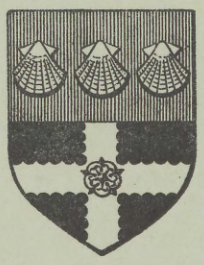
Grain - Cost of production





# UNIVERSITY OF READING

## DEPARTMENT OF AGRICULTURAL ECONOMICS

# ECONOMIC ASPECTS OF CEREAL PRODUCTION

By

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# ECONOMIC ASPECTS OF CEREAL PRODUCTION

This paper was presented to the Agricultural Section of the British Association for the Advancement of Science at its 126th Annual Meeting held in Southampton, during August and September, 1964. It formed part of a symposium of three papers concerned with cereal production, within the Section's general theme - "Trends in Chalkland Farming".

This paper is divided into three parts. The first examines the recent level of profits from cereal growing and the main factors affecting them. The second considers cereals in the farm economy, with special reference to continuous corn. The final section looks briefly at past trends in cereal growing, indicating how they have changed and how they might change in the future.

## I.

Over the past forty years a large body of information about the costs and returns from cereal production has resulted from the enterprise cost investigations undertaken by the ten University Departments of Agricultural Economics in England and Wales. Some provisional results from the latest of these - a combined wheat and barley study undertaken by Reading University in 1963 - are shown in Table I of the Appendix. These figures, showing a margin over all costs of between £18 and £20 per acre, relate only to the chalkland farms in the sample. Table II in the Appendix shows how little the picture has changed since 1957 when Bristol University surveyed barley production on the Wiltshire Downs.

In all of this work one fact stands out - and must be emphasized. It usually costs as much to grow a poor crop as it does a good one, so that returns from the crop (and more especially yield) are by far the most important determinant of profits. In the Wiltshire Downs Survey, for example, the correlation coefficient between 'yield' and 'profit' was as high as 0.9. In other words yield differences

accounted for something like 80% of the variations in profit, and a consideration of the factors controlling yields explains much of the economics of cereal production.

Unfortunately for the farmer, the most important influence on yields - the weather - is quite beyond his control and the cereal grower must accept a seasonal variation in his returns and profits as part of the risk element of his trade. To the extent that yield control is possible at all, all available evidence points to the dominance of qualitative rather than quantitative factors - to the quality of inputs and not least to the quality of management itself. Discussion with many growers leads inescapably to the conclusion that, quite apart from the original choice of farm and variety of crop, such intangibles as the quality and management of the labour force and the timeliness of cultivations are the crucial factors in yield control. It is easy for weather conditions to interfere with field work if they are allowed to. It is also easy for the onlooker to recognise those who can (and those who cannot) by planning, foresight and sheer good management, discount many of the difficulties they encounter. And even if the exact return can never be forecast,experience has confirmed the wisdom of timely and meticulous cultivations as a sound insurance policy for which the premium is low.

The production of corn, in the economic sense, however, does not end with its harvesting any more than the production of coal ends when it is brought to the surface. Like any marketable commodity corn must be traded to the customer in some convenient place, time and form. The

farmers' returns will be influenced by the price he can command in the market, and every farmer has some control over which market he aims at and when he sells.

His market will depend largely on the quality of his grain. With deficiency payments geared to the difference between average market prices and standard prices there is scope for the quality grower to command valuable premiums especially for malting barley or seed grain. Table III, for example, shows the difference between the average price received for 'choice grade' malting and for feed barley in 1961/62 - with the differential averaging 3/8d. per cwt. over the year. With the vagaries of our climate, however, there can be no certainty of commanding these premiums and, bearing in mind the high correlation between yield and profit it would not be prudent to risk any substantial loss in yield in anticipation of a higher quality product.

Gauging the effect of time of marketing is perhaps somewhat less nebulous than anticipating quality premiums. All grain prices tend to rise from a minimum after harvest to a maximum in the spring. Although changes in world supplies can upset this pattern, it is the one against which farmers must decide whether or not to invest in storage and drying plant. Encouragement to do so is given in the case of wheat, by five standard prices for five seasonal periods with a total rise of £5 per ton; while with barley, the persuasion ranges from a 15/- penalty at harvest to a 30/- premium from March onwards.

The storage and additional drying costs which must be set against these price benefits are seldom the same for any two farms.

Recent studies (1) have shown the average cost of storage to vary between about £3 and £4 per ton - depending mainly on the size of the initial investment (which can range from little or nothing to over £20 per ton), its expected life and the annual length of storage. At this level of cost there are obvious benefits from storing corn especially in order to obtain the full seasonal price rise - although fluctuations in market price can never make this a certainty.

What is certain is that many farmers appreciate the insurance element in storage facilities without which they may, in bad seasons, be forced on to depressed markets at harvest time. In one county recently, the A.L.S. staff was doubled in order to cope with the number of applications for grants towards grain storage. What is also certain, however, is that as more farmers invest in storage, the quantity of grain withheld in anticipation of higher prices will increase, with an inevitable flattening in the seasonal price pattern. In these circumstances it is questionable how wise it is for any but the largest farmers to continue to 'go it alone' in the provision of large and often unconvertible storage and drying plant. Strangely enough machinery syndicates have so far left this apparently fertile field virtually untouched.

