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Report for 1930

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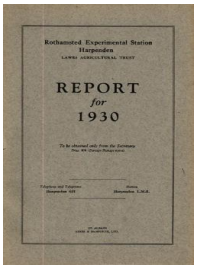

Rothamsted Farm Report

Rothamsted Research

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SUGAR BEET

There was no significant insect attack on Long Hoos. At Woburn (July 2nd.) there was on Stackyard a poor plant made up by transplanting. Though the Black Spring-tail was present there was no evidence of attacks by the Pigmy Mangold Beetle, the Mangold Flea-beetle or the Mangold Fly. On Lansome there was a good plant; here the Black Spring-tail was frequent, and an occasional plant was attacked by the Mangold Fly.

CRUCIFEROUS ROOT CROPS

Attack by Flea-beetles (*Phyllotreta*, spp.) necessitated re-sowings both here and at Woburn.

POTATOES

No significant insect attack.

THE FARM REPORT

I. Weather.

The weather during the season 1929-30 was generally favourable to farm operations. The autumn was wet. After January, however, drier conditions enabled spring work to start early. The rainfall for October, 1929, to January, 1930, as compared with the 77 year average, was:

	October	November	December	January
1929–30	4.51	6.56	6.01	3.24
1853–4—1929–30	3.11	2.66	2.65	2.42

For the remaining months, however, the rainfall was not far from the 77 year average. Frost was rare, the average temperature for January, 41.3°F, being 3.9° above the 57 year average, but this did not prevent a good spring tilth, because all the land had been ploughed in good order during the early autumn. During the spring and early summer the rain was sufficient to encourage vigorous growth, and excellent hay crops were favourably secured during a spell of hot, dry weather. Immediately afterwards the weather broke, and several heavy thunderstorms laid most of our heaviest grain crops. The broken weather continued during the first fortnight of harvest and aroused some anxiety; later there was a marked improvement which lasted until after the winter oats and some of the wheat had been sown. The total sunshine for the year was very close to the 37 year average.

II. Farm Policy and Developments.

The laying down to grass was completed in 1929. In 1930 water was laid on from the old supply, which had to be enlarged for this purpose, and the fields were divided into fenced areas of 6 to 9 acres, each with water and some with shelters. In addition there are a few small paddocks.

The buildings were next improved and extended so as to bring them all, including the Dutch Barn, under one roof. The extension includes two cart sheds and one storage shed, two covered cattle

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courts, capable of holding nearly thirty-six fattening cattle or other stock, and accommodation for a large quantity of dung.

It is proposed shortly to erect a demonstration room, a farm office and work room for experimental staff and equipment, and to install throughout electricity for power and light; this will complete the present scheme.

The work on the arable land in recent months has been affected by the following new factors:

(1) Corn crops have become so unprofitable that no more can be grown than will provide the minimum of straw required for litter.

(2) There has been a marked increase in the experimental programme; the new experiments including:

(*a*) Two new long term rotation experiments, one in Great Hoos, the other in Long Hoos, Section IV.

(*b*) A set involving three crops in succession—barley, hay and wheat.

(*c*) Forage mixtures and other crops.

These factors have made it necessary to introduce various changes; they prevent strict adherence to any one cropping system. The classical fields and Long Hoos IV to VI alone are reserved exclusively for experiments, but any of the remaining arable land is so used when necessary. On the commercial farm two new crops showed promise: winter rye after farmyard manure in early autumn, and kale. The rye provides, at a cost of less than £2 per acre for seed and cultivation, useful green food for ewes, lambs and cows from the middle of March onwards; it helps to prevent loss of nitrate from the soil by winter leaching; it effectively controls black bent and other winter weeds, all of which are destroyed in the spring cultivation after the rye is ploughed up; and its roots facilitate the production of a spring tilth, a matter of great importance on this sticky soil. This use of rye as a catch crop would be impossible without a tractor to carry out the autumn ploughing.

Kale is the second new crop in the commercial farming. It has the advantages of a root crop without the high labour costs. We have still to discover the best following crop. Barley is almost certain to go down, potatoes and other roots would be very suitable, but soil and other considerations rule them out. This year we are trying barley mixed with beans, and also spring sown (Marvellous) oats. Maize, for green food, and linseed for seed are also possible.

