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*Farm business analysis*

UNIVERSITY COLLEGE OF WALES  
ABERYSTWYTH

DEPARTMENT OF AGRICULTURAL ECONOMICS

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ECONOMIC ORGANISATION AND RESULTS OF  
THE MAIN TYPES OF WELSH FARM  
1960-1965 and 1964-1965

BY

MICHAEL B. JAWETZ

PRICE: 12s. 6d.

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## FOREWORD

This Report is based on the results of the Farm Management Survey for the five years 1960 to 1965.

Each year four hundred or so farmers on different types of land, and following different systems of farming in Wales provide the Department of Agricultural Economics with financial accounts and full details of their crops and stocks. Properly analysed the information serves two purposes. First, it provides an objective indication of the financial state of farming, its difficulties and its achievements. Secondly, it provides a wealth of information on the factors which lead to success or failure in farming. Both purposes are vital. It is only in the full knowledge of the financial and physical state of the industry that sound and sensible policies can be developed and proper managerial decisions taken by individual farmers. Every farmer in Wales and all who are concerned with the welfare of Welsh farming owe a substantial debt of gratitude to the farmers who have co-operated in the Farm Management Survey.

This report is the work of Dr. M. B. Jawetz who has supervised the analysis of the material and written the commentary. The field work was performed by Messrs. D. B. Garner, M. B. Roberts, R. L. Evans and G. Hughes, who wish to record their thanks for their invariably kind reception by farmers participating in the Scheme. Miss E. Johnson, the Departmental Librarian, carried out the painstaking task of editing the original draft and correcting the proofs and many others assisted in a variety of ways. All these will consider their work amply rewarded if this report in any way advances the interests of Welsh farming.

H. T. WILLIAMS,  
*Professor of Agricultural Economics,  
University College of Wales, Aberystwyth.*

## INTRODUCTION

This report is based on data collected for the Farm Management Survey of England and Wales. Its first part deals with an identical sample of 208 Welsh farms which have co-operated in the Survey in each of the five years from 1960 to 1965. It shows the economic changes which took place during this period at farm level. The second part is based on the whole sample of farms for the year 1964-1965. Since a single year naturally involves a larger number of farmers, this "full" sample permits a subdivision according to net farm income into "average" and more profitable farms, and makes it possible to illustrate differences between more and less profitable farm groups with similar farming systems and types of land. In both parts comparisons are made between farms of comparable size but different type.

### THE CLASSIFICATION OF FARMS

The sample is not representative, in the strict statistical sense, of every facet of Welsh farming. Nevertheless, it includes a sufficient number of farms belonging to the main types characteristic of Wales to make it possible to sub-divide each type into three to four size groups. The average figures for these can at least give a reasonable idea of the numerical magnitudes involved. Since about two-thirds of all Welsh holdings over 20 acres of crops and grass are of less than 100 acres, problems of size in terms of acreage are of particular interest.

For a country like Wales, about two-fifths of which consists of rough grazing, classification by acreage of crops and grass is not suitable. The economic effect of rough land—mostly hill pasture and small and badly drained portions of many better land farms—may be insignificant for farmers in England and Wales generally, but it is relatively important when the Principality is regarded separately. It is necessary therefore to make special provision for rough grazing and to express its useful value in terms of its equivalent of the "normal" land on any given farm. For this reason the areas of farms have been calculated in terms of "adjusted" acreage. This is arrived at by deducting from the total acreage of a farm the area occupied by roads, woodland, waste land and buildings and then estimating the "equivalent" use of rough grazing as "normal" land. For example, three acres of rough grazing may be as useful as one acre of crops and grass and would thus be expressed as one adjusted acre. Although this or any other practical method of bringing vastly different classes of land to a common denominator is extremely crude, no other is available which could be used as a basis for economic comparisons of farms with different proportions of rough grazing. (How else would one measure the performance of a farm of, for example, 300 acres including 150 acres of rough grazing against one of 200 acres with 250 acres of rough land?)

In the first instance the farms have been grouped into three main types: dairy, mixed and livestock rearing, which will be described later. Secondly, each type group has been sub-divided into better land and poor land farms and, thirdly, these have been further classified into acreage



groups. The dairy farms have been divided into four groups: 20–50, 50–100, 100–200 and over 200 adjusted acres. The mixed and livestock rearing farms have been dealt with in three size groups, ranging from under 100 to over 200 adjusted acres.

The classification of farms as either better land or poor land is of considerable importance in the Principality. In spite of its crudeness it gives a better basis for the comparison of farms run on similar farming systems than could be achieved without it. But, easy as is such a rough classification at the extremes of land quality, it becomes increasingly difficult towards “the middle” and, in fact, there are some cases which could equally well be classified as either better land or poor land. The qualifying criteria are never absolute and can only be taken in combination. They are:

1. **Elevation.** Most poor land farms are hill or upland farms, and few are below 600 feet above sea level. But there are poor land farms overlaying coal measures or situated on lowland bogs at elevations of a few feet and upwards. High elevation usually means high rainfall, steep slopes etc. But there are exceptions to this. For example, some very good red sandstone land can be found in Brecon at altitudes of up to 1,300 feet, with reasonable slopes and a comparatively low rainfall.

2. **Elevation range.** This may indicate steepness of slope, which may hinder cultivations and thus explain a high incidence of rough grazing. But a small range of elevation does not automatically indicate better land.

3. **Incidence of rough grazing.** Rough land in itself tends to be poor land, whether by reason of steepness of slope, bad drainage, excessive rainfall or poverty of the soil. But the existence of a large proportion of rough grazing—e.g. over 25 per cent of a farm’s total acreage—may indicate that at least some of the adjacent “good” land, although improved, is likely to be affected by a handicap—be it high water table, shallow top soil or rock, steepness of slope or a combination of these drawbacks.

4. **Stocking rates.** High stocking with sheep and low stocking with cattle are more typical of poor land farms than of better ones.

5. **Rent.** Although the rent or rental value may depend as much on the period in which the land was let or purchased as on its quality, a low rent (below 15s. per actual acre or £1–£1 5s. per adjusted acre) is a strong indication that the farm is a “poor land” one.

6. **Value of Land**—at least in Wales—may also be a significant pointer. Land valued in 1965/66 at less than £60 per actual acre (including rough grazing) can be classed as poor land, while values exceeding £100 an acre should be classed as better land in most cases. In between these values, the type and quality of the house and buildings and the accessibility to a town may influence valuations and blur the issue.

The main characteristics of the type-of-farming groups on better and on poor land are given below:

**Better Land Dairy Farms.** One-half or more of gross output consists of milk. In a few individual cases, such as on the larger farms or on small farms with a high production of pigs or poultry, milk production may account for slightly less than half of the total output; but it is never less

than 45 per cent. Most of the farms are at elevations of below 600 feet, and have little, if any, rough grazing. Rents tend to exceed £2 5s. per acre.

**Poor Land Dairy Farms.** Milk output as above. Most of the farms are on marginal land at low elevations (e.g. bog or land lying over coal seams). Some of them have substantial rough grazing. Conventional rents tend to be below £2 per acre but more recent purchases indicate rental values of £4-£5 per acre.

**Better Land Mixed Farms.** All farms below 200 acres in size in this group produce milk for sale, but are distinguished from the more specialised dairy farms by the fact that it accounts for less than 45 per cent of the gross output. The main enterprises combined with dairying are cattle and sheep rearing, with pigs and/or poultry important on some of the smaller farms. Not all the mixed farms above 200 acres produce milk for sale, and the size group has been divided into those that do and those that do not. The non-milk selling farms engage in the fattening as well as the rearing of cattle and sheep, and some have substantial arable enterprises. Most of the farms are on lower ground and few have land over 600 feet in height. Only a small proportion is rough grazing. Rents tend to be over £2 5s. per acre and have been going up whenever a farm has changed hands.

**Poor Land Mixed Farms.** This group comprises farms on poor land where milk is produced for sale but amounts to less than one-half of the total gross output. Hardly any sale crops are grown and the main enterprises, other than dairying, are the rearing of cattle and sheep, and sometimes the production of poultry and eggs. Most rents are below £2 per acre.

**Better Land Livestock Rearing Farms.** These are mostly upland farms whose main enterprises are the rearing of cattle and sheep. Most of them have small pig or poultry enterprises and some of the larger ones may also produce crops for sale. A number have no rough grazing and few have more than 40 per cent. The majority are on elevations of under 1,000 feet. Rents tend to exceed £1 5s. per acre and are hardly ever less than £1 per acre.

**Poor Land Livestock Rearing Farms.** This group mostly comprises hill and mountain farms whose main enterprises are sheep and store cattle. In most cases they are above 600 feet. On some of them, with less than 100 adjusted acres, poultry assume a moderate importance. The proportion of rough grazing is high—over 50 per cent of the total acreage on the majority of the farms. Those with over 200 adjusted acres are presented in two sub-classes, according to whether their rough grazing area is over or under 80 per cent of their total acreage. Rents are mostly under £1 5s. and often less than £1 per adjusted acre. This amounts to less than 15s. per actual acre.

The three types of farming described above are not the only ones found in Wales, but they are the most important. There are also beef fattening farmers, pig and poultry specialists, commercial market gardeners and even cut-flower producers. But none of them have been numerous enough to provide a sample sufficiently large for worthwhile analysis.

A glossary of terms and definitions used in farm management and in this report is given as Appendix B.

## PART I

### Five-Year Comparison of 209 Identical Farms

The number of farms of each type, divided into size groups, is given in Table 1. The average acreage of the farms in the first and last years is also given, as well as the percentage change in acreage.

**TABLE 1**  
**NUMBER OF FARMS IN TYPE AND SIZE GROUPS**  
Average Adjusted Acreage and Increases During Five-Year Period

Size Group (acres) ...		25—50	50—100	100—200	Over 200	
<b>TYPE OF FARM</b>						
Better Land Dairy:	Number	12	14	14	2	—
	Acreage	39—41	78—79	143—146	228—268	—
	Increase	5.1%	1.3%	2.1%	17.5%	—
Poor Land Dairy:	Number	6	8	8	—	—
	Acreage	39—42	69—72	139—142	—	—
	Increase	7.7%	4.3%	2.2%	—	—
Better Land Mixed	Number	—	1	7	With Milk 8	Non-Milk 3
	Acreage	—	74	166—177	279—293	433—456
	Increase	—	None	6.6%	5.0%	5.3%
Better Land Livestock	Number	—	13	27	12	—
	Acreage	—	66—70	143	295—298	—
	Increase	—	6.1%	None	1.0%	—
Poor Land Mixed	Number	—	15	15	4	—
	Acreage	—	88	153—156	285—306	—
	Increase	—	None	2.0%	7.4%	—
Poor Land Livestock	Number	—	14	14	Under 80% R.G. 11	Over 80% R.G. 11
	Acreage	—	69	135	384—423	440—455
	Increase	—	None	None	10.2%	3.4%
Size Group (Number) ...		18	55	85	51	—
Average Increase	Area Per cent	2.3 acres 6%	1.6 acres 2.35%	2.2 acres 1.5%	19.1 acres 5.5%	

Where the number of farms in a group is less than four or five the averages cannot be taken as even roughly representative of the class. They are included as examples but no valid generalisations can be made from them. The number of farms in a class tends to reflect to some slight extent its proportion in the "universe". For example, some mixed or livestock rearing farms under 50 adjusted acres exist in Wales; but most small farms of this size are dairying, simply because they could not be profitable enough under less intensive systems. On the other hand, large dairy farms

tend to increase the proportion of their output other than milk as they become more intensive—hence many of them are borderline cases between dairying and mixed farming, according to the definitions accepted here.

The average acreage of the farms over the five years tended to increase slightly in 14 groups, not at all in five groups and by over 10 per cent in two groups, of which one consisted of only two farms. On the average the smallest (dairy) farms increased during the period by 2.3 acres or 6 per cent, farms of 50–100 acres by 1.6 acres or 2.35 per cent, those of 100–200 acres by 2.2 acres—a mere 1.5 per cent—while those over 200 acres acquired 19.1 acres, that is, nearly 10 per cent. An examination of the individual records revealed that in each case the increase was only small. A substantial proportion of it was due to the improvement of some rough land, which then showed in the adjusted acreage. Occasionally a field or a small holding had been acquired. But the largest “amalgamation” involved the take-over of an 80-acre holding in 1963 by a dairy farm of over 200 acres. The slow pace of acreage increase in a sample of this size, over a period when general statistics have indicated an acceleration in the rate of amalgamation, may mean two things. It is possible that the official statistics have been affected by the fact that some multiple holdings, which had been returned separately in the past, have been treated more recently as single farm units. On the other hand it might well be that amalgamations are more frequent among “new” farmers, with more advanced ideas about the economies of scale, while the “older” farmers of five years standing in the Farm Management Survey display less land hunger.

#### THE ECONOMIC DATA

These are given for each year separately in Appendix A, Tables I-VI. They are summarised as 5-year means in Table 2 below.

Gross output per acre tended to decline with increasing acreage on most types of farm. But better land mixed farms showed the opposite trend; and poor land milk producing (dairy and mixed) farms of medium size were less intensive than both the smaller and the larger size groups. Costs moved in sympathy with gross output, and proportionately more so in the poor land groups. Both gross output and costs were considerably higher on the (more intensive) dairy and mixed farms than on the traditional livestock rearing farms, even on better land. The highest output per acre was obtained on the small dairy farms under 50 acres—including those on poor land.

Net farm income tends to be related to gross output and this tendency is clearly discernible in the sample. But costs per acre are often proportionately higher on smaller farms, and this is the reason why the more traditional systems of farming were inclined to have a similar net farm income per acre in all size groups; the higher output on these small farms was not enough to keep their total net farm income above that of the larger ones.

A comparison of NFI as between different types of farming shows that dairy farms tended to be more profitable than others. But large mixed farms on better land did better than the two dairy farms of comparable size. This fact demonstrates the importance of farm acreage in

**TABLE 2**  
**IDENTICAL SAMPLE OF WELSH FARMS**  
**Five Years' Mean of Gross Output, Costs, Net Farm Income and Tenant Capital**

Type of Farming Group	Size Group (adj acres)					
	Acres Under 50	Acres 50—100	Acres 100—200	Acres Over 200		
	<b>Gross Output £ per acre</b>					
BL Dairy ...	73	56	52	47**	—	
PL Dairy ...	62	37	39	—	—	
				With Milk	Non-Milk	
BL Mixed ...	—	29*	36	47	52	
BL Livestock	—	30	24	22	—	
				Under 80% R.G.	Over 80% R.G.	
PL Livestock	—	21	17	14	8	
PL Mixed ...	—	29	20	24	—	
	<b>Costs £ per acre</b>					
BL Dairy ...	55	45	42	39**	—	
PL Dairy ...	48	28	30	—	—	
				With Milk	Non-Milk	
BL Mixed ...	—	23*	27	37	39	
BL Livestock	—	22	17	15	—	
				Under 80% R.G.	Over 80% R.G.	
PL Livestock	—	18	13	10	5	
PL Mixed ...	—	23	15	19	—	
	<b>Net Farm Income £ per acre (per farm)</b>					
BL Dairy ...	18 (747)	11 (842)	10 (1,497)	8 (1,997)**	—	
PL Dairy ...	14 (546)	9 (623)	9 (1,249)	—	—	
				With Milk	Non-Milk	
BL Mixed ...	—	6 (450)*	9 (1,588)	10 (3,102)	13 (5,653)	
BL Livestock	—	8 (548)	7 (1,050)	7 (2,142)	—	
				Under 80% R.G.	Over 80% R.G.	
PL Livestock	—	3 (214)	4 (610)	4 (1,838)	3 (1,134)	
PL Mixed ...	—	6 (532)	5 (736)	5 (1,475)	—	
	<b>Tenant Capital £ per acre</b>					
BL Dairy ...	58	50	44	40**	—	
PL Dairy ...	50	43	37	—	—	
				With Milk	Non-Milk	
BL Mixed ...	—	34*	42	46	59	
BL Livestock	—	41	37	35	—	
				Under 80% R.G.	Over 80% R.G.	
PL Livestock	—	27	22	20	12	
PL Mixed ...	—	27	22	24	—	

\*One farm only.

\*\*Two farms only.

economic comparisons. It would appear that among farms below 100 adjusted acres dairy farms had the highest NFI. (The absence of other than dairy farms in the size groups under 50 acres has been explained by the difficulty of making such small farms pay under any other system.) The unsatisfactory results of the single small BL mixed farm—it was less profitable than even the poor land farms—seem to be due to the fact that

it still clung to its traditional organisation after greater intensity and specialisation had become imperative for small-scale farming.

If the value of the labour of farmer and wife, the mean of which for the 5-year period was £600, is charged as a cost it becomes apparent that below 100 acres only the BL dairy farms and the larger (50–100 acres) poor land ones tended to be profitable; and if interest on tenant capital, and the fact that the average rents in this investigation were less than economic rents for new tenancies, were taken into account it would appear that none of the farm groups below 100 acres tended to be profitable, except the better land dairy ones.

The position was better in the 100–200 acre size groups, where all but the PL livestock rearing farms tended to make a profit. But on these PL livestock farms the NFI would not have sufficed to cover the interest on tenant capital (see Table 4). In this size group, too, the higher profits of the more intensive milk selling systems stand out against the lower ones of the livestock rearing farms, even when the latter are on better land. In the size groups over 200 acres the advantage lies more clearly with the better land farms, regardless of system. The BL dairy group (two farms) is not comparable with the others, neither is the BL mixed non-milk selling group (three farms which all happen to specialise in the production of early potatoes and turkeys).

Tenant capital showed similar trends to those for gross output, with investment per acre decreasing as size of farm increased. Care is needed, however, in interpreting the figures for tenant capital. These are the average of opening and closing valuations and represent the average value of livestock in all stages of production and deadstock in all stages of depreciation. A person embarking on a new farm venture would probably have to budget for a level of investment about 30–50 per cent above those given here, because in such a case cows would normally be bought soon after calving and reasonably young and machinery would perhaps be new or at least in good working order. Tenant capital should be considered also in conjunction with the density of stocking, figures for which are shown later.

#### THE FREQUENCY DISTRIBUTION OF NET FARM INCOME

The frequency distribution of NFI after deduction of 5 per cent interest on tenant capital is given in Table 3.

It can be assumed that, after the deduction of an interest charge on tenant capital, the NFI should at least cover the value of the farmer's and wife's manual labour if it is to be considered satisfactory. The average annual value of the labour of farmer and wife during the five years amounted to £600.

Table 3 (bottom line) shows that nearly one-half of the farms investigated averaged, after charging interest, less than £600 NFI during this period, though only 8 per cent suffered actual losses. Naturally, poor land farms tended to be worse off than the better land ones and smaller ones made less than the larger. It is an illustration of this trend that many of the smaller dairy and livestock rearing farms, even when they were situated on better land, appear to have been unable to yield 5 per cent on

**TABLE 3**  
**FREQUENCY DISTRIBUTION OF NET FARM INCOME**  
 (After deduction of 5 per cent interest on tenant capital)  
 Five Years' Mean

Type of Farm and Size Group	Farms	Proportion of Farms with Net Farm Income					
		Loss	Under £600	£600 to £1,200	Over £1,200	Over £1,500	
Acres	No.	%	%	%	%	%	
BL Dairy:							
25—50	12	—	42	58	—	—	
50—100	14	(21)	42	36	22	(14)	
100—200	14	—	36	14	50	(28)	
Over 200	2			50†	50†	(50)	
BL Mixed:							
Under 100	*						
100—200	7	—	—	42	58	(29)	
Over 200:							
With milk	8	—	—	12	88	(75)	
No milk	3	—	33†	—	67†	(67)†	
BL Livestock:							
Under 100	13	(8)	85	15	—	—	
100—200	27	—	41	45	14	(7)	
Over 200	12	—	8	26	66	(58)	
All Better Land	112		36	32	32		100%
PL Dairy:							
25—50	6	—	100	—	—	—	
50—100	8	—	74	26	—	—	
100—200	8	—	13	62	25	—	
PL Mixed:							
Under 100	5	(20)	60	40	—	—	
100—200	15	(20)	73	20	7	(7)	
Over 200	4	—	25	—	75	(75)	
PL Livestock:							
Under 100	14	(50)	100	—	—	—	
100—200	14	—	79	21	—	—	
Over 200:							
—80% R.G.	11	(18)	18	9	73	(27)	
+80% R.G.	11	—	36	46	18	(9)	
All Poor Land	96		60	23	17		100%
All Farms	208	(8)	48	27	25	(16)	100%

\*Only 1 farm, ignored.

†Given only as individual examples without meaning.

capital while providing a full recompense for work; while on poor land the majority of the smaller farms of all types made less than £600.

The same tendency is apparent in the figures for the moderate NFI bracket (between £600 and £1,200), which contained just over one-quarter of all the farms. Only 26 per cent of the smaller PL dairy farms belonged to it, and none of these had less than 50 acres; but it included 62 per cent of the medium-sized farms of the same type and land quality. Nearly one-half of the largest PL livestock (predominantly rough grazing) farms also came into this NFI category, their size compensating for the poverty of their soil; and it included likewise a roughly similar proportion of all better land farms (except the dairy ones) in the 100-200 acre group. A striking exception to the general trend occurred in the case of the PL mixed farms under 100 acres, 40 per cent of which had an NFI of this moderate level.

