ROTHAMSTED RESEARCH

Report for 1937

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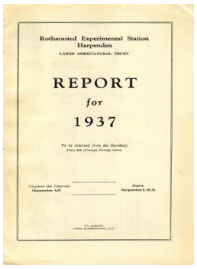

Fungus Diseases at Rothamsted and Woburn, 1937

Rothamsted Research

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Plot	5	11	13	19
Fallow Section				
I	0	18	16	2
II	1	33	18	13
III	0	28	16	4
IV	2	42	14	2
V	0	18	0	0

Considerable variation in cyst number is shown along the length of the field but the central plots 11 and 13 are consistently higher than the outer plots 5 and 19. There is no correlation between the density of infection and the yield either of grain or straw.

FUNGUS AND OTHER DISEASES AT ROTHAMSTED AND WOBURN, 1937

MARY D. GLYNNE

WHEAT

Cercosporella herpotrichoides Fron. first recorded in this country at Rothamsted in 1935, caused lodging at Rothamsted and in a number of other localities in 1937. On parts of Broadbalk and on Pastures field where the wheat was very badly laid the disease was found in 80 to 95 per cent. of the culms. It was most abundant and lodging most severe in plots which had received nitrogenous manures and in the most recently fallowed sections of the plots; mineral manures appeared to have comparatively little effect. Wheat grown under different rotational and cultural conditions on other fields at Rothamsted showed much variation in disease incidence; Pennells Piece, adjacent to Broadbalk, was almost free from *Cercosporella* and had a very upright and good crop. These differences suggest possibilities for control, which are under investigation. The disease was slight on wheat grown on lighter soil at Woburn. The fungus was found sporing on stubble in the autumn on Broadbalk and Pastures fields.

White Straw Disease *Gibellina cerealis* Pass. seems likely to be of more academic than practical interest. It has been recorded in Italy since 1886 but does not seem to have been noted elsewhere till it was found at Rothamsted in 1935 on the alternate wheat and fallow experiment on Hoos field. It could not be found in the following year when the adjacent plot was under wheat. In 1937, a few diseased plants were found in about the same part of the same plot as it had occurred in 1935. We have no evidence regarding the source of infection. The disease causes considerable damage to individual plants but has hitherto spread so little that it is not at present regarded as of appreciable practical importance.

Wojnowicia graminis (McAlp.) Sacc. and D. Sacc., regarded abroad as a weak secondary parasite, was found in the autumn fruiting on stubble on Broadbalk. There have been two previous field records of it in this country, in Hants.

Mildew (*Erysiphe graminis* DC.), was slight at Rothamsted.

Ergot (*Claviceps purpurea* (Fr.) Tul.): one or two specimens were found on Broadbalk and Pastures fields respectively.

Take-all (*Ophiobolus graminis* Sacc.) was slight to moderate on winter wheat at Rothamsted and Woburn, being distinctly more

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frequent where wheat was grown after wheat as on Broadbalk or after barley as in the three course cultivation experiment on Long Hoos or after fallow in the alternate wheat and fallow experiment on Hoos field. The disease reappeared on Stackyard field, Woburn in the classic experiment having been absent in 1936 after two years fallow. Its distribution in relation to previous manurial treatment though less in amount was very similar to that observed in the years 1931-33. Spring wheat at Rothamsted showed moderate attack on Great Knott field and on the Exhaustion experiments on Hoos field.

Loose Smut (*Ustilago Tritici* (Pers.) Rostr.) was slight to moderate at Rothamsted and Woburn, there being rather more than usual. In the wheat observation experiment at Woburn it was more frequent on Yeoman than on Square Heads Master.

Yellow Rust (*Puccinia glumarum* (Schm.) Erikss. and Henn.) varied from slight to moderate.

Brown Rust (*Puccinia triticina* Erikss.) varied from slight to plentiful on winter wheat and was plentiful on spring wheat.

Leaf Spot (*Septoria Tritici* Desm.) was slight at Rothamsted in mid-January.

BARLEY

Mildew (*Erysiphe graminis* DC.) was slight.