The policy for livestock is to make them as self-contained as possible. Store cattle and store sheep are so dear that purchases are reduced to a minimum. As many polled black calves as possible are raised and suckled by a few cows. A flock of nearly 200 half-bred breeding ewes is kept, these are crossed with Suffolk and other rams, and are timed to lamb from about the middle of March. After lambing they are put on rye and on grass that receives a nitrogenous top dressing early in February. Lambs are sold throughout the year. Young cattle are outwintered as far as possible for sale either fat off the grass during early summer, or as strong stores when the demand is greatest, according as prices move.

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III. Cropping, 1929–30. (For dates, yields and other information, see Table on pp. 112-5.)

All winter corn was sown in September, 1929, on a very dusty tilth, except Broadbalk sown on October 16th. The plant was thick and appeared to suffer no harm from the fine tilth. It was in unusually forward condition by the spring and looked promising throughout the season. Winter oats in Little Hoos, and wheat in Fosters, just resisted lodging, and were cut a few days early to secure them against storm damage. Most of Great Knott wheat was hopelessly laid, the damage commencing as early as June, with consequent loss of yield; on some of the plots where there was little lodging the unmanured wheat gave the remarkable yield of 27 cwt. (50.4 bushels) per acre.

The Broadbalk wheat, on the three-fifths which had been fallowed in the previous years, was completely laid, except for the unmanured plot. The yields were, in consequence, considerably less than the record figures obtained from the top two-fifths in 1928. In 1930 the top two-fifths were not laid but gave poor yields, with much black bent (see pp. 122-3). Barley was grown on the experimental fields only.

Potatoes were planted earlier this year on Long Hoos (April 2nd–3rd), and the yields were considerably better than last year. The crop was again lifted under excellent conditions. Sugar beet, sown alongside on May 9th, was again disappointing. This occurs so frequently at Rothamsted, though not at Woburn with its lighter soil, that in 1931 we are comparing very intensive cultivation and manurial treatments. Barn Field mangolds sown on May 10th, gave better crops than in 1929.

A heavy crop of seeds hay (some 40 cwt. per acre) was cut from Great Harpenden and Long Hoos IV. The aftermath in Great Harpenden was left for sheep, part being ploughed up in time for sowing winter oats, and the rest for spring oats. Long Hoos IV, however, was ploughed up at once and prepared for the second long period Rotation Experiment (pp. 128-9). Immediately after harvest, Sections I and III in Long Hoos were dunged, the mustard on II was folded off with sheep, and all three sections were sown with rye, on September 26th–30th.

Little Hoos was also dunged after harvest, having given heavy crops for several years without dung, and was then laid out for certain of the 1931 experiments. The winter rye in Pastures proved most useful for the ewes and lambs in spring. It is frequently objected that this crop grows so quickly that it soon becomes coarse and unpalatable; efficient stocking, however, prevents this, and its quick growth is one of its great virtues. When grass sufficed for the ewes and lambs the rye was ploughed up, by sections, and sown with kale from May 17th. The crop suffered much from the turnip flea beetle; the whole field had to be sown a second time, and parts of it a third time. This trouble would be reduced by earlier ploughing of the rye and earlier sowing of the kale, but as against this early sown kale is apt to be too mature by the time it is most wanted.

Fosters Field was undersown with Italian Rye Grass and Broad Red Clover. Part was drilled, part broadcast; the latter method was good, but the former was better, as usual in this district. By

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September there was an excellent bite of young grass in this field, which was admirable for flushing our ewes.

III. Stock.

A start was made this year in trying to raise sufficient calves to supplement the sheep stocking of our grassland. Four in-calf heifers were purchased, and after calving they are given bought-in calves to rear in addition to their own. Lambing commenced on February 1st, possibly rather early under our conditions. We have not yet been able to wean a 150 per cent crop of lambs, because of the addition of gimmers[1] to the flock. A few of the ewe lambs, purchased in August, 1929, produced lambs, but neither lambs nor mothers did particularly well. More ewe lambs were purchased in September, 1930, thus raising the number of our potential ewe flock to nearly 200.

