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ROTHAMSTED
RESEARCH

Report for 1934

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Survey of Insect Pests at Rothamsted and Woburn

Rothamsted Research

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SHEEP HUSBANDRY EXPERIMENTS

These experiments deal with the flushing of the ewes and other items of management. The four-teated ewe flock is increasing, and is run with the two-teated flock so that the lambs may be otherwise comparable: detailed records are kept of the rates of growth of the lambs to see if the additional teats tend to increase the milk supply.

The interest of the farm staff in experimental work shows itself in the high standard of their ordinary work. As an encouragement to the staff we began in 1933 to send animals to shows, and this has been continued. No special expenditure is incurred on exhibiting, but gratifying successes have been obtained by both farms as the following list shows:

LIST OF SUCCESSES AND SHOW AWARDS, 1933 AND 1934

ROTHAMSTED

Great Hertfordshire Show. Hatfield.

1933. 2nd prize. 5 crossbred fat lambs.
1934. 1st " 5 " " "

Hitchin Christmas Fat Stock Show.

1933. 1st prize. 5 crossbred fat tegs.
1934. 1st " 5 " " "
1st " Fat sow. " "
1st " Pen of 2 bacon pigs.

Smithfield Club's Fat Stock Show.

1934. Reserve and Highly Commended. 3 crossbred fat lambs.

Redbourne and District Agricultural Competitions.

1933. 2nd prize. Horse ploughing (F. Stokes).
3rd " " " (A. Lewis).
1934. 1st prize and silver challenge cup. Horse ploughing (F. Stokes).
1st " Best turn-out. Landowners' teams (F. Stokes).
Certificate of National Horse Association of Great Britain (F. Stokes).

WOBURN

Bedford Agricultural Society Show

1933. 1st prize. 5 crossbred lambs.
2nd " Large black boar.
3rd " Crossbred gilt.
Reserve. 5 breeding ewes.
1934. 1st prize. 5 crossbred lambs.
1st " 1 gilt pig.
2nd " 5 breeding ewes.
2nd " Breeding sow and litter.

Bedford Christmas Fat Stock Show

1934. 1st prize. 3 fat tegs.

Smithfield Club's Fat Stock Show

1933. 1st prize. Crossbred lamb carcase.
Highly commended. Pig carcase (100-160 lb.).

VISITORS TO THE FARM AND LABORATORIES

The number of visitors was 2,460, the highest on record, and the arrangements for demonstrations by Messrs. Garner and Gregory worked out very satisfactorily. The new demonstration room at the farm proved very useful.

INSECT PESTS AT ROTHAMSTED AND WOBURN, 1933-4

H. C. F. NEWTON

GENERAL

There was an increase in wireworm attack this year which was generally severe on cereals. On Pastures field there was an outbreak of *Heterodera schachtii* Schmidt which, together with a frit fly attack,

ruined the oat experiment. Gout fly was generally present but less severe than last year. Flea-beetle attack again occurred.

BROADBALK

Wheat. No appreciable loss from insect attack occurred but the infestation by wheat midges (*Sitodiplosis mosellana* Géhin and *Contarinia tritici* Kirby) increased slightly. The following are the figures for the past eight years.

Year.	1927	1928	1929	1930	1931	1932	1933	1934
Percentage grain attack	3.2	6.5	7.7	17.6	21.4	15.4	2.1	4.0

The Wheat Leaf-miner (*Agromyza ambigua* Fall.) was again rare.

HOOS FIELD

The *classical barley* plots, fallowed last year, suffered from wireworm attack, while the Four Course Rotation *barley* was only slightly attacked. The Flea-beetle (*Phyllotreta vittula* Redt.) caused slight leaf damage on both plots, as also did an unidentified Saw-Fly larva. Part of the *alternate wheat* strip was destroyed by wireworm; wheat bulb-fly was also present.