Ergot (*Claviceps purpurea* (Fr.) Tul.) was found on Stackyard field, Woburn.

Take-all (*Ophiobolus graminis* Sacc.) was common on Hoos continuous experiment and Fosters commercial crop, both on land which had grown barley the previous two years. It was absent or very slight on barley grown in rotation experiments except on Agdell where the cropping had been : beans or fallow 1934 ; wheat 1935 ; turnips 1936 ; barley 1937. The crop was very poor and the disease plentiful on plots fallowed in 1934, but less severe on those which had grown beans, and had received mineral manure alone or nitrogen, while the plot which had grown beans in 1934 but had no manure was rather badly attacked. The exhausted state of the land is likely to be the chief factor favouring Take-all. The disease was, in general, slight at Woburn, but was moderate on Stackyard classic experiment where barley had been grown the previous year after two years fallow.

Brown Rust (*Puccinia anomala* Rostr.) was moderate to plentiful at Rothamsted.

Leaf Stripe (*Helminthosporium gramineum* Rabenh.) was slight to moderate on several crops at Rothamsted and Woburn, but was apparently absent from others.

Leaf Blotch (*Rhynchosporium Secales* (Oud.) Davis) occurred occasionally at Rothamsted and Woburn.

RYE

Brown Rust (*Puccinia secalina* Grove)
Leaf Blotch (*Rhynchosporium Secalis* (Oud.) Davis) } both diseases were slight at Rothamsted.

GRASSES

Ergot (*Claviceps purpurea* (Fr.) Tul.) was unusually abundant in 1937 and occurred on the grass plots and on various grasses

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growing between fields, notably between Great Knott and Fosters and between Hoos and Fosters and on *Alopecurus agrestis* growing as a weed among sugar beet, mangolds and kale on Long Hoos and Fosters fields. It was found in late summer and autumn plentifully on *Dactylis glomerata*, *Holcus lanatus* and *Alopecurus agrestis*, fairly commonly on *Lolium perenne* and *Agropyrum repens* and occasionally on *Arrhenatherum avenaceum*. Ergot was similarly plentiful on wild grasses in 1932 but had not been observed in the intervening years.

Choke (*Epichloe typhina* (Fr.) Tul.) occurred on *Agrostis* on the grass plots, as usual being most plentiful on the more acid plots where also *Agrostis* was most frequent.

CLOVER

Peronospora Trifoliorum de Bary was rather common on the six course rotation, Long Hoos in the autumn.

Rot (*Sclerotinia Trifoliorium* Erikss.) caused bad patches on the six course rotation experiment, Long Hoos, in the spring and previous autumn. By May the clover was, in general, growing well and the bare patches left by the disease were filled by chickweed.

BROAD BEAN

Chocolate Spot (*Botrytis* spp.) causing two types of lesion, and Rust (*Uroyces Fabae* (Pers.) de Bary) was slight early in the season and moderate by August on Great Knott field.

POTATO

Virus. Leaf Drop Streak (first year symptoms of infection with virus Y) was fairly common at Rothamsted and Woburn on variety Ally.

Leaf Roll was rather common in July on Majestic from Scotch seed at Woburn.

Stem Canker (*Corticium Solani* Bourd and Galz.) was occasionally found on Majestic at Woburn.

MANGOLD

Virus. A little Mosaic disease was found in the autumn at Rothamsted.

SUGAR BEET

Virus. There was a little Mosaic in the autumn at Rothamsted.

LUPIN

Fusarium culmorum attacked about 5 per cent. of the lupin plants on Lansome field, Woburn.

MALTING BARLEY

The fourth Conference on the growing of malting barley was held on November 24th, 1937 on the same lines that proved so successful in the three previous years. Samples were sent in by growers from all the important barley growing districts, accompanied by full agricultural details. These samples were graded by an expert committee of valuers, and were then displayed at the Conference to provide the basis of a discussion of the technical problems of barley growing. The grading distinguished six classes, grades I to III representing pale ale barleys, and grades IV to VI mild ale barleys. The price range between grades was about three shillings per quarter.

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