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A Study of Farm Organisation and Management in the North West

1953–4 1954–5

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For the cover photograph we are indebted to the *Preston Guardian.*

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FOREWORD

In an industry like farming, where there are so many producers operating widely different sizes and types of business, it is not surprising to find wide variations in incomes earned. However, by no means all the variations are due to differences in area of land and type of product, for even when we select our sample carefully and group the farms by size and by type, we still find that the range of variation in results is extremely wide. To a large extent this must be attributed to differences in management efficiency.

The purpose of this report is to analyse the causes of differences in success which individual farmers achieve. Over 300 farms have participated in this enquiry from the counties of Lancashire, Cheshire, Shropshire and Staffordshire, and they have been grouped according to size and type of farm. Comparison between type groups are of limited use to individual farmers although they should not be ignored. For reasons of location, weather, type of soil and accommodation for livestock and crops or managerial experience, farmers cannot easily change completely from one type of farming to another. There are opportunities on most farms, however, for some modification of the system and a study of the profitableness of farming of different types can often be indicative of the direction in which change should be made.

Similarly, with farms of different sizes, possibilities of adding to the area of a farm by taking adjacent land are limited. As the farmer's resources grow, either in terms of family labour or in capital, the choice will usually be between intensifying production within the existing farm or moving to a larger one. A study of the results of farms of different sizes, as well as of individual farms within a given size group operating at different levels of intensity, will help in choosing the right alternative.

A change from one type of farming to another or from one size of farm to another is, however, attended by serious disadvantages both technical and personal. For example, capital equipment or managerial skill for one size or type of farm may not be entirely suitable for a different size or different system. Farmers and their families may be loath to leave the social environment in which they have lived. For these reasons most farmers will wish to exhaust the possibilities of increasing their incomes on their existing holdings before they will contemplate a change. Consequently, the main body of this report consists of an analysis of the factors which account for variations in results within well defined types of farming and within groups of farms of roughly similar size.

Compared with previous years, much more extensive analyses have been made and the results are discussed in much greater detail. In particular, some statistical tests have been used to establish relationships which were thought to be significant and the results are given in the footnotes. These statistical measurements are intended mainly for the use of other research workers who may be interested in testing the same relationships for farms in other areas. Their meaning is, however, fully explained in the text in a form which we hope will be of benefit to farmers.

Each section of the report includes a study of the changes which have occurred between the two years. This serves to illustrate the way in which farmers as a whole have reacted to the changing conditions and, where the changes have been fairly pronounced, an assessment is made of their influence upon farm incomes. The more important part of each section, however, is that dealing with differences between farms in a given year.

There are two groups of farms, namely the Specialist Poultry Farms and the Mixed Livestock Farms, which are not included in the general body of the report but for which individual results are set out in the appendices. Specialist Poultry Farms are catered for in reports on the Economics of Egg and Poultry Production issued periodically by this department. In the case of the Mixed Livestock Farms, the number in the group was too small and the farms too varied in character to merit an extensive analysis. In character they conform most closely to the Mixed Arable Farms and many of the findings for this group will apply to them equally. We hope that at a later date it will be possible to increase the numbers in this group and to devote a separate section of the report to them.

The extent of the analyses which can be made of these accounts for farm management purposes depends largely upon the amount of detailed information which farmers provide. For some groups the information which we now get is all that is required but there are other groups, particularly those which include several livestock enterprises, where the data on feeding is quite inadequate for an assessment of the contribution of the different enterprises to the economy of the whole farm, or of the success or failure of the feeding practices within individual enterprises. Feed is easily the most important item of cost in all livestock production and more detailed information of quantities and kinds of food fed is essential to the provision of adequate advice in this important field.

It is not the intention to issue a report in this detail every year, as this would mean long delay in the publication of results. Instead, we intend to issue co-operating farmers with the group tables and their individual results as soon as these can be assembled each year and to publish the results of analyses every second or third year. We hope that in this we shall be giving our co-operating farmers the best possible service and providing a more comprehensive report which will be of wider interest to other farmers and to advisory officers in the National Agricultural Advisory Service.

Circumstances beyond our control have seriously delayed the printing of this report and since it went to press results from the survey for another year, 1954–5, have been assembled. To avoid further delay we have added these results to the present report and co-operating farmers will find the group tables and individual farm figures in Appendix IV.

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INTRODUCTION

This report is based on the results of the Farm Management Survey for 1952–3 and 1953–4. Its main objects are to review the financial changes which have occurred on different types of farms between the two years and to present data which will assist farmers in judging the performance of their own farms.

For these purposes a number of records obtained in 1953–4 had to be discarded because no information was available in 1952–3 and there were others in both years which could not be used because they did not conform to a clearly defined type. Seventy-two records were discarded on these grounds leaving a total of 239 which have been classified by type of farm and used in the report. The types of farm used in the classification are the same as in previous years and each is described under its respective heading in Part I of the report. In this part the financial changes between the two years and some of the factors which account for variations in results between farms of similar type and size are discussed.

Part II deals with the ways in which financial and other data of the kind obtained in the Farm Management Survey may be used to analyse the business side of farming and to detect possible weaknesses in management. Average standards against which the performance on individual farms may be measured have been worked out for each type of farming (see Appendices III and IV).

The term " output " is used frequently in this report and it is desirable that readers should be clear from the outset exactly what is meant by the word. As applied to a livestock enterprise, " output " is the value of sales less the cost of purchases of the relevant class of stock, all adjusted for any change between the opening and closing valuations. Since crops are not normally purchased, the " output " from a crop enterprise is the value of sales adjusted for any change between the opening and closing valuation of that crop.

" Gross Output " is the sum of the outputs of all the farm enterprises plus certain miscellaneous items including government grants, trading bonus and allowances for produce and stores used in the farmhouse, rental value of the house and private use of car. " Gross Output " in this report is synonymous with the term " total production " as used in earlier Farm Management Survey reports published by this department. Other terms used in this report are defined in Appendix (V).

Season and Prices

The year 1953–4 was a particularly favourable one for both crops and stock. The yields of cereal and root crops were well above the average and exceeded those of 1952. Grass too was plentiful and, with growth continuing well into the autumn stock, were able to graze much later than usual. This contributed to higher milk yields and enabled the winter fodder supplies to provide for a greater number of stock.

CROP YIELDS PER ACRE

	England and Wales*			S.W. Lancs. Farms†
	1943–52	1952	1953	1953
Wheat .. .. .. (cwt.)	20·1	22·6	24·0	25·9
Barley .. .. .. (cwt.)	18·8	19·9	22·7	27·3
Oats .. .. .. (cwt.)	17·9	20·1	21·5	25·7
Mixed Corn .. (cwt.)	17·6	20·0	21·2	28·5
Potatoes .. .. (tons)	7·2	8·0	8·8	9·6
Sugar Beet .. .. (tons)	9·8	10·5	12·8	—

* Ministry's Statistics. † Thirty-one arable farms.

The average prices for most farm products were higher in 1953–4 than in 1952–3; those of fat cattle and sheep were about 5 per cent more, and that of milk ½d. per gallon, 1·3 per cent more. The average price of fat pigs was 1·2 per cent higher but the prices received by individual pig producers were variously affected by the introduction of a premium for porkers and the stricter grading of bacon pigs. Fat pig prices were linked to feedingstuffs prices in 1953. Wool prices were slightly lower and the average support price for hen eggs was much lower at 4s. per dozen as compared with 4s. 7d. per dozen in 1952–3. Store stock in S.W. Shropshire found a favourable market. The autumn store stock sales of 1953 and the spring sales of 1954 were the last to be held before rationing and marketing controls ended in July 1954 and, possibly because of a general impression that there would then be a greater demand for meat, the prices of store cattle and breeding sheep rose substantially at both spring and autumn sales.

Prices for the main farm crops were slightly higher for the 1953 harvest. The guaranteed prices for wheat, barley and oats were increased by amounts varying between 1s. and 1s. 6d. per cwt. For rye the increase was 3s. per cwt. and for sugar beet and potatoes 4s. 6d. and 5s. per ton respectively. The prices received for market garden crops, on the other hand, were substantially less than in the previous year. On the farms where these crops are important the return per acre of market garden crops grown dropped by over 60 per cent compared with 1952–3 although yields were much higher.

On the input side prices also tended to the farmer's advantage. Fertiliser prices, excluding subsidies, were about 5 per cent less, whilst the national average price of feedingstuffs fell by between 1 and 2 per cent from the 1952–3 level. Supplies of feedingstuffs were derationed on July 31st, 1953. Wages were the only important item to show an increase: the minimum wage rate for an adult male worker was increased from £5. 13s. 0d. to £6 per week in August 1953.

PART I

ARABLE

In the subsequent tables and commentary cövering forty-one arable farms surveyed in this province in both 1952–3 and 1953–4 the Shropshire and Staffordshire farms have generally been treated separately from the Lancashire ones. The reasons for this are that although both groups derive most of their output from the sale of crops and are on average of similar intensity, they differ in certain fundamental respects indicated by the following table. There are also differences in cropping, stocking and manuring which will be mentioned later.

	Salop and Staffs.	*S.W. Lancs.*
Average size of farm	330 acres	110 acres
Total tillage	61%	76%
Total arable	81%	96%
Crop output as proportion of total output	57%	80%
Livestock output as proportion of total output ..	41%	17%

The Shropshire and Staffordshire farms depend to a large extent upon livestock production. In this respect they resemble the group of Mixed Arable farms, with the difference that the livestock output on the Mixed Arable farms comes largely from dairy herds whereas on the Arable farms it consists almost entirely of sales of fat cattle, fat sheep, pigs and poultry. For some purposes, however, a comparison with the Mixed Arable group is useful.

Changes in Cropping and in Output

TABLE I

CHANGES IN CROPPING 1952–3—1953–4

	Cropping per 100 acres			
	Salop and Staffs. 10 farms		S.W. Lancashire 31 farms	
	1952–3	1953–4	1952–3	1953–4
Cereals	37·0	35·6	45·9	46·3
Sugar Beet	8·0	7·8	—	0·2
Potatoes	14·0	13·3	19·2	18·4
Fodder Roots	2·5	2·7	0·5	0·7
Market Garden Crops	—	—	7·2	10·2
Other Crops	0·2	1·2	—	—
Total Tillage	61·7	60·6	72·8	75·8
Temporary Grass—Mown	12·7	12·2	20·3	18·0
Grazed	7·8	8·6	2·0	1·8
Total Arable	82·2	81·4	95·1	95·6
Permanent Grass—Mown	0·8	0·6	—	—
Grazed	17·0	18·0	4·9	4·4
	100·0	100·0	100·0	100·0
Average farm size .. .. (acres)	330 acres	330 acres	110 acres	110 acres

There were only slight changes in cropping of price controlled commodities between the two years. Changes in the relative prices of crops for the 1953 season announced at the 1952 Price Review were presumably not large enough to affect the acreage pattern immediately. It is also true that, even if farmers wished to change, the rotational pattern of farming imposes certain limitations on them in the short run.

Although there was little change in the area of the main crops grown there were significant changes in sales per acre. The 1953 season was very favourable for crop production and good yields were obtained. For this reason the increase in output per acre of wheat, sugar beet and potatoes was much greater than could be attributed to price alone. The barley crop however showed relatively poor returns on the Staffordshire and Shropshire farms. Although the national average price fell by only 4·1 per cent sales per acre on these farms dropped by 11·2 per cent even though yields were, in general, higher than in 1952. Many of the farmers in this area normally sell a large part of the crop in the malting market which usually attracts a much higher price than that guaranteed for feeding quality. In 1953–4, however, many farmers found difficulty in disposing of the crop in the higher market and the real price fall for these farms was much greater than represented by the national index of prices. In fact, the poor returns on the barley crop largely offset the gains obtained on other crops, with the result that crop output per acre of the whole farm increased by only about £2. 8s.

TABLE II

CHANGES IN SALES AND PRICES OF CROPS

	Salop and Staffs. farms			S.W. Lancashire farms			National Average change in Price
	Sales per acre 1952–3	Sales per acre 1953–4	% change	Sales per acre 1952–3	Sales per acre 1953–4	% change	%
	£	£		£	£		
Wheat	37	43	+14·3	34	39	+14·7	+ 6·6
Barley	36	32	−11·2	36	38	+ 5·5	− 4·1
Sugar Beet	68	94	+38·2	—	—	—	+ 3·2
Potatoes	91	96	+ 5·7	89	105	+18·0	+ 2·0
Mkt. Gdn. Crops				177	57	−67·8	−36·2
Peas				110	97	−11·8	−44·9

In S.W. Lancashire barley growers do not normally aim at the malting market and here the sales per acre improved with the better yields. These farms suffered however from the drop in prices of peas and market garden produce, crops which are not important in the sample of Shropshire and Staffordshire farms.

Peas are mainly grown under contract for vining or for picking green. The drop in price reduced output even against the higher yield. Even so the sales per acre were good and there can be little doubt that this crop, particularly where it can be grown on contract, offers a good alternative source of income to farmers in a highly intensive arable system who, for reasons of eelworm infestation, are having to reduce the potato area. Sugar beet is another crop which fits well into the rotation and is a useful alternative where eelworm is troublesome. It is a relatively new crop in S.W. Lancashire but some remarkably high yields were obtained on the small area grown in 1953 and, with experience, there seems no reason why it should not become an integral part of the rotations on these farms.

Table III

Output, Costs, and Income per Acre 1952–3 and 1953–4 for Identical Samples of Farms

	Staffs. and Salop 10 farms				S.W. Lancashire 31 farms			
	1952–3		1953–4		1952–3		1953–4	
	£	%	£	%	£	%	£	%
Output								
Crops	28·7	55	31·1	57	43·4	81	46·7	80
Cattle	4·9		4·9		0·8		1·4	
Milk	0·5		0·5		1·2		1.0	
Sheep and Wool	4·2		4·2		—		—	
Pigs	8·3		9·2		2·6		3·1	
Poultry and Eggs	3·7		3·4		3·7		4·7	
Total Livestock	21·6	42	22·2	41	8·3	16	10·2	17
Miscellaneous	1·7	3	1·2	2	1·5	3	1·6	3
Gross Output	52·0	100	54·5	100	53·2	100	58·5	100
Costs								
Foods	7·4	18	8·2	19	4·6	10	5·5	12
Seeds	4·0	10	3·3	8	4·6	10	3·9	8
Fertilisers	4·8	11	4·6	11	7·1	16	7·3	16
Rent and Rates	2·1	5	2·3	5	2·6	6	2·7	6
Repairs and Depreciation	6·7	16	6·7	16	5·3	12	5·8	13
Labour (excluding farmer)	12·2	29	12·9	30	13·9	32	14·4	31
Miscellaneous	4·5	16	4·8	11	6·0	14	6·4	14
Total Costs	41·7	100	42·8	100	44·1	100	46·0	100
Net Farm Income	10·3		11·7		9·1		12·5	
Farmer's Labour	0·5		0·5		2·2		2·3	
Investment Income	9·8		11·2		6·9		10·2	
Family Income	10·6		12·1		11·4		15·3	
Capital Expenditure	5·2		6·1		5·0		5·8	

Market garden crops, mainly brassicas, which showed very high returns in 1952–3 were a relative failure in 1953–4 despite the favourable yields. Increased yields generally reduced the national price index by 36 per cent but the glut in S.W. Lancashire was very severe and a number of farmers failed to find a market at a price which would repay harvesting. Many crops were ploughed in. The advisability of incorporating a market garden area in the general organisation of the farm cannot be judged on the results of one year only. Over an average of a number of years the returns and margins per acre are high but there is a tendency amongst farmers to increase substantially the area grown after a year when returns have been good and thereby flood the market in the following year. This occurred between 1952 and 1953; the increased area, coinciding as it did with a high yield, led to a catastrophic fall in price. This phenomenon is not confined to market garden crops but the fluctuations in price resulting from changes in supply are particularly severe for these

crops. There is much to be said for steadily maintaining the area of speculative crops and even, occasionally, of going against the market trend. There are also advantages in growing crops on contract, even though in some years the price is somewhat less; it does avoid the speculative element the advantage of which in a good year is largely lost in higher taxation. Farmers also need to consider whether, in the long run, they need to change the emphasis on the different types of crop grown. Many of the farms in S.W. Lancashire now depend largely on coarse brassicas whereas the trend in consumption seems to be towards the finer vegetables such as cauliflower and peas and to those which can be readily canned.

There were some changes in the number of stock carried, but not in the relative importance of the different categories of livestock. Changes in livestock numbers and output are not of major importance in S.W. Lancashire where less than a fifth of the total output is contributed by those enterprises. Pig numbers increased by about 28 per cent but output per pig unit declined slightly, partly as a result of inexperience in pig management and the difficulty in fattening pigs to the most advantageous weight and grades.

In Shropshire and Staffordshire the livestock output is considerably more important, accounting for over 40 per cent of the total. The increase of from 1 to 4 per cent in the prices of fat cattle and sheep prompted farmers to increase the numbers of stock but this failed to show a higher output as the prices of store stock, which are mostly purchased on these farms, showed an even steeper rise in price.

The only significant change in output was for pigs, where output per acre increased by 11 per cent. Pork pig prices improved by about 8 per cent but there was a reduction of about 2 per cent in the price of bacon pigs and also a tightening of grade regulations. The indications are that some improvement in pig production took place for output per pig unit increased by 7 per cent.

A similar improvement of poultry production took place in both groups of farms. Poultry numbers were reduced in Staffordshire and Shropshire but, despite the drop of 13 per cent in the egg price, output was well maintained. In Lancashire a small increase in numbers of poultry was accompanied by a substantial rise in output.

Changes in costs

Changes in costs were few, arising mainly out of the increase in the minimum wages rates and in the ending of feedingstuffs rationing. Although feed prices were only about $1\frac{1}{2}$ per cent less than in the previous year there was a tendency to use feed more liberally, partly in order to maintain increased numbers of stock. On the Lancashire farms the ratio of livestock output to input of purchased feed improved slightly but declined on the farms in Staffordshire and Shropshire. The change was, however, too small to draw any definite conclusion but there may have been a tendency to overfeed, with some wastage, which on some farms would be worth correcting with more careful balancing and rationing of both home-grown and purchased feed. Expenditure on seed, including seed potatoes, fell somewhat unaccountably and this helped to balance the increase on feedingstuffs.

The overall picture was one of slightly increased expenditure and output but as output rose faster than expenditure there was a fairly substantial rise in Net Farm Income and in Investment Income. Most but not all of the improvement could be attributed to the favourable conditions of the 1953 season. As in other types of farming, however, differences from farm to farm in the same year are very much greater than those between the average results of two years. It is the purpose of the next section to examine some of the causes of this inter-farm variation.

Productivity of Resources

In this section an attempt is made to determine some of the important causes which lead to variations in success in this type of farming. Differences in organisation of farms, even within the same farming system, are often associated with the size of the farm. There is a tendency for smaller

farms to be cropped rather differently from the larger farms; they may carry different complements of livestock and of equipment and they may be operated at very different levels of intensity. This, however, is not the case here. When the arable farms in this sample are grouped into those in S.W. Lancashire on the one hand and those in Staffordshire and Shropshire on the other, the differences in organisation within each group which can be related to size of farm seem of little importance. In the group of thirty-one S.W. Lancashire farms, all of them highly dependent on cash crops, the character of the cropping bears little or no relationship to size of farm although it varies considerably between farms of the same size. This can also be said of the level of intensity at which they are operated and even of the incomes per acre which are earned.

In the following analysis, therefore, no attempt is made to subdivide the groups into size classes as has been done in some other sections of this report. While it is possible to establish some important relationships between certain management factors and incomes on the Lancashire farms the sample of farms in Staffordshire and Shropshire is too small in itself to yield results of the same degree of certainty.

The Relationship between High Output Cash Crops and Income

A characteristic of the farms in S.W. Lancashire is their high dependence on cash cropping; very few of them derive less than 70 per cent of total output from this source. Inter-farm differences in the proportion of cash cropping is, therefore, small and little or no connection could be found between variation in this proportion and the profits per acre. There are however much wider variations in the proportion of the farm which is devoted to high output cash crops, such as potatoes, sugar beet, peas and vegetables, and these accounted for a substantial share of the variation in profits per acre as illustrated in the diagram below. For the purpose of this analysis for 1953 we have excluded the brassica crops from the vegetable acreage because the average output per acre was relatively low, being little more than that for wheat.

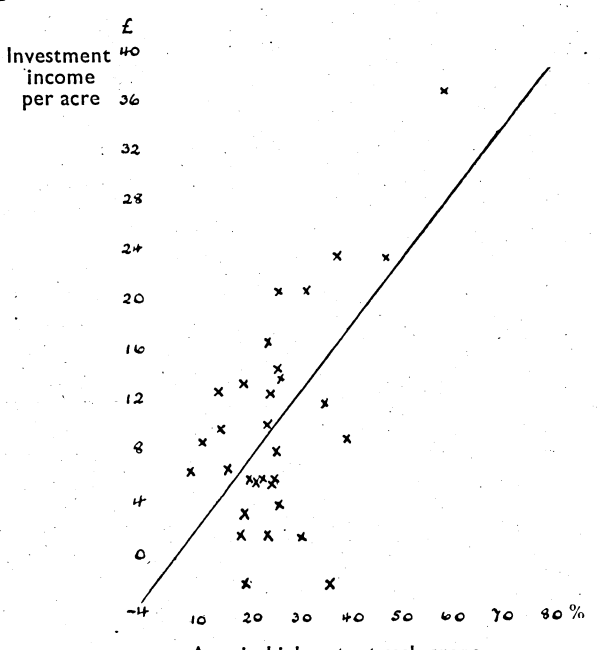

DIAGRAM I*

Proportion of high output cash crops and investment income per acre.

* The coefficient of correlation of proportion of farm acreage in high output cash crops and Investment Income per acre $r = +0{\cdot}58$ (significant at 1 per cent level).

We may conclude from this that about one-third of the variation in Investment Income per acre could be accounted for by variation in the proportion of high output cash crops. It was clearly advantageous to increase the proportion of the farm devoted to these crops, within the limits of good husbandry. In practice, of course, there are limits to increasing the acreage of any one crop or group of crops within the same farm. The amount of land which is suitable for their production may be limited, there may be difficulties in increasing the contract acreage, as for sugar beet, and the limitations imposed by potato eelworm infestation is only too well known in this district. There may also be difficulties in finding the labour supply to overcome the rush periods but, within these limits, there would seem to be good opportunities of improving the farm income by increasing the proportion of these crops.

It does not follow, however, that an increase in the proportion of high output cash crops will be automatically accompanied by an increase in income per acre. It is clear from the diagram that some farms, although they had a high proportion of high output cash crops, made relatively poor incomes and even losses in some cases. These divergencies from the general tendency can be accounted for by a number of factors. Not all farmers are equally efficient in the management of these particular crops and there are also variations in their skill in looking after other crops and livestock enterprises. It was particularly noticeable on a few farms which had a relatively large livestock enterprise that profits were low despite a high proportion of land in high output cash crops. In 1953 a few farmers growing brassica crops obtained very good returns because their produce came to market at just the right time while others had to plough in most of the crop. These differences tended to widen the scatter of points around the expected trend but it is important to note that very few farms achieved a high income per acre when the proportion of high output cash crops (H.O.C. Crops) was low.

TABLE IV

FACTORS ASSOCIATED WITH DIFFERENCES IN PROPORTION OF HIGH OUTPUT CASH CROPS

	Proportion of total farm acreage in H.O.C. Crops	Proportion of farm acreage in potatoes	Proportion of H.O.C. Crop acreage which is potatoes	I. Income per adjusted acre	Sales value of H.O.C. Crop per acre of H.O.C. Crop
	%	%	%	£	£
1st Group	39·8	22·6	56·9	15·7	111
2nd Group	26·6	20·3	76·2	12·3	107
3rd Group	21·8	20·1	92·1	6·2	98
4th Group	14·5	14·0	96·6	5·6	108

Table IV shows, with a few additions, the relationships which were depicted in Diagram I. Here the results for the thirty-one farms, arranged in order of proportion of farm area devoted to

high output cash crops, have been divided into four groups. Apart from the association of Investment Income per acre with the proportion of land in high output cash crops it is interesting to note that as the latter increases it is chiefly on account of increases in the area devoted to crops other than potatoes. The proportion of farm area in potatoes is similar in all groups except the fourth. There is also no indication that the output per acre of high output cash crops declines as the proportion is increased. As noted above, the proportion is generally increased by the incorporation of additional crops in the system rather than by an increase in the potato area. In this way the intensively operated farms have been able to avoid, very largely, the danger of disease.

It is however important to bear in mind that the intensification of the farming system which this course involves must go hand in hand with a high degree of technical management and that the more intensive system will involve greater outlay of resources, particularly of labour and fertilisers.

In fact, intensifying the system by incorporating a larger proportion of high output cash crops requires the stepping up of total annual expenditure. This increases the risks which the farmer carries and there are other risks, particularly of disease, inherent in this form of intensification. As we have seen, it will tend to increase the profit per acre. Important though this may be, particularly on small farms, it is also necessary to determine what happens to the rate of return per £100 of total expenditure. As the following diagram shows, farms vary considerably in their output per £100 of expenditure and no very definite association with the proportion of high output cash crops can be found. If anything the tendency is for them to rise together; certainly there are no indications of a rapid fall.

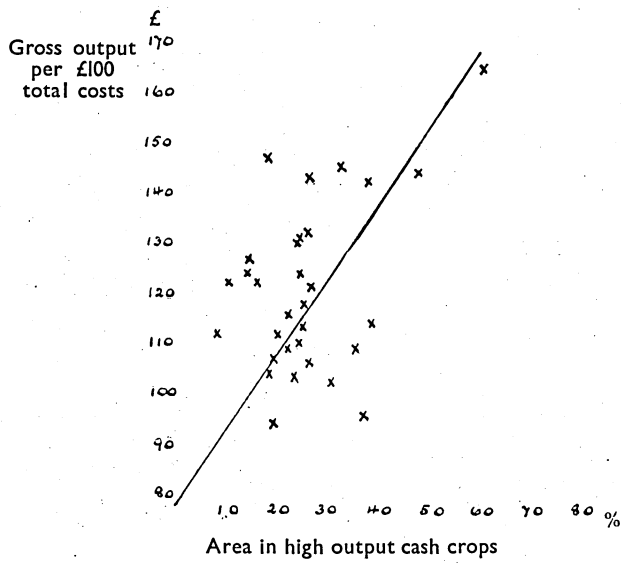

DIAGRAM II*

Proportion of high output cash crops and gross output per £100 total costs.

Clearly, there is some stage at which increasing the proportion of high value cash crops will lead to a decline in output per unit of expenditure. But, within the limits found on these farms, expenditure on labour and materials used in increasing this proportion is likely to be at least as well rewarded as that which is already committed in the present organisation.

* The coefficient of correlation of proportion of farm acreage in high output cash crops and gross output per £100 total expense. r=+0·45 (significant at 1 per cent level).

The Importance of Yields

The importance of maintaining good yields and the association of higher fertiliser inputs with increasing proportions of high output cash crops is illustrated in the following diagrams.

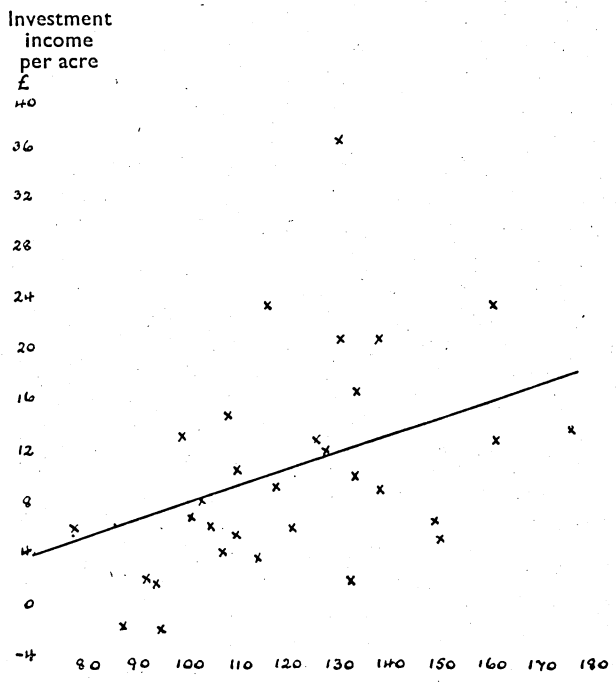

DIAGRAM III

Crop Yield Index and Investment Income*

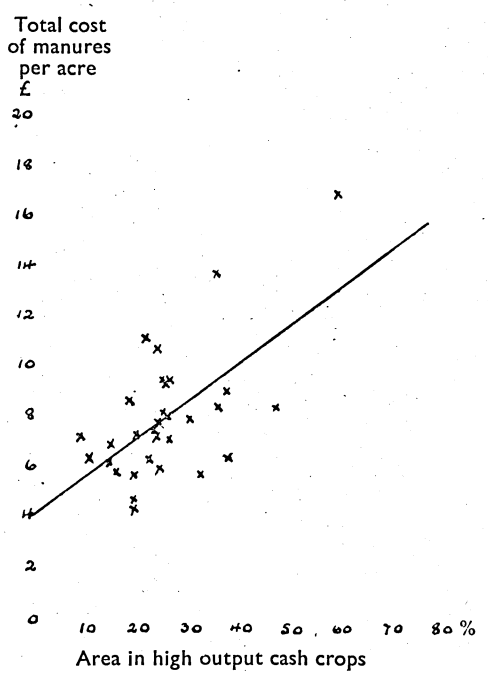

DIAGRAM IV

Proportion of High Output Cash Crops and Total Manures†

The attainment of high yields, if achieved only at very high cost, will obviously not lead to high economy, but the indications are that time and money spent in improving crop yields on many of these farms would give a good return and lead to higher incomes. It is also evident that increasing the proportion of high value cash crops which, as we have seen, tends to increase the income per acre usually demands a much higher expenditure on fertilisers and manures, but the fact that the correlation is not higher shows that there are many other factors, such as good cultivation, timeliness in sowing and harvesting, etc., which are also important in achieving high yields.

Some crops make heavier demands than others on fertiliser ingredients. The potato crop is a case in point and the association between the level of manuring on the farm and the yield of potatoes is shown in the following diagram.

* The crop Yield Index is a measure, in percentage terms, of the actual value of sales of cash crops compared with average standards. The correlation with Investment Income $r = +0{\cdot}43$ (significant at 5 per cent level). Average crop Yield Index for the thirty-one farms was 122.

† Correlation of proportion of high output cash crops with total manures $r = +0{\cdot}58$ (significant at 1 per cent level). Total manure includes fertilisers and farmyard manure purchased as well as an allowance for home-produced farmyard manure.

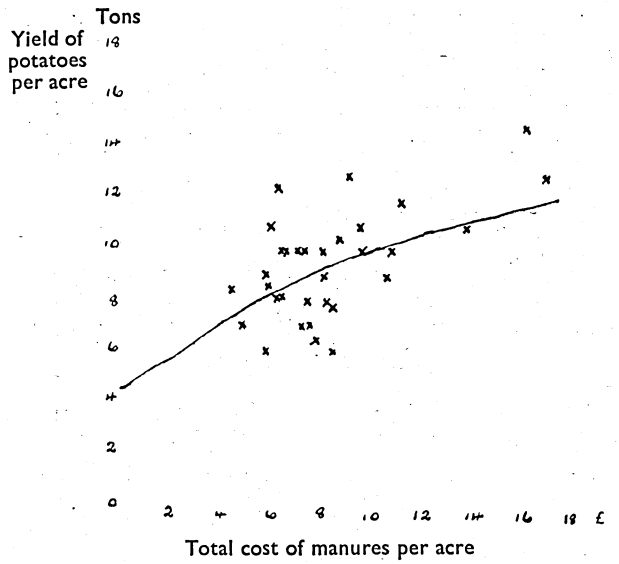

DIAGRAM V

EXPENDITURE ON MANURES PER ACRE OF THE FARM AND YIELD PER ACRE OF POTATOES*

The effect of raising the yields of potatoes, partly through higher expenditure on manures, on the farm incomes is brought out in the following table, which shows the overall results for seven farms at each end of the range of manuring.

TABLE V

INPUT OF MANURES, YIELDS OF POTATOES, CROP YIELD INDEX AND INVESTMENT INCOME PER ACRE ON TWO GROUPS OF FARMS

	Cost of manures £ per adjusted acre	Yield of Potatoes tons per acre	Investment Income per adjusted acre	Crop Yield Index
7 highest ..	12·7	11·1	16·2	137·0
7 lowest	5·6	8·3	9·3	112·0

* Expenditure on manure includes purchases of fertilisers and farmyard manure as well as an allowance for home-produced farmyard manure. Correlation with yield r=+0·45 (significant at 1 per cent level). Farmers pay widely varying prices for farmyard manure and if the eleven farms spending more than one-quarter of their total manure costs on purchases of farmyard manure are excluded the correlation is much higher r=+0·59 (significant at 1 per cent level).

It is clear that the level of manuring is an important factor determining the physical yield of crops and the profitableness of the farming system. Many farmers might well look to increased manuring as a means of increasing their profits. In adopting a policy of heavier manuring, however, it is essential to use those varieties of crops best suited to a high plane of manuring and always to maintain a balance between nitrogen, phosphate and potash appropriate to the soil and to the crop.

High Output Cash Crops, Yield and Investment Income

In Diagrams I and III the effect separately of variation in the proportion of the farm growing high output cash crops and crop yield index on Investment Income per acre was shown. Further work was done to find the multiple correlation between these three variables. It was found that 53 per cent of the variation in Investment Income per acre was associated with variation in crop yield index and the proportion of farm area in high output cash crops. Furthermore there was no correlation between crop yield index and the proportion of area in high output cash crops: in other words yield was not affected by the varying proportions of high output cash crops.

On average, the results showed that by devoting an additional 1 per cent of the farm area to high output cash crops and at the same time maintaining crop yield index unchanged there was an increase of 9s. 3d. per acre in Investment Income. On the other hand an increase of one unit of crop yield index while growing the same proportion of high output cash crops increased Investment Income by 3s. 1d. per acre.

Livestock Enterprises

Although livestock enterprises are not, on average, of major importance on these farms, differences in the efficiency with which they are managed often upset the relationships which could be expected from the cropping side. On some farms livestock enterprises would seem to add substantially to the income without in any way diminishing the proportion of high output cash crops so essential to high profits. But the average standard of management is poor and in some cases the productivity of these enterprises is so low as probably to detract from income earned elsewhere on the farm. This is a highly complicated system of arable farming and there are dangers that the introduction of too large a livestock enterprise will overtax management capacity. Yet subsidiary livestock enterprises, particularly of pigs and poultry can, if properly managed, lead to a high degree of success. They can be used to increase the size of the business on small farms and will help to absorb labour which could not otherwise be profitably employed. Too often, however, they are regarded merely as sidelines receiving little attention and even less thought. There is much to be said for delegating responsibility for subsidiary enterprises to one individual, preferably to a member of the family. On the larger farms it is also important that they should be of a size that will profitably use the labour of one person or some well-defined part of it, otherwise they tend to be neglected during rush periods. But even more important from the viewpoint of economy of the whole farm is that they must not unduly depress the proportion of the farm devoted to high output cash crops either through excessive demand for labour or for land. Land which is taken from high output cash crops in order to produce feed for livestock is uneconomically used on these farms.

The Shropshire and Staffordshire Farms

This group is too small for close investigation of the relationships found on the Lancashire farms. The proportion of area devoted to high output cash crops is much smaller and could not be expected to exert the same influence on incomes. Many of the farms are prevented from increasing this proportion by the impossibility of hiring an adequate labour force. They therefore depend on a more extensive type of arable farming where cereals predominate. Even so it would still seem to be important to maintain a high proportion of cash cropping for as the following diagram illustrates this is closely associated with incomes per acre.

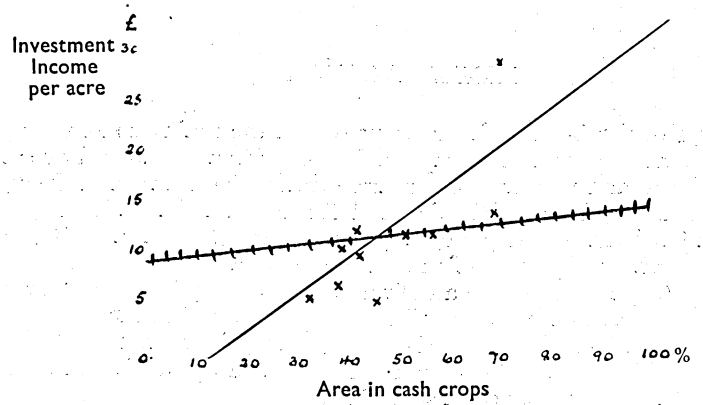

DIAGRAM VI*

Proportion of cash crops and investment income.

The same relationship is also shown in the following table, where the sample has been divided into two groups according to the proportion of land devoted to cash crops.

TABLE VI

PROPORTION OF CASH CROPS, COSTS PER ACRE, INVESTMENT INCOME PER ACRE AND PER FARM ON TWO GROUPS OF FARMS

Proportion of farm in cash crops	Investment Income per acre	Investment Income per farm	Total Costs per acre	Average farm size
%	£	£	£	acres
59	13·9	4,139	56·5	286
39	8·7	3,269	31·6	370

It is also evident from the above figures that higher costs per acre are associated with a higher proportion of cash crops. However, the extra expenditure would appear to be justified by the higher Investment Income received.

Since on these ten farms 41 per cent of total production is from livestock the competition for land between requirements for stock keep (stock acres) and land for sales crops (cash crop acres) is great. The tables of individual farm results, in Appendix III, show for all these farms the livestock output per stock acre and the cash crop output per cash crop acre. It is very significant that on all except two farms, and these have large pig or poultry enterprises, livestock output per stock acre is less than cash crop output per cash crop acre. If these two farms are excluded livestock output per stock acre is on average only 40 per cent as great as cash crop output per cash crop acre.

This would appear to indicate that where higher incomes are desired cash cropping should be increased within the limits of sound husbandry and availability of markets and labour. The livestock enterprise should be sufficiently large to utilise crop by-products and maintain fertility by providing dung, which of course can not be purchased in this area as in S.W. Lancashire. Furthermore it is important that the land which, for various reasons, has to be devoted to grass or other stock food crops should be fully stocked and the standard of livestock management be as high as possible.

* The coefficient of correlation between proportion of cash crops and Investment Income per acre $r = +0{\cdot}697$ (significant at 5 per cent level).

MIXED ARABLE

This group consisting of thirty-seven farms forms one of the main economic types of farming found in the North Western Province. Geographically the farms are scattered over the potentially arable areas of the province and this sample is mainly drawn from East and Central Shropshire, South and West Staffordshire, North Cheshire and from South Lancashire. These farms are combined together as a particular economic type group on the basis that all of them carry a dairy herd and also devote a certain proportion of their acreage to cash crop production. Within these limits a great deal of diversity between farm and farm exists not only in the emphasis given the two main enterprises of dairying and cash crop production but also within the enterprises themselves, such as type of crop grown, variety of seed, breed of cows, grade of milk and degree of self-sufficiency in supply of feed. This lack of uniformity is further accentuated by the fact that many farms also carry one or more subsidiary enterprises of varying sizes.