It would be inappropriate to conclude this section without some general reference to the other side of the profit complex - the costs of production. Investigations regularly show that the range in cereal

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(1) "Grain Handling, Storage Drying: Economics - the Heart of the Matter" by J.S. Nix. The Agricultural Merchant. Vol. 44. No. 5. May, 1964.

production costs is remarkably small from farm to farm - especially when compared with the range in returns. And even the most cost-conscious growers frequently confess to an inability to reduce costs except by increasing production, either by using more acres or by obtaining higher yields from existing acres. Despite the pleas from the policy makers to 'cut costs' the reasons for this predicament are fairly evident. First, as the following figures show, no single item dominates the cost structure of cereal production. This means that there is seldom an obvious direction in which an all out onslaught on cost reduction and cost control (as in the case of feeding-stuffs in livestock production) can pay large dividends. Even a 5% saving on the largest item shown here, would only reduce total growing costs by 1.3%. This is not, of course, to deny that a sufficient number of small economies can add up to a significant total and that cost reduction should be pursued by all possible means. Group activities, bulk purchasing and the acceptance of discounts come readily to mind.

Average total costs per acre of barley by type of input.

| Input | Costs per acre | |
|---|---|---|
| | £ | % |
| Manures | 4.7 | 27 |
| Depreciation and repairs | 2.6 | 15 |
| Seed | 2.6 | 15 |
| Rent | 2.2 | 13 |
| Labour | 1.9 | 11 |
| Tractor | 1.4 | 8 |
| Contract | 0.7 | 4 |
| Fuel | 0.4 | 2 |
| Sprays | 0.3 | 2 |
| Sacks | 0.3 | 2 |
| Twine and wire | 0.2 | 1 |
| Total | 17.3 | 100 |

Source: As for Table II in Appendix.

Secondly, cost reduction, without increasing output, tends to be of a 'once and for all' nature. As waste is checked and the opportunities for economy are exploited it becomes increasingly difficult, if not impossible, to repeat the process. It is unlikely, anyway that the quantities of materials used in corn growing will substantially exceed the basic requirements. Even where some economy has been possible, therefore, the 'point of no return' is soon reached with - as many farmers know - an inevitable falling back on expansion for further improvement.

The mention of expansion leads, finally, in this section to a brief reference to the so-called economies of scale. Apart from commercial economies through large-scale buying and selling, this principle is most evident in the use of labour and machinery. These economies are gained as a given complement of labour and machinery operates over a larger output, so reducing the unit cost of production. While, generally speaking, a streamlining of methods associated with larger fields and larger more efficient machines has made this possible - so also has the attitude of the individual. What one farmer takes in his stride another declares impossible. Thus a basic set of corn-growing machinery, costing say £3,000, with an average annual depreciation of some £500 may be used on 100, 200 or 300 acres depending on the individual and the circumstances concerned. The difference in the incidence of depreciation per acre in these three situations is obvious. Above 300 acres any economies of scale seem frequently to disappear as the duplication of equipment becomes necessary. Nevertheless the spreading of machinery and labour costs up to the point of duplication (and subsequently beyond it) has undoubtedly

had much to do with the high profits, the increased cereal acreages, and with the high rents and land prices of recent years.

II.

There are two aspects of corn growing that must commend it to many farmers today: it is relatively easy and it is profitable.

Without underestimating its technical problems, there are few farming enterprises as straightforward as cereal growing. It involves none of the continuous day to day worries of control associated with the more intensive livestock enterprises; none of the complexities of feeding and assessing the performance of the grazing animal and, these days, none of the really heavy seasonal demands on labour associated with root crops. It might even be claimed that the ultimate success of a corn crop is far more in the lap of the Gods than it is in the hands of the farmer. This is seldom denied by the specialist corn grower. References to his four-month year are commonplace and a five day week for his employees is no real problem. Indeed this type of farmer is frequently concerned with business and public affairs away from his farm - and in some respects he is much more of a part-time farmer than his smaller counterpart who takes whole or part-time employment off his farm.

