

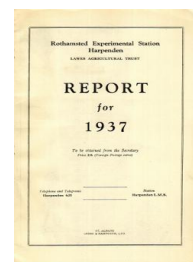
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Farm Report, 1937

Rothamsted Research

Rothamsted Research (1938) *Farm Report, 1937* ; Report For 1937, pp 79 - 86 - DOI:
<https://doi.org/10.23637/ERADOC-1-69>

FARM REPORT, 1937

Weather

The outstanding weather feature of the year 1936-37 was the extremely wet winter and spring. The rainfall for the six months November to April amounted to 21.867 inches compared with the 84 year average of 13.553, and for the three months January to March was over twice the normal. The total for the year amounted to 35.859 inches compared with the 84 year average of 28.625 inches. The summer months on the whole were drier than the average. The sunshine figures were far below the average and eleven months of the twelve gave figures below the average, although mean temperatures were slightly better than average.

Weather and Crops

The weather conditions very seriously affected the work of the farm, for during the first three months of 1937 no land work could be done. Sowing of spring corn did not commence until the end of March, and even then conditions were not really suitable. However, most of the corn was sown by mid-April. No harrowing or rolling operations were done to wheat or barley as by the time the land was fit for these operations the crop was too forward. Towards the end of April and early May there was a dry spell with strong winds which dried and hardened the surface soil and made it difficult to get suitable seed beds for root crops. Only surface cultivations could be given as deeper work brought large lumps of sodden unweathered soil to the surface. Potatoes went in under bad conditions. The late ploughing and the absence of frosts during the winter made it difficult to get even a surface tilth. When bouting took place the plough cut through lumps of cold and wet soil and the sets thus had a poor start. However, subsequent growth was better than was expected and no blight occurred. The summer was mainly dry and although this was very suitable for hay and harvest work, the root crops grew very slowly. Wheat crops ripened fairly evenly but barley very unevenly and much had to be cut before the whole field was properly ripe. The favourable harvest conditions enabled many of the non-experimental crops to be threshed in the field, and all non-experimental wheat and oats were so treated. Hoosfield, Agdell and the Half Acre wheat were also threshed without stacking.

Classical Experiments

Broadbalk was ploughed only once for the 1937 crop as we wished to avoid the possible delay in sowing that would occur if the second ploughing was delayed by adverse weather conditions. The wheat grew well throughout the year and no apparent damage was done by the wheat bulb fly. Most of the plots were badly laid before harvest, the only exceptions being the unmanured and rape cake plots. The crop on the plot receiving minerals only was pulled to the ground by vetchlings. The plots were almost free of poppies and those that grew in the paths or edges of the plots were cut or hand-pulled. Broadbalk was the first crop to ripen and although bird damage occurred before cutting and in the

stood the damage was far less than in the past few years. The field took longer than usual to harvest owing to the laid condition of most of the plots.

The wheat plant in the Hoosfield Half Acre was thin and the ears were very small, but again there was no attack by bulb fly. Although this area was sown with the same variety as Broadbalk at the same time the wheat was very slow in ripening and was one of the last pieces of corn to be cut.

Hoosfield barley plots were sown very late and only a thin plant came through. Growth during the summer was very slow and the crop appeared very stunted. At harvest time the field presented a sorry picture for many of the ears had not completely emerged from the sheaths and many ears contained little or no grain. The dunged plot appeared to be easily the best plot on the field. Wild oats and black medick were prevalent on most of the plots. The plots ripened very unevenly and although cutting was delayed until early September all the plots were not completely ripe.

Agdell barley presented much the same appearance. Growth stopped early in summer and the crop turned yellowish. At harvest time the crop was not more than nine inches high and the undersown clover was nearly as tall as the barley. All the plots presented much the same appearance except that self-sown black medick took the place of the clover on the half to be fallowed in 1938. However there was noticeably less black medick on the fallow side of the plot receiving complete manures.

Barnfield was ploughed rather earlier than usual but the absence of frosts made it rather difficult to work the land down to a good seedbed. The cultivator could not be used as it brought unweathered soil to the surface, and so only surface cultivations could be made. Quite a good seedbed was finally obtained and drilling took place on May 8th. The seed germinated well but weeds grew fast and much hand and horse hoeing was necessary. Singling was done rather late and this probably had some effect on the yields, which were rather low.