Cropping and stocking per 100 acres

Table I shows the cropping and stocking per 100 acres for 1953–4 while Table II shows the changes in cropping from that of the previous year.

TABLE I

CROPPING AND STOCKING PER 100 ACRES

Cropping per 100 acres		Livestock Units per 100 acres	
Wheat	12·1	Cows	17·0
Oats	8·1	Other Cattle	12·7
Other Corn	12·5	Pigs	4·0
Sugar Beet	3·3	Poultry	2·3
Potatoes	8·5	Sheep	3·9
Other Roots	2·8	Horses	0·8
Other Crops	1·2	Total	40·7
Total Tillage	48·5		
Temporary Grass—Mown	16·6		
Grazed	8·9		
Total Arable	74·0		
Permanent Grass—Mown	1·7		
Grazed	24·3		
	100·0		

TABLE II

CHANGES IN CROPPING, 1952–3—1953–4

	Cropping per 100 acres	
	1952–3	1953–4
Cereals	31·8	32·7
Sugar Beet	3·7	3·3
Potatoes	8·5	8·5
Other Roots	2·2	2·8
Other Crops	0·6	1·2
Total Tillage	46·8	48·5
Temporary Grass—Mown	16·2	16·6
Grazed	10·9	8·9
Total Arable	73·9	74·0
Permanent Grass—Mown	1·5	1·6
Grazed	24·6	24·4
	100·0	100·0

Nearly half the land is under tillage crops, and the predominance of cereal crops is well illustrated, these being followed by potatoes and sugar beet. The average acreage for sugar beet is low because none of the Cheshire and Lancashire farms grows this crop, while most of the Shropshire and Staffordshire farms grow both potatoes and beet. The total tillage acreage has increased over that for 1952–3 mainly as a result of an increase in the wheat acreage, other roots and crops, but this has been mainly at the expense of sugar beet and temporary grass since the area under permanent grass is identical for both years. Although many farms carry large sheep, pigs and poultry enterprises in terms of numbers, Table I illustrates the predominance of the dairy enterprises. In terms of livestock units, dairy cows and their followers account for 75 per cent of the stock carried for the group as a whole.

Table III

Financial Results and Measures of Economic Efficiency, 1953–4

Average Output, Costs and Income per acre	£ per acre
Output	
Crops	17·5
Cattle	3·3
Milk	19·4
Sheep and Wool	1·4
Pigs	4·5
Poultry and Eggs	2·1
Total Livestock	30·7
Miscellaneous	1·8
Gross Ouput	50·0
Costs	
Foods	9·8
Seeds	2·0
Fertilisers	3·2
Rent and Rates	2·4
Power Costs	6·8
Other Repairs	1·1
Contract	0·8
Labour (excluding farmer)	12·3
Miscellaneous	1·8
Total Costs	40·2
Net Farm Income	9·8
Farmer's Labour	1·0
Investment Income	8·8
Family Income	11·2

Measures of Economic Efficiency		
Area in Cash Crops	%	29·7
Output from Cash Crops	%	35·0
Output from Pigs, Sheep and Poultry	%	16·0
Milk per Cow	gallons	741·5
Milk Sales per Cow	£	115·3
Output per £100 Costs(*e*)	£	124·3
Output per £100 Labour(*a*)	£	375·4
Output per £100 Labour and Power(*a*)	£	248·3
Livestock Output per L.S.U.	£	75·5
Livestock Output per Stock Acre	£	43·1
Livestock Output *less* bought feed per Stock Acre	£	29·4
Livestock Output per Feed Acre	£	31·1
Cattle and Milk Output per Cattle Unit	£	76·3
Pig Output per Pig Unit	£	112·5
Poultry and Egg Output per Poultry Unit	£	95·1
Sheep Output per Sheep Unit	£	35·9
Cash Crop Output per Cash Crop Acre	£	57·8
Stock Acres per Livestock Unit		1·8
Feed Acres per Livestock Unit		2·4
Yield Index		105·9
Crop Yield Index		111·0
Livestock Yield Index		102·0
Labour Index		85·7

(*e*) Excludes farmers labour. (*a*) Includes farmers labour.

Table III sets out the average output, costs and income per acre for the group as well as certain measures of economic efficiency. The predominance of cash cropping and dairying is illustrated by the fact that output from them accounts for over 80 per cent of the total output of the whole group, the remaining 20 per cent being derived from subsidiary enterprises and miscellaneous receipts. 1953 was a good crop year and yields in general were high and receipts from cash crops which used 30 per cent of the farm area accounted for 35 per cent of total output. Cash crop output per cash crop acre was £57·8 compared with the figure of £43·1 for livestock output per stock acre. Livestock enterprises on most of the farms are also dependent to a certain extent on purchased feedingstuffs and when these are discounted the output from livestock per stock acre falls to £29·4. On the costs side, labour purchased foods and power costs are the largest items accounting for nearly 75 per cent of the total costs.

TABLE IV

OUTPUT, COSTS AND INCOME PER ACRE, 1952–3 AND 1953–4.
IDENTICAL SAMPLE OF THIRTY-SEVEN FARMS

	1952–3 £ per acre	1953–4 £ per acre
OUTPUT		
Crops	15·8	17·5
Cattle	3·4	3·3
Milk	18·0	19·4
Sheep and Wool	1·5	1·4
Pigs	2·9	4·5
Poultry and Eggs	1·8	2·1
Total Livestock	27·6	30·7
Miscellaneous	1·7	1·8
Gross Output	45·1	50·0
COSTS		
Foods	8·1	9·8
Seeds	2·4	2·0
Fertilisers	3·5	3·2
Rent and Rates	2·3	2·4
Labour (excluding farmer)	11·5	12·3
Miscellaneous	10·5	10·5
Total Costs	38·3	40·2
Net Farm Income	6·8	9·8
Farmer's Labour	1·0	1·0
Investment Income	5·8	8·8
Family Income	8·0	11·2
Capital Expenditure	3·4	4·5

In 1953–4 total output increased by £5 per acre over the previous year and, with only a £2 per acre increase in costs, net farm income increased from £6·8 to £9·8 per acre. This favourable change has been the result of a number of factors. Good yields from a larger acreage and increased prices for wheat, potatoes and sugar beet considerably increased the output from cash crops. The following table shows the increase in output per acre from these crops:

OUTPUT PER ACRE

	1952–3 £	1953–4 £
Wheat	34	39
Barley	34	37
Sugar Beet	61	76
Potatoes	75	96

As a result of a small increase in the price for milk, and a higher yield per cow from a larger number of cows, the output from livestock also increased substantially. Output from pigs and poultry has also continued to rise despite a decline in prices for bacon pigs and fat sows and a substantial decline in prices obtained for eggs and poultry.

On the costs side the expenditure on labour increased by 16s. per acre as a result of a 6·5 per cent increase in wages; and despite a reduction in the prices of some kinds of feedingstuffs expenditure on this item has also increased. A larger quantity of purchased feed was used, mainly for the expanded pigs and poultry enterprises, but also partly for the dairy enterprise since the acreage devoted to the production of feed crops declined by 2 per cent. Although favourable seasonal and price conditions accounted for much of this success, part of it must be attributed to a general improvement in efficiency on individual farms, a factor which will become more important still as the change from controlled prices to a freer system progresses.

Factors Affecting Profitableness

By definition, these farms are engaged in a diversified type of agriculture. It is true that they depend largely on two main kinds of activity, viz. the production of cash crops and of milk. But there are wide differences between farm and farm in the composition of the cash crop area and similarly wide differences, on the livestock side, in the degree of dependence upon subsidiary enterprises of sheep, pigs and poultry. There are obvious disadvantages to diversification in this way but there are also clear advantages such as the contribution of livestock enterprises to the maintenance of fertility, the full use of by-products, the absorption of surplus labour and the spreading of risks. The disadvantages of over-diversification which sometimes lead to low performance of labour and to underemployment of capital when these are spread over a large number of enterprises on the small mixed farm do not apply with equal force to this group although, as we point out later, there are dangers even here. As will be seen from Table V, the great majority of farms in this group are sufficiently large to carry several subsidiary enterprises of a size which will use both labour and capital effectively.

The very mixed nature of the farming does, however, make it extremely difficult to determine the factors which account for differences in success. There are some, like the differences in quality of land, ease of working and weather conditions which we cannot measure precisely and, therefore, cannot use in our analysis. But the number which we can measure is also large and the influence of each so small in the total that we are unable to isolate their individual effect with any certainty. Nevertheless, there are important questions which need to be answered in this type of farming, such as what proportion of the farm should be devoted to cash cropping, what area should be used for high value cash crops such as sugar beet and potatoes, how intensively should the cash crop and stock area be managed, what levels of milk yield should be aimed at and what combination of supplementary enterprises should be added to the main enterprises. It is with these questions that this part of the report is concerned.

Farms of Different Sizes

The answers to these questions will obviously vary with the size of the farm. As we would expect, the intensity of operation declines progressively as the size of farm increases. The smallest size group have an average total cost per acre of £56·8 (when the farmer's own labour is included) compared with £43·2 for the intermediate group. The extra costs, however, yield practically no additional investment income although it is true that the net farm income is some £2 per acre higher. The largest farms incur about £7 less in total expenditure than the intermediate group, and they achieve a slightly higher net farm income and investment income. The differences in total expenditure are large compared with the differences in Investment Income and a more detailed analysis of the reason is indicated.

Table V

Results from Farms of different sizes

	0—150 acres £ per acre	151—300 acres £ per acre	Over 300 acres £ per acre
Output			
Crops	18·8	16·2	18·4
Cattle	1·2	3·5	3·6
Milk	31·2	21·6	15·8
Sheep and Wool	—	0·8	2·2
Pigs	8·7	4·8	3·2
Poultry and Eggs	3·6	2·8	1·4
Miscellaneous	2·1	2·2	1·5
Gross Output	65·6	51·9	46·1
Costs			
Foods	16·7	10·9	7·4
Seeds	2·5	2·4	1·6
Fertilisers	3·2	2·9	3·5
Rent and Rates	3·2	2·6	2·2
Power Costs	8·0	6·7	6·9
Other Repairs	1·4	1·0	1·1
Contract	1·6	0·9	0·4
Labour (excluding farmer)	15·1	12·9	11·1
Miscellaneous	2·1	1·9	1·8
Total Costs	53·8	42·2	36·0
Net Farm Income	11·8	9·7	10·1
Farmer's Labour	3·0	1·0	0·6
Investment Income	8·8	8·7	9·5
Family Income	13·8	11·5	11·2
Capital Expenditure	6·1	5·3	4·2
Numbers of Farms	12	15	12
Average Size (acres)	102	223	407
Area in Cash Crops (%)	30·6	28·3	31·4
Area in Potatoes and Sugar Beet (%)	12·0	11·1	12·1
Livestock Output per Stock Acre (£)	61·8	46·1	39·2
Livestock Output per Feed Acre (£)	36·7	32·2	29·2
Yield per Cow (gallons)	704	727	748
Output per £100 Costs (*a*)	115·8	120·1	127·1
Output per £100 Costs (*e*)	123·3	123·6	129·8
Output per £100 Labour (*a*) (£)	371·2	383·3	395·9
Yield Index	108·5	101·9	110·0
Crop Yield Index	111·8	105·4	111·3
Livestock Yield Index	105·9	97·2	106·2
Labour Index	72·3	91·8	89·3

(*a*) Including farmer's labour. (*e*) Excluding farmer's labour.

The large differences are in the costs of feedingstuffs and labour. On the whole, however, the smaller farms seem to use their feed supplies more effectively than the larger. Livestock output per feed acre (i.e. the total acreage equivalent of both home-grown and purchased feed) is considerably higher on the smallest farms than in the other two groups. This means that the physical efficiency with which they convert feed into animal products is higher than on the larger farms. We have to bear in mind, however, that a larger proportion of the feed acres on the small farms is made up of purchases of feed which tend to be much more expensive than home-grown. Even so, it is clear that the purchases of feed on the small farms helped them to increase the scale of the business and added effectively to income. The critical question to ask is whether the small farms could use even more feed and, if so, how should it be obtained. There can be little doubt that, on some farms, the contribution of the home area to feed supplies could be increased with profit. Despite the small size, the farms in this group use only about average quantities of fertilisers and, although they derive some manurial benefit from the larger quantities of feed bought, the indications are that greater expenditure on fertilisers to raise the productivity of the stock area would be worth while. They are more heavily stocked with cattle than the larger farms but yields per cow are inferior. It is possible that the pressure of stock, on the area devoted to stock, and particularly on the grassland, is now militating against higher milk yields. Grassland gets less attention than it merits on many farms despite the fact that it responds well to higher expenditure and provides the cheapest sources of feed on farms to-day. The maintenance of a large herd of dairy cows is correct policy on the smaller farms but it is also important to achieve high yields where this can be done at low cost. Improvement in the production and use of grassland coupled, possibly, with a better type of cow are probably the best means of attaining the desired end.

There is also little doubt that on small farms in this group, as in others discussed in this report, there is an important place for subsidiary enterprises of pigs and poultry. These have increased in importance since the previous year (Table IV) seemingly with little addition to the purchase of feed. Farm production of feed was, however, a good deal higher in the favourable conditions of 1953–4 and the precise effect of increasing the pig and poultry enterprises cannot as yet be determined.

The small farms are clearly less efficient in their use of labour than the large farms. This is to some extent unavoidable in their very nature for they are unable to use the advantages of scale available to larger farms. With an average labour bill (including the value of the farmer's own labour) of a little over £1,800 per farm of 100 acres they are, however, by no means understaffed. On the very smallest farms, staffed mainly by family labour, it may not be possible to release labour but there can be little doubt that some farms are carrying more labour than they should relative to the output obtained. If a higher productivity of labour is to be achieved farms must either find ways and means of economising in its use to the extent of releasing one man or raise the output. Some of the possibilities of raising the output on the small farms have already been discussed but there remains the question of the management of the cash crop area. There is, somewhat surprisingly, a high degree of similarity between the small and the large farms in this group both in the proportion of the land devoted to cash crops and in that part of it used for potatoes and sugar beet. Normally we would expect a somewhat higher proportion of sugar beet and potatoes on the smaller farms and the absence of this tendency may account in part for this somewhat lower productivity of labour. Certainly, a larger area in these crops would help to absorb surplus labour. On the whole, sugar beet seems a better proposition than potatoes where the dairy herd is large, for the tops are a highly nutritious low cost feed. It is not difficult to get a larger allocation of sugar beet quota in Staffordshire and Shropshire.

Labour Productivity

Low labour productivity is not confined to the small farms. Indeed, one of the striking features of the whole group is its somewhat low output per £100 labour, particularly when we bear in mind that many of the farms are of a size where we would expect labour productivity to be high. Many of the farms are in areas where labour is difficult to obtain but, taken as a group, there would seem to be considerable room for improvement in the use of labour. There are some very wide differences between individual farms in the larger size groups, differences which cannot be accounted for merely by variations in the quality of land, ease of working, etc. They can only be fully explained by variations in the efficiency of labour management and, clearly, some managers have much to learn from the best. In this respect we have to remember that a high output per man or per £100 spent on

labour does not only depend upon the speed and efficiency with which labour works but also upon a high standard of general management which ensures that labour is working on profitable enterprises.

On many of the large farms the reason for a low labour productivity lies in the low output of the stock area of the farm. As indicated above, much more effective use is made of the stock area on the small than on the large farms. There can be little doubt that many of the larger farmers manage their cash crops much better than their stock. Reasonably good milk yields per cow are obtained but the stock enterprises are small relative to the size of the farms. Lack of accommodation is no doubt a problem on many farms but the indications are that there is enough scope to increase the output of the stock area to merit further capital investment in buildings, capital which many farmers are too ready to put into mechanical equipment.

Another reason given for the failure to develop the stock area is the difficulty of getting labour to work with stock, entailing as it does the working of overtime and weekends. Farmers say that they have often to do the week-end work themselves and that they have to devote more time than they can spare to the management of these enterprises with resultant neglect of the cash crops. These are strong reasons against the extension of livestock enterprises but it can also be argued that it is only when these enterprises are sufficiently large that the proper arrangements for the delegation of responsibility and for relief work at week-ends become feasible. On some of these farms delegation of work and responsibility, allied with bonus schemes, are working well but there are still many where the livestock enterprises are not sufficiently large to warrant the payment of highly skilled and responsible specialist staff. In some cases the fault lies in over diversification of livestock enterprises, each one not large enough to carry its own staff. In these cases greater concentration on one enterprise would almost certainly give better results and lighten the management load.

The Influence of Cash Cropping and of Cash Roots

It is commonly asserted in this type of farming that cash cropping yields a higher profit per acre than land devoted to livestock production. If this were true we would expect a fairly close relationship between the proportion of the farm used for cash cropping and the income per acre of the whole farm. On the basis of the results in 1953–4 however we cannot find such a correlation. The proportions of cash cropping on some farms was a good deal higher than on others but this did not lead to a consistent difference in profits. It would seem that there are on average about equal possibilities of earning profits from land devoted to dairying and the subsidiary livestock enterprises as there are in devoting it to production of cash crops taken as a whole.

A much more important effect on income arises from the way in which the cash crop acreage is managed. Farms which obtained a high output per acre from cash crops were, in general, the farms making the higher profits. Variations in cash crop output per acre accounted for nearly 20 per cent of the variations in Investment Income. A high cash crop output per acre can be achieved either by raising the proportion of high value cash crops such as potatoes and sugar beet or by increasing the yields of all cash crops irrespective of their composition. Limitations in the data prevent us from determining the extent to which each of these contributed to the variation in income because, to some extent, a higher proportion of high value cash crops on these farms was associated with higher yields for all crops. But, together, variations in the proportion of the farm devoted to potatoes and beet and variations in the yield index accounted for about 25 per cent of the variations in Investment Income. This result ties up with that found in the sample of arable farms dealt with earlier in this report. The effect is not as great, for the share of the farm devoted to cash cropping in this group is on average much smaller than on the more specialised arable farms.

One of the limitations to increasing the area of cash crops on many of these farms, particularly the larger farms, is the shortage of labour. In fact a number of farmers have tried to ease their labour problems by cutting down on the root area. But our investigations into the economy of potato and sugar beet production in recent years have shown that these crops yield a large margin per acre, important on small farms where land is limited, and a return on expenditure which compares favourably with that on any other crop.* It is important from an income point of view,

* See "Economics of Sugar Beet Growing in the West Midlands". Bulletin 79/EC/44. "Maincrop Potato Production in the North West. A Survey of 98 Farms in 1954." Bulletin No. 81/EC/46. Issued by Manchester University.

therefore, that the acreage of these crops should be maintained as high as possible and, where the labour supply is difficult, methods of mechanising the cleaning and harvesting operations and the use of contract services deserve careful consideration. There is evidence in some areas from which these farms are drawn that the acreage of sugar beet is declining and that farmers in the North-West are losing their quota to the Eastern counties. It is extremely doubtful whether this is in their best interest.

It is important to recognise, as we have pointed out elsewhere, that increasing the proportion of high value cash crops does not automatically raise incomes, for high profits on these crops can only be achieved where good yields are obtained. Increasing the area, therefore, carries with it the need to spend a good deal more on fertilisers and to make sure that good cultivation on the larger area is not being neglected.

Where shortage of labour makes a reduction in high value cash crops inevitable some of the ill effects on income can be mitigated by increasing the yields of the other cash crops, particularly of cereals. Most of these farms now carry a heavy load of machinery and power costs which they can only partly escape by reducing the cash roots area. Income from the whole cash crop area will, therefore, tend to fall unless the reduced cash root output can be compensated for by an increase in the output of cereals. We cannot tell from the records what the detailed programme of fertilising is on each farm but we know that there are wide variations. A few farmers now make a practice of testing all fields regularly and of using fertilisers at near optimal levels for each crop. Others have soil tests carried out only intermittently or not at all and they tend to estimate the fertiliser requirements on the results of the last crop. This, at best, is an imperfect guide and is often only possible when a crop failure has already occurred, but it has been demonstrated time and again that the correct fertiliser treatment is one of the most important factors in achieving profitable yields.

Many farmers still fear the effects of over-fertilising on cereal crops because of unfortunate past experiences when they have raised the level of fertiliser use. Regular soil tests will help to avoid these occurrences but it is also important to use varieties which will stand up to higher rates of fertiliser use. The adoption of the new proven varieties is still too slow on many farms. The problem is more difficult in the case of barley where farmers are aiming at the malting market, for some of the older weak strawed varieties still yield the better qualities. But even here some progress in breeding and selection has been made and provided there is careful timing of applications a good and safe response to fertiliser use may be obtained.

High and Low Profit Farms

This type of farming, depending as it does on a combination of cash cropping and livestock production, requires a high standard of management for success. Where management capacity is high it can be a highly profitable system as is demonstrated in Table VI where the high profit and low profit farms are compared.

Failure to achieve high profit may arise from many causes, some of which have already been discussed. For example an abnormally low area in cash crops, particularly in cash roots, often leads to poor results. As will be seen from Table VI the area of beet and potatoes on the high profit farms was some 60 per cent higher than on the low profit farms and the returns per cash crop acre about £15 higher.

This, however, was by no means the only difference. The high profit farms were generally managed a good deal more intensively with total expenses of about £8 per acre higher. Some of the extra income no doubt arose from this, but it is also clear that they obtained much higher returns per £1 of expenses. They would appear to have achieved a large part of this from better returns from the area devoted to livestock where the difference was £20 per acre used for stock.* The milk produced per stock acre averaged 253 gallons compared with 154 gallons on the low profit farms and

* It is estimated that 40 per cent of the variation in incomes in this group of farms arises from variations in the area devoted to cash roots, in crop yields and in livestock output per stock acre.

TABLE VI

COMPARISON OF HIGH AND LOW PROFIT FARMS

	Ten High Profit farms	Ten Low Profit farms
Average Size .. .. acres	237	256
Gross Output per acre .. .. £	70·4	45·1
Total Costs per acre .. .. £	50·5	42·3
Net Farm Income per acre .. .. .. £	19·9	2·8
Investment Income per acre .. .. £	18·5	1·1
Area in Cash Crops .. .. %	33·8	24·7
Area in Beet and Potatoes .. .. .. %	16·2	10·3
Cash Crop Output per Cash Crop Acre £	72·0	57·0
Livestock Output per Stock Acre .. £	61·0	41·0
Livestock Output per Feed Acre .. .. £	36·0	30·0
Yield per Cow .. .. gallons	788	733
Milk per Stock Acre .. .. .. gallons	253	154
Output of subsidiary Livestock enterprises per Stock Acre .. .. £	14·4	12·1
Feedingstuffs per acre .. .. £	16·6	9·2
Labour (including farmer) per acre .. £	15·5	14·6
Fertilisers and Seeds per acre .. .. £	5·9	5·8
Yield Index	116	101
Crop Yield Index	123	98

returns from other livestock enterprises were also higher. It is true that this entailed the purchase of larger quantities of feed but this was small compared with the difference in output obtained. Efficiency in the use of feed as measured by output per feed acre accounted for part of the gain shown but a substantial part must have been due to higher production on the area used by stock.

This table is a good example of what can be achieved by efficient management. The resources used in the two groups are not very different; the area of land is nearly the same, the difference in labour, in seeds and fertilisers is not large and the main difference in total expenditure arises largely from the additional feedingstuffs used on the high profit farms. Yet, one group achieves an output per acre £25 in excess of the other. There can be little doubt that failure to improve the management often arises out of ignorance of what is possible and being achieved on other farms. It is one of the purposes of a study of this sort to provide farmers with standards against which they can judge the performance of their own farms. In this particular group the glaring differences between the best and the worst would seem to arise in the main from differences in the efficiency of livestock management although the differences in results from cropping are large enough. There is clearly room for much improvement, We have to recognise, however, that on many of the large farms the total income is already very substantial even though the level of efficiency is not above average. In this situation the desire for additional income may not be strong, particularly when the marginal rate of taxation is high, and managers are loath to add to their responsibilities and to the risks involved.

LIVESTOCK REARING

The farms in this group are all situated in the Clun Forest and adjoining hill district of South West Shropshire. They are in the main devoted to the rearing of store cattle and sheep, although on the larger farms cash cropping and fattening are also important. These farms are hill farms in the sense that much of the land is above the 800 ft. contour and in many cases above 1,200 ft., but some of the land is of higher fertility than is usually associated with this altitude. Areas of rough grazing are common to most of the farms, not necessarily at the highest elevation, whilst much of the arable land is on the hill tops above the 1,000 ft. contour. Most of the sheep are of the Clun Forest and Kerry Hill breeds and most of the cattle are Herefords and Hereford crosses.

TABLE I

NUMBERS OF FARMS AND CASH CROP ACREAGE

	0—60 acres	61—160 acres	Over 160 acres	All farms
Number of farms	8	19	13	40
Percentage of acreage devoted to cash crops ..	5%	4%	12%	10%

Market Trends and Season 1953–4

The year 1953–4 was favourable to livestock rearing farms, both as regards weather and market prices. Although the arable acreage is quite high, averaging over 40 per cent of total acreage, sales of roots and corn are relatively unimportant. Most of the arable crops grown are either folded or harvested as fodder for store stock which do not demand the same high quality of roughages so essential for dairy herds. A damp summer with plenty of grass is nearly ideal and this was the season experienced in 1953.

The autumn store stock sales of 1953 and the spring sales of 1954 were the last to be held before meat rationing and marketing controls ended in July 1954. Possibly because of the general impression that when controls ended there would be a shortfall in the amount of meat available, store prices for cattle and the prices for breeding ewes rose substantially at both the autumn and spring sales. Store lamb prices were not affected to the same degree as most lambs had been disposed of before July and the Ministry of Food prices up to that time had shown little increase over the previous year. Increased receipts for store stock can be accounted for partly by the improvement in prices and partly by the good grazing season of 1953 which allowed farmers to sell their stock in better condition. This led to an improvement in profits earned even though numbers of stock sold differed little between the two years.

Net Farm Income per acre rose to the record level of £6·0 per acre in 1953–4, the highest figure previously recorded for this group of farms being £5·7 in 1951–2. The fall in net farm income in 1952–3 resulted mainly from a drop in the price of wool.

For the group as a whole gross output rose by £1·6 per acre between the two years whilst costs rose by only £1 per acre. Pig and poultry sales, although they are still not large, showed a marked increase, receipts rising by 28 per cent and 17 per cent respectively. This expansion accounts for most of the rise of 33 per cent in the cost of purchased foods, since very little of these are used for the rearing enterprises. The value of sheep production rose by 11 per cent and of cattle by 8 per cent due almost entirely to the higher value realised per beast.

Government grants received by most Clun farms rose considerably during the year due to the introduction of the Hill Cow Subsidy of £10 per head paid on breeding cows in rearing herds on hill farms. Most of the Clun farms, with the exception of those selling milk, qualified for this subsidy.

TABLE II

OUTPUT, COSTS AND INCOME PER ACRE*
1952–3 AND 1953–4

	1952–3	1953–4
OUTPUT	£	£
Crops	2·5	2·4
Cattle	3·5	3·9
Milk	0·6	0·6
Sheep and Wool	6·6	7·1
Pigs	0·7	0·9
Poultry and Eggs	1·2	1·4
Total Livestock	12·6	13·9
Government Grants	1·4	1·2
Produce to House		0·3
Sundries		0·3
GROSS OUTPUT	16·5	18·1
COSTS		
Foods	1·2	1·6
Seeds	0·6	0·6
Fertilisers	1·3	1·2
Rent and Rates	1·2	1·3
Labour (excluding farmer)	3·3	3·7
Miscellaneous	3·5	3·7
TOTAL COSTS	11·1	12·1
Net Farm Income	5·4	6·0
Farmer's Labour	1·6	1·6
Investment Income	3·8	4·4
Family Income	6·9	7·7

Apart from feedingstuffs, the only other major increase in costs was one of 12 per cent for paid labour. For some years, labour costs on these farms remained fairly stable despite increases in the statutory minimum wage rates. Increased rates were often more than offset by a decline in the labour force, this being an area from which agricultural labour has tended to migrate. In 1952–3 and 1953–4, however, labour costs have risen more than the minimum wage. The supply of labour was certainly not any easier during these two years, and many of the larger farms have been progressively reducing their tillage acreage because of the growing shortage of labour. There is little doubt that most hired workers, and many family workers also, have been receiving considerably higher wages than hitherto and this has not, in general, been for additional overtime work.

The overall financial changes mask the very considerable variations between farms of different size which are summarised in Table III.

* In this and the following tables all the data have been calculated from an identical sample of farms in 1952–3 and 1953–4.

TABLE III

FINANCIAL CHANGES 1952–3 TO 1953–4 IN SIZE GROUPS

Per acre	0—60 acres	61—160 acres	Over 160 acres
	£	£	£
Cattle Ouput—1952–3	4·8	3·5	3·3
1953–4	5·6	3·5	3·9
Sheep Output—1952–3	7·7	7·2	6·3
1953–4	9·4	8·4	6·5
Pig Output—1952–3	1·4	0·3	0·9
1953–4	1·8	0·5	1·0
Poultry and Egg Output—1952–3	4·5	1·9	0·8
1953–4	6·6	2·0	0·7
Gross Output—1952–3	25·2	16·6	16·0
1953–4	31·6	18·8	17·0
Foods Purchased—1952–3	4·9	1·1	1·0
1953–4	6·8	1·5	1·2
Labour Costs (excluding farmer)—1952–3	3·3	3·5	3·3
1953–4	3·8	3·7	3·6
Net Farm Income—1952–3	7·8	4·4	5·6
1953–4	11·2	6·3	5·6
Investment Income—1952–3	0·2	1·5	4·9
1953–4	3·2	3·4	4·9

Net Farm Income has risen by over 40 per cent in both groups of farms under 160 acres but remained the same in the largest size group. A substantial part of the increase on the smaller farms, and nearly the whole of it in the group 61 to 160 acres, can be accounted for by the increase in sheep output. There is no evidence of radical changes in the management of sheep enterprises on these farms and the increase in sheep output was achieved with little or no increase in costs. This, however, may be a temporary feature only, associated with the special conditions of the 1953 season. Certainly, many small farmers received very high prices for their draft ewes which may not be repeated in another year. The season also favoured them in that they were able to sell their ewes in better condition than in other years. But why these benefits should not have been more apparent on the larger farms is not known. They are less heavily stocked with sheep than the smaller farms and, having better fodder supplies in a normal year, it is possible that the same improvement in output in a good year cannot be expected.

The output of cattle also increased by proportionately more in the smallest size group. To some extent this is due to the fact that cattle on the smaller farms are sold at a younger age than on the large farms and prices have increased most for the young cattle, particularly for weanlings. There is a tendency for farms which have erected new winter cattle accommodation with the assistance of grants under the Livestock Rearing Acts—generally the larger farms—to keep their cattle longer than hitherto. It is doubtful whether this policy has been worth while. When the interest charges on the new buildings are taken into consideration it seems unlikely that there is any financial advantage to be gained by selling these stores at two years old, at the end of their second winter, rather than in the previous autumn at eighteen months old.

The improvement in incomes on small farms may also be attributed in part to the increase in pig and poultry enterprises. The combined output of these two enterprises went up by £2·5 per acre against an increase in purchased feedingstuffs of £1·9 per acre. As other costs are largely fixed the margin may be regarded as a substantial addition to profit. There is still room for expansion of these enterprises on small farms where the total farm income is low. They nearly all suffer from some degree of under-employment of family labour. This under-employment is not always clearly apparent for many family workers already work long hours, but much of this is due to a low level of mechanical aid which would take the drudgery out of the work and sometimes to poor working arrangements. Capital for investment in labour-saving devices is often short and could only be paid for by increasing the output. But if these families are to attain an adequate standard of living they will have to expand their supplementary enterprises still further.

On the larger farms there is not the same incentive to increase pig and poultry production. Total farm incomes are higher and the inducement to incur the extra worry and risk of larger pig and poultry units not so great. A number of them also suffer from a shortage of labour and the merits of a policy of expansion of supplementary enterprises have to be weighed against the risks of paying too little attention to the sheep and cattle enterprises which are the main pillars in their farming organisation.

TABLE IV

CROPPING AND STOCKING OF FARMS PER 100 ACRES 1953–4

	0—60 acres	61—160 acres	Over 160 acres	All farms
Wheat	0·8	0·9	2·2	1·8
Oats	5·6	10·9	4·5	6·2
Other Corn	12·0	6·7	8·3	8·0
Sugar Beet	—	—	0·4	0·3
Potatoes	0·2	0·1	0·3	0·2
Fodder Roots and Kale	5·2	6·4	3·1	4·0
Rape	—	2·7	3·4	3·1
Total Tillage	23·8	27·7	22·2	23·6
Temporary Grass—Mown	18·9	14·1	11·1	12·2
Grazed	1·7	5·3	8·7	7·5
Total Arable	44·4	47·1	42·0	43·3
Permanent Grass—Mown	9·5	7·0	3·7	4·9
Grazed	45·9	38·8	51·3	47·8
Rough Grazing	0·2	7·1	3·0	4·0
Total	100·0	100·0	100·0	100·0
Number of Livestock Units per 100 acres	76	56	49	52
Pigs and Poultry as percentage of Livestock Units	14%	6%	4%	5%

Cropping and Stocking

Farms in all size groups are alike in having a total arable acreage of above 40 per cent of the total farm acreage. Practically all of the tillage crops are grown for livestock feed and only on the larger farms is there any tendency for cash corn crops to be grown. On the smaller farms only fodder roots, such as swedes and mangolds, are grown apart from cereals, but on both of the larger groups folding crops of rape, or rape and turnips, are important.

The density of stocking is much higher on the smaller farms with their greater proportion of dairy stock, more pigs and poultry and the virtual absence of rough grazing on most of them.

Some of the differences arising between the various size groups of livestock-rearing farms have already been mentioned in discussing the financial changes in the years 1952–3 and 1953–4. A more detailed analysis is given in Table V.

TABLE V

AVERAGE OUTPUT, EXPENSES AND INCOME PER ACRE 1953–4

	0—60 acres	61—160 acres	Over 160 acres	All farms
	£	£	£	£
OUTPUT				
Crops	0·7	1·1	3·0	2·4
Cattle	5·6	3·5	3·9	3·9
Milk	4·7	1·2	0·2	0·6
Sheep and Wool	9·4	8·4	6·5	7·1
Pigs	1·8	0·5	1·0	0·9
Poultry and Eggs	6·6	2·0	0·7	1·4
Total Livestock	28·1	15·6	12·3	13·9
Government Grants	1·0	1·1	1·2	1·2
Produce to House	1·3	0·6	0·2	0·3
Sundries	0·5	0·4	0·3	0·3
Gross Output	31·6	18·8	17·0	18·1
COSTS				
Foods	6·8	1·5	1·2	1·6
Seeds	0·5	0·5	0·7	0·6
Fertilisers	1·5	1·0	1·2	1·2
Rent and Rates	1·7	1·2	1·3	1·3
Power Costs	4·2	2·9	2·1	2·4
Other Repairs	0·4	0·5	0·3	0·3
Contract Work	0·6	0·4	0·3	0·3
Labour (excluding farmer)	3·8	3·7	3·6	3·7
Miscellaneous	0·9	0·8	0·7	0·7
Total Costs	20·4	12·5	11·4	12·1
Net Farm Income	11·2	6·3	5·6	6·0
Farmer's Labour	8·0	2·9	0·7	1·6
Investment Income	3·2	3·4	4·9	4·4
Family Income	14·3	8·4	7·0	7·7
Average Farm Size	38 acres	95 acres	367 acres	172 acres

Although the net farm income per acre of the 0—60-acre group of farms is exactly double that of the over-160-acre group, the average net farm income per farm of the first group is £422 and of the second £2,202. It is clear that a high output per acre and a high net farm income per acre on the smallest farms is essential to the achievement of a total income large enough to maintain a family. This goal can be attained on the larger farms at a much lower level of intensity and the increasing rate of taxation as incomes rise no doubt plays its part in retarding production, particularly if a lot more work is involved, as would be the case with pigs and poultry.

The larger part of the net farm income of the smaller farms consists of the return for the farmers' own labour and the investment income on these farms is lower than in both of the other groups. After normal living expenses have been taken into account there can be little left for re-investment.

Of the eight farms in the under-60-acre group of farms, five have a total pig and poultry output of over £5 per acre, averaging £11·1 per acre. The net farm income of these farms averages £12·5 per acre and their family income £17·3 per acre. The other three farms have only small pig and poultry enterprises, with an average combined output of £3·2 per acre. Their average net farm income is £9·9 per acre and the family income £11·1 per acre. The size of the pig and poultry enterprises is not, however, the only reason for the difference in the level of profitableness. Both sheep and cattle output, and thus gross output, are considerably higher on the five farms with a large pig and poultry output. High profits can only be obtained on these small farms, with their high proportion of fixed costs, by obtaining a high gross output and pigs and poultry probably provide the easiest means of raising it where land is already heavily stocked.

TABLE VI

MEASURES OF ECONOMIC EFFICIENCY

	0—60 acres	61—100 acres	Over 160 acres
Gross Output per £100 Costs	167 (111*)	153 (122*)	144 (140*)
Gross Output per £100 Labour*	264	284	391
Gross Output per £100 Labour and Power*	193	198	254
Livestock Output per L.S.U.	37	29	26
Livestock Output per Stock Acre..	30	17	15
Cattle Output per Cattle Unit	36	23	19
Sheep Output per Sheep Unit	28	29	32
Yield Index	82	88	93
Labour Index	69	88	113

* Includes farmer's labour.

In each size group, if the mainly milk-producing farms are omitted, the farms recording the highest Investment Income are generally those with both above average output and above average costs. This is shown in Table VI which also illustrates very fully the effect of size on various management factors. If the cost of the farmer's manual labour is included as a cost, Gross Output per £100 costs is highest on the largest farms, and the same is true of Gross Output per £100 Labour and per £100 Labour and Power. If the cost of the farmer's labour is excluded, Gross Output per £100 costs is greatest on the smallest farms.

Livestock Output per Stock Unit is higher on the smaller farms because of the larger numbers of pigs and poultry kept and also because more milk is sold from these farms. This also explains the much higher Cattle Output per Cattle Unit. Sheep Output per Sheep Unit reflects the reverse trend. This may mean that sheep thrive better on the larger farms where the rate of stocking is lower but it does not necessarily follow that the sheep enterprise as a whole is thereby more

profitable on the large farms. On the farms dealt with here the numbers of sheep carried per acre on the small farms is so much greater that total profit per acre was also greater despite the lower output per sheep unit.

The Labour Index, which is a ratio of the amount of labour which would be required to perform all the necessary operations if the work were done at average standards of performance to the actual labour used, improves steadily from the smallest to the largest size group, despite the absence of large numbers of pigs and poultry on the larger farms. This suggests that there still remains a surplus of labour on many of the smaller farms that could be used productively to raise a not very substantial total farm income. Since over 95 per cent of the labour on these farms is family labour there is not, in most cases, any possibility of adopting the alternative course of reducing the labour force. A more intensive grassland policy (manures used per acre cost only 24s. in 1953–4) coupled with more poultry would seem to be advisable. There is also considerable room for improvement in the dairy herds on the small farms, production per cow averaging only slightly more than 600 gallons per annum.