This combination of ease and profitability should mean that there is more chance of the average farmer obtaining a satisfactory livelihood from a predominantly arable system of farming than from a predominantly livestock one and the latest farm income figures

published by Reading University support this view.(1) Indeed, a major problem to farmers and advisers, in predominantly arable areas, is how best to utilise grass. Experience has taught that with present day price/cost relationships the substitution of arable for grass invariably adds to the overall farm profit, and usually, at a reduced capital input. Much advice has been couched in these terms and its soundness is frequently illustrated with the aid of 'gross margins'.(2)

The typical range of gross margins from different enterprises in recent years has been as follows:-

| Enterprise | Gross Margin per acre |
|---|---|
| Potatoes | £50 - £60 |
| Sugar Beet | £40 - £50 |
| Wheat and Barley | £25 - £30 |
| Oats | £20 - £23 |
| Dairy Cows | £30 - £35 |
| Cows and followers | £25 - £30 |
| Herbage Seeds | £15 - £30 |
| Beef | £15 - £20 |
| Sheep | £12 - £15 |
| Keep and Hay | £8 - £12 |

These figures will obviously vary considerably from district to district and from farm to farm depending on the level and system of management involved. Nevertheless they give a good indication of the gross margin hierarchy and explain why, except in the case of dairying, arable acres can usually be profitably substituted for grass. Taking the mid-point

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(1) Financial Results on Farms in the Southern Province in 1961/62 and 1962/63. By G.B.Bisset. Department of Agricultural Economics, Reading University. February 1964.

(2) A gross margin is the difference between gross output and the variable costs (e.g.seeds, fertilizers, sprays, fuel, concentrate feed etc.) directly associated with obtaining that output. It measures the contribution of each enterprise towards covering fixed costs and providing a profit.

of the beef and sheep figures, for instance, an acre of grass transferred from either of these enterprises into corn can usually add £10 to the total gross margin of the farm, leaving the fixed costs unaltered and releasing capital previously locked up in livestock. In fact the return on capital to the marginal unit of corn - where the capital involved is merely the sum of the variable costs (say £8 to £10 an acre) and the return is the gross margin (say £25 to £30) - can be astronomical.

As marginal increases are made to cereal acreages it is frequently the case, as indicated in Section I, that fixed capital and costs already committed to cereals, are spread over a larger output thus reducing the unit cost of production. With the scope for substantial direct cost reduction severely limited, this frequently provides the arable farmer with his most obvious room for manoeuvre. It can be a trump card in the hands of the larger chalkland farmer, with acreage and drainage problems at a minimum. Clearly, the further the arable acreage can be pushed on a particular farm the less imperative it becomes to maintain an intensive capital and labour demanding enterprise - such as dairying - on the grass. In these circumstances, beef and sheep and even selling hay or keep can fit conveniently into a basically arable system of farming. In many respects, herbage seeds provide the ideal solution to the grassland problem in terms of return and economic use of the fixed costs, but the 'mystique' attached to this job seems to keep a good many away from it.

The type of thinking developed here leads ultimately to thoughts of 'continuous corn' about which so much is currently written

and talked. Inevitably farmers and advisers are curious to know how far they can go in this direction. The system is not, of course, an entirely new one and the pioneer work of Chamberlain, in Oxfordshire, is well known and we can even read that as far back as the early eighteenth century Jethro Tull grew thirteen successive corn crops! It appears from published work that the technical problems involved are increasingly well known and under many conditions are not apparently insuperable.(1) Recent discussion with many cereal growers in Hampshire suggests that the present attitude is one of a readiness to experiment, but with due regard for tradition and even some prejudice. Nothing else could explain the variety of procedures that exist within small and entirely homogenous districts. Proof of the pudding, of course, is always to be found in the eating - and there has been little evidence, as yet, to show the long term economic results from continuous corn. This merely reflects the fact that there are, still, few farmers who have practised the technique for any significant length of time. No doubt this situation will be rectified as the current experiments of the N.A.A.S. Experimental Husbandry Farms mature and as the experience of the slowly increasing number of continuous corn growers becomes better known.

Isolated case studies have been published from time to time as in Nottingham University's Farm Management Notes, Spring 1963(2). This

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(1) 'Some problems in intensive cereal production'. By E.R.Bullen. Outlook on Agriculture, Vol. IV. Number 2. 1964.

(2) Continuous Barley Cropping by M.E.Daw.

example deals with a 200 acre poor sandland farm which for the past seven years has been wholly in barley. 'No measurable effect of pests or diseases has been sustained' says the report 'in fact yields have been gradually increasing, particularly over the last three years'. Barley yields on this farm were in fact slightly lower than on 16 neighbouring farms with which it is compared, but the net farm income (excluding the 'factory' enterprises) was £12 per acre compared with an average of £7 on the other farms. Two main reasons for this are typical of any comparison between predominantly cereal farms and mixed farms. First, although the gross margin from corn may be lower in the former case, it is more or less constant over the whole farm - and is not dragged down by a lower gross margin on a substantial area of grass. Secondly, because of a maximum spreading of fixed costs over one enterprise, labour and machinery costs in particular are minimised. In other words, as the Nottingham report points out, 'Gross Margins only tell part of the story.'

