

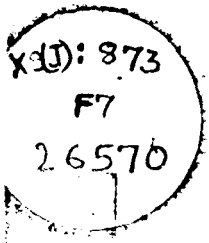
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APPLIED TO AGRICULTURE**

AS AN AID TO MORE PRODUCTIVE FARMING

BY

**J. S. KING**



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**By J. S. KING**

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## PREFACE

**T**HE initiative, in this country, in promoting the use of cost accounting as an instrument of value to the farmer and the Agricultural Economist, has come, in the main, from Mr. C. S. Orwin at the Agricultural Economics Research Institute, Oxford. To that initiative was due, in large measure, the form of the work of the post-war Agricultural Costings Committee, and it has given direction, in later days, to much of the work of the Advisory Agricultural Economists, now established by the Ministry of Agriculture at various centres throughout the country. This small volume has arisen out of an attempt to apply, to the solution of some of the economic problems of farmers, the methods of farm accounting, involving the determination of costs, which are at present advocated.

Scientific method in accounting, as in every other branch of human activity, is only perfected by a process of trial and error. No scientific weapon was ever forged that proved entirely suitable under trial and that could not be sharpened on the wheel of critical discussion. If in these pages some modifications of present methods are suggested, it is hoped that the reasons adduced for change may not prove to be inadequate. It is hoped, too, that the interest of farmers in the efforts now being made to obtain for agriculture the benefits accounting can offer, will be increased by a frank discussion of the difficulties arising from the character of the industry, and of the limits within which accounts may be of practical value.

Critical discussion, however, to be effective for good, must be constructive. To that end, where weaknesses may have been established in existing methods, new lines of approach to the same problems have been suggested. For the use of the farmer simpler means have been devised. For the investigator, in search of comparative data, accuracy of principle rather than simplification of method has been the objective :

at the same time it is proposed to eliminate some of the wearisome labour of apportionment without, it is hoped, any loss of vital information. The excuse for putting these alternative methods into print is that they have been tried, and, if the farmers who have allowed themselves to be the subject of experiment are not merely charitable, they have been found to work.

Acknowledgement is gratefully made to the Ministry of Agriculture and Fisheries and to the Research Board of the University of Reading for making the work and its publication possible; to Mr. C. S. Orwin, who read the work in draft, and, whilst giving helpful criticism, generously advised publication and offered to put the methods advocated to practical test under his supervision at Oxford; to Professor S. Pennington of Reading and Professor J. A. S. Watson of Oxford, whose careful scanning of the proofs has resulted in the removal of some flaws; to the workers on the advisory staffs at the Midland Agricultural and Dairy College and the University of Reading, for their patience and loyalty in carrying out the constant changes in the detailed work of farm accounting suggested by growing experience; and finally, and in greatest measure, to the farmers in the Midlands and the South of England, too numerous to mention by name, who have, during the past four years, personally recorded in detail the operations on their farms, and placed full information upon the practical and financial aspects of their business at the writer's disposal. Such blemishes as appear in the book are due entirely to the writer's failure to profit by the help so freely given.

J. S. K.

UNIVERSITY OF READING,  
*September 1927.*

## INTRODUCTION

**A**CCOUNTING as an end in itself has no attractions for the practical farmer. It must be a direct means to the attainment of some definitely useful purpose if it is to make any appeal to the man whose interests are very largely centred in crops and stock, which are often not only the source of his profit, but the basis of his reputation as a farmer as well. Cost accounting, even in factory industry, is used in only a small proportion of businesses in which it could be an effective instrument for promoting efficiency. An essential condition for its more widespread use by the farming community is that its practical utility, for throwing light upon specific problems in management, must be clearly demonstrated with reference to particular cases. It is, at best, an irksome and rather monotonous business to keep records from day to day and analyse them periodically. The work only becomes attractive if it can proceed upon fairly definite lines to results which can be readily understood and used as a basis of action.

Any system of cost accounting must take account of the conditions under which the industry is carried on. It is necessary, therefore, to make some preliminary inquiries into the characteristics of farming which may determine the nature of the problems to be solved. It has been proposed to apply to agriculture conceptions of the uses of cost accounts which arise in factory industry. Accounts have been framed to arrive at the cost of the individual products of the farm by a detailed apportionment of expenses, and to arrive at a Profit and Loss Account in which the net return on each saleable crop or live-stock product is stated separately. These methods will be examined in the light of the circumstances of the industry, in Chapter I from the standpoint of the farmer, and in Chapter II from the comparative standpoint.

The individual farmer would no doubt be interested in cost accounting if, with a reasonable expenditure of time and effort, his records would provide him with some means of measuring the efficiency of his methods, and indicate where he has succeeded or failed in achieving the objects at which he had aimed. His outlook and his interests are, however, limited by the circumstances in which he finds himself. The possibilities of change, or of develop-

ment, may be conditioned by the physical and economic environment of his farm ; by its soil, climate, situation relative to markets ; by its size, the amount of capital at his disposal, and by labour conditions in the locality. Comparative costs and returns on other farms, similarly situated, but on a larger or smaller scale, or differently organized, may help him to solve his own particular problems. He is, however, chiefly interested in comparisons between alternatives which he can apply under the circumstances prevailing in his district, and in figures by which he can test the efficiency of the use of his labour and capital.