The Relationship of Labour and Power Costs

The conditions of labour supply are very different for the three groups of farms and this affects the economy of mechanisation as between groups. In the smallest size group, the labour supply is mainly contributed by the farm family and the ratio of labour cost to power costs is extremely high although it varies from farm to farm depending on the size of the family. As might have been expected we can find little or no relationship here between the level of power costs and incomes earned on these farms. This does not mean that power costs can be ignored on these small farms for they are extremely high per acre and there is need to guard against unremunerative investment in machinery. The more important problem here, however, is to provide full employment for labour and to raise the farm output to such a level as will give a chance of attaining a reasonable income.

In the medium-sized group the absolute power costs per acre are lower but labour per acre is also lower and the ratio of power costs to labour costs higher. Variations in power costs here are more closely associated with profits than in the first group and the need to keep them low is illustrated by fairly close association of low power costs with high profits. Because of the regular labour demands of livestock, mechanisation even in this group does not necessarily allow the release of labour and, unless opportunities are available for hiring out, increased mechanisation may result in lower rather than increased profits.

In the largest-size group the conditions seem to be very different. It would seem that only in this group is it possible to achieve the full economies from mechanisation. These farms find it difficult to retain as much labour as is profitable and many of them are reducing their arable acreage rather than increasing their investment in machinery in order to meet the difficult labour situation. Our analysis suggests, however, that this is the wrong policy for there is need, even in this group, to spread the farm overheads over a larger output. In fact, the farms which show the higher power costs are also the farms which achieve high outputs and high incomes per acre. Although mechanisation got under way at an earlier date on the larger than on the smaller farms, there is still considerable scope for further mechanisation. For instance, one of the farms with over 400 acres of land has still only one tractor when there is ample scope for two with the possibilities of increased output that are available. There are a number of other large farms which are understaffed and under-equipped and those who have maintained their labour force at a high level and supplemented it with machinery show considerably higher output and higher profits.

The Scope for Increased Use of Fertilisers

Despite the publicity which has been given in recent years to fertiliser usage, accompanied by subsidies and marginal grants, the amounts used in the Clun area are still very low. Although there is a range of use on the survey farms of from nothing to £3·3 per acre, few farms spend more than £2 per acre (net of subsidies) on lime and artificials. This is equally true of both large and small farms. The range of use is so narrow that it is not easy to ascertain the results of varying

fertiliser practice when there are so many other variables. In Diagram I intensity of stocking on twenty-three non-milk-producing farms of between 50 and 220 acres has been plotted against their use of fertiliser. It would appear that some farms are able to achieve a high rate of stocking without using much fertiliser but that many others fail to do so. As fertiliser usage increases those who fail to achieve a high rate of stocking become fewer.

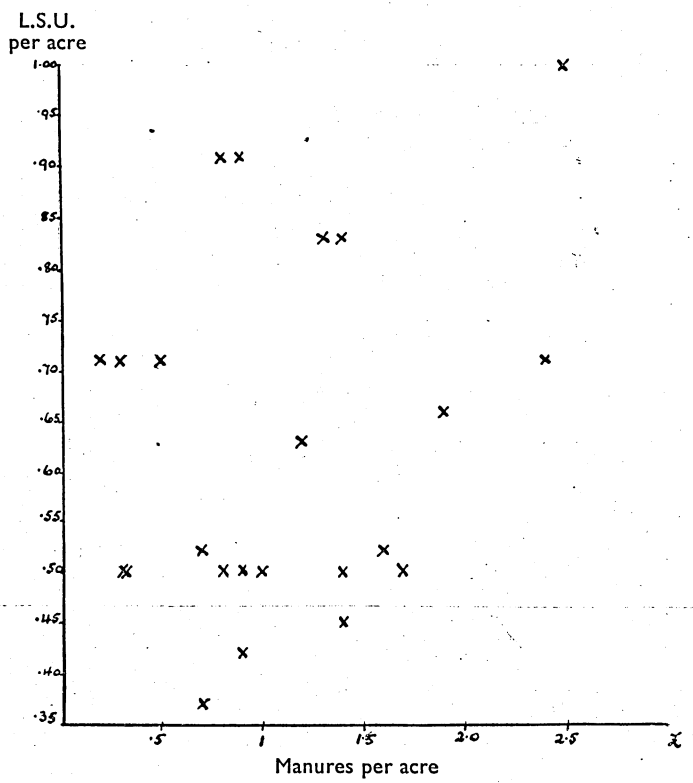

DIAGRAM I

In the section below the relationship between density of stocking and sheep output will be examined. The conclusion is reached that a higher density of stocking leads to higher output per acre despite a fall in the output per animal unit and that this is usually accompanied by higher profits. Although, apparently, some farms are able to achieve these higher stocking densities without heavy fertiliser usage, the fact that those farms with higher fertiliser inputs all achieve high stocking densities should encourage their use by those farmers who have low densities of stocking.

Density of Stocking and Profits

Other work carried out by the Department in recent years in the Clun area has disclosed that farm profits in the area are, to a considerable degree, dependent upon the profitableness of the sheep enterprise. In a study carried out in 1952–3, the profit per acre on land used for sheep was £6. 13s. 0d. per acre, whilst for cattle it was only £2. 8s. 2d. per acre. It is not possible from the data available in the present study to calculate the profitableness of these two enterprises separately, but it is possible to analyse in some detail the relationships between total stocking, density of sheep stocking, and farm income. In the following tables, farms of over 250 acres and under 50 acres have been omitted in order to leave out the effect of very small or very large acreages on the farming system. Farms producing milk rather than store cattle have also been left out.

TABLE VII

FARMS WITH DIFFERING INTENSITY OF STOCKING

Low Intensity: Over 1·7 Stock Acres per L.S.U.		High Intensity: Less than 1·7 Stock Acres per L.S.U.
12	Number of Farms	11
126	Average Farm Acreage	118
£33	Output per Sheep Unit	£23·5
1·27 : 1	Ratio Sheep Units to Cattle Units	1·83 : 1
£5·38	Net Farm Income per Acre	£6·93
£3·07	Investment Income per Acre	£4·59
£1·24	Rent per acre	£1·60

TABLE VIII

FARMS WITH DIFFERING INTENSITY OF SHEEP-STOCKING

Low Intensity: Over 3·5 Stock Acres per Sheep Unit		High Intensity: Less than 3·5 Stock Acres per Sheep Unit
12	Number of Farms	11
126	Average Farm Acreage	119
4·23 Stock Ac. per Sheep Unit	Density of Sheep Stocking	2·57 Stock Ac. per Sheep Unit
£35·8	Output per Sheep Unit	£21·5
£5·59	Net Farm Income per Acre	£6·68
£3·27	Investment Income per Acre	£4·34

Note.—The figures in these tables are weighted averages.

The indications are that increasing density of stocking leads to higher incomes. It might at first appear from Table VII that the higher density of stocking has been achieved entirely by increasing the number of sheep but, in fact, the numbers of both sheep and cattle are higher relative to acreage on the densely stocked farms. In previous work it has been found that sheep were more profitable per acre than cattle on most farms. It might, therefore, be expected that increasing the ratio of sheep to cattle would improve profits. This might account in part for the higher profits of the densely stocked farms on which the ratios of sheep to cattle are high. Too much reliance should not, however, be placed on this factor because there are extremely wide variations in this ratio on both the high and low stocked farms and a statistical analysis of its effect upon profits is not sufficiently definite to draw a valid conclusion.

Farmers in hill areas have traditionally regarded a balance of cattle to sheep as necessary for the maintenance of the quality of herbage for sheep. There is little or no guidance in the textbooks, however, as to the exact ratio which is necessary. It could seem, from general observation, that the quality of hill grazings is deteriorating in many areas and this is often attributed to the decline in the number of cattle. Although there is some evidence that, in the short run, greater profits can be earned by increasing the ratio of sheep to cattle this may lead, in the long run, to a fall in stocking capacity and in profits. Obviously, there is need for much more research work on this

problem, not only in determining the rate of deterioration of herbage with low cattle ratios but also into other methods of maintaining the quality of pastures and the costs associated with them. Some of the farmers in this survey have successfully maintained high rates of stocking with sheep over a long period despite a low ratio of cattle; others have found that this policy leads quickly to poor herbage and to low profits.

The question of how heavily to stock with sheep, quite apart from the ratio of sheep to cattle, is also an important one. It is an old adage amongst shepherds that " the worst enemy of a sheep is another sheep " and the dangers of overstocking with sheep are no doubt very real. On the twenty-three farms analysed here there was a significant correlation between the density of sheep per acre and the output per sheep unit which is illustrated in the following diagram.

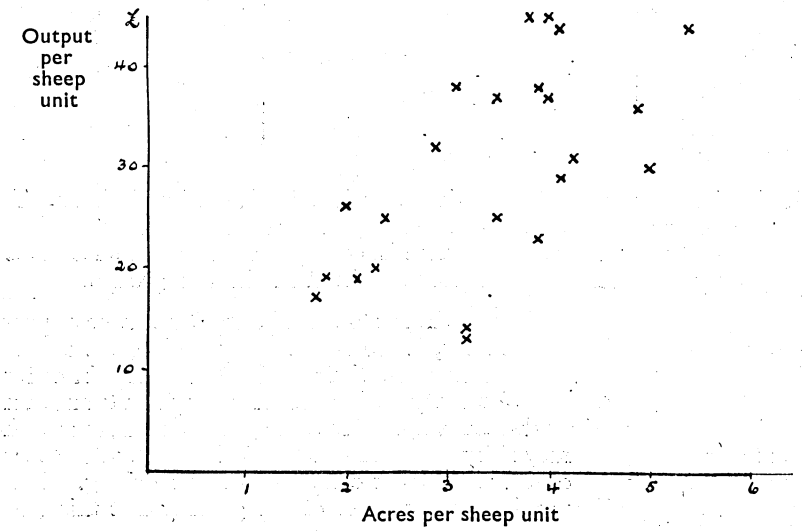

DIAGRAM II

Clearly, the output per sheep unit increases the fewer sheep there are to the acre. In theory we would expect that, at some stage, increasing the area of land per sheep would no longer increase the output per unit but, apparently, there were few if any farms in this survey in that phase. We would also expect, at the other end of the graph, to see a rapid fall in the output per unit as the density of stocking is increased, because of the incidence of disease. Again, there were few if any farms in this survey which incurred heavy penalties from disease. Nearly all farms were either keeping within the safety limits or their managers had learnt how to control disease under conditions of heavy stocking. The result is that we find a constant rate of increase in output per sheep unit as the area of land per sheep increases. *But, within the range found on these farms, this increase in output per sheep unit was insufficient to compensate for the lower numbers.*

Using the data from Diagram II we can now calculate the effect of increasing or decreasing the density of stocking on the output per sheep unit and per acre. In the following table we start with the average density of 3·4 acres per sheep unit which gives an average output of £30 per unit and £8·82 per acre and illustrate the effect of increasing the density to 2·4 acres per sheep unit and of decreasing it to 4·4 and 5·4 acres.

It is possible that on some farms increasing the sheep stocks can only be achieved at the expense of cattle, with the long-term consequences that this will have. There can be little doubt, however, that on most farms now carrying relatively few sheep, increasing the flocks would not require a reduction in cattle herds. A number of farms now carry low stocks of sheep only because they have suffered heavy losses during severe winters and not from disease. Their managers have been impressed by how much better the reduced flock has been doing per head but our analysis leads to the conclusion that they should again build up the flocks as rapidly as possible. As shown

Table IX

The Effect of Density of Sheep Stocking on Output per Sheep Unit and per Acre

Density of Stocking: Acres per Sheep Unit	Output per Sheep Unit	Output per Acre
ac.	£	£
2·4	23·59	9·80
3·4 (Av.)	30·00	8·82
4·4	36·41	8·27
5·4	42·82	7·93

in Table VIII the higher incomes are earned on the farms heavily stocked with sheep. The average output per sheep unit in the two groups in Table VIII corresponds very closely to what we should expect from Table IX. This would give a difference in output per acre from sheep of a little over £1 which is approximately the difference in incomes earned in the two groups.

Although the relationship between density of sheep stock and output per acre appears constant within the range of observations dealt with here, it would be dangerous to conclude that these farms which are already heavily stocked could increase their flocks still further in order to add to profits. Probably these farms are already operating fairly near the safety limits and, until more is known about the incidence of the various diseases which affect sheep in these areas and the methods of controlling them, it would be extremely risky to venture further. But it is also clear that many farmers are operating well below the optimum economic level of sheep stocking. Increasing the stocks may require closer shepherding and tighter control of the grazing but this would appear to be well worth while.

Clun farmers depend largely on sales of store cattle and store sheep. Unlike the farmers who "finish" these products their prices are not controlled at the annual price reviews and it is, therefore, more difficult to judge their future prospects. In practice, however, the prices of store stock keep fairly well in line with those of the finished product. Current prices would seem to favour the expansion of sheep flocks rather than of cattle herds on these farms and it is unlikely that the relative prices of beef and lamb will change radically in the next few years. Assuming that a high level of incomes and full employment are maintained in our economy the demand for lamb is likely to remain strong. The prospect for beef is also encouraging for world supplies remain at a low level. There is evidence, however, that consumers are becoming more selective in their choice of beef, preferring the smaller cuts of young beef. This trend is likely to continue and the premium for young store stock of good quality over the older type of store animal will almost certainly increase. We therefore view with some concern the tendency on some of the larger farms, which have extended their buildings with the aid of grants under the Livestock Rearing Acts, to keep store stock until they are over two years old. The indications are that a policy of increasing the number of cows and of grassland improvement to get young stock into marketable condition at an earlier date will yield better results.

UPLAND DAIRY

Upland Dairy farming is characterised by a concentration on milk production on the one hand and by physical factors, such as altitude and climate which differentiate it from Lowland Dairy, on the other.

With a climate unsuited to the growth of arable crops, livestock farming from grass is the rule. Apart from the higher sheep farms, the greater part of these Western Pennines is divided into small family units. Hired labour is scarce and dear; in East Lancashire because of the counter-attraction of industrial employment, in North East Staffordshire because of the decline in population in these upland parishes. A high degree of intensity is required by the livestock farmer of small acreage to furnish an adequate family income, and liquid milk production is the predominating system.

The basic problem of Upland Dairy farmers is the profitable production of milk, eggs, and pigmeat from the grass and purchased concentrates which form the major feed inputs. Eight-five per cent of the total area is in permanent grassland and rough grazing, and cattle account for 77 per cent of total livestock in terms of livestock units.

TABLE I

CROPPING AND STOCKING ON FIFTY-THREE UPLAND DAIRY WHOLESALE FARMS

Land Use	% of Area in Different Crops	Livestock	% Stocking by Type of Livestock in Livestock Units
Wheat	1·4	Cows	50·7
Oats	0·5	Other Cattle	26·5
Other Cereals	4·5	Pigs	4·8
Cash Roots	0·4	Poultry	7·5
Fodder Crops	1·2	Sheep	7·5
Temporary Grass—Mown	5·9	Horses	3·0
Grazed	1·5		
Permanent Grass—Mown	32·0		
Grazed	48·0		
Rough Grazing	4·6		
	100·0		100·0

Average size of farm = 76 acres.

There are fifty-three Upland Dairy farms in the identical sample for the two years 1952–3 and 1953–4; forty-five of them range between 20 and 100 acres in size: the remaining eight farms are over 100 acres. Fifteen of the farms are in East Lancashire, thirty-eight in Staffordshire.

Financial Changes 1952–3 and 1953–4

Table II shows two years' results from an identical sample of Upland Dairy farms.

TABLE II

OUTPUT, COSTS AND INCOME 1952–3 AND 1953–4

	Wholesale						Total Wholesale		Retail	
	0—50 acs.		50—100 acs.		over 100 acs.					
	52–3	53–4	52–3	53–4	52–3	53–4	52–3	53–4	52–3	53–4
OUTPUT										
Milk	33·2	37·2	26·7	30·9	27·3	28·2	28·1	30·9	55·3	61·8
Cattle	1·7	2·2	1·9	2·4	1·9	2·2	1·9	2·3	2·0	0·5
Poultry and Eggs	4·7	6·2	3·9	4·1	1·1	1·1	3·1	3·3	3·3	6·4
Pigs	1·4	2·2	2·0	2·3	1·3	3·1	1·6	2·6	2·0	4·5
Sheep and Wool	0·6	0·6	0·6	0·8	1·4	1·3	0·9	1·0	0·3	0·4
Crops	0·2	–0·2	0·6	0·6	0·1	1·0	0·3	0·6	–0·2	0·4
Miscellaneous	2·4	3·0	2·3	2·3	1·0	1·0	1·9	2·0	2·8	3·6
Gross Output	44·2	51·2	38·0	43·4	34·1	37·9	37·8	42·7	65·5	77·6
COSTS										
Foods	24·1	28·8	17·3	19·5	10·7	14·3	16·3	19·2	28·5	34·3
Labour (excluding farmer)	5·1	6·1	6·1	6·5	6·2	5·9	6·0	6·2	13·6	13·9
Power Costs	—	4·2	—	3·8	—	3·6	—	3·8	—	7·9
Rent and Rates	1·7	1·7	1·8	1·9	2·1	2·3	1·9	2·0	2·1	2·2
Seed and Fertiliser	0·7	0·8	1·3	1·4	1·9	1·7	1·4	1·4	2·1	1·1
Miscellaneous*	7·1	3·0	6·0	2·3	6·1	2·3	6·2	2·4	11·2	4·4
Total Costs	38·7	44·6	32·5	35·4	27·0	30·1	31·8	35·0	57·5	63·9
Net Farm Income	5·5	6·6	5·5	8·0	7·1	7·8	6·0	7·7	8·0	13·7
Farmer's Labour	7·3	7·8	3·4	3·7	1·5	1·7	3·4	3·6	3·6	4·5
Investment Income	–1·8	–1·2	2·1	4·3	5·6	6·1	2·6	4·1	4·4	9·2
Family Income	8·9	10·8	6·1	10·4	8·8	9·2	7·5	10·0	14·8	22·2
Number of Farms	20		25		8		53		8	
Average Size of Farm (acres)	33		76		184		76		62	

* Includes Power Costs in 1952–3.

Taking the wholesale group as a whole, two main changes are apparent.

1. Gross output per acre increased by some 13 per cent, largely due to greater milk sales. Pig output also rose substantially whereas poultry production remained at about the same level except on the smallest farms where some increase occurred.
2. Total costs rose by approximately 10 per cent, almost entirely due to greater expenditure on feedingstuffs. Both output and costs increased more steeply on the smaller than on the larger farms.

The net result of this intensification was a rise in profits, but the margin over cost of the increased output of the 0—50-acre farms was smaller than in the case of the larger farms and, despite the improvement over 1952–3, half of the twenty small farmers still did not achieve an income equal

to the national agricultural wage. The view expressed in our report last year that, with the derationing of feedingstuffs, the numbers of pigs and poultry in the Upland Dairy group would increase and that this should lead to some improvement in incomes has been proved correct. Nevertheless, the improvement among the 0—50-acre group has been small, and, with the present narrow linked margin between cost of feed and the prices of pigmeat and eggs, it will need both efficient feeding and still greater turnover before these two subsidiary enterprises can substantially increase incomes among Upland Dairy farmers.

The intensification of production in 1953–4 was particularly apparent among retailers whose higher incomes enabled them to expand rapidly with the end of feed rationing. The incentive of the retail egg price explains the rise in retailers' poultry production.

TABLE III

MILK PRODUCTION DATA 1952–3 AND 1953–4

	Wholesale Acreage Size Groups						Total Wholesale		Retail	
	0—50		51—100		101 and over					
	52–3	53–4	52–3	53–4	52–3	53–4	52–3	53–4	52–3	53–4
No. of Cows per 100 acres ..	36	36	26	28	25	26	28	29	39	41
No. of Cows bought	46	63	91	101	5	21	142	185	51	96
Average Price paid (£) ..	54	56	53	56	65	60	54	56	59	79
No. of Cows sold	75	80	260	185	51	78	386	343	73	116
Average Price received (£)	33	41	28	39	33	41	30	40	40	51
Gallons per Cow	643	661	651	719	715	739	669	713	733	730
Gallons per Stock Acre ..	234	236	173	202	178	193	185	205	286	301
Milk Sales + or — Cattle Production per Stock Acre (£)	37	39	29	34	29	32	30	34	57	64

The milking herd is the sheet-anchor of Upland Dairy farming and between 1952–3 and 1953–4 two significant changes occurred.

1. An average increase in milk yield per cow of forty-four gallons was obtained by wholesalers.
2. A higher draft cow price was enjoyed by all groups.

How much of the first was due to higher feeding of purchased concentrates and how much to seasonal factors cannot be stated with certainty but it is probable that the larger share of the increase should be attributed to the former.

The substantial increase in milk yield per cow over the previous year enjoyed by wholesalers was not shared by retailers, in spite of their purchasing a distinctly better class of cow. As retailers' incomes increased by more than wholesalers' it would seem that the high feeding of milk cows by the latter in 1953–4 was uneconomical. The indication is that a better class of cow is now required by wholesalers in order to take profitable advantage of the availability of feedingstuffs.

Among wholesalers, more cows were bought in 1953–4 than in the previous year and fewer sold so that, in spite of the fall in the margin of loss per cow, the cattle output figure is little different in the two years. The number of cows kept per 100 acres rose slightly in both wholesale and retail groups.

The Use of Resources

A farm is a complex business. On the one hand is the weather over which the farmer has no control and the varying incidence of disease over which he has but little. On the other hand are those factors within the farmer's control, such as the number and type of livestock on the holding, the amount and quality of purchased feed, the quantity and type of fertiliser applied to the fields, and so on. These are the economic factors with which farm management deals.

No simple relationship between Investment Income and some single factor such as yield per cow can be expected to explain differences in profit between similar farms. Many factors combine to determine, each to a greater or lesser extent, the Investment Income of a farm. The use of an identical sample tells us what changes have occurred on the same group of farms over two years. Knowledge of this kind can be helpful as a guide to future management, but, to be of optimum use, it needs to be supplemented by the insight gained from analysis of farm management information relating to a satisfactory sample of farms. Other things equal, the larger the sample and the more alike the type of farm, the more reliable will be the information obtained.

Because of their dissimilarity, not only in size but in type of farm and geographical location, farms over 100 acres have been excluded from the sample of Upland Dairy farms chosen for analysis. Again, in view of certain differences between East Lancashire and North East Staffordshire farms, in particular the greater average intensity of production among the former, it might have proved advantageous to treat of these two groups separately. This, however, would have resulted in samples too small for satisfactory analysis and the present sample thus consists of forty-five farms between 20 and 100 acres in size situated in North East Staffordshire and East Lancashire.*

As a first step in the process of discovering those factors which condition farm profit, it is useful to look at the relative contribution of the different items of output and input.†

TABLE IV

OUTPUT AND INPUT: BY PERCENTAGE

	Output		Input
Milk	72·4	Feed	50·0
Cattle	5·4	Labour (including farmer)	25·1
Poultry	0·2	Power	10·0
Eggs	7·5	Miscellaneous	6·1
Pigs	6·1	Rent and Rates	5·2
Sheep	2·3	Seed and Fertiliser	3·6
Total Livestock	93·9		
Crops	1·4		
Miscellaneous	4·7		
Total Output	100·0	Total Input	100·0

The absolute level of output is important as it would seem that high output per acre is usually associated with above average profit. On these small Upland Dairy farms a low output per acre cannot provide the turnover necessary to cover the fixed cost of family labour. [Gross Output per acre, IV.]

* For the benefit of individual farmers, some average figures for the fifteen East Lancashire farms and the thirty North East Staffordshire farms have been listed and compared at the end of this section.

† Reference will be made to the relevant measures of economic efficiency which illustrate the point under discussion. They are to be found listed by individual farms in Appendix III and will be indicated in the text by name and number, e.g. [Gross Output per acre, IV].

Low output per acre may be due to:

1. Light stocking with cattle. [Stock Acres per livestock unit, VIII.]
2. A high proportion of the less profitable cattle stock, such as young cattle. [Cows per 100 stock acres, IX.]
3. Small numbers or none, of pigs and poultry.
4. Low yields per unit of livestock. [Yield Index, X: Yield per cow, XI.]

The understocking usually associated with low output per acre results in the under-employment and the consequent low remuneration of the family labour [Labour Index, XVI: Output per £100 labour, XVII]. The remedy is to keep more milking cows, more pigs and more poultry to the limit of available labour's capacity. Should the farm labour force be fully employed and the farm apparently adequately stocked and yet total output per acre remain low, it is probable that output per livestock unit is unsatisfactory. Attention should be directed first to the Yield Index and then to such indicators as milk yield per cow and number of eggs obtained per bird.

Low yields may be improved by more efficient feeding and by keeping better quality stock, i.e. stock whose potential optimum yield, given correct feeding, is higher than average. In other words, it is wasteful to feed sixteen pounds of cake in the expectation of a return of four gallons of milk to a cow whose inherent maximum yield is three gallons a day. The point may appropriately be made here that, if the ruling consideration is monetary profit, investment in higher quality milk cows and larger numbers of pigs and poultry will yield a better return than investment in machinery if the latter exhausts the farmer's financial resources and renders him unable to meet the further investment in livestock that is required to utilise the labour " saved " by the intial investment in machinery. Investment in more and better livestock usually leads to increases in gross turnover and in profit. In the short run, investment in machinery on the small grass farm does not: it merely makes life easier.

On the input side, the major cost is feed, which is responsible for half of total input and on which the Upland Dairy group spends, on average, over £20 per acre [purchased feed per acre, VI]. The next most important cost is labour, which, including the value of the farmer's own labour, accounts for a quarter of total input. Labour is, in practice, a fixed cost on the family farm, i.e. it does not vary with the quantity of production, and thus the profitability of subsidiary enterprises, e.g. pigs and poultry, will depend on

(*a*) the unit margin between feed, the major variable cost, i.e. a cost which does vary with the quantity of production, and the product price, and

(*b*) the size of turnover, as, with the value of labour fixed, the greater the number of units produced the lower will be the unit labour cost.

In short, the profitability of a pig or poultry enterprise will, in practice, be determined by the size of the enterprise and by the efficiency of feeding management, i.e. the number of eggs or the liveweight gain that is produced per unit input of feed.

If the value of family labour is excluded, purchased feed accounts for 70 per cent of total money costs. Nevertheless, livestock output per £100 purchased feed [XIII] does not show a high correlation with profit largely because of variations in the proportion of total livestock feed contributed by the farm grassland. Thus, other things equal, a farm with a high proportion of its total output derived from pigs and poultry, which are wholly dependent on purchased feed, will show a lower figure for output per £100 purchased feed than will a farm whose total output is derived from cattle which utilise the farm grassland. Moreover, the proportionate contribution of farm grassland to total feed supply will vary with the quality of the grassland and the degree of attention devoted to its management.

The factor, albeit a composite one, which reveals the highest correlation with profit is livestock output per feed acre [XII]*. (The number of feed acres per farm is obtained by adding one acre to the farm acreage for every ton of provender purchased.) This correlation is to be expected

* r=+0·88 (significant at 1 per cent level): see the accompanying diagram, page 42.

in view of the preponderance of livestock on the output side and feed on the input side; its importance is demonstrated by the close scatter of points around the trend. It is clear that efficiency in the use of total available feed is the major factor determining profit on Upland Dairy Farms.

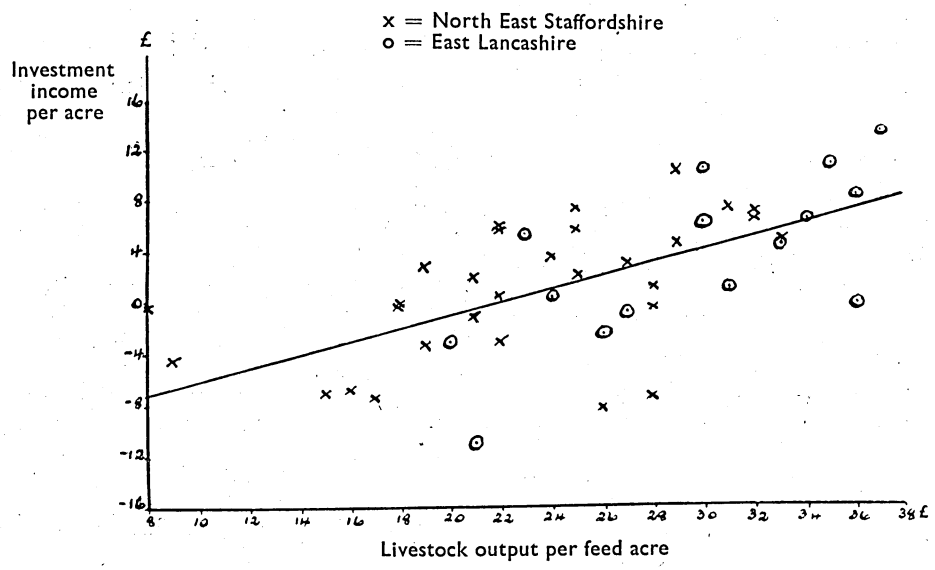

DIAGRAM I

A low value for livestock output per feed acre may be raised either by increasing livestock output with a less than proportionate increase in feed acres or by decreasing the number of feed acres with a less than proportionate decrease in livestock output. In practice and in view of the general desirability of increasing output on these small farms, the former is the usual course adopted, viz. livestock output is increased and at the same time the attempt is made to use feed more economically.

Mention has been made of methods of increasing livestock output both by keeping more stock and by improving output per livestock unit. The problem remains of how to produce this extra output with a less than proportionate increase in feed acres.

There are two possibilities:

(A) The value of purchased provender fed per unit of output may be lowered: there are three ways of doing this—

(i) By raising the level of technical efficiency in the feeding of concentrates, so as to decrease the quantity fed, by such methods as the weighing and rationing of feed, the avoidance of waste and the closer balancing of feed nutrients to the requirements of stock.

(ii) By mixing the feed ration on the farm from " straights " rather than purchasing the relatively expensive " compounds ": the price gap between the two seems to be increasing.

(iii) By closer study of feed prices combined with a willingness to change to the relatively cheaper but nutritionally equivalent feed at all times.

(B) Production from the farm acreage may be increased and substituted for purchased feed with the aim of reducing the quantity of feed purchased and hence the feed acreage of the farm. In practice, it is found that the quantity of feed purchased is seldom reduced when the

grassland is improved, but that the greater productivity of the farm acreage encourages the keeping of more and better quality stock and thus increases livestock output from the same quantity of purchased feed by providing a higher proportion of the milking herd's total nutrient requirements.

Farm production on Upland Dairy farms is utilised by cattle, mainly milking cows, and, given the prevailing climatic and soil conditions, the farm acreage consists almost entirely in grassland, mostly permanent. There are several ways of increasing the productivity of the farm acreage.

(i) Land may be ploughed to grow arable crops. The difficulties of harvesting in an average season render corn-growing impracticable and the most successful arable crops are likely to be kale and roots. Apart from the difficulty of ploughing at all on the majority of farms as a result of lack of equipment and experience, the normal wet autumn and the poor drainage of the clays and shales overlying the gritstone make it undesirable to graze these crops on the ground and the unpleasant prospect of cutting and leading arable crops in such conditions, when not a traditional part of farming life, in large measure accounts for the unwillingness of Upland Dairy farmers to introduce the plough.

(ii) Permanent grass may be ploughed and some proportion of temporary grass leys introduced. For ploughing and re-seeding the farmer is usually dependent on the contractor and the per-acre cost of the whole job is high. Another objection to temporary leys voiced by farmers is that, no matter how careful the management and how frequent the application of manure and fertiliser, a new ley soon deteriorates and is worth little in its third year. The continuing need for renewal and the high cost of re-seeding have made leys unpopular among Upland Dairy farmers and, until the technical problems of ley establishment have been solved, particularly in East Lancashire where industrial smog adversely affects the new grasses, and convincing local proof of the superiority of leys is available, progress will remain slow.

(iii) There remains a third and more immediate approach and that is the improvement of permanent grassland. This is a question of fertilising and management. The fertilising of permanent grassland with other than home-produced manure applied to the meadows is still uncommon on many farms.* There is considerable scope for the more frequent application of lime, the more balanced fertilising of meadow and pasture and the more efficient conservation of liquid manure, either by direct irrigation of low-lying fields, by tank storage and eventual distribution by contractor, or by the use of absorbent litter in the cowshed. Improvements in the management of grassland go hand in hand with a planned fertilising policy. It will suffice here to mention strip-grazing and improved fodder conservation. The making of silage, the tripoding of hay or the drying of grass in barn or drier not only ensure a higher quality winter feed but, by shortening haytime, allow more efficient utilisation of grass during the growing season which itself can be extended.

Any increase in the quantity of feed grown on the farm will be consumed by the dairy herd but, although milk is the biggest item of output on Pennine farms, the rôle of pigs and poultry is not unimportant. The present form of accounts which we receive from many farmers, however, prevents us from making any close assessment of their contribution to profits or to the general economy of these farms. While we can divide the output according to *source*, viz. milk, cattle, pigs, poultry, eggs, we are unable to break down the major input, feed, according to *use*, viz. by cattle, pigs, and poultry. Most of the pig and poultry feed is purchased but few farmers give us a separate account of the amounts and values used in this way.

Unless farmers record their use of purchased feedingstuffs and allocate separately the quantities fed to pigs, to poultry, to other livestock and to the milking herd, the economic analysis of Upland Dairy type farming cannot be developed as it should. But once this break-down of total feed purchases into use categories is accomplished, the major variable factor in the costs of bacon and egg production, viz. feed, will be known, and the costs and margins of these two enterprises can

* See the low values for seed and fertiliser per acre [VII].

then be estimated with a high degree of accuracy. In the case of cattle production an estimate of the amount of purchased feed consumed by the milking herd brings us to the crux of the problem—what quantity of purchased provender is fed per gallon of milk produced on the individual farm and how is this figure affected by

(*a*) efficiency in feeding technique and

(*b*) the contribution of the farm grassland?

As noted above, we are as yet unable to make accurate assessments for individual farms but, taking the Upland Dairy group as a whole and making standard deductions for pigs, poultry, and other cattle, it appears that, on average, farmers feed purchased concentrates at the rate of approximately five pounds per gallon of milk produced. This suggests that, at best, Upland Dairy farmers can do no more than provide basic maintenance for the milking herd from their grassland. On some farms high-priced concentrates are undoubtedly used to make up the maintenance ration.

On the other hand there are dairy farmers in this country who can provide maintenance and two gallons per cow from their grassland by the use of modern techniques of grazing management and grass conservation. Uncontrolled grazing of unimproved permanent pasture and the single, annual cut of meadow hay cannot compete economically with these new methods. To the extent that Upland Dairy farmers feed concentrates at a cost of 19d. per gallon rather than grass at 4½d. or silage at 6d., they are heavily handicapped in their endeavours to produce milk at low unit cost.

The cost of grassland improvement in these areas is admittedly high and the technical problems not completely solved. Nevertheless, the margin between 6d. and 19d. is large and the alternatives feasible. Controlled strip grazing and more balanced fertilising are immediate and practical measures that will improve the productivity of even permanent grassland at low cost.

The use of farm management material can profitably be carried further provided that

1. the Department increases the number of farms in the East Lancashire sample, and
2. farmers record separately the use of purchased provender by pigs, poultry, other cattle and the milking herd.

In these ways, East Lancashire and North East Staffordshire farms can be analysed separately and a measure can be obtained of the crucial contribution of the farm grassland to cattle and milk production. With this information available, the problem of determining the degree of substitution between purchased and home-produced feed that is economically optimum can be explored.

A Note on the Measures of Efficiency

The usefulness of the tables in the Appendix to the individual farmer lies in the comparisons that can be made between the individual farm and other farms in the *same group*. Even the best farm may have weaknesses in organisation which reveal themselves in one or other of the factors listed. The individual farmer can systematically compare with others his level of gross output, his level of input and the efficiency of his use of different factors of production as reflected by the output obtained per unit of input.

To take an example: the thirteenth farm from the top in the 51—100-acre wholesale group appears at about the mid-way point in the Upland Dairy group of farms between 51 and 100 acres in size. The gross output per acre is the highest in the group, as is the stocking per acre in terms of livestock units and in terms of milk cows only. Livestock Output per feed acre is above average as is labour efficiency. What then is the weakness? A clue to the answer is provided by the low Yield Index which is an average measure of yields in all sectors of the farm. Poultry Output per poultry unit is only about average and Milk and Cattle Output per cattle unit is even lower. Looking closer at the milking herd, the yield per cow is clearly low at 560 gallons a year. If this figure could economically be raised by 150 gallons, at the same time maintaining the excellent results obtained in other sections of the farm economy, there is no reason why this farm should not be at or near the top of the table. In this instance, the keeping of a better quality, higher yielding type of cow, perhaps accompanied by a reduction in the number of cows, would seem to be the right policy to pursue.

COMPARISON OF
EAST LANCASHIRE AND NORTH EAST STAFFORDSHIRE

Measures of Economic Efficiency	East Lancashire		North East Staffordshire	
	Average of 15 farms	Average of top 5 by Investment Income	Average of 30 farms	Average of top 6 by Investment Income
1. Investment Income per acre .. .. £	4·5	9·5	2·1	7·1
2. Gross Ouput per acre .. .. £	57·9	79·8	39·2	45·2
3. Total Cost per acre .. .. £	49·2	65·3	32·1	38·7
4. Capital Invested per acre .. .. .. £	38·6	49·8	26·7	37·3
5. Seed and Fertiliser per acre.. .. .. £	1·5	2·3	0·7	0·9
6. Stock Acres per livestock unit	1·5	1·3	1·8	1·7
7. Milk Cows per 100 stock acres	35	38	28	31
8. Yield Index	103	116	89	98
9. Yield per Cow in gallons	733	871	681	742
10. Livestock Output per feed acre .. .. £	31	34	24	29
11. Livestock Output per livestock unit .. £	85	96	67	77
12. Milk and Cattle Output per cattle unit £	92	109	71	85
13. Milk and Cattle Output per cow .. £	126	152	113	127
14. Poultry and Egg Output per poultry unit £	101	119	69	69
15. Labour Index	86	85	77	93
16. Gross Output per £100 labour* .. £	449	540	383	556

* Includes farmer's labour.

It is clear from the table that:

(i) East Lancashire farms are, on average, more profitable and more intensively managed than are North East Staffordshire farms.

(ii) The most profitable East Lancashire farms are more intensive than the East Lancashire average and the intensity of production of the most profitable North East Staffordshire farms approaches the average intensity of the East Lancashire farms.

The contrast may be viewed under three heads. The figures in square brackets refer to the lines in the table.

(i) *Output and Intensity of Production*

Gross output per acre is much higher in East Lancashire than in North East Staffordshire [2] and results from both denser stocking [6, 7] and higher yields [8, 9].

(ii) *Input and Intensity of Resource Use*

East Lancashire's gross output incurs higher costs than does the relatively low gross output of North East Staffordshire, but the difference in costs is not proportionate; the margin of profit per acre is greater in East Lancashire. The implication that increases in gross turnover attained by more intensive stocking and management lead to higher profits is supported by the fact that the most profitable farms in each area show both a higher gross output and a higher level of input than their respective average. Intensity of input is illustrated by lines 4 and 5.