No doubt, as more economic evidence becomes available the general attitude amongst corn growers will harden one way or the other. In the meantime economics can still help with the use of hypothetical farm models to demonstrate the possible financial effects of changes in the level of specialisation and associated technical performance. S.R.Wragg(1) recently illustrated this technique, using gross margins,

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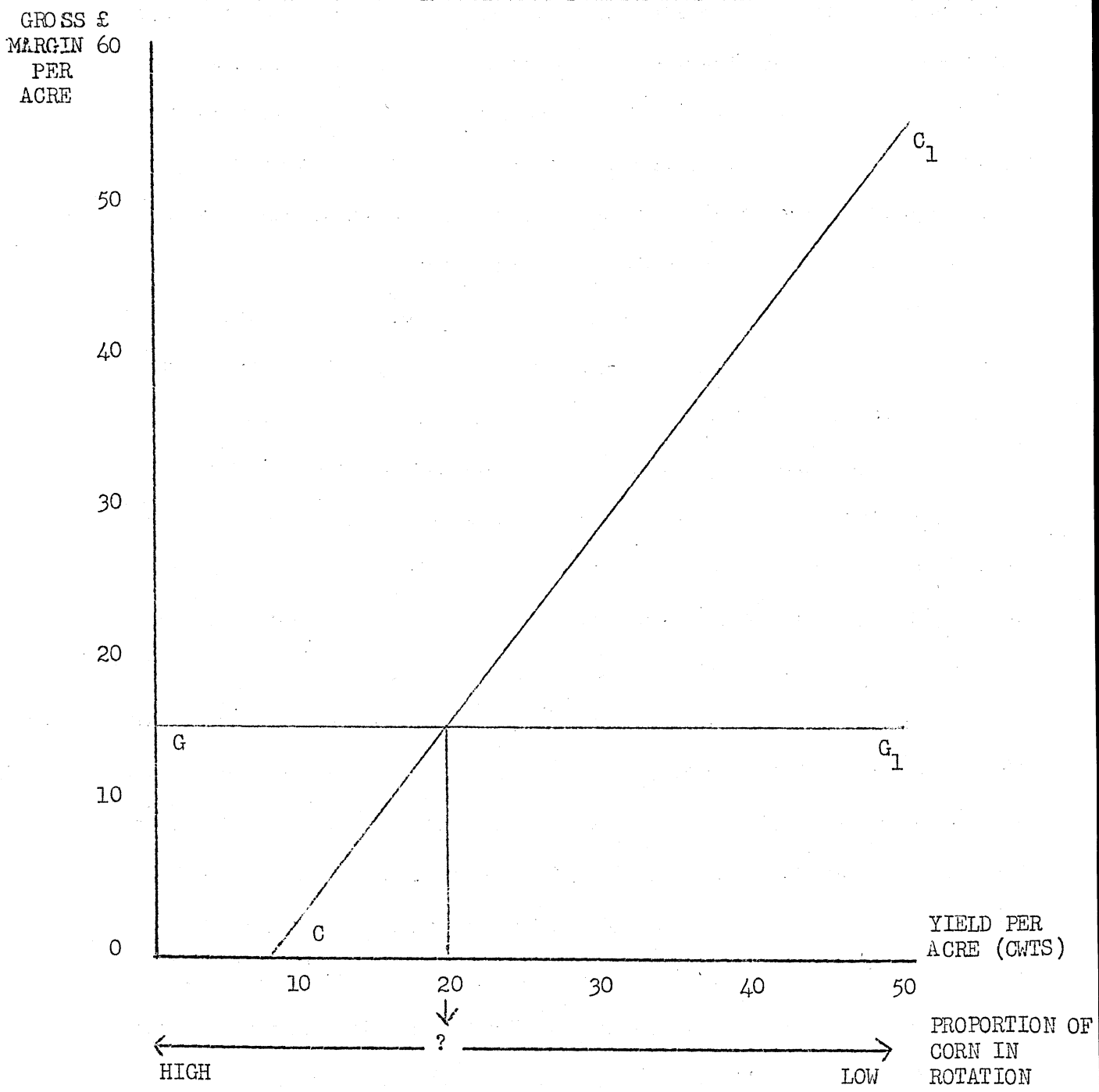
(1) Note on the Economics of Crop Rotations with special reference to Continuous Cereal Production. By S.R.Wragg. N.A.A.S. Quarterly Review. Vol. XIV. No. 58. Winter 1962.

to assess the effect of a series of moves towards the 'continuous corn' situation. He suggested, that, with an entirely assumed fall in the level of yields from an average of 32 cwts. per acre for a 50/50 grain/ley rotation, to one of 18 cwts. with an all grain rotation, and with an assumed gross margin of £15 per acre from livestock rearing, total gross margin would be maximised with a 70% corn rotation - a level, incidentally, beyond which many farmers feel disinclined to go.