The exhaustion land in Hoosfield was cropped with spring-sown Little Joss wheat after fallow in 1936. Growth in early summer was exceptionally slow despite good sowing conditions. Fairly rapid growth took place in July, but the crop was rather poor and patchy, and the ears were small. The crop was still quite green in August and the ground was carpeted with black medick. The crop was harvested according to the old potato plots in late September, but much bird damage was done both before cutting and while the crop was in the stooks.

Modern Long-Term Experiments

Four-Course Rotation. The wheat crop looked poor throughout the summer, with short straw and small thin ears. The ryegrass and barley were average crops, but the latter ripened unevenly. The potato land was rough but as the season was well advanced the sets were planted. Growth during the season was slow and yields were low.

Six-Course Rotation. The wheat crop looked well throughout the summer. The straw was long and the ears large and well filled. Unfortunately several plots were laid before harvest. The barley also looked well, being a clean, even crop with well-filled ears. This was the only piece of barley on the farm which ripened evenly and early. The rye grew well and all plots were standing at harvest. The crop ripened later than usual. The clover plant was thick and even but no great growth was made. The ley was ploughed in immediately after the removal of the hay to give the area a bastard fallow. The clover undersown in the barley took well. Sugar beet and potatoes went into a rather coarse tilth and the effect of the late sowing and poor start lasted until the crops were harvested.

Three-Course Rotation (Straw and Green Manure). The barley showed big plot differences quite early in the season. The crop ripened unevenly, the plots receiving their manures in 1937 ripening earlier than those which were manured in 1936. Two plots were badly damaged by rooks. Potatoes were set under poor conditions and growth was slow, very little top being made. Rooks started to damage the tubers and the final earthing-up had to be done early to reduce this damage. There was a good plant of sugar beet but growth was slow throughout the summer.

Three-Course Rotation (Cultivation). The wheat crop was very disappointing. The plant was thin and short in the straw, and the ground underneath became very weedy. All the ploughed plots were far better than either the tine or rotary cultivated plots, and were far less weedy. There was no apparent difference between the tine cultivated and the rotary cultivated plots. The barley, although rather disappointing early in the season, developed into an even well-standing crop with no obvious plot differences. The ears were well filled and the grain of good size. The mangolds were sown on a rather coarse tilth. However a good even plant was established which grew well throughout the season.

Annual Experiments

Leys in preparation for wheat. This experiment which was designed to test the effect of different leys and green manures on the following wheat crop proved very successful and interesting. The ley plots grew well and yielded a good first cut, and the growth of the following mustard or vetches demonstrated clearly which ley crop they were following. The green crops after the fallow and clover grew far better than after the clover and grass mixtures, but the crops after rye-grass alone grew very small.

Kale. The experiment using kale to test the immediate and residual effects of different forms of organic manure fared badly. However this was not surprising as it was the second kale crop following two successive crops of brussels sprouts. The plant germinated well, but was attacked by flea beetle which made it rather gappy. Early growth was quite good although the ground beneath was rather weedy. Later, however, the plant stopped growing and although certain plots showed up as more green than others, the whole area turned a yellowish colour, and in autumn

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assumed a purplish tinge. Many of the lower leaves of the plants turned brown, withered and dropped off, and the whole area had the appearance of suffering from a deficiency disease.

Sugar Beet and Mangolds. The sowing of both these experiments was delayed until mid-May, and suitable seedbeds were only obtained with difficulty. Good growth was made during the summer although the mangolds were rather patchy. Both experiments were attacked by bean aphid early in July and were sprayed with nicotine and soft soap before much damage was done. The sugar beet yielded well and the mangolds produced an average crop.

Potatoes. Ploughing for this experiment was not finished until February on account of the weather, and planting was delayed until the end of May. The potatoes came through quite well and made good growth during the summer. Plot differences could easily be seen by the size and colour of the haulms.

Beans. The seed was ploughed in at the end of November and grew well throughout the summer. Growth was strong and upright, and the crop flowered well. Unfortunately an attack by bean aphid early in July did great damage and restricted pod formation. The crop was too tall to spray and the attack had to run its course.

Non-experimental Cropping, 1936-7.

The ploughing for kale in Little Hoos field was done very late, and owing to the flooded condition of the dung yards and the sodden state of the ground it was impossible to apply dung to the field. A good seedbed was eventually obtained but growth was slow in spite of the application of five cwt. per acre of nitrochalk.

The wheat in Pastures field looked well early in the season but turned yellowish during the summer. The ears were rather small and most of the field was badly laid before harvest. Yields were low.