(iii) *Output per Unit of Input*

The remaining lines in the table demonstrate the more efficient use of resources to be found on the more profitable farms. Their feeding and livestock policies are such as to promote optimum conversion by quality stock of available feed, both purchased and home-grown, into milk, meat and eggs [10, 11, 12, 13, 14]. Equally, the more profitable farms utilise labour more efficiently [15, 16].

To conclude, it would seem that the difference between East Lancashire and North East Staffordshire farms are similar to those found between the more and the less profitable farms within each area, viz. higher gross output, more intensive stocking and higher yields. Costs are of course higher but their increase is more than recompensed by the higher returns. There is no suggestion of diminishing returns in the Upland Dairy system: on the contrary, there is a profit incentive for the individual farmer to increase his gross output by more intensive production in the form of more and better stock and higher yields.

LOWLAND DAIRY

This sample is drawn from the good grass-growing areas in the Province, and includes only farms on which at least 60 per cent of the gross output is obtained from milk and cattle. Over half of the farms are situated in Cheshire and the remainder are widely scattered throughout the other three counties. Sixty-one such farms, for which comparable information was obtained in 1952–3, form the basis of this section. The 1953–4 results of a further eight farms are shown in the Appendix III tables, but are not included in the averages.

Crops and Stock

The farms have been divided into four size groups, and details of cropping in each group are given in Table I. The chief difference between the two years was an increase in the acreage of grass mown for hay, silage or dried grass in 1953–4. The increase was slight in the 51—100-acre group, but an additional 3 per cent of the farm area in the 0—50 and 101—150-acre groups was mown, and an extra 4 per cent in the over-150-acre group. On the smallest farms more land for mowing was obtained at the expense of root crops and cereals, but in the two groups of farms over 100 acres the pasture area was curtailed.

Between the groups, the chief differences in cropping were that the under-50-acre farms had the highest proportion of grass and least cereals, and that the proportion of the farm in grass mown declined as size increased. Root crops and kale occupied a similar proportion of the total farm area in all groups, but contrary to expectation the over-150-acre group had more kale per 100 acres than any other group. Small farmers might be expected to exploit this crop more, since under normal conditions it will yield both more and cheaper starch and protein per acre than almost any crop except grass.

In all groups the proportion of the acreage used to carry the stock—stock acres—was lower in 1953–4. This change was not entirely due to increased crop sales, some of the area was used to increase stocks of feed corn, roots and fodder, and was therefore not utilised by livestock in this particular year.

TABLE I

CROPPING PER 100 ADJUSTED ACRES 1952–3 AND 1953–4

Size Group	0—50 acres		51—100 acres		101—150 acres		Over 150 acres	
Number of Farms	13		20		15		13	
Average Size acres	35		74		129		191	
Year	1952	1953	1952	1953	1952	1953	1952	1953
Acreage per 100 acres in: Cereals	17·1	16·2	21·7	22·0	22·8	22·2	18·1	19·4
Cash Roots, etc.	3·2	2·3	3·0	2·6	2·9	3·6	2·0	2·3
Fodder Roots	3·5	1·9	2·7	1·7	2·2	1·3	2·7	1·5
Kale		0·8		1·2		0·8		1·3
Miscellaneous	—	—	0·5	0·2	—	—	1·0	0·8
Grass Mown—Temporary	16·3	18·2	19·3	17·2	17·0	19·6	16·5	17·6
Permanent	12·8	13·8	5·6	8·1	3·9	4·6	3·2	6·2
Grass Grazed—Temporary	4·4	4·4	3·3	6·3	7·7	5·1	10·8	7·4
Permanent	42·7	42·4	43·9	40·7	43·5	42·8	45·7	43·5
Total Grass	76·2	78·8	72·1	72·3	72·1	72·1	76·2	74·7
% of Acreage Supporting Stock	97	96	95	92	94	90	93	90

The numbers of livestock carried per 100 stock acres are given in terms of "livestock units" (Table II) so that different proportions of the various classes of stock can be combined to give a comparable measure of the total stock carried. The conversion factors applied to different classes of stock for the 1953–4 year are given in Appendix V.

Table II

Stock Carried per 100 Stock Acres 1952–3 and 1953–4
(in livestock units)

Size Group	0—50 acres		51—100 acres		101—150 acres		Over 150 acres	
Year	1952–3	1953–4	1952–3	1953–4	1952–3	1953–4	1952–3	1953–4
Dairy Cows	41·4	43·7	32·7	34·3	36·2	39·9	30·0	31·8
Pigs	1·9	1·4	3·4	4·5	2·7	4·5	4·7	5·3
Poultry	6·7	6·2	4·8	5·5	4·2	5·8	1·6	1·9
Other Cattle	23·9*	17·1	23·9*	18·0	23·6*	17·5	30·2*	21·2
Sheep		—		0·6		2·8		6·2
Horses		2·0		1·4		1·3		1·1
Total	74·0*	70·4	64·8*	64·3	66·7*	71·8	66·5*	67·5

* These figures are not comparable with those for 1953–4 because the units applied to Young Cattle, Sheep and Horses were different in the two years.

In all groups there was an increase in the number of cows kept, and except in the 0—50-acre group there were more pigs and poultry. On the small farms numbers of both pigs and poultry were rather unaccountably reduced. Young cattle, sheep and horses were virtually unchanged in numbers in the groups below 100 acres but in the two groups of larger farms there were increases in the numbers of young cattle and sheep.

Comparing the groups the smallest farms had most cows and poultry, least young cattle and pigs and no sheep, whilst just the reverse was true of the largest farms.

A more accurate comparison of the stocking of grassland is given in Table III, where the acres of grass per unit of grazing livestock (cattle, sheep and horses) are shown. The figure of " grazing " per unit of grazing stock includes pasture for the whole year plus one-third of the acreage mown as an allowance for aftermath: this figure is not, therefore, the difference between total grass and acreage mown per grazing stock unit.

Table III

Grass and Grazing Stock 1953–4

	0—50 acres	51—100 acres	101—150 acres	Over 150 acres
Acres of grass per unit of grazing stock	1·30	1·45	1·31	1·37
Acres of mown grass per unit of grazing stock	0·53	0·51	0·44	0·44
Acres of grazing per unit of grazing stock	0·95	1·11	1·02	1·08

Although there was less grass per unit of grazing stock in the 0—50-acre group, a greater proportion was cut to provide winter fodder. This may be associated with the high proportion of cows, absence of sheep and smaller area of cereals. There would be fewer young cattle for autumn grazing, no grazing needed for sheep and less straw to substitute for hay.

The foregoing measures are not sufficient in themselves to provide a standard of the density of stocking as account must be taken of the effect of purchased feedingstuffs. This has been done by calculating the " feed acres " for each farm, by adding to " stock acres " the acreage equivalent of any bulk feeds such as hay or roots and the tons of concentrates purchased (one ton being assumed equivalent to one acre). As actual weights were not collected for the 1953–4 year an estimate has been made by dividing expenditure on concentrates by the average price of £36 per ton.

TABLE IV

STOCK AND FEED ACRES PER LIVESTOCK UNIT 1953–4

	0—50 acres	51—100 acres	101—150 acres	Over 150 acres
Stock acres per Livestock Unit	1·42	1·56	1·39	1·48
Feed acres per Livestock Unit	2·40	2·35	2·32	2·26

The average number of feed acres per livestock unit on the farms in each group is given in Table IV. It may be noted that the differences in stock acres per livestock unit were, to a large extent, balanced by purchases of feed. On the larger farms fewer feed acres were required, so either the stock acres were more productive (it will be seen later that they spend most on fertilisers), or feeding was more efficient.

Financial Changes

(*a*) *Gross Output.* Details of gross output, costs and net incomes per acre in 1952–3 and 1953–4 are given in Table V. Gross output per acre increased substantially in all groups though not as much in the 0—50-acre group as in the other three. The increases were greater than could be attributed to price changes and were mainly in milk sales, although some changes in pig, poultry and crop output also occurred. Milk sales in 1953–4, on all sixty-one farms, were 11·2 per cent higher than in 1952–3 and as actual gallons produced were up by 10·7 per cent it is clear that higher yields per cow played a greater part than the 3·2 per cent increase in the number of cows kept. The biggest increase in milk sales occurred on the farms under 50 acres, but they had the lowest output per acre from crops, cattle and pigs, that from pigs and crops having declined since the previous year. There was a tendency in this group to specialise more on milk production while the other groups increased their output from practically every enterprise. This greater dependence on milk can be seen in Table VI which gives the output of each enterprise as a percentage of gross output.

TABLE V

GROSS OUTPUT, COSTS AND NET INCOME PER ACRE 1952–3 AND 1953–4

Size Group	0—50 acres		51—100 acres		101—150 acres		Over 150 acres.	
Year	1952–3	1953–4	1952–3	1953–4	1952–3	1953–4	1952–3	1953–4
OUTPUT	£	£	£	£	£	£	£	£
Crops	2·1	1·9	2·3	3·3	2·9	4·0	2·8	4·4
Cattle	3·7	4·1	3·4	5·0	3·6	4·3	4·3	5·0
Milk	41·9	47·8	29·2	32·8	35·3	40·2	31·9	34·9
Sheep and Wool	0·1	—	0·1	0·1	0·3	0·5	1·1	1·8
Pigs	1·7	1·5	2·6	4·2	2·6	4·6	4·1	5·6
Poultry and Eggs	5·3	4·5	4·3	4·9	6·0	5·5	1·3	1·6
Total Livestock	52·7	57·9	39·6	47·0	47·8	55·1	42·7	48·9
Miscellaneous	3·1	3·2	1·8	1·9	1·7	1·7	2·0	1·6
Gross Output	57·9	63·0	43·7	52·2	52·4	60·8	47·5	54·9
COSTS								
Feedingstuffs	19·9	22·9	13·3	16·4	16·2	21·1	14·0	16·0
Seeds	1·4	1·2	1·8	1·2	1·3	1·3	1·6	1·3
Fertilisers	1·3	1·7	1·7	1·4	2·0	1·7	2·0	2·2
Rent and Rates	3·3	3·4	3·1	3·2	3·1	3·1	2·6	2.8
Power Costs	11·6	9·0	9·4	5·5	10·0	5·9	10·7	6·1
Contract		0·9		1·1		1·1		0·9
Miscellaneous		3·2		2·8		3·0		3·0
Labour (exc. farmer)	7·6	8·2	8·4	8·7	10·0	10·5	10·8	11·2
Total Costs	45·1	50·5	37·7	40·3	42·6	47·7	41·7	43·5
Net Farm Income	12·8	12·5	6·0	11·9	9·8	13·1	5·8	11·4
Farmer's Labour	6·9	7·7	3·6	4·0	2·0	2·2	1·3	1·3
Investment Income	5·9	4·8	2·4	7·9	7·8	10·9	4·5	10·1
Family Income	16·9	16·9	8·1	14·5	11·9	14·6	7·4	13·2

The increase in cattle output (Table V) was largely due to an increase in the prices received for cows sold; on all the farms the average price received in 1953–4 was £48 per cow, nearly £9 more than in the previous year, whereas the average cost of cows purchased at £53·7 was virtually the same as in 1952–3.

TABLE VI

PERCENTAGE CONTRIBUTION OF EACH ENTERPRISE TO GROSS OUTPUT 1953–4

	0—50 acres	51—100 acres	101—150 acres	Over 150 acres
	%	%	%	%
Crop Output	3·0	6·3	6·6	8·0
Cattle Output	6·5	9·6	7·1	9·1
Milk Output	75·9	62·8	66·1	63·6
Sheep Output	—	0·2	0·8	3·3
Pig Output	2·4	8·0	7·6	10·2
Poultry Output	7·1	9·4	9·0	2·9
Miscellaneous	5·1	3·7	2·8	2·9

(*b*) *Costs.* On the input side, the big change was in expenditure on feedingstuffs, which increased by about 15 per cent in the under-50 and over-150-acre groups and by 24 and 30 per cent in the 51—100 and 101—150-acre groups respectively. As the average price per ton was slightly lower, the change in quantity purchased was even greater than the change in expenditure. Labour costs in the three groups of farms over 50 acres increased by about the same amount as the rise in minimum wage rates, but in the 0—50-acre group the increase was appreciably greater, indicating that more labour was employed. This is surprising when it is remembered that the acreage of tillage had been reduced and that the only change in stock numbers was a slight increase in the number of cows. There were no other very significant changes except that the only group to show an increase in power costs or miscellaneous expenditure was again the under-50-acre group.

Between group differences were (i) higher expenditure on feedingstuffs on farms in the 0—50 and 101—150-acre groups, (ii) a fall in rent per acre with increasing size of farm, as would be expected, (iii) high power costs on the smallest farms and (iv) the higher cost of hired labour per

TABLE VII

DISTRIBUTION OF TOTAL COSTS INCLUDING FARMER'S LABOUR 1953–4

	0—50 acres	51—100 acres	101—150 acres	Over 150 acres
	%	%	%	%
Expenditure on—				
Feedingstuffs	39·3	37·0	42·3	35·7
Seeds	2·1	2·7	2·6	2·9
Fertilisers	2·9	3·2	3·4	4·9
Rent and Rates	5·8	7·2	6·2	6·3
Power Costs	15·5	12·4	11·8	13·6
Contract Work	1·6	2·5	2·2	2·0
Total Labour	27·3	28·7	25·5	27·9
Miscellaneous	5·5	6·3	6·0	6·7

acre as size of farm increased. When the value of the farmer's manual work is taken into account, however, the smallest farms with £15·9 per acre used labour more intensively than farms in the other three groups. They, on average, were all very similar with a total labour cost of between £12·5 and £12·7 per acre.

The costs also bring out two rather surprising features of management, firstly, the largest farms as a group spent most on fertilisers and lime per acre, and secondly, farmers in the 0—50-acre group paid no more per acre for work done by contractors than those in the other groups.

Of the total costs in each group, expenditure on feed was about 40 per cent and on labour, including farmer's labour, about 27 per cent (Table VII). These two items plus power costs accounted for more than 77 per cent and profitability must largely depend on the efficiency with which feed, labour and power are employed.

(*c*) *Incomes*. In total, the cost increase from 1952–3 to 1953–4 was greatest on the under-50-acre farms, greater in fact than their increase in output, so their net farm income per acre fell slightly. In the other three groups extra output was much greater than extra costs and net incomes per acre rose considerably. The biggest advances were in the groups 51—100 acres and over 150 acres, which were the least intensive both on the basis of stock carried and of total inputs per acre. These achieved substantial improvements in output with relatively small increases in costs. As a result of these changes there was a levelling up of the net farm income per acre earned in the four groups.

On the evidence available at the moment it is impossible to determine accurately to what extent the improvement in income on the larger farms was due to the favourable conditions of the 1953–4 season or how much was due to a real advance in efficiency. But this improvement, which nearly doubled the income in some groups, should allow of some capital accumulation and of further investment which, if properly directed, should lead to a more permanent improvement in the income position. The failure of the smallest farms to make a similar advance is disquietening. When the value of the farmer's own manual work (which naturally declines per acre as the size of farm increases) is deducted from the Net Farm Income there is little left over in terms of " Investment Income " to cover interest on capital and reward for risk bearing and for management. Because of their small size and low incomes per acre the total farm income is necessarily very small and allows of little scope for saving or reinvestment. There has been a tendency to try to improve incomes by increasing milk output sometimes beyond the capacity of existing herds to give an economic response. The indications are, as a later section demonstrates, that the money spent on purchased feedingstuffs in an endeavour to raise milk yields would have been better devoted to increasing the size of the pig and poultry enterprises.

The Productivity of Resources

So far, we have been concerned mainly with the general levels of output and of expenditure on groups of farms of different sizes. Some important differences in the amounts and kinds of resources used and in the outputs achieved have emerged. The next and more important stage is to consider how these differences have affected the returns per unit of the various resources which farmers use in their businesses. Some of these measures are shown in Table VIII.

It is clear that, in 1953–4, the farms over 50 acres gave higher returns to all resources used than those under 50 acres. As suggested above some of the improvement on the larger farms between the two years may have been of a temporary nature but it would be reasonable to assume that the good weather conditions would also have benefited the small farms where, in fact, gross output per £100 of costs declined.

Labour, power and purchased feed between them account for over three-quarters of the value of all resources used and a high productivity for these is essential to the attainment of high incomes. The relatively low productivity of all resources used on the smallest farms is to be attributed to their failure to use these three resources as effectively as the larger farms. In 1952–3 the smallest farms showed a relatively favourable productivity of labour but failed to improve their position in 1953–4 at a time when the larger farms were going ahead. This improvement on the larger farms may be attributed to increases in numbers of cows and milk yields, and to greater numbers of pigs and poultry which allowed them to make more effective use of labour. The problem of improving labour productivity on small farms is more difficult than on the larger, for they have fewer

Table VIII

The Productivity of Resources 1952–3 and 1953–4

	0–50 acres		51–100 acres		101–150 acres		Over 150 acres	
	52–3	53–4	52–3	53–4	52–3	53–4	52–3	53–4
Gross Output per acre .. .. £	57·9	63·0	43·7	52·2	52·4	60·8	47·5	54·9
Total Costs per acre (*a*) .. .. £	52·0	58·2	41·3	44·3	44·6	49·9	43·0	44·8
Gross Output per £100 Costs (*a*) £	111	108	106	118	117	122	111	122
Gross Output per £100 Labour (*a*) £	400	396	365	409	438	478	394	438
Gross Output per £100 Labour and Power (*a*) .. .. £		253		285		325		295
Labour Index Average		76		88		108		98
Livestock Output per L.S.U... £	73*	85	64*	80	76*	85	69*	80
Livestock Output per Stock Acre £	54	60	42	51	51	61	46	55
Livestock Output per Feed Acre £	34	35	30	34	34	37	31	36
Livestock Output per £100 Purchased Feedingstuffs .. £	264	253	298	287	295	261	304	304
Milk Yield per Cow .. galls.	693	739	632	687	687	743	702	743
Milk Yield per Stock Acre galls.	287	323	207	236	249	297	211	236
Milk Sales per Stock Acre .. £	43	50	31	36	37	45	34	39

(*a*) Including value of farmer's labour. * Not comparable with 1953–4.

opportunities of cutting down on labour. When the number of people employed is very small it becomes almost impossible to replace labour with machinery to an extent which will allow of reduction in the labour force. The capital cost and the maintenance charges of power equipment and machinery also tend to be high when used on a small scale and Table VIII again demonstrates the low productivity of the small farms in respect of labour and power together. When the possibilities of cutting down labour are severely restricted the only means of raising productivity is to make more effective use of the existing labour force. The low labour indices† on many small farms show that there is a substantial measure of under-employment and the introduction of larger supplementary enterprises, such as pigs and poultry, which are treated in greater detail later in this section, is one way of raising output.

† The labour index is below 100 when there is more labour available than would be required on average to grow the crops and tend the stock on the particular farm.

Another possibility is to increase the size or improve the yields within the main enterprise, in this case dairying. In this respect the smaller farms are already more heavily stocked than the larger and any further increases in numbers of stock will need to go hand in hand with improvement in production and use of pasturage. There has been a tendency to push up yields in all groups, milk yields being some forty gallons per cow higher in 1953–4 than in the previous year. With the exception of the group 51 to 100 acres there are now no striking differences in the average yields per cow or in outputs per livestock unit and per stock acre. But this comparability of output has only been achieved on the smallest farms by the use of considerably more purchased feedingstuffs with the result that livestock output per £100 of purchased feed is much lower than in other groups. As stated above, the increased inputs of feedingstuffs on the small farms went almost entirely to dairy cows whereas on the larger farms a considerable proportion of it must have been devoted to pigs and poultry. The indications are that the extra feed given to dairy cows on the small farms did not give as high a return as on the larger. It is not possible from the limited records available to determine whether this difference is due to better feeding management or to the existence of a better type of dairy cow on the larger farms. As will be seen later a higher proportion of the larger farms than the smaller ones have tuberculin-tested herds and this is almost certainly one of the contributory factors. Greater intensity in feeding, if it is to be effective, must go hand in hand with improvement in the quality of stock. Small farmers need to consider carefully whether the money which they now spend on additional purchases of feedingstuffs would not be better devoted to the purchase of better quality cows or to a long-term policy of herd improvement.

They also need to consider whether some of the extra feed to dairy cows would be better used in increasing pig and poultry enterprises, the policy which the larger farms adopted and where incomes increased substantially.

Economic Organisation

The analyses above have been mainly concerned with differences which have occurred in management between two successive years and between farms of different sizes. While they lead us towards some broad conclusions as to the effectiveness of different management policies they are of limited use in answering the specific problems of individual farmers who cannot alter the size of their farms. Of greater interest to them are the differences in organisation which occur within a size group or which are not confined to a particular size. The next part of this section deals with two important differences of this kind.

(*a*) *The Economic Advantages of Tuberculin-Tested and Attested Dairy Herds, 1953-4*

Of the sixty-one farms included in the 1953–4 averages, thirty sold T.T. or T.T. Attested milk, thirty sold non-T.T. milk and one farm became attested during the year. Throughout this section the former group will be described simply as " T.T. milk producers ".

TABLE IX

DISTRIBUTION OF T.T. AND NON-T.T. MILK PRODUCERS IN THE FARM SIZE GROUPS

Size Group	T.T.		Non-T.T.		Proportion T.T.
	No.	Av. Rent + Rates	No.	Av. Rent + Rates	%
0—50 acres	5	£3·6	8	£3·3	38
51—100 acres	7	£3·7	12	£2·8	37
101—150 acres	7	£3·2	8	£3·1	47
Over 150 acres	11	£2·8	2	£3·1	85
Average size	125 acres		84·5 acres		

The first striking feature of this comparison is that a much higher proportion of the larger farms were T.T. milk producers; Table IX gives the number in each size group.

It is possible that the larger farms had better buildings, but it is more likely that the real reason why more large farmers were able to make the initial change was availability of capital. In addition to the cost of putting buildings in order there is usually a considerable loss of income in the year of change over and possibly for one or two years subsequently, whichever way the attested herd is established. On small farms with comparatively low net incomes per farm there is little opportunity to raise the capital to face this situation, although it is known that after the initial difficulties are overcome net incomes are usually higher than before the change over.

Rather more (nine compared with six) of the T.T. milk producers owned all or part of their farms and it can be seen (Table IX) that rents or rental values of the smaller of these were higher than those of the non-T.T. farms.

TABLE X

LIVESTOCK PER 100 STOCK ACRES

UNITS OF:—

	Cows	Other Cattle	Pigs	Poultry	Sheep	Horses	Total
T.T. Producers	34·2	21·4	4·9	4·1	4·1	1·0	69·7
Non-T.T. ,,	38·1	15·4	4·0	4·3	2·4	1·7	65·9

There was little difference in the proportion of land used for stock keep between the T.T. and the non-T.T. farms. The former had four less cows per 100 stock acres, six units or 39 per cent more young cattle and more sheep and pigs than the latter. In all, T.T. producers had 3·8 livestock units (mainly grazing stock) more per 100 stock acres than non-T.T. producers and their gross output was 22 per cent higher at £61·0 compared with £50·0 per acre.

Details of output and costs on these two groups of farms are given in Tables XI and XII.

TABLE XI

OUTPUT PER ACRE

	Crops	Cattle	Milk	Pigs	Poultry	Sheep	Total Livestock	Gross Output
	£	£	£	£	£	£	£	£
T.T. Producers	4·5	5·6	39·0	5·0	3·7	1·2	54·5	61·0
Non-T.T. Producers	2·9	3·3	34·0	4·1	3·6	0·5	45·5	50·0

Table XII

Costs, Net and Investment Incomes per Acre

	Costs per acre							Net Farm Income	Investment Income
	Feed	Seeds	Fertilisers	Rent and Rates	Power Costs	Hired Labour	Total		
	£	£	£	£	£	£	£	£	£
T.T. Producers	19·3	1·5	2·1	3·0	6·9	11·2	48·2	12·8	10·6
Non-T.T. Producers	16·3	1·1	1·4	3·0	4·9	8·7	39·0	11·0	7·6

The T.T. milk producers' higher gross output per acre came partly from more pig, sheep and crop sales but in the main it was obtained from the dairy herd. Although they had fewer cows their milk sales per acre were nearly 15 per cent higher than those of non-T.T. producers. There are three main reasons for this: (i) they obtained the premium paid on T.T. and T.T. attested milk, (ii) the yield per cow was higher, and (iii) they produced a higher percentage of their milk in the months October to March when the price was highest.

The average yields, together with other measures of productivity, for these two groups of farms are given in Table XIII and it can be seen that the T.T. milk producers sold rather more gallons of milk per stock acre, the extra 131 gallons per cow more than compensating for the four fewer cows.

Table XIII

Productivity of Resources

	T.T. milk producers	Non-T.T. milk producers
Gross Output per £100 Costs (*a*) .. .. £	121	118
Gross Output per £100 Labour (*a*) .. .. £	454	414
Gross Output per £100 Labour and Power (*a*) £	300	294
Feed Acres per Livestock Unit	2·3	2·3
Livestock Output per Feed Acre .. .. £	37	33
Livestock Output per Livestock Unit .. £	87	75
Cattle and Milk Output per Cattle Unit £	89	75
Yield per Cow .. .. gallons	787	656
Yield per Stock acre .. .. gallons	269	250
Milk Sales per cow .. .. £	127	97
Percentage of Winter Milk..	48	45

(*a*) Including value of farmer's labour.

On the T.T. farms the purchases of feedingstuffs were £3·0 per acre more, 50 per cent more was spent on fertilisers, and the labour and power costs were higher. Despite the relatively high labour costs, however, the productivity of the labour was greater and so was that of the land and feed. The T.T. farms had the same average number of feed acres per livestock unit as the non-T.T., but the output per unit of their livestock was £12 higher, of which less than £6 can be attributed to the higher prices received for their milk. This is apparent in livestock output per feed acre, since only about £2·5 of the extra £4 per feed acre on the T.T. farms could have been due to the premium on their milk.

Although the average net income was only £1·8 per acre more on the T.T. farms, the distributions given in Table XIV, show that twenty-four out of thirty of T.T. milk producers compared with fifteen out of thirty non-T.T. producers had net farm incomes of £10 or more per acre. It is, however, clear that many non-T.T. milk producers by efficient management made high profits, although they did not qualify for the T.T. premium.

TABLE XIV

DISTRIBUTION OF NET INCOMES PER ACRE

	No. of farms with Net Incomes per acre:						Total Farms	Average N.F.I./ acre
	Negative	0— £4·9	£5·0— £9·9	£10— £14·9	£15— £19·9	£20 and over		
T.T. producers	2	2	2	11	10	3	30	£12·8
Non-T.T. producers	1	1	13	5	8	2	30	£11·0

Having fewer cows per 100 stock acres the T.T. milk producers were able to rear more of their own replacements and to obviate the risk of misjudgment or of introducing disease when buying in. Table XV shows that only eight T.T. farms bought replacements and that all farms but one sold cows during 1953–4. The farms have been classified according to the average price each paid or received for cows, and the average prices of cows and in calf-heifers bought and of cows sold are given for the two groups.

TABLE XV

PURCHASES AND SALES OF COWS

	Purchases		Sales	
	T.T./Attested	Non-T.T.	T.T./Attested	Non-T.T.
No. of farms trading.	8	17	30	29
No. of farms trading at:—				
Under £20 per cow	—	—	2	3
£20—£29 per cow	—	1	4	6
£30—£39 per cow	—	2	9	10
£40—£49 per cow	1	3	6	4
£50—£59 per cow	3	8	4	6
£60—£69 per cow	2	3	2	—
Over £70 per cow	2	—	3	—
Average price per cow	£61	£50	£55	£40
No. of cows bought or sold per 100 cows on the farms	4	19	29	34

There was a wide range in the average prices received for cows sold in both groups but, as the averages cover all types of cow from " screws " to newly calved pedigree animals, they are not very meaningful. However, it might be noted that it was only from attested herds that the cows sold

per farm averaged more than £60 each and those sold from the five farms which achieved this figure were largely responsible for the £15 difference in the average price received per cow on the two groups of farms.

The last line of Table XV shows that only 4 per cent of the cows on the T.T.-milk-producing farms were bought during the year, compared with 19 per cent on the non-T.T. farms; this should not be ascribed to attested policy alone, since more of the latter were small farms which have to be stocked with as many cows as possible to achieve a size of business which can bring in a reasonable net income. Both groups of farms sold what might be considered a high percentage of their cows in the year.

It would be useful to discover the economic effects of keeping varying proportions of young cattle to cows on these farms but this is not easy, because of the variation in numbers of other livestock and the differences in income from T.T. and non-T.T. milk. While it is maintained that small farmers should stock heavily with cows and rear few replacements, it must be pointed out that net incomes were well below average on some of the farms with near flying herds.

Although there was a wide range in the proportion of milk produced in the months October to March, inspection of the individual results reveals no relationship between this proportion and profit. In fact, three-quarters of the farms produced between 40 and 55 per cent of their milk in winter and variations in enterprises and inputs obscure any attempt to reach conclusions on the relative profitableness of summer and winter milk production.

(*b*) *The Contribution of Pig and Poultry Enterprises 1953–4*

On these dairy farms the output from pigs and poultry varied from nothing to about 30 per cent of total output, and it was possible to subdivide the groups of T.T. and non-T.T. producers according to the percentage of total output from these enterprises.

TABLE XVI

PHYSICAL DATA OF FARMS WITH VARYING PROPORTIONS OF OUTPUT FROM PIGS AND POULTRY

	T.T. farms		Non-T.T. farms	
	Proportion of Gross Output from pigs and poultry:			
	Under 10%	Over 10%	Under 10%	Over 10%
Number of Farms	13	17	18	12
Average Size .. .. .. acres	127	124	72	103
% of Acreage Supporting Stock ..	89	90	90	95
Livestock Units per 100 Stock Acres—				
Cows	31·6	36·1	37·1	39·1
Other Cattle	19·0	23·2	13·2	17·5
Sheep	5·5	3·1	—	4·9
Pigs	0·5	8·4	0·5	7·5
Poultry	1·6	6·0	3·0	5·6
Horses	0·4	1·5	2·0	1·5
Total	58·6	78·3	55·8	76·1

Of twenty-nine farms with over 10 per cent of their output from pigs and poultry, twenty-two had net incomes of £12 or more per acre and only nine out of thirty-one farms, on which pig and

Table XVII

Output, Costs, Net Incomes per Acre and Efficiency Factors

Pigs and Poultry Output per cent	T.T. Farms		Non-T.T. Farms	
	Under 10%	Over 10%	Under 10%	Over 10%
Output per acre				
Crops £	5·6	3·7	3·6	2·1
Cattle £	5·3	5·8	2·7	3·9
Milk £	34·4	42·7	30·4	37·6
Sheep and Wool £	1·4	1·0	—	1·0
Pigs £	0·5	8·5	0·5	7·9
Poultry and Eggs £	1·0	5·8	1·3	6·1
Gross Output £	50·2	69·4	40·2	60·2
Costs per acre				
Feed £	13·6	23·8	11·1	21·7
Seeds £	1·6	1·3	1·1	1·0
Fertilisers £	2·2	2·0	1·1	1·6
Rent and Rates £	2·7	3·3	2·8	3·3
Power Costs £	6·1	7·5	4·6	5·2
Labour (excluding farmer) £	10·2	12·1	7·6	9·9
Total Costs £	39·9	54·7	32·0	46·2
Net Farm Income £	10·3	14·7	8·2	14·0
Farmer's Labour £	1·9	2·4	4·0	2·7
Investment Income £	8·4	12·3	4·2	11·3
Gross Output per £100 Costs(*a*) £	120	122	112	123
Gross Output per £100 Labour(*a*) £	415	479	347	478
Gross Output per £100 Labour and Power(*a*) £	276	315	248	338
Labour Index Average	93	99	87	103
Livestock Output per Livestock Unit £	82	90	69	78
Livestock Output per Stock Acre £	48	71	39	60
Livestock Output per Feed Acre £	32	41	29	36
Feed Acres per Livestock Unit	2·5	2·2	2·4	2·2
Milk Yield per Cow gallons	760	806	620	689
Milk Yield per Stock Acre gallons	240	291	230	269

(*a*) Including value of farmer's labour.

poultry output was under 10 per cent of the total, achieved similar net incomes. The following are ways in which the two groups of farms on which pigs and poultry contributed over 10 per cent of gross output differed from the others:

(i) The average net incomes per acre were £4·4 and £5·8 higher in the T.T. and non-T.T. sub-groups respectively.

(ii) As well as the additional pigs and poultry they had appreciably more cows and young cattle, and in total had about twenty units of livestock (over 34 per cent) more per 100 stock acres.

(iii) These differences in stocking were reflected in the output figures, gross output being £19·2 and £20·0 per acre higher in the T.T. and non-T.T. groups respectively.

(iv) They purchased extra feed costing £10·2 and £10·6 per acre, but the extra units of pigs and poultry kept would have required feed costing £10·4 and £8·6 per acre if it were all purchased.* Therefore, although slightly less crops were sold, it would appear that the productivity of the land of the farms in the more intensive groups was greater than that on the farms with few pigs and poultry since cattle and milk outputs were greater.

(v) Although total labour and power costs were higher per acre, the productivity of these was much greater; the labour indices were also higher, demonstrating how these subsidiary enterprises can utilise surplus labour and how fixed costs can be spread over a greater volume of output.

(vi) The livestock output factors were considerably higher on the farms with a lot of pigs and poultry, but it must be remembered that these farms also had more cows per 100 stock acres, and as shown in the last lines of Table XVII, obtained a higher yield per cow.

It is clear from the foregoing analysis that there are opportunities of improving incomes on small dairy farms through the introduction or extension of pig and poultry enterprises. But the critical factor may be the capacity of management to organise and supervise such enterprises efficiently. It is clear that those managers who now operate relatively large pig and poultry enterprises are also, in general, those who achieve a high productivity from their land and their dairy herds. They achieve a substantial margin of output over estimated extra feed cost in the subsidiary enterprises. It is, however, open to question whether all managers would achieve this result. Where management capacity is below average it is almost certainly better to concentrate on improving the efficiency within the dairy enterprise before venturing on more ambitious schemes. But it is also clear that on some farms the management potential of members of the farmer's family is not being fully exploited and, in these cases, it would often be appropriate to delegate responsibility for the running of subsidiary enterprises to members of the family.

The problem of finding the capital to develop subsidiary enterprises is also a fundamental one, though not necessarily so urgent as in becoming T.T. Attested. Some farmers may have had capital resources or employed credit, but it is a reasonable assumption that many, by better management in the past, have earned net incomes in excess of family living expenses. With what has remained after payment of tax, they have been able to buy equipment and convert or put up buildings to house stock which would add further to net income. Many of those who have few pigs and poultry have regularly earned low net incomes and have never succeeded in establishing a system of improvement or further enterprises which would lead to higher net incomes. Of the eighteen non-T.T. farms with under 10 per cent of their output from pigs and poultry, ten in 1953–4 and fifteen in 1952–3 had net incomes of under £600 per farm.

* This is based on the assumption that it would require 7 cwt. of feed to fatten a pig to bacon weight and 1 cwt. of feed per laying bird in the poultry flocks. Additional feed for rearing has been allowed for in both cases.

Capital Accumulation and Investment

It is clear from Table XVIII that there is an important association between level of income per farm and the accumulation of capital.

TABLE XVIII

DATA RELATED TO CAPITAL INVESTMENT 1953–4

	0—50 acres	51—100 acres	101—150 acres	Over 150 acres
Average Size of Farm .. acres	35	74	129	191
Average Net Income per farm.. £	437	881	1,697	2,183
Proportion of Net Income invested in higher closing inventories of livestock and produce .. .. %	1·9	21·9	17·7	21·5
Closing Valuation per acre of—	£	£	£	£
Livestock..	22·4	19·6	23·4	23·7
Produce and Stores	1·8	3·0	2·6	3·0
Machinery	20·5	12·3	14·3	14·7
Total	44·7	34·9	40·3	41·4
Purchases of New Implements				
1952–3 .. .. per acre	7·1	1·9	2·8	3·1
1953–4 .. .. per acre	6·6	2·2	4·5	3·5

On small farms of under 50 acres the possibilities of accumulating capital from the farmer's own income, unless management is well above average standards, are strictly limited. In practice, the farmer's income is not the only source of saving on these small farms as sons and daughters working at home may contribute to family earnings either through unpaid work (which here is entered as a cost) or by actual contribution to further investment. A surprising feature of this table, however, is the relatively small amount of current income on the small farms which has been invested in increased livestock and produce and the relatively large amount invested in new equipment. With a preponderance of family labour there is probably a strong desire to ease the burden of work but large investments in relatively unproductive machinery restrict possibilities of investment in other directions. We have, as yet, no accurate assessment of capital invested at current values but the book values of capital in the closing inventories of these farms, averaged in Table XVIII, show that there is a very marked difference in the balance of investment between livestock and machinery on the small and the large farms. These small farms are already loaded with power costs (Table V), which are £3 per acre more than on the large farms and high investment in machinery will tend to increase this difference. It is eminently desirable to lighten the burden of work on small farms if they can afford to do so, but before further purchases of machinery are made it would be well to consider whether the money would give a better return in more and improved livestock, in more fertilisers or in better grass seed mixtures.

On the larger farms these were the alternatives adopted, for purchases of new equipment were probably little more than required to maintain the value of physical assets. Their investment in livestock was, however, very large in relation to income, particularly in the 51—100-acre group, and almost certainly much higher than could be expected in a normal year.

Efficiency and the Individual Farmer

Throughout this section we have attempted to determine the effect of different lines of action on the success achieved by groups of farms. This, however, tends to cloak the differences which occur between farm and farm within the same group.

Although above-average investment incomes per acre were achieved on more of the farms with high inputs per acre[1] than of the less intensive farms, high incomes per acre were obtained over the whole range of inputs. Also, though milk production was the main enterprise on all these farms, little of the variation in investment incomes earned per acre could be explained by differences in milk and cattle output per stock acre[2] and only about one quarter by variations in total livestock output per stock acre[3].

Clearly investment income depends on the relation between output and inputs, though high output in relation to one input, e.g. feed, may be more than outweighed by high costs in another, e.g. labour. This can be demonstrated from the individual results of the lowland dairy farms. Purchased feed was the most important input, but since use of it is bound up with the feed produced on the farm, a joint assessment of the productivity of the land and purchased feed has to be made.

By adding the acreage equivalent of purchased feed to the acres which supported stock on each farm, the total "feed acres" utilised may be calculated and related to livestock output. This factor *livestock output per feed acre* showed, as would be expected, a much closer association[4] with investment income per acre than any so far considered. A high livestock output per feed acre usually meant a high profit.

Investment incomes per acre were also closely related[5] to the level of *gross output per £100 labour and power* on these farms. In Table XIX the farms have been divided into four groups; livestock outputs per feed acre of over and under £33·5 were classed as high and low respectively, and the same distinction made for gross outputs per £100 labour and power of over and under £270.

