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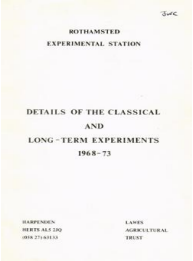
Details of the Classical and Long-term Experiments 1968-73


ROTHAMSTED
EXPERIMENTAL STATION

DETAILS OF THE CLASSICAL
AND
LONG-TERM EXPERIMENTS
1968-73

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Introduction

Rothamsted Research

Rothamsted Research (1977) *Introduction ;* Details Of The Classical And Long-Term Experiments 1968-73, pp 1 - 3 **- DOI: https://doi.org/10.23637/ERADOC-1-193**

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INTRODUCTION

This booklet brings up to date the *Details of the Classical and Long-Term Experiments up to 1967* (short title *Details 1967)* published in 1970 and should be used in conjunction with it for all experiments which appear in both publications. The original intention was to cover a period of five years 1968–72 but 1973 has been included as this is the last year of a cycle in a number of classical experiments. It is for use with the annual *Yields of the Field Experiments* (up to 1970 this was entitled *Numerical Results of the Field Experiments;* these are referred to as *Yields)*

Corrections to Details 1967

The following amendments and clarifications to the General Notes on the Classical Experiments given in *Details 1967* pp. 9–10 should be noted.

(i) The unit dressing of nitrogen from 1938 has been 43 lb N and not 23 lb as stated.

(ii) Na: is applied as $Na_2SO_4 . 1OH_20$ although the anhydrous salt may have been used in earlier years.

(iii) Mg, Na: the standard rates on Barnfield are 20 lb Mg and 80 lb Na respectively compared with 10 lb and 14 lb respectively in other Classical experiments.

(iv) Rape cake. The standard dressing of 2000 lb contains about 100 lb N, and also about 20 lb P and 20 lb K.

Amendments and corrections relating to individual experiments are given at the start of the appropriate report as necessary.

The period covered is generally the six harvest years 1968 to 1973 except in those cases where an experiment, not included in *Details 1967*, is reported on and then information is given from its commencement. In a few instances a different period has been taken for the presentation of results in order to embrace one or more complete cycles.

(This booklet brings together information on the treatments, the more important aspects of husbandry and, where appropriate, summaries of the yields. Further details, especially on matters of husbandry should be sought in the appropriate *Yields* or in the publications listed.)

Conventions

The following conventions have been used:

Period

(i) All years quoted are harvest years and all operations directly concerned with that crop are linked with it even if carried out during the previous summer or autumn, e.g. a weedkiller applied to the stubble of a crop in 1970 is related to the 1971 crop.

(ii) '1968-73' indicates a treatment or other operation first carried out on the 1968 crop and ending with the one harvested in 1973. '1968–' implies that the treatment has been continued beyond 1973.

(iii) 'Since 1968' or 'from 1968' implies an operation first adopted for the 1968 crop. Similarly 'until 1973' or 'to 1973' implies one ending with the 1973 crop.

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Units

(i) Metric units were introduced in the 1971 issue of *Yields* and have been used thereafter, so in this report it has been necessary to convert all the figures for the years 1968-70. The conversion factors used are those given in the appendix.

(ii) All yields, seed rates, rates of application of fertilisers, sprays etc are per hectare unless otherwise stated and all areas are in hectares. Measurements of length are in metres or centimetres if more appropriate.

(iii) Yields of grain and straw are calculated as at 85% dry matter. Grass, hay, etc are expressed as dry matter. For potatoes yields of total fresh tubers are given.

(iv) Operations in the field have continued to be carried out in Imperial units as the machinery still in use must be set for widths in feet or inches. Consequently it is less confusing to do all the work in the old units as the necessary conversions can be made very easily by the computer. As a result, when certain data are converted, slight discrepancies may appear e.g. treatments which are exact multiples of hundredweights may not appear exactly so in kg.

Degrees of accuracy

(i) Materials for treatments are normally weighed out on a balance for each unit area and so are given to the nearest 1%. Basals or standard treatments are commonly applied by a machine which has been calibrated beforehand and consequently data are usually given to an accuracy of 5%.

(ii) Two systems have been followed in setting out quantities of manurial ingredients applied. In the Classical Experiments dressings are expressed in units of the element involved which has been the practice for many years. In the other experiments the units used in the Fertiliser and Feedingstuffs legislation – P_2O_5, K_2O – have been followed so that they can be more readily linked with farm practice.

Husbandry

Unless stated to the contrary the following practices have been adopted throughout:

(i) All cereal seed has been dressed by commercial methods with organo-mercury and gamma-BHC materials. Where a special material has been used in addition, such as ethirimol or dieldrin, this is stated.

(ii) An ammonium nitrate, calcium carbonate mixture sold under the trade name 'Nitro-Chalk' has been used as the source of N when applied alone. The material used up to 1972 contained 21% N and the 25% grade was introduced in 1973.

(iii) Compound fertilisers are indicated: (20–10–10) implying a compound of 20% N, 10% P_2O_5 and 10% K_2O and in granular form unless otherwise noted.

(iv) Liming. Lime is normally applied in one of three different ways. Routine liming for a field or part of a field is normally done by a contractor using commercial equipment. For small parcels of land or

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if a contractor is not available, lime is applied by the farm staff using a fertiliser drill whose rate of application is checked periodically. For experiments where lime is one of the treatments, weighed quantities of materials of known composition are applied by machine or by hand to individual plots. The Total Neutralisation Value (TNV) is determined and the quantities applied are calculated on this basis. The quality of a sample is checked by determining the calcium carbonate content.

The materials normally used are ground chalk at Rothamsted and ground magnesium limestone (dolomite) or chalk at Woburn.

Soil series

The main soil types, as classified by the Soil Survey of England and Wales, are given for each experimental site. A description of the Rothamsted soils is given in the *Rothamsted Guide 1974,* pp 40-46, and for Great Hill, Road Piece and Butt Close fields at Woburn in *Rothamsted Experimental Station Report for 1974,* Part 2, pp 5-28, and for Saxmundham on pp 143-148 of the *Report for 1971*, Part 2.

Terminology and abbreviations

W = winter wheat, B = spring barley, O = oats, P = potatoes, BE = spring beans, SB = sugar beat, F = fallow.

FYM or D = Farmyard manure

'Minerals' = inorganic manures other than nitrogenous, i.e. P, K, Na, Mg

'Basal', an operation applied to the whole experiment.

'Standard', an operation applied to one section of an experiment but common to two or more treatments.

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