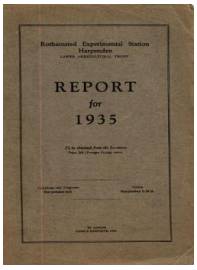
This work is licensed under a Creative Commons Attribution 4.0 International License.

Thank you for using eradoc, a platform to publish electronic copies of the Rothamsted Documents. Your requested document has been scanned from original documents. If you find this document is not readible, or you suspect there are some problems, please let us know and we will correct that.

Report for 1935

Full Table of Content



Atmospheric Deposits

Rothamsted Research

Rothamsted Research (1936) *Atmospheric Deposits ;* Report For 1935, pp 68 - 69 **- DOI: https://doi.org/10.23637/ERADOC-1-67**

This work is licensed under a Creative Commons Attribution 4.0 International License.

Such forecasts, however, would be of little use in predicting the average yield of a district unless one knows how closely the yield on the observation plot is related to that of other fields in the same district.

The degree of association between fields in a district was estimated from samples taken by the crop weather observers in 1934 and 1935 from fields on different farms: the variability from field to field was remarkably high. In consequence both estimates and forecasts of the average yield of a district need to be based on observations of commercial crops.

The observations on wheat will be extended to study the possibilities of crop estimation at and prior to harvest. Suitable methods for sampling sugar beet and potatoes are being sought; the Harper Adams College is co-operating in the sugar beet work.

DEPOSITS FROM THE ATMOSPHERE

Since 1915 Rothamsted has co-operated in the investigation of Atmospheric Pollution organized by the Department of Scientific and Industrial Research. Certain analyses of the rain and of the dust deposits are regularly made, and some of the results have now been summarised. (1) For the second year in succession our deposition gauge collected the smallest total solids out of the 98 gauges in use throughout the country. The total for the period April 1st, 1934, to March 31st, 1935, was made up as follows:

		Kg. per hectare	Cwt. per acre
Insoluble Matter	Loss on Ignition	59.4	0.473
	Ash	88.1	0.702
Soluble Matter	Loss on Ignition	93.9	0.748
	Ash	91.1	0.725
Total		332.5	2.648

The total deposit for the present year is the lowest since 1925-26 when a total of 307.5 kg per hectare (2.45 cwt. per acre) was collected. The average total for the last ten years is 401.1 kg per hectare (3.20 cwt. per acre) and the highest, recorded in 1929-30, was 507.4 kg. per hectare (4.04 cwt. per acre). The well-known positive correlation between rainfall and deposition of soluble matter is clearly apparent, and in consequence of this no secular change either for better or worse is detectable with certainty over this period.

The average monthly deposit was greater during the summer than the winter. This is a regular feature of our records, but it is particularly interesting this year, because rainfall had the opposite distribution.

	April to Sept.	Oct. to March
Average Monthly Rainfall, mm.	43	51
Average Monthly Deposition, Kg/hectare	31.8	23.6

(1) B. H. Wilsdon.—"Results of a statistical examination of records of deposit gauges." Appendix to Dept. Sci. Ind. Res., Twenty-first Report on Observations in the Year ended 31st March, 1935.

This work is licensed under a Creative Commons Attribution 4.0 International License.

The recent analysis undertaken by B. H. Wilsdon shows that in London the rate of deposition of soluble matter is less in summer than in winter. This may be partly due to a lower rate of production: but taken in conjunction with the Rothamsted results, may indicate that summer conditions favour the transport of this fraction into the surrounding country. The seasonal distribution indicates that little of what we collect originates in the domestic fires of the neighbourhood, which are much more active in winter.

The fact that only 27 per cent. of the deposit at Rothamsted is non-combustible and insoluble in water shows that very little can be ascribed to dust from neighbouring fields and roads. Most of it comes from other sources.

At some of the other centres much higher values were obtained; near the Liverpool Docks, for instance, the atmospheric deposit amounts to almost one ton per acre per annum as against our 2½ cwt. Here also, as at Rothamsted, about half the soluble material and about one-third of the insoluble material is combustible: the difference in the amounts of these deposits appears to be much greater than the difference in their composition.

FARM HUSBANDRY INVESTIGATIONS

The investigations outlined above necessitate a considerable amount of field work which is carried out on the farm but this does not occupy anything like the whole of the land available. The classical fields are of course given up to their own crops, but all the newer experiments are made on the non-classical fields. Only certain areas, however, are suitable and the land available in any year is further restricted by the wholesome rule, to which we adhere closely, that an area of land once used for an experiment should not come again into experiment until after the lapse of three years. There is thus a considerable area of land to be farmed on ordinary commercial lines, besides numbers of live-stock needed for the consumption of the farm produce or for the testing of the value of the various fodder crops. Numerous opportunities arise for carrying out farm husbandry investigations by the farm manager and the farm recorder acting in conjunction with other members of the staff. These investigations are not connected with the main programme, but they are in all cases of considerable agricultural importance. Those at present in hand are set out below.

1. A comparison of electrical power with the tractor or stationary oil engine for the performance of work about the farm buildings.

This is being done under the aegis of the Royal Agricultural Society and it consists in finding the equivalence between units of electricity and gallons of paraffin for the various operations, account being taken of such details as starting and stopping. The results are expressed in terms of power consumed per ton of material threshed, ground, etc. In all cases the work is to be done in the ordinary farm way using ordinary farm labour; the results are to show what happens on good but ordinary farm conditions. They were discussed at a Conference held at Rothamsted in February, 1936, the report of which is now issued (p. 13).