TABLE XIX

THE BEARING OF LIVESTOCK OUTPUT PER FEED ACRE AND GROSS OUTPUT PER £100 LABOUR AND POWER ON INVESTMENT INCOME PER ACRE

Livestock Output per Feed Acre Gross Output per £100 Labour and Power	HIGH HIGH	HIGH LOW	LOW HIGH	LOW LOW
Number of Farms with Investment Income per acre				
£14·5 and over	7	2	—	—
£9·5 to £14·4	13	2	4	—
£4·5 to £9·4	3	3	7	1
Under £4·5	—	2	2	15

[1] e.g. Total costs including value of farmer's labour—over £50 per acre.

[2] X_1 Investment Income per acre.
X_2 Milk and cattle output per stock acre $r_{12} = +0{\cdot}37$ (significant at 1 per cent level).

[3] X_1 Investment Income per acre.
X_2 Total livestock output per stock acre $r_{12} = +0{\cdot}50$ (significant at 1 per cent level).

[4] X_1 Investment Income per acre $r_{12} = +0{\cdot}64$ (significant at 1 per cent level).
X_2 Livestock output per feed acre $X_1 = -10{\cdot}79 + 0{\cdot}55X_2$.

[5] X_1 Investment Income per acre $r_{12} = +0{\cdot}63$ (significant at 1 per cent level).
X_2 Gross Output per £100 labour and power $X_1 = -9{\cdot}26 + 0{\cdot}06X_2$.

On five of the eight farms which had high livestock outputs per feed acre but earned investment incomes of under £9·5 per acre, gross output was low in relation to the labour and power inputs, and of twelve farms with high gross outputs per £100 labour and power, but making profits of under £9·5 per acre, nine had low livestock outputs per feed acre. Both of these factors were low on fifteen farms where the investment income was under £4·5 per acre.

Thus, most Lowland Dairy farmers making low profits can begin to find the cause from an examination of these two questions:

Is the output of the stock on the farm low in relation to the land and feed from which it is produced?

Is output low in relation to the labour and machinery expenses incurred?

The reasons for a positive answer in either case should then be traced by comparing other measures of economic efficiency for his farm with the group averages or the figures of high profit farms. It is important that the individual manager should be able to analyse his own results to determine where improvements in management can be effected; a more detailed description of the procedure has, therefore, been given in Part II of this report.

PART II

ANALYSIS OF THE FARM BUSINESS

Most farmers aim to improve on past performances and their problem may very well be how best to adjust their farming to increase or at least maintain their net income. Here the past can be used to guide future policy by providing a basis for diagnosing existing deficiencies and so pointing the way to profitable adjustments.

The existing state of the farm economy may be analysed by reference to performance on other farms of a similar type and size by using the data provided in Part I of the report and in the Appendices. The scope for improvement on a farm will be indicated by a comparison of net farm income with the average net farm income for the group and further comparisons of output and costs will indicate the line or lines along which improvement can most readily be effected.

Output

Profit or net farm income is the difference between output and cost so that a low profit may be due to either low output in relation to costs or high costs in relation to output. It follows then that both output and costs have to be examined when the reasons for a low profit are sought. Taking output first a high output is usually but not invariably associated with a high net farm income. For example amongst the Lowland Dairy farms net farm incomes of over £17 acre were achieved from outputs ranging from £36 to £112 per acre, but of thirty-three farms with outputs of more than £55 per acre only eight failed to make a profit of £12 per acre or more, whereas of thirty-six farms on which the output was less than £55 per acre only ten made a profit of more than £12. The proportion of farms earning a net income of more than £12 per acre was very much greater when gross output was high, above £55 in the case of the dairy farms, than when it was below this level. On the small farms there is hardly any alternative to a high output. The volume of business must be great on a per acre basis to meet the costs of such items as machinery, which are relatively heavy on the small farms, and to pay the farmer an adequate wage.

If the output for the individual farm and also the net farm income is low by comparison with similar farms the next step is to track down the deficiency to particular enterprises. For crops an obvious test will be the yields per acre and a further check can be obtained for sale crops if the output of crops is divided by the acreage on which they are grown. This gives the " cash crop output per acre cash crops " and takes into account both the yield of the crop and the price received. A poor yield or a poor price will give a low output per acre and the figure will also be low if the proportion of low output crops such as cereals and hay is greater than the average. Row crops—potatoes, beet and peas—are all high output crops and, other things being equal, crop output per acre cash crops increases as the proportion of these crops in the rotation increases.

Similar measures test the level of output from livestock. The yield of milk per cow is a good indication of the performance of the dairy herd and comparisons for other livestock can be made by converting the different classes and ages of stock to a common unit—the livestock unit. (The factors used for conversion are shown in Appendix V.) The " livestock output per livestock unit " is a general guide to stock yields though it is affected by varying proportions of the different classes of stock and by prices. If the proportion of sheep and young cattle to other stock is higher than the average then the livestock output per livestock unit will tend to be lower. This general figure can, however, be split to give the output per unit of each class of stock, e.g. pig output per unit of pigs.

In addition to the livestock output per unit of livestock, total farm output depends on the number of units carried. The rates of stocking can be compared on the basis of stock acres per livestock unit and the intensity of milk production by the milk yield per stock acre. (Stock acres = the total farm area less the acreage on which crops for sale are grown.) Obviously an increase in stocking, if yields are maintained, will increase total output but, as suggested above, an increase in the numbers of sheep or young cattle will have much less effect than a corresponding increase in the number of cows. This does not imply that young cattle and sheep should not be kept on dairy

farms: the former are the foundation of a high yielding herd and a small flock of the latter can often be a profitable sideline. It is suggested that on intensive lowland farms, pedigree values apart, the best results are obtained by keeping as many producing cows as possible and rearing the minimum number of replacements required to maintain the herd.

The combined influence on the total farm output of variations in the rate of stocking and different combinations of crops and stock with high and low output values is expressed by the System Index. This index compares the output of a farm assessed at standard values for each commodity with that of the average farm calculated in the same way. (See Appendix V.) Thus if the index is low, less than 100, the farm in question is either less heavily stocked or is carrying a higher proportion of low output stock or crops than the average farm of its type. The index provides an indication of the intensity of the farming system as a whole, whilst measures discussed earlier—livestock units per acre, milk per acre and crop sales per acre cash crops—deal only with specific enterprises.

A further general standard which has been calculated for individual farms and for the group average is the Yield Index. This is an overall measure of the yields on the farm since it compares the actual output with the output which would have been achieved at provincial average yields. The index is over 100 when actual output is above the output calculated at average rates.

Costs

The economic tests so far described have all been concerned with measuring in one way or another the level of output, but it is equally essential to analyse the cost and to test the efficiency with which the various resources needed in production have been used. From the point of view of cost the most important resources are labour, machinery and feeding stuffs.

An apparently easy method of assessing the economy of expenditure on a farm would be to compare the cost per acre, item by item, with the average costs per acre on a group of similar farms. Such a method would, however, be misleading since high costs on any particular farm might be fully justified by an output which was correspondingly high. What really matters as far as costs are concerned is the return obtained for the costs incurred.

The following figures show the rate of expenditure per acre and the output per £100 expenditure on intensive, highly profitable farms and on the average farm of the same type and size group.

	Average	High Profit
	£	£
Investment Income per acre	10·9	16·6
Costs per acre—Feed	21·1	33·0
Labour	12·7	16·2
Power	5·9	8·2
Other Costs	10·2	11·7
Total	49·9	69·1
Gross Output per £100 Costs	122	124
Gross Output per £100 Labour	478	529
Gross Output per £100 Labour and Power ..	325	351

Expenditure is very much higher on the high profit farms, but for every £100 of expenditure the output is £124 as compared with £122.

Purchased Feed

On the dairy farms dealt with in this report purchased feed was the heaviest item of costs and the efficiency with which it was used was probably the most important factor in determining the level of incomes on the individual farm. Unfortunately there is no standard, based on simple

financial accounts, by which the efficiency of use of purchased feed alone can be assessed, since so much depends on the quantities and types of home-grown feed and the kind of stock carried. Only a general assessment of the overall feeding position is possible from comparisons of the livestock output per feed acre. Feed acres combine the acreage of the farm used for stock, i.e. the stock acres, with the purchased concentrates, on the assumption that each ton of concentrates bought is equivalent to an additional acre. Roughages bought are also converted to acres on the basis of average yields: thus if ten tons of hay are bought and the average yield of hay for a farm is two tons per acre the equivalent acreage of the bought hay would be five.

If the livestock output per feed acre should be low there are three possible reasons: (i) the livestock output may be low owing to low yields or a low rate of stocking, (ii) the production of home-grown foods may be poor or the foods badly utilised, (iii) purchased foods may be extravagantly or wastefully used. The earlier analysis of total output will have disclosed whether the first reason is responsible but there is no simple method of distinguishing between the second and third reasons. Usually the real cause can only be tracked down by further recording of the amounts of feed used for the different classes of livestock and from observation of the type of grassland, the crop yields, use of fertiliser and the grazing management on the individual farm.

Labour and Power

The labour cost, including a charge for the farmer's own work, came next in importance on dairy farms and was the chief item of cost on the arable farms. It is best considered in conjunction with the costs of machinery and fuel since the two are to a considerable extent interchangeable. Again the basis for comparison is not the expenditure per acre but the ratio of cost to output, i.e. the Gross Output per £100 Labour and Power, and as with other measures of this kind there is more than one possible reason why the result for an individual farm may be above or below the average. If the figure obtained is low it may be the result of low output due to some technical failure or to poor organisation of the work. Some measure or index which will distinguish between the two is required and for this purpose the "Labour Index" has been used. It compares the man-days available on a farm with the man-days which would be required to grow the crops and tend the livestock kept on that farm if all the work were performed at average rates. Where the index is much below 100 and there are no obvious handicaps to labour efficiency, such as a bad layout of the farm and very inconvenient buildings, it is probable that there is under-employment of labour.

Fertilisers

The other important item of cost or input is fertilisers. On the dairy and stock farms it has been impossible to trace the effects of different levels of fertiliser application on stock carried or on purchases of feed, but it may be noted that many of the low output farms with below average net farm incomes used very little or no fertilisers. It is almost certain that heavier applications of fertilisers, with an appropriate change in grassland and grazing management, would either increase the stock-carrying capacity and so raise livestock output, or bring about a reduction in the amount of feed to be bought. Part of the difficulty in assessing the effect of fertilisers on stock farms is that there is no direct measure of the yields of many of the crops. They are fed to stock and their response to fertilisers may be lost through poor utilisation. High expenditure on fertilisers and high expenditure on feedingstuffs for the stock carried suggest that much of the benefit of grassland improvement may be lost in this way. On arable farms, where the response to fertiliser applications is more directly measured in crop returns, the influence of fertilisers on potato yields has been traced. (Page 13, Table V.)

The various tests which have been discussed in this part of the report give, when taken together, a fairly comprehensive view of the efficiency of management in the main sectors of the farm economy. They do not, of themselves, solve the problem of low farm incomes but by indicating where weaknesses lie they are the first step towards a solution. The next step is to decide how weaknesses may best be remedied. For this there are no general prescriptions which will apply equally to all farms or even to farms of the same type but it will be useful to indicate the main points for consideration when remedies are contemplated.

ADJUSTMENTS TO THE FARM ORGANISATION

Net farm income will be increased if the cost of each unit of output (i.e. each gallon of milk, each pound of pork or bacon, or each ton of potatoes) can be reduced. There are two ways in which this may be achieved. The same amount of a product may be produced at less cost or a greater amount produced at the same or only slightly higher cost. In the first case the elimination of any wastage in the use of inputs is an obvious way of reducing costs without changing output but it is also important to consider how far total costs may be reduced if expenditure on one or more items is increased. For example, the cost of additional fertilisers could be more than compensated for by a reduction in the cost of purchased feeds.

More often, however, the second method will be easier because so many of the costs incurred on a farm, e.g. rent and upkeep charges, are fixed and do not increase if output is increased. Their share in the cost of a unit diminishes as the number of units produced is increased. Repairs and depreciation on machinery are also fixed costs and so to a large extent is the cost of the regular labour force since it is composed of large units. A change in cost involves at least a man's wage more or less, and only rarely will a change of this order be feasible. If the labour performance is poor a search for ways of increasing output is usually more fruitful than seeking to reduce the number of men regularly employed.

Plans to reduce total costs or to increase output, and often more than one plan has to be considered, may be tested and their relative merits assessed by preparing " partial " budgets. The procedure is to estimate the changes in costs which a new plan will involve and set them against the expected changes in return. In some cases there may be no change in costs. If milk yields per cow are low, or if the lambing percentage, litter averages or crop yields are low, the answer may be better techniques in the culling and selection of stock, and in choice of seed varieties.

Examples of partial budgets are given in the following pages. They deal with some general problems of farmers in the North West Province but their prime purpose is to show how the probable outcome of an adjustment may be tested. The quantities and prices used are based on average results and when a management decision has to be made for a particular farm the quantities and prices applicable to that farm at the time should be substituted.

1. To assess the probable outcome of introducing or expanding a poultry or pig unit to increase output when surplus labour and accommodation are available.

A. *Increase of laying flock by 100 hens*

Additional Costs	£	Additional Revenue	£
130 day-old pullets	23	Eggs at £3. 5s. 0d. per bird, 180 eggs at 4s. 4d. per doz.	325
Feed at 1½ cwt. per layer to include feed for replacements = 7½ tons		12 culls at 10s.	6
⅔ bought at £37 per ton	185		
⅓ home-grown grain at £24 per ton	60		
Miscellaneous costs at 9d. per layer	4		
Depreciation of equipment at 2s.	10		
	282		
Deduct value of birds remaining at end of year, 85 at 7s.	30		
	252		
MARGIN (Additional Profit)	79		
	£331		£331

Labour required 400 hours.

B. *Increase of 2 Sows—fattening 24 to bacon weights*

Additional Costs	£	Additional Revenue	£
2 Gilts in pig at £35	70	24 Baconers at £19	456
*Feed for gilts and weaners 50 cwt. at £36	90		
Feeding 24 weaners to bacon 24 × 7 cwt. = 168 cwt. at £36	303		
Miscellaneous costs at 50s. per sow and 10s. per fattener	17		
	480		
Deduct value of sows at year end	50		
	430		
MARGIN (Additional Profit)	26		
	£456		£456

Labour required 380 hours.

* See also footnote to budget 4 (iii).

In both these budgets there is no charge for labour, since it was assumed labour was already available. Similarly no overhead costs are included since they would have to be paid whether or not the output was increased by the addition of pigs or poultry.

2. *Increased Grass Production*

On many dairy farms where little fertiliser is used and the level of grassland management is not very high more grass offers two possibilities of adding to profits:

(i) the present milk output might be produced at less cost by saving purchased concentrates,

(ii) more cows might be kept to increase total output.

For this example let us assume that 40 acres of grass provide the maintenance requirements of a herd of 20 non-T.T. cows with an average yield of 700 gallons per cow per annum, and that 4 lb. of purchased dairy cake are fed for every gallon of milk produced. The increased grass production could be obtained from all or only part of the acreage. If, for example, the present level of fertiliser application is low, 1 cwt. of sulphate of ammonia applied to each acre should raise grass production by about 17 per cent.* This should ensure that an extra 10 per cent could be utilised. The cost of such an application, net of subsidy, would be about £30. Alternatively, the output of say one-fifth of the acreage could be raised 50 per cent by re-seeding and adequate fertiliser application and, assuming that the necessary labour and equipment are available on the farm, the only additional cost besides those for seeds and fertilisers is tractor fuel. A reasonable estimate of the extra costs per acre of re-seeding to a three-year ley would be £9, equivalent to £3 per year of the life of the ley. Lime and extra fertilisers costing £3 per acre would probably also be required to achieve the 50 per cent increase in output, making the total extra cost of re-seeding and fertiliser on 8 acres about £48 per year.

* The present utilised Starch Equivalent per acre would be about 12 cwt.: therefore a 10 per cent increase = 1·2 cwt. utilised. Based on figures given by Yates and Boyd, *Agricultural Progress*, Vol. XXIV, 1949, the average response of permanent grass to 1 cwt. of sulphate of ammonia would be about 2·1 cwt. of Starch Equivalent.

(i) *Using the extra grass to replace some of the purchased dairy cake for production during summer.*

Additional Costs	Using 2 tons sulphate of ammonia	By re-seeding 8 acres	Costs Saved	
	£	£		£
Fertiliser	30	24	70 cwt. *Dairy Cake at 35s.	122
Tractor Fuel	4	1		
One-third share of extra costs of ley establishment	—	24		
	34	49		
MARGIN (Additional Profit)	88	73		
	£122	£122		£122

At higher levels of grass management further increases in grass production will become more costly but if a 10 per cent increase costing £60, £70 or £80 would save £120 on purchased feed it would be well worth while.

(ii) *Keeping two more cows, the extra grass supplying their maintenance requirements. Assuming labour and housing available.*

Additional Costs	Using 2 tons sulphate of ammonia	By re-seeding 8 acres	Additional Revenue	
	£	£		£
Cost of producing extra grass as above	34	49	Milk 1,400 galls. at 3s. 1d.	216
Tractor fuel, etc. making hay or silage for 2 more cows	5	5	2 Calves	7
50 cwt. Dairy cake for extra cows at 35s.	88	88		
Depreciation of extra cows	20	20		
Extra miscellaneous expenses	10	10		
	157	172		
MARGIN (Additional Profit)	66	51		
	£223	£223		£223

* Ten per cent more grass utilised would provide 48 cwt. of Starch Equivalent which would be supplied by 74 cwt. of dairy cake of S.E.=65. This would be producing 100 gallons of milk per cow from grass instead of concentrates in summer.

3. *Dairy Herd Maintenance*

Another question, of particular importance for the small dairy farmer, is whether or not to rear replacements for the dairy herd. Here let us assume a 30-acre holding carrying 14 T.T.-attested cows; the cows utilise all the home-produced feed and the introduction of young stock would mean a reduction in cow numbers. If the 14 cows are maintained by buying 5 replacements and it is necessary to reduce the cows to 10 in order to rear 3 heifers to calve annually the alternative stocking when the changeover is complete would be: 10 cows, 3 heifers in calf, 4 yearlings and 4 calves. The comparison is, therefore, between a herd of 14 cows maintained by buying replacements and one of 10 cows, replacements for which are reared on the farm.

Additional Costs	£	Additional Revenue	£
2 cwt. Milk Equivalent	10	1 Cull 2-year-old heifer	40
38 cwt. Concentrates for young stock at 40s.	76		
Loss of Revenue		*Costs Saved*	
Sale value of 4 calves retained at 70s.	14	Concentrates of 4 cows, 5 tons at £35	175
Milk fed to calves 160 galls. at 3s. 5d.	28	5 Replacements cows at £80	400
Milk of 4 cows 2,800 galls. at 3s. 5d.	480		615
2 fewer cull cows to sell at £40	80	MARGIN (Loss of Income)	73
	£688		£688

The advantage of buying replacements would disappear if (*a*) replacement cows giving 700 gallons cost £95 each, (*b*) replacement cows costing £80 each only gave 585 gallons milk, i.e. £100 worth, or (*c*) it was necessary to replace 7 or more of the 14 cows at the above prices.

The foregoing comparison applies when average replacement rates are used; an above-average rate in the self-contained herd would increase the loss on rearing and vice versa. If, on the other hand, less than one-fifth of the cows were replaced annually there would be little difference between rearing and buying at the prices given.

4. *Alternative Crops*

On some arable farms it may be desirable to grow fewer potatoes to avoid serious eelworm infection or for some other reason. The economic problem here is to decide which crop is the most profitable substitute. Three examples are given below; some of the figures included, e.g. transport costs and casual labour, are very rough estimates and individual farmers should adjust them to fit their particular case.

On the assumption that potatoes are grown one year in four, e.g. 30 acres on a farm with 120 acres of tillage, a reduction to 20 acres would mean the crop need only be grown on the same ground every six years. What is the best crop for the 10 acres released?

(i) *Substitution of Canning Peas for 1 acre Potatoes*

Additional Costs	£	s.	Additional Revenue	£	s.
Seed	9	0	32 cwt. Peas at 42s.	67	0
Fertiliser 5 cwt. net of subsidy	4	0			
Spraying	4	10			
Tractor Fuel 15 hrs. at 3s.	2	5			
Transport—say	6	0	*Costs Saved*		
Depreciation and upkeep of special equipment*	5	0	Seed Potatoes 17 cwt.	18	0
			Fertiliser 15 cwt.	16	10
Loss of Revenue			Tractor Fuel 35 hrs. at 3s.	5	5
9 tons Potatoes at £14	126	0	Casual Labour	7	0
				113	15
			Loss of Income	43	0
	£156	15		£156	15

* Pea cutter, cost £175; Loader, cost £155; Total £330. Depreciation and upkeep at 15 per cent=£49. 10s. or £5 per acre on 10 acres. But a small acreage of peas can be grown with no special equipment.

For each acre of potatoes replaced by peas there would, on this basis, be a reduction of £43 in the net farm income. If, however, the potato yield were only 6 tons per acre the substitution of one crop for the other would make little difference to the net farm income. Pea haulm would have a value for silage making but this has not been taken into account in the foregoing calculation.

(ii) *Substitution of Sugar Beet for 1 acre Potatoes*

Additional Costs	£	s.	Additional Revenue	£	s.
Seed	1	5	12½ tons Sugar Beet at £6. 8s.	80	0
Fertiliser 12 cwt.	13	0			
Tractor Fuel 30 hrs. at 3s.	4	10	*Costs Saved*		
Transport at £1 per ton	12	10	Seed Potatoes 17 cwt.	18	0
			Fertiliser 15 cwt.	16	10
Loss of Revenue			Tractor Fuel 35 hrs. at 3s.	5	5
9 tons Potatoes at £14	126	0		119	15
			Loss of Income	37	10
	£157	5*		£157	5

Sugar beet tops would also be available for stock feeding. With costs as above—sugar beet would break even with a potato yield of about 6 tons per acre.

* If separate mechanical topper and lifter purchased for £200—depreciation and upkeep at 15 per cent=£30 per annum or £3 per acre on 10 acres, extra tractor fuel costing £1 per acre would be required, but some £6 might be saved on casual labour.

(iii) *Increasing Cereal acreage, e.g. Barley in place of 1 acre Potatoes*

Additional Costs	£	s.	Additional Revenue	£	s.
Seed	3	15	28 cwt. Barley at 26s.	36	8
Fertilisers 3 cwt.	2	10			
Tractor Fuel 10 hrs. at 3s.	1	10	*Costs Saved*		
Spraying	1	10	Seed Potatoes 17 cwt.	18	0
Binder Twine, etc.		10	Fertiliser 15 cwt.	16	10
Hire of Thresher and Baler	1	12	Tractor Fuel 35 hrs. at 3s.	5	5
			Casual Labour	7	0
Loss of Revenue				83	3
9 tons Potatoes at £14	126	0	Loss of Income	54	4
	£137	7		£137	7

There would, in this case, be a reduction of £54 in the net farm income for each acre of potatoes replaced by barley, assuming that no straw was sold and that the regular labour which became surplus was not found profitable employment elsewhere.

The saving of regular labour when barley is grown instead of an acre of potatoes would be approximately 110—27=83 hours. If 5 acres barley were grown in place of potatoes—415 man-hours of regular labour would be made available for alternative employment and the quantity of barley available, if not sold, would be 5×28=140 cwt. This labour and barley might be devoted to the pig breeding and fattening enterprise covered by budget 1B.

The home-grown barley could form:

	cwt.
60 per cent of the sows' feed, i.e.	30
and 65 per cent of the baconers' feed, i.e.	110
Total	140

The sows' ration could be balanced by 15 cwt. weatings and 5 cwt. fish meal and the baconers' could be balanced by 50 cwt. weatings and 10 cwt. fish meal. The total cost of feed for the pigs in budget 1B would then be:

		£
140 cwt. barley at 26s.		182
+£1 per ton for grinding and mixing ..		7
65 cwt. weatings at 29s.		94
15 cwt. fish meal at 72s.		54
Total ..	220 cwt.	£337

This would be a saving of £56 on the £393 cost of feed shown—and represents an additional return of £11. 4s. 0d. per acre of barley.

The partial budgeting technique illustrated in the foregoing pages can be applied in seeking the solutions to a wide variety of problems. Essentially the procedure will be the same in each case. The additional requirements of feedingstuffs, fertilisers, fuel, etc. of the proposed plan are set down in logical order and values are then put on the quantities needed and the production expected. Where appropriate any requirements saved or any production foregone must also be taken into account. It must be stressed, however, that budget profits should be used as comparative statements rather than as firm estimates of the expected results. They are intended to show the probable effects of a change in the farm economy and to indicate which, of several plans, is likely to be the best.

Farmers who may be interested in this kind of business analysis but are in doubt as to the methods can, if they so desire, enlist the help of the N.A.A.S. Their District Officer will be prepared to help them with the actual analysis and in planning changes which seem desirable as a result. "The Farm as a Business" published by Her Majesty's Stationery Office also contains much information on the analysis of a farm business and budgeting, together with standards and various statistics.

APPENDIX I

MIXED LIVESTOCK FARMS 1953–4

OUTPUT, COSTS AND INCOME, £ PER ACRE

Size Group (Ac.)	51–100	101–150	51–100	51–100	51–100	51–100	151–200	101–150	0–50	0–50	101–150	0–50	0–50	0–50	0–50	51–100	0–50	51–100	0–50	0–50
Investment Inc.	27·8	18·8	17·9	16·0	14·6	10·8	9·6	9·4	5·6	4·9	4·0	2·4	1·4	—	–0·7	–1·3	–4·4	–5·6	–6·3	–11·1
Net Farm Inc. . .	33·8	21·4	21·0	20·0	17·8	15·1	11·1	12·3	11·9	13·7	6·9	7·0	7·6	8·5	6·2	2·0	29·7	–2·0	6·3	7·9
Family Inc. . .	40·0	26·5	21·5	20·0	17·8	15·1	14·2	12·3	14·0	20·3	6·9	19·7	10·1	11·4	8·8	4·1	29·7	6·6	22·1	17·6
Output																				
Crops	–0·4	5·3	–1·4	–0·8	9·8	–0·3	13·3	3·2	19·9	3·6	–0·1	8·1	3·3	–0·8	0·2	0·3	0·2	8·4	—	—
Cattle	4·5	4·2	2·6	5·1	3·7	4·3	8·7	14·8	3·9	3·2	4·4	–3·3	1·4	–6·1	4·6	6·9	5·4	–0·2	13·7	4·7
Milk	49·2	39·3	35·5	36·9	5·2	27·2	0·2	—	—	31·9	21·2	47·7	4·8	45·0	27·6	2·3	55·9	33·7	—	69·0
Sheep & Wool	—	—	5·7	3·1	4·5	4·0	3·9	5·2	—	—	—	—	—	—	—	—	—	—	1·1	—
Pigs	9·9	30·7	32·1	16·8	7·1	–0·1	19·8	8·2	33·4	22·4	13·3	16·7	—	–1·1	–0·3	3·5	2·3	19·3	26·5	—
Poultry	85·9	–0·2	2·9	7·5	0·8	0·7	0·1	0·8	–1·0	0·4	2·8	1·7	–1·3	–0·2	2·3	0·2	8·6	1·6	23·6	–7·8
Eggs	9·6	5·6	26·5	17·4	15·8	19·0	—	9·3	7·8	31·0	14·1	31·9	5·6	18·8	17·6	1·1	58·6	8·4	136·9	36·7
Miscellaneous	4·0	3·3	2·7	2·5	1·2	3·3	—	4·3	2·3	0·9	1·4	4·3	2·7	3·4	2·1	3·0	6·0	0·8	8·9	5·9
Gross Output . .	162·7	88·1	106·6	88·5	48·1	58·1	32·5	45·8	66·3	93·4	57·1	107·1	16·5	59·0	54·1	17·3	137·0	72·0	210·7	108·5
Costs																				
Foods	80·9	26·5	52·5	37·6	7·4	29·4	12·2	12·3	14·1	36·0	24·5	64·3	2·6	34·4	26·7	7·5	81·4	33·7	156·3	61·4
Seeds	0·9	1·0	0·9	2·7	0·4	0·1	1·9	1·7	3·5	2·3	1·9	3·1	0·2	0·8	0·7	0·1	—	4·2	—	—
Fertilisers . .	3·3	4·1	4·4	3·3	2·9	0·6	2·2	4·1	5·0	5·0	1·7	2·2	—	0·7	0·8	0·6	—	1·8	0·7	—
Rent & Rates	2·4	2·7	3·1	2·6	2·7	2·3	1·9	2·3	4·7	2·9	2·8	3·8	2·0	2·7	1·9	0·8	6·0	3·6	3·4	2·4
Power Costs . .	18·2	11·1	6·4	9·8	9·2	3·5	4·1	4·2	10·2	11·0	9·0	4·8	1·0	4·2	4·8	1·9	11·7	9·8	15·4	17·4
Labour (excl. farmer's) . .	13·2	16·6	12·6	7·5	6·6	5·1	11·2	4·8	12·8	14·8	4·5	13·9	2·4	5·1	9·6	2·3	0·2	13·0	15·8	9·7
Miscellaneous	10·0	4·7	5·7	5·0	1·1	2·0	2·7	4·1	4·1	7·7	5·8	8·0	0·7	2·6	3·4	2·1	8·0	7·9	12·8	9·7
Total Costs . .	128·9	66·7	85·6	68·5	30·3	43·0	36·2	33·5	54·4	79·7	50·2	100·1	8·9	50·5	47·9	15·3	107·3	74·0	204·4	100·6

APPENDIX II

POULTRY FARMS 1953–4

OUTPUT, COSTS AND INCOME PER FARM.

	C	F	I	K	L	P	Q	S	U	V	W	X	Y	Z	BB	CC	DD	EE
Output																		
Poultry	621	308	2,957	205	4,212	78	754	111	251	194	963	557	262	65	72	3,547	357	409
Eggs	1,206	1,440	2,521	3,534	4,574	2,242	1,809	1,124	958	3,263	1,941	1,157	295	3,678	832	1,597	1,887	545
Other Livestock	—	—	382	—	2,235	232	—	—	—	—	493	—	20	—	—	15	—	—
Crops..	—	—	—	—	64	—	—	50	—	—	—	—	—	—	—	111	1	—
Miscellaneous ..	56	14	92	59	309	161	35	30	27	28	76	12	13	119	17	24	79	11
Gross Output ..	1,883	1,762	5,952	3,798	11,394	2,713	2,598	1,315	1,236	3,485	3,473	1,726	590	3,862	921	5,294	2,324	965
Costs																		
Rent & Rates ..	60	9	112	17	52	98	39	9	16	10	44	28	3	50	6	95	37	24
Hired Labour ..	—	89	—	205	513	56	507	—	—	—	295	—	13	167	—	713	—	—
Family Labour..	80	—	343	104	—	156	—	—	100	155	—	180	17	52	—	—	—	—
Foods..	1,747	833	2,636	2,570	7,119	2,110	1,793	1,110	823	2,845	2,531	1,073	496	2,875	581	3,387	1,581	659
Seeds & Manure	13	—	—	—	26	—	34	—	—	—	—	—	—	—	—	—	—	—
Power Costs ..	125	38	506	167	914	239	112	88	52	261	193	72	69	290	76	457	71	227
Miscellaneous ..	24	59	523	94	467	53	88	23	28	22	166	29	77	49	12	390	73	107
Total Costs	2,049	1,028	4,120	3,157	9,091	2,712	2,573	1,230	1,019	3,293	3,229	1,382	675	3,483	675	5,042	1,762	1,017
Net Farm Inc. ..	–166	734	1,832	641	2,303	1	25	85	217	192	244	344	–85	379	246	252	572	–52
Farmer's Labour ..	310	197	192	311	352	310	65	311	296	311	311	311	89	300	266	233	311	311
Investment Inc. ..	–476	537	1,640	330	1,951	–309	–40	–226	–79	–119	–67	33	–174	79	–20	19	261	–363
Av. No. of Birds ..	915	411	1,376	1,113	1,325	1,115	598	477	350	1,339	800	541	208	1,365	295	750	711	455

APPENDIX III

MEASURES OF ECONOMIC EFFICIENCY — ARABLE FARMS — SHROPSHIRE AND STAFFORDSHIRE FARMS

County	Investment Inc. per Acre	Net Farm Inc. per Acre	Gross Output per Acre	Total Costs per Acre	Area in Cash Crops	Output per Acre (*b*)					Crop Yield Index	L'stk. Yield Index	L'stk. Output per Stock Acre	Cattle Output per Cattle Unit	Sheep Output per Sheep Unit	Pig Output per Pig Unit	Purchased Manures per Acre	Gross Output per	
						All Cash Crops	Wheat	Barley	Sugar Beet	Potatoes								£100 Labour (*a*)	£100 Labour & Power (*a*)
	£	£	£	£	%	£	£	£	£	£			£	£	£	£	£	£	£
Staffs.	28·3	29·0	122·3	93·3	71	66	35	32	85	120	124	109	255	37	—	125	5·5	514	298
Salop	13·3	13·8	75·2	61·4	70	78	—	56	86	101	123	80	39	20	27	83	10·1	449	215
Salop	12·0	12·3	64·6	52·3	42	109	59	79	120	144	160	108	26	21	43	82	3·5	314	196
Salop	11·5	12·0	77·7	65·7	57	66	42	41	84	80	102	108	97	28	27	125	4·9	492	293
Salop	11·5	11·6	42·9	31·3	51	54	43	23	83	86	109	145	28	33	52	—	3·6	354	260
Salop	10·2	10·9	38·0	27·1	40	59	49	—	117	85	126	98	22	21	24	132	5·8	512	324
Salop	9·7	9·7	31·5	21·8	42	55	29	23	—	103	121	73	14	22	22	107	3·9	367	285
Salop	6·6	6·7	41·4	34·7	38	58	46	35	80	77	102	90	29	24	28	109	3·2	332	250
Salop	5·3	6·1	26·7	20·5	33	42	26	28	—	80	89	83	17	24	34	104	2·3	325	221
Salop	5·0	5·9	34·4	28·5	46	45	—	22	89	57	83	83	18	45	37	152	5·2	372	221
*Salop	3·8	5·3	19·8	14·5	31	26	38	—	—	18	36	62	14	26	31	—	0·9	335	209
Av. 10 farms	11·2	11·7	54·5	42·8	44	59	43	32	94	96	114	98	40	27	31	113	4·6	395	250

* Not included in average.
(*a*) Includes farmer's labour.
(*b*) Calculated from acreage sold and available for sale.

County	Investment Inc. per Acre	Net Farm Inc. per Acre	Gross Output per Acre	Total Costs per Acre	Area in high Output Cash Crops	Output per Acre (b)								Other Mkt. Gdn.		Crop Yield Index	L'stk. Yield Index	Yield of Potatoes per Acre	Manures per Acre		Seeds per Acre	Gross Output per	
						All Cash Crops	Wheat	Oats	Barley	Peas	Potatoes	Hay	Brassicas	Contract	Non-Contract				Total (d)	Purchased only		£100 Labour (a)	£100 Labour & Power (a)
	£	£	£	£	%	£	£	£	£	£	£	£	£	£	£			tons	£	£	£	£	£
Lancs.	36·9	40·0	92·6	52·6	60	90	35	—	—	118	139	23	49	—	75	130	48	13	16·9	16·7	4·0	638	408
,,	23·8	27·0	78·7	51·7	38	83	50	38	—	118	182	21	53	—	36	161	49	13	9·1	8·4	4·3	310	216
,,	23·6	28·7	75·9	47·2	48	68	45	32	—	98	90	—	90	—	—	116	115	8	8·4	8·3	8·2	435	304
,,	21·3	24·4	67·6	43·2	32	70	42	19	—	95	110	47	81	—	—	138	23	9	5·8	5·7	3·8	257	214
,,	21·1	23·6	68·3	44·7	26	71	45	33	—	—	93	26	—	333	—	130	101	10	9·6	8·3	4·5	420	268
* ,,	20·6	23·3	130·2	106·9	48	67	49	30	59	62	130	48	nil	67	—	113	75	11	(c)	5·0	2·8	567	290
* ,,	18·4	20·3	76·0	55·7	12	46	43	31	23	—	116	12	66	—	185	137	97	10	3·9	3·1	2·6	582	263
,,	16·9	17·7	69·4	51·7	24	63	46	29	—	78	111	40	—	—	—	134	103	10	10·8	9·2	3·2	563	299
,,	15·0	20·6	60·3	39·7	26	49	33	28	—	—	90	17	—	—	—	108	90	9	8·1	7·4	3·1	415	313
,,	14·2	14·2	78·1	63·9	27	80	56	38	—	145	171	19	—	—	—	176	92	15	9·4	9·1	5·2	393	259
,,	13·6	18·4	41·8	23·4	19	43	37	32	—	—	66	9	50	—	114	99	—	6	5·8	5·8	1·7	353	255
,,	12·9	15·0	63·6	48·6	25	62	43	29	—	60	133	37	12	—	—	126	114	11	6·0	5·7	5·8	290	217
,,	12·8	15·1	64·4	49·3	14	67	58	62	—	—	136	30	55	—	—	161	137	10	7·1	6·6	2·0	274	199
,,	12·0	15·0	129·1	114·1	35	87	34	—	—	—	114	24	9	259	—	127	67	11	13·8	10·6	3·7	402	299
* ,,	11·4	11·4	133·6	122·2	41	128	51	—	29	119	155	—	58	203	—	166	97	13	16·1	16·1	8·5	329	212
* ,,	11·3	14·0	127·9	113·9	14	72	—	—	—	95	—	—	66	—	66	128	70	—	(c)	3·7	1·5	460	225
,,	10·6	12·0	45·0	33·0	24	48	29	17	—	—	105	17	—	—	—	111	44	10	7·3	7·2	3·7	352	263
,,	10·2	12·8	46·8	34·0	14	50	40	29	34	91	132	43	2	—	—	134	66	12	6·3	6·2	4·5	356	241
* ,,	9·6	10·8	105·8	95·0	44	106	47	51	—	93	96	31	117	91	30	122	62	9	10·6	14·4	6·1	379	223
,,	9·3	14·9	70·3	55·4	39	59	26	22	—	—	104	25	—	—	231	117	69	10	6·4	6·1	2·8	242	178
,,	9·2	11·6	48·9	37·3	11	45	42	30	—	—	116	25	—	—	—	139	74	10	6·5	5·7	2·0	358	248
* ,,	8·7	10·9	60·6	49·7	17	69	50	39	—	—	97	—	—	—	—	119	99	8	6·2	4·1	3·8	347	248
,,	8·2	8·2	50·9	42·7	25	51	44	35	56	51	80	32	51	—	—	103	69	8	8·2	7·6	4·0	366	209
,,	6·9	7·5	36·9	29·4	16	37	—	29	—	—	77	19	—	—	—	100	93	8	5·9	5·4	2·8	435	270
,,	6·6	8·7	55·7	47·0	8	51	40	32	48	—	112	17	90	—	—	150	—	13	7·5	7·5	6·2	336	209
,,	6·1	10·0	42·3	32·3	22	42	34	26	—	—	83	20	—	—	—	104	52	8	6·4	6·3	4·5	304	217
,,	6·1	9·0	49·9	40·9	25	52	44	33	—	—	97	17	nil	—	—	121	25	11	9·5	9·4	2·9	277	210
,,	5·9	10·7	57·6	46·9	24	35	30	17	27	—	65	8	—	—	—	78	94	6	7·8	6·7	3·0	320	230
,,	5·6	8·8	49·0	40·2	20	46	34	28	—	60	89	24	—	—	—	109	92	8	7·4	6·4	2·5	300	227
,,	5·5	7·8	59·6	51·8	22	57	41	34	—	—	130	30	—	—	—	150	—	12	11·2	11·2	7·8	403	248
,,	4·0	7·3	61·5	54·2	26	54	35	—	23	83	77	30	41	—	—	107	70	7	7·2	6·0	4·8	299	224
,,	3·6	6·3	47·9	41·6	19	48	28	—	21	—	93	30	73	—	73	114	41	8	4·4	4·2	4·2	223	164
,,	1·9	5·5	40·1	34·6	19	41	30	32	—	—	113	33	nil	—	—	91	—	10	8·7	8·6	1·6	289	194
,,	1·9	4·1	70·2	66·1	30	63	54	31	37	104	106	27	—	—	—	132	91	10	8·0	6·4	6·0	365	250
,,	1·8	4·0	40·2	36·2	23	42	21	26	—	—	81	25	—	—	—	94	64	7	7·5	6·0	3·8	287	196
,,	–2·0	2·9	36·8	33·9	19	38	25	25	—	—	80	17	15	—	—	87	79	7	4·8	4·7	2·7	227	174
,,	–2·1	3·1	83·9	80·8	36	61	24	—	—	103	64	29	—	—	147	95	96	6	8·4	7·0	4·4	293	181
* ,,	–16·0	–16·0	46·0	62·0	36	45	22	25	—	42	141	26	—	—	—	86	44	12	(c)	8·8	5·9	135	133
* ,,	–19·5	–19·5	52·3	71·8	24	51	40	32	—	—	38	21	24	—	113	109	12	4	(c)	8·8	2·3	161	118
Av. of 31 farms	10·2	12·5	58·5	46·0	26	55	39	30	38	97	105	25	46	259	91	122	79	10	8·0	7·3	3·9	350	239

* Not included in average.
(a) Includes farmer's labour.
(b) Calculated from acreage sold and available for sale.
(c) Not available.
(d) Includes home-produced manures.