Only 25 per cent of all the farms made more than £1,200. They included most of the larger BL mixed farms and two-thirds of the largest BL livestock farms; but in the next size-group (100-200 acres) of the BL livestock farms only 14 per cent were as profitable as this. The BL dairy farms were an obvious example of the manner in which profitability increased with size. None of those with less than 50 acres attained this moderate level of NFI, and only one-fifth of those with 50-100 acres did so; but one-half of those with 100-200 acres succeeded in reaching it. Since there were only two BL dairy farms in the sample with over 200 acres, they cannot be used for a meaningful comparison; but one of them (i.e. 50 per cent of the total) was in the over-£1,200 category. The poor land farms were naturally much less well represented, and those which did achieve a return of over £1,200 were all (apart from a mere 7 per cent of the mixed farms with 100-200 acres) in the largest size-group for their class; they comprised one-quarter of the dairy farms with over 100 acres, three-quarters of the livestock (under 80 per cent rough grazing) and mixed farms with over 200 acres, and 18 per cent of the livestock (over 80 per cent rough grazing) farms with over 200 acres.

Among all the better land farms, slightly over one-third had an NFI (net of interest) below £600, just under one-third had £600-£1,200 and a similar proportion had over £1,200. Nearly one-half of the poor land farms had under £600, while roughly one-quarter each were in the two higher income groups.

Only 16 per cent of all farms exceeded a NFI of £1,500.

#### RETURN ON TENANT CAPITAL

Net farm income measures the total financial return to the farmer. In order to achieve this return he not only puts into the business his manual labour and his managerial and organisational expertise but also risks the loss of his capital. (In these accounts we are concerned solely with what is described as tenant capital, the landlord's share having been taken care of by including a charge for rent or rental value.) With the rapid technical development which has occurred in recent times, and the continuing substitution of machinery and improved equipment for manual labour, the capital invested has tended to increase. As a result, a good deal of



attention has been focussed on the return to capital in farming; but much of the discussion has been confused. The fact of the matter is that there is no satisfactory means of isolating the return to capital from those to labour and management; nor is it always clear that one should attempt to do this.

If Net farm income is the return to labour, management and capital combined, the only ingredient which can be valued with any degree of reasonableness is the manual work; and this has to be done by equating it to the cost of a comparable amount of hired labour. Even so, few farmers would agree that their own labour was worth no more than a hired worker's. When it comes to assessing the managerial and organisational effort the difficulties are greater, because this can vary so tremendously and will itself affect the size of net income and the return on capital. If, therefore, the return on capital is assumed to be what is left over after allowing for manual and managerial labour, it can be made to vary substantially according to one's assessment of the value of that labour. Moreover, apart from the difficulty of estimating the return on capital separately from those on the other inputs, there is considerable doubt whether the concept has any meaning or validity. Capital, when invested

TABLE 4  
RETURN ON TENANT CAPITAL  
Interest Rate

On Net Farm Income and Management and Investment Income

Size Group	25-50 acres	50-100 acres	100-200 acres	Over 200 acres
Type of Farm	Interest on Tenant Capital			
Better Land Dairy	%	%	%	%
On Net Farm Income	31.0	22.0	22.7	20.0†
On Investment and Man. Income	8.6	8.0	15.9	15.0†
Poor Land Dairy	28.0	20.9	24.3	—
On Net Farm Income	negative	negative	13.5	—
Better Land Mixed	—	17.6*	21.4	21.7
On Net Farm Income	—	negative*	14.3	17.4
Better Land Livestock	—	19.5	18.9	20.0
On Net Farm Income	—	negative	8.1	14.3
Poor Land Livestock	—	11.1	18.2	20.0
On Net Farm Income	—	negative	negligible	15.0
Poor Land Mixed	—	22.2	22.7	20.8
On Net Farm Income	—	negative	4.5	12.5

\*One farm. †Two farms. ‡Three farms.

in a farm or any other business, is invested with the object of increasing the total income. It makes labour more productive and gives scope for management. Without the capital, labour and management would be ineffective and would produce nothing and vice versa. The return on capital is in fact the amount whereby it increases the effectiveness of labour or management. In Table 4 net farm income and management and investment income (i.e. income after the value of manual labour has been deducted) are expressed as percentages of tenant capital.

Except on the single BL mixed farm and those in the smaller PL livestock rearing group, the return on capital based on NFI oscillated around 20 per cent. It was highest—around 30 per cent—on the smallest dairy farms, both on better and on poor land. When, however, a charge was deducted for the labour of farmer and wife, the return on capital based on investment and management income became negative for all farms under 100 acres except the BL dairy only. It will be noted that, on most farms over 200 acres, a return of about 20 per cent based on NFI corresponded to about 15 per cent based on investment and management income, while 28 per cent, the second highest return of all, which was earned on the smallest PL dairy farms, actually became negative when calculated on the latter basis. On these small PL dairy farms the hired equivalent of the value of the labour of the farmer and his wife would have absorbed the whole of the farm income.

#### STOCKING RATES AND MILK OUTPUT PER COW

The relevant data for this section are shown in Table 5.

The density of stocking with cows tended to fall with increasing farm acreage, except on the BL livestock rearing farms, which stocked at roughly similar densities in all size groups. The BL dairy farms under 50 acres approached a density of one cow to every two acres, but all the other dairy farms stocked only one cow or less to three to five acres. These are low stocking rates even for poor land dairy farms, and even though there were also other ruminant stock on these farms. The livestock rearing and the mixed farms stocked fewer cows—one to less than 5–10 adjusted acres. On these farms sheep and other cattle predominated.

Milk output per cow was considerably higher on the dairy farms than on the mixed ones. This was partly due to the fact that mixed farms keep more dual purpose cows, but the yield figures might have been deflated on mixed farms by underestimation of milk fed to calves: nobody really knows accurately how much this represented. Moreover, it may be noted that the 50–100 acre BL and PL, and the 100–200 acre PL, dairy farms produced up to 100 gallons less per cow than did the dairy farms in the smaller size groups, which was perhaps a reflection of the decreased need for intensity where more land is available. The two dairy farms over 200 acres averaged nearly 1,100 gallons per cow, but it may be remarked that they had the lowest density of stocking with dairy cows among the dairy farms. (Ten years ago they would have been typical of the best dairy farms. But at present the trend for large farms would be to have a much higher stocking density and medium yields with little concentrates and low labour costs.)

**TABLE 5**  
**FIVE YEARS' MEAN OF STOCKING AND MILK YIELDS**

Type of Farming Group	Size Group (adj. acres)			
	Under 50 acres	50-100 acres	100-200 acres	Over 200 acres
	<u>Number of Cows per 100 Adjusted Acres</u>			
BL Dairy	45	34	29	18†
PL Dairy	33	23	24	—
				With Milk      Non-Milk
BL Mixed	—	17*	15	16      2
BL Livestock	—	11	13	12      —
				Under 80% R.G.    Over 80% R.G.
PL Livestock	—	10	8	7      2
PL Mixed	—	15	8	8      —
	<u>Milk Yield per Cow</u>			
BL Dairy	831	771	848	1,092†
PL Dairy	847	740	744	—
BL Mixed	—	493*	623	717
PL Mixed	—	546	603	711
	<u>Number of Breeding Sheep per 100 Adjusted Acres</u>			
BL Dairy	8	21	60	55†
PL Dairy	63	51	93	—
				With Milk      Non-Milk
BL Mixed	—	82*	106	69      88
BL Livestock	—	138	151	151      —
				Under 80% R.G.    Over 80% R.G.
PL Livestock	—	177	192	183      231
PL Mixed	—	170	217	197      —
	<u>Total Grazing Livestock Units per 100 Adjusted Acres</u>			
BL Dairy	58	51	54	40†
PL Dairy	49	42	45	—
				With Milk      Non-Milk
BL Mixed	—	45*	45	40      36
BL Livestock	—	44	45	43      —
				Under 80% R.G.    Over 80% R.G.
PL Livestock	—	41	38	36      31
PL Mixed	—	45	40	38      —

\*One farm only.      †Two farms only.

The stocking with sheep tended to be highest where that with cows was lowest. It appears to have been most intensive in the size group of 100-200 acres regardless of type of farming, the notable exception being the over 80 per cent rough grazing farms which had practically no other stock but sheep. The lower stocking with sheep was bound up with higher stocking with cows in the size groups under 100 acres, and the stocking combinations were related to the labour complement. The BL livestock farms tended to have somewhat larger sheep, like the improved Welsh, the Speckle Face or the Radnor, and more young cattle than the PL ones; hence the lower numbers of sheep carried on them.

The total grazing livestock units stocked per 100 acres tended to be higher on the BL dairy farms under 200 acres than on all the other type and size groups and higher on the smallest dairy farms than on larger ones. It is also apparent that farms above 200 acres tended to be somewhat less intensively stocked than those under 200 acres. But in most type-of-farming groups the differences appear to have been small. In fact, except for the dairy farms mentioned above, there was very little difference on average in stocking density as between the various types of farming. But it should be kept in mind that some differences do exist as between cow units: a beef cow on a poor land livestock rearing farm has lower maintenance requirements than a beef cow on better land, let alone a better land dairy cow. Nevertheless they all represent "cow units" within their own surroundings. It is thought that, in spite of the error implicit in this treatment, it is preferable to more complicated conversions which might lose any direct meaning.

Stocking with pigs and poultry has been ignored in this part of the report. Its importance on general Welsh farms has on the average been very limited. It will be discussed, in the context of management, in the next section.

#### CHANGES IN THE MAIN DATA DURING FIVE YEARS

Such changes as have taken place during the five-year period investigated here can be seen in detail in the tables given in Appendix A. There have been some difficulties in summarising them. In the first place there have been the effects of inflation on all the money values involved, as distinct from whatever genuine changes (at constant values) occurred. Treating all values at constant prices would not solve the problem either, because all have been influenced by the weather in varying degrees and not always in the same direction. It is probable that cost increases tended to be inflationary, whereas values of output and tenant capital reflected mainly quantitative changes and only to a smaller extent any increased values or prices. But there was also the problem of deciding on the basis for the comparisons: should it be the lowest year and the highest, or the first and the last, or the difference from the mean of the five? A study of the appendices will reveal that, with the exception of net farm income, all the figures tended to increase as between 1960/61 and 1964/65. It therefore seemed practical to present the changes in the form of a comparison between those two years, except in the few cases when the highest figure occurred in an intermediate year.

Unfortunately no valid conclusions as to trend in output and net farm income are possible, in view of the exceptional effect of the combination of weather, market conditions and guarantee levels which made 1964/65 one of the best years ever experienced in Wales. Since it followed two very bad seasons, five-year averages of both output and net farm income may express the magnitudes involved better than the changes between years presented below.

The changes in gross output, costs, net farm income and tenant capital are shown in Table 6.

Gross output increased substantially during the period (mostly in the last year) and in the majority of groups by roughly 20-30 per cent. The

**Table 6**  
**CHANGES IN GROSS OUTPUT, COSTS, NET FARM INCOME AND TENANT CAPITAL**  
**IN FIVE YEARS FROM 1960/61 TO 1964/65**

Size Group (adj. acres)	20-50 acres				50-100 acres				100-200 acres				Over 200 acres							
	Percentage Changes in:																			
Type of Farming	Gross Output	Costs	NFI	Tenant Capital	Gross Output	Costs	NFI	Tenant Capital	Gross Output	Costs	NFI	Tenant Capital	Gross Output	Costs	NFI	Tenant Capital	Gross Output	Costs	NFI	Tenant Capital
BL Dairy ...	% 23	% 20	% 30	% 20	% 20	% 8	% 80	% 22	% 19	% 10	% 56	% 12	% 14	% 5	% 67	% 3	—	—	—	—
PL Dairy ...	36	14	100	9	11	7	22	10	28	14	72	11	—	—	—	—	—	—	—	—
BL Mixed ...	—	—	—	—	3*	8*	60*	nil*	18	8	57	10	27	24	66††	19	35	14	80%††	3
BL Livestock	—	—	—	—	15	10	50†	5	23	20	29	8	30	14	67	9	—	—	—	—
PL Livestock	—	—	—	—	26	12	150	4	19	17**	50	5	31	22	50	16	Over 43	80% 20	Rough 100	Grazing nil
PL Mixed ...	—	—	—	—	22	9**	100	21	28	7	100	5	53	31	167	17	—	—	—	—

\*Only one farm. \*\*Highest in 1963/64. †Highest in 1961/62 and 1962/63. ††Highest in 1962/63.

poor land groups tended to have more large increases in the value of output than did the better land ones. The recent rises in hill sheep and hill cow subsidies were largely responsible for this. Total costs have increased by roughly 10–20 per cent. The total cost increases tended to be highest in the smallest dairy groups and on the mixed and livestock rearing farms of over 100 acres. The adverse winter of 1963 tended to push up the cost of feed in that year, but the cost increases over the five years represent a genuine trend. What proportion of it was due to intensification of output and what to inflation cannot be estimated from the available information. But it is possible that the trend towards lower cost increases which is apparent in most groups of 50–100 acres was due more to inflation than to intensification, since this size group tends to have more land and capital in relation to its labour (with few hired men) than do either the smaller or the larger size groups, which tend to be more land intensive.

In most groups net farm income was considerably higher in 1964/65 than in 1960/61. Scrutiny of the tables in Appendix A will, however, reveal that in some groups it dipped below the 1960/61 level in one or more years. Four of the groups tended to have their highest NFI before the bumper year 1964/65. In the BL farms over 200 acres this was due to the extremely high prices received for the early potato crop in 1962, which brought those three large non-milk selling farms the income of the century. But no rational reason can be given in the case of the two poor land groups. Although the percentage changes in NFI were quite dramatic in many groups, they tended to be small in absolute terms among the smallest dairy farms and in most PL groups where NFI was low originally. While the exceptional results of 1964/65 may not occur again for a number of years, it is possible that NFI will remain at a level higher than the average for the past five seasons. This may happen if the relative improvement in the prices of livestock is a lasting one.\* In spite of the uncertain prospects for milk, higher returns for livestock would also be reflected in better NFI even on dairy farms.

No clear net trend can be discerned with tenant capital. Even the largest increase hardly exceeded 20 per cent, and on the majority of farms it seems to have increased by 5–12 per cent. Some more light may be shed on this situation by a study of Table 7, which shows the changes in milk yields and in stocking with cows, breeding sheep, and total grazing livestock.

There were increases in stocking in most groups of farms. Some types, for example the BL livestock and the PL mixed, increased stocking considerably more than the others; but no definite pattern can be observed. The largest growth tended to be in cow numbers, but breeding sheep also expanded quite considerably in several groups. The increase in total grazing livestock units tended to be relatively less than the individual increases in cow and sheep numbers might have suggested, owing to the drop in numbers of other cattle which, though not shown separately, have been included in the total grazing units. Milk yields per cow also increased in all groups except two PL dairy ones, but in most of them these increases were quite moderate.

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\*When reading the proofs in December 1966 there was a severe slump in livestock prices.

Table 7

CHANGES IN STOCKING PER 100 ADJUSTED ACRES AND MILK YIELDS PER COW  
IN FIVE YEARS FROM 1960/61 TO 1964/65

Size Group (adj. acres)	20-50 acres				50-100 acres				100-200 acres				Over 200 acres						
	Per 100 acres				Per 100 acres				Per 100 acres				Per 100 acres				Per 100 acres		
	Cows	Breed- ing Sheep	Total Cow Units	Yield per Cow	Cows	Breed- ing Sheep	Total Cow Units	Yield per Cow	Cows	Breed- ing Sheep	Total Cow Units	Yield per Cow	Cows	Breed- ing Sheep	Total Cow Units	Yield per Cow	Cows	Breed- ing Sheep	Total Cow Units
BL Dairy ... ..	% 9	% negl.	% 7	% 6	% 13	% nil	% 8	% 4	% 4	% 20	% 6	% 7	% -4	% 18**	% -17	% 9	% —	% —	% —
PL Dairy ... ..	nil	-9	7	4	9	24	5	-5	18	5	9	-2	—	—	—	—	—	—	—
BL Mixed ... ..	—	—	—	—	-11*	-49*	-28*	17*	nil	5	2	13	nil	With 33	Milk 2	13	nil	Non Mi lk 12	-3
BL Livestock ...	—	—	—	—	nil	9	5	—	17	14	7	—	18	5	5	—	—	—	—
PL Livestock ...	—	—	—	—	11	9	3	—	nil	10	5	—	Under80% nil	Rough 8	Grazing 3	—	Over 80% 50	Rough 7	Grazing 10
PL Mixed ... ..	—	—	—	—	14	27	17	1	14	5	5	9	43	6	11	nil	—	—	—

\*One Farm. \*\*One of the two farms increased acreage by 80 in 1963.

## CONCLUSION OF PART I

The five years ended in April 1965 were difficult ones for Welsh farming. The first and the last seasons were good but those in between were unfavourable. Prices of agricultural products did not rise as fast as other prices. This was probably one of the main reasons why the results of all those years except the last show no trace of any dynamic changes. In fact they give an impression of near-stagnation, which was broken only in 1964/65.

Few generalisations can be made from the 5-year analysis. As could be expected, better land farms tended to be more profitable than poor land ones. Milk producing farms made more than livestock rearing ones of similar size. But above 100 acres mixed farms appeared to be more profitable than dairy farms, contrary to the accepted belief in the virtues of streamlining and specialisation. This might be due to an insufficient degree of specialisation on the average Welsh dairy farm over 100 acres. It would also appear that a good or bad season may have as much effect on annual changes in net farm income as fluctuations in the prices of agricultural products. Year to year changes in productivity have an influence on profits, but this is confused and overlain by the effects of the weather and the price review.

If the majority of Welsh farmers have always been in the lower income brackets, this has been largely due to the fact that most of the farms are small and a large proportion are on poor land. The preceding analysis has shown that, even on poor land, dairy farms tend to be more profitable than better land livestock rearing farms of comparable size and very considerably more profitable than poor land farms organised on more conventional lines. Even if there are historical reasons for the inadequate economic performance of a large proportion of the more traditionally run Welsh farms, it is obvious that a considerable number of the small livestock rearing ones have not been viable if the test of viability is a favourable comparison with the income obtainable in other occupations, including that of an agricultural worker. Moreover, a number of small intensive farms have been economically sub-marginal for a good many years now. Some of them might have become profitable under different ownership if re-organised on more intensive lines. But nearly always such a change would pre-suppose the injection of considerable new capital. This might be justified if land and layout were good and if some of the buildings could be adapted for modern use. But expensive modifications to the farmhouse would hardly ever be worthwhile on a small acreage; amalgamation would be inevitable in such cases unless the house and some buildings were reasonably good.

What the conditions are which make some farms more profitable than others can only be discovered from a business analysis, in which the organisation and performance of the "average" farm is compared with those of similar but more profitable farms. This has been done in Part II.



## PART II

### Welsh Farms 1964-1965:

#### Farm Management Analysis

Every year the results of the Welsh Farm Management Survey have been used for the calculation of averages relating, firstly, to all farms in each type and size group and, secondly, to the one-third of farms in each group with the highest management and investment income. These figures have been published by this department in tabular form for several years, under the title of *Farm Management Handbook Supplement*. The averages for 1964-1965 have been based on the records of 406 Welsh farms and the following pages contain a commentary on the results for each group. It has been possible to compute the cost of all concentrates fed to the cows on the dairy farms, but not on the mixed and livestock rearing ones.\*

#### THE BETTER LAND DAIRY FARMS

In Table 8 some details about the land use, stocking and milk production of a group of 97 farms of this type are given.

The larger farms tended to be situated at slightly lower elevations than did those of under 100 acres. Moreover, the most profitable (top) third of farms, in each size group except the largest, tended to lie a little lower (about 30 feet on the average) than the average of all farms in that group. It is not thought, though, that the differences were significant. Rough grazing occupied a small fraction of the total acreage. The top third of farms in each group were of very similar size to the average, again with the exception of those over 200 acres which were nearly 20 per cent smaller than the average. But this latter group consisted of only three farms and little importance can be attached to this difference.

The proportion of land under corn, roots and fodder increased with farm size up to 200 acres but diminished somewhat thereafter. In each size group, barring the largest, the top farms had distinctly more corn and fodder crops than the average. The proportion of hay diminished from about 40 per cent of the acreage in the smallest group to 20 per cent in the largest (it will be seen lower in the table that the figure moved in sympathy with the stocking density of cattle) and was similar as between the average and top farms. Relatively little silage was made; and except in the size group under 50 acres the top farms tended to make less even than the average.

The stocking density with cows tended to be over twice as intensive in the two size groups under 100 acres as in the group over 200 acres. Within the size groups the top third of farms were stocked more intensively than the average. The difference amounted to 20 per cent in the group under 50 acres, 15 per cent in the group of 50-100 acres and 5 per cent in the groups over 100 acres. Only the best farms under 50 acres tended to stock (a little) more than one cow to every two acres of farmland.

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\*For the method employed see *Farm Management Handbook Supplement*, 1964-65, Financial, Technical and Economic Data and Measures of Efficiency for Typical Groups of Welsh Farms. By M. B. Jawetz, Department of Agricultural Economics, University College of Wales, Aberystwyth.

