ROTHAMSTED RESEARCH

Report for 1933

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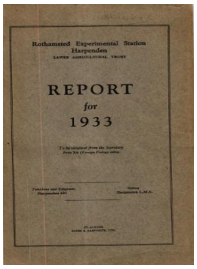

Farm Husbandry Problems

Rothamsted Research

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The working out of the experimental data has now become a formidable task, as shown by the following numbers of plot yields analysed :

	Number of Experiments.			*Plot Yields Analysed.*		
Year.	Rothamsted and Woburn.	Outside Centres.	Total.	Rothamsted and Woburn.	Outside Centres.	Total.
1925	8	—	8	328	—	328
1926	13	4	17	740	73	813
1927	12	5	17	802	150	952
1928	11	12	23	1267	392	1659
1929	12	12	24	1565	352	1917
1930	14	24	36	1341	918	2259
1931	13	41	52	2044	1968	4012
1932	17	49	64	2153	3792	5945
1933	15	78	93	2085	4443	6528

FARM HUSBANDRY PROBLEMS

With the completion of the farm equipment it has now become possible for the farm staff to take up a number of farm husbandry problems which previously had to be neglected. Three have already been started, and it is hoped to take up others as opportunity arises.

Sources of power about the farm buildings. With the setting up of the grid system, many farmers are now in a position to obtain electric current as a source of power, and naturally they wish to know how its cost compares with that of the internal combustion engine. A programme of investigation was drawn up early in 1931, when Mr. Borlase Matthews generously gave his services in working out plans for a complete installation. It was not, however, possible to obtain the necessary capital, and the work could not be put in hand. In 1932, however, Sir Hugo Hirst gave a munificent donation that assured adequate equipment, and the North Metropolitan Electric Supply Company agreed to connect up the farm, and supply current at a special rate so that the investigation could be begun in real earnest ; Mr. Rowland and other officers of the General Electric Company thereupon designed the installation and selected the equipment : The purpose of the work is to see what electricity can usefully do about the buildings under the conditions of a good commercial farm, and how the costs compare with those of the older methods. The Royal Agricultural Society made a grant out of its Research Fund to allow of the appointment of a Recorder, and a scheme of measurements was drawn up after discussion with the Oxford Institutes of Agricultural Engineering and of Agricultural Economics. The various operations, threshing, grinding, etc., are done alternately by an electric motor and by an engine (usually a tractor) and the work done, the time required, the units of electricity or gallons of fuel consumed, are all recorded, along with such other measurements as give further necessary information about the produce. We shall thus be able to find how many units of electricity are equivalent to 1 gallon of fuel for work about the buildings.

Under ordinary commercial conditions of working the power required to do a particular piece of work varies widely according to the setting of the machine and the condition of the produce it deals

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with, but these variations are reduced to a minimum in successive tests. A further result of this investigation will be to furnish agricultural engineers with information about the wastage of power that so often occurs on farms.

For purposes of these investigations the International Harvester Company kindly placed a new tractor at our disposal in order that we might include it in the tests in comparison with one that has done five years' good work on the farm.

Sheep husbandry investigations. These investigations were begun by the late H. G. Miller, and their general trend was foreshadowed in two papers, one read before the Rothamsted Conference on Sheep Husbandry *, and the other read before the Farmers' Club in 1931†. The experiments include some on the flushing of ewes and the treatment of the breeding flock. A flock of four nippled ewes is being built up to see if they are better mothers than the usual animals with two nipples only.

Bacon-pig investigations. The herd consists of Wessex Saddleback and cross-bred sows crossed with a Large White boar.

The experimental work on pigs was extended during the year by the introduction of a complex experiment, designed to test the possibility of applying to animal husbandry problems the methods which have been so successful in increasing the efficiency and validity of field plot experiments.

Individual feeding was resorted to, and three blocks, each of 24 pigs, were formed, to test the effect of green food, of dry feeding *versus* wet feeding, and of variation in the numbers of pigs per pen (equal floor space being assigned to each pig). The experiment was very successful. The results afford a striking demonstration of the importance of green food in the dietary of the growing pig. They also show the advantage of wet over dry feeding, this being attributable to the greater food consumption of the pigs on wet food. There appeared to be no differences due to variation of numbers in a pen. The standard errors per pig were satisfactorily low. The details of design and numerical data are given in the Yield Tables at the end of the Report.

The experimental design adopted embodies several novel and interesting features, and the methods employed should prove of great value to those who have to undertake this type of investigation. The work is being continued this year.

These various experiments are being continued under J. R. Moffatt ; their results are not yet sufficiently advanced for publication. The efficiency of the management is attested by the circumstance that the lamb carcase sent to Smithfield was awarded a First Prize, the pig carcase a Highly Commended, while the bacon factory place a large proportion of our animals in the A class.

PLANT BIOCHEMISTRY

The work on fertilisers and crops has expanded so much that it has been necessary to make further provision for chemical examination of the growing crop, and A. G. Norman has therefore been put in charge of this work. In conjunction with Mrs. Norman, he is studying

* Rothamsted Conference Reports, No. 12, obtainable at the Station.
† Jl. Farmers' Club, 1931, pp. 106-117, obtainable from the Sec. Farmers' Club, 2 Whitehall Gardens London.

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