MIXED ARABLE FARMS

County	Investment Inc. per Acre	Net Farm Inc. per Acre	Gross Output per Acre	Total Costs per Acre	Area in Cash Crops	Area in Cash Roots	Prop'n of Total Output from Cash Crops	Crop Yield Index	Output per Acre: All Cash Crops	Wheat	Barley	Potatoes	Sugar Beet	L'stk. Output per Feed Acre	Cattle & Milk Output per Cattle Unit	Pig Output per Pig Unit	Yield per Cow	L'stk. Yield Index	Feed Acres per L.S.U.	Gross Output per: £100 Labour (a)	£100 Labour and Power (a)	Size Group
	£	£	£	£	%	%	%		£	£	£	£	£	£	£	£	galls.			£	£	acres
Staffs.	25·4	25·8	75·0	49·2	39·0	27·4	48	130	91·0	24·6	36·0	123·5	108·0	36	90	117	822	106	2·9	490	274	350–400
Ches.	25·0	29·1	111·4	82·3	16·0	13·6	12	104	86·0	—	—	95·1	—	45	109	121	773	108	2·5	681	471	50–100
Staffs.	24·5	25·7	58·4	32·7	30·0	14·0	36	125	70·2	36·0	—	114·0	105·0	38	99	119	914	117	2·6	491	382	100–150
Ches.	17·5	19·5	111·5	92·0	27·7	15·0	18	111	64·0	—	—	90·5	—	41	109	101	845	97	2·4	560	366	150–200
*Ches.	17·1	19·0	67·7	48·7	34·0	6·7	30	137	58·0	55·0	—	98·2	—	41	88	—	804	116	2·1	529	326	200–250
Salop	17·1	17·9	54·4	36·5	34·6	16·8	50	137	75·0	50·7	54·7	109·6	99·8	28	76	—	952	124	2·0	412	293	400–450
Staffs.	15·3	16·1	51·2	35·1	29·0	17·0	46	121	79·3	41·0	—	117·0	98·0	29	93	93	738	105	2·1	386	260	150–200
Salop	14·8	15·0	48·8	33·8	43·5	19·0	53	112	57·0	33·3	47·3	119·1	51·7	31	74	—	657	101	2·0	373	248	400–450
Ches.	14·5	15·7	73·7	57·8	22·3	13·0	25	125	82·0	—	—	124·7	—	43	118	—	728	134	2·6	295	215	50–100
Lancs.	13·7	14·9	51·6	36·7	61·4	19·0	72	129	61·0	43·8	—	103·7	—	31	80	—	645	76	2·6	352	253	200–250
Salop	11·4	11·9	51·6	39·7	25·0	9·3	29	121	59·0	48·3	46·5	88·2	81·2	31	64	119	717	93	2·1	371	245	200–250
Staffs.	11·0	11·4	39·6	28·2	33·0	13·3	46	104	55·0	46·6	43·4	67·6	68·1	25	86	82	799	108	2·6	376	261	350–400
Ches.	10·3	10·3	64·4	54·1	19·0	12·0	19	97	65·0	—	26·7	83·2	—	35	98	108	815	104	2·8	478	318	150–200
Salop	9·8	10·7	41·1	30·4	32·1	6·5	35	109	46·0	40·8	—	70·3	—	27	80	35	915	115	2·9	559	277	300–350
Ches.	9·0	11·2	77·6	66·4	48·2	12·7	40	145	64·0	28·6	—	153·4	—	38	103	140	944	127	2·9	374	277	100–150
Salop	8·7	13·2	56·3	43·1	29·0	10·3	28	117	54·0	37·0	—	—	96·9	37	93	91	842	124	2·5	345	230	50–100
Staffs.	8·4	9·0	54·2	45·2	36·1	16·5	57	147	86·0	55·2	—	128·2	—	28	71	—	684	87	2·6	318	194	200–250
Salop	8·4	9·0	58·8	49·8	33·0	18·4	38	109	66·3	50·0	—	94·0	71·0	31	72	135	662	100	2·6	435	271	300–350
Salop	8·3	9·8	52·0	42·2	38·0	10·6	37	112	50·1	31·0	—	103·0	—	34	90	—	882	120	2·5	433	277	150–200
*Staffs.	8·2	9·8	54·7	44·9	20·0	6·8	19	117	53·0	38·2	30·1	89·0	88·9	35	79	120	653	102	2·5	432	262	150–200
Salop	8·2	8·9	24·8	15·9	10·0	3·4	17	113	42·0	—	36·6	54·5	70·7	21	57	94	740	99	2·4	384	248	400–450
Salop	8·0	9·2	36·9	27·7	13·1	—	9	108	26·2	28·4	30·0	—	—	28	71	118	657	97	3·0	462	286	200–250
Staffs.	7·5	8·2	39·7	31·5	42·0	10·6	62	140	58·0	46·0	—	127·0	69·0	19	43	59	450	71	2·9	312	198	400–450
Staffs.	7·0	8·0	50·7	42·7	62·8	11·8	44	91	36·0	36·2	23·6	61·7	—	46	79	—	614	108	1·7	379	234	300–350
Ches.	6·9	10·8	49·7	38·9	21·1	7·8	23	103	54·0	37·8	—	72·3	—	31	84	128	560	80	2·7	368	274	50–100
Ches.	6·7	7·9	45·4	37·5	21·7	9·0	19	70	40·0	19·7	—	68·9	—	34	73	91	730	102	2·2	291	215	200–250
Ches.	6·0	7·0	53·7	46·7	29·7	11·7	25	84	45·0	26·4	—	66·5	—	35	80	—	734	93	2·4	269	223	200–250
Salop	5·9	7·0	50·7	43·7	28·0	12·4	22	77	38·4	38·0	—	52·0	56·0	34	65	95	721	100	2·1	398	262	250–300
Lancs.	5·1	5·9	52·4	46·5	16·8	8·5	15	84	49·0	—	—	72·7	—	33	59	110	720	78	1·9	329	245	150–200
Ches.	4·3	6·9	44·8	37·9	25·5	11·0	34	104	60·0	33·1	—	90·4	—	29	98	104	925	105	3·1	325	223	150–200
Lancs.	4·0	7·4	62·0	54·6	39·4	14·4	41	130	64·0	30·8	—	120·8	—	46	118	—	(c)	116	2·4	233	175	50–100
Salop	3·5	4·2	41·3	37·0	26·3	5·0	24	93	38·0	34·7	30·3	68·0	51·8	32	74	196	740	112	2·2	303	199	400–450
Staffs.	3·4	3·9	42·3	38·4	29·0	15·0	36	88	52·6	27·0	29·0	82·9	—	29	73	108	712	98	2·1	312	199	200–250
Ches.	3·3	6·8	38·5	31·8	40·8	14·0	53	91	56·0	31·0	65·0	—	—	27	44	—	420	65	1·6	209	161	100–150
Salop	3·3	3·9	43·5	39·6	4·0	5·7	10	100	93·1	—	—	—	75·0	32	66	114	770	103	2·2	380	243	500–550
Staffs.	2·1	3·2	50·1	46·9	26·8	12·6	28	89	54·0	29·8	—	80·6	—	27	60	166	691	87	2·8	390	283	250–300
Salop	–1·5	–1·3	35·6	36·9	16·0	7·5	25	98	55·0	35·9	37·7	92·8	53·9	23	81	175	855	128	3·2	348	224	500–550
Lancs.	–5·3	–2·8	35·9	38·7	31·9	0·6	35	83	40·0	—	—	56·0	—	27	88	—	654	87	3·0	269	139	50–100
Lancs.	–7·5	–2·6	66·9	69·5	31·0	17·4	32	104	68·0	37·3	—	88·0	—	38	85	149	848	111	2·7	304	197	50–100
*Staffs.	–10·9	–10·9	20·6	31·5	27·8	(c)	18	(c)	14·0	(c)	(c)	(c)	(c)	20	38	91	540	(c)	1·9	166	115	300–350
Av. of 37 farms	8·8	9·8	50·0	40·2	29·7	11·9	35	111	57·8	39·3	36·8	96·1	76·2	31	76	112	741	102	1·8	375	248	—

* Not included in average.

(a) Includes farmer's labour.

(c) Not available.

LIVESTOCK REARING FARMS

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Livestock Output per			Stock Acres per L.S.U.	Cattle Output per Cattle Unit	Sheep Output per Sheep Unit	Ratio Sheep Units: Cattle Units	Yield Index	Labour Index (a)	Area in Cash Crops	Altitude	Gross Output per		
					L'stk. Unit	Stock Acre	Feed Acre									£100 Costs (e)	£100 Labour (a)	£100 Labour and Power (a)
	£	£	£	£	£	£	£		£	£				%	feet	£	£	£
Salop	7·2	13·3	45·6	32·2	49	48	29	1·0	29	38	1·32 : 1	73	125	15	1,300	141	456	258
,,	5·6	17·2	32·0	14·8	30	28	27	1·1	29	27	2·11 : 1	64	49	4	1,430	216	197	172
* ,,	3·7	9·1	24·0	14·9	55	23	22	2·4	67M	33	0·68 : 1	93	68	3	750	161	23	22
,,	3·1	8·4	17·2	8·8	33	16	14	2·1	20	34	1·39 : 1	86	79	4	1,050	195	260	180
,,	2·1	9·1	24·6	15·5	22	23	20	1·0	8	15	1·45 : 1	81	97	2	800	158	318	198
,,	1·9	11·9	34·9	23·0	38	34	24	1·1	29	42	1·34 : 1	90	48	10	1,400	152	239	171
,,	1·2	9·6	20·5	10·9	34	17	16	2·0	18	42	1·67 : 1	88	63	1	1,350	188	194	185
,,	1·1	11·2	52·5	41·3	51	51	22	1·0	84M	19	1·32 : 1	90	45	4	1,200	127	237	214
,,	0·7	10·9	22·2	11·3	19	17	15	1·1	21	12	0·47 : 1	75	60	7	850	196	183	176
Av. of 8 farms	3·2	11·2	31·6	20·4	37	30	22	1·2	36	28	1·20 : 1	82	69	5		167	264	193

* Not included in average.
(a) Includes farmer's labour.
(e) Excludes farmer's labour.
M Includes milk sales.

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Livestock Output per			Stock Acres per L.S.U.	Cattle Output per Cattle Unit	Sheep Output per Sheep Unit	Ratio Sheep Units: Cattle Units	Yield Index	Labour Index (a)	Area in Cash Crops	Altitude	Gross Output per		
					L'stk. Unit	Stock Acre	Feed Acre									£100 Costs (e)	£100 Labour (a)	£100 Labour and Power (a)
	£	£	£	£	£	£	£		£	£				%	feet	£	£	£
Salop	11·0	13·3	25·0	11·7	24	21	20	1·1	18	26	1·51 : 1	87	125	8	625	213	412	291
,,	8·0	11·9	19·1	7·2	35	17	17	2·0	27	38	1·33 : 1	105	74	5	1,200	265	331	270
,,	7·9	9·9	19·3	9·4	29	16	15	1·9	20	37	1·38 : 1	101	127	10	1,200	204	397	260
,,	6·4	10·1	30·7	20·6	49	30	28	1·6	67M	26	0·94 : 1	145	63	10	600	149	296	188
,,	6·1	8·9	20·6	11·7	36	18	18	2·0	21	45	1·12 : 1	107	85	—	950	175	344	221
,,	4·1	8·0	27·6	19·6	37	25	22	1·5	30	14	1·22 : 1	91	87	13	1,000	141	344	231
,,	3·5	7·1	21·6	14·5	30	19	18	1·6	11	38	1·21 : 1	90	84	7	1,300	149	226	171
,,	2·8	6·9	20·5	13·6	26	18	16	1·4	15	32	1·44 : 1	77	60	—	1,275	151	202	173
,,	2·4	4·9	13·2	8·3	27	11	11	2·4	16	31	1·88 : 1	84	88	—	1,200	159	235	197
,,	2·3	2·3	10·6	8·3	14	10	10	1·4	11	14	6·80 : 1	48	121	2	850	128	290	248
,,	2·3	5·0	15·3	10·3	26	14	13	1·9	24	44	0·63 : 1	96	89	—	900	149	236	173
,,	2·2	4·9	14·4	9·5	23	12	11	2·0	11	29	1·04 : 1	73	148	—	1,100	152	363	223
,,	2·0	7·0	21·9	14·9	39	20	17	2·0	18	44	1·32 : 1	95	72	1	1,300	147	311	203
,,	0·6	5·2	24·1	18·9	35	22	20	1·6	67M	9	1·28 : 1	66	68	10	600	128	258	168
,,	0·1	4·9	21·8	16·9	26	19	18	1·4	23	25	1·64 : 1	77	70	8	1,100	129	243	178
,,	−0·7	0·6	17·6	17·0	33	15	14	2·2	23	37	1·46 : 1	100	85	6	950	103	265	160
* ,,	−0·8	2·9	14·7	11·8	24	13	12	1·9	31	16	1·54 : 1	68	74	4	900	125	184	131
,,	−1·3	3·0	10·7	7·7	13	9	8	1·4	13	13	1·10 : 1	46	87	14	800	140	181	144
,,	−1·6	1·8	15·1	13·3	31	12	11	2·7	19	36	1·54 : 1	108	79	—	1,150	113	220	132
,,	−2·6	1·7	16·9	15·2	18	15	14	1·2	9	19	1·38 : 1	70	63	23	1,150	111	237	133
Av. of 18 farms	3·4	6·3	18·8	12·5	29	17	16	1·7	23	29	1·42 : 1	88	88	4		153	284	198

* Not included in average.
(a) Includes farmer's labour.
(e) Excludes farmer's labour.
M Includes milk sales.

LIVESTOCK REARING FARMS

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Livestock Output per			Stock Acres per L.S.U.	Cattle Output per Cattle Unit	Sheep Output per Sheep Unit	Ratio Sheep Units: Cattle Units	Yield Index	Labour Index (*a*)	Area in Cash Crops	Altitude	Gross Output per		
					L'stk. Unit	Stock Acre	Feed Acre									£100 Costs (*e*)	£100 Labour (*a*)	£100 Labour and Power (*a*)
	£	£	£	£	£	£	£		£	£				%	feet	£	£	£
Salop	9·5	10·2	24·5	14·3	37	21	19	1·8	32	30	1·06 : 1	106	93	9	500	171	410	300
,,	6·8	8·2	31·0	22·8	37	30	23	1·2	16	20	2·15 : 1	88	105	25	1,175	136	527	310
,,	6·5	8·1	26·2	18·1	23	21	20	1·1	14	45	0·41 : 1	101	64	15	600	144	328	212
,,	6·4	6·7	14·3	7·6	17	12	11	1·3	11	26	0·72 : 1	82	244	7	1,100	187	649	395
,,	6·2	7·0	17·4	10·4	30	13	13	3·6	23	27	1·28 : 1	104	138	1	1,500	167	517	299
,,	5·0	6·8	28·3	21·5	21	21	20	1·0	20	19	1·39 : 1	87	107	12	600	131	364	223
,,	4·9	6·4	19·0	12·6	29	14	14	2·0	38	25	1·54 : 1	108	75	15	600	151	302	207
,,	4·5	5·0	12·0	7·0	25	12	12	2·1	14	32	1·32 : 1	92	139	35	1,000	172	550	343
,,	3·4	4·3	13·5	9·2	27	12	11	2·3	21	31	1·53 : 1	103	92	—	800	147	289	239
,,	2·9	3·1	18·7	15·6	28	15	14	1·9	19	33	0·98 : 1	105	116	—	900	120	236	180
,,	2·4	4·2	19·1	14·9	32	16	15	2·0	22	30	0·83 : 1	92	89	14	1,000	128	379	196
,,	0·5	0·5	9·3	8·8	23	7	7	3·1	23	24	0·81 : 1	92	93	7	800	106	316	261
,,	0·0	1·7	9·5	7·8	12	6	6	2·0	–2	23	1·17 : 1	54	112	9	1,200	122	224	150
Av. of 13 farms	4·9	5·6	17·0	11·4	26	15	14	11·4	19	32	1·0 : 1	93	113	12		144	391	254

(*a*) Includes farmer's labour.

(*e*) Excludes farmer's labour.

MEASURES OF ECONOMIC EFFICIENCY — UPLAND DAIRY FARMS — SIZE 0—50 ACRES — WHOLESALE

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII
County (*f*)	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Purchased Feed per Acre	Seeds and Fertilisers per Acre	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield Index	Yield per Cow	Live-stock Output per Feed Acre	Live-stock Output per £100 Purchased Feed	Milk and Cattle Output per Cattle Unit	Poultry and Egg Output per Poultry Unit	Labour Index (*a*)	Gross Output per £100 Labour (*a*)
	£	£	£	£	£	£				galls.	£	£	£	£		£
*NES	35·3	41·9	123·8	81·9	54·7	2·4	1·1	65	141	941	47	222	140	155	70	527
*EL	18·5	26·4	137·2	110·8	72·4	4·5	0·7	51	105	917	44	183	95	98	118	829
EL	8·4	18·0	116·8	98·8	74·6	3·4	0·8	54	110	951	36	153	137	127	109	850
EL	6·5	14·1	82·1	68·0	44·4	1·3	1·4	41	103	812	34	170	114	88	65	520
EL	6·2	8·9	52·3	43·4	22·9	0·4	1·1	51	65	496	30	218	64	72	130	399
NES	4·8	14·1	76·6	62·5	45·6	0·6	1·4	42	94	759	33	163	117	81	79	521
NES	3·1	11·8	61·8	49·9	40·1	—	1·0	42	85	684	27	147	61	59	95	498
NES	2·0	9·4	30·8	21·4	13·9	0·4	2·4	18	94	731	21	218	67	166	65	340
NES	1·1	7·4	61·5	54·1	35·0	1·0	1·3	35	85	714	28	171	74	73	112	575
NES	0·4	2·8	51·5	48·3	31·3	—	1·1	35	94	628	22	214	108	86	49	301
EL	−0·2	14·4	67·4	53·0	30·6	0·2	1·5	55	86	640	36	149	55	70	76	370
EL	−0·9	5·9	49·9	44·0	27·3	1·8	1·6	42	82	524	27	176	84	124	84	403
NES	−1·3	8·6	31·6	23·0	12·5	0·4	1·8	23	86	624	21	225	54	71	49	223
EL	−2·4	−2·4	41·9	44·3	17·9	1·1	1·6	41	72	641	26	189	50	46	62	259
NES	−3·1	5·5	36·7	31·2	17·7	0·3	1·3	31	85	530	22	216	63	—	90	274
EL	−3·4	5·4	31·7	26·3	17·7	—	2·2	30	84	607	20	168	78	41	67	303
*NES	−4·1	7·9	48·4	40·5	23·8	—	1·4	31	74	590	25	191	55	95	51	233
*EL	−6·0	7·0	60·8	53·8	36·8	—	1·1	51	61	564	29	160	76	58	72	321
NES	−6·8	4·8	22·4	17·6	11·8	0·2	2·0	16	49	573	16	177	50	29	62	193
NES	−7·0	0·7	26·1	25·4	15·7	0·1	2·0	25	75	655	15	150	45	—	59	198
NES	−7·4	−0·7	28·4	29·1	20·0	—	1·9	20	75	751	17	135	65	26	54	250
NES	−7·5	4·8	81·5	76·7	55·0	0·6	1·0	62	88	610	28	136	81	76	53	317
NES	−8·3	7·4	55·5	48·1	28·0	4·1	0·9	41	72	590	26	170	48	51	56	251
EL	−11·0	−2·2	40·9	43·1	24·0	0·1	1·7	38	60	470	21	167	60	55	65	280
Av. of 20 farms	−1·2	6·6	51·2	44·6	28·8	0·8	1·4	36	87	661	26	168	73	74	72	368

* Not included in average.
(*a*) Includes farmer's labour.

(*f*) NES=North East Staffordshire.
EL=East Lancashire.

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII
County (*f*)	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Purchased Feed per Acre	Seeds and Fertilisers per Acre	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield Index	Yield per Cow	Livestock Output per Feed Acre	Livestock Output per £100 Purchased Feed	Milk and Cattle Output per Cattle Unit	Poultry and Egg Output per Poultry Unit	Labour Index (*a*)	Gross Output per £100 Labour (*a*)
	£	£	£	£	£	£				galls.	£	£	£	£		£
EL	13·5	16·6	75·8	59·2	33·4	2·4	1·4	34	130	909	37	213	102	148	60	416
EL	9·8	11·3	74·0	62·7	29·6	3·0	1·5	31	144	947	35	240	105	157	88	475
NES	9·3	14·8	44·3	29·5	16·5	1·5	1·8	32	90	634	29	263	80	84	70	427
EL	9·3	10·6	48·3	37·7	17·6	1·5	1·6	34	94	737	30	260	85	74	101	441
NES	7·7	13·7	64·3	50·6	34·9	1·1	1·3	38	94	715	31	175	96	76	106	614
NES	7·6	10·7	51·7	41·0	30·3	0·6	1·7	28	107	783	25	160	91	86	108	804
NES	7·0	10·7	51·8	41·1	19·8	0·9	1·3	31	93	677	32	244	69	49	97	447
NES	6·5	11·2	59·1	47·9	29·2	1·2	1·8	31	116	1,001	32	200	111	70	87	731
NES	6·0	9·1	31·2	22·1	9·4	0·8	2·2	26	86	642	22	318	64	46	87	312
NES	5·8	9·7	26·0	16·3	5·0	0·2	2·3	25	84	652	22	477	64	—	68	298
NES	5·8	9·2	39·0	29·8	17·6	0·7	1·9	32	82	588	25	212	75	104	104	439
EL	5·4	8·7	34·6	25·9	7·0	3·4	2·5	15	128	748	23	337	79	—	67	373
EL	4·8	10·3	80·1	69·8	46·7	1·0	0·9	54	77	560	33	166	73	75	104	480
NES	4·6	9·3	45·6	36·3	16·8	2·4	1·7	38	93	750	29	260	83	74	80	337
NES	3·7	7·5	36·6	29·1	14·2	0·7	1·9	27	81	658	24	246	68	44	99	440
NES	2·8	4·3	32·4	28·1	17·6	0·9	1·9	23	81	569	19	177	69	32	88	406
*NES	2·4	4·4	30·3	25·9	8·8	0·8	2·2	26	93	603	22	311	65	—	71	278
NES	2·2	5·8	36·6	30·8	14·6	1·2	1·9	33	82	662	25	232	67	64	91	381
*NES	1·9	3·4	17·5	14·1	10·2	0·2	2·3	23	58	428	12	163	41	—	104	297
EL	1·0	5·4	69·5	64·1	42·7	0·9	1·5	35	103	663	31	158	94	166	97	519
EL	0·4	3·4	35·0	31·6	13·3	5·8	2·9	19	77	1,062	24	197	149	44	174	723
NES	−0·2	3·6	32·1	28·5	20·3	0·8	2·4	19	101	846	18	147	74	79	82	449
NES	−0·4	4·7	27·6	22·9	13·7	0·2	1·8	19	92	889	18	193	58	43	61	271
NES	−0·4	3·1	10·8	7·7	4·1	0·1	4·2	16	55	338	8	224	42	40	77	216
NES	−0·7	4·2	53·1	48·9	30·8	0·8	1·8	36	94	742	28	170	97	92	80	450
NES	−3·7	1·4	26·5	25·1	12·2	—	2·4	22	77	589	19	204	58	101	37	183
NES	−4·5	0·2	12·4	12·2	8·3	0·4	4·0	14	70	498	9	139	51	28	67	191
*EL	−14·0	−8·9	39·9	48·8	31·1	1·5	1·9	25	75	822	20	122	71	51	90	419
Av. of 25 farms	4·3	8·0	43·4	35·4	19·5	1·4	1·8	28	95	719	26	207	81	88	85	428

* Not included in average.
(*a*) Includes farmer's labour.

(*f*) NES=North East Staffordshire.
EL=East Lancashire.

MEASURES OF ECONOMIC EFFICIENCY — UPLAND DAIRY FARMS — SIZE 100 ACRES AND OVER — WHOLESALE

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII
County (*f*)	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Purchased Feed per Acre	Seeds and Fertilisers per Acre	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield Index	Yield per Cow	Livestock Output per Feed Acre	Livestock Output per £100 Purchased Feed	Milk and Cattle Output per Cattle Unit	Poultry and Egg Output per Poultry Unit	Labour Index (*a*)	Gross Output per £100 Labour (*a*)
	£	£	£	£	£	£				galls.	£	£	£	£		£
St.	10·4	12·2	39·2	27·0	16·5	0·9	1·7	32	86	610	26	235	68	126	112	569
Sa.	9·7	10·4	39·3	28·9	9·4	3·5	2·2	24	108	878	33	386	101	—	118	628
St.	6·8	9·4	57·3	47·9	30·5	1·5	1·3	41	114	783	25	254	92	33	99	613
Sa.	5·7	7·6	46·1	38·5	11·6	2·0	1·6	33	104	690	28	341	76	—	88	372
St.	5·0	7·3	40·6	33·3	21·0	0·9	1·8	26	83	726	24	192	71	53	93	435
St.	2·5	4·4	24·7	20·3	9·4	0·6	2·2	20	78	652	19	255	65	57	92	347
St.	2·1	3·6	17·7	14·1	5·5	0·6	2·2	15	72	604	15	310	42	105	101	390
St.	–0·6	2·3	52·3	50·0	33·3	0·8	1·9	33	124	833	26	155	98	131	91	626
*St.	–0·7	1·5	28·0	26·5	12·9	0·6	2·0	23	80	(*c*)	19	205	63	14	97	365
Av. of 8 farms	6·1	7·8	37·9	30·1	14·3	1·7	1·9	26	98	739	25	251	78	70	101	504

* Not included in average.
(*a*) Includes farmer's labour.
(*c*) Not available.

(*f*) St=Staffordshire
Sa=Shropshire.

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII
County (*f*)	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Purchased Feed per Acre	Seeds and Fertilisers per Acre	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield Index	Yield per Cow	Livestock Output per Feed Acre	Livestock Output per £100 Purchased Feed	Milk and Cattle Output per Cattle Unit	Poultry and Egg Output per Poultry Unit	Labour Index (*a*)	Gross Output per £100 Labour (*a*)
	£	£	£	£	£	£				galls.	£	£	£	£		£
*EL	40·3	47·2	173·1	125·9	58·3	—	1·2	55	203	823	65	288	276	102	129	548
EL	24·7	30·0	123·5	93·5	50·0	3·2	1·0	43	123	801	48	241	132	123	95	525
EL	23·5	32·4	133·5	100·9	68·9	—	0·9	44	109	817	43	185	126	130	59	413
EL	12·5	15·2	85·7	70·5	34·8	1·6	1·8	39	165	810	40	238	154	139	85	416
EL	12·4	15·5	61·4	45·9	24·9	0·3	1·3	46	111	744	38	237	102	50	98	440
*EL	4·3	7·5	44·0	36·5	13·9	0·1	1·9	22	123	837	31	306	100	22	75	270
EL	3·9	8·0	45·7	37·7	22·2	0·4	2·1	33	98	617	27	192	96	58	99	405
EL	0·5	7·0	69·2	62·2	31·4	0·9	1·4	52	97	505	30	174	90	—	74	326
EL	0·0	5·3	83·3	78·0	47·6	0·8	1·4	33	133	854	34	167	129	72	111	456
EL	–3·2	5·3	69·2	63·9	28·4	1·6	1·6	48	115	706	37	238	123	—	71	324
*EL	–6·2	5·5	85·2	79·7	46·8	—	1·5	54	132	649	35	176	135	90	68	299
*EL	–7·2	33·6	233·7	200·1	169·3	—	0·4	93	84	956	40	132	164	46	101	573
Av. of 8 farms	9·2	13·7	77·6	63·9	34·3	1·1	1·4	41	124	730	38	214	121	108	89	421

* Not included in average.
(*a*) Includes farmer's labour.

EL=East Lancashire.

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Area in Cash Crops	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield per Cow	Milk per Stock Acre	Milk and Cattle Output per S.A.	Livestock Output per Feed Acre	Gross Output per £100 Labour and Power (a)	Purchased Feed per Acre	Fertilisers per Acre	Labour per Acre (a)	Power Costs per Acre
	£	£	£	£	%			galls.	galls.	£	£	£	£	£	£	£
Salop	11·9	17·8	107·1	89·3	10	0·9	70	845	588	88	40	297	49·9	0·4	20·7	15·3
Salop	10·6	16·6	47·6	31·0	6	1·6	34	744	250	44	34	269	14·3	0·5	14·4	3·2
Salop	9·5	20·6	65·8	45·2	17	1·3	40	643	254	49	42	220	15·4	3·4	22·8	7·1
Ches.	8·7	15·8	73·1	57·3	—	1·2	54	644	351	60	44	226	20·0	2·8	21·3	11·0
Ches.	7·2	13·4	103·1	89·7	—	1·2	48	1,036	507	86	42	346	49·7	2·8	19·9	9·9
Ches.	5·9	13·4	66·7	53·3	2	1·9	43	826	356	61	38	240	21·7	2·7	17·5	10·3
Salop	4·4	16·0	49·1	33·1	10	1·4	45	610	274	45	28	263	16·4	2·4	16·7	2·0
Ches.	4·4	11·7	35·0	23·3	9	1·8	34	495	169	26	23	224	7·2	0·3	7·7	8·0
Staffs.	3·4	9·8	51·6	41·8	—	1·6	37	762	283	43	32	242	18·2	0·5	12·6	8·7
Ches.	1·2	7·9	50·5	42·6	—	1·5	44	686	302	47	31	312	20·9	2·6	9·2	7·0
Ches.	0·2	10·2	53·7	43·5	8	1·6	40	774	310	49	33	256	20·8	2·6	12·8	8·1
Salop	–2·4	7·3	64·4	57·1	3	1·3	49	653	321	59	42	152	16·5	—	23·2	19·2
*Ches.	–5·5	3·7	71·9	68·2	4	1·0	44	632	281	48	29	310	41·5	1.9	21·2	2·0
Staffs.	–9·4	–2·1	46·3	48·4	—	1·5	31	467	146	36	19	253	29·4	—	10·8	7·5
*Ches.	–12·4	–5·1	44·7	49·8	—	1·7	34	647	220	39	24	256	29·6	1·2	8·9	8·5
Av. of 13 farms	4·8	12·5	63·0	50·5	4	1·4	44	739	323	54	35	253	22·9	1·7	15·9	9·0

* Not included in averages.

(a) Includes farmer's labour

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Area in Cash Crops	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield per Cow	Milk per Stock Acre	Milk and Cattle Output per S.A.	Livestock Output per Feed Acre	Gross Output per £100 Labour and Power (a)	Purchased Feed per Acre	Fertilisers per Acre	Labour per Acre (a)	Power Costs per Acre
	£	£	£	£	%			galls.	galls.	£	£	£	£	£	£	£
Salop	18·9	23·7	65·5	41·8	—	1·6	38	815	312	56	40	371	21·9	0·6	12·1	5·5
Salop	14·2	18·5	60·7	42·2	17	1·4	29	670	198	36	39	331	16·0	2·0	11·3	7·0
Staffs.	13·7	17·1	37·3	20·2	29	2·3	25	669	165	29	29	279	2·6	1·5	9·1	4·3
Ches.	13·5	17·8	67·3	49·5	4	1·3	32	747	238	46	38	299	21·8	2·1	14·1	8·5
Ches.	12·9	18·8	49·9	31·1	22	1·0	57	558	317	42	37	355	13·6	0·9	9·6	4·4
Salop	12·8	20·5	90·8	70·3	11	1·0	41	823	339	61	41	304	37·8	1·2	19·6	10·2
Ches.	12·7	17·8	36·2	18·4	2	1·8	36	592	211	34	33	271	2·1	—	11·3	2·1
Salop	11·5	15·4	73·9	58·5	18	1·1	36	620	226	46	41	353	25·9	4·8	13·6	7·3
Staffs.	10·5	13·9	58·3	44·4	—	1·9	36	888	322	56	40	276	16·3	1·6	14·4	6·7
Lancs.	8·9	12·0	57·9	45·9	4	1·3	42	589	248	42	33	359	23·4	1·9	9·5	6·6
Ches.	8·7	12·7	51·7	39·0	10	1·4	33	706	234	39	36	258	13·2	0·6	14·2	5·9
*Staffs.	7·7	13·4	79·9	66·5	11	1·3	57	624	357	70	40	277	26·2	1·1	18·9	9·9
Ches.	6·5	9·6	99·1	89·5	7	1·0	43	889	385	65	41	343	50·6	1·1	18·8	10·1
Salop	6·0	10·1	30·6	20·5	12	2·2	24	724	175	28	25	240	4·1	2·5	10·2	2·5
Ches.	5·8	9·2	24·2	15·0	4	2·1	24	492	118	23	21	339	3·8	0·3	6·4	0·7
*Ches.	5·7	8·0	32·5	24·5	—	2·0	38	482	183	30	25	265	9·1	0·7	11·5	0·8
Lancs.	3·3	7·1	26·1	19·0	—	2·3	26	600	155	25	23	226	4·1	0·6	9·0	2·6
Ches.	3·1	8·5	47·2	38·7	14	2·1	35	691	240	41	33	181	8·2	0·7	17·8	8·4
Ches.	0·9	5·4	35·9	30·5	—	2·0	40	399	158	32	26	251	11·8	0·5	12·3	2·0
Salop	0·7	4·0	39·6	35·6	1	2·0	29	645	188	37	28	229	14·1	1·5	11·9	5·5
Ches.	–2·8	2·2	36·4	34·2	11	2·4	35	640	223	34	28	172	8·9	0·8	17·5	3·7
Ches.	–7·5	–6·5	52·1	58·6	9	1·4	37	819	304	51	30	225	21·9	2·1	17·6	5·6
Av. of 20 farms	7·9	11·9	52·2	40·3	8	1·6	34	687	236	41	34	285	16·4	1·4	12·7	5·5

* Not included in averages.

(a) Includes farmer's labour.

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Area in Cash Crops	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield per Cow	Milk per Stock Acre	Milk and Cattle Output per S.A.	Livestock Output per Feed Acre	Gross Output per £100 Labour and Power (a)	Purchased Feed per Acre	Fertilisers per Acre	Labour per Acre (a)	Power Costs per Acre
	£	£	£	£	%			galls.	galls.	£	£	£	£	£	£	£
Lancs.	17·9	20·3	85·7	65·4	1	1·0	33	852	284	52	44	351	33·6	1·3	17·7	6·8
Lancs.	16·7	18·3	107·6	89·3	4	1·0	36	1,039	371	73	44	347	47·2	1·8	19·0	12·0
Ches.	16·5	19·0	73·2	54·2	5	1·3	43	868	369	65	42	368	26·0	0·6	12·8	7·2
Salop	15·3	17·6	76·4	58·8	19	1·2	49	784	381	62	42	344	25·3	2·3	15·2	6·9
Ches.	15·0	17·0	55·7	38·7	—	1·6	46	656	301	44	34	481	20·1	1·5	8·5	3·0
Ches.	14·2	16·4	50·7	34·3	6	1·7	30	706	210	38	33	376	14·3	2·5	9·6	3·9
Lancs.	13·4	15·7	67·3	51·6	28	1·2	47	690	325	68	43	337	24·5	0·9	12·6	7·3
Ches.	13·3	15·8	55·9	40·1	11	1·5	41	723	298	49	38	291	10·7	3·3	13·1	6·1
Ches.	9·2	11·0	62·0	51·0	9	1·8	44	813	358	60	36	327	23·2	1·8	11·6	7·4
Ches.	7·2	8·8	46·1	37·3	5	1·2	43	519	226	32	31	309	15·3	1·0	12·4	2·5
Ches.	7·0	9·1	43·7	34·6	10	1·6	37	737	276	41	30	311	15·6	0·7	9·3	4·8
*Ches.	6·0	8·8	68·5	59·7	—	1·4	31	880	272	49	35	318	31·4	0·6	10·9	10·6
Ches.	5·3	7·6	46·9	39·3	8	1·8	31	742	233	37	31	274	14·8	2·1	13·1	4·0
Ches.	4·0	7·0	45·4	38·4	—	1·6	44	645	282	41	31	254	15·9	2·2	12·0	5·9
Ches.	3·3	6·3	53·3	47·0	27	1·4	61	720	439	60	33	360	23·2	1·3	7·9	7·0
Staffs.	2·8	5·2	35·0	29·8	21	2·7	23	639	149	26	24	185	3·3	2·0	14·4	4·5
Av. of 15 farms	10·9	13·1	60·8	47·7	10	1·4	40	743	297	50	37	325	21·1	1·7	12·7	5·9

* Not included in averages.

(a) Includes farmer's labour.