This particular way of looking at the problem can also be illustrated by the following diagram. If, for example, the line $CC_1$ indicates a fall in gross margin from cereals associated with a decline in yield, and this decline is also associated with an increasing proportion of corn in the rotation, then the point at which the constant gross margin from grass ($GG_1$) intersects $CC_1$, will indicate the level of corn beyond which it is not profitable to proceed. Put another way, it indicates the yield below which it is uneconomic to fall in the pursuit of an all-corn policy. Although the precise relationship between yield and proportion of corn in the rotation is not known, this diagram suggests that where conventional systems of livestock rearing are competing with cereals, grain yields must (at present prices) fall to something a little below a ton to the acre before they should give way to grass. And while, over a period of time, yields may tend to be lower from a predominantly or all-cereal rotation than from one containing break crops, there is little to suggest that they will fall to this level, or that they will continue to fall

DIAGRAM TO SHOW THE POSSIBLE RELATIONSHIP BETWEEN GROSS MARGINS FROM CEREALS AND LIVESTOCK REARING WITH VARYING PROPORTIONS OF CEREALS IN A ROTATION.




Note: C $C_1$ assumes grain priced at 26/- per cwt and variable costs of £10 per acre.
G $G_1$ assumes a Gross Output of £20 per acre from livestock rearing and variable costs of £5 per acre.

indefinitely. Two farms in the Reading area (both on Hampshire chalk) with 86% and 81% of their land in cereal production have average barley yields over the past five years of 30 cwts. per acre - with no sign at all of a downward trend. Bearing in mind the low fixed cost argument, there seems, therefore, to be a sound economic case for continuous corn under the right technical conditions and under the right management. Time alone will confirm or refute this contention.

The advantages of the model illustrated here are, of course, that all manner of changes in yields, input levels, prices and costs, including the fixed costs, can be simply explored and as the complexity of the problem increases, the aid of the computer sought. What most general advisers already know, however, is that the answer to this, as to most management problems, depends on the individual farm - on the possibilities it offers, on the level of management it enjoys, and on the objectives of that management.

Two obvious points, however, seem worth emphasising. First, the farmer who specialises towards, or right up to the point of monoculture will be able to devote all of his managerial time and skill to the technical and economic problems peculiar to his system. In the case of continuous corn, this means the maintenance of yields. Secondly, it is often forgotten that a farming system that fails, or threatens to fail, can be altered. Profits are the reward for taking risks and for meeting change with change. There is no evidence yet of catastrophic ruin resulting from continuous corn. When danger warnings appear, the intensive corn grower is, surely, of all people, flexible enough to revert

to more conventional cropping - but in the meantime he may have been rewarded handsomely for his enterprise.

It would be wrong to end this section without strongly countering any impression that may have been created that successful corn production must, inevitably, be on a large scale. In fact, there is probably no other enterprise that in differing circumstances, can be so fully justified at almost any level. All farmers must select those enterprises that are relatively best in their own circumstances. At one end of the scale is the large specialist (but not the continuous) corn grower who has known all about gross margins and the relative profitability of corn and grass for a long time and usually has well over half of his land in corn. For many small or medium sized farmers, at the other end of the scale, corn is also often a sensible answer, even though they may produce at a relative disadvantage to larger competitors. On the small grassland farm, for instance, a small arable acreage, using the contractor, can force livestock on to a smaller and, therefore, better utilized area of grass; while on the medium sized farm cereals can combine with dairying or livestock rearing as a major enterprise in the farm economy.

These are but a few typical examples in a range of corn growing situations that extends over the whole spectrum of farm sizes. And included in this range are the less common situations, such as the small all-arable farm where, for one reason or another, milk and livestock are either not possible or not wanted; or the situation where corn is used temporarily to provide the new-comer to the industry with a maximum

initial income for a minimum capital outlay. In all of these cases, however, corn growing is not an end in itself - it is part of a farming system designed to provide a satisfactory income over a period of years. This is the objective of most businessmen. With a high level of management, there is reason to believe that 'continuous corn' may also satisfy this objective. But farming, like any other industry, embraces the average and the poor as well as the good; and for many of these a lower, but safer, level of income will no doubt be a more attractive objective for the foreseeable future.

## III.

It is appropriate to the general theme of this meeting - "Trends in Chalkland Farming" - that the final section of this paper should depart from the contemporary and dominantly prosperous scene, to glance briefly into the past and into the future.

It is a measure of the importance of cereal production in British farming, as well as of the popular sentiments associated with bread as "the staff of life", that much of the economic (and political) history of the industry is illustrated by the movement in corn prices.(1)

Prices, however, are only one side of the picture. Far less is known about costs and profits associated with corn growing before formal economic investigations began in the universities during the 1920's.

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(1) Table IV of Appendix.

Wye College carried out continuous investigations into the economics of cereal production between the years of 1924 and 1945 on a sample of farms in South East England.(1) The profits (and losses) recorded are summarised in Table V of the Appendix and reflect clearly the depression of the twenties, the partial recovery after the 1932 Wheat Act and the prosperity during the last war. The reports show that between 1924 and 1932, "the average profit of 10/- per acre per annum (fell) very far short of providing a reasonable return on the capital invested and also a reasonable return for the farmer's managerial duties". They also show that between 1933 and 1939 "wheat growers were in receipt of deficiency payments under the Wheat Act amounting to an average of £4. 4s. 4d. per acre per annum and that without this help the net result would have been a profit of only two shillings and eightpence per acre per annum."