**TABLE 8**  
**BETTER LAND DAIRY FARMS**  
**Land Use, Stocking and Milk Production Data**

Size Group (adj. acres)	20-50		50-100		100-200		Over 200	
	Average	Top	Average	Top	Average	Top	Average	Top
Number of Farms ...	17	6	39	13	33	11	8	3
Acreage: Adjusted ...	40	39	75	72	139	146	295	253
Actual ...	40	39	77	74	143	149	303	262
Rough Grazing* ...	0.1	0.4	4.7	3.7	4.3	3.0	4.0	4.3
Range of Elevation, feet	320- 360	290- 330	380- 460	350- 440	290- 410	260- 370	210- 280	270- 320
Crops and Grass (acres)	<u>Per 100 Adjusted Acres</u>							
Corn ... ..	3.8	6.4	9.7	11.8	12.0	19.0	14.0	12.0
Roots and Fodder ...	3.2	4.6	6.6	8.3	4.0	5.0	4.0	4.0
Hay ... ..	40.9	38.2	28.8	30.9	26.0	26.0	20.0	21.0
Silage ... ..	2.5	7.2	9.9	7.9	7.0	4.0	7.0	6.0
Pasture ... ..	49.6	43.6	43.4	40.7	49.0	45.0	54.0	56.0
Stocking Numbers	<u>Per 100 Adjusted Acres</u>							
Cows ... ..	45	54	36	41	29	30	19	20
Other Cattle (Cow Units) ...	16	14	12	13	16	15	16	13
All Cattle (Cow Units)	61	68	48	54	45	45	35	33
Actual Numbers:								
Sheep, Breeding ...	10	—	32	28	47	36	40	35
Pigs ... ..	25	50	22	33	11	12	7	14
Poultry ... ..	273	517	181	350	108	115	21	34
Total Cow Units	73	88	61	72	56	56	44	42
(Excl. Pigs and Poultry)	<u>Acres per Cow Unit</u>							
	1.6	1.5	2.0	1.8	1.9	2.0	2.4	2.6
	<u>Per Cow</u>							
Milk Yield: Galls. ...	845	939	784	858	823	894	857	1,041
Milk Sales: £ ... ..	125	141	116	130	125	134	136	169
Cost of Concentrates: £	48	51	41	46	45	48	56	75
Margin over Concentrates £** ...	77	90	75	84	80	86	79	94
Cost of Concentrates: d.	<u>Per Gallon</u>							
	13.8	13.1	12.6	12.8	13.1	12.8	15.8	17.3

\*Per cent of actual acres.

\*\*Excluding calf.

The stocking density with other cattle (expressed in cow units) was quite similar in three of the four groups, but about 20 per cent lower than average in the 50-100 acres group. Except in this size group, it tended to be somewhat less than average among each top third of farms. Thus the top farms kept more cows in relation to other cattle than the average farm did, but the larger the farm the narrower was the ratio between cows and other cattle.

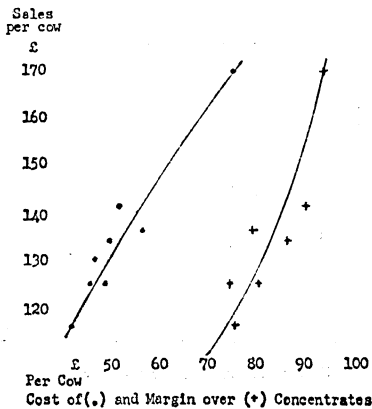
There was a small flock of sheep on most farms over 50 acres—slightly smaller, among the top farms, than the average for any one size group. Not all the farms kept pigs, whose number can be only a rough indication of their importance. Without a sub-division into age or type groups mere numbers can be misleading. All that can be said is that the top farms tended to keep considerably more pigs than the average—up to twice as many in some cases. In spite of the marked differences in density when expressed per 100 acres the actual herd sizes tended to vary from 10 pigs on the smallest to 20 pigs on the largest average groups and between 20 and 35 pigs as between small and large top farms. Roughly similar proportions can be found among the poultry flocks: greater numbers on the small farms and, within size groups, on the top ones. On the larger farms poultry was of negligible importance.

The total intensity of stocking with grazing animals tended to be higher on farms under 100 acres than on the larger farms. But one characteristic difference appeared as between the top farms; whereas the most successful ones below 100 acres were *more* heavily stocked than the average in their size groups, the top farms over 100 acres were *less* heavily stocked. This is bound up with the interrelationship between the productivity of the (grazed) land and labour, and requires further investigation.

The milk production data at the bottom of Table 8 reveal some interesting information. Yield per cow on the average was similar as between the smallest and the two larger size groups, but distinctly less in the 50–100 acres group. Again, the top farms of that size group had the lowest yield of all the top farms. In each size group the top farms had markedly higher yields than the average ones—1,041 gallons (the three farms over 200 acres) and 939 gallons (the six farms of 20–50 acres) followed by 894 gallons and 858 gallons in the other size groups. The cost of concentrates per cow was also higher on the top farms in each size group. A very close correlation ( $r=0.95$ ) was found between the sales of milk and input of concentrates per cow (and also, therefore, between milk sales and the margin over cost of concentrates). This can be seen from the scatter diagrams presented in Figure I.

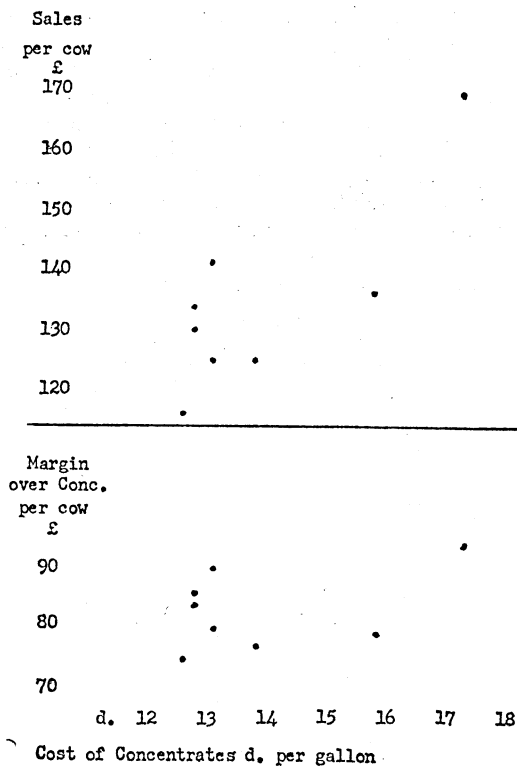
Figure I.

Better land dairy farms. Relationship between sales per cow, cost of concentrates and margins over concentrates per cow.



The cost of concentrates per gallon appeared to be lowest in the group with the lowest yield and highest in the highest yield group. But in between the pattern was not clear-cut. The top farms under 200 acres tended to use a little less concentrates per gallon than the average, in spite of distinctly higher output per cow. Average yields of the eight (average) farms over 200 acres were, however, somewhat deflated owing to the fact that one of them had a Jersey herd; for the same reason input per gallon was higher. This is partly why sales per cow were higher and the margin over concentrates lower in this group than in another with an identical yield. But there must also have been some differences in relative efficiency. In any case the cost of concentrates per gallon had no distinct connection with either yield or sales or with margin over concentrates, although a slight degree of connection seems to exist. The vague relationship between sales and margin per cow and cost of concentrates per gallon is illustrated in Figure II.

Figure II.  
Better land dairy farms. Relationships between  
sales per cow, margin over concentrates per cow  
and cost of production per gallon.



In Table 9 are shown details of output, costs and economic results per acre of these dairy farms, together with some efficiency measurements.

**TABLE 9**  
**BETTER LAND DAIRY FARMS**  
**Gross Output, Costs, Other Economic Data and Some Efficiency Measurements**

Size Group (adj. acres)	20-50		50-100		100-200		Over 200	
	<u>Per Adjusted Acre</u>							
	Average	Top	Average	Top	Average	Top	Average	Top
	£	£	£	£	£	£	£	£
<b>Gross Output:</b>								
Cattle ... ..	13.5	11.5	8.4	10.6	8.4	9.6	8.2	8.4
Sheep and Wool ... ..	0.9	—	2.3	2.6	3.2	3.2	3.5	3.6
Pigs ... ..	5.9	10.6	4.9	7.4	2.2	3.0	1.5	2.5
Poultry and Eggs ... ..	7.7	17.5	3.2	6.8	2.1	2.3	0.8	2.5
Crops ... ..	2.8	5.4	2.7	4.1	3.5	8.1	4.0	5.6
Milk ... ..	56.9	75.7	41.8	52.5	36.2	40.4	26.1	34.2
Miscellaneous ... ..	2.1	3.3	0.7	0.9	0.6	0.6	0.6	0.4
Direct Grants ... ..	1.9	1.2	1.3	2.0	0.7	0.7	1.1	0.7
<b>Total Gross Output</b>	<b>91.7</b>	<b>125.2</b>	<b>65.3</b>	<b>86.9</b>	<b>57.0</b>	<b>67.9</b>	<b>45.8</b>	<b>57.9</b>
<b>Costs:</b>								
Rent or Rental Value	3.8	4.1	3.3	4.0	3.8	4.3	2.7	3.8
Foods ... ..	31.3	45.0	19.3	26.3	14.9	15.5	11.1	17.2
Seeds ... ..	0.8	1.1	1.1	1.8	1.0	1.4	1.2	1.3
Fertilizers ... ..	3.1	3.6	3.6	3.9	2.9	3.1	2.8	2.8
Machinery and Power	11.3	13.8	9.1	10.3	7.5	8.4	7.0	7.1
Miscellaneous ... ..	6.4	7.2	4.9	5.4	4.2	4.3	3.5	3.6
Labour excl. Farmer and Wife ... ..	6.5	8.5	6.1	5.1	8.1	9.8	8.0	7.6
<b>Total Costs</b>	<b>63.2</b>	<b>83.2</b>	<b>47.3</b>	<b>56.8</b>	<b>42.4</b>	<b>46.8</b>	<b>36.3</b>	<b>43.4</b>
<b>Net Farm Income</b> ... ..	<b>28.6</b>	<b>41.9</b>	<b>18.1</b>	<b>30.1</b>	<b>14.6</b>	<b>21.1</b>	<b>9.5</b>	<b>14.6</b>
<b>Management and Investment Income</b> ... ..	<b>14.6</b>	<b>26.6</b>	<b>10.3</b>	<b>21.3</b>	<b>10.3</b>	<b>17.3</b>	<b>7.6</b>	<b>12.3</b>
<b>Tenant Capital:</b>								
Livestock ... ..	39	50	35	44	31	34	24	25
Machinery ... ..	25	38	18	21	17	21	14	16
Total incl. Crops, Stores etc. ... ..	67	94	58	70	51	60	41	45
Return: on NFI on Management & Investment Income	43%	45%	31%	43%	29%	35%	23%	32%
	22%	28%	18%	31%	20%	29%	18%	27%
<b>Net Output</b> ... ..	<b>60</b>	<b>79</b>	<b>45</b>	<b>59</b>	<b>41</b>	<b>51</b>	<b>34</b>	<b>39</b>
<b>Man Units Employed</b> ... ..	<b>3.8</b>	<b>4.4</b>	<b>2.6</b>	<b>2.6</b>	<b>2.3</b>	<b>2.5</b>	<b>1.8</b>	<b>1.8</b>
<b>Gross Output per Man Unit</b> ... ..	<b>2,433</b>	<b>2,884</b>	<b>2,560</b>	<b>3,458</b>	<b>2,471</b>	<b>2,600</b>	<b>2,499</b>	<b>3,178</b>
<b>Net Output per Man Unit</b> ... ..	<b>1,583</b>	<b>1,821</b>	<b>1,761</b>	<b>2,339</b>	<b>1,782</b>	<b>2,006</b>	<b>1,829</b>	<b>2,165</b>

On the average, gross output per acre was twice as high (nearly £92) on the farms under 50 acres as it was on those over 200 acres (nearly £46), with the medium size groups falling in between. The top farms had still larger differences, ranging from £125 per acre in the smallest to £58 in the largest size groups. Within each size group the top farms had a distinctly higher output of milk and most other products. It will be noted that this pattern prevailed even where they had lower stocking numbers. Where their stocking was higher the relevant output was relatively higher still. Direct grants amounted to an insignificant fraction of gross output.

Costs per acre also diminished with increasing farm size, but at a somewhat lesser rate than output. While they amounted to just over one-third of gross output in the under 50 acre group they took about four-fifths of it in the over 200 acre group. Food was the highest single cost item. It was also the only one which tended to be much higher among the top farms than on the average ones in each size group. Machinery was the next most important cost on the farms under 100 acres, followed by labour. On larger farms this order was reversed. The top farms in each group tended to have above average rents, mostly owing to improvements carried out and charged under this head. The use of fertilisers tended to be somewhat higher on the smaller than on the larger farms and a fraction higher than average on the top ones, though here it was less than one would expect.

Net farm income per acre declined as between farm sizes from £28.6 to £9.5 on the average and from £41.9 to £14.6 as between the top farms. Investment and management income started from a lower peak—£14.6 on the average and £26.6 on the top farms under 50 acres—and declined at lower rates to £7.6 and £12.3 on the average and top farms respectively over 200 acres. But it must be remembered that this was an exceptionally good year for Welsh farming.

Tenant capital showed trends in line with those observed in gross output and costs. The exceptionally good year was reflected in the rates of return on capital calculated on the basis of NFI and "management and investment" income. The former varied from 43 per cent on the average farm under 50 acres to 23 per cent on that over 200 acres and from 45 to 32 per cent on the top farms, while management and investment income oscillated around £20 per acre for average farm groups of all sizes and ranged from 27 to 31 per cent as between the top farms of different size groups.

Net output per acre (gross output less purchased foods and seeds) followed the trend of gross output. It amounted to less than two-thirds of gross output in the groups under 50 acres and to over two-thirds in those over 200 acres, with the other two groups falling in between. Man units employed per 100 acres declined from 3.8 or 4.4 respectively in the average or top groups under 50 acres to 1.8 in both groups over 200 acres. Barring the farms under 50 acres, there were practically no differences as between the average and the top farms within the size groups.

Gross output per man was, on the average, close to £2,500 in all size groups. Among the top groups gross output per man unit was highest (nearly £3,500) on farms of 50–100 acres, followed by nearly £3,200 in the over 200 acre group. It was lowest (£2,600) in the 100–200 acres group. On the average, net output per man unit was less than £1,600 on the smallest

farms and around £1,800 on those over 50 acres. Again, the highest net output per man among the top farms was in the group of 50-100 acres (£2,339), followed by farms over 200 acres (£2,165), 100-200 acres (£2,006) and under 50 acres (£1,821).

The above presentation of the data per acre, per 100 acres, per cent of tenant capital and per man unit makes it possible to compare the relative efficiency of the different farm classes. It does not, however, give an immediate measure of the total magnitudes involved and it would be

TABLE 10  
BETTER LAND DAIRY FARMS  
Land Use, Stocking and Economic Data  
Per Farm

Size Group (adj. acres)	20-50		50-100		100-200		Over 200	
	Average	Top	Average	Top	Average	Top	Average	Top
<b>Crops and Grass:</b>	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
Corn ... ..	1.5	2.5	7.2	8.5	17.0	28.0	42.0	31.0
Roots and Fodder ...	1.3	1.8	4.9	6.0	6.0	8.0	11.0	11.0
Hay ... ..	16.2	14.9	21.5	22.1	37.0	38.0	60.0	54.0
Silage ... ..	1.0	2.8	7.4	5.7	10.0	6.0	19.0	14.0
Pasture ... ..	19.8	17.1	32.3	29.1	68.0	65.0	160.0	140.0
<b>Stocking Numbers:</b>	No.	No.	No.	No.	No.	No.	No.	No.
Cows ... ..	18	21	27	29	40	44	57	51
Other Cattle (Cow Units) ...	6	6	9	9	22	22	48	33
All Cattle (Cow Units)	24	27	36	38	62	66	104	84
Sheep, Breeding ...	4	—	24	20	65	53	118	90
Pigs ... ..	10	20	16	24	15	17	20	36
Poultry ... ..	109	203	135	251	149	167	61	85
Total Cow Units ...	29	34	45	51	78	81	128	107
Net Farm Income ...	£ 1,137	£ 1,642	£ 1,344	£ 2,155	£ 2,028	£ 3,068	£ 2,786	£ 3,673
Management and Investment Income ...	581	1,043	768	1,526	1,434	2,517	2,224	3,098
Tenant Capital:	£	£	£	£	£	£	£	£
Livestock ... ..	1,538	1,968	2,636	3,116	4,293	4,961	7,027	6,330
Machinery ... ..	995	1,481	1,320	1,536	2,302	3,037	4,064	4,096
Total incl. Crops & Stores ... ..	2,678	3,685	4,308	5,005	7,103	8,707	12,131	11,356
Man Units Employed ...	No. 1.5	No. 1.7	No. 1.9	No. 1.8	No. 3.2	No. 3.7	No. 5.4	No. 4.6
(Man Units per 100 Adjusted Acres)...	(3.8)	(4.4)	(2.6)	(2.6)	(2.3)	(2.5)	(1.8)	(1.8)
Gross Output ... ..	£ 3,649	£ 4,902	£ 4,864	£ 6,225	£ 7,907	£ 9,879	£ 13,492	£ 14,620
Of which Direct Grants	(74)	(45)	(94)	(146)	(100)	(94)	(335)	(164)
<b>Costs:</b>								
Rent ... ..	152	159	247	286	534	629	797	958
Foods ... ..	1,243	1,763	1,435	1,886	2,067	2,251	3,262	4,341
Fertilizers ... ..	122	141	268	277	408	453	810	718
Machinery and Power	448	540	675	739	1,035	1,223	2,072	1,798
Labour excl. Farmer and Wife ... ..	259	332	450	363	1,117	1,421	2,368	1,908

necessary to multiply each figure by the acreage of the group in order to obtain these measures. To save the reader's time and provide him with ready information concerning these magnitudes, the pertinent data have been presented on a "per farm" basis in Table 10. But these figures can only permit very crude comparisons, since they refer to groups which vary in size.

Only the most pertinent points need be discussed here.

In the first place it is apparent that the sizes of the herds, even on the larger farms, are far from the numbers which it has become fashionable in recent years to regard as the "economic" minimum. Looking at the man units employed it can be seen that 70 to 100 cows per man unit must be extremely rare in Wales, since even the smallest units (around 20 cows) were not, strictly speaking, one-man herds. Nevertheless, the NFI and even the management and investment incomes tended to be very satisfactory on this type of farm, although it must not be forgotten that the year was exceptional in every respect.

In this type of farming direct grants represent a very small proportion of the output.

#### THE POOR LAND DAIRY FARMS

Details of the land use, stocking and milk production of the 37 farms of this type are shown in Table 11.

As on better land, the farms over 100 acres were at lower elevations than those under 100 acres. The top farms were at lower elevations than the average ones in the smallest and larger size groups, but at higher elevations in the 50-100 acres group. Proportions of rough grazing did not show any trend. The proportion of land under corn and roots was about equal on the average, but the top farms were inclined to have more corn and roots than the average in most groups.

The number of cows per 100 adjusted acres was about one-quarter less than in the corresponding groups on better land. The top farms had more cows than the average in each size group, the difference diminishing with increase in acreage. Unlike the better land top farms, however, those on poor land had also more other cattle than the average, at least in the two smallest size groups. Sheep were more prominent than on better land dairy farms. But, characteristically for rational farm organisation on this type of land, the three top farms of 20-50 acres had no sheep at all, but concentrated their resources on the more rewarding dairy cows and complementary cattle. It will be noted that their area of rough grazing was lower than average. On the other hand, the three top farms over 100 acres had nearly twice the average number of sheep; with an above average proportion of rough grazing (48 per cent against the average 29 per cent) they put more emphasis on sheep numbers, although the difference in terms of output of sheep was relatively slight. Pigs and poultry were of little importance.

The top farms carried about 20 per cent more cow units per 100 acres than the average in each size group.

In the size group of 20-50 acres milk yields per cow were 820 gallons on the average and 936 gallons on the top farms. This was similar to



**TABLE 11**  
**POOR LAND DAIRY FARMS**  
**Land Use, Stocking and Milk Production Data**

Size Group (adj acres)	20-50		50-100		100 and Over	
	Average	Top	Average	Top	Average	Top
Number of Farms ... ..	9	3	18	6	10	3
Acreage: Adjusted Acres ...	39	36	66	63	143	165
Actual Acres ... ..	51	43	74	67	185	264
Rough Grazing* ... ..	37.5	22.0	16.7	12.4	28.5	47.8
Range of Elevation (feet) ...	490- 620	430- 470	470- 650	520- 680	300- 480	20- 250
Crops and Grass (acres):		<u>Per 100 Adjusted Acres</u>				
Corn ... ..	4.3	—	5.8	7.0	5.6	8.3
Roots and Fodder ... ..	5.8	6.2	4.7	6.1	5.2	4.5
Hay ... ..	30.2	41.7	22.3	27.4	22.9	11.5
Silage ... ..	3.6	8.3	8.3	10.4	7.1	12.3
Pasture ... ..	38.0	37.3	52.2	43.0	51.5	46.7
Stocking Numbers:		<u>Per 100 Adjusted Acres</u>				
Cows ... ..	33	40	26	29	24	25
Other Cattle (Cow Units)...	14	22	9	10	8	8
All Cattle (Cow Units) ...	47	62	35	39	32	33
Actual Numbers:						
Sheep ... ..	47	—	51	82	90	153
Pigs ... ..	5	—	11	34	1	—
Poultry ... ..	225	457	84	93	95	120
Total Cow Units ... ..	58	71	46	58	46	57
		<u>Acres per Cow Unit</u>				
(Excl. Pigs and Poultry) ...	1.9	1.6	2.4	2.0	2.2	1.9
		<u>Per Cow</u>				
Milk Yield, Gallons ... ..	820	936	677	708	778	736
Milk Sales £** ... ..	127	136	100	111	114	111
Cost of Concentrates £ ...	64	66	35	29	45	42
Margin over Concentrates £	63	70	65	82	69	69
		<u>Per Gallon</u>				
Cost of Concentrates d. ...	18.7	16.8	12.3	9.8	13.8	13.6

\*Per cent of actual acreage.