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Area in Cash Crops	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield per Cow	Milk per Stock Acre	Milk and Cattle Output per S.A.	Livestock Output per Feed Acre	Gross Output per £100 Labour and Power (a)	Purchased Feed per Acre	Fertilisers per Acre	Labour per Acre (a)	Power Costs per Acre
	£	£	£	£	%			galls.	galls.	£	£	£	£	£	£	£
Lancs.	20·0	21·3	70·9	49·6	1	1·4	39	755	291	65	41	412	24·1	2·7	11·3	5·9
*Ches.	17·9	19·1	54·0	34·9	5	1·7	34	905	308	49	38	387	14·5	1·5	9·7	4·3
Lancs.	17·3	18·3	112·4	94·1	6	1·4	41	896	367	92	59	255	32·9	3·6	29·0	15·0
*Ches.	16·9	18·9	73·1	54·2	4	1·6	41	905	368	66	40	394	29·1	1·1	13·1	5·4
Ches.	15·2	17·0	55·9	38·9	13	1·7	28	824	233	45	38	248	8·8	3·1	15·4	7·2
Salop	12·2	13·9	55·2	41·3	3	1·5	29	720	209	37	33	309	18·6	1·2	11·1	6·8
Ches.	12·1	13·6	50·8	37·2	7	1·4	37	608	224	38	36	327	13·6	2·3	11·5	4·0
Ches.	10·8	12·3	51·0	38·7	13	1·6	33	775	259	44	35	323	14·5	1·7	10·6	5·3
Ches.	10·4	11·5	56·3	44·8	12	1·3	33	958	317	50	38	312	17·5	1·5	11·9	6·1
Salop	9·6	11·3	59·6	48·3	8	1·4	22	811	181	30	39	299	15·7	4·3	12·9	7·0
Ches.	9·0	10·7	61·1	50·4	21	1·1	38	766	295	49	26	390	23·0	4·1	10·2	5·5
Staffs.	9·0	10·6	52·9	42·3	—	1·4	35	702	243	42	32	411	24·5	1·1	9·6	3·3
*Salop	8·7	9·8	42·9	33·1	18	1·9	19	880	165	29	28	367	15·4	1·4	6·0	5·7
Ches.	4·4	5·2	28·6	23·4	12	2·5	16	821	130	27	24	241	6·2	1·2	7·2	4·6
Ches.	3·7	4·7	47·4	42·7	17	1·8	25	754	227	41	35	200	6·8	1·8	15·8	8·0
Ches.	–2·5	–1·5	29·4	30·9	15	1·7	40	344	137	23	21	188	6·6	0·7	12·9	2·7
Av. of 13 farms	10·1	11·4	54·9	43·5	10	1·5	32	743	236	44	36	295	16·0	2·2	12·5	6·1

* Not included in averages.

(a) Includes farmer's labour.

APPENDIX IV

RESULTS FOR 1954–5

ARABLE FARMS

TABLE I

CROPPING PER 100 ACRES ON 41 FARMS 1954–5
AVERAGE SIZE 159 ACRES

	Salop and Staffs. 10 farms	S.W. Lancashire 31 farms
Cereals	35·4	47·6
Sugar Beet	8·3	0·7
Potatoes	12·7	17·0
Fodder Roots	2·8	0·3
Market Garden Crops	0·2	10·8
Other Crops	1·2	—
Total Tillage	60·6	76·4
Temporary Grass—Mown	12·0	17·2
Grazed	9·0	2·3
Total Arable	81·6	95·9
Permanent Grass—Mown	—	0·2
Grazed	18·4	3·9
	100·0	100·0
Average farm size (acres)	314	109

ARABLE FARMS

TABLE II

OUTPUT, COSTS AND INCOME PER ACRE 1954–5

	Salop and Staffs. 10 farms		S.W. Lancashire 31 farms	
	£ per acre	%	£ per acre	%
OUTPUT				
Crops	27·6	50	44·0	77
Cattle	8·5		1·5	
Milk	0·5		0·9	
Sheep and Wool	4·2		—	
Pigs	8·8		3·0	
Poultry and Eggs	4·1		5·4	
Total Livestock	26·1	47	10·8	19
Miscellaneous	1·5	3	2·6	4
Gross Output	55·2	100	57·4	100
COSTS				
Foods	9·8	22	7·5	15
Seeds	3·5	8	4·1	8
Fertilisers	4·1	9	6·6	14
Rent and Rates	2·6	6	2·7	6
Power Costs	7·9	17	8·1	17
Labour (excluding farmer)	13·2	29	15·0	31
Miscellaneous	3·9	9	4·5	9
Total Costs	45·0	100	48·5	100
Net Farm Income	10·2		8·9	
Farmer's Labour	0·4		2·7	
Investment Income	9·8		6·2	
Family Income	10·7		11·9	
Capital Expenditure	8·3		5·0	

ARABLE FARMS

MEASURES OF ECONOMIC EFFICIENCY — SHROPSHIRE AND STAFFORDSHIRE FARMS

County	Investment Inc. per Acre	Net Farm Inc. per Acre	Gross Output per Acre	Total Costs per Acre	Area of Cash Crops	Output per Acre (*b*)					Crop Yield Index	L'stk. Yield Index	L'stk. Output per Stock Acre	Cattle Output per Cattle Unit	Sheep Output per Sheep Unit	Pig Output per Pig Unit	Purchased Manures per Acre	Gross Output per	
						All Cash Crops	Wheat	Barley	Sugar Beet	Potatoes								£100 Labour (*a*)	£100 Labour & Power (*a*)
	£	£	£	£	%	£	£	£	£	£			£	£	£	£	£	£	£
Staffs.	16·3	16·4	110·6	94·2	62	62	51	36	68	74	100	93	178	28	38	96	6·5	513	298
Salop	15·4	15·9	72·7	56·8	38	77	26	—	61	106	96	90	68	31	27	99	3·9	427	258
Salop	12·7	13·2	83·8	70·6	56	103	—	82	74	114	124	107	37	26	38	109	7·8	467	239
Salop	12·6	13·3	37·7	24·4	45	47	40	—	70	97	118	125	28	36	27	102	2·2	482	299
Salop	11·5	11·5	37·5	26·0	54	45	18	45	—	101	103	96	27	25	28	107	3·9	408	321
*Salop	9·9	11·5	25·0	13·5	39	24	31	—	—	18	40	132	25	45	23	—	0·5	415	309
Salop	7·9	7·9	41·3	33·4	48	47	43	21	70	71	86	179	33	53	49	—	4·1	323	238
Salop	7·2	7·5	69·3	61·8	51	82	69	40	58	127	127	86	48	20	35	58	5·2	355	234
Salop	7·1	7·1	36·7	29·6	44	35	16	60	40	111	83	136	35	41	39	116	2·3	316	233
Salop	4·7	5·5	29·9	24·4	29	37	18	15	—	82	76	98	26	42	17	110	2·5	340	231
*Salop	1·9	3·3	34·2	30·9	48	36	28	—	51	57	76	91	29	39	16	64	5·2	267	207
Salop	0·6	2·2	37·5	35·3	46	32	—	20	47	40	56	91	37	42	36	90	6·0	341	191
Av. of 10 farms	9·8	10·2	55·2	45·0	47	57	35	39	61	95	102	101	48	32	31	98	4·1	406	256

* Not included in average.
(*a*) Includes farmer's labour.
(*b*) Calculated from acreage sold and available for sale.

MEASURES OF ECONOMIC EFFICIENCY

S.W. LANCASHIRE FARMS

County	Investment Inc. per Acre	Net Farm Inc. per Acre	Gross Output per Acre	Total Costs per Acre	Area in High Output Cash Crops	Output per Acre (*b*)										Crop Yield Index	L'stk. Yield Index	Yield of Potatoes per Acre	Manures per Acre		Seeds per Acre	Gross Output per	
						All Cash Crops	Wheat	Oats	Barley	Peas	Potatoes	Hay	Brassicas	Other Mkt. Gdn. Contract	Other Mkt. Gdn. Non-Contract				Total (*c*)	Purchased only		£100 Labour (*a*)	£100 Labour & Power (*a*)
	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£			tons	£	£	£	£	£
Lancs.	31·7	34·9	85·5	50·6	67	81	58	—	—	43	125	—	83	—	114	101	60	11	13·9	13·4	3·2	539	374
Lancs.	22·6	25·8	68·9	43·1	36	68	43	28	—	48	76	33	170	—	—	117	44	7	8·2	8·2	4·0	294	242
Lancs.	21·5	24·1	67·5	43·4	24	78	38	30	—	—	143	33	—	—	—	155	67	13	2·4	1·3	4·2	365	237
Lancs.	20·8	21·9	86·4	64·5	29	77	55	42	45	117	180	32	—	—	—	178	53	13	10·8	10·2	4·8	411	266
Lancs.	18·7	21·2	56·3	35·1	19	52	42	32	—	67	78	35	—	—	—	130	114	6	7·2	5·9	3·4	388	305
Lancs.	17·1	23·1	59·4	36·3	22	59	34	20	—	—	76	10	147	—	69	112	—	5	10·7	10·6	1·8	337	284
Lancs.	15·0	21·8	86·7	64·9	26	60	42	29	—	—	113	27	—	—	—	139	92	8	9·6	8·4	5·1	511	304
Lancs.	15·0	17·5	69·0	51·5	33	56	53	42	—	47	75	48	14	—	—	104	76	7	7·3	6·8	5·7	318	247
Lancs.	13·7	16·3	64·7	48·4	7	62	58	32	41	—	121	17	137	—	—	147	—	8	7·8	7·8	4·2	356	209
Lancs.	12·7	15·1	63·1	48·0	14	63	35	—	—	—	115	44	110	—	—	132	107	9	5·6	5·5	4·7	262	200
Lancs.	11·5	16·8	67·9	51·1	41	61	33	—	—	43	109	—	105	—	—	94	61	7	7·2	7·1	7·6	354	261
Lancs.	9·3	13·0	38·7	25·7	24	39	39	23	—	—	57	23	—	—	—	94	32	5	6·0	5·7	1·9	329	237
Lancs.	9·3	12·5	60·4	47·9	28	67	45	33	—	86	169	18	63	—	—	124	58	14	8·0	7·4	3·1	255	181
*Lancs.	8·6	11·8	158·6	146·8	11	66	31	—	29	112	—	52	131	—	55	145	90	—	12·1	7·7	1·4	476	263
Lancs.	8·5	10·3	48·4	38·1	25	50	39	25	—	59	95	26	—	—	—	118	58	8	9·1	8·9	3·9	356	245
Lancs.	8·3	10·2	56·2	46·0	11	36	29	21	20	—	91	25	96	—	124	104	97	8	3·1	2·7	2·3	415	191
Lancs.	8·1	11·5	73·6	62·1	27	56	43	20	41	111	35	19	99	—	—	99	96	7	7·6	6·3	5·6	339	255
Lancs.	8·0	10·0	52·1	42·1	17	55	46	56	—	—	60	40	58	—	—	138	21	6	7·0	7·0	2·4	267	198
Lancs.	6·3	9·1	56·1	47·0	19	60	32	20	—	63	100	21	147	—	100	120	40	9	4·8	4·5	4·8	237	174
*Lancs.	5·5	9·4	114·6	105·2	46	71	46	—	—	71	82	33	100	53	44	99	48	8	15·2	15·0	7·9	337	205
Lancs.	4·8	5·7	65·9	60·2	25	51	41	31	—	68	80	30	—	—	—	115	88	6	10·0	8·3	6·6	443	269
Lancs.	4·6	8·3	47·7	39·4	19	48	31	32	—	—	79	9	65	—	—	87	4	7	7·7	7·7	4·1	273	194
Lancs.	3·0	5·7	43·9	38·2	20	47	37	38	—	71	97	17	60	—	—	110	—	9	6·9	6·9	4·3	273	203
*Lancs.	–0·1	–0·1	115·8	115·9	44	116	55	—	66	—	134	—	118	141	139	143	88	12	16·3	13·5	7·0	268	174
Lancs.	–0·5	1·9	37·8	35·9	11	37	29	—	—	—	55	17	—	—	—	97	95	3	1·2	0·4	1·0	248	185
Lancs.	–1·1	4·0	35·5	31·5	16	37	26	20	—	—	81	13	58	—	—	91	59	8	5·0	4·9	3·3	237	181
Lancs.	–2·1	0·1	34·1	34·0	24	33	16	19	—	—	57	—	—	—	—	69	89	4	5·8	3·9	4·7	260	188
Lancs.	–2·8	0·2	125·6	125·4	42	80	58	—	—	56	43	45	111	172	—	98	66	4	16·7	13·7	8·2	374	264
*Lancs.	–2·8	0·0	97·5	97·5	43	49	60	—	36	39	72	6	—	—	—	84	93	6	13·4	11·0	1·7	383	233
Lancs.	–3·9	–3·0	25·9	28·9	20	24	12	19	—	—	46	13	—	—	—	56	64	4	5·8	4·8	1·9	281	180
Lancs.	–4·4	–0·9	47·6	48·5	14	54	34	25	—	—	116	21	—	—	—	133	91	10	4·8	4·0	5·7	233	158
Lancs.	–5·7	0·0	57·7	57·7	25	43	27	30	—	—	54	26	—	—	193	104	74	4	5·4	5·1	5·5	203	152
Lancs.	–6·1	–1·2	59·9	61·1	24	41	26	25	31	—	72	25	—	—	—	98	66	7	7·0	6·0	3·1	372	225
*Lancs.	–11·6	–11·6	58·6	70·2	26	54	32	39	—	—	59	23	101	—	62	100	17	5	5·6	5·4	3·5	181	133
Lancs.	–12·5	–6·9	83·9	90·8	34	54	39	—	—	52	35	63	—	49	—	80	90	3	11·1	9·3	3·0	269	189
Lancs.	–14·8	–12·5	57·7	70·2	40	50	40	40	—	40	140	11	—	18	—	93	72	11	10·6	9·3	7·4	333	219
Av. of 31 farms	6·2	8·9	57·4	48·5	24	52	36	27	38	60	88	26	108	103	109	108	74	7	7·3	6·6	4·1	325	223

* Not included in average.
(*a*) Includes farmer's labour.
(*b*) Calculated from acreage sold and available for sale.
(*c*) Includes home-produced manures.

MIXED ARABLE FARMS

TABLE I

CROPPING AND STOCKING PER 100 ACRES ON THIRTY-SEVEN FARMS, 1954–5

AVERAGE SIZE 258 ACRES

Cropping per 100 acres		Livestock Units per 100 acres	
Wheat	15·6	Cows	17·0
Oats	5·9	Other Cattle	14·7
Other Corn	11·3	Pigs	6·2
Sugar Beet	3·2	Poultry	2·6
Potatoes	7·8	Sheep	4·7
Other Roots	2·5	Horses	0·6
Other Crops	1·5	Total	45·8
Total Tillage	47·8		
Temporary Grass—Mown	15·9		
Grazed	10·8		
Total Arable	74·5		
Permanent Grass—Mown	1·8		
Grazed	23·7		
	100·0		

MIXED ARABLE FARMS

TABLE II

FINANCIAL RESULTS AND PRODUCTIVITY MEASURES, 1954–5

Average Output, Costs and Income per acre	£ per acre
OUTPUT	
Crops	15·2
Cattle	4·5
Milk	19·8
Sheep and Wool	1·4
Pigs	5·8
Poultry and Eggs	2·5
Total Livestock	34·0
Miscellaneous	1·9
Gross Ouput	51·1
COSTS	
Foods	13·0
Seeds	2·5
Fertilisers	3·3
Rent and Rates	2·6
Power Costs	6·9
Other Repairs	1·0
Contract	0·6
Labour (excluding farmer)	12·2
Miscellaneous	1·9
Total Costs	44·0
Net Farm Income	7·1
Farmer's Labour	1·0
Investment Income	6·1
Family Income	8·2

Productivity Measures		
Area in Cash Crops	%	28·8
Output from Cash Crops	%	29·8
Output from Pigs, Sheep and Poultry	%	19·0
Milk per Cow	gallons	777·5
Milk Sales per Cow	£	116·5
Output per £100 Costs (*a*)	£	113·5
Output per £100 Labour (*a*)	£	386·6
Output per £100 Labour and Power (*a*)	£	254·3
Livestock Output per L.S.U.	£	74·3
Livestock Output per Stock Acre	£	47·3
Livestock Output *less* bought feed per Stock Acre	£	29·3
Livestock Output per Feed Acre	£	31·1
Cattle and Milk Output per Cattle Unit	£	76·4
Pig Output per Pig Unit	£	94·0
Poultry and Egg Output per Poultry Unit	£	97·8
Sheep Output per Sheep Unit	£	29·7
Cash Crop Output per Cash Crop Acre	£	52·0
Stock Acres per Livestock Unit		1·6
Feed Acres per Livestock Unit		2·4
Yield Index		100·4
Crop Yield Index		98·1
Livestock Yield Index		99·8
Labour Index		93·4

(*a*) Includes farmer's labour.

MIXED ARABLE FARMS

Measures of Economic Efficiency

County	Investment Inc. per Acre	Net Farm Inc. per Acre	Gross Output per Acre	Total Costs per Acre	Area in Cash Crops	Area in Cash Roots	Prop'n of Total Output from Cash Crops	Crop Yield Index	Output per Acre: All Cash Crops	Wheat	Barley	Potatoes	Sugar Beet	L'stk. Output per Feed Acre	Cattle & Milk Output per Cattle Unit	Pig Output per Pig Unit	Yield per Cow	L'stk. Yield Index	Feed Acres per L.S.U.	Gross Output per £100 Labour (a)	Gross Output per £100 Labour and Power (a)	Size Group
	£	£	£	£	%	%	%		£	£	£	£	£	£	£	£	galls.			£	£	acres
Salop	20·9	22·5	74·9	52·4	22	12	35	171	117	44	—	129	—	40	119	95	954	140	2·8	541	312	150–200
Staffs.	17·6	18·2	82·6	64·4	40	31	34	92	69	49	37	85	68	39	68	106	677	90	2·5	601	325	350–400
Ches.	16·6	18·5	72·2	53·7	32	14	28	114	63	33	—	98	—	34	85	101	903	105	2·5	504	379	200–250
Staffs.	14·6	15·9	53·0	37·1	33	14	34	101	56	43	14	83	67	31	92	80	883	108	2·9	493	367	100–150
Ches.	13·4	15·5	129·6	114·1	6	17	22	112	95	37	—	84	—	36	146	85	916	105	3·2	479	370	150–200
Ches.	13·2	17·2	124·9	107·7	10	11	11	127	135	34	—	117	—	38	94	88	831	88	2·4	682	426	50–100
Salop	12·5	13·3	53·8	40·5	34	16	37	103	56	41	35	92	66	35	88	72	815	125	2·1	444	281	250–300
Lancs.	12·4	13·6	49·2	35·6	60	17	69	124	57	33	—	106	—	30	88	—	768	86	3·0	318	251	200–250
Staffs.	12·0	12·8	49·7	36·9	33	16	39	102	59	28	—	122	67	31	98	75	734	110	2·3	377	261	150–200
Salop	10·0	10·9	46·3	35·4	19	7	27	115	65	44	—	87	—	28	85	104	937	130	3·1	537	313	300–350
Salop	9·6	10·4	27·7	17·3	4	4	4	71	51	—	—	54	50	24	70	49	939	115	2·1	387	252	400–450
Staffs.	8·8	9·5	43·9	34·4	51	12	38	76	31	24	27	62	51	39	50	103	586	90	1·7	332	233	400–450
Salop	8·1	9·3	52·7	43·4	38	13	24	74	33	53	28	41	30	37	61	108	854	108	1·8	375	265	250–350
Salop	8·0	8·5	49·2	40·7	15	9	19	94	60	36	38	106	53	33	64	64	666	98	1·6	328	229	200–250
Salop	7·6	7·9	43·2	35·3	36	19	58	116	65	40	42	72	92	22	49	—	596	70	1·9	330	210	450–500
Ches.	7·5	7·5	68·8	61·3	20	18	20	78	70	36	—	72	—	34	94	112	821	107	2·8	463	276	200–250
Staffs.	6·9	8·0	48·4	40·4	20	14	28	88	68	42	44	67	—	28	59	112	668	80	2·5	365	253	250–300
Salop	6·5	7·1	48·5	41·4	16	2	12	94	37	32	—	66	64	35	70	113	822	107	2·1	411	244	500–550
Ches.	5·5	7·4	66·5	59·1	38	15	16	49	28	15	24	43	—	38	90	—	898	123	2·3	528	338	200–250
Salop	5·5	6·2	45·2	39·0	25	5	25	122	44	52	—	120	—	33	86	73	808	117	2·4	297	213	400–450
Staffs.	5·5	6·2	57·5	51·3	56	17	55	120	56	47	—	90	—	35	89	—	732	99	2·6	345	222	200–250
Ches.	4·3	6·5	69·1	62·6	43	13	43	145	69	44	—	122	—	29	86	95	862	103	2·9	367	250	100–150
Salop	3·6	4·9	44·1	39·2	24	—	11	81	17	25	15	—	—	33	78	85	716	87	2·4	507	299	200–250
Staffs.	3·1	3·9	45·3	41·4	42	5	46	137	50	44	34	115	—	30	93	—	719	108	3·0	360	239	350–400
Ches.	2·7	6·7	51·1	44·4	28	9	25	89	44	30	—	59	—	30	90	135	605	82	2·8	375	250	50–100
Lancs.	2·3	4·6	54·6	50·0	51	15	44	89	47	23	—	88	—	32	67	—	765	111	2·2	347	225	100–150
Salop	2·0	2·2	41·6	39·4	28	7	26	85	37	31	29	57	58	29	85	83	887	111	2·2	369	235	500–550
Ches.	1·0	4·2	46·3	42·1	31	10	32	98	48	33	—	76	—	28	95	—	1,048	112	3·3	271	204	50–100
Staffs.	0·5	0·9	32·8	31·9	36	17	47	74	43	27	30	68	26	21	59	78	774	84	2·2	286	204	350–400
Salop	–0·4	0·6	45·7	45·1	34	10	33	98	44	30	29	—	61	28	74	56	722	86	2·4	331	218	250–300
Salop	–0·6	4·0	48·0	44·0	23	10	21	81	43	43	—	—	42	36	83	62	897	107	2·2	275	194	50–100
Salop	–2·4	–1·5	50·5	52·0	19	13	17	63	44	35	38	52	34	29	76	91	636	90	2·7	347	223	300–350
Ches.	–2·5	–1·6	44·8	46·4	15	8	18	83	55	47	—	65	—	28	62	87	731	94	2·3	290	215	200–250
Lancs.	–2·9	–2·2	50·9	53·1	14	7	6	86	72	22	—	92	—	26	59	75	694	81	2·6	347	237	150–200
Lancs.	–4·1	–1·6	32·2	33·8	43	13	30	57	22	45	—	14	—	30	72	—	711	83	2·1	242	135	50–100
Staffs.	–7·6	–7·6	26·2	33·8	19	—	16	92	22	43	25	—	—	20	54	122	699	86	2·6	259	166	350–400
Lancs.	–10·9	–6·0	64·4	70·4	48	21	37	84	49	44	23	80	—	29	76	61	773	83	2·9	354	229	50–100
Average	6·1	7·1	51·1	44·0	29	11	30	98	52	36	31	83	60	31	76	94	777	100	2·4	387	254	250–300

(a) Includes farmer's labour.

LIVESTOCK REARING FARMS

Table I

Cropping and Stocking per 100 acres on Forty-three Farms, 1954–5

Average Size 169 acres

	0—60 acres	61—160 acres	Over 160 acres	All farms
Wheat	0·4	0·9	2·8	2·1
Oats	5·9	8·1	5·8	6·5
Other Corn	3·9	5·6	5·6	5·5
Sugar Beet	—	—	0·4	0·3
Potatoes	0·1	0·1	0·2	0·1
Fodder Roots and Kale	6·3	5·4	3·1	4·0
Rape	0·4	2·9	3·4	3·1
Total Tillage	17·0	23·0	21·3	21·6
Temporary Grass—Mown	20·1	16·4	11·1	13·1
Grazed	8·9	9·5	6·2	7·2
Total Arable	46·0	48·9	38·6	41·9
Permanent Grass—Mown	14·6	8·0	3·3	5·2
Grazed	37·6	37·0	55·2	49·2
Rough Grazing	1·7	6·1	2·9	3·7
Total	100·0	100·0	100·0	100·0
Number of Livestock Units per 100 acres	68	58	56	57
Pigs and Poultry as percentage of Livestock Units	14%	5%	4%	5%

LIVESTOCK REARING FARMS

TABLE II

AVERAGE OUTPUT, COSTS AND INCOME PER ACRE 1954–5

	0—60 acres	61—160 acres	Over 160 acres	All farms
	£	£	£	£
OUTPUT				
Crops	−0·9	0·0	1·5	1·0
Cattle	9·1	5·7	6·1	6·1
Milk	4·4	1·9	0·2	0·9
Sheep and Wool	8·2	8·9	7·4	7·9
Pigs	2·7	0·1	0·9	0·8
Poultry and Eggs	5·2	1·9	0·7	1·3
Total Livestock	29·6	18·5	15·3	17·0
Government Grants	0·2	0·3	0·2	0·2
Produce to House	0·9	0·5	0·2	0·3
Sundries	0·6	0·4	0·3	0·3
Gross Output	30·4	19·7	17·5	18·8
COSTS				
Foods	7·6	2·2	1·8	2·2
Seeds	0·3	0·5	0·7	0·6
Fertilisers	0·8	1·0	1·2	1·1
Rent and Rates	2·0	1·4	1·3	1·4
Power Costs	3·9	3·2	1·9	2·4
Other Repairs	0·3	0·5	0·3	0·4
Contract Work	0·6	0·4	0·2	0·3
Labour (excluding farmer)	3·8	3·6	3·6	3·6
Sundry	1·0	1·1	0·7	0·8
Total Costs	20·3	13·9	11·7	12·8
Net Farm Income	10·1	5·8	5·8	6·0
Farmer's Labour	6·5	3·0	0·7	1·7
Investment Income	3·6	2·8	5·1	4·3
Family Income	12·3	7·9	7·1	7·6
Average Farm Size	44 acres	97 acres	374 acres	169 acres

LIVESTOCK REARING FARMS

MEASURES OF ECONOMIC EFFICIENCY

SIZE 0—60 ACRES

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Livestock Output per			Stock Acres per L.S.U.	Cattle Output per Cattle Unit	Sheep Output per Sheep Unit	Ratio Sheep Units to Cattle Units	Yield Index	Labour Index (a)	Altitude	Gross Output per		
					L'stk. Unit	Stock Acre	Feed Acre								£100 Costs (a)	£100 Labour (a)	£100 Labour and Power (a)
	£	£	£	£	£	£	£		£	£				feet	£	£	£
Salop	12·0	18·3	48·1	29·8	49	42	27	1·2	47	25	2·78 : 1	115	86	1,300	133	476	297
Salop	11·7	22·1	64·6	42·5	52	57	27	0·9	103M	16	1·61 : 1	98	58	1,200	122	283	229
Salop	7·2	12·7	23·6	10·9	43	26	23	1·7	35	42	1·82 : 1	98	88	1,050	144	363	218
Salop	6·6	15·3	29·0	13·7	41	27	25	1·5	51	36	2·11 : 1	108	56	1,350	129	272	215
Salop	1·1	6·6	24·0	17·4	57	22	20	2·6	84M	25	0·85 : 1	107	63	750	105	264	162
Salop	1·0	8·3	22·0	13·7	40	20	18	2·0	59	27	1·44 : 1	101	53	800	105	272	186
Salop	–0·3	9·0	20·6	11·6	24	19	18	1·3	25	26	2·54 : 1	58	67	1,430	98	160	139
Salop	–1·5	–0·1	29·4	29·5	51	30	20	1·7	45	—	—	100	86	850	95	352	274
Salop	–6·2	4·3	19·3	15·0	21	18	16	1·2	27	8	0·21 : 1	54	63	850	76	155	149
Average	3·6	10·1	30·4	20·3	43	29	22	1·5	53	27	1·20 : 1	95	69	—	113	294	214

(a) Includes farmer's labour.

M Includes milk sales.

LIVESTOCK REARING FARMS

Measures of Economic Efficiency

Size 61—160 Acres

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Livestock Output per			Stock Acres per L.S.U.	Cattle Output per Cattle Unit	Sheep Output per Sheep Unit	Ratio Sheep Units to Cattle Units	Yield Index	Labour Index (*a*)	Altitude	Gross Output per		
					L'stk. Unit	Stock Acre	Feed Acre								£100 Costs (*a*)	£100 Labour (*a*)	£100 Labour and Power (*a*)
	£	£	£	£	£	£	£		£	£				feet	£	£	£
Salop	12·6	15·0	25·9	10·9	30	25	24	1·2	27	32	1·35 : 1	98	140	625	195	518	334
Salop	7·8	9·8	19·9	10·1	41	19	19	2·1	44	41	1·28 : 1	123	126	1,200	164	486	261
Salop	5·1	10·0	25·7	15·7	36	22	18	1·6	35	36	1·65 : 1	101	103	1,100	125	326	224
Salop	4·8	8·6	16·7	8·1	28	17	17	1·6	37	25	3·09 : 1	78	84	1,200	141	289	237
Salop	4·0	7·5	20·3	12·8	35	19	18	1·9	33	34	1·69 : 1	101	69	1,150	125	287	197
Salop	4·0	6·3	27·4	21·1	61	30	24	2·1	78M	27	0·68 : 1	90	109	—	117	441	266
Salop	3·8	7·7	32·4	24·7	47	31	27	1·5	68M	27	1·14 : 1	92	91	600	113	297	186
Salop	3·3	7·8	16·8	9·0	25	16	15	1·6	32	24	1·42 : 1	87	93	800	125	292	207
Salop	3·3	5·9	15·1	9·2	30	14	14	2·1	34	26	2·20 : 1	85	77	1,200	128	264	225
Salop	2·0	7·1	21·9	14·8	44	25	18	2·1	29	42	1·31 : 1	104	74	1,300	110	271	200
Salop	1·5	1·5	11·1	9·6	16	11	10	1·5	32	13	5·49 : 1	54	106	850	116	281	223
Salop	1·3	4·2	19·1	14·9	27	18	17	1·5	29	23	1·41 : 1	81	99	950	108	303	190
Salop	1·2	4·0	15·7	11·7	30	15	15	2·0	28	29	1·80 : 1	83	81	900	109	222	160
Salop	1·1	4·9	16·2	11·3	36	16	15	2·3	29	31	1·83 : 1	95	75	900	107	251	184
Salop	0·7	5·5	24·0	18·5	37	22	22	1·6	60M	17	1·22 : 1	64	69	600	103	223	150
Salop	0·6	4·2	21·8	17·6	30	20	19	1·5	28	27	1·45 : 1	80	94	1,300	103	213	153
Salop	0·0	4·0	18·0	14·0	26	18	14	1·4	21	31	1·29 : 1	71	62	1,275	100	199	153
Salop	−0·1	2·6	15·4	12·8	28	15	13	1·9	25	25	1·26 : 1	73	112	1,100	99	370	206
Salop	−1·5	2·3	16·0	13·7	19	14	13	1·4	16	19	3·19 : 1	67	100	1,150	91	254	160
Salop	−1·9	−0·5	17·0	17·5	31	16	15	2·0	25	31	2·12 : 1	92	74	950	90	248	159
Salop	−3·6	0·4	20·5	20·1	29	20	19	1·4	39	22	1·43 : 1	81	80	1,000	85	225	159
Average	2·8	5·8	19·7	13·9	32	19	17	1·7	37	27	1·63 : 1	86	91	—	116	297	201

(*a*) Includes farmer's labour.

M Includes milk sales.

LIVESTOCK REARING FARMS

MEASURES OF ECONOMIC EFFICIENCY — SIZE OVER 160 ACRES

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Livestock Output per			Stock Acres per L.S.U.	Cattle Output per Cattle Unit	Sheep Output per Sheep Unit	Ratio Sheep Units to Cattle Units	Yield Index	Labour Index (a)	Area in Cash Crops	Altitude	Gross Output per		
					L'stk. Unit	Stock Acre	Feed Acre									£100 Costs (a)	£100 Labour (a)	£100 Labour and Power (a)
Salop	£	£	£	£	£	£	£		£	£				%	feet	£	£	£
Salop	9·5	9·7	23·7	14·0	42	22	22	1·9	42	40	1·26 : 1	128	129	—	900	167	285	244
Salop	7·1	7·8	28·6	20·8	27	27	22M	1·0	21	32	0·47 : 1	81	166	8	500	133	468	345
Salop	6·5	8·1	29·2	21·1	28	26	24M	1·1	25	33	0·61 : 1	97	90	10	600	129	337	219
Salop	6·5	7·8	25·9	18·1	39	25	20	1·6	36	22	1·43 : 1	90	130	1	1,175	134	549	362
Salop	6·5	7·3	17·4	10·1	30	16	15	1·9	29	28	1·78 : 1	96	139	13	1,500	159	495	273
Salop	5·7	7·4	28·0	20·6	20	24	22	0·8	15	31	0·31 : 1	77	96	14	600	125	345	229
Salop	5·1	5·8	11·4	5·6	30	11	11	2·7	32	30	0·79 : 1	116	75	1	800	181	379	314
Salop	4·9	5·2	12·0	6·8	15	11	10	1·4	13	16	2·20 : 1	62	228	11	1,100	168	663	393
Salop	4·5	5·7	17·0	11·3	31	16	16	1·9	26	35	0·81 : 1	89	124	—	600	135	388	244
Salop	4·2	5·9	14·9	9·0	29	13	13	2·1	26	32	1·13 : 1	96	93	—	1,200	139	284	201
Salop	4·1	4·6	11·5	6·9	29	14	14	2·1	25	30	1·63 : 1	90	148	35	1,000	157	487	298
Salop	1·1	1·1	15·2	14·1	34	15	14	2·3	38	31	1·70 : 1	107	96	1	800	108	285	222
Salop	–4·6	–2·8	15·1	17·9	31	14	13	2·2	23	34	0·95 : 1	88	73	—	1,000	77	234	167
Average	5·1	5·8	17·5	11·7	27	17	16	1·6	24	27	1·07 : 1	88	126	9	—	140	404	280

(a) Includes farmer's labour.

M Includes milk sales.

UPLAND DAIRY FARMS

TABLE I

CROPPING AND STOCKING ON FIFTY UPLAND DAIRY WHOLESALE FARMS 1954–5

AVERAGE SIZE 76 ACRES

Land Use	% of Area in Different Crops	Livestock	% Stocking by Type of Livestock in Livestock Units
Wheat	1·1	Cows	48·0
Oats	1·3	Other Cattle	28·8
Other Cereals	2·6	Pigs	6·3
Cash Roots	0·3	Poultry	7·6
Fodder Crops	1·3	Sheep	6·9
Temporary Grass—Mown	4·3	Horses	2·4
Grazed	0·5		
Permanent Grass—Mown	30·4		
Grazed	54·1		
Rough Grazing	4·1		
	100·0		100·0

UPLAND DAIRY FARMS

TABLE II

AVERAGE OUTPUT, COSTS, AND INCOME PER ACRE 1954–5

	Wholesale: Acreage Size Groups			Wholesale	Retail
	0—50	51—100	101 and over		
Milk	41·0	28·7	27·8	30·3	59·8
Cattle	2·5	4·1	3·4	3·6	0·6
Poultry and Eggs	9·9	4·5	1·2	4·0	6·9
Pigs	3·4	1·8	5·6	3·6	5·7
Sheep and Wool	0·6	0·8	1·6	1·1	0·7
Crops	—	—	–0·2	–0·1	–0·3
Miscellaneous	2·9	1·9	1·1	1·7	3·3
Gross Output	60·3	41·8	40·5	44·2	76·7
Foods	35·0	22·6	17·9	22·7	33·9
Labour (except farmer)	6·9	7·3	6·3	6·8	12·6
Power Costs	5·0	3·8	4·4	4·2	8·2
Rent and Rates	2·0	1·9	2·4	2·1	2·3
Seeds and Fertiliser	1·0	0·8	1·8	1·3	1·0
Miscellaneous	3·2	2·5	2·3	2·5	5·4
Total Costs	53·1	38·9	35·1	39·6	63·4
Net Farm Income	7·2	2·9	5·4	4·6	13·3
Farmer's Labour	8·5	3·8	1·7	3·5	4·7
Investment Income	–1·3	–0·9	3·7	1·1	8·6
Family Income	11·9	6·3	6·9	7·4	19·3
Number of Farms	19	23	8	50	8
Average Size of Farm in acres	31	75	184	76	62

UPLAND DAIRY FARMS

TABLE III

MILK PRODUCTION DATA 1954–5

	Wholesale: Acreage Size Groups			Total Wholesale	Retail
	0—50	51—100	101 and over		
No. of Cows per 100 acres	38	28	26	29	38
No. of Cows per farm	12	21	48	22	24
No. of Cows bought per farm ..	3	4	7	4	9
Average Buying Price .. .. £	59	57	62	59	66
No. of Cows sold per farm .. £	6	9	20	10	12
Average Selling Price .. .. £	38	42	38	40	41
Gallons per cow	680	675	711	689	743
Gallons per Stock Acre..	262	190	184	199	281
Sales of Milk per cow .. .. £	106	102	108	105	155
Sales of Milk Stock Acre .. £	41	29	28	30	59
Sales of Milk + or − Cattle Output per cow .. .. .. £	112	117	121	117	157
Sales of Milk + or − Cattle Output per Stock Acre .. .. £	43	33	31	34	59

UPLAND DAIRY FARMS

MEASURES OF ECONOMIC EFFICIENCY — SIZE 0—50 ACRES — WHOLESALE

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII
County (*f*)	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Purchased Feed per Acre	Seeds and Fertilisers per Acre	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield Index	Yield per Cow	Livestock Output per Feed Acre	Livestock Output per £100 Purchased Feed	Milk and Cattle Output per Cattle Unit	Poultry and Egg Output per Poultry Unit	Labour Index (*a*)	Gross Output per £100 Labour (*a*)
	£	£	£	£	£	£				galls.	£	£	£	£		£
E.L.	9·2	16·8	84·2	67·4	43·2	1·9	1·4	44	92	773	34	178	117	92	89	537
E.L.	7·7	15·7	141·3	125·6	81·7	6·2	0·6	51	92	954	41	167	90	86	131	781
N.E.S.	7·5	14·0	78·1	64·1	46·0	1·7	1·2	38	104	909	29	162	86	70	121	698
N.E.S.	6·3	18·3	70·8	52·5	28·4	—	0·9	35	79	764	37	241	65	66	61	339
N.E.S.	3·4	10·2	126·2	116·0	87·6	1·4	0·9	64	145	1,043	36	141	128	132	72	530
N.E.S.	2·0	9·2	54·7	45·5	24·5	0·9	1·7	25	103	884	30	214	83	114	53	301
E.L.	2·0	8·9	46·0	37·1	22·7	—	1·3	42	67	425	27	192	64	100	103	366
N.E.S.	1·7	9·3	35·4	26·1	17·8	—	1·7	22	95	680	22	193	54	160	70	369
E.L.	0·3	3·0	46·2	43·2	23·1	—	1·5	40	69	470	26	191	59	141	103	353
N.E.S.	–1·3	1·1	60·2	59·1	34·9	1·3	1·3	36	110	750	27	164	89	13	57	378
N.E.S.	–2·4	7·7	31·0	23·3	14·9	0·4	1·5	23	79	592	20	195	42	117	53	227
E.L.	–4·4	4·4	48·8	44·4	26·0	0·7	1·3	47	66	485	26	177	60	61	80	341
N.E.S.	–4·6	4·9	64·5	59·6	42·6	0·3	1·5	39	90	795	27	144	100	76	68	406
N.E.S.	–4·6	3·2	28·6	25·4	13·3	—	2·3	25	93	636	18	189	64	—	51	192
N.E.S.	–4·9	1·9	27·2	25·3	16·8	0·1	1·7	23	65	531	17	150	50	39	68	246
*E.L.	–5·0	3·7	68·8	65·1	41·7	0·4	1·4	41	90	815	29	152	90	129	93	516
E.L.	–5·5	3·4	22·3	18·9	13·5	0·1	2·7	25	64	559	15	154	56	33	64	237
E.L.	–5·6	8·9	71·2	62·3	38·4	3·7	1·7	50	99	655	32	181	114	91	50	318
*E.L.	–10·4	3·8	44·6	40·8	24·8	0·8	1·5	35	78	770	25	153	89	75	59	237
N.E.S.	–12·5	0·1	80·7	80·6	58·9	0·3	1·0	55	88	643	27	134	78	80	64	304
N.E.S.	–15·0	1·1	53·7	52·6	38·7	0·4	0·9	48	66	519	20	133	49	60	96	241
E.L.	–17·2	–4·2	55·6	59·8	36·7	—	1·2	44	64	449	25	146	56	104	69	271
*N.E.S.	–17·6	–5·7	81·6	87·3	63·0	2·0	1·1	45	105	825	23	126	93	146	91	469
*N.E.S.	–17·8	–3·6	33·8	37·4	25·4	0·2	1·6	34	63	585	18	122	54	46	46	178
Av. of 19 farms	–1·3	7·2	60·3	53·1	35·0	1·0	1·3	38	86	680	28	164	76	86	79	393

(*f*) E.L.=East Lancashire.
N.E.S.=North East Staffordshire.