For the Chalk Downs this period was the culmination of a continuous decline in the intensiveness of farming which had begun far back in the late seventies and early eighties. L.G.Troup(2) observed in 1931 that 'even in a cursory survey or journey through the north of the country the obvious conclusion must be drawn that there are today larger tracts of the country in a low state of productivity, carrying poor grass that is insufficiently stocked. Much of the worst is even reverting to scrub and rabbit-warren.....with large areas of an

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(1) Reports No.XX, XXXII, XXXIX by James Wyllie. Department of Economics, Wye College, Kent.

(2) 'Chalkland Farming in Hampshire' by L.G.Troup. The Journal of the Royal Agricultural Society of England. Vol. 92. 1931.

order which cannot pay even for the reduced labour and small quantity of manure that is being expended on them'. The effect of the depression on this particular countryside and of its inhabitants has nowhere been more vividly expressed than in A.G. Street's "Farmers Glory".

All of this is a far cry from present day chalkland farming and the profit levels outlined in Section I. For twenty years the scales have been well loaded in favour of the arable farmer. Guaranteed prices, under the 1947 Act have had the dual aim of guaranteeing farmer's incomes and, as far as possible, of directing production in the national interests. At no point are these two aims more in conflict than in the case of cereals. Initially to encourage production and for balance of payments reasons, and subsequently for more political reasons, the guaranteed prices for cereals were set and remain relatively high.

To some, however, the first cloud on the horizon may be the introduction, or rather the re-introduction,(1) at the last price review of a standard quantity on which the guaranteed price for corn will be paid. Together with increasing rents and the threat of substantial increases in the price of labour, could this, it is asked, be a further closing of the "scissors" of rising costs and falling prices? And if so, how will cereal growers react?

Any closing of the scissors would, of course, be no new experience for farmers. At the end of the Napoleanic Wars, at the end of the

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(1) The technique was first used in 1932 when the standard price for wheat of 15/- per cwt. was linked to a maximum quantity of 27 million cwts. raised in 1937 to 36 millions.

"Golden Age of British Farming", and at the end of the First World War falling prices combined with inflationary costs to bring depression to their industry. On each occasion the situation was met by the farming community in two main ways: by changes to farming systems and by changes in production methods. And superimposed on the industry's own efforts was paternal government intervention designed to help financially - the Corn Laws in 1815, tax and freight concessions in the 1890's and the numerous Acts of the 1930's.(1)

Based on the official Agricultural Statistics, Tables VI and VII have been prepared to indicate how, during this century, adjustments have been made to farming systems in Hampshire. Table VI shows the fall in the cereal acreage during the depression and the steady increase after 1935 accompanied by a very marked change in the composition of the total cereal acreage - with barley, in the last decade, forging ahead at the expense of oats, and, to a lesser extent, of wheat. The Hampshire figures reflect not dissimilar trends in the country as a whole. Table VII reflects (except for sheep) a significant increase in livestock numbers, particularly of the cereal consuming intensive type. The lesson of increasing profits through expanding output seems well understood.

Changing production techniques within each enterprise are too numerous (and in any case not for the economist) to list. None, however, has been more significant than the substitution of machinery for labour.

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(1) Wheat Act 1932; Agricultural Marketing Acts 1932 and 1933; Agriculture Act 1937. Commodity Commissions for wheat, sugar and livestock.

Between 1950 and 1960 the number of combine harvesters on Hampshire farms increased from 426 to 1,415. And during the same period the total number of hired agricultural workers of all types fell by some 3,000 persons.

In the event of further economic pressures on the farming community there is every indication that it is well equipped to continue to adapt itself to change - particularly in arable districts. There has probably been no time in the history of the industry when it has been more 'management minded' and, with the help of advisers, more able to cope with changing circumstances. The general strategy with which most farmers confront such change is still, naturally, governed largely by modifications to their own farming systems and to their own production techniques. For many of them, in the foreseeable future, this will almost certainly mean a further resort to increased corn acreages and to planned rather than to piecemeal mechanisation. Recently, however, co-operative action in the commercial field has become a third tactic in this general strategy and voluntary co-operatives and trading groups are increasingly active in the cereals field.

In the meantime there is in fact no indication at all that the mood of 'government' (or of the public) is such these days as to abandon the industry. The barometer still seems set fair for the British cereal grower and if the present level of profits persists, many of the larger farmers concerned will continue to farm only as well as they have to - or as well as the disincentive of taxation inclines them to.