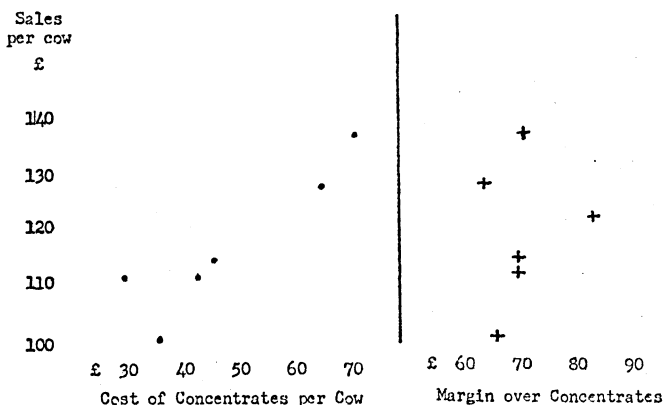
\*\*Excluding calves.

yields on the comparable better land farms. But in the larger size groups yields were distinctly lower. Concentrate costs were also highest in the 20-50 acre groups (£64-£66 per cow respectively). On the larger farms they oscillated between £29 and £45 per cow. Margins over concentrates on the average increased slightly from £63 per cow in the smallest to £69 in the over 100 acres group. Among the top farms those of 50-100 acres had the highest margin over concentrates per cow (£82), which was £12-£13 more than the margin in the top farms of the other two groups.

As may be seen from Figure III, sales of milk per cow were highly correlated with the costs of concentrates per cow. However, little relationship was found on these poor land farms between input of concentrates

Figure III.

Poor land dairy farms, Relationship between sales per cow, cost of concentrates and margin over concentrates per cow.

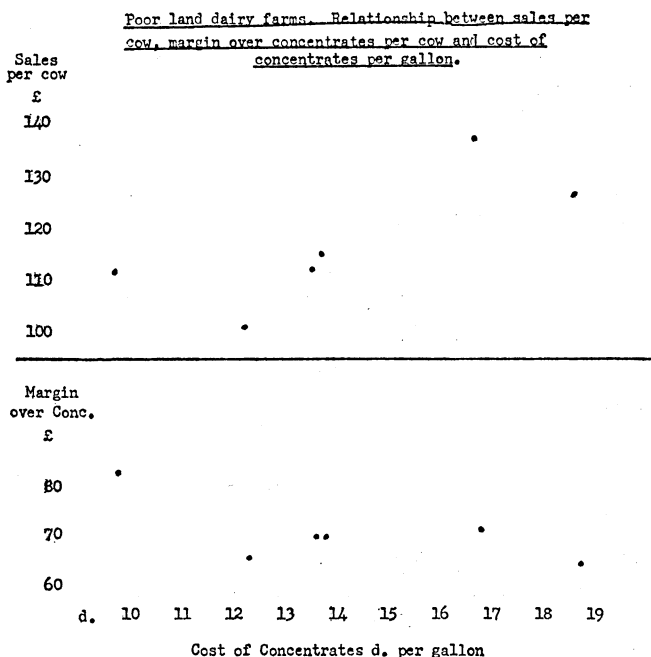


per cow and margin over concentrates, whereas on the better land farms there was a high correlation (Figure I).

Further, the costs of concentrates per gallon were not at all similar to those on the better land farms of comparable size. On the smallest farms (which had practically the same yields as those on better land, but used more concentrates per cow) concentrate costs per gallon were 18.7d. on the average and 16.8d. on the top farms—4.9d. and 3.7d. more respectively than on the corresponding better land farms. In the other groups concentrate costs per gallon were much lower: they ranged from 9.8d. on the top farms of 50–100 acres to 13.8d. on the average farms over 100 acres. In contrast to the position on the better land farms, there appears to be a negative correlation between the costs of concentrates per gallon and the margin over concentrates per cow. The relevant scatter diagrams are shown in Figure IV.

The apparent contradiction in the relationships between costs per gallon and margins over concentrates per cow can be explained by the peculiar circumstances of the various groups of farms. It must be remembered that the cost per gallon is not a criterion of efficiency in milk production, nor is margin per cow. These measures have a meaning only when seen against the scale of the enterprise. In the final analysis it is the cost and margin per farm that counts as a measure of the efficiency of the business, not costs and margins per gallon, per cow or even per acre. It is obvious that a higher stocking with cows, with a higher cost of and lower margin over concentrates per cow, can be more profitable than a lower stocking with a higher margin per cow. Similarly a high gallonage per acre, even at a high cost per gallon, can be more profitable than a lower gallonage with a low cost per gallon.

Figure IV.



This is illustrated in a comparison of net farm incomes given in Table 12, which shows details of gross output, costs and other economic data.

The top farms of 20-50 acres had the highest NFI per acre in this type of farm. They also had the highest gross output, net output and output of "dairy products" (milk), and the highest density of stocking with cows. This high number of cows, producing the highest output per cow at the highest cost of concentrates and a high cost of concentrates per gallon, gave a higher NFI per acre than the top farms in the next size group obtained although the latter had the lowest cost of concentrates per cow and per gallon and the highest margin per cow.

The trends in this type of farming were mostly similar to those in better land dairying, only on a smaller scale. Milk output per acre was higher on the top farms under 100 acres, but only fractionally so on those over 100 acres. Cattle tended to be the next highest item, with some poultry and eggs in the smallest size group and some pigs on the top farms of 50-100 acres. Sheep and wool made a small contribution which, however, increased with farm size. Crops were insignificant and direct subsidies amounted to less (mostly much less) than 5 per cent of gross output.

Feedingstuffs were again the highest cost item. They amounted to nearly one-half of total costs on the smallest farms and to over one-third even in the larger size groups. Machinery came next—its cost was considerably higher than that of labour (excluding farmer and wife) on farms under 100 acres but less than that of hired labour on the remainder. Fertilizer costs were roughly similar to those on better land farms, while

**TABLE 12**  
**POOR LAND DAIRY FARMS**  
**Gross Output, Costs, Other Economic Data and Some Efficiency Measurements**

Size Group (adj. acres)	20-50		50-100		100 and Over	
	Average	Top	Per Adjusted Acre		Average	Top
			Average	Top		
	£	£	£	£	£	£
<b>Gross Output:</b>						
Cattle ... ..	14.7	22.6	5.7	6.6	5.4	4.7
Sheep and Wool ... ..	1.4	—	2.5	4.1	4.5	5.7
Pigs ... ..	2.3	—	2.3	7.3	0.2	—
Poultry and Eggs ... ..	6.4	13.8	1.4	1.5	2.3	2.4
Crops ... ..	1.0	0.9	1.7	1.7	1.1	1.7
Dairy Products ... ..	41.7	54.8	26.0	32.5	27.0	27.5
Miscellaneous ... ..	1.0	1.0	0.8	1.4	0.5	0.7
Direct Grants ... ..	2.5	2.6	1.8	2.0	1.0	1.3
<b>Total Gross Output ... ..</b>	<b>71.0</b>	<b>95.7</b>	<b>42.2</b>	<b>57.1</b>	<b>42.0</b>	<b>44.0</b>
<b>Costs:</b>						
Rent or Rental Value ... ..	2.5	3.5	2.3	2.1	1.8	1.8
Foods ... ..	26.9	37.0	11.2	13.7	11.8	10.9
Seeds ... ..	0.9	1.0	0.8	0.6	0.6	0.7
Fertilizers ... ..	3.0	4.2	2.6	2.8	2.6	3.5
Machinery and Power ... ..	9.0	10.2	7.3	9.2	5.2	4.6
Miscellaneous ... ..	5.2	6.7	3.8	3.8	3.1	3.2
Labour excl. Farmer and Wife ... ..	4.7	7.6	2.1	3.0	5.6	6.4
<b>Total Costs ... ..</b>	<b>52.2</b>	<b>70.2</b>	<b>30.1</b>	<b>35.2</b>	<b>30.7</b>	<b>31.1</b>
<b>Net Farm Income ... ..</b>	<b>18.8</b>	<b>25.5</b>	<b>12.1</b>	<b>21.9</b>	<b>11.3</b>	<b>12.9</b>
<b>Management and Investment Income ... ..</b>	<b>2.3</b>	<b>9.6</b>	<b>2.2</b>	<b>11.2</b>	<b>6.9</b>	<b>10.1</b>
<b>Tenant Capital:</b>						
Livestock ... ..	32	41	25	29	23	25
Machinery ... ..	15	18	15	21	12	12
Total incl. Crops, Stores, etc.	49	62	44	55	37	39
Return: on NFI ... ..	37%	41%	28%	40%	31%	33%
on Management and Investment Income ... ..	5%	15%	5%	20%	18%	26%
<b>Net Output ... ..</b>	<b>43</b>	<b>58</b>	<b>30</b>	<b>43</b>	<b>30</b>	<b>32</b>
<b>Man Units Employed ... ..</b>	<b>3.9</b>	<b>4.5</b>	<b>2.2</b>	<b>2.5</b>	<b>1.9</b>	<b>1.7</b>
<b>Gross Output per Man Unit</b>	<b>1,845</b>	<b>2,150</b>	<b>1,853</b>	<b>2,236</b>	<b>2,226</b>	<b>2,592</b>
<b>Net Output per Man Unit ... ..</b>	<b>1,124</b>	<b>1,295</b>	<b>1,328</b>	<b>1,677</b>	<b>1,567</b>	<b>1,910</b>

all the other costs were lower than on better land farms of comparable size in proportion to their gross output.

While the better land farms' investment and management incomes were not much lower than their NFI, the poor land farms, particularly those under 100 acres, provided little over £2 per acre after the labour of farmer and wife was charged. Even the small top farms had only about £10 per acre, as against over £20 per acre on the better land top farms under 100 acres.

Tenant capital was about two-thirds of that on comparable better land dairy farms, and was invested more in livestock and less in machinery. Returns on tenant capital tended to be slightly less than those from better land dairying when calculated on NFI, but on investment and management income considerably less.

Gross output per man unit increased slightly with farm size and was larger than average in each top group. The same trends can be seen in net output per man unit, but here the differences between the size groups are larger. Barring the top farms over 100 acres, the differences in net output per man unit as between these poor and the better land farms were considerable.

The per farm data are given in Table 13.

TABLE 13  
POOR LAND DAIRY FARMS  
Land Use, Stocking and Economic Data  
Per Farm

Size Group (adj. acres)	20-50		50-100		100 and Over	
	Average	Top	Average	Top	Average	Top
<b>Crops and Grass:</b>	Acres	Acres	Acres	Acres	Acres	Acres
Corn ... ..	1.7	—	3.8	4.4	8.0	13.6
Roots and Fodder ... ..	2.2	2.2	3.1	3.8	7.4	7.5
Hay ... ..	11.8	15.0	14.7	17.2	32.7	19.0
Silage ... ..	1.4	3.0	5.5	6.5	10.2	20.3
Pasture ... ..	14.8	13.4	34.3	27.0	73.7	77.2
<b>Stocking Numbers:</b>	No.	No.	No.	No.	No.	No.
Cows ... ..	12	15	17	18	34	41
Other Cattle (Cow Units)... ..	5	8	6	6	12	13
Sheep, Breeding ... ..	18	—	33	51	129	254
Pigs ... ..	2	—	7	21	1	—
Poultry ... ..	88	165	56	59	135	198
<b>Total Cow Units ... ..</b>	<b>23</b>	<b>26</b>	<b>30</b>	<b>37</b>	<b>66</b>	<b>93</b>
<b>Net Farm Income ... ..</b>	<b>£ 733</b>	<b>£ 917</b>	<b>£ 801</b>	<b>£ 1,372</b>	<b>£ 1,620</b>	<b>£ 2,125</b>
<b>Management and Investment Income ... ..</b>	<b>88</b>	<b>308</b>	<b>146</b>	<b>701</b>	<b>980</b>	<b>1,672</b>
<b>Tenant Capital:</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>
Livestock ... ..	1,226	1,489	1,612	1,811	3,252	4,110
Machinery ... ..	593	647	1,022	1,344	1,736	2,022
Total incl. Crops and Stores	1,891	2,213	2,908	3,415	5,334	6,487
<b>Man Units Employed ... ..</b>	<b>No. 1.5</b>	<b>No. 1.6</b>	<b>No. 1.5</b>	<b>No. 1.6</b>	<b>No. 2.7</b>	<b>No. 2.8</b>
(Man Units per 100 adj. acres)	(3.9)	(4.5)	(2.2)	(2.5)	(1.0)	(1.7)
<b>Gross Output ... ..</b>	<b>£ 2,768</b>	<b>£ 3,441</b>	<b>£ 2,779</b>	<b>£ 3,577</b>	<b>£ 6,010</b>	<b>£ 7,257</b>
Of which Direct Grants ... ..	(100)	(94)	(121)	(127)	(147)	(212)
<b>Costs:</b>						
Rent ... ..	99	125	150	135	260	294
Foods ... ..	1,046	1,330	735	855	1,692	1,801
Fertilizers ... ..	117	152	174	173	367	588
Machinery and Power ... ..	350	366	479	575	739	755
Labour excl. Farmer & Wife	182	274	139	190	804	1,063

It is worthy of note that the top farms over 100 acres cut more grass for silage than for hay—the only group among all the dairy farms to do so. Stocking with cows on the farms under 100 acres was 18 in the best group, but even so the top farms of 20–50 acres with no more than 15 cows had a NFI exceeding £900. In this excellent year even the smallest of these farms averaged acceptable profits, but one cannot exclude the thought that another such year may not happen again in a dozen seasons.

Direct grants were somewhat higher than in comparable size groups on better land. But only the top farms over 100 acres with moderately large sheep flocks and rough grazing had grants exceeding £200 per farm. This amounted to about 10 per cent of NFI.

Table 14  
BETTER LAND MIXED FARMS  
Land Use Stocking, and Milk Production Data

Size Group (adj. acres)	20–100		100–200		(Milk Selling) 200 and Over		(Non Milk Selling) 200 and Over	
	Average	Top	Average	Top	Average	Top	Average	Top
Number of Farms ...	11	4	18	6	19	6	9	3
Acreage: Adjusted ...	64	73	150	149	314	251	381	290
Actual ...	66	80	160	157	344	263	386	295
Rough Grazing* ...	5.6	9.0	8.5	6.7	11.4	7.7	1.7	2.8
Range of Elevation(feet)	360– 480	420– 500	290– 390	280– 350	250– 570	250– 570	190– 380	200– 350
Crops and Grass (acres):	Per 100 Adjusted Acres							
Corn ...	10.5	15.7	13.8	16.4	26.0	27.9	20.3	32.3
Roots and Fodder ...	3.4	2.0	6.1	7.2	4.1	3.6	8.7	13.2
Hay ...	29.8	26.0	23.9	24.5	17.8	16.9	17.7	20.3
Silage ...	5.1	6.1	1.7	—	7.8	11.2	3.6	—
Pasture ...	49.3	47.1	51.7	50.5	41.4	37.3	49.2	33.3
Stocking Numbers:	Per 100 Adjusted Acres							
Cows ...	28	25	19	17	15	16	6	7
Other Cattle (Cow Units) ...	17	16	17	15	13	14	18	18
All Cattle (Cow Units)	45	41	36	32	28	30	24	25
Actual Numbers:								
Sheep, Breeding ...	63	72	99	94	75	64	83	34
Pigs ...	60	38	40	107	21	17	12	—
Poultry ...	208	77	421	68	44	27	265	1,044
Total Cow Units ...	70	59	67	69	44	43	44	51
Excl. Pigs and Poultry...	Acres per Cow Unit							
	1.8	1.9	2.0	2.2	2.6	2.6	2.8	3.4
Milk Yield: Gallons ...	Per Cow							
Milk Sales: £** ...	706	784	729	798	676	733	—	—
	100	115	104	115	98	105	—	—

\*Per Cent of Actual Acreage. \*\*Excluding Calves.

## THE BETTER LAND MIXED FARMS

There were 47 farms in this group. Details about their land use, stocking and milk production are given in Table 14.

Within each size group the farms were quite homogeneous in their proportions of rough grazing and in their elevation. Among the largest farms, both those producing milk and those not doing so, the top farms tended to be over 20 per cent smaller than the average. This is a significant difference, since intensity of output is inclined to be negatively correlated with farm size. In other words, the better results per acre of the top farms may be partly due to their smaller acreage.

The proportion of land under corn was nearly twice as high on the large farms as it was on those under 200 acres, and tended to be larger on the top farms in all size groups. The proportion under roots and fodder was small, but tended to be much larger on the farms without milk, particularly on the top ones. Most of these non-milk farms (and all three top ones) produced early potatoes on a relatively large scale. There was little silage except, characteristically, on a few of the best top farms over 200 acres, with milk production.

Stocking with dairy cows was less than 30 per 100 acres on the small farms and less than 20 on the larger farms. When the top farms are compared with the average, a characteristic nuance appears to be the somewhat lower density of cows among the top farms under 200 acres. This is a mark of the rather delicate adjustment of the dairy enterprise to the other enterprises in an area of output in which the marginal productivity of labour in milk production is probably lower than in some other enterprises. Practically all calves were reared, except on farms under 100 acres, where relatively more milk cows and fewer followers were kept. The large farms without milk had multiple suckling enterprises and the largest number of other cattle (in cow units) of all the groups.

Stocking with sheep was moderate—flocks were roughly twice as large as on better land dairy farms of comparable size. It may be noted that the three top farms without milk had less than one-half of the density of sheep carried by most other farms.

Pigs were of some importance among the small and medium farms—especially among the top farms of 100–200 acres—but of little consequence on farms over 200 acres. The top farms without milk had no pigs at all.

Poultry did not show any discernible trend, but a few interesting and significant pieces of information are worthy of consideration. Firstly, the frequent appearance of “moderate” commercial poultry flocks on the “average” mixed farm of 100–200 acres compares with insignificant house-size flocks among the top farms of this group. The inference is that, whatever else contributed to the greater success of the top farms, it could not have been the poultry enterprises. The same argument cannot be extended to the average farms without milk, since their poultry belonged to the specialised enterprises of the three farms which happened to be the most successful ones. It does not follow that it might have been advisable for all those farms to specialise in poultry. The three top farms have actually concentrated on turkeys and early potatoes: that is, on enterprises in which a talent for marketing has to be combined with technical

know-how more completely than in conventional farming or poultry keeping.

Total stocking intensity was lower than on dairy farms and declined with farm size. It tended to be slightly lower on the top farms of each size group. Milk output per cow was below 800 gallons, even on the top farms whose yields were about 10 per cent above the average.

**Table 15**  
**BETTER LAND MIXED FARMS**  
**Gross Output, Costs, Other Economic Data and Some Efficiency Measurements**

Size Group (adj. acres)	20-100		100-200		(Milk Selling) 200 and Over		(Non Milk Selling) 200 and Over	
	Per Adjusted Acre							
	Average	Top	Average	Top	Average	Top	Average	Top
	£	£	£	£	£	£	£	£
<b>Gross Output:</b>								
Cattle ... ..	12.6	16.0	11.1	12.1	9.5	10.0	13.4	11.4
Sheep and Wool ... ..	4.8	6.1	6.5	7.1	5.2	5.9	6.7	3.4
Pigs ... ..	11.4	7.2	8.2	22.2	4.2	3.4	2.7	—
Poultry and Eggs ... ..	3.5	1.2	9.8	0.8	1.4	0.4	6.8	26.9
Crops ... ..	2.5	2.8	5.3	7.1	8.6	9.8	19.4	36.1
Dairy Products ... ..	27.7	27.4	17.5	15.2	13.0	15.0	—	—
Miscellaneous ... ..	1.4	2.2	0.9	0.6	0.5	0.8	0.2	0.2
Direct Grants ... ..	2.6	4.0	1.3	1.3	1.6	1.3	2.3	1.7
<b>Total Gross Output</b>	<b>66.5</b>	<b>66.9</b>	<b>60.6</b>	<b>66.4</b>	<b>44.0</b>	<b>46.6</b>	<b>51.5</b>	<b>79.7</b>
<b>Costs:</b>								
Rent or Rental Values	3.1	3.4	2.8	2.5	3.3	3.7	4.3	4.6
Foods ... ..	24.1	14.0	21.1	21.6	9.5	6.7	7.8	16.5
Seeds ... ..	0.7	0.6	1.1	0.8	1.2	1.1	2.9	4.3
Fertilizers ... ..	1.7	1.8	2.4	2.6	2.6	2.1	3.3	3.3
Machinery and Power	9.4	9.8	7.9	6.7	6.4	5.8	6.7	10.1
Miscellaneous ... ..	4.5	3.6	3.8	2.9	3.3	3.6	3.8	4.1
Labour excl. Farmer and Wife ... ..	3.7	2.2	8.6	7.7	7.7	7.3	8.9	12.3
<b>Total Costs</b>	<b>47.2</b>	<b>35.4</b>	<b>47.7</b>	<b>44.8</b>	<b>34.0</b>	<b>30.3</b>	<b>37.7</b>	<b>55.2</b>
<b>Net Farm Income</b> ... ..	<b>19.3</b>	<b>31.5</b>	<b>12.9</b>	<b>21.6</b>	<b>10.0</b>	<b>16.3</b>	<b>13.8</b>	<b>24.5</b>
<b>Management Investment Income</b> ... ..	<b>8.7</b>	<b>22.3</b>	<b>9.3</b>	<b>17.5</b>	<b>8.3</b>	<b>14.1</b>	<b>12.4</b>	<b>22.4</b>
<b>Tenant Capital:</b>								
Livestock ... ..	38	37	35	43	25	27	33	29
Machinery ... ..	18	25	16	15	15	12	17	32
Total incl. Crops, Stores etc....	60	69	56	64	46	46	59	74
Return: on NFI ... .. on Management & Investment Income	32%	46%	41%	53%	22%	35%	23%	33%
	15%	32%	29%	43%	18%	30%	21%	30%
<b>Net Output</b> ... ..	<b>42</b>	<b>52</b>	<b>38</b>	<b>44</b>	<b>33</b>	<b>39</b>	<b>41</b>	<b>59</b>
<b>Man Units employed</b> ... ..	<b>2.6</b>	<b>2.1</b>	<b>2.3</b>	<b>2.2</b>	<b>1.7</b>	<b>1.8</b>	<b>1.9</b>	<b>2.7</b>
<b>Gross Output per Man Unit</b> ... ..	<b>2,496</b>	<b>3,265</b>	<b>2,680</b>	<b>3,084</b>	<b>2,559</b>	<b>2,597</b>	<b>2,686</b>	<b>2,998</b>
<b>Net Output per Man Unit</b> ... ..	<b>1,563</b>	<b>2,555</b>	<b>1,698</b>	<b>2,043</b>	<b>1,936</b>	<b>2,162</b>	<b>2,129</b>	<b>2,215</b>



In Table 15 are shown output, costs and economic results for these farms.

