ROTHAMSTED RESEARCH

Report for 1933

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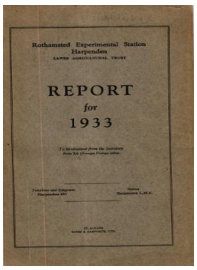

Survey of Fungus Diseases at Rothamsted and Woburn

Survey of Fungus Diseases at Rothamsted and Woburn (1934) Report For 1933, pp 54 - 56 **- DOI: https://doi.org/10.23637/ERADOC-1-3**

WOBURN

The farm at Woburn was inspected on June 16th, but no serious insect damage was seen.

FUNGUS DISEASES AT ROTHAMSTED AND WOBURN, 1932-33

MARY D. GLYNNE

WHEAT

Mildew (*Erysiphe graminis* DC.) was slight by July on most of the wheat crops under observation. It was moderate on some plots of Broadbalk and on the Woburn Six Course Rotation, and varied from absent to plentiful on different parts of the Six Course Rotation on Long Hoos and the Commercial Wheat on Fosters.

Whiteheads (Take-All) (*Ophiobolus graminis* Sacc.) was found on wheat grown continuously or in alternate years on the same land, and was much more plentiful on the light land at Woburn than on the heavier land at Rothamsted. On wheat grown alternately with green manure on Stackyard and Lansome fields at Woburn the disease was moderate, reaching a maximum of about 13 per cent. plants infected. On certain plots of the Continuous Wheat, Stackyard field, as many as 43 per cent. of the plants were infected at harvest. Plots with a high soil acidity (pH below 5) were practically free from the disease. A detailed survey carried out since 1931 showed an increase in percentage diseased plants from 1931 to 1932 on all plots affected by the disease. In the following year there was an increase in infection in all plots numbering seven which, in 1932 had less than 35 per cent. infected and a decrease in infection in the seven plots which had 35 per cent. or more of their plants infected in 1932. The significance of this observation is not yet clear.

Loose Smut. (*Ustilago Tritici* (Pers.) Jens.) was rare except on certain blocks of the Precision Wheat on Lansome field at Woburn.

Brown Rust (*Puccinia triticina* Erikss.) was slight in July on most of the Wheat and was moderate on the Commercial Wheat on Fosters field and the Cultivation experiment on Pastures.

Yellow Rust (*Puccinia glumarum* (Schm.) Erikss. and Henn.) appeared in June and varied from slight and moderate to plentiful at Rothamsted, while at Woburn it was never more than slight.

Foot Rot (*Fusarium* sp.) was occasional on Broadbalk, slight on the Alternate Wheat and Green Manure experiment on Stackyard and a little more plentiful on the Green Manuring experiment on Lansome field, Woburn.

Leaf Spot (*Septoria Tritici* Desm.) of little if any economic importance, was found occasionally.

OATS

Mildew (*Erysiphe graminis* DC.) was generally slight except on the Forage oats grown on Pastures field, where it was plentiful.

Leaf Spot (*Helminthosporium Avenae* (Bri. and Cav.) Eid.) was slight on all oat crops grown at Rothamsted. None was grown at Woburn.

BARLEY

Mildew (*Erysiphe graminis* DC.) varied from slight to plentiful on different crops at Rothamsted, and was rare at Woburn.

Whiteheads (Take-All) (*Ophiobolus graminis* Sacc.) is more common on wheat than on barley, on which it was found only on the Continuous Barley experiment on Stackyard field, Woburn. A detailed survey showed a variation in different plots of from 0 to 15 per cent. plants infected. As in the case of wheat, little or no disease appeared in plots with a high soil acidity (pH below 5).

Net Blotch (*Pyrenophora teres* (Died.) Drechsl.) varied from rare to moderate at Rothamsted, and was not recorded at Woburn. In the preceding year it was much more common and was found on all the barley crops, being plentiful in several of them.

Brown Rust (*Puccinia anomala* Rostr.) varied from slight to moderate at Rothamsted and was slight at Woburn.

Leaf Stripe (*Helminthosporium gramineum* Rabenh.) was found on all the barley crops, and varied from slight to moderate at Rothamsted and slight to plentiful at Woburn. There was more on the Six Course Rotation at Woburn than at Rothamsted. Infection seemed to be mostly secondary, and did not kill the plants.