IV. Grass.

Favoured with a good season for grass in 1930, all the grass on the farm has shown a steady and, in some cases, a surprising improvement. Summer growth was so good that much hay had to be cut, and all fields were, as usual, topped. There was an abundance of aftermath on all fields in the autumn. Little Knott which has had pride of place for the last two years, has now serious rivals. Next to it, and equal to each other come Great Harpenden and Sawyers (next West Barn) ; both these were sown in August, 1928, and despite the very severe frost that followed, the wild white clover survived and now forms a dense mat. This early autumn sowing was a distinct success.

New Zealand is also improving. It has filled up remarkably, clover is becoming prominent and weeds have been largely suppressed.

Great Knott looked very brown by the end of 1930, due possibly, to the strength of the cocksfoot. Parts of it are still somewhat thin and weed grasses are still too prominent, but it has been heavily trampled with stock during the winter of 1930-31.

Great Field continues its steady improvement, and has been very severely grazed with sheep throughout the winter of 1930–31.

The worst grass now on the farm is in West Barn and Stackyard, but the former has improved considerably, and the latter is benefiting from heavy winter treading.

One of the outstanding demonstrations on our young grass is the injurious effect of sulphate of ammonia on the young developing plants of wild white clover, even though the grass be well and thoroughly grazed. This fertiliser should not be used on a permanent grazing pasture while it is becoming established ; whether or not other nitrogenous manures are safer we cannot yet say.

VI. Implements.

Through the kindness of some of the leading implement manufacturers, we have a large variety of implements at our two farms, either presented or on loan, the value of which exceeds £1,000. These are among the most useful of our farm demonstrations, and are a never failing source of interest to farmers. One reason why

1 A gimmer is a young ewe that has not yet borne lambs.

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we desire to improve our demonstration accommodation at the farm is to extend the opportunities for showing and describing the implements. Among firms to whom we are indebted we wish especially to mention the following :

Ruston, Hornby, Ltd. (Grain drill, binder and trusser).
Ransomes, Sims & Jefferies (ploughs and cultivators).
J. & F. Howard, Ltd. (ploughs, potato lifter).
Ford Motor Co., Ltd. (tractor).
International Harvester Co. (manure distributor and grain drill).
Wallace & Sons, Ltd. (potato implements).
Jack & Sons, Ltd. (turnip implements).
Massey, Harris, Ltd. (dung-spreader, pulverator).
W. A. Wood & Co. (mower and harrows).
J. Wilder, Ltd. (Pitch-pole harrows).
Bamfords, Ltd. (hay machinery).
Blackstone & Co., Ltd. (hay machinery).
Simar Rototillers.
Geo. Henderson (manure distributor).
Harrison, McGregor & Co., Ltd. (root pulper, manure distributor).
E. H. Bentall & Co., Ltd. (cake breaker, etc.).
Cooper Stewart Engineering Co. (sheep-shearing machine).
R. A. Lister & Co., Ltd. (oil engine).
Cooper, McDougall & Robertson, Ltd. (sheep dipper).
Cooper-Pegler & Co., Ltd. (spraying machines).
George Monro, Ltd. (motor-hoe).
Allen & Simmonds (motor-hoe).
Parmiter & Sons, Ltd. (chain-harrows).
Garvie & Sons (grass-seed broadcaster).
Dawe-wave Wheel Co. (tractor wheels).

VII. Staff.

Mr. C. Frith, as voluntary student assistant, is collecting data on the commercial farming side, particularly relating to the live-stock. At both farms our herds of pigs and flocks of ewes are completely recorded, and as the farms develop it is hoped to extend this branch of the work and to study various management and other problems.

A constant stream of Danish students now come to our farms for varying periods to study field experimental methods and to gain experience of English farming. In return we are hoping to send members of our farm staff from time to time over to Denmark ; the first will, we hope, go out in the summer of 1931.

METEOROLOGICAL OBSERVATIONS

Meteorological observations have been systematically made at Rothamsted for many years; these records are being used in the Statistical Department in interpreting crop records. The Station has co-operated in the Agricultural Meteorological Scheme since its inauguration by the Ministry of Agricultural in 1926, and possesses all the equipment required of a Crop-Weather Station. The observations taken under this scheme include :