Gross output followed broadly the stocking intensity pattern. Milk tended to be the main item, dropping from about two-fifths to less than one-third of total output as between the farms under 100 acres and those over 200 acres. Cattle generally came next, followed by pigs (on the farms under 200 acres) and sheep and crops. Pigs were highest on the list in the top 100–200 acre group, with poultry and eggs prominent among the average in that group. The group without milk derived its highest gross output from crops, followed by cattle, sheep and poultry. The top three farms of that group had poultry in the second place, followed by cattle. These three farms had by far the highest total gross output of all the better land mixed farms.

In this type of farming, food was the major cost item in most groups of farms. In some of the groups over 200 acres, however, the cost of labour was slightly higher. Machinery and power was second in magnitude on farms under 100 acres, but fell to third position on larger ones. The top farms in all but the milkless group had lower costs than the average. But in the latter their total costs per acre were highest, as well as their labour, machinery, rent and fertiliser costs.

On the average, NFI descended from £19.3 per acre on the smallest to £10 per acre on the largest farms with milk, but was £13.8 on those without milk—largely owing to the very high NFI of the top three farms. In the top farms NFI dropped from £31.5 per acre on the smallest through £21.6 to £16.3 on the farms over 200 acres with milk, but the top three farms without milk had £24.5 per acre—excellent results for this size of farm by any standards—which was largely due to the good prices obtained for early potatoes.

Of all the farms in the survey, these top three farms without milk had the highest input of labour and the highest rent per acre. They also used the second highest amount of tenant capital—£74 per acre (surpassed only by the top dairying group of 20–50 acres, which used £94 per acre). The other BL mixed farms used somewhat more tenant capital than the BL dairy farms of comparable size and repeated the pattern noted on those dairy farms. With increasing acreage, capital per acre diminished on the average from £60 to £46 as between the smallest and largest milk selling farms (the figure for the average non-milk groups is inflated by those for the three top farms). The top farms tended to use more capital than the average, with the exception of those over 200 acres producing milk. Returns on capital calculated on N.F.I. were very high in that exceptional year. They rose on the average from 32 to 41 per cent as between the small farms and the medium ones and amounted to 22 or 23 per cent in the two groups over 200 acres. The top farms made 46 and 53 per cent respectively in the two groups under 200 acres, 35 per cent in the top milk selling group of large farms, and 33 per cent in the group of three top non-milk-selling ones. Since the latter's results are subject to considerable risks and fluctuations, 33 per cent in an exceptional year may be regarded as somewhat disappointing.

Gross output per man unit on the average tended to be similar as between the size groups, with the farms under 100 acres a little below the trend. Net output per man unit increased by over 20 per cent as between

the groups under 100 and over 200 acres. The opposite tendency can be observed among the top groups. The top farms under 100 acres had the highest gross and net output per man unit—£3,265 and £2,555 respectively—of any group in the whole Welsh FMS.

Details per farm are shown in Table 16.

Table 16  
BETTER LAND MIXED FARMS  
Land Use, Stocking and Economic Data  
Per Farm

Size Group (adj. acres)	20-100		100-200		(Milk Selling) 200 and Over		(Non Milk Selling) 200 and Over	
	Average	Top	Average	Top	Average	Top	Average	Top
Crops and Grass:								
Corn and Pulses ...	6.7	11.5	20.7	24.3	81.5	70.0	77.4	93.5
Roots and Fodder								
Crops ...	2.2	1.4	9.1	10.7	12.8	9.1	33.1	38.3
Hay ...	19.0	19.0	35.9	36.4	56.1	42.3	67.4	58.7
Silage...	3.3	4.5	2.6	—	24.3	28.1	13.6	—
Pasture ...	31.5	34.5	77.7	75.0	130.1	93.5	187.4	96.3
Stocking Numbers:	No.	No.	No.	No.	No.	No.	No.	No.
Cows ...	18	19	29	26	48	40	22	20
Other Cattle (Cow								
Units) ...	11	12	25	23	41	35	71	52
Sheep, Breeding ...	40	52	149	140	234	160	315	99
Pigs ...	39	28	60	159	65	42	47	—
Poultry ...	133	56	633	101	137	68	1,008	3,022
Total Cow Units ...	45	44	100	103	138	107	165	146
Net Farm Income ...	£ 1,229	£ 2,306	£ 1,948	£ 3,216	£ 3,135	£ 4,101	£ 5,268	£ 7,107
Management and In-								
vestment Income ...	555	1,635	1,391	2,600	2,600	3,526	4,710	6,497
Tenant Capital:								
Livestock ...	2,392	2,729	5,286	6,307	7,855	6,891	12,652	8,510
Machinery ...	1,165	1,856	2,415	2,219	4,621	3,063	6,402	9,246
Total incl. Crops &								
Stores ...	3,852	5,033	8,410	9,472	14,474	11,518	22,432	21,343
Man Units Employed ...	No. 1.7	No. 1.5	No. 3.4	No. 3.2	No. 5.4	No. 4.5	No. 7.3	No. 7.7
(Man Units per 100 adj.								
Acres ...	(2.6)	(2.1)	(2.3)	(2.2)	(1.7)	(1.8)	(1.9)	(2.7)
Gross Output ...	£ 4,243	£ 4,897	£ 9,111	£ 9,869	£ 13,821	£ 11,686	£ 19,605	£ 23,082
Of which Direct Grants	(165)	(290)	(191)	(199)	(488)	(315)	(890)	(493)
Costs:								
Rent ...	199	247	424	371	1,048	926	1,621	1,316
Foods ...	1,537	1,023	3,165	3,213	2,984	1,674	2,966	4,779
Fertilizers ...	109	133	357	382	802	530	1,275	943
Machinery and Power	601	719	1,180	1,003	2,015	1,440	2,545	2,940
Labour excl. Farmer								
and Wife ...	239	165	1,287	1,137	2,406	1,839	3,389	3,565

If the relevant figures are compared with those of the BL dairy farms (Table 3) of comparable size, a few differences appear. The mixed farms tended to be stocked a little more heavily than the dairy ones, owing to the larger number of pigs and poultry. Dairy farms tended to stock slightly more ruminants, that is to use the land slightly more intensively (see Tables 1 and 7). NFI appeared to be a little larger than on dairy farms, but this is due to the fact that the mixed farms themselves tended to be a little larger. It may also be noted that, on the average, direct grants were considerably higher on the mixed farms and twice as large on the top mixed farms as on the top dairy ones. The non milk-selling group, owing to their heavy dependence on cattle and crops, received on average the highest grants among all the mixed farms.

#### THE POOR LAND MIXED FARMS

There were 49 farms in this group. Their land use, stocking and milk production data are shown in Table 17.

TABLE 17  
POOR LAND MIXED FARMS  
Land Use, Stocking and Milk Production Data

Size Group (adj. acres)	20-100		100-200		200 and Over	
	Average	Top	Average	Top	Average	Top
Number of Farms ... ..	16	5	23	8	10	3
Acreege: Adjusted ... ..	68.6	68.1	146.0	163.3	273.7	263.5
Actual ... ..	98.2	86.6	255.9	244.7	469.8	405.8
Rough Grazing* ... ..	42.0	32.3	65.4	51.4	67.3	51.4
Range of Elevation (feet) ...	480- 730	640- 810	470- 1,150	440- 920	480- 1,000	480- 1,060
Crops and Grass (acres):	Per 100 Adjusted Acres					
Corn ... ..	5.3	5.9	2.6	2.2	2.6	5.6
Roots and Fodder... ..	3.7	3.7	4.1	7.3	2.6	2.2
Hay ... ..	25.9	33.1	19.6	21.3	15.6	18.3
Silage ... ..	0.4	—	0.2	—	1.8	—
Pasture ... ..	46.5	43.4	34.1	42.1	33.5	48.7
Stocking Numbers:	Per 100 Adjusted Acres					
Cows ... ..	18	19	10	12	9	10
Other Cattle (Cow Units)...	10	11	9	9	6	9
All Cattle (Cow Units) ...	27	29	19	22	15	19
Actual Numbers:						
Sheep, Breeding ... ..	191	183	200	188	228	263
Pigs ... ..	6	14	1	—	—	1
Poultry ... ..	102	57	26	24	58	39
Total Cow Units ... ..	53	55	42	45	43	50
Excl. Pigs and Poultry ...	Acres Per Cow Unit					
	1.8	1.8	2.4	2.3	2.5	2.1
Milk Yield: Gallons ... ..	Per Cow					
	623	692	617	690	699	704
Milk Sales £** ... ..	87	96	85	99	103	102

\*Per cent of Actual Acres.

\*\*Excluding Calves.

The top farms in each size group had a lower proportion of rough grazing than the average, in spite of approximately similar topography. It is thought that this was mostly due to their own efforts in improving some of the rough grazing. The proportion of land in corn and roots seemed to decline with increase in farm size and tended to be slightly larger on the top farms of each size group. Hay showed a similar tendency. Silage was negligible.

Density of stocking with cows was twice as high on the smallest farms as on the largest, while other cattle showed a similar tendency to a smaller degree. Stocking on the top farms was a little higher. The stocking with cattle per 100 adjusted acres was only about two-fifths of that on the BL mixed farms, but ample compensation was made for this by stocking much more intensively with sheep. Pigs and poultry had little economic significance. The density of stocking tended to be somewhat higher on the top farms under 200 acres and considerably higher (nearly 20 per cent) on those above 200 acres. This was largely due to the fact that there were slightly more cows and other cattle on all top farms and nearly 20 per cent more sheep on the largest top farms than on the average of this size group.

Yields per cow were low—around 620 gallons on the average on farms under 200 acres and 690 on the top farms in this group—while average as well as top farms over 200 acres produced about 700 gallons per cow.

Gross output, costs and other economic data are given in Table 18.

It is noticeable that the top farms' output per acre of most items was higher than the corresponding average. Furthermore, it can be seen that in a number of cases the relative increase above the average was larger than the increase in stocking would suggest; or that—as was the case with sheep on top farms under 200 acres—output was larger than average even where stocking was lower. The farms under 100 acres produced twice as much milk per acre as those over 200 acres. Total gross output was 10 per cent above average on the top farms under 100 acres, and this figure rose to nearly 30 per cent on the larger top farms.

On the cost side, rents were hardly, if at all, higher on the larger top farms and nearly one-third lower on the small ones. Foods tended to be lower on top farms, at least up to 200 acres, and so were a number of other cost items, except those on top farms of 100–200 acres and machinery costs alone on top farms over 200 acres. Total costs were over 15 per cent below the average on the small top farms and less than 15 per cent higher on the top farms over 100 acres.

Net farm income per acre fell from £11.1 to £8.0 as between the small and large farms on the average and from £19.5 to £12.5 as between the corresponding top farms. Management and investment income increased from £1.8 per acre in the smallest to £5.8 in the largest group. The top farms tended to have NFI around £10.0 an acre. Return on capital calculated on NFI was 31 per cent and 34 per cent respectively on the average farms below 200 acres and 29 per cent on the average large farms. The smallest top farms showed returns of 51 per cent, falling to 42 per cent and 40 per cent on the larger farms.

Net output per man unit employed rose on the average from £1,095 to £1,454 and £1,807 as between the three size groups. Productivity per man

was highest—£1,933—in the top group of 100–200 acres, followed by £1,851 on the large top farms. Small top farms, however, showed only £1,497 net output per man unit.

**Table 18**  
**POOR LAND MIXED FARMS**  
**Gross Output, Costs and Other Economic Data and Some Efficiency Measurements**

Size Group (adj. acres)	20–100		100–200		200 and Over	
	Per Adjusted Acre					
	Average	Top	Average	Top	Average	Top
<b>Gross Output:</b>	£	£	£	£	£	£
Cattle ... ..	7.8	8.1	5.7	7.1	5.2	9.4
Sheep and Wool ... ..	7.7	7.9	7.2	9.5	6.7	7.6
Pigs... ..	2.3	4.3	0.4	—	0.2	0.6
Poultry and Eggs ... ..	1.6	0.9	0.4	—	1.6	0.6
Crops ... ..	1.2	1.5	0.8	1.0	0.8	1.0
Dairy Products ... ..	14.8	16.7	7.8	10.7	7.1	8.2
Miscellaneous ... ..	0.8	0.8	0.5	1.0	0.6	0.8
Subsidies and Grants ... ..	3.0	2.9	2.9	2.7	3.0	3.9
<b>Total Gross Output ... ..</b>	<b>39.2</b>	<b>43.1</b>	<b>25.7</b>	<b>32.0</b>	<b>25.0</b>	<b>32.1</b>
<b>Costs:</b>						
Rent or Rental Value ... ..	1.5	1.1	1.1	1.2	1.6	1.7
Foods ... ..	11.5	10.2	5.5	5.4	5.7	6.4
Seeds ... ..	0.5	0.4	0.3	0.5	0.3	0.4
Fertilizers ... ..	1.7	1.5	1.2	1.5	1.1	0.8
Machinery and Power ... ..	5.7	5.6	3.6	4.3	3.1	3.6
Miscellaneous ... ..	3.1	3.0	1.9	2.0	1.8	1.5
Labour excl. Farmer and Wife ... ..	4.1	1.8	3.0	3.2	5.6	5.2
<b>Total Costs ... ..</b>	<b>28.1</b>	<b>23.6</b>	<b>16.6</b>	<b>18.1</b>	<b>17.2</b>	<b>19.6</b>
<b>Net Farm Income ... ..</b>	<b>11.1</b>	<b>19.5</b>	<b>9.1</b>	<b>13.9</b>	<b>8.0</b>	<b>12.5</b>
<b>Management and Investment Income ... ..</b>	<b>1.8</b>	<b>10.6</b>	<b>4.9</b>	<b>9.9</b>	<b>5.8</b>	<b>10.2</b>
<b>Tenant Capital:</b>						
Livestock ... ..	23	23	18	21	19	23
Machinery ... ..	11	12	7	10	7	7
Total incl. Crops and Stores, etc. ... ..	36	38	27	33	28	31
Return: on NFI ... .. on Management and Investment Income ... ..	31%	51%	34%	42%	29%	40%
	5%	27%	18%	30%	21%	33%
<b>Net Output ... ..</b>	<b>27</b>	<b>33</b>	<b>20</b>	<b>26</b>	<b>19</b>	<b>25</b>
<b>Man Units Employed ... ..</b>	<b>2.5</b>	<b>2.0</b>	<b>1.4</b>	<b>1.3</b>	<b>1.1</b>	<b>1.4</b>
<b>Gross Output per Man Unit</b>	<b>1,581</b>	<b>2,096</b>	<b>1,877</b>	<b>2,371</b>	<b>2,379</b>	<b>2,349</b>
<b>Net Output per Man Unit ... ..</b>	<b>1,095</b>	<b>1,497</b>	<b>1,454</b>	<b>1,933</b>	<b>1,807</b>	<b>1,851</b>

Table 19 gives the main data for this type of farming on a per farm basis.

**Table 19**  
**POOR LAND MIXED FARMS**  
**Land Use, Stocking and Economic Data**  
**Per Farm**

Size Group (adj. acres)	20-100		100-200		200 and Over	
	Average	Top	Average	Top	Average	Top
<b>Crops and Grass:</b>	Acres	Acres	Acres	Acres	Acres	Acres
Corn and Pulses ... ..	3.6	4.0	3.8	3.6	7.0	14.7
Roots and Fodder Crop ...	2.5	2.5	6.0	12.0	7.0	5.8
Hay ... ..	17.8	22.6	28.6	34.7	42.7	48.3
Silage ... ..	0.3	—	0.4	—	5.0	—
Pasture ... ..	31.9	29.5	49.7	68.7	91.7	128.4
<b>Stocking Numbers:</b>	No.	No.	No.	No.	No.	No.
Cows ... ..	12	13	15	20	25	26
Other Cattle (Cow Units)...	7	7	13	15	17	24
Sheep, Breeding ... ..	131	124	292	307	623	693
Pigs ... ..	4	9	2	—	1	2
Poultry ... ..	70	39	37	39	159	103
<b>Total Cow Units ... ..</b>	<b>36</b>	<b>37</b>	<b>62</b>	<b>73</b>	<b>116</b>	<b>132</b>
<b>Net Farm Income ... ..</b>	<b>£ 763</b>	<b>£ 1,331</b>	<b>£ 1,329</b>	<b>£ 2,269</b>	<b>£ 2,177</b>	<b>£ 3,296</b>
<b>Management and Investment Income ... ..</b>	<b>124</b>	<b>725</b>	<b>710</b>	<b>1,618</b>	<b>1,579</b>	<b>2,686</b>
<b>Tenant Capital:</b>						
Livestock ... ..	1,582	1,584	2,596	3,399	5,242	5,966
Machinery ... ..	722	828	1,055	1,660	1,842	1,753
Total incl. Crops and Stores	2,468	2,593	3,914	5,392	7,530	8,039
<b>Man Units Employed ... ..</b>	<b>No. 1.7</b>	<b>No. 1.4</b>	<b>No. 2.0</b>	<b>No. 2.2</b>	<b>No. 2.9</b>	<b>No. 3.6</b>
<b>(Man Units per 100 adj. acres)</b>	<b>(2.5)</b>	<b>(2.0)</b>	<b>(1.4)</b>	<b>(1.3)</b>	<b>(1.1)</b>	<b>(1.4)</b>
<b>Gross Output ... ..</b>	<b>£ 2,688</b>	<b>£ 2,935</b>	<b>£ 3,753</b>	<b>£ 5,217</b>	<b>£ 6,899</b>	<b>£ 8,459</b>
<b>Of which Direct Grants ...</b>	<b>(207)</b>	<b>(199)</b>	<b>(420)</b>	<b>(434)</b>	<b>(815)</b>	<b>(1,038)</b>
<b>Costs:</b>						
Rent ... ..	101	74	155	197	425	439
Foods ... ..	790	695	795	883	1,570	1,691
Fertilizers ... ..	114	99	170	243	312	221
Machinery and Power ...	391	382	519	693	846	944
Labour excl. Farmer and Wife ... ..	281	124	449	530	975	1,361

A comparison with better land mixed farms would be of little relevance. The poor land mixed farms can more appropriately be compared with poor land livestock rearing farms without milk, and this will be done later. Suffice it to note at this stage that in that exceptional year NFI appeared to be adequate in all size groups and that the top farms managed to achieve considerably better than average results.

Direct grants (largely hill sheep subsidies) play an important part in this type of farming. On average, they made up about 30 per cent of NFI on the farms under 200 acres and about 40 per cent on the large farms.

On the top farms under 200 acres their relative importance diminished to under 20 per cent of NFI; but it was still high, with more than 30 per cent of NFI, on the top large farms. Taken, however, as a proportion of gross output, direct grants amounted on the average to less than 10 per cent on the smallest farms and to somewhat over 12 per cent on the larger. On the top farms under 200 acres the proportion was even less, but it was still 12 per cent of gross output on the top large farms.

#### THE BETTER LAND LIVESTOCK REARING FARMS

There were 84 farms in this group and their data are given in the Tables 20-22.

