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ROTHAMSTED
RESEARCH

Report for 1933

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Meteorological Observations

Rothamsted Research

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Sheep. The experimental programme commenced in 1931 has continued along the same lines. In the autumn of 1932, we put 49 of our home-bred Half-bred ewe lambs to the tup, and of these only 13 lambed. The rams used were a Southdown and a Half-bred ram lamb. It remains to be seen whether the ewe lambs which reared lambs will prove better mothers in future.

The result of the first lambing (1933) of the Dorset Horn cross Cheviot gimmers is given in the 1932 Report. We were not successful in getting these gimmers to take the Dorset Horn ram during the summer, but the same ram will again be run with them in the summer of 1934.

All the ewes and ewe lambs possessing four well-developed teats were again put to a ram with the same characteristic. A ram lamb of our own breeding was used this year, as the progeny of the two rams descended from the Bell flock were weakly and of poor conformation.

The result of the 1933 flushing experiment appeared in the 1932 Report. In the autumn of 1933, another experiment on the same lines was commenced. Any differences between the treatments will not be seen until the 1934 lambing, and the results will appear in the next Report.

STAFF

E. C. Wallis came in December, 1933, as a voluntary assistant, and has now been transferred to the staff as Farm Recorder. J. T. Moon was here for a short time in the summer as voluntary worker to help with the livestock experimental work, and has since obtained a post in Kenya.

At the local ploughing match our two horsemen, F. Stokes and A. Lewis, secured 2nd and 3rd prizes respectively for their work.

METEOROLOGICAL OBSERVATIONS

Meteorological observations have been systematically made at Rothamsted for many years; these records are being used in the Statistical Department in interpreting crop records. The Station has co-operated in the Agricultural Meteorological Scheme since its inauguration by the Ministry of Agriculture in 1926, and possesses all the equipment required of a Crop-Weather Station. The observations taken under this scheme include:

OBSERVATIONS TAKEN ONCE DAILY: 9 a.m. G.M.T.

Temperatures—maximum and minimum (screen), solar maximum, grass minimum.

Rain (inches) and *Sunshine* (hours and minutes by Campbell-Stokes recorder) during the previous 24 hours.

OBSERVATIONS TAKEN THRICE DAILY: 9 a.m., 3 p.m., and 9 p.m. G.M.T.

Temperatures—wet and dry bulb (screen), 4 inches and 8 inches under bare soil.

Wind—direction and force (continuously recording anemobiograph).

Weather—(Beaufort letters).

Visibility.

These, together with notes and observations of crop growth are used in drawing up the weekly statement for the purpose of the Crop Weather Report of the Ministry of Agriculture.

Additional data are collected under the following heads :

RADIATION.—A Callendar Radiation Recorder (on loan from the Imperial College of Science) gives a continuous record of the radiant energy falling on a receiver situated on the roof of the laboratory. The records are compared with those for South Kensington, and are also used in plant physiological studies in the Station.

RAINFALL AND DRAINAGE.—The rain falling on one thousandth of an acre is collected in the big gauge erected by Lawes in 1871. Samples of the water are analysed in order to ascertain its nutrient value.

Three drain gauges, each of one thousandth of an acre in area, originally installed by Lawes in 1870, and fitted with continuous recorders in 1926, give the drainage through 20 inches, 40 inches, and 60 inches of uncropped and undisturbed soil. A small continuously recording rain gauge is used in conjunction with these,

EVAPORATION.—The amount of water that evaporates in 24 hours from a porous porcelain candle dipping into a bottle of water is measured daily by the loss in weight. This measurement has been found to give a good general indication of the "drying power" of the atmosphere during rainless periods which, being controlled by wind, radiation, and humidity, is difficult to compute from standard data.

SOIL TEMPERATURE.—Soil temperature records are taken under grass as well as bare soil. These are a continuation of experiments which have been carried out for some years past and which have for their object the determination of the best times for taking single temperature measurements for use in calculating averages.

