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Insect Pests at Rothamsted and Woburn, 1935

Rothamsted Research

Rothamsted Research (1936) *Insect Pests at Rothamsted and Woburn, 1935* ; Report For 1935, pp 80 - 82 - DOI: <https://doi.org/10.23637/ERADOC-1-67>

including nitrogen and minerals, the relative proportions of the three main groups of species, i.e. grasses, leguminous and miscellaneous plants, are not usually much affected by season, though the individual species vary, but with one-sided fertilisers and on unmanured areas wide fluctuations occur in the percentage of these groups.⁽³⁰⁾ A new cycle of analyses is now being carried out to determine the effect of potash on the herbage fluctuations from year to year in relation to the supply of nitrogenous fertilisers. The Park grass plots afford a unique opportunity of observing the relations between plant species and seasonal and manurial conditions.

INSECT PESTS AT ROTHAMSTED AND WOBURN, 1935

A. C. EVANS

GENERAL

A very severe attack of pigmy mangold beetle occurred on Barnfield, the entire crop being lost. Wheat bulb-fly caused much damage on the Alternate Wheat and Fallow and on the Four-Course Rotation experiments. Pigeons completely destroyed the first planting of brussels sprouts on Fosters.

WHEAT

Wheat bulb-fly (*Hylemyia coarctata* Fall.) caused much damage on the Alternate Wheat and Fallow and Four Course Rotation experiments, but was slight elsewhere. On Broadbalk, the wheat blossom midges (*Sitodiplosis mosellana* Géhin and *Contarinia tritici* Kirby) are steadily increasing. The following are the figures for the last three years.

		Number of Larvae per 500 ears		
		1933	1934	1935
<i>C. tritici</i>	1,474	3,381	4,289
<i>S. mosellana</i>	319	572	4,221
		Percentage Grain Attack		
<i>C. tritici</i>	0.7	1.5	2.1
<i>S. mosellana</i>	1.4	2.5	18.0

The percentage parasitism found is still low, and so a still further increase in the numbers of the midges is expected in 1936.

BARLEY

Few gout-fly (*Chlorops taeniopus* Meig.) were present. Several arvæ of a leaf-eating beetle (*Lema melanopa* L.) were found on barley on Hoos field. This species has not yet been recorded in these reports as occurring on the farm.

OATS

A severe attack of eelworm (*Heterodera schachtii* Schmidt) occurred on Long Hoos I. Fortunately the infested area was small.

(30) W. E. Brenchley—"The Influence of Season and of the Application of Lime on the Botanical Composition of Grass Land Herbage." *Ann. App. Biol.*, 1935, Vol. XXII, pp. 183-207.

KALE

Few cabbage aphid (*Brevicoryne brassicae* L.) were present on this crop on Pastures, but large numbers of flea-beetles (*Phyllotreta* spp.) appeared towards the end of August. However, the plants were well developed and no appreciable damage was done.

BRUSSELS SPROUTS

The first planting was entirely destroyed by wood-pigeons. Cabbage aphid was plentiful on some plants of the second planting, but a general infestation did not occur.

SUGAR BEET

Pigmy mangold beetle (*Atomaria linearis* Steph.) and flea-beetles were present, but no damage was evident.

BEANS

Bumble bees (short-tongued *Bombus* spp.) bit through the base of the bean flowers, one hundred per cent. being pierced in this way during June. A species of pollen-eating beetle (*Meligethes aeneus* F.) entered the flower through the hole, laid eggs and several larvae were usually recovered later from each flower. During July the flowers were not bitten so frequently. It is thought that no damage resulted to the crop.

MANGOLDS

The crop of mangolds on Barnfield was destroyed by a very severe infestation of pigmy mangold beetle H. F. C. Newton recorded a general attack by this pest on this field during 1934, but in spite of this the resulting crop was better than the fifty-three year average. A survey of all treatments of strips 1, 2, 5, 7 and 8 was undertaken on June 11th. Two samples of soil 12 inches long by 3 inches wide by 3 inches deep were taken at random along the row in each plot. The plant was completely exterminated on the following plots: 1A, 2A, 1N, 2N and 5N, and no beetles at all were found on these plots. The remaining plots showed great variation in the size of the plants and the numbers of beetles per sample. In general, the plants were smaller on the A, N and O strips, and larger on the AC and C strips. The concentration of the pest corresponded with the size of the plants. Mr. Newton recorded that in 1934 the beetle was fairly evenly distributed over the field. He took 100 samples and these yielded some 500 beetles. This year 50 samples were taken and these yielded well over 2,000 beetles, the largest number in one sample being 150. The writer only took up his duties on June 1st, and so only the later phases of the infestation were studied. The beetle population, at this late stage of the infestation, was definitely greatest on the rape cake area. In the rape cake area the population was highest on plots 7C and 7AC, lowest on plots 5C and 5AC, and intermediate on the other plots. The seed for the 1936 crop has been treated with a mixture of phenol and magnesium sulphate in an effort to combat the pest.

F

WOBURN

The farm at Woburn was visited on July 13th, but no serious insect damage was seen.

FUNGUS AND OTHER DISEASES AT ROTHAMSTED AND WOBURN, 1935

MARY D. GLYNNE

WHEAT

Three diseases which had not previously been recorded on wheat in this country were found at Rothamsted in 1935.* Of these, *Cercospora herpotrichoides* Fron. is considered one of the most important of the fungi causing foot-rot of wheat in certain parts of France and of the United States and has recently been recorded in Germany, Holland and Denmark; *Gibellina cerealis* Pass. causes "white straw" disease in wheat and is found in Italy and has recently been recorded in Oregon. *Ophiobolus herpotrichus* (Fr.) Sacc. occurs in several European countries with other fungi causing foot-rot in wheat and is generally regarded as a weak parasite of secondary importance. It has been found on wild grasses, but not previously on cereals in Great Britain and America.

Cercospora herpotrichoides Fron. was observed in February, causing pale lesions with dark borders on the outer sheaths and leaf bases in Broadbalk and in the adjacent Pennells Piece. Spores were produced abundantly in a few days in the laboratory on material collected in the latter part of March, but hardly any were found in material collected at intervals subsequently. The lesions on sheath and stem were observed till harvest and were abundant among plants which had lodged but were also present on many which had not lodged. The disease was moderate on all Broadbalk plots and on Pennells Piece and was also recorded in certain other fields at Rothamsted.

White Straw Disease (*Gibellina cerealis* Pass.) was found affecting about twenty scattered plants on Hoos alternate wheat and fallow plot. One plant was also found on an adjacent plot of the soil exhaustion experiment.

Ophiobolus herpotrichus (Fr.) Sacc. was found in March in Pennells Piece on wheat stubble which had overwintered in the soil, but no evidence of parasitism was obtained.

Mildew (*Erysiphe graminis* DC.) was noted in February, and by the end of April was unusually plentiful on the nitrogenous manure and Precision experiments on Great Harpenden field. In June and July it was mostly slight or moderate and occasionally plentiful.

Whiteheads (Take-all) (*Ophiobolus graminis* Sacc.). As in many other districts, this disease was unusually common at Rothamsted this year. In Broadbalk it was first noted in March, and by harvest was moderate on several plots, notably the unmanured and that which receives only mineral manure. In Hoos exhaustion experiment, in which manuring has been practically discontinued

* Glynne, Mary D.—"Some New British Records of Fungi on Wheat. *Cercospora herpotrichoides*, Fron., *Gibellina cerealis* Pass., and *Ophiobolus herpotrichus* (Fr.) Sacc." Trans. Brit. Myc. Soc., 1935, XX, p. 120-122.