The elevation of these farms tends to increase with farm size. The top farms had marginally higher elevations or steeper slopes in each size group. The medium-size top farms had similar proportions of rough grazing to those of the average farms in their size group, but both the smallest and the large top farms had markedly greater proportions of rough grazing—the small farms over one-third greater—than the average. Rents are in line with these trends. It appears, therefore, that the top farms' higher profits were not due to better natural conditions, at least in

Table 20  
BETTER LAND LIVESTOCK REARING FARMS  
Land Use and Stocking Data

Size Group adj. acres	20-100		100-200		200 and Over	
	Average	Top	Average	Top	Average	Top
Number of Farms ... ..	18	6	44	15	22	7
Acreage: Adjusted ... ..	66.6	77.6	144.5	141.8	319.5	334.9
Actual ... ..	78.0	102.0	165.6	163.2	390.2	436.7
Rough Grazing* ... ..	19.8	30.2	19.3	18.9	26.8	31.2
Range of Elevation (feet) ...	480- 630	470- 630	580- 820	520- 850	610- 1,010	670- 1,030
Crops and Grass (acres):	Per 100 Adjusted Acres					
Corn ... ..	6.9	10.1	9.4	10.3	9.3	6.0
Roots and Fodder ... ..	3.6	3.4	4.4	5.2	5.3	4.2
Hay ... ..	27.0	29.1	20.7	19.3	18.3	23.5
Silage ... ..	—	—	1.7	1.6	1.9	3.6
Pasture ... ..	56.5	49.1	56.3	56.9	54.6	52.4
Stocking Numbers:	Per 100 Adjusted Acres					
Cows ... ..	10	10	12	13	13	15
Other Cattle (Cow Units)...	14	15	12	14	10	11
All Cattle (Cow Units) ...	25	25	24	27	23	26
Actual Numbers:						
Sheep, Breeding ... ..	130	123	166	192	183	187
Pigs ... ..	11	17	3	4	4	2
Poultry ... ..	152	77	50	52	24	28
Total Cow Units ... ..	49	46	49	56	49	51
Excluding Pigs and Poultry	Acres per Cow Units					
	2.3	2.4	2.1	1.9	2.1	2.0

\*Per cent of Actual Acres

their original state, but both the small and the large top farms tended to have bigger acreages—both actual and adjusted—than the average for their groups. This fact might in itself be a contributing factor to their greater-than-average success.

Corn was distinctly more important than roots in all size groups. Silage appears to have been ignored. This is not surprising in a traditional system of farming, which has been based on very frugal winter feeding of breeding cows. Self-feeding silage easily results in very high consumption, with the cows getting over-fat.\*

The small farms stocked about one-third more cow units of other cattle than of breeding cows. The medium farms tended to have similar stocking densities with cows and followers, while the large farms had about one-third more cow units in the breeding herd than in young stock. This is a reflection of the more intensive system followed on smaller farms—some multiple suckling and the selling of more followers in older age groups. Few of these smaller farms are eligible for hill cow subsidy (their elevation is too low) and there is enough labour in the winter to look after the young cattle. More of the larger farms tend to get the hill cow subsidy, which explains their inclination to keep relatively more cows. This fact, and their relatively lower labour complement, account for their practice of single suckling and their disposal of young cattle at an earlier stage in order to keep the system as simple as possible. The higher density of young cattle on the small farms was balanced by lower stocking with sheep to the extent, indeed, of their having the lowest stocking densities of all size groups.

The top farms under 100 acres had practically the same stocking rates with cattle, and marginally lower rates with sheep, than the average. The medium top farms stocked under 10 per cent more cattle but tended to have nearly 20 per cent more sheep than the average. The top large farms stocked 10 per cent more cattle than the average but only a few more sheep. Pigs and poultry were unimportant on the majority of farms (pigs were found only on those under 100 acres). The rather small differences in stocking rates as between the average and the top livestock rearing farms make it very difficult to deduce reasons for different financial results from any fine points of organisation. At least it is quite obvious that such differences as there were in stocking and cropping cannot fully account for the relatively larger variations in NFI (see Table 21) as between the average and top farms in each size group.

Other economic data of these farms are also presented in Table 21.

The gross output of cattle and sheep was roughly related to the stocking in all size groups. No other item of output counted for much on the average, but on individual farms poultry or pigs or crops sometimes made a more conspicuous contribution. Subsidies are more prominent in this type of farming than in more intensive systems, both absolutely and as a proportion of (lower) output. The latter tended to be 20 per cent

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\*Rationing by time at the silage face would involve a full two feet of feeding space per cow; otherwise those of lower "social status" would not get a chance to feed. The problem might be overcome by cutting silage deliberately late (after hay), so that it was stemmy and less palatable. This is likely to cut consumption to about 60 lb. a day, sufficient for maintenance and perhaps a drop of milk, with concentrates (barley) for production when necessary.



**Table 21**  
**BETTER LAND LIVESTOCK REARING FARMS**  
**Gross Output, Costs and Other Economic Data and Some Efficiency Measurements**

Size Group adj. acres	20-100		100-200		200 and Over	
	Per Adjusted Acre					
	Average	Top	Average	Top	Average	Top
Gross Output:	£	£	£	£	£	£
Cattle ... ..	12.6	12.7	10.3	14.0	9.2	12.5
Sheep and Wool ... ..	8.2	7.3	10.1	11.8	10.3	10.1
Pigs ... ..	2.1	2.9	0.7	1.1	0.8	0.1
Poultry and Eggs ... ..	2.3	1.0	0.8	1.2	0.3	0.5
Crops ... ..	1.8	2.5	1.6	1.6	2.5	1.7
Dairy Products ... ..	—	—	0.1	0.2	—	—
Miscellaneous ... ..	1.8	3.1	0.5	0.5	0.3	0.2
Subsidies and Grants ... ..	4.3	5.0	3.3	3.7	3.5	4.3
<b>Total Gross Output ... ..</b>	<b>33.1</b>	<b>34.5</b>	<b>27.4</b>	<b>34.1</b>	<b>26.9</b>	<b>29.4</b>
Costs						
Rent or Rental Value ... ..	2.4	2.2	2.3	2.8	2.4	2.2
Foods ... ..	8.0	4.9	3.2	3.6	3.3	3.1
Seeds ... ..	0.6	0.6	0.6	0.7	0.5	0.5
Fertilizers ... ..	1.4	1.5	1.4	1.7	1.5	1.7
Machinery and Power ... ..	5.7	5.7	4.4	4.7	3.4	3.6
Miscellaneous ... ..	2.6	1.9	2.6	3.0	1.9	2.0
Labour excl. Farmer and Wife ... ..	3.7	5.3	3.2	2.8	4.4	4.4
<b>Total Costs ... ..</b>	<b>24.4</b>	<b>22.1</b>	<b>17.7</b>	<b>19.3</b>	<b>17.4</b>	<b>17.5</b>
Net Farm Income ... ..	8.7	12.4	9.7	14.8	9.5	11.9
Management and Investment Income ... ..	0.1	6.2	5.3	10.4	7.7	10.3
Tenant Capital:						
Livestock ... ..	28	26	30	37	29	30
Machinery ... ..	12	12	10	10	8	8
Total incl. Crops, Stores etc.	43	43	43	51	42	43
Return: on NFI ... ..	20%	28%	22%	29%	23%	28%
on Management and Investment Income	—	12%	12%	20%	18%	24%
Net Output ... ..	25	29	24	30	23	26
Man Units Employed ... ..	2.3	2.3	1.4	1.3	1.2	1.1
Gross Output per Man Unit	1,469	1,486	1,979	2,541	2,328	2,661
Net Output per Man Unit ... ..	1,088	1,246	1,700	2,222	2,000	2,330

higher on the top medium farms and 10 per cent higher on the top large ones than on the average comparable farms, while top small farms produced but little more than the average.

The cost pattern is not clear. The small top farms appeared to spend over 50 per cent less on food than the average but hardly any more on fertilizers—in spite of lower rent. Fertilizers cost marginally more than average on the larger top farms, but barely more than the price equivalent of 1½ cwt. of compound per acre (most of it actually in the form of lime and basic slag) seemed to be the average input on these farms. Machinery

Table 22  
**BETTER LAND LIVESTOCK REARING FARMS**  
 Land Use, Stocking and Economic Data  
 Per Farm

Size Group (adj. acres)	20-100		100-200		200 and Over	
	Average	Top	Average	Top	Average	Top
<b>Crops and Grass:</b>	Acres	Acres	Acres	Acres	Acres	Acres
Corn and Pulses ... ..	4.6	7.9	13.6	14.7	29.6	19.9
Roots and Fodder Crops...	2.4	2.6	6.4	7.3	17.0	14.0
Hay ... ..	18.0	22.6	29.9	27.4	58.4	78.6
Silage ... ..	—	—	2.4	2.3	6.2	12.1
Pasture ... ..	37.6	38.1	81.4	80.6	174.4	175.7
<b>Stocking Numbers:</b>	No.	No.	No.	No.	No.	No.
Cows ... ..	7	8	17	18	42	51
Other Cattle (Cow Units)...	10	12	17	20	31	36
Sheep, Breeding ... ..	87	96	240	272	585	626
Pigs ... ..	7	13	4	6	11	6
Poultry ... ..	101	60	73	74	77	92
<b>Total Cow Units...</b>	<b>33</b>	<b>36</b>	<b>71</b>	<b>79</b>	<b>157</b>	<b>170</b>
<b>Net Farm Income ... ..</b>	<b>£ 582</b>	<b>£ 960</b>	<b>£ 1,395</b>	<b>£ 2,095</b>	<b>£ 3,049</b>	<b>£ 3,986</b>
<b>Management and Investment Income ... ..</b>	<b>—2</b>	<b>405</b>	<b>766</b>	<b>1,472</b>	<b>2,471</b>	<b>3,488</b>
<b>Tenant Capital:</b>						
Livestock ... ..	1,883	2,033	4,267	5,194	9,227	10,211
Machinery ... ..	767	954	1,414	1,486	2,512	2,733
<b>Total incl. Crops and Stores</b>	<b>2,881</b>	<b>3,329</b>	<b>6,194</b>	<b>7,285</b>	<b>13,290</b>	<b>14,342</b>
<b>Man Units Employed ...</b>	<b>No. 1.5</b>	<b>No. 1.8</b>	<b>No. 2.0</b>	<b>No. 1.9</b>	<b>No. 3.7</b>	<b>No. 3.7</b>
<b>(Man Units per 100 adj. acres)</b>	<b>(2.3)</b>	<b>(2.3)</b>	<b>(1.4)</b>	<b>(1.3)</b>	<b>(1.2)</b>	<b>(1.1)</b>
<b>Gross Output ... ..</b>	<b>£ 2,204</b>	<b>£ 2,676</b>	<b>£ 3,957</b>	<b>£ 4,827</b>	<b>£ 8,615</b>	<b>£ 9,845</b>
<b>Of which Direct Grants ...</b>	<b>(287)</b>	<b>(391)</b>	<b>(476)</b>	<b>(522)</b>	<b>(1,116)</b>	<b>(1,448)</b>
<b>Costs:</b>						
Rent ... ..	163	170	331	396	757	723
Foods ... ..	531	384	465	505	1,048	1,058
Fertilizers ... ..	90	116	202	238	490	570
Machinery and Power ...	382	438	641	667	1,105	1,202
Labour excl. Farmer and Wife ... ..	245	414	457	392	1,409	1,463

and power absorbed less than on other better land farms of comparable size. In fact the costs of this item were similar to those on the poor land mixed farms (Table 11). Labour costs per acre, other than those for farmer and wife, were lowest in the medium size groups. Nevertheless, man units employed per 100 acres, when farmers and wives were counted, were lowest in the largest size group.

Net farm income on the average was £8.7 per acre on the small farms and £9.7 or slightly less on those over 100 acres. On the smaller top farms it was about 50 per cent higher than average and on the large ones slightly over 20 per cent higher. This result was achieved by different means in each group: slightly higher output and 10 per cent lower costs on the small

farms, 25 per cent higher output and 10 per cent higher costs on the middle ones and 10 per cent higher output with similar costs on the large. On the average small farms, NFI was just sufficient to cover the cost of labour of the farmer and wife.

Returns on tenant capital amounted to 20-23 per cent on the average and 28-29 per cent on the top farms when calculated on NFI. Computed on management and investment income they amounted to nought, 12 per cent and 18 per cent on the average as between the small and large farms and to 12 per cent, 20 per cent and 24 per cent as between the top farms.

Net output per man unit on the average was nearly twice as large on the big farms as on the small ones and slightly less on the top farms. But the top medium farms produced only 5 per cent less net output per man unit than the top large ones did.

The per farm data in Table 22 again demonstrate the order of magnitudes involved. It is obvious that the average small farm of this type has become uneconomic. Even farmers of above average ability and working capacity—the top third—could show only a moderate success in an exceptional year. Moreover, the medium farms owed their more satisfactory results to a benevolent season. Direct grants played a very important role in this type of farming. They accounted on the average for fully one-half of the sub-marginal NFI of the small farms, for nearly one-third of the NFI of the medium and for over one-third of the NFI of the large farms. Among the top farms they made up about one-quarter of the NFI of those under 200 acres and more than one-third of the NFI of those over 200 acres.

#### THE POOR LAND LIVESTOCK REARING FARMS

The physical data for these farms are given in Table 23.

Except for the mainly rough grazing farms (over 200 adjusted acres with more than 80 per cent rough grazing), in which it was lower, elevation of the top farms in each size group was comparable to that of the average. The proportion of rough grazing tended to be larger on the average than on the top farms, except on farms under 100 adjusted acres, where it was similar. An examination of the rents quoted in Table 24 will show little difference between top and average farms on this score, except that the top farms of 100-200 acres tended to have higher than average rents. Again it is likely that the lower proportion of rough land and the tendency towards higher rents in the top farms resulted from improvements, rather than from inherently better (dearer) land with less rough grazing.

A somewhat larger proportion of the land was under fodder on the top farms than on the average in each size group, particularly on the smallest farms and the large rough grazing ones. But no clear-cut tendency emerged as regards corn, roots and hay. A few of the large top farms were the only ones to have made any silage at all.

The stocking numbers with cows were below ten per 100 adjusted acres. They tended to be a little higher than average on the top farms, to decline slightly with increasing farm size and to be lowest on the large rough grazing farms. On the average farms under 200 acres, cow units of other cattle were slightly less than the number of cows, but on the top farms

Table 23  
**POOR LAND LIVESTOCK REARING FARMS**  
 Land Use and Stocking Data

Size Group (adj. acres)	20-100		100-200		200 and Over Under 80% R.G.		200 and Over Over 80% R.G.	
	Average	Top	Average	Top	Average	Top	Average	Top
Number of Farms ...	24	8	24	8	19	6	15	5
Acreage: Adjusted ...	72.6	83.4	134.0	131.1	424.6	471.0	398.6	420.4
Actual ...	125.8	142.6	218.3	205.1	697.1	644.7	1,039.6	1,059.2
Rough Grazing* ...	61.9	61.3	60.1	55.4	57.9	43.8	91.1	88.2
Range of Elevation(feet)	590- 920	630- 800	710- 1,110	600- 1,130	610- 1,380	790- 1,340	680- 1,700	420- 1,140
Crops and Grass, (acres)	<u>Per 100 Adjusted Acres</u>							
Corn ...	5.2	9.5	3.5	3.3	2.0	1.3	0.7	1.2
Roots and Fodder ...	4.4	7.0	5.1	5.2	4.9	8.1	1.3	2.2
Hay ...	21.1	21.7	20.3	25.2	10.2	10.0	8.9	11.3
Silage ...	—	—	—	—	1.6	3.5	—	—
Pasture ...	35.3	27.9	36.0	36.2	50.4	54.1	12.2	15.0
Stocking Numbers:	<u>Per 100 Adjusted Acres</u>							
Cows ...	10	10	8	9	7	8	4	6
Other Cattle (Cow Units) ...	8	10	8	9	5	5	3	4
All Cattle (Cow Units)	18	19	16	18	13	13	7	10
Actual Numbers:								
Sheep, Breeding ...	204	220	215	201	202	221	246	284
Pigs ...	2	6	—	—	—	—	1	1
Poultry ...	150	167	29	15	6	7	10	7
Total Cow Units ...	46	50	43	44	38	43	35	42
Excl. Pigs and Poultry...	<u>Acres per Cow Unit</u>							
	2.4	2.2	2.4	2.3	2.7	2.4	2.9	2.4

\*Per cent of Actual Acres.

the figures were about equal. On the larger farms there were one-quarter to one-third fewer cow units of other cattle than of cows, and the top farms had a slightly lower proportion of followers than the average.

The sheep were chiefly Welsh Mountain. The smaller type predominated in most parts, with the improved larger type frequent south of Brecon; but there were also some Speckle Face types in some areas. The stocking rate on the average tended to work out at just above 200 ewes per 100 adjusted acres, there being nearly 250 ewes on the large rough grazing farms. The top farms tended to have about 10 per cent more ewes per 100 acres, except those of 100-200 acres which had over 5 per cent fewer than the average for their size group. Pigs and poultry were of no economic importance, except on some of the smallest farms where they may have provided farmers' wives with pin money.

Total cow units on the average declined from 46 per 100 acres on the smallest to 35 on the largest (rough grazing) farms. But except in the

smaller size group, with 50 cow units per 100 acres, the top farms tended to be equally stocked at about 43 cow units per 100 adjusted acres.

In Table 24 the other economic data are shown.

Table 24  
**POOR LAND LIVESTOCK REARING FARMS**  
 Gross Output, Costs and Other Economic Data and Some Efficiency Measurements

Size Group adj. acres	20-100		100-200		200 and Over Under 80% R.G.		200 and Over Over 80% R.G.	
	Per Adjusted Acre							
	Average	Top	Average	Top	Average	Top	Average	Top
	£	£	£	£	£	£	£	£
<b>Gross Output:</b>								
Cattle ... ..	7.0	8.0	5.8	7.9	4.4	5.5	2.1	3.3
Sheep and Wool ... ..	7.5	8.3	8.4	10.2	8.4	11.3	5.9	7.8
Pigs ... ..	0.5	1.2	0.1	—	—	—	0.1	0.2
Poultry and Eggs ... ..	2.5	3.0	0.3	0.2	—	—	0.2	—
Crops ... ..	1.2	1.7	0.6	0.8	0.5	0.1	0.2	0.3
Dairy Products ... ..	0.3	0.3	—	—	—	—	0.2	0.3
Miscellaneous ... ..	0.5	0.6	0.4	0.3	0.2	0.2	0.1	0.1
Direct Grants ... ..	5.1	6.4	4.2	4.7	3.1	3.5	3.4	4.2
<b>Total Gross Output</b>	<b>24.6</b>	<b>29.5</b>	<b>19.8</b>	<b>24.1</b>	<b>16.6</b>	<b>20.6</b>	<b>12.2</b>	<b>16.2</b>
<b>Costs:</b>								
Rent and Rental Value	1.3	1.4	1.1	1.4	1.3	1.2	0.7	0.7
Foods ... ..	5.1	4.8	2.3	1.8	2.1	2.8	1.8	2.2
Seeds ... ..	0.4	0.8	0.3	0.4	0.3	0.3	0.1	0.2
Fertilizers ... ..	0.9	1.1	1.0	1.1	0.9	1.2	0.4	0.6
Machinery and Power	4.1	4.9	3.0	3.3	2.4	2.7	1.5	1.8
Miscellaneous ... ..	2.1	2.2	1.7	2.0	1.4	1.6	0.9	0.9
Labour excl. Farmer and Wife ... ..	3.2	2.0	4.0	3.0	2.6	3.0	1.5	2.0
<b>Total Costs ... ..</b>	<b>17.1</b>	<b>17.2</b>	<b>13.4</b>	<b>13.0</b>	<b>11.0</b>	<b>12.8</b>	<b>6.9</b>	<b>8.4</b>
<b>Net Farm Income ... ..</b>	<b>7.5</b>	<b>12.3</b>	<b>6.4</b>	<b>11.1</b>	<b>5.6</b>	<b>7.8</b>	<b>5.3</b>	<b>7.8</b>
<b>Management and In- vestment Income ... ..</b>	<b>0.1</b>	<b>5.4</b>	<b>2.2</b>	<b>6.8</b>	<b>4.2</b>	<b>6.8</b>	<b>3.8</b>	<b>6.3</b>
<b>Tenant Capital:</b>								
Livestock ... ..	21	24	19	24	18	21	12	17
Machinery ... ..	8	9	6	9	4	4	2	3
<b>Total incl. Crops, Stores, etc. ... ..</b>	<b>29</b>	<b>35</b>	<b>27</b>	<b>34</b>	<b>23</b>	<b>27</b>	<b>15</b>	<b>21</b>
<b>Return: on NFI on Management and Investment Income</b>	<b>26%</b>	<b>35%</b>	<b>24%</b>	<b>33%</b>	<b>24%</b>	<b>29%</b>	<b>35%</b>	<b>37%</b>
	—	15%	8%	20%	18%	25%	26%	30%
<b>Net Output ... ..</b>	<b>19</b>	<b>24</b>	<b>17</b>	<b>22</b>	<b>14</b>	<b>17</b>	<b>10</b>	<b>14</b>
<b>Man Units Employed ... ..</b>	<b>2.0</b>	<b>1.6</b>	<b>1.5</b>	<b>1.4</b>	<b>0.7</b>	<b>0.8</b>	<b>0.6</b>	<b>0.7</b>
<b>Gross Output per Man Unit ... ..</b>	<b>1,191</b>	<b>1,756</b>	<b>1,328</b>	<b>1,754</b>	<b>2,277</b>	<b>2,692</b>	<b>2,209</b>	<b>2,529</b>
<b>Net Output per Man Unit ... ..</b>	<b>924</b>	<b>1,425</b>	<b>1,149</b>	<b>1,595</b>	<b>1,939</b>	<b>2,286</b>	<b>1,855</b>	<b>2,158</b>

The gross output of cattle diminished, on the average, from £7 to £2.1 per (adjusted) acre as between the smallest and largest farms. The top farms had a consistently higher output than the average, ranging from £8 to £3.3. Lower output of cattle on the larger farms was balanced by higher output of sheep, ranging on the average from £7.5 per acre to £8.4 (£5.0 on the rough grazing) and on the top farms from £8.3 to £11.3 (£7.8 on the rough grazing). Pigs did not count and poultry only marginally on the smaller farms. Total output dropped from £24.6 per acre to £12.4 on the average as between the smallest and largest (rough grazing) farms and from £29.5 to £16.2 per acre as between the corresponding top farms. Direct grants amounted generally to about one-fifth of gross output, except on the large rough grazing farms where they exceeded one-quarter.