BARNFIELD

Mangolds. A general attack by the Pigmy Mangold Beetle (*Atomaria linearis* Stephens) occurred, causing some loss of plant. The gappiness was most marked along the upward slope running across the middle of the field. As it has been previously stated that the beetle occurs less frequently on the rape cake area an attempt was made to find out its distribution over the various plots by the examination of about one hundred soil samples. Some five hundred beetles in all were found in these. It appeared that the beetle was fairly evenly distributed over the field, but was less frequent in areas where the tilth was bad and the soil 'capped.' The population was highest on the farmyard manure plots where the soil was more friable, but the mangold plant was much less affected here. It would appear, therefore, that it is a combination of bad growing conditions and beetle attack rather than a larger population of beetles which produced the gappiness on the area referred to. Springtails were also present.

PASTURES

The oat variety trial was partly destroyed by a combined attack of *Heterodera schachtii* Schmidt, frit fly, the stem eelworm (*Anguillulina dipsaci* (Kühn) Gerv. v. Ben) and wireworm. Occasional plants were destroyed by lepidopterous larvae, probably *Apamea secalis* L. Apart from the effect of the *Heterodera* itself, the attack held back growth so that the frit fly attack was intensified, resulting in areas which produced practically no crop. An area similarly infested with *Heterodera* occurred on the commercial oats and a record has been made of both positions. Over the rest of the field few cysts were found except in the case of the wheat experiment, which was lightly infested. Here growth was not affected as in the case of the oats. The roots of two plants from a badly infected area, one plant two feet high and the other only a few inches, were examined and the cysts were counted. There appeared to be little difference in the numbers present; in the first case some 300 cysts were found; in the latter over 200.

Oat crops on Pastures field were in 1929, recorded as "winter killed," and again in 1931, when four acres near the road yielded 14 cwt. per acre.

LONG HOOS

Wheat. Wireworm attack was generally observed on the winter sown cereals. The stem sawfly (*Cephus pygmaeus* L.) was observed ovipositing in early June. *Barley* on the Three-Course Rotation was attacked by wireworm, that on the Six-Course Rotation less than elsewhere on the farm. The Barley flea-beetle (*Phyllotreta vittula* Redt.) was generally present, but did not cause appreciable damage. Frit fly and gout fly attacks were not serious.

Sugar Beet suffered little from insect attack. Some damage by *Plectroscelis concinna* Marsh, and by Springtails occurred on LONG HOOS I. The *beans* on the same section were severely attacked by the pea and bean weevil (*Sitona lineata* L.). On the *flax* the Flea-beetle (*Apthona euphorbiae* Schr.) was found but numbers were too small to cause damage.

FOSTERS

One sowing of *kale* was destroyed by Flea-beetles in early May, the second sowing (May 10th) escaped. Later, in early June the third sowing and the resown first plot were subject to a fresh attack.

GREAT HARPENDEN

Rooks destroyed the first sowing of beans in the north-east of the field.

WOBURN

STACKYARD

Barley was attacked by gout fly. Slight damage to *Sugar beet* was caused by wireworm, Pigmy Mangold beetle and Mangold fly (*Pegomyia hyoscyami* Panz.). Odd plants were eaten off by rodents. Mangold fly was also present in Butt Close.

LANSOME

Maize suffered from frit fly attacking the tillers, as many as twenty larvae occurring on one plant. Some flea-beetle damage occurred on the cruciferous crops and the *swedes* were attacked by cutworms.

FUNGUS DISEASES AT ROTHAMSTED AND WOBURN, 1933-34

MARY D. GLYNNE

WHEAT

Take-all (*Ophiobolus graminis* Sacc.) was rare. It is generally found on the Continuous wheat and barley experiments on Stackyard field, Woburn, but this season these were fallow.

Foot Rot (mainly *Fusarium culmorum* (W.G.Sm.) Sacc.) was found scattered as occasional "whiteheads" through several crops at Rothamsted, there being more on Broadbalk than on other fields. At Woburn it was plentiful on the "Precision" and on the "Nitrogenous Manure" experiments on Butt Furlong field, dead heads and stunted plants being common. Similar symptoms had been apparent in barley grown in the same field in 1929 when patches of stunted barley were associated with the presence of *Fusarium* sp. on the underground parts.