## APPENDIX

### Table I

Average returns, costs and margins per acre from the 1963 Cereal Costs Investigation on Chalk Farms in the Reading Province

| | Wheat £ per acre | Barley £ per acre |
|---|---|---|
| **Returns** | | |
| Grain and deficiency payment | 40.5 (31.7 cwts.) | 34.7 (27.1 cwts.) |
| Straw | 1.9 | 2.6 |
| Total Returns | 42.4 | 37.3 |
| **Costs** | | |
| Rent | 4.5 | 4.6 |
| Machinery Costs | 5.5 | 4.9 |
| Labour | 2.7 | 2.2 |
| Seed | 3.7 | 2.2 |
| Fertilizer | 4.8 | 4.4 |
| Other material | 1.4 | 1.3 |
| Total Costs | 22.6 | 19.6 |
| **Margin** | 19.8 | 17.7 |

Source: Unpublished data collected by A.H.Gill and J.S.Marsh. Department of Agricultural Economics, Reading University.

Table II

A comparison of average returns, costs and margins per acre for barley production on chalk farms in Wiltshire (1957) and Hants., Berks. and Oxon (1963)

| | Wilts. £ per acre | Hants, Berks. & Oxon. £ per acre | Difference £ per acre |
|---|---|---|---|
| Returns | | | |
| Grain and deficiency | 37.2 (28.4 cwts.p.a.) | 34.7 (27.1 cwts.p.a.) | -2.5 |
| Straw | 1.8 | 2.6 | +1.8 |
| Total Returns | 39.0 | 37.3 | -1.7 |
| Costs | | | |
| Rent | 2.2 | 4.6 | +2.4 |
| Machinery Costs | 5.1 | 4.9 | -0.2 |
| Labour | 1.9 | 2.2 | +0.3 |
| Seed | 2.6 | 2.2 | -0.4 |
| Fertilizer | 4.7 | 4.4 | -0.3 |
| Other materials | 0.8 | 1.3 | +0.5 |
| Total Costs | 17.3 | 19.6 | +2.3 |
| Margin | 21.7 | 17.7 | -4.0 |

Source: Wilts: Some Costs and returns of barley growing in Bristol I Province. By A.K.Giles. Department of Agricultural Economics, University of Bristol. March 1959.

Hants., Berks. and Oxon: as for Table I.

Table III

Average Barley prices paid to farmers 1961/62

| | Malting (per cwt.) | | Feeding (per cwt.) | | Difference (per cwt.) | |
|---|---|---|---|---|---|---|
| | s. | d. | s. | d. | s. | d. |
| July | 24. | 3 | 18. | 4. | 5. | 11. |
| August | 22. | 11. | 17. | 3. | 5. | 8. |
| September | 21. | 5. | 17. | 6. | 3. | 11. |
| October | 21. | 11. | 18. | 5. | 3. | 6. |
| November | 22. | 3. | 19. | 2. | 3. | 1. |
| December | 23. | 0. | 20. | 2. | 2. | 10. |
| January | 24. | 4. | 21. | 5. | 3. | 11. |
| February | 25. | 8. | 22. | 5. | 3. | 3. |
| March | 25. | 8. | 22. | 11. | 2. | 9. |
| April | 27. | 10. | 26. | 2. | 1. | 8. |
| May | 28. | 8. | 26. | 8. | 2. | 0. |
| June | 28. | 8. | 25. | 2. | 3. | 6. |

Source: Agricultural Statistics.

## Table IV

## Wheat Prices 1800 - 1960

| Year | Annual Average Market Price s/d per cwt. | Significant Events |
|---|---|---|
| 1800 | 25/3½ | |
| 1805 | 19/11½ | |
| 1810 | 23/8 | |
| 1815 | 14/7 | 1815 Napoleonic Wars ended |
| 1820 | 15/1 | New Corn Law passed. |
| 1825 | 15/2½ | |
| 1830 | 14/3½ | |
| 1835 | 8/9 | |
| 1840 | 14/9 | |
| 1845 | 11/3½ | 1846 Corn Laws repealed. |
| 1850 | 8/11 | |
| 1855 | 16/7 | |
| 1860 | 11/10 | The Golden Age of British |
| 1865 | 9/3½ | Agriculture. |
| 1870 | 10/5 | |
| 1875 | 10/10½ | |
| 1880 | 9/10 | Beginnings of intensive competition |
| 1885 | 7/3½ | from overseas producers. |
| 1890 | 7/1 | |
| 1895 | 5/1½ | |
| 1900 | 6/- | |
| 1905 | 6/7 | |
| 1910 | 7/0½ | |
| 1915 | 11/9 | 1914 1st World War - Guaranteed prices |
| 1920 | 17/11½ | under Corn Production Act 1917. |
| 1925 | 12/2 | 1922 Corn Production Acts abolished. |
| 1930 | 8/- | |
| 1935 | 5/2 | 1932 Wheat Act. |
| 1940 | 10/- | 1939 Second World War. |
| 1945 | 14/5 | 1947 Agriculture Act. |
| 1950 | 25/10 | |
| 1955 | 22/11 | |
| 1960 | 21/4 | |

Sources: 1800 - 1920 English Farming, Past and Present, Lord Ernle.
1925 - 1960 Agricultural Statistics.