* Not included in average.
(*a*) Includes farmer's labour.

UPLAND DAIRY FARMS

MEASURES OF ECONOMIC EFFICIENCY — SIZE 51—100 ACRES — WHOLESALE

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII
County (*f*)	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Purchased Feed per Acre	Seeds and Fertilisers per Acre	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield Index	Yield per Cow	Livestock Output per Feed Acre	Livestock Output per £100 Purchased Feed	Milk and Cattle Output per Cattle Unit	Poultry and Egg Output per Poultry Unit	Labour Index (*a*)	Gross Output per £100 Labour (*a*)
	£	£	£	£	£	£				galls.	£	£	£	£		£
E.L.	5·8	11·4	88·4	77·0	58·0	0·6	0·8	53	70	557	32	147	87	51	127	638
N.E.S.	4·8	8·8	39·4	30·6	16·7	0·9	1·7	27	87	627	25	231	67	52	86	410
N.E.S.	3·8	7·1	31·4	24·3	11·2	0·8	1·9	25	87	724	23	269	58	35	87	312
E.L.	2·9	3·9	67·5	63·6	27·3	1·4	1·4	33	125	863	35	239	89	133	70	373
N.E.S.	2·3	5·8	38·6	32·8	21·3	0·2	1·8	28	86	594	23	174	68	123	87	434
N.E.S.	2·1	5·3	54·2	48·9	35·2	0·7	1·6	30	106	763	24	142	83	132	104	766
N.E.S.	1·8	5·8	26·6	20·8	8·0	0·8	2·4	23	87	701	21	312	66	—	84	289
N.E.S.	1·1	5·9	44·5	38·6	19·4	1·8	1·7	36	95	706	28	221	76	88	65	312
N.E.S.	1·0	4·7	46·5	41·8	24·3	1·0	2·1	25	93	797	25	194	88	44	99	469
N.E.S.	–0·7	1·3	28·9	27·6	9·6	0·1	2·3	25	88	568	22	279	64	—	91	274
N.E.S.	–0·9	5·0	35·4	30·4	15·1	1·6	1·5	32	70	501	24	230	51	90	88	320
E.L.	–0·9	4·4	51·3	46·9	31·8	1·0	1·9	20	101	825	24	153	82	95	106	685
N.E.S.	–0·9	2·7	11·8	9·1	4·8	—	3·3	17	51	401	9	226	39	71	91	218
N.E.S.	–1·0	4·3	31·9	27·6	16·3	0·3	2·0	22	101	847	20	193	70	51	58	284
N.E.S.	–1·6	3·9	16·8	12·9	10·1	—	2·2	23	56	353	12	158	38	—	102	286
E.L.	–1·6	2·2	71·9	69·7	39·9	1·6	1·5	36	118	794	32	172	96	157	62	307
N.E.S.	–1·9	–0·4	33·7	34·1	22·5	0·9	1·6	24	84	680	18	144	58	16	93	410
*E.L.	–2·0	2·5	43·3	40·8	23·2	2·0	2·1	28	93	728	24	176	87	96	88	409
N.E.S.	–3·3	0·6	30·8	30·2	21·6	0·2	2·1	18	99	808	18	135	62	91	75	388
N.E.S.	–3·6	0·2	54·1	53·9	28·5	1·6	1·4	37	95	632	28	179	92	130	80	415
N.E.S.	–4·0	1·0	52·8	51·8	34·6	0·1	1·6	34	85	748	24	149	89	76	85	434
E.L.	–4·3	0·2	69·6	69·4	47·8	1·2	1·3	30	94	619	28	140	72	156	101	516
E.L.	–6·3	–3·3	21·8	25·1	8·6	0·9	2·6	19	98	683	17	202	60	50	81	263
N.E.S.	–9·3	–3·2	51·0	54·2	38·7	1·4	1·8	18	95	809	22	131	92	95	94	465
N.E.S.	–13·8	–8·4	20·8	29·2	14·2	0·4	2·4	21	58	459	13	141	42	81	41	128
Av. of 23 farms	–0·9	2·9	41·8	38·9	22·6	0·8	1·7	28	91	675	24	177	72	98	82	375

(*f*) E.L.=East Lancashire
N.E.S.=North East Staffordshire.

* Not included in average.
(*a*) Includes farmer's labour.

UPLAND DAIRY FARMS

MEASURES OF ECONOMIC EFFICIENCY — SIZE 101 ACRES AND OVER — WHOLESALE

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII
County (*f*)	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Purchased Feed per Acre	Seeds and Fertilisers per Acre	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield Index	Yield per Cow	Livestock Output per Feed Acre	Livestock Output per £100 Purchased Feed	Milk and Cattle Output per Cattle Unit	Poultry and Egg Output per Poultry Unit	Labour Index (*a*)	Gross Output per £100 Labour (*a*)
	£	£	£	£	£	£				galls.	£	£	£	£		£
St.	11·6	13·5	43·9	30·4	19·5	0·8	1·5	32	91	653	27	223	66	137	124	595
Sa.	5·8	7·8	44·9	37·1	12·0	0·6	1·9	26	112	738	30	346	79	88	109	367
St.	5·1	7·8	57·1	49·3	31·1	1·1	1·3	43	93	616	28	179	72	79	121	559
St.	4·3	7·3	56·8	49·5	32·9	0·4	2·0	31	127	939	27	171	107	87	118	689
St.	3·9	5·9	33·5	27·6	14·6	1·0	2·0	23	93	666	23	222	71	57	99	431
Sa.	2·7	3·4	42·7	39·3	17·3	4·4	1·9	19	102	824	28	252	86	—	124	639
St.	1·7	3·2	19·9	16·7	6·8	0·7	2·0	20	64	478	16	281	39	70	119	358
St.	–4·1	–1·8	36·8	38·6	22·6	1·1	1·6	31	71	738	21	145	72	30	100	374
Av. of 8 farms	3·7	5·4	40·5	35·1	17·9	1·8	1·8	26	95	711	25	222	73	66	115	506

(*f*) St=Staffordshire.
Sa=Salop.

(*a*) Includes farmer's labour.

UPLAND DAIRY FARMS

MEASURES OF ECONOMIC EFFICIENCY — RETAIL

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII
County (*f*)	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Purchased Feed per Acre	Seeds and Fertilisers per Acre	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield Index	Yield per Cow	Livestock Output per Feed Acre	Livestock Output per £100 Purchased Feed	Milk and Cattle Output per Cattle Unit	Poultry and Egg Output per Poultry Unit	Labour Index (*a*)	Gross Output per £100 Labour (*a*)
	£	£	£	£	£	£				galls.	£	£	£	£		£
*E.L.	64·6	70·7	190·0	119·3	57·7	2·0	1·1	50	212	657	71	319	315	130	135	636
E.L.	23·8	29·2	118·2	89·0	49·9	1·3	0·9	48	114	773	49	233	130	74	106	568
E.L.	15·1	24·0	149·4	125·4	89·6	—	1·0	37	118	892	40	160	170	148	60	459
*E.L.	10·9	53·0	284·9	231·9	161·9	2·3	0·3	87	76	1,068	43	169	162	68	144	634
E.L.	9·9	13·2	63·8	50·6	25·5	0·9	1·5	37	114	715	36	246	108	56	112	426
E.L.	9·5	12·3	74·2	61·9	29·0	1·7	1·8	35	146	853	38	249	131	150	91	428
E.L.	5·1	14·1	77·3	63·2	28·2	—	1·4	54	120	608	38	261	116	—	121	387
E.L.	5·1	9·3	45·1	35·8	20·7	0·1	2·3	31	98	527	26	206	105	64	104	389
E.L.	1·8	7·3	104·0	96·7	62·3	1·1	1·3	30	142	1,084	34	161	135	142	128	554
E.L.	0·2	6·8	53·9	47·1	18·2	1·1	1·7	42	96	556	29	242	82	—	75	284
*E.L.	−6·6	5·4	75·4	70·0	43·5	0·5	1·8	46	141	705	31	166	149	75	59	328
Av. of 8 farms	8·6	13·3	76·7	63·4	33·9	1·0	1·5	38	121	743	36	217	119	108	101	442

* Not included in average. (*a*) Includes farmer's labour. (*f*) E.L.=East Lancashire.

LOWLAND DAIRY FARMS

TABLE I

CROPPING PER 100 ACRES ON 57 FARMS 1954–5
AVERAGE SIZE 104 ACRES

Size Group	0—50 acres	51—100 acres	101—150 acres	Over 150 acres
Number of Farms	13	19	13	12
Average Size acres	35	74	126	200
Acreage per 100 acres in:				
Cereals	17·6	19·1	18·7	15·7
Cash Roots, etc.	1·4	2·8	3·3	2·1
Fodder Roots	2·3	1·2	0·9	0·8
Kale	1·5	0·5	0·8	1·3
Miscellaneous	—	0·4	0·4	0·9
Grass Mown—Temporary	16·7	16·6	19·3	20·8
Permanent	9·6	11·9	8·0	4·3
Grass Grazed—Temporary	1·4	8·4	3·3	11·6
Permanent	49·5	39·1	45·3	42·5
Total Grass	77·2	76·0	75·9	79·2
% of Acreage Supporting Stock	99	97	96	95

TABLE II

STOCKING PER 100 STOCK ACRES 1954–5
(in livestock units)

Size Group	0—50 acres	51—100 acres	101—150 acres	Over 150 acres
Dairy Cows	40·3	32·4	36·8	30·5
Other Cattle	17·8	16·2	21·4	21·2
Pigs	1·8	3·1	6·3	5·2
Poultry	8·2	3·7	6·4	2·3
Sheep	—	1·9	1·7	5·7
Horses	2·0	1·1	1·0	1·0
Total	70·1	58·4	73·6	65·9

LOWLAND DAIRY FARMS

TABLE III

RATES OF STOCKING 1954–5

	0—50 acres	51—100 acres	101—150 acres	Over 150 acres
Acres of grass per unit of grazing stock	1·29	1·52	1·30	1·42
Stock Acres per livestock unit	1·43	1·71	1·36	1·52
Feed Acres per livestock unit	2·65	2·56	2·57	2·47

TABLE IV

OUTPUT, COSTS AND NET INCOMES PER ACRE 1954–5

Size Group	0—50 acres	51—100 acres	101—150 acres	Over 150 acres
	£	£	£	£
OUTPUT				
Crops	1·6	2·5	2·6	2·9
Cattle	3·8	4·0	5·5	6·3
Milk	46·4	33·3	42·7	38·6
Sheep and Wool	—	0·3	0·5	1·6
Pigs	1·5	2·9	5·7	4·3
Poultry and Eggs	6·5	3·4	5·3	2·0
Miscellaneous	3·4	2·0	1·9	2·0
Gross Output	63·2	48·4	64·2	57·7
COSTS				
Feedingstuffs	28·0	16·9	29·2	20·5
Seeds	0·8	1·0	1·2	0·9
Fertilisers	1·2	1·1	1·9	1·8
Rent and Rates	3·6	3·4	3·3	2·9
Labour (excluding farmer)	8·6	9·9	9·8	11·5
Power Costs	8·3	5·8	6·8	6·7
Contract	1·0	1·0	0·9	0·6
Miscellaneous	4·1	3·3	3·7	3·4
Total Costs	55·6	42·4	56·8	48·3
Net Farm Income	7·6	6·0	7·4	9·4
Farmer's Labour	7·7	4·2	2·4	1·4
Investment Income	–0·1	1·8	5·0	8·0
Family Income	12·8	8·7	9·7	11·5
Purchases of New Equipment	3·2	3·2	4·0	4·2

LOWLAND DAIRY FARMS

TABLE V

THE PRODUCTIVITY OF RESOURCES 1954–5

	0—50 acres	51—100 acres	101—150 acres	Over 150 acres
Gross Output per acre .. .. £	63·2	48·4	64·2	57·7
Total Costs per acre (*a*) .. .. £	63·3	46·6	59·2	49·7
Gross Output per £100 Costs (*a*) £	100	104	109	116
Gross Output per £100 Labour (*a*) £	387	345	526	449
Gross Output per £100 Labour and Power (*a*) .. .. £	257	244	339	296
Labour Index Average	83	87	123	110
Livestock Output per L.S.U. .. £	83	77	85	84
Livestock Output per Stock Acre £	58	45	62	55
Livestock Output per Feed Acre £	31	30	33	34
Livestock Output per £100 Purchased Feed .. .. £	208	260	205	257
Milk Yield per Cow .. .. galls.	780	698	809	812
Milk Yield per Stock Acre galls.	314	226	298	248
Milk Sales per Stock Acre .. £	46	34	45	40

(*a*) Including value of farmer's labour.

LOWLAND DAIRY FARMS

Measures of Economic Efficiency

Size 0—50 Acres

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Area in Cash Crops	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield per Cow	Milk per Stock Acre	Milk and Cattle Output per S.A.	Livestock Output per Feed Acre	Gross Output per £100 Labour and Power (*a*)	Purchased Feed per Acre	Fertilisers per Acre	Labour per Acre (*a*)	Power Costs per Acre
	£	£	£	£	%			galls.	galls.	£	£	£	£	£	£	£
Staffs.	12·4	19·0	63·3	44·3	4	1·3	39	831	329	53	35	304	21·2	0·6	13·3	7·6
Ches.	11·2	17·9	112·3	94·4	6	0·8	52	1,040	543	87	40	408	58·6	1·5	19·9	7·7
Ches.	9·5	17·0	43·2	26·2	7	2·8	31	640	197	29	24	254	9·3	1·2	8·0	8·9
Ches.	4·0	11·8	71·9	60·1	—	2·2	37	957	354	62	36	259	28·2	1·9	17·3	10·5
*Ches.	2·6	18·2	96·7	78·5	—	1·2	53	883	471	77	39	350	50·7	2·0	18·0	9·7
Ches.	1·6	8·5	54·5	46·0	—	1·5	43	673	287	49	30	336	24·8	1·1	9·7	6·5
Ches.	–1·0	7·5	68·9	61·4	—	1·4	49	639	315	53	36	209	22·8	3·8	23·3	9·7
Salop	–1·8	3·9	50·4	46·5	5	1·2	41	563	230	39	31	178	16·9	0·1	21·2	7·0
Salop	–2·7	5·6	48·8	43·2	—	1·6	29	804	234	40	28	243	23·8	1·1	16·7	3·5
*Ches.	–4·4	2·0	55·7	53·7	—	1·5	50	690	348	46	26	395	34·2	1·5	9·8	4·3
Salop	–8·6	3·3	43·0	39·7	14	1·3	46	617	285	43	27	207	20·0	2·8	16·7	4·1
Salop	–8·8	–8·8	95·5	104·3	—	1·1	53	857	457	62	32	279	56·4	—	20·5	13·8
Salop	–11·9	–1·9	55·1	57·0	—	1·6	34	731	247	35	26	143	19·2	—	24·1	14·4
Ches.	–13·2	–4·4	47·7	52·1	11	1·8	38	739	279	43	23	239	30·7	—	11·0	8·9
Staffs.	–23·0	–6·2	41·2	47·4	—	1·6	21	912	195	34	19	182	33·0	—	16·8	5·9
Av. of 13 farms	–0·1	7·6	63·2	55·6	1	1·4	40	780	314	50	31	257	28·0	1·2	16·3	8·3

* Not included in averages.

(*a*) Includes farmer's labour.

LOWLAND DAIRY FARMS

Measures of Economic Efficiency

Size 51—100 Acres

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Area in Cash Crops	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield per Cow	Milk per Stock Acre	Milk and Cattle Output per S.A.	Livestock Output per Feed Acre	Gross Output per £100 Labour and Power (a)	Purchased Feed per Acre	Fertilisers per Acre	Labour per Acre (a)	Power Costs per Acre
	£	£	£	£	%			galls.	galls.	£	£	£	£	£	£	£
Ches.	11·1	14·3	69·7	55·4	12	1·9	35	826	289	62	44	201	14·6	1·0	24·0	10·6
Staffs.	10·7	14·2	34·1	19·9	20	2·1	21	682	146	26	28	272	0·3	1·0	9·3	3·3
Staffs.	8·1	11·6	58·7	47·1	—	1·9	39	828	322	57	39	293	19·0	1·6	13·9	6·1
Ches.	7·4	12·9	56·2	43·3	26	2·0	35	898	310	51	37	208	10·4	1·4	18·6	8·4
Ches.	7·2	11·2	58·0	46·8	—	1·5	35	721	256	42	36	255	16·7	0·8	15·5	7·2
*Ches.	6·0	11·9	56·7	44·8	—	1·4	43	716	305	42	33	555	25·2	0·6	8·4	1·8
Salop	5·3	9·5	38·9	24·4	8	2·3	24	731	179	30	33	246	7·6	1·4	10·2	3·5
Salop	4·3	7·8	45·4	37·6	1	1·8	28	686	194	40	30	252	15·8	1·1	12·4	5·6
Ches.	4·2	10·2	51·3	41·1	—	1·5	34	594	201	27	28	345	21·8	0·3	9·5	5·4
Ches.	3·6	8·9	30·4	21·5	1	2·1	34	565	191	28	26	204	3·5	—	12·7	2·2
Ches.	1·2	6·1	62·2	56·1	6	1·4	32	772	250	43	36	246	21·8	2·6	14·6	10·7
Salop	–0·1	3·9	75·5	71·6	4	1·2	34	696	234	45	35	313	37·6	2·3	14·5	9·6
Ches.	–0·3	5·1	45·4	40·3	—	1·8	39	560	217	39	27	254	19·7	—	14·4	3·4
Ches.	–0·5	2·9	24·1	21·2	—	2·4	21	633	131	20	16	313	10·1	0·3	5·8	1·9
Ches.	–1·0	0·0	67·4	67·4	6	1·6	38	968	368	60	38	260	25·3	4·3	20·3	5·6
Lancs.	–1·8	2·5	27·6	25·1	—	2·1	28	650	179	25	19	277	11·0	1·8	7·7	2·2
Salop	–4·5	1·6	64·8	63·2	—	1·0	28	865	244	45	30	252	33·0	1·9	15·4	10·3
Staffs.	–6·1	–0·3	72·2	72·5	9	1·1	60	650	398	60	35	255	36·4	0·6	17·4	10·9
Ches.	–9·7	–6·5	24·5	31·0	2	2·0	37	425	156	21	16	161	13·9	—	14·2	1·0
Ches.	–11·9	–6·7	32·0	38·7	—	3·0	24	632	151	21	21	141	12·4	—	19·6	3·0
Av. of 19 farms	1·8	6·0	48·4	42·4	3	1·7	32	698	226	38	30	244	16·9	1·1	14·1	5·8

* Not included in averages.

(a) Includes farmer's labour.

LOWLAND DAIRY FARMS

Measures of Economic Efficiency

Size 101—150 Acres

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Area in Cash Crops	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield per Cow	Milk per Stock Acre	Milk and Cattle Output per S.A.	Livestock Output per Feed Acre	Gross Output per £100 Labour and Power (*a*)	Purchased Feed per Acre	Fertilisers per Acre	Labour per Acre (*a*)	Power Costs per Acre
	£	£	£	£	%			galls.	galls.	£	£	£	£	£	£	£
Ches.	14·5	17·1	65·6	48·5	13	1·3	46	818	378	62	38	350	22·4	3·2	12·5	6·2
Ches.	13·4	15·6	53·1	37·5	2	1·2	25	749	185	37	33	400	17·5	0·8	9·8	3·4
Ches.	12·9	16·3	66·9	50·6	7	1·5	54	803	437	59	37	455	27·0	2·1	8·0	6·7
Lancs.	9·9	12·0	71·4	59·4	—	1·7	25	1,013	257	53	37	360	28·8	4·1	13·4	6·4
Ches.	7·5	9·6	61·8	52·2	—	1·4	41	682	277	44	30	552	32·3	1·1	8·2	3·0
*Salop	4·9	7·6	68·8	61·2	10	1·3	28	899	254	45	40	255	21·6	3·6	16·9	10·1
Ches.	3·9	6·4	74·7	68·3	—	1·3	40	828	335	56	34	369	40·0	1·1	13·0	7·3
Ches.	3·4	5·3	66·3	61·0	15	1·6	48	841	406	67	37	274	25·4	2·4	14·3	9·9
Staffs.	2·5	4·9	41·1	36·2	25	2·4	24	855	207	33	23	224	10·5	2·6	14·6	3·7
Ches.	2·3	5·5	68·0	62·5	—	1·3	32	868	279	50	31	370	38·5	0·5	9·2	8·8
Lancs.	2·0	3·5	109·1	105·6	1	0·8	35	1,052	373	70	36	366	61·3	2·4	18·2	11·6
Ches.	1·3	3·8	39·7	35·9	—	1·6	34	600	205	39	27	289	18·3	—	7·3	6·5
Salop	–2·5	–0·1	67·5	67·6	4	1·2	41	742	305	47	32	287	33·4	1·2	15·6	7·8
Ches.	–6·7	–3·7	44·0	47·7	—	1·5	42	675	281	37	26	235	22·0	3·1	12·3	6·3
Av. of 13 farms	5·0	7·4	64·2	56·8	4	1·4	37	809	298	50	33	339	29·2	1·9	12·2	6·8

* Not included in averages.

(*a*) Includes farmer's labour.

LOWLAND DAIRY FARMS

Measures of Economic Efficiency — Size Over 150 Acres

County	Investment Income per Acre	Net Farm Income per Acre	Gross Output per Acre	Total Costs per Acre	Area in Cash Crops	Stock Acres per L.S.U.	Cows per 100 Stock Acres	Yield per Cow	Milk per Stock Acre	Milk and Cattle Output per S.A.	Livestock Output per Feed Acre	Gross Output per £100 Labour and Power (*a*)	Purchased Feed per Acre	Fertilisers per Acre	Labour per Acre (*a*)	Power Costs per Acre
	£	£	£	£	%			galls.	galls.	£	£	£	£	£	£	£
Lancs.	14·9	16·5	63·4	46·9	—	1·5	31	914	280	57	36	354	23·2	0·5	11·8	6·1
Salop	14·5	16·2	67·9	51·7	5	1·3	30	823	249	47	39	325	22·5	2·4	12·3	8·6
Ches.	14·0	15·7	70·9	55·2	—	1·5	28	1,027	284	49	34	419	31·2	0·4	11·5	5·4
*Ches.	11·0	13·3	54·5	41·2	—	1·4	35	631	221	40	34	330	18·0	1·6	9·1	7·5
Ches.	9·5	11·0	50·1	39·1	10	1·4	34	711	238	39	33	293	14·3	0·8	12·4	4·6
Ches.	9·4	10·9	53·3	42·4	3	1·8	31	852	266	44	34	304	17·8	1·5	12·1	5·5
Staffs.	9·0	10·7	54·7	44·0	—	1·4	36	622	221	41	29	385	25·7	0·7	10·2	4·1
Ches.	8·4	10·4	75·4	65·0	—	1·5	39	905	353	65	37	346	33·1	2·7	15·3	6·6
Ches.	8·0	9·4	58·2	48·8	17	1·6	29	931	268	52	38	227	13·8	4·1	15·4	10·2
Ches.	5·0	6·0	35·1	29·1	1	2·2	17	674	115	24	22	264	10·0	0·9	8·7	4·5
Ches.	4·5	6·3	57·1	50·8	12	1·3	34	707	241	43	29	343	22·7	4·3	11·1	5·6
Ches.	1·4	2·1	38·1	36·0	21	2·1	28	724	199	35	30	198	6·5	1·8	12·4	6·8
Lancs.	−0·1	−0·1	103·0	103·1	1	1·0	38	831	316	85	47	228	40·8	3·2	28·4	16·8
Av. of 12 farms	8·0	9·4	57·7	48·3	5	1·5	30	812	248	47	34	296	20·5	1·8	12·9	6·7

* Not included in averages.

(*a*) Includes farmer's labour.

MIXED LIVESTOCK FARMS

TABLE I

CROPPING AND STOCKING PER 100 ACRES ON 24 FARMS 1954–5
AVERAGE SIZE 127 ACRES

Cropping per 100 acres		Livestock Units per 100 acres	
Wheat	6·8	Cows	25·6
Oats	5·8	Other Cattle	14·9
Other Corn	13·4	Pigs	20·5
Sugar Beet	1·5	Poultry	12·0
Potatoes	3·6	Sheep	8·5
Other Roots	2·8	Horses	0·8
Other Crops	0·3	Total	82·3
Total Tillage	34·2		
Temporary Grass—Mown	19·8		
Grazed	11·0		
Total Arable	65·0		
Permanent Grass—Mown	3·1		
Grazed	31·9		
	100·0		

MIXED LIVESTOCK FARMS

TABLE II

AVERAGE OUTPUT, COSTS AND INCOME PER ACRE 1954–5

	£ per acre	%
OUTPUT		
Crops	4·5	6
Cattle	3·6	5
Milk	29·7	39
Sheep and Wool	2·0	3
Pigs	19·0	25
Poultry and Eggs	14·0	19
Total Livestock	68·3	91
Miscellaneous	2·4	3
Gross Output	75·2	100
COSTS		
Foods	37·1	53
Seeds	1·6	2
Fertilisers	2·5	4
Rent and Rates	3·1	4
Power Costs	7·6	11
Labour (excluding farmer)	13·3	19
Miscellaneous	5·2	7
Total Costs	70·4	100
Net Farm Income	4·8	
Farmer's Labour	2·2	
Investment Income	2·6	
Family Income	7·1	
Capital Expenditure	6·2	

MIXED LIVESTOCK FARMS

Measures of Economic Efficiency

County	Investment Inc. per Acre	Net Farm Inc. per Acre	Gross Output per Acre	Total Costs per Acre	Purchased Feed per Acre	Feed Acres per L.S.U.	L'stk. Output per Feed Acre	Proportion of Total L.S.U.s					Cattle & Milk Output per Cattle Unit	Pig Output per Pig Unit	Poultry & Egg Output per Poultry Unit	Sheep Output per Sheep Unit	Yield per Cow	Yield Index	Labour Index (a)	Gross Output per		Size Group
								Cows	Other Cattle	Pigs	Poultry	Sheep								£100 Labour (a)	£100 Labour and Power (a)	
	£	£	£	£	£	acres	£	%	%	%	%	%	£	£	£	£	galls:			£	£	acres
Lancs.	17·7	21·8	116·6	94·8	58·9	2·1	40	26	20	10	25	18	69	140	131	24	652	93	174	924	465	51–100
Lancs.	17·0	23·3	111·7	88·4	70·1	2·8	35	25	22	—	36	17	82	—	148	22	879	97	130	884	705	0–50
Ches.	15·5	18·5	89·6	71·1	41·1	2·7	43	36	20	16	28	—	109	97	134	—	1,046	95	132	800	470	101–150
Ches.	13·4	15·5	129·6	114·1	55·7	3·2	36	45	5	37	11	—	146	85	88	—	916	109	88	479	370	101–150
Ches.	13·2	17·2	124·9	107·7	69·1	2·4	38	36	10	46	8	—	94	88	78	—	831	92	148	682	426	51–100
Lancs.	10·8	14·0	132·9	118·9	74·2	1·8	41	18	7	30	23	21	83	85	103	24	727	79	162	759	542	51–100
Lancs.	7·8	16·1	145·8	129·7	90·0	2·7	39	45	4	13	34	—	87	125	132	—	643	91	79	498	399	1–50
Ches.	6·5	8·9	58·4	49·5	22·9	2·7	32	50	20	22	8	—	84	91	86	—	836	96	104	441	323	101–150
Ches.	5·1	8·6	119·5	110·9	70·0	3·1	39	41	16	21	22	—	111	106	161	—	1,042	118	123	591	384	51–100
Lancs.	4·8	7·2	69·5	62·3	30·4	1·8	36	32	22	5	17	21	62	63	114	35	622	84	86	389	297	101–150
Lancs.	3·6	8·3	99·1	90·8	58·9	2·6	32	37	10	20	29	—	89	76	97	—	714	81	74	516	410	1–50
Salop	3·6	4·9	44·1	39·2	16·7	2·4	33	30	22	40	8	—	78	85	78	—	716	87	104	507	299	201–250
Salop	3·5	6·2	80·2	74·0	35·2	2·3	39	40	19	35	6	—	95	75	102	—	817	90	92	394	285	101–150
Salop	3·1	4·8	73·9	69·1	32·2	2·1	38	27	14	34	4	21	88	105	102	23	780	94	108	472	309	151–200
Lancs.	2·8	7·3	49·4	42·1	28·6	2·4	26	23	26	1	22	22	60	96	106	33	778	84	105	500	363	51–100
Salop	1·8	1·8	37·6	35·8	17·1	2·6	24	24	21	29	—	25	79	80	—	7	830	84	134	631	347	251–300
Ches.	–0·1	2·8	64·4	61·6	34·3	2·5	29	36	20	13	27	—	93	110	65	—	659	71	175	672	328	101–150
Salop	–2·4	–1·5	50·5	52·0	20·1	2·7	29	43	21	20	8	8	76	91	125	14	636	84	101	347	223	301–350
Salop	–2·6	1·8	63·5	61·7	26·3	2·6	36	37	26	27	10	—	83	108	131	—	755	104	66	384	245	51–100
Lancs.	–2·9	–2·2	50·9	53·1	23·7	2·6	26	25	37	18	17	—	59	75	97	—	694	82	87	347	237	151–200
Ches.	–5·5	4·0	85·5	81·5	52·8	2·6	31	40	21	23	11	—	73	84	140	—	745	90	75	374	292	1–50
Lancs.	–6·0	–5·4	96·7	102·1	53·7	2·2	38	16	19	31	14	19	64	106	165	31	587	103	78	375	265	251–300
Ches.	–13·8	–11·9	78·5	90·4	49·4	2·8	31	45	7	33	4	11	96	93	64	19	790	84	114	484	314	51–100
Salop	–13·9	–5·8	83·1	88·9	49·4	2·6	33	30	17	29	24	—	81	97	91	—	720	81	71	381	255	1–50
Avge.	2·6	4·8	75·2	70·4	37·1	2·4	34	31	18	25	15	10	82	92	117	23	765	91	104	485	325	—

(a) Includes farmer's labour.

POULTRY FARMS 1954–5

Output, Costs and Income per Farm

	C	F	I	K	P	Q	S	U	V	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ
	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Output																						
Poultry	29	315	4,619	817	628	947	228	297	173	467	223	306	172	65	2,260	367	–57	458	488	–9	240	216
Eggs	1,875	1,419	1,798	2,840	1,702	1,563	1,089	820	3,262	1,450	243	2,855	1,174	977	1,670	2,427	1,549	1,611	1,372	363	1,554	926
Other Livestock	—	—	298	—	31	35	—	—	—	—	38	40	—	—	—	—	—	263	—	—	—	—
Crops..	—	—	—	—	—	—	57	—	—	—	—	—	—	—	—	—	—	–70	—	—	—	—
Miscellaneous ..	86	31	174	84	174	16	27	12	46	17	50	156	38	12	49	44	47	122	86	3	105	99
Total	1,990	1,765	6,889	3,741	2,535	2,561	1,401	1,129	3,481	1,934	554	3,357	1,384	1,054	3,979	2,838	1,539	2,384	1,946	357	1,899	1,241
Costs																						
Rent & Rates ..	60	9	126	19	127	39	9	16	10	28	3	50	54	6	97	37	24	92	25	2	74	43
Hired Labour ..	7	75	—	222	—	538	—	—	—	—	36	147	—	—	520	—	—	—	—	—	—	155
Family Labour..	104	—	365	104	158	—	—	—	156	156	20	—	—	—	—	—	—	—	—	—	—	—
Foods..	1,641	792	2,334	2,381	1,692	1,666	934	710	2,499	1,191	426	1,968	596	785	3,208	1,681	1,304	1,631	1,094	196	1,221	783
Seeds & Manures	7	—	26	—	—	26	—	—	—	—	—	—	—	—	—	—	—	62	—	—	—	—
Power Costs ..	127	41	510	170	335	111	61	43	242	53	70	339	28	70	311	48	185	246	41	12	74	70
Miscellaneous ..	43	55	520	114	99	136	19	42	81	23	81	149	34	30	215	120	89	72	23	19	68	22
Total	1,989	972	3,881	3,010	2,411	2,516	1,023	811	2,988	1,451	636	2,653	712	891	4,351	1,886	1,602	2,103	1,183	229	1,437	1,073
Net Farm Inc. ..	1	793	3,008	731	124	45	378	318	493	483	–82	704	672	163	–372	952	–63	281	763	128	462	168
Farmer's Labour ..	156	204	222	312	316	65	316	156	312	340	93	312	160	283	234	234	322	312	250	47	312	—
Investment Inc. ..	–155	589	2,786	419	–192	–20	62	162	181	143	–175	392	512	–120	–606	718	–385	–31	513	81	150	168
Av. No. of Birds ..	940	443	1,207	900	973	675	509	349	1,465	616	218	938	445	341	745	873	725	785	766	96	473	462

APPENDIX V

Schedule of Definitions

(*a*) *Acreage:* The acreage figures used throughout the report, when merely referred to as acres, are *adjusted acres* obtained by converting rough grazings into equivalent pasture areas and by excluding the area of woodlands, waste lands, roads and stackyards.

Stock acres: That part of the total adjusted acreage of the farm required to produce food fed to livestock during the accounting period. On farms where sugar beet tops are fed one-third of the sugar beet acreage is allocated as stock acres.

Cash crop acres: That part of the total adjusted acreage producing crops sold or available for sale.

Feed acres: Represents in terms of acreage the total feed available. It is arrived at by adding to stock acres one acre for each ton of purchased concentrates and cereals, and also an acreage equivalent of all other purchased feed consumed during the year.

(*b*) *Livestock Units* (*L.S.U.s*): In converting different categories of livestock to livestock units (L.S.U.s) the following unit equivalents are employed:

		L.S.U.s
Cattle	Dairy Cows	1
	Beef Cows	1
	Stores over two years	1
	Yearlings	$\frac{2}{3}$
	Calves sold	—
	Calves retained	$\frac{1}{3}$
	Feeding Cattle	1
	Bulls	1
Pigs	Sows	$\frac{1}{2}$
	Fattened	1/7
	Boars	$\frac{1}{3}$
Poultry	Layers	1/50
	Fat/reared	1/200
	Other	1/200
Sheep	Ewes	$\frac{1}{3}$
	Fat Lambs wintered	1/12
	Rams	$\frac{1}{4}$
Horses		$1\frac{1}{2}$

(*c*) *Output:* The use of this term provides an accurate measure of output without the necessity for giving a detailed account of the receipts, expenses and valuations of the various livestock enterprises. Here output is the difference between the opening valuation added to the purchases and the closing valuation added to the sales. For example, where the opening valuation for cattle is £1,250, purchases for the year £600, sales £700 and closing valuation £1,260 output is calculated thus:

	£		£
Opening Valuation	1,250	Closing Valuation	1,260
Purchases	600	Sales	700
	£1,850		£1,960
		Difference being Output	£110

If the opening valuation plus purchases is greater than the closing valuation plus sales, output will be a negative quantity as it often is with " flying " herds.

The measure may also be applied to crops. Since, normally, there are no purchases to consider, output is the difference between the opening valuation and the closing valuation plus sales.

Miscellaneous output includes receipts such as trading bonus, government grants, contract work performed for other farmers, farm produce and stores used in the farmhouse, and a proportion of the rental value and rates of the farmhouse.

(*d*) *Costs:* Here are included the cost of foods, seeds, manures, repairs and sundries, depreciation of implements and machinery, rent and labour. In the case of rent where a farm is owner-occupied the rental value of the farm is used. In most cases this is the Schedule A gross assessment. Labour covers the cost of hired labour and of perquisites such as milk, cottages, produce and a charge for the board and lodging of employees living in the farmhouse. The value of family labour whether paid or unpaid, but not that of the farmer himself, is also included.

(*e*) *Net Farm Income:* This is the difference between gross output and total costs. It represents the amount available as remuneration for the farmer's own labour and management and for his capital invested in the farm.

(*f*) *Family Income:* This is the net income as defined above, plus the value of the labour paid or unpaid of the farmer's family including his wife.

(*g*) *Investment Income:* This is equal to Net Farm Income less the estimated value of the farmer's own labour. It represents therefore the net remuneration on the farmer's capital and management.

(*h*) *System Index:* A comparison in percentage terms of the gross output of a farm, assessed at standard values for each commodity, with that of the average farm calculated in the same way, e.g. if the assessed gross output from a particular Arable farm is £50 per acre and the assessed gross output for the Average Arable farm is £54 per acre then the System Index of this farm is

$$\frac{50 \times 100}{54} = 92{\cdot}6.$$

(*i*) *Yield Index:* A comparison, in percentage terms, of the actual gross output of a farm with the output which would have been achieved at provincial average yields, e.g. if the actual gross output of a farm is £55 per acre, but the assessed gross output at average yields is £50 per acre then the Yield Index is

$$\frac{55 \times 100}{50} = 110{\cdot}0.$$

(*j*) *Labour Index:* A comparison, in percentage terms, of the number of man-days of labour theoretically required by the particular stocking and cropping of a farm with the total number of man-days, including those of the farmer, actually available, e.g. if the total theoretical labour requirement of the stock kept and crops grown on a particular farm during the year is 1,000 man-days (Man Work units) and the total amount of labour provided by the farmer, his two men and, say, £70 spent on casual labour is 1,050 man-days, then the Labour Index is:

$$\frac{1{,}000 \times 100}{1{,}050} = 95{\cdot}2$$

indicating that the amount of labour available is greater than the amount normally needed for that cropping and stocking.

(*k*) *Power Costs:* Include charges for machinery repairs and depreciation, electricity, fuel, vehicle taxes and insurance.