beans replace sugar beet in the 1-year "break" and can replace potatoes as the second crop of the double "break".

Crops

Wheat. The Cappelle wheat sown in October and November 1964 germinated unevenly in the dry seedbed, but growth later was good, and the crop looked very promising in early June. It then lodged badly, and the many "ground-keeper" potato plants grew through; yields were small and quality was poor. Opal spring wheat grew well, lodged little and yielded 35 cwt/acre.

Barley. Maris Badger was the only variety grown. The seed was combine-drilled early with a compound fertiliser containing 75 units of nitrogen, and an extra 30 units were applied soon after drilling. The crop grew well,

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but lodged badly, and there was much second growth. The average yield was 33 cwt/acre, with grain of poor quality.

Potatoes. King Edward was the main variety grown, with Majestic in a few experiments. Seed, grown and chitted at Rothamsted, was planted in April, emerged quickly in a warm spell and some leaves were damaged by the linuron and paraquat herbicide used. Many cleavers (*Galium aparine*) germinated deep in the soil and were unaffected by the herbicide, and the worst areas were grubbed and ridged. As weather favoured the spread of blight, crops were sprayed four times, starting early in July. The haulm started to die in August and was burnt off, as the tubers were large. The crop was lifted in October in good conditions. King Edward yields averaged about 15 tons/acre total produce. The tubers were of good size and shape; there is some blight in the tubers, but less scab than usual.

Sugar beet. Drilling was spread to extend the period of singling, but all was sown in April. The non-experimental areas were thinned mechanically, the final singling and weeding being done by hand. The crops grew vigorously during the summer and, as aphids were few, weeds were not sprayed. Weeds between the rows were controlled mechanically and in the rows by hand. There was more mayweed than usual. The roots were large, and the yield averaged 16 tons/acre. The sugar content of the early loads was over 16%, but only 14% for the last few loads.

Grass. This was given a high-nitrogen compound fertiliser in February, and two small areas had a dressing of "Nitro-Chalk" in June. The grass grew rapidly and hay crops were heavy, but most were spoilt. There was too much grass throughout the summer for the cattle, and more were bought in October to graze it. Grass remained plentiful until almost the end of the year.

Livestock

Cattle. Eighteen of the most forward Hereford bullocks bought in autumn 1964 were yarded during the winter, and 14 were outwintered. The 18 were sold fat off the grass in early summer, and the others were transferred to Rothamsted for finishing. Another 33 were bought, and they were still outside at the end of the year. In both winters the cattle were fed on hay, sugar-beet tops and brock potatoes, with a small ration of home-grown concentrates.

Sheep. A few Rothamsted-bred ewe tegs were wintered at Woburn. They were used to graze the grass plots on the Ley–Arable experiment, and were returned to the Rothamsted breeding flock in early autumn. As further grazing was needed, draft ewes from Rothamsted were used.

Pigs. Analysis of the herd costings under the Pig Industry Development Association's feed-recording scheme again showed the labour costs to be large, and the attempt to cheapen these by keeping more of sows failed

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because the housing was unsatisfactory. It was therefore decided to stop keeping pigs, and by the end of the year all the breeding stock and most of the young pigs had been sold.

The litter average rose from 8·9 to 9·4, and 155 more pork pigs were sold than in 1964, of which 84% were in grade "A" or the "Quality" grade.

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