Costs per acre of foods and of machinery and power tended to fall with increasing farm size; and this fact accounted for a parallel decline in total costs, since other costs were roughly similar as between the farms (apart from the large rough grazing ones, whose costs were lowest throughout). The top farms' costs were similar to the average below 200 acres, and slightly higher above 200 acres, so that their better NFI was clearly due to their higher output.

The NFI, on the average, varied relatively little as between the smallest farms (£7.5 per acre) and the largest ones (£5.2 per acre). The top farms' NFI range extended from £12.3 to £7.8 per adjusted acre. A comparison of the NFI with the sums per acre received in direct grants reveals that those grants, on the average, amounted to roughly two-thirds of NFI on the smaller farms and to three-fifths on the larger ones. On the top farms the proportion was roughly one-half.

For average farms, returns on tenant capital calculated on NFI were highest—about 35 per cent—on the large rough grazing farms. On the others they tended to be about 25 per cent for the average, and for the top farms 25 to 29 per cent as between the small and the large ones. Calculated on management and investment income they increased from 0 to 26 per cent on the average as between the smallest and largest size groups and from 15 to 30 per cent on the top farms.

Net output per man unit increased on the average from £924 on the small to £1,939 on the large farms and was still £1,855 on the rough grazing farms over 200 acres. On the top farms, net output per man rose from £1,425 to £2,286 as between the small and large farms and fell slightly to £2,158 on the rough farms.

Table 25 shows some of the figures per farm.

The farms under 100 adjusted acres on the average only just paid for the labour of the farmer and wife. Their NFI tended to leave nothing as a return on the tenant capital. Even at 5 per cent this would take over £100 per annum. The top farms in this size group, as well as most farms over 100 adjusted acres, tended to have a satisfactory NFI. The NFIs of the top farms were one-third or more higher than the average in their respective size groups.

The moderate prosperity of these farms was due to some extent to the good season and to a rise in the prices of store cattle, but mostly to the new rate of hill sheep subsidy (25s. per ewe) and—to a smuch maller extent—

**Table 25**  
**POOR LAND LIVESTOCK REARING FARMS**  
Land Use, Stocking and Economic Data  
Per Farm

Size Group adj. acres	20-100		100-200		200 and Over Under 80% R.G.		200 and Over Over 80% R.G.	
	Average	Top	Average	Top	Average	Top	Average	Top
<b>Crops and Grass:</b>	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
Corn ... ..	3.8	7.9	4.7	4.3	8.7	6.1	2.7	5.0
Roots and Fodder ...	3.2	5.8	6.8	6.9	20.8	38.1	5.3	9.4
Hay ... ..	15.3	18.1	27.2	33.0	43.4	47.2	35.4	47.4
Silage... ..	—	—	—	—	6.6	16.3	—	—
Pasture ... ..	25.6	23.3	48.2	47.4	214.0	254.8	48.8	63.2
<b>Stocking Numbers:</b>	No.	No.	No.	No.	No.	No.	No.	No.
Cows ... ..	7	8	11	12	31	37	16	27
Other Cattle (Cow Units) ... ..	6	8	10	12	23	25	13	17
Sheep, Breeding ...	148	183	288	263	858	1,040	980	1,195
Pigs ... ..	2	5	—	—	1	—	3	4
Poultry ... ..	109	139	38	20	26	31	41	27
<b>Total Cow Units ...</b>	<b>34</b>	<b>42</b>	<b>57</b>	<b>57</b>	<b>162</b>	<b>203</b>	<b>140</b>	<b>178</b>
<b>Net Farm Income ...</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>
Management and In- vestment Income ...	546	1,029	854	1,449	2,383	3,692	2,122	3,270
	—8	453	301	894	1,801	3,190	1,507	2,646
<b>Tenant Capital:</b>								
Livestock ... ..	1,456	1,975	2,612	3,097	7,473	10,020	4,755	7,214
Machinery ... ..	554	753	791	1,134	1,892	2,106	956	1,421
<b>Total incl. Crops, Stores, etc. ...</b>	<b>2,120</b>	<b>2,886</b>	<b>3,596</b>	<b>4,492</b>	<b>9,891</b>	<b>12,609</b>	<b>5,856</b>	<b>8,812</b>
<b>Man Units Employed ...</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>	<b>No.</b>
(Man Units per 100 adj. acres)... ..	1.5	1.4	2.0	1.8	3.1	3.6	2.2	2.7
	(2.0)	(1.6)	(1.5)	(1.4)	(0.7)	(0.8)	(0.6)	(0.7)
<b>Gross Output ... ..</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>	<b>£</b>
Of which Direct Grants	1,787	2,459	2,656	3,157	7,059	9,691	4,859	6,829
	(372)	(531)	(559)	(616)	(1,330)	(1,645)	(1,340)	(1,749)
<b>Costs:</b>								
Rent ... ..	93	115	151	187	527	550	258	307
Foods ... ..	369	400	312	239	906	1,302	736	917
Fertilizers ... ..	63	95	127	139	369	536	155	246
Machinery and Power Labour excl. Farmer and Wife ... ..	297	405	398	436	1,024	1,266	608	759
	237	164	541	402	1,104	1,434	599	857

to the new combined hill-cow-cum-winter-keep subsidy, amounting to £18 per eligible cow. Total direct grants (which included calf subsidies, deficiency payments on the few acres of corn and ploughing grants on relatively small areas) accounted for roughly one-half of the average NFI on the farms over 200 acres and on the top farms below 200 acres, and for about two-thirds of the average NFI on the smaller farms.

## CONCLUSIONS

The analysis given on previous pages is unavoidably detailed and it may therefore be useful to make some generalisations which might facilitate the drawing of conclusions. This has been done in two ways. Firstly, some measures of economic efficiency have been summarised and, secondly, the lesson to be learned for efficient farm organisation and management has been discussed.

Some measures of productivity are set out in Table 26. Under (a) net farm incomes per 100 adjusted acres are given, under (b) net output per man unit and under (c) net output per 100 adjusted acres.

**Table 26**  
**SOME PRODUCTIVITY MEASURES**  
**(a) Net Farm Income per 100 Adjusted Acres**

Size Group (adj. acres) ...	20-50		50-100		100-200		Over 200			
	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £
Type of Farm:										
BL Dairy ...	2,860	4,190	1,810	3,010	1,460	2,110	950	1,460		
PL Dairy ...	1,880	2,560	1,210	2,190	1,130	1,290				
BL Mixed ...			1,930	3,150	1,290	2,160	1,000	1,630	No Milk	
BL Livestock			870	1,240	970	1,480	950	1,190	1,380	2,450
PL Livestock			750	1,230	640	1,110	590	780	Over 80% R.G.	
PL Mixed ...			1,110	1,950	910	1,390	800	1,250	530	780

**(b) Net Output per Man Unit**

Size Group (adj. acres) ...	20-50		50-100		100-200		Over 200			
	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £
Type of Farm:										
BL Dairy ...	1,580	1,820	1,760	2,340	1,780	2,010	1,830	2,170		
PL Dairy ...	1,120	1,300	1,330	1,680	1,570	1,910				
BL Mixed ...			1,560	2,560	1,700	2,040	1,940	2,160	No Milk	
BL Livestock			1,090	1,250	1,700	2,220	2,000	2,330	2,130	2,220
PL Livestock			920	1,430	1,150	1,600	1,940	2,290	Over 80% R.G.	
PL Mixed ...			1,100	1,500	1,450	1,930	1,810	1,850	1,860	2,160



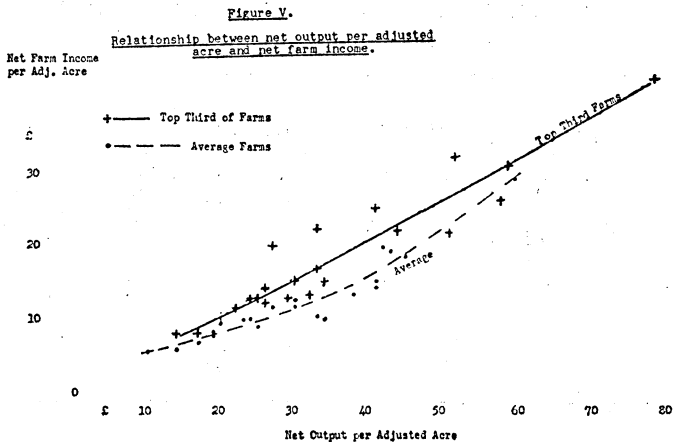
TABLE 26 continued  
(c) Net Output per 100 Adjusted Acres

Size Group (adj. acres) ...	20-50		50-100		100-200		Over 200			
	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £
Type of Farm:										
BL Dairy ...	6,000	7,900	4,500	5,900	4,100	5,100	3,400	3,900		
PL Dairy ...	4,300	5,800	3,000	4,300	3,000	3,200				
BL Mixed ...			4,200	5,200	3,800	4,400	3,300	3,900	No Milk	
BL Livestock			2,500	2,900	2,400	3,000	2,300	2,600	4,100	5,900
PL Livestock			1,900	2,400	1,700	2,200	1,400	1,700	1,000	1,400
PL Mixed ...			2,700	3,300	2,000	2,600	1,900	2,500		

An examination of this table reveals certain trends, if only in a very crude manner. Small farms under 100 adjusted acres tended to have higher net farm incomes and net output per acre than larger farms but—with the exception of the top better land dairy and mixed farms—lower net output per man unit.

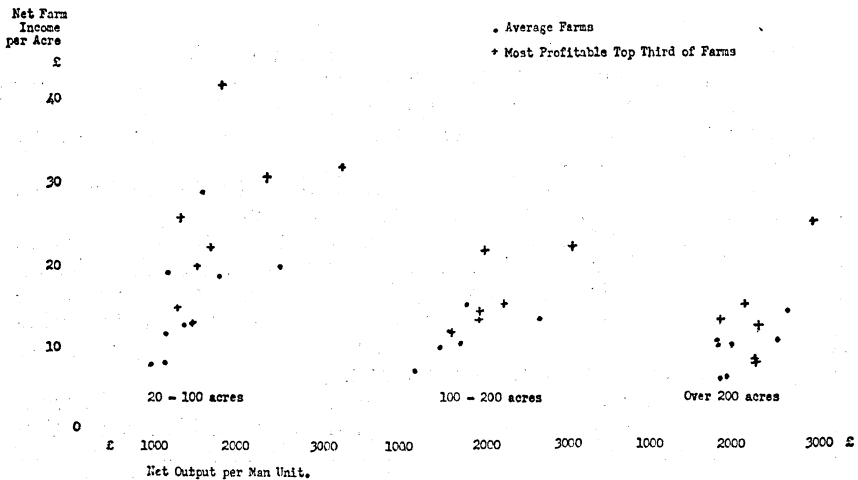
The largest livestock rearing farms had the lowest net output and the lowest net farm income per 100 adjusted acres, but mostly the highest output per man. Net farm income and net output per 100 adjusted acres tended to fall with increasing farm size. But output per man unit, which on the average was inclined to increase with farm size, did so much more markedly on poor land farms than on better ones and on livestock rearing farms than on milk selling farms. Productivity per man, however, was highest on the top BL milk producing farms.

Two broad trends emerged concerning the relationship between productivity and net farm income. Firstly, there was a high correlation between net output per acre and net farm income, regardless of type of farming or farm size. This can be better demonstrated in Figure V in which the NFI's, as in Table 26 (a), have been plotted against the net output in Table 26 (c). One could fit a regression curve to this scatter diagram which would show that each additional £1,000 of net output per 100 acres tended to be associated with an increase of about £400 in NFI.



In Figure VI net farm incomes from Table 26(a) have been plotted against net output per man unit, separately in three size groups. Plotting all the observations, regardless of farm size, in one diagram would reveal only a little correlation between NFI and productivity per man, but there appears to have been a correlation on farms of comparable size. Even the most profitable small farms were less productive per man than the medium ones, which in turn were less productive than the large. At each comparable level of net output per man, NFI appeared to diminish with farm size; while, at identical levels of NFI, net output per man appeared to increase with farm size.

Figure VI.  
Relationship between net output per man unit and NFI.



Some measures of capital efficiency have been compiled and are shown in Table 27(d) and (e).

Table 27  
SOME EFFICIENCY MEASURES OF RETURNS ON CAPITAL  
(d) Return on Tenant Capital

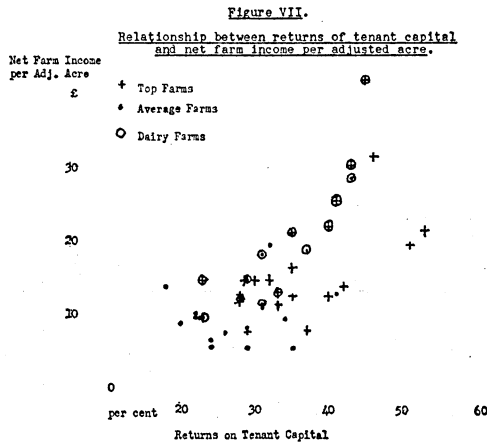
Size Groups: adj. acres ...	20-50		50-100		100-200		Over 200			
	Aver. %	Top %	Aver. %	Top %	Aver. %	Top %	Aver. %	Top %	Aver. %	Top %
BL Dairy ...	43	45	31	43	29	35	23	32	—	—
PL Dairy ...	37	41	28	40	31	33	—	—	—	—
BL Mixed ...	—	—	32	46	41	53	22	35	23	33
BL Livestock	—	—	20	28	22	29	23	28	—	—
PL Livestock	—	—	26	35	24	33	24	29	35	37
PL Mixed ...	—	—	31	58	34	42	29	40	—	—

No Milk  
Over 80% R.G.

TABLE 27 continued  
(e) Net Output per £100 of Rent

Size Group: adj. acres ...	20-50		50-100		100-200		Over 200			
	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £	Aver. £	Top £
Type of Farm:										
BL Dairy ...	1,580	1,930	1,360	1,480	1,080	1,190	1,260	1,030	—	—
PL Dairy ...	1,720	1,660	1,300	2,050	1,670	1,780	—	—	—	—
BL Mixed ...	—	—	1,350	1,530	1,360	1,760	1,000	1,050	No Milk	950 1,280
BL Livestock	—	—	1,040	1,320	1,040	1,070	920	1,180	—	—
PL Livestock	—	—	1,270	2,180	1,550	1,830	880	1,550	Over 80% R.G.	1,430 2,000
PL Mixed ...	—	—	2,080	2,360	1,820	1,860	1,460	2,080	—	—

In Table 27(d) are summarised "returns on tenant capital", which have been calculated on the net farm incomes. These returns were apt to be higher on the top farms than on the average farms in each type and size group. They were also apt to be higher on the milk selling farms than on the purely livestock ones. A tendency can be discerned on milk selling farms for returns on capital to decline with increasing farm size, but this tendency is blurred on the livestock rearing groups. In Figure VII, NFI's from Table 26(a) have been plotted against returns on tenant capital as in Table 27(d), in order to find the degree of relationship between these two measures.



It appears that there was little correlation between returns on tenant capital and NFI except in the case of the dairy farms, either on better or on poor land. This is also true when the top farms are regarded separately from the average ones. In plotting the diagram attention has been given to size groups and type groups, but no correlation could be found in any other grouping apart from the dairy farms.

Had rents not been grossly deflated as a result of war and early post-war legislation, net output per £100 of rent, which is shown in Table 27(e), could have been used as an additional efficiency measure in farm management. As it is, this particular measure shows rather which groups of farms tend to be rented too low in comparison with others.

It would appear that net output per £100 of rent tended to be higher on the smaller farms under 200 acres than on the large farms, higher on milk selling farms than on livestock rearing ones, higher on poor land farms of similar type than on comparable better land farms and—with two exceptions—higher on top than on average farms in the same groups. The highest net output per unit of rent was found on the smallest dairy farms under 20–50 acres, on all poor land milk selling farms and on the large, predominantly rough grazing, farms. One deduction from this fact is that it might pay to invest, on this type of farm, in fixed equipment and improvements (such as ditching, drainage, fencing and road making) to a point where the net output per unit of the increased rent would be similar to that now prevailing on the other farms.

#### ESTIMATED RETURNS ON LAND AT CURRENT VALUES

The average rents calculated for each group of farms in this report do not represent economic returns on the value of the farms at present-day prices. In order to obtain an idea of what such returns might be, arbitrary estimates have been made of "average" values of typical farms in each type group, and the rent figures shown in the preceding tables have been used to calculate the interest rate which they would represent on those estimated values. Both the values per adjusted acre and the interest rates calculated on them are shown in Table 28.

Table 28  
RETURN ON LAND AT CURRENT VALUES

Size Group (adj. acres)		20–50		50–100		100–200		Over 200				
Type Group;	Value of Adj. Acre		Aver. %	Top %	Aver. %	Top %	Aver. %	Top %	Aver. %	Top %	Aver. %	Top %
	£	£										
BL Dairy ...	120	150	3.2	2.7	2.8	2.7	3.2	2.9	2.3	2.5	—	—
PL Dairy ...	70	80	3.6	4.4	3.3	2.6	2.6	2.3	—	—	—	—
BL Mixed ...	120	150	—	—	2.6	3.4	2.3	1.7	2.8	2.5	No Milk	3.1
BL Livestock	90	100	—	—	2.4	2.2	2.6	2.8	2.7	2.2	—	—
PL Livestock	50	60	—	—	1.5	1.1	2.2	2.0	3.2	2.8	—	—
PL Livestock	25	30	—	—	—	—	—	—	—	—	Over 80% R.G.	2.0
PL Mixed ...	60	70	—	—	1.3	1.4	1.8	2.0	2.2	1.7	—	—

The land has been valued at uniform rates regardless of farm size. (There tends to be a premium on land in small units; but this in recent years would seem to have decreased except in the case of the very smallest holdings, whose prices are dominated by the value of the house.)

Values of top farms have been taken to be higher than average, since such farms have often been improved relatively recently. It must be remembered that the values are given per adjusted acre: this means that the larger the proportion of rough grazing the larger will be the actual acreage of a farm in comparison with its adjusted acreage and, therefore, the smaller will be the value per actual acre, although total value of the farm would not be affected.\*

Although some of the above values may be somewhat conservative, it is obvious that the ownership of land tends to bring very low financial rewards. It may be noted that in most of the groups (15 out of 21) the return on the top farms' rents would be lower than that of the average. This might point to over-valuation of some of the top farms, but it might equally well denote a tendency for better equipped farms to have lower rent assessments, relative to their real value, than the average farms had. Land on dairy and better land mixed farms would show much higher returns than those on most livestock rearing farms and poor land mixed ones.

Recently established tenancies have normally attracted much higher rents than the average of those in the Farm Management Survey. Returns from new lettings, therefore, would be better than those given in Table 28. But it is obvious that in several groups, particularly in most livestock rearing ones, rents would have to be more than twice as much as those from which Table 28 has been computed, before they represented economic returns on land at the values estimated here.

The estimates underline one of the facts of Welsh agricultural life at the present time. Rents are bound to rise as more long-occupied farms change hands. These rises would increase costs of production and depress net farm incomes (which in any case have tended to fall behind relative to incomes earned in other occupations) unless of course there is substantial improvement in the efficiency of land use. Only the most efficient farmers can afford to pay a fully economic rent or to buy land at present prices with any hope of economic return.

#### DRAWING INFERENCES FROM FARM MANAGEMENT STANDARDS

Comparison of average data ("standards") with the information available for an individual farm can often help considerably in pinpointing the good and bad features of its performance. On the other hand it is all too easy to lose oneself in irrelevant detail and to expect too much from such information.

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\*Thus a farm of 100 adjusted acres valued at £50 per adjusted acre would be worth £5,000. If this farm consisted of 50 acres of "crops and grass" and 50 acres of rough grazing (= 50 adjusted acres) each of the 200 actual acres would be worth £25. But the farm would be worth £5,000—no more and no less.

It must be remembered that average figures tend to conceal a wide variation in individual circumstances. The exact "best" level or "best" combination cannot be calculated with accuracy for any specific condition. The application of any economic data to management, for all its appearance of scientific method, still remains predominantly an art.

Comparison of average farm with top farm data must be followed by speculative assessment. As far as the main items of production are concerned, large differences between average and top farms tend to indicate important differences in organisation. But only if differences in the same direction are found consistently in similar groups of farms can they be considered significant. When differences in various directions appear among farms of similar types and sizes they may be non-consequential. The given situation must then be judged in its own light and on the basis of other standards or experience.

#### SOME GENERALISATIONS ON FARM ORGANISATION AND MANAGEMENT PLANNING

On the basis of a careful study of the preceding farm management data, and experience gained in their use, certain facts emerge. But the success or failure of their application in practice ultimately depends on good husbandry and careful day-to-day management. With this point in mind, several simple generalisations can be made.

