

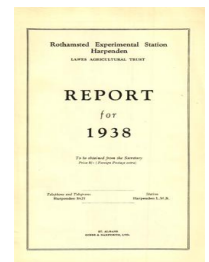
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Fungus Disease at Rothamsted and Woburn, 1938

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BEANS

The spring Beans on Great Harpenden were ruined by the Black Bean Aphis. The winter Beans on the same field were badly attacked in places. Spraying was not practicable owing to the density of the plant.

WOBURN

No serious pests were noted. Aphids (various species) were common on several crops but no obvious damage was done.

FUNGUS DISEASES AT ROTHAMSTED AND WOBURN, 1938

MARY D. GLYNNE

GENERAL

The dry season of 1938 produced differences in the incidence of several diseases compared with the wet season of 1937. Thus Eyespot Lodging of wheat caused by *Cercospora herpotrichoides* Fron. was much less severe than previously and Brown Foot Rot of wheat caused by *Fusarium* sp. was more frequent than usual.

WHEAT

Eyespot Lodging (*Cercospora herpotrichoides* Fron.) produced no general lodging of wheat on Broadbalk in 1938 when the average percentage culms infected at harvest in the whole field was estimated as about 40 per cent. In 1937 lodging had been very severe with over 80 per cent. of the culms infected at harvest. In general, observations have indicated that serious lodging is caused by the disease only when about 80 per cent. or more of the culms are infected. Individually lodged culms could be seen lying criss-crossed in the otherwise apparently upright crop on Broadbalk in 1938 and these showed a high percentage infection while upright culms showed a low percentage. The disease was found in 1938 on Hoosfield on the Alternate Wheat and Fallow Experiment to a less extent than on Broadbalk. It also occurred, but on relatively few culms, on some of the wheat grown in rotation at Rothamsted.

"Eyespot Lodging" was approved in December, 1938 by the Plant Pathology Committee of the British Mycological Society as the common name of the disease caused by *Cercospora herpotrichoides* Fron.

White Straw Disease (*Gibberella cerealis* Pass.) was first found in 1935 on Hoosfield on the Alternate Wheat and Fallow experiment and to a very small extent on the adjacent plot of the Soil Exhaustion experiment. As the only other records of this disease show that it has occurred in Italy, Hungary and as a rarity in central France it has rather a special interest. It re-appeared in the Alternate Wheat and Fallow experiment in 1937 when the B series of plots cropped in 1935 again bore wheat, but none could be found in 1936 on the A series of plots. It was a little surprising therefore that in 1938 when the A plots were next cropped more diseased plants were found than in 1935 or 1937. The disease caused severe damage to the plants attacked but these formed only a small proportion estimated in 1938 as 1 to 5 per cent. of the total number.

No sign of the disease could be found on Broadbalk or on any other wheat grown at Rothamsted or Woburn.

Brown Foot Rot (*Fusarium* sp.) was more than usually frequent at harvest, sometimes causing individual culms to lodge or to produce whiteheads. Its incidence varied on different plots on Broadbalk and showed some tendency to be greater on the plots receiving heavy nitrogen. On these and on some of the commercial wheat crops as many as 33 per cent. of the culms showed signs of infection at harvest, but of these only a small proportion were attacked severely enough to cause either lodging or whiteheads.

Take-all (*Ophiobolus graminis* Sacc.) The season was in general not very favourable to this disease. It was found, but infrequently, on Broadbalk at Rothamsted. On the Continuous Wheat experiment on Stackyard field at Woburn the disease had increased as compared with the previous year and its distribution in relation to manurial treatment showed a close similarity to that found in the years 1931-33 before it was fallowed in 1934 and 1935.

Mildew (*Erysiphe graminis* DC.) was moderate at Rothamsted, being more severe where heavy dressings of nitrogen were applied.

Loose Smut (*Ustilago Tritici* (Pers.) Rostr.) was slight both at Rothamsted and Woburn.

BARLEY

Take-all (*Ophiobolus graminis* Sacc.) was slight on the Continuous Barley plots at Rothamsted and Woburn and moderate after green manure on Lansome field, Woburn.

Brown Foot Rot (*Fusarium* sp.) was slight at Rothamsted.

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

Leaf Stripe (*Helminthosporium gramineum* Rabenh.) occurred occasionally on the Commercial Barley on Lansome field, Woburn, where untreated seed saved from the farm had been used. On the Green Manure and other experiments where commercial seed already treated was used, the disease was absent. Leaf stripe used to occur frequently but since the almost universal adoption of seed treatment by commercial firms it has now practically disappeared except when untreated seed is used.

GRASSES

Choke (*Epichloe typhina* (Fr.) Tul.) occurred as usual on *Agrostis* on the grass plots and was most plentiful on the acid plots where also *Agrostis* is most frequent. It was rather more abundant than in 1937, when however there was rather less than in previous years.

CLOVER

Rot (*Sclerotinia Trifoliorum* Erikss.) caused death of some plants and of the outer leaves of others in the early spring and previous autumn both at Rothamsted and Woburn.

BROAD BEAN

Botrytis spp. causing two types of lesion, the limited, known as "Chocolate Spot," and the unlimited type, was unusually slight at Rothamsted.

POTATO

Virus. Leaf Drop Streak was fairly common at Woburn on Butt Furlong field.

Blight (*Phytophthora infestans* (Mont.) de Bary) was observed as slight on the Four-course experiment on Hoosfield in August.

FARM REPORT, 1938

Weather

The outstanding weather feature of the year 1937-38 was the severe drought during the spring and summer months. The total rainfall for the year was only 20.084 inches compared with last year's total of 35.859 inches and the 85-year average of 28.710 inches. Ten of the twelve months had rainfall below the average, and the six months April to September only had 8.144 inches compared with the average of 14.029 inches. The winter was generally mild and there were only two frosts of any severity. Mean temperatures were slightly above average. There was an extremely warm and sunny spell in March, but the total sunshine for the year was below normal.

Weather and Crops

Conditions from late autumn to early spring were generally favourable to farm work, and all root crops were gathered under good conditions. The land which was ploughed by the end of 1937 worked down well in spring and good seed beds were obtained early for the spring cereals. Owing to the absence of frosts the late ploughed land was difficult to work down. The continuous dry weather soon slowed down growth of all corn crops and towards the end of May most crops were turning yellow. However the little rain which fell at the end of May brought about an immediate change in the corn and bean crops. These started to grow rapidly and changed to a darker and more uniform colour. The continuation of the drought did not appear to affect the corn crops after this, and yields were exceptionally high. Although the weather conditions gave rise to excellent yields of grain, the straw yields were not correspondingly high, and in many experiments the yield of grain was higher than the yield of straw.

The root crop areas which were worked down early produced good seed beds, but those that were not worked down by the middle of March dried out into hard unworkable lumps, and good seed beds were difficult to obtain. Yields of beet were rather poor, but the weight of the tops was in most cases up to average and was well above the weight of roots. Sugar percentages were low.

The dry weather during the summer enabled the weeds to be kept under control easily. The germination of seedlings was slow and they were far less numerous than usual. The stubbles were far cleaner than usual, and as these had been softened by storms during harvest they were in good condition for working. Advantage was taken of this and all stubbles were cleaned either by shallow ploughing or cultivating, followed by several harrowings.