An investigator into the economics of farming will wish to take a wider and more comprehensive view of the methods and costs of production in different localities, and of the relative economy of working on a large or a small scale. The statesman, who may be called upon to legislate for the promotion of agriculture in the national interest, must, of necessity, take wide and long views, and visualize adjustments in methods and in organization which, in the light of economic investigation, seem to suggest possibilities of greater efficiency in the agricultural activities of the country as a whole. Comparative data may be of very great significance when considering farmers as an industrial class, or for determining the effects of policy upon the fortunes of different sections of the agricultural community.

The major difficulty in farm cost accounting seems to arise from the organic nature of the farming business, its processes being the exploitation of living organisms, which require the maintenance of suitable conditions for development, and a consequent dependence upon natural forces. In the present state of knowledge these forces can only be brought under control at a cost which is altogether beyond the possibilities of economical production at the present level of food values. Farming thus exhibits a state of affairs in which limiting factors of an uncontrollable kind are constantly in operation, and in which a balance of activities must be maintained ; conditions which are to a great extent eliminated in factory industry when inert material is being dealt with in a controlled environment. The farmer's problem is thus the grouping of activities within a circumscribed field. The farm cost accountant is, in consequence, faced with the measurement of factors which are not independent of one another, and he must fall back upon the expedient of expressing their joint

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effect in such a way that the possibilities of economical change are shown as clearly as possible. That has been the objective in these pages, and the constructive suggestions in Chapter III are offered as a contribution to the discussion of principles and to the technique of what may prove to be an essential part of the machinery for the study of Agricultural Economics.

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The abbreviated titles used in the text are given in brackets.

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## APPENDIX

*The body of rules drawn up by the Agricultural Economics Committee of the Ministry of Agriculture for the guidance of agricultural accountants, to which reference is made in the text, is printed below. The Sections in which the various rules are discussed are indicated by Section or Page references in brackets at the end of each paragraph.*

### *Instructions to Accountants*

The following instructions have been drawn up by agreement between research and educational workers engaged in preparing agricultural cost accounts, on methods to be adopted in dealing with disputed questions in cost accounting, in order to secure comparability between different accounts.

1. *Produce Accounts* for arable crops and grass should relate to individual crops and different kinds of grass and, preferably (especially where the previous history of the field is known), to individual fields as well. The advisability of costing on the basis of individual fields is, however, a question which is left to the discretion of the cost accountants, to be considered by them in relation to its applicability and practicability. (Chapter I, also pages 75-7, 82-3, 143-6, 160.)

2. *Overhead Charges.* The rent and rates of cottages should be charged to labour accounts. Where cottages are let with the farm, the rental value of the cottages as estimated by the farmers should be adopted. The rent and rates of farm-houses should be charged in the first instance as a business expense against profits. Any adjustments made by H.M. Inspector of Taxes as regards charging a part to personal account should also be made by the cost accountant. Apart from the above two exceptions rent and rates should be distributed over land alone at a flat rate per acre; but cost accountants are free to adopt differential rates in cases of marked differences in categories of land. (Pages 66-70, 140.)

Where roots are fed on the fields the proportionate share of rent, rates and certain overhead charges allocated in accordance with this paragraph should be charged to the stock eating the roots. In the case of catch crops the proportion of rent and rates should be two-thirds for the main crop and one-third for the catch crop, except in special cases. (Page 149.)

Insurance (except where a direct allocation can be made), upkeep of roads, buildings, hedging, ditching and draining, should be charged in the same way as rent and rates. (Pages 71, 139.)

Bailiff's wages should be distributed between the different produce (including live stock) accounts in the same proportions as the other manual

labour is charged in these accounts. General overhead charges other than the above should be distributed between the various produce accounts in the same way as bailiff's wages. (Pages 71, 139-43.)

3. *Interest on Capital and Management Charges* should not be brought into the accounts (except where cash is actually paid). They should be borne in mind in considering whether the profit is sufficient reward for the capital, management, and labour. In comparing two farms or two systems of farming, the result in each case must be interpreted in the light of capital sunk and labour given without wages. The value of unpaid labour (apart from management) should be estimated and records kept of such charges; such charges must always be kept separate in the accounts. Where cash is paid for Interest or Management (exclusive of bailiff's wages), the charges should not be divided between the accounts for the different farm products but should appear in the Profit and Loss account. In the memorandum accompanying the accounts, reference should be made to the extent of the non-chargeable items. (Pages 53-4, 70-1, 86, 94, 95, 136, 140, 142.)

4. *Produce both grown and used on the farm* (e.g. seed, home-grown foods fed to stock) should be charged in the accounts at the cost of production and not at conventional or market prices (for cost of straw see paragraph 5). (Pages 61-2, 89-91.)