## Table V

### Profits (+) and Losses (-) from cereal growing in South East England from 1924 to 1945.

| Year | Wheat | | | Barley | | | Oats | | |
|---|---|---|---|---|---|---|---|---|---|
| | £ | s | d | £ | s | d | £ | s | d |
| 1924 | + 3 | 1 | 1 | + 7 | 5 | 0 | - | 19 | 8 |
| 1925 | + 1 | 18 | 3 | + 1 | 11 | 7 | - 1 | 1 | 6 |
| 1926 | - | 2 | 11 | + 3 | 10 | 8 | - 2 | 10 | 2 |
| 1927 | + | 3 | 4 | + 2 | 4 | 2 | - | 8 | 8 |
| 1928 | + 1 | 1 | 7 | + 4 | 8 | 8 | + 1 | 0 | 0 |
| 1929 | + 1 | 8 | 5 | + 1 | 14 | 1 | - 1 | 8 | 6 |
| 1930 | - 3 | 1 | 2 | + | 7 | 6 | - 1 | 9 | 5 |
| 1931 | - 2 | 2 | 1 | - | 11 | 9 | - 1 | 16 | 7 |
| 1932 | + 1 | 19 | 9 | - | 15 | 0 | - 2 | 1 | 6 |
| 1933 | + 3 | 16 | 0 | + 2 | 16 | 6 | - | 13 | 4 |
| 1934 | + 4 | 13 | 5 | + 3 | 4 | 9 | - | 7 | 2 |
| 1935 | + 2 | 13 | 5 | + 1 | 16 | 7 | + | 6 | 0 |
| 1936 | + 2 | 15 | 8 | + 3 | 19 | 6 | - | 8 | 11 |
| 1937 | + 2 | 14 | 11 | + 4 | 2 | 6 | - 1 | 18 | 3 |
| 1938 | + 4 | 13 | 5 | + 2 | 9 | 9 | + | 9 | 11 |
| 1939 | + 6 | 17 | 10 | + 8 | 13 | 6 | + 6 | 18 | 2 |
| 1940 | + 7 | 8 | 6 | + 8 | 11 | 10 | + 9 | 8 | 8 |
| 1941 | + 4 | 6 | 0 | +20 | 19 | 6 | + | 19 | 1 |
| 1942 | + 6 | 0 | 11 | +19 | 10 | 3 | + 2 | 15 | 7 |
| 1943 | + 8 | 12 | 8 | +12 | 10 | 1 | + 1 | 10 | 2 |
| 1944 | + 6 | 6 | 7 | +12 | 7 | 10 | + 3 | 6 | 11 |
| 1945 | + 4 | 12 | 9 | +12 | 3 | 0 | + | 4 | 0 |

Source: Reports No. XX, XXXII and XXXIX by James Wyllie. Department of Economics, Wye College, Kent.

## Table VI

### Cereal Acreages in Hampshire 1900 - 1960

| Year | Wheat, Barley & Oats as % of Crops and Grass. | Wheat as % of Wheat, Barley and Oats | Barley as % of Wheat, Barley and Oats | Oats as % of Wheat, Barley and Oats |
|---|---|---|---|---|
| 1900 | 21 | 34 | 23 | 43 |
| 1905 | 22 | 34 | 18 | 48 |
| 1910 | 22 | 36 | 19 | 45 |
| 1915 | 24 | 40 | 13 | 47 |
| 1920 | 25 | 33 | 19 | 48 |
| 1925 | 21 | 32 | 19 | 49 |
| 1930 | 18 | 31 | 18 | 51 |
| 1935 | 17 | 48 | 14 | 38 |
| 1940 | 21 | 34 | 22 | 44 |
| 1945 | 27 | 35 | 34 | 31 |
| 1950 | 27 | 40 | 36 | 24 |
| 1955 | 27 | 33 | 47 | 20 |
| 1960 | 30 | 21 | 70 | 9 |

Source: Agricultural Statistics

Table VII

Index of Livestock Numbers in Hampshire 1900-1960

(1945 = 100)

| Year | Total Cattle | Total Sheep | Total Pigs | Total Poultry |
|---|---|---|---|---|
| 1900 | 65 | 456 | 121 | * |
| 1905 | 70 | 410 | 130 | * |
| 1910 | 72 | 448 | 117 | * |
| 1915 | 61 | 308 | 98 | * |
| 1920 | 59 | 167 | 74 | * |
| 1925 | 70 | 214 | 111 | * |
| 1930 | 66 | 170 | 86 | 162 |
| 1935 | 81 | 164 | 146 | 199 |
| 1940 | 88 | 162 | 162 | 167 |
| 1945 | 100 | 100 | 100 | 100 |
| 1950 | 115 | 54 | 127 | 212 |
| 1955 | 121 | 68 | 281 | 241 |
| 1960 | 136 | 111 | 260 | 376 |

Source: Agricultural Statistics

* Details not available.