Leaf Blotch (*Rhynchosporium Secalis* (Oud.) Davis), which is usually found on several of the barley crops, could not be found this year.

RYE

Brown Rust (*Puccinia secalina* Grove). Occasional spots of Brown Rust were found at Woburn on the Six Course Rotation, but none at Rothamsted.

Leaf Blotch (*Rhynchosporium Secalis* (Oud.) Davis) was moderate on rye mixed with vetches on the Six Course Rotation at Rothamsted and Woburn.

GRASSES

Ergot (*Claviceps purpurea* (Fr.) Tul.). None could be found, though it had been common in the previous season on a number of wild grasses left to ripen between fields and on the edge of plots.

GRASS PLOTS

Choke (*Epichloe typhina* (Fr.) Tul.), which was found chiefly on Agrostis and much less on Dactylis glomerata, appeared to have remained fairly constant over the four years in which eye estimations were made, 1930-33, except that after the addition of lime in 1932 there was a decrease in disease from slight to absent in the least acid plots. As before, the disease was most plentiful on plots which had received Ammonium Sulphate, and was less on those which had received lime. The disease was plentiful only on fairly acid plots (pH 5.5 or less). Agrostis was also most plentiful on these plots. The fungus was in many instances attacked by the larva of a small dipteron *Anthomyia spreta*, Meig., which lays its eggs on the surface of the fungus stroma.

CLOVER was mostly grown in forage mixtures and was unusually free from disease.

Downy Mildew (*Perenospora Trifoliorum* de Bary) was slight on Lansome field, Woburn.

BROAD BEANS

Chocolate Spot (*Bacillus Lathyri* Manns and Taubenh.) was plentiful on Little Hoos, and moderate on Long Hoos.

Grey Mould (*Botrytis* sp.) was plentiful in July on both fields, killing the leaves, so that by mid-July about 20 per cent. of the plants on Long Hoos appeared dead.

Rust. (*Uromyces Fabae* (Pers.) de Bary) was very slight.

POTATOES

(Variety Ally.) All the potatoes appeared healthy in June and July. At Rothamsted the tops, however, died early, possibly owing to the dry season.

Stem Canker (*Corticium Solani* Bourd. and Galz.) was moderate on Butt Furlong in the Six Course Rotation at Woburn.

Black Leg (*Bacillus phytophthorus* Appel) was rare; only one affected plant was found at Woburn.

SUGAR BEET

On the whole very healthy.

Black Leg. A little was found on Pastures Field, Rothamsted, and on Lansome field, Woburn.

MANGOLDS

Black Leg. Early in June blackened main roots were detected in some of the young seedlings.

Mosaic (possibly Virus). A leaf Mosaic was very common on the mature crop and varied in incidence from 3 to 70 per cent. on different plots. It was clear that the disease had spread from centres of infection, advancing apparently independently of manurial treatment from one plot to the next. In general the plots receiving nitrogen were much more affected than those without, but there was little Mosaic on the dunged plot next to the no-nitrogen strip. Evidence is inconclusive as to how far the distribution of the Mosaic is fortuitous.

SWEDES

Brown Rot (Physiological or Bacterial). The crop appeared healthy till the autumn, when it was found that about 30 per cent. were affected by internal browning.

FARM REPORT, 1933

Weather.—The outstanding feature of the year October, 1932, to September, 1933, was the abnormally hot and dry weather. The total rainfall was only 22.48 inches, compared with the 80-year average of 28.70 inches. The two periods in which the droughts were most severe were the three winter months November, December and January, when only 4.488 inches fell as against the average of 7.760 inches; and the five summer months April to August, when only 5.629 inches fell, less than half the 80-year average of 11.685 inches. This seriously affected the growth of late spring crops and of grass. October, with 4.842 inches, was 1.783 inches above the average, making the conditions very unfavourable for root-lifting. The break in the drought in September helped the kale crop and the grassland considerably, but the rain was too late to help the root crops.

The total sunshine for the year, 1,812 hours, was 255 hours above the 40-year average, and of this excess, the four months June to September yielded 170 hours. March gave the biggest monthly increase of 80 hours. The only months showing a decrease of more than 4 hours were November and May with 18 and 34 hours deficit, respectively.