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FUNGUS AND OTHER DISEASES AT ROTHAMSTED AND WOBURN, 1936

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WHEAT

(*Cercospora herpotrichoides* Fron.) recorded for the first time in this country at Rothamsted in 1935 was found sporing on Broadbalk wheat in the latter half of March; specimens collected early in April produced spores in the laboratory within a few days, but as in the previous season no spores were obtained from material collected later in the year. Lesions resembling the fungus and yielding typical cultures were found up to harvest time on Great Knott field at Rothamsted and on wheat grown near St. Albans.

White Straw Disease (*Gibellina cerealis* Pass.) found for the first time in this country in 1935 on Hoos alternate wheat and fallow plot could not be found this year. Its absence may be due to seasonal conditions unfavourable to the disease, or the fungus may have established itself only on the plot bearing wheat in 1935. As this plot will again be sown with wheat in 1937 it will be of interest to see if the disease reappears.

Mildew (*Erysiphe graminis* DC.) was moderate by July. It was less plentiful and appeared later than in the previous, drier year.

Take-all (*Ophiobolus graminis* Sacc.) was rather rare at Rothamsted and none was found at Woburn. This contrasted with the previous season when the disease was unusually prevalent. It had been plentiful on certain plots of the continuous wheat experiment on Stackyard field, Woburn, from 1931 to 1933. None could be found in 1936 when wheat was grown on the same land after two years fallow.

Loose Smut (*Ustilago Tritici* (Pers.) Rostr.) was slight at Rothamsted and Woburn. On the "wheat observation" plots at Rothamsted it occurred occasionally on Yeoman II but was not noted on Square Heads Master or on Victor.

Yellow Rust (*Puccinia glumarum* (Schm.) Erikss. and Henn.) was first noted in May and was slight to moderate at Rothamsted and Woburn.

Brown Rust (*Puccinia triticina* Erikss.) varied from slight to plentiful both at Rothamsted and at Woburn and was more frequent than in the previous season.

Leaf Spot (*Septoria Tritici* Desm.) was slight to moderate at Rothamsted from the beginning of March.

Glume Blotch (*Septoria nodorum* Berk.) was noted at harvest at Rothamsted and Woburn.

Ear Blight (*Fusarium* sp.) was slight to moderate at harvest at Rothamsted and Woburn.

Pythium sp. (? *torulosum*) was reported on the roots of young wheat plants from Broadbalk sent to Professor Vanterpool for examination.

Brown Neck (darkening of culm just below the ear; cause unknown) was very common on all crops of Yeoman II, generally over 80 per cent of the plants being affected. In "wheat observation" experiments at Rothamsted and Woburn most plants of Yeoman II showed brown neck, while none was found on inter-

vening plots of Square Heads Master and Victor. Isolations made from a few plants developed *Fusarium* sp. of the culmorum type from the brown necks but not from other parts of the same plants and very rarely from the necks of Victor and Square Heads Master. Although there appeared to be an association of *Fusarium* sp. with brown neck it is quite likely that the fungus was a secondary invader.

OATS

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

Crown Rust (*Puccinia Lolii* Niels.) was slight to moderate in July and plentiful in August.

Leaf Spot (*Helminthosporium Avenae* Eid.) was found sporing freely in late November on self-sown oats in Long Hoos. It was moderate to plentiful from May onwards in commercial oats in Long Hoos and slight in Little Hoos.

BARLEY

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

Take-all (*Ophiobolus graminis* Sacc.) was slight at Rothamsted.

Brown Rust (*Puccinia anomala* Rostr.) was slight at Rothamsted and Woburn.

Leaf Stripe (*Helminthosporium gramineum* Rabenh.) was slight on self-sown barley in the autumn and on spring sown crops at Rothamsted. None was found at Woburn.

Leaf Blotch (*Rhynchosporium Secalis* (Oud.) Davis) was moderate on self-sown plants in the autumn and varied from slight to fairly plentiful on experimental plots in the summer.

RYE

Brown Rust (*Puccinia secalina* Grove) was plentiful at Rothamsted and moderate at Woburn on the six course rotation experiments.

GRASS PLOTS

Choke (*Epicloe typhina* (Fr.) Tul.) occurred on *Agrostis* and was most plentiful on the more acid plots where also *Agrostis* was most frequent. The dipteran *Anthomyia spreta* Meig. was noted on the fungal stroma.

CLOVER

Downy Mildew (*Peronospora Trifoliorum* de Bary) was moderate at Rothamsted and slight at Woburn in the six course rotation experiments.

Rot (*Sclerotinia Trifoliorum* Erikss.) was obvious in the autumn on the six course rotation on Long Hoos and increased in the spring, doing considerable damage on all plots. It was worse under the iron cages put up to protect a part of each plot from rabbit attack, than it was in the open. This may have been due to a higher humidity under the cages although they were of a very open type.

BROAD BEAN

Chocolate Spot (*Botrytis* spp.) was plentiful at Rothamsted in July on all plots of winter sown beans and slight to moderate on those

sown in spring. The same fungus causing lesions unlimited in area was fairly plentiful in July and plentiful in August on all plots of winter sown beans and only slight in July and moderate in August on the spring sown plots. In the previous dry season potash deficiency was associated with a definite increase of disease in the early part of the season, but in the wet season of 1936 no such effect was observed.

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

POTATO

Black Leg (*Bacillus phytophorus* Appel) was slight on Hoos and fairly common on Great Harpenden field.

Blight (*Phytophthora infestans* (Mont.) de Bary) was slight to moderate at Rothamsted and rather plentiful at Woburn. Spraying was carried out.

TURNIPS

Club Root (*Plasmodiophora Brassicae* Woron.) had been very prevalent on Agdell field four course rotation in 1932 when a variety reputed to be the resistant Bruce was sown. Doubt was expressed regarding the reliability of this seed and in 1936 disease resistant purple topped Bruce turnip of guaranteed purity was used in the main part of the field. The disease was found only on one or two roots in this crop but occurred to a somewhat greater extent in a strip of a yellow topped disease resistant Wallace turnip at one side of the field. Its incidence was very slight compared with 1932.

FARM REPORT, 1936

Weather

The outstanding feature of the year October 1935 to September 1936 was the abnormally high rainfall. The total for the year was 36.69 inches, over 8 inches above the normal. November, January, June and July were extremely wet months and the total for these months was well over twice the normal. The June rainfall totalled 6.34 inches compared with the average of 2.22 inches, and on one day in this month a storm of almost unprecedented severity occurred and 3 inches of rain fell in as many hours.

The weather, however, remained remarkably mild during the winter and very few frosts of any severity occurred before Christmas. The mean temperature was only very slightly below the average, although sunshine figures showed a large decrease. The hours of sunshine were 252 hours below the average, and nine of the twelve months showed a decrease. The largest decreases were shown by July and September with 83 and 69 hours, respectively, below normal.

Weather and Crops

A dry spell in the latter half of October enabled most of the winter corn to be sown under good conditions. The very wet November made conditions for sugar beet lifting appalling, and this operation was consequently much prolonged. Considerable difficulty was experienced in working down this land to a suitable seedbed afterwards on account of the severe trampling in wet weather. The