Great Harpenden field was sown with Star Spring Oats in the middle of April and despite the late sowing no frit fly attack occurred. The crop ripened rather late but yields were average.

Foster's field was planned to be sown with spring beans, but sowing was delayed by weather conditions and pressure of experimental work. As sowing had not been done by the end of March the cropping was altered to barley in spite of the fact that this would be the third successive barley crop. The plant was rather thin, but the crop was even and the ears were of good size.

Harwood's Piece was sown late with Rivett wheat, but much of the seed rotted in the ground owing to the wet conditions. The plant which came through was very thin and weak, and so the crop was ploughed in during early summer and the field was fallowed for the rest of the year.

Considerable difficulty has been experienced on our heavy soil in past years in working the land down to a suitable barley seedbed after folded kale, especially when some of the kale is reserved for spring use. Furthermore, the crop has nearly always been lodged with consequent loss of time and crop at harvest. This year

after folded kale, Long Hoos was sown with Abed Kenia barley a Danish variety which as it need not be sown until much later than usual, gives more time in which to utilise the kale and prepare the seedbed. The straw is also very strong. The seed was not sown until May 10, but the crop grew well and ripened soon after the earlier sown barleys. The straw was short and stood well, and the crop yielded 17 cwt. of grain per acre, which was sold at 60/- per quarter.

High Field Grazing Experiment

This experiment is planned to assess the residual manurial value of feeding stuffs fed to stock on grassland, and the arrangement is described on page 25. In the spring of 1937 the field was divided into three blocks each of three plots by steel post and wire fencing. Water was laid on to each plot, the $\frac{3}{4}$ -inch pipe being drawn through the ground behind a mole plough drawn by a traction engine. This method proved far cheaper and quicker than the trenching method and has proved quite efficient. After double chain harrowing a random half of each plot was dressed with basic slag at 10 cwt. per acre. A central weighing machine was installed with suitable collecting pens.

The season 1937 was used to develop the technique and to conduct a uniformity trial on all plots. Grazing did not commence until the end of May as the fencing was not completed before, and at first cattle alone were used. The grass was topped early in July and sheep were added to each plot immediately after this operation. The stock was weighed at fortnightly intervals throughout the grazing period, the water troughs being covered the evening before the day on which the weighing was done. The mixed grazing continued until the end of September when the sheep were removed. Grazing by cattle continued well into November and the field was then left unstocked through the winter. The stock used in 1937 were Aberdeen Angus $\times$ Shorthorn heifers and Half-bred ewes and hogs.

Estate Work.

About fifty trees were felled on the farm during November, 1936, but only badly mis-shapen, dead or dying trees or those that interfered with cultural operations were felled. The removal of these will help to reduce bird damage to crops at harvest time, will destroy natural harbourage for weeds and vermin, and will enable full use to be made of the arable fields.

Grassland

The hay crops were quite good and none were laid before cutting. All the grass was cut by the tractor mower and swept to the stack by a car sweep so that horses could be freed for other work. The hay was made under good conditions and yielded good average crops. The aftermath grew well and provided excellent keep for lambs after weaning. All the grass fields which were not cut for hay were topped, and throughout the season there was sufficient short palatable grass for the stock.

Livestock

Horses. Two young Suffolk horses were purchased in the spring to replace two of the old horses. The old team was kept for a time after the purchase of the Suffolks to enable us to make up the arrears of spring work.

Cattle. The cattle policy, started in 1929, of keeping Dairy Shorthorn cows to rear several calves each during their lactation did not prove successful. The high labour and feeding-stuff costs, the difficulty in obtaining suitable calves at the right time, and the time taken by the poorer calves to grow to beef were the main causes of failure. This policy was abandoned in 1934. Between 1934 and 1937 the cattle reared in this way were sold and two lots of Irish cattle were fattened off.

The policy now being adopted is to make hardy cows of the beef type to a similar type of bull, and allow them to rear one calf each during the summer. The cows out-winter without receiving concentrates and calve down out of doors in the spring. The calves run out at pasture with their mothers during the summer months and are weaned into sheds or yards in the autumn. The calves can then either be sold for box fattening, as stores, or be kept on for fattening, whichever promises to pay best. This policy makes us independent of many of the price fluctuations, and reduces costs to a minimum. Fifteen Kerry heifers were purchased and bulled to calve in the spring of 1938, and Blue-Grey (white Short-horn $\times$ Galloway) heifers will be purchased and bulled to calve in the spring of 1939.