5. *Secondary Products*. The cost of dung should be ascertained so that it can be charged to the crop accounts. To ascertain the cost of the food residues the figures published in recognized tables should be taken as a guide. The cost of straw should be taken as one-seventh of the cost of production (exclusive of marketing) of the Wheat, Oats, or Barley crop. Where the dung made is not used or sold (e.g. in dairies) its cost should be written off in the Dung Account as a loss. (Pages 58-9, 64-6, 98-104, 145, 149-50.)

Wool should be regarded as a by-product. A separate account should be kept for wool solely for the purpose of comparing the cost of shearing and other operations directly debitable to the wool with the price received; and the balance should be carried into the Sheep Account, but shown as a separate item.

6. *The Distribution of the Cost of Manure between Crops and Years*. The cost of artificial manures should be spread over the crops in rotation, the recognized tables being used as a guide for the purpose. (Pages 55-8, 117-18, 145.)

The duration of effect of farmyard manure should be taken as three years; the following proportions of cost are suggested for guidance: first year, 50 per cent.; second year, 30 per cent.; third year, 20 per cent. (Pages 30-31, 58-9.)

7. *Cleaning Crops*. In the case of potatoes carried off, 75 per cent. of the cost of cleaning operations should be debited in the crop account and 25 per cent. should be debited to succeeding crops in the rotation until another cleaning crop is taken. The proportions of the 25 per cent. suggested for guidance are: *three years*, 50 per cent., 30 per cent., 20 per cent.; *four years*, 50 per cent., 25 per cent., 12½ per cent., 12½ per cent.

In the case of *turnips, swedes, and mangolds* carted, one-third of the cost of cleaning operations should be regarded as removed and two-thirds as

remaining to be carried forward to be charged to succeeding crops until the next cleaning crop is taken, in the proportion given above for potatoes.

In the case of roots fed in the field, the stock eating the roots should be charged with the cost of the seed and one-third of the operations; the cost of the manures and two-thirds of the cost of operations should be carried forward and charged to succeeding crops in the manner indicated above. (Pages 30-1, 59-60, 104-6, 145, 148-9.)

8. *Seed Leys*. In deciding what proportion of the cost of a ley to charge each year, the length of ley contemplated should first be ascertained. The initial cost should then be equally divided between each year. If the ley is discontinued before the time contemplated the charges originally allocated to the years by which the ley is shortened should be a general charge. If the length of the ley is beyond the time contemplated no charge need be made for the years by which the ley is extended. (Page 159.)

When the first crop is fed to early lambs, and the second crop mown for seeds hay; or first cut used for hay and second cut used for grazing, the proportions of cost should be two-thirds for the first crop and one-third for the second crop. (Page 149.)

9. *Charges for Grazing*. Four-fifths of the cost should be allocated to the summer grazing, and one-fifth to the winter grazing, the periods of summer and winter grazing to be determined according to locality and season. (Pages 62-4, 90-1, 109-11, 147-8.)

10. *Horse Labour*. No difference should be made in different seasons of the year, but a flat rate should be charged throughout the year. Where horses are fed on home-grown produce grown during the same season as that for which it is desired to calculate the cost of horse labour, it will be necessary, in order to enable the cost of home-grown foods to be arrived at, to estimate the cost of the horse labour—such estimate, after the first year, should be based on the preceding year's cost subject to such modifications as may be justified by altered circumstances.<sup>1</sup> (Pages 88-92, 137.)

11. *Valuations*. As a general rule the term 'stock in hand' should be employed in preference to 'valuation'. Stock in hand should as a general rule be valued at cost.

In the case of breeding-stock, however, the 'Standard Valuation' method should be adopted, i.e. the stock should be valued at a fixed amount per head, unvarying from year to year, unless the change in market values requires the adoption of a different fixed amount. The advantages of this method in agricultural costing are so great that it should be adopted even although another method has to be adopted for Income Tax purposes.

Working horses should be brought into the accounts at cost. For depreciation purposes a decision should be made as to the number of years of life and the value written down by the yearly amount so obtained every year. In the case of working horses bred on the farm the cost at which they

<sup>1</sup> This difficulty can be surmounted, without using any estimated cost of horse labour on produce fed to horses, by ignoring, for the computation of the cost of horse work, both the number of horse-hours worked for the benefit of the horses and its value. See 'A note on the Determination of the Cost of Horse Labour' by the Author, *Incorporated Accountants' Journal*, June, 1925.

are brought in (i.e. the cost up to the time of working) should be estimated. (Pages 31-7, 89.)

12. *Discount.* The net amounts paid or received for goods or services rendered should be entered in the accounts.

On the memoranda referred to in clause 3 a note should be made of the total amounts of discounts paid or received.

13. *Draining.* In the event of mole or tiling draining operations being carried out a Drainage and Improvement Account should be opened, and the estimated depreciation written off each year over the whole farm. (Pages 140-1.)

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