ROTHAMSTED RESEARCH

Report for 1930

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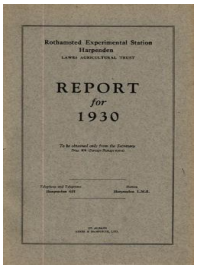

Field Experiments at Outside Centres

Rothamsted Research

Rothamsted Research (1931) *Field Experiments at Outside Centres ;* Report For 1930, pp 61 - 62 **- DOI: https://doi.org/10.23637/ERADOC-1-63**

covers a larger area than is shown on the geological map; for instance, although the lane running from north of Red Gables to Ninnings Field is sunk to a depth of at least 4 ft. near the main road, no chalk is visible, but only material that is obviously downwash from the clay-with-flints plateau. It is not possible for the geologist, however, to map this part as anything but bare chalk since the downwash is obviously of recent date.

FIELD EXPERIMENTS AT OUTSIDE CENTRES

The outside experiments began in 1922 with a series of trials under the Institute of Brewing Research Scheme on good barley growing farms in various parts of the country to test the effects of fertilisers on the yield and quality of barley. The same scheme was used throughout and the same stock of seed. In the first four years, 1922-1925, single plots were used, and 225 plots were harvested. In 1926 the scheme was modified and curtailed and 48 plots only were used, but the experiments were in duplicate. In 1924 laboratory work on the inoculation of lucerne was sufficiently advanced to justify extended field trials. The Royal Agricultural Society provided the necessary funds. Some 39 centres were chosen in various parts of Great Britain, and eleven strips were drilled at each centre, five with inoculated seed alternating with six with uninoculated seed. These experiments have continued, and at 21 centres the plots were still in existence in 1930.

By 1926 the new methods of field experimentation had been tested on the Rothamsted farm and they were then used on commercial farms to test the value of various types of basic slags on grass and arable land. Four by four and five by five Latin squares proved entirely successful, and they were continued till 1929, when the effect of the initial dressing of phosphate had almost disappeared. A new series was laid down in 1930. The cost of these experiments was defrayed by the Basic Slag Committee of the Ministry of Agriculture.

In the meantime interest in the level of phosphatic manuring for potatoes had been aroused by Mr. J. C. Wallace's results at Kirton, and a series of experiments was arranged on a number of potato growing farms using four by four Latin squares. The first tests were made on Mr. George Major's farm at Wisbech in 1928 and at Mr. J. C. Luddington's farm at Stowbridge; several other centres have been arranged since.

Up to this point the experiments and much of the work had been done by the Rothamsted Staff, T. Eden being in charge till 1927, and H. J. G. Hines in 1928. In 1929 H. V. Garner took charge, and immediately widened the scope of the work by enlisting the co-operation of agricultural colleges, county organisers, and certain schools which possessed the necessary facilities for small plot work. This has proved very successful; it has enabled us to carry out uniform schemes of experiment over widely different types of soil and climatic conditions. The statistical staff at Rothamsted supplies the form of Latin square and works up the yield data, and the chemical staff examines the produce. Mr. Garner and other members of the field staff maintain personal touch with the workers at the various centres, but are relieved of the detailed work involved in the experiments.

https://doi.org/10.23637/ERADOC-1-63

More elaborate experiments are made at some of the centres under the direct supervision of the Rothamsted staff, and in 1929 the new sampling technique for cereal crops was successfully used on barley at Wellingore. In 1930 still higher replication was adopted. The new phosphatic series of the Basic Slag Committee has five by five instead of four by four Latin squares; experiments of 32 plots or 36 plots were put down at several centres on potatoes and sugar beet, and two barley experiments of 64 plots each were carried through by the sampling method. The following table summarises the number of outside centres and plots.

Replicated Trials at Outside Centres, 1926–30.

	Conducted by Rothamsted Staff.		Conducted by Other Workers.		Total.	
	No. of Centres.	No. of Plots.	No. of Centres.	No. of Plots.	Centres.	Plots.
1926	4	73	—	—	4	73
1927	5	85	—	—	5	85
1928	7	186	3	41	10	227
1929	5	112	5	76	10	188
1930	7	234	10	160	17	394

OBSERVATIONS ON FUNGOUS DISEASES IN CROPS ON EXPERIMENTAL PLOTS AT ROTHAMSTED AND WOBURN MAY—SEPTEMBER, 1930

By Mary D. Glynne

WHEAT

Take-all or Whiteheads. (*Ophiobolus graminis Sacc.*) was prevalent on Broadbalk particularly on the unfallowed plots. It appeared to cause serious damage on Great Knott; on Fosters it was only occasional and on Long Hoos Dicyanamide Grazing Experiment, 1929-30, none was found.

Leaf Spot. (*Septoria tritici, Desm.*) was common on Broadbalk, Fosters and Long Hoos Dicyanamide Grazing Experiment, and was present on Great Knott.

Yellow Rust. (*Puccinia glumarum* (*Schm.*) *Erikss. and Henn.*) was slight on Broadbalk and Long Hoos, moderate on Fosters and common on Great Knott.

BARLEY

Leaf Stripe. (*Helminthosporium gramineum* Rabenh.) was very common both at Rothamsted and Woburn. The distribution of the disease appeared to vary little from plot to plot of the same experiment, but showed very striking differences in intensity in different fields. At Rothamsted in Great Harpenden Forage Experiment it was very prevalent, but in Hoos Permanent Barley the infection was slight; at Woburn in Stackyard Permanent Barley almost every plant was affected to some extent; in the Rotation Barley on the same field fewer plants were affected, but actually more were killed. There was some evidence to suggest two kinds of attack in one of which most plants were affected slightly,

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