Sheep. The investigational work done between 1931 and 1935 is now being examined statistically and a report of the results of this work will be published in the 1938 Station Report. No further investigations will be undertaken until the results of the previous work is known. In the meantime the flock, which had become very mixed has been severely culled and replacements have been made by Scotch Halfbred gimmers. It is now run as a commercial flock for the production of fat lambs.

Two Hampshire tups were used for the 1937 lamb crop and the lambs produced fattened rapidly to good stocky lambs well suited to local markets. For the 1938 lamb crop Hampshire tups only will be used.

The 1937 lamb crop averaged 125 per cent. Conditions during lambing were bad owing to the incessant rain, and this combined with the lack of sun gave the lambs a poor start. The wet conditions gave rise to a lot of udder trouble and sore teats in the ewes.

Fifty Suffolk ewes were purchased in the autumn of 1937 as the foundation flock for breeding pure bred tegs for the High Field Grazing experiment.

Pigs. A large number of deaths of small pigs occurred during the winter and early spring, and the primary cause of death was pneumonia, brought about by damp and draughty beds, and unsuitable buildings generally. Throughout the summer the pigs did quite well. Other buildings are now being converted into farrowing pens to minimise losses of small pigs.

No further experiments will be carried out in the individual feeding pens as although they served their purpose in developing the individual feeding method of experimentation, they are quite unsuited to present-day requirements.

Although no bacon contract was in operation, pigs were sent to the bacon factory, and the following table shows the percentage grading returns for 1937 :

Total delivered	Class A	Class B	Class C	Class D	Under-weight
104	71	22	5	—	2

Show Successes

At the Hertfordshire and Bedfordshire Bacon Competitions we entered one pair of pigs and secured the first prize in the class, and the reserve championship for the best pigs in all classes. At the Redbourn Ploughing Match C. Mephram secured the first prize for turnout and L. Stokes third prize for ploughing.

Buildings

The new Adco building and feeding boxes were completed during the year. These will enable the Adco for the experiments to be made and stored under suitable conditions, and dung for experiments to be made and stored under known conditions.

The pair of new cottages were completed and provide much needed accommodation for stockmen who must live on the farm.

A new shed has also been erected by farm labour to house ploughs and hoes, etc.

Staff

J. B. Matthews spent a year on the farm as a voluntary worker.

Implements

We now have at the farm a collection of farm implements which have either been presented or loaned to us by many of the leading implement manufacturers. They form a source of great interest to the many parties of practical farmers who visit us, and detailed information concerning the quality of their work and their suitability to our land is given when required. The firms who have helped us to make this collection and to whom we are indebted are as follows :

Allen & Simmonds, Ltd.
Bamfords, Ltd.
E. H. Bentall & Co., Ltd.
Blackstone & Co., Ltd.
Cooch & Sons.
Cooper, McDougall & Robertson, Ltd.
Cooper, Pegler & Co., Ltd.
The Cooper-Stewart Engineering Co., Ltd.

Motor hoe.
Hay machinery.
Cake breaker ; root grapper.
Swathe turner.
Potato sorter.
Sheep dipper.
Spraying machinery.
Sheep shearing machine.

The Dawewave Wheel Co.	Tractor wheels.
Dunlop Rubber Co., Ltd.	Rubber wheels, paving bricks.
R. G. Garvie & Sons.	Grass seed broadcaster.
General Electric Co.	Electric motors.
Harrison, McGregor & Co., Ltd.	Root pulper, manure distributor.
J. & F. Howard, Ltd.	Ploughs, potato digger.
International Harvester Co., Ltd.	Drill, manure distributor.
A. Jack & Sons, Ltd.	Root drill and hoe.
R. A. Lister & Co., Ltd.	Oil engine, sheep shearing machine, self-cleaning grass harrows.
Miller Wheels, Ltd.	Tractor wheels.
G. Monro, Ltd.	Motor hoe.
Parmiter & Sons, Ltd.	Rake and harrows.
Ransomes, Sims & Jefferies, Ltd.	Ploughs, cultivators, grass rejuvenator.
Ruston, Hornsby, Ltd.	Grain drill, binder.
J. Wallace & Sons, Ltd.	Manure sower, potato planter.
J. Wilder.	Pitch-pole harrows.
W. A. Wood & Co., Ltd.	Mower, spring tine harrows.
Oxford Institute of Agricultural Engineering.	Automower.
The Harvest Saver & Implement Co.	Prime Electrical Fence.