**Very small farms under 50 adjusted acres.** Unless specialising in poultry, pigs or market-gardening these must concentrate on dairying, since no other livestock system can produce a large enough turnover on such a small scale. Ideally they should have one cow to about  $1\frac{1}{2}$  acres or less, with no followers. Partial alternatives, in order of declining profitability might be: cash crops, rearing a few heifers and, as a last resource, some general store raising or fattening. Margins on sheep are too low for small farms and in any case sheep compete with cows for scarce grazing, especially early in the season. Small poor land farms with much rough grazing may be an exception. Milk yields should be 850 gallons or over. Where the skill exists, higher yields tend to be more economic. Summer milk on such a small scale can rarely pay better than winter milk. High stocking coupled with some purchases of hay would score over lower stocking and full self-sufficiency in bulk feed. Subsidiary enterprises should only be continued if proved successful, and to use capital and labour for starting such enterprises from scratch cannot be justified unless the dairy enterprise is fully developed.

**Small farms 50-100 adjusted acres.** These have less economic compulsion for dairying than do farms under 50 acres, but they tend to reach their full economic potential only as dairy or dairy and mixed farms. As on smaller farms, high density of stocking with dairy cows is the safest road to economic success, but good results can be obtained with mixed systems and relatively fewer cows. The choice depends on inclination and experience, on the labour available, on housing conditions and, to a certain extent, on access to capital for building adjustments. Often, indeed, a mixed system results from a surplus of land or labour in relation to the housing capacity

for dairy cows. Where buildings do not permit dairy expansion it may be better to expand the cattle, sheep and pig enterprises (and poultry where direct sales to consumers are possible) and to restrict dairy cows to a traditional number rather than to rush into expensive building schemes. Some corn growing may also be considered if stocking is limited to (good) existing buildings. In the latter case, contract services for cultivations and harvesting may prove economical.

Under a traditional livestock rearing system, farms of this size on better land can sustain a very moderate livelihood. On the other hand, scope for increasing the volume of business is restricted and without an efficiently run intensive sideline their economic capacity is soon exhausted. On poor land only exceptional management will keep this type of farming above marginal levels.

**Medium farms 100–200 adjusted acres.** On this scale it is more difficult for milk producing farms, to raise their output to relatively high levels than it is for them to aim at a moderate rate growth in output with only small increases, or even actual savings in costs. Stocking rates need not be as high as those on smaller farms, but considerable increases in net farm income can be obtained from more intensive stocking. The scale of business is sufficient for low-cost systems like summer milk or self-feed silage/barley to be followed, if they fit the labour complement. On farms of this size, higher yields per cow may be more economically obtained from increased fertilizer input and larger acreages of corn and fodder than from extra purchased foods. On the better land mixed farms, pigs tend to contribute considerably to the income and there seems to be little reason why poor land farms could not also benefit from an intensive subsidiary enterprise—provided that capital were available and that the necessary specialised knowledge could be acquired without undue losses.

If more extensive systems involving milk production can be highly successful in this size group, success on livestock rearing farms with a similar acreage depends on relatively high levels of intensity coupled with good husbandry. But while the stocking involved, and on better land the costs also, would be less than 10 per cent higher than the average, output should be over 20 per cent above average.

**Larger farms, over 200 adjusted acres.** The above remarks apply roughly to larger farms too. But the recent tendency for some larger farms on good land in Wales to go out of milk production has not yet resulted in a clear-cut alternative. Most commonly this alternative appears to be a livestock rearing system with under 30 per cent of the land in crops—twice as much as on BL livestock farms, a multiple suckling cattle enterprise instead of single suckling, and less than one-half the sheep carried by comparable livestock rearing farms. It could be expected that substantially greater proportions of land under corn would lead to higher economic efficiency on this type of farm, where the rainfall is not too high. In many cases specialisation either in sheep or in cattle might lead to savings of labour and diminishing managerial stress. An intensive type of farming without dairying might not provide the NFI possible with a dairy system under the very best of management, but it would nevertheless tend to be more remunerative, less risky and much easier to run where there was a shortage of skilled labour than would a milk producing one.

It has been mentioned before that, on livestock farms without milk, success depends less on organisation than on good husbandry. Where inferior technical efficiency is the reason for indifferent results, or for actual failure, there is not much one can teach the farmer in order to remedy the situation. Inefficiency in this type of farming is very rarely connected with understocking, overfeeding or similar quantitative faults. More often the mistakes are in timing, and costs tend to be high only in relation to the low quality or value of the output. But at least understocking will not diminish the value per unit of livestock, while relative overstocking can produce such a result. Although it has not been shown in the preceding analysis, it is a fact that the highest-stocked livestock farms were not those with the best economic results. Indeed, the highest-stocked livestock farm in this survey was seventh down the list where profit was concerned. Hardly ever does one come across a genuine stocking rate of more than  $2\frac{1}{2}$  Welsh ewes per 100 adjusted acres, plus one breeding cow for every 10 ewes on better land and less than one cow for every 20 ewes on poor land. Even these are rather exceptional rates. On better land livestock farms it would appear that once a reasonably good stocking rate with sheep is found—about 100 bigger ewes or 150 Welsh mountain ewes per 100 adjusted acres—the pushing up of sheep numbers tends to produce relatively small increases in net farm income. At the same time increased stocking with cattle will tend to produce relatively larger economic responses.

Finally, it may be symptomatic that not one of the 200 livestock rearing farms in this sample was based on sheep only, without cattle. (At the same time a few small better land farms had cattle only.) In spite of the advocacy of high stocking in occasional articles and discussions, attempts at running specialist sheep farms based on relatively high stocking (four and more ewes to the acre all the year round) have not always been successful. The trouble seems to be with lambing rates, which tend to fall at these high stocking levels. Winter housing of sheep may be the answer in some cases, but not enough is known about this technique for it to be recommended generally. In any event, capital would mostly be lacking on those farms where the practice might be of greatest advantage.

*Aberystwyth.*

*August, 1966.*



## APPENDIX A

**TABLE I**  
**Welsh Dairy Farms**  
**Better Land**

Identical Sample for Five Years 1960/61—1964/65

(a) STOCKING AND YIELD PER COW

Size Group (adj. acres)	Under 50	50—100	100—200	Over 200
No. of Farms ...	12	14	14	2
Average Acreage (adj.)	39—41	78—79	143—146	228—268
<u>Per 100 adjusted acres</u>				
No. of Cows: 1960/61	43	31	28	18
1961/62	44	34	29	20
1962/63	44	35	29	20
1963/64	45	35	28	16*
1964/65	47	35	29	17
5 years' mean	45	34	29	18
No. of Sheep (breeding) 1960/61	6 (1 Farm)	20 (6 Farms)	55 (8 Farms)	50 (Both Farms)
1961/62	6 (2 " )	23 (6 " )	54 (8 " )	52 ( " " )
1962/63	9 (2 " )	22 (7 " )	58 (8 " )	56 ( " " )
1963/64	8 (2 " )	21 (7 " )	65 (8 " )	56 ( " " )
1964/65	11 (2 " )	19 (7 " )	66 (8 " )	59 ( " " )
5 years' mean	8	21	60	55
Grazing Units (in Cow Units) 1960/61	57	48	53	42
1961/62	56	49	51	41
1962/63	59	54	54	43
1963/64	59	53	55	37*
1964/65	61	52	56	35
5 years' mean	58	51	54	40
<u>Gallons per Cow per Annum</u>				
Yield of Milk 1960/61	804	776	807	1,036
1961/62	827	740	843	1,091
1962/63	834	766	844	1,052
1963/64	837	766	881	1,159
1964/65	851	808	866	1,120
5 years' mean	831	771	848	1,092

\*One of the farms purchased an extra 80 acres.

APPENDIX A

TABLE II  
Welsh Dairy Farms (Identical Sample)

Better Land

(b) ECONOMIC DATA

Size Group (adj. acres) ...	Under 50	50—100	100—200	Over 200				
	<u>Per (adjusted) Acre</u>							
	£	£	£	£				
Gross Output 1960/61	70	54	48	44				
1961/62	69	53	51	49				
1962/63	68	55	51	47				
1963/64	71	54	53	44				
1964/65	86	65	57	50				
5 years' mean	73	56	52	47				
Costs (excl. labour of farmer & wife) 1960/61	50	44	39	38				
1961/62	54	44	42	41				
1962/63	54	46	42	37				
1963/64	54	46	43	38				
1964/65	60	47	43	40				
5 years' mean	55	45	42	39				
Net Farm Income 1960/61	per acre	per farm	per acre	per farm	per acre	per farm		
1961/62	20	815	10	777	9	1,291		
1962/63	15	625	9	702	9	1,352		
1963/64	14	558	9	694	9	1,257		
1964/65	17	716	8	640	10	1,509		
5 years' mean	26	1,020	18	1,397	14	2,075		
1960/61	18	747	11	842	10	1,497		
Management and Investment Income 1960/61	7	292	4	296	5	747	4	824
1961/62	3	121	3	209	6	796	6	1,408
1962/63	1	37	2	181	5	721	8	1,748
1963/64	4	165	1	119	7	948	4	1,068
1964/65	11	446	11	840	10	1,498	8	2,187
5 years' mean	5	212	4	329	7	942	6	1,447
	<u>Per acre</u>							
Tenant Capital 1960/61	54	48	42	39				
1961/62	55	50	44	43				
1962/63	56	51	44	43				
1963/64	58	50	45	37				
1964/65	65	52	47	40				
5 years' mean	58	50	44	40				

APPENDIX A

TABLE III  
Welsh Dairy Farms  
Poor Land

Identical Sample for Five Years 1960/61—1964/65  
(a) STOCKING AND YIELD PER COW

Size Group (adj. acres) ...		Under 50	50—100	Over 100
Number of Farms... ..		6	8	8
Average Acreage (adj.) ...		39—42	69—72	139—142
		<u>Per 100 adjusted acres</u>		
No. of Cows	1960/61	32	23	22
	1961/62	33	22	24
	1962/63	34	23	24
	1963/64	34	24	25
	1964/65	32	25	26
	5 years' mean	33	23	24
No. of Sheep (breeding)	1960/61	65 (3 Farms)	42 (5 Farms)	92 (7 Farms)
	1961/62	63 (2 " )	46 (6 " )	90 (6 " )
	1962/63	65 (2 " )	58 (6 " )	89 (6 " )
	1963/64	63 (2 " )	57 (6 " )	98 (6 " )
	1964/65	59 (2 " )	52 (7 " )	97 (6 " )
	5 years' mean	63	51	93
Grazing Units (in Cow Units)	1960/61	46	40	43
	1961/62	47	38	42
	1962/63	50	46	45
	1963/64	52	45	48
	1964/65	51	42	47
	5 years' mean	49	42	45
		<u>Gallons per Cow per Annum</u>		
Yield of Milk	1960/61	835	726	744
	1961/62	847	781	754
	1962/63	888	784	780
	1963/64	797	719	711
	1964/65	868	688	732
	5 years' mean	847	740	744

APPENDIX A

TABLE IV  
Welsh Dairy Farms (Identical Sample)  
Poor Land

(b) ECONOMIC DATA

Size Group (adj. acres) ...		Under 50		50—100		Over 100	
		<u>Per (adjusted) acre</u>					
		£		£		£	
Gross Output	1960/61	53		37		35	
	1961/62	60		35		36	
	1962/63	63		38		39	
	1963/64	60		34		39	
	1964/65	72		41		44	
5 years' mean	...	62		37		39	
Costs (excl. labour of farmer and wife)	1960/61	43		28		28	
	1961/62	45		26		27	
	1962/63	51		29		30	
	1963/64	49		29		31	
	1964/65	52		30		32	
5 years' mean	...	48		28		30	
		per acre	per farm	per acre	per farm	per acre	per farm
Net Farm Income	1960/61	10	409	9	667	7	1,019
	1961/62	15	573	9	674	9	1,175
	1962/63	12	487	9	641	9	1,297
	1963/64	11	422	5	344	8	1,079
	1964/65	20	837	11	789	12	1,673
5 years' mean ...	...	14	546	9	623	9	1,249
Management and Investment Income	1960/61	-4	-167	—	11	3	477
	1961/62	-1	-30	—	3	5	632
	1962/63	-4	-140	—	-31	5	732
	1963/64	-4	-171	-5	-332	4	491
	1964/65	4	174	1	98	8	1,061
5 years' mean	...	-2	-67	-1	-50	5	679
		<u>Per acre</u>					
Tenant capital	1960/61	47		41		35	
	1961/62	48		39		36	
	1962/63	51		44		37	
	1963/64	53		45		39	
	1964/65	51		45		39	
5 years' mean	...	50		43		37	

APPENDIX A  
**TABLE V**  
 Welsh Mixed Farms  
 Better Land  
 Identical Sample for Five Years 1960/61—1964/65  
 (a) STOCKING AND YIELD PER COW

Size Group (adj. acres)	Under 100	100—200	200 Acres and Over	
			Milk Selling	Non-Milk Selling
No of Farms ... ..	1	7	8	3
Average Acreage (adj.)	74	166—177	279—293	433—456
		<u>Per 100 Adjusted Acres</u>		
No. of Cows 1960/61	18	14	16	2
1961/62	18	15	16	2
1962/63	19	16	15	2
1963/64	16	15	16	2
1964/65	16	14	16	2
5 years' mean	17	15	16	2
No. of Sheep 1960/61 (breeding)	82	101 (All Farms)	60 (All Farms)	81 (All Farms)
1961/62	93	107 ( " )	63 ( " )	92 ( " )
1962/63	102	110 ( " )	67 ( " )	88 ( " )
1963/64	93	104 ( " )	75 ( " )	87 ( " )
1964/65	42	106 ( " )	80 ( " )	91 ( " )
5 years' mean	82	106	69	88
Grazing Units 1960/61 (in Cow Units)	47	44	41	36
1961/62	47	44	38	37
1962/63	51	47	40	36
1963/64	45	46	41	36
1964/65	34	45	42	35
5 years' mean	45	45	40	36
		<u>Gallons per Cow per Annum</u>		
Yield of Milk 1960/61	483	587	626	
1961/62	495	609	723	
1962/63	496	623	786	
1963/64	430	635	745	
1964/65	563	662	705	
5 years' mean	493	623	717	

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TABLE VI  
Welsh Mixed Farms (Identical Sample)  
Better Land

(b) ECONOMIC DATA

Size Group (adj. acres)		Under 100	100—200	200 Acres and Over					
				Milk Selling		Non-Milk Selling			
		<u>Per (adjusted) Acre</u>							
		£	£	£	£	£	£	£	
Gross Output	1960/61	29	33	41	40				
	1961/62	28	35	45	52				
	1962/63	29	37	49	69				
	1963/64	29	34	49	45				
	1964/65	30	39	52	54				
5 years' mean		29	36	47	52				
Costs (excl. labour of farmer and wife)	1960/61	24	26	33	36				
	1961/62	22	25	35	37				
	1962/63	21	27	36	41				
	1963/64	21	26	39	42				
	1964/65	26	28	41	41				
5 years' mean		23	27	37	39				
Net Farm Income	1960/61	per acre 5	per farm 343	per acre 7	per farm 1,182	per acre 8	per farm 2,181	per acre 4	per farm 1,869
	1961/62	6	423	10	1,665	10	2,677	15	6,457
	1962/63	8	564	10	1,664	13	4,818	28	12,686
	1963/64	8	603	8	1,449	10	2,727	3	1,179
	1964/65	4	315	11	1,980	11	3,106	13	6,076
5 years' mean		6	450	9	1,588	10	3,102	13	5,653
Management and Investment Income	1960/61	-2	-127	4	724	6	1,673	4	1,536
	1961/62	-1	-57	7	1,158	8	2,158	14	6,097
	1962/63	1	64	7	1,151	11	3,017	27	12,311
	1963/64	1	83	5	915	8	2,152	2	774
	1964/65	-3	-255	8	1,463	9	2,508	13	5,656
5 years' mean		-1	-52	6	1,082	8	2,302	12	5,275
		<u>Per Acre</u>							
Tenant Capital	1960/61	36	39	42	58				
	1961/62	34	41	43	59				
	1962/63	36	43	46	60				
	1963/64	35	42	48	60				
	1964/65	30	43	50	59				
5 years' mean		34	42	46	59				

APPENDIX A

TABLE VII

Welsh Mixed Farms

Poor Land

Identical Sample for Five Years 1960/61—1964/65

(a) STOCKING AND YIELD PER COW

Size Group (adj. acres)		Under 100	100—200	200 Acres and Over
No. of Farms	...	5	15	4
Average Acreage (adj.)	...	88	153—156	285—306
<u>Per 100 Adjusted Acres</u>				
No. of Cows	1960/61	14	7	7
	1961/62	14	8	7
	1962/63	15	8	8
	1963/64	16	8	9
	1964/65	16	8	10
5 years' mean		15	8	8
No. of Sheep (breeding)	1960/61	153 (All Farms)	212 (All Farms)	196 (All Farms)
	1961/62	157 ( " )	218 ( " )	192 ( " )
	1962/63	168 ( " )	217 ( " )	190 ( " )
	1963/64	179 ( " )	216 ( " )	202 ( " )
	1964/65	194 ( " )	222 ( " )	207 ( " )
5 years' mean		170	217	197
Grazing Units (in Cow Units)	1960/61	42	39	38
	1961/62	42	39	35
	1962/63	46	40	36
	1963/64	46	40	40
	1964/65	49	41	42
5 years' mean		45	40	38
<u>Gallons per Cow per Annum</u>				
Yield of Milk	1960/61	544	583	680
	1961/62	558	604	755
	1962/63	577	602	723
	1963/64	499	591	718
	1964/65	550	637	680
5 years' mean		546	603	711

## APPENDIX A

TABLE VIII  
Welsh Mixed Farms (Identical Sample)

Poor Land

(b) ECONOMIC DATA

Size Group (adj. acres)		Under 100		100—200		200 Acres and Over	
		<u>Per (adjusted) Acre</u>					
		£		£		£	
Gross Output	1960/61	27		18		19	
	1961/62	28		19		22	
	1962/63	27		19		21	
	1963/64	28		18		26	
	1964/65	33		23		29	
5 years' mean		29		20		24	
Costs (excl. labour of farmer and wife)	1960/61	22		14		16	
	1961/62	22		14		17	
	1962/63	22		15		18	
	1963/64	24		15		21	
	1964/65	23		15		21	
5 years' mean		23		15		19	
Net Farm Income	1960/61	per acre 5	per farm 451	per acre 4	per farm 595	per acre 3	per farm 1,065
	1961/62	6	491	5	777	5	1,616
	1962/63	5	459	4	610	3	1,071
	1963/64	4	379	3	486	5	1,423
	1964/65	10	882	8	1,212	8	2,200
5 years' mean		6	532	5	736	5	1,475
Management and Investment Income	1960/61	-1	-91	-	62	2	529
	1961/62	-1	-63	2	238	4	1,099
	1962/63	-1	-104	1	113	2	535
	1963/64	-3	-221	-1	-147	3	865
	1964/65	3	258	4	621	6	1,621
5 years' mean		-1	-44	1	177	3	930
		<u>Per Acre</u>					
Tenant Capital	1960/61	24		22		23	
	1961/62	27		22		22	
	1962/63	28		22		22	
	1963/64	28		22		25	
	1964/65	29		23		27	
5 years' mean		27		22		24	



APPENDIX A

TABLE IX  
Welsh Livestock Rearing Farms  
Better Land

Identical Sample for Five Years 1960/61—1964/65

(a) STOCKING AND YIELD PER COW

Size Group (adj. acres) ...		Under 100	100—200	200 Acres and Over
No. of Farms ....		13	27	12
Average Acreage (adj.) ...		66—70	143	295—298
		<u>Per 100 adjusted Acres</u>		
No. of Cows	1960/61	11	12	11
	1961/62	12	13	12
	1962/63	12	14	13
	1963/64	11	14	13
	1964/65	11	14	13
	5 years' mean	11	13	12
No. of Sheep (breeding)	1960/61	129 (12 Farms)	141 (All Farms)	148 (All Farms)
	1961/62	132 ( " )	148 ( " )	150 ( " )
	1962/63	141 ( " )	152 ( " )	152 ( " )
	1963/64	146 ( " )	155 ( " )	152 ( " )
	1964/65	141 ( " )	161 ( " )	155 ( " )
	5 years' mean	138	151	151
Grazing Units (in Cow Units)	1960/61	43	44	43
	1961/62	43	43	42
	1962/63	44	45	43
	1963/64	46	46	44
	1964/65	45	45	45
	5 years' mean ...	44	47	43

## APPENDIX A

TABLE X  
Welsh Livestock Rearing Farms (Identical Sample)  
Better Land

## (b) ECONOMIC DATA

Size Group (adj. acres)		Under 100		100—200		200 Acres and Over	
		Per (adjusted) Acre					
		£		£		£	
Gross Output	1960/61	27		22		20	
	1961/62	30		24		21	
	1962/63	30		23		21	
	1963/64	30		24		23	
	1964/65	31		27		26	
5 years' mean		30		24		22	
Costs (excl. labour of farmer and wife)	1960/61	21		15		14	
	1961/62	21		16		14	
	1962/63	21		17		15	
	1963/64	22		18		16	
	1964/65	23		18		16	
5 years' mean		22		17		15	
Net Farm Income	1960/61	6	403	7	1,057	6	1,620
	1961/62	9	617	8	1,130	7	2,166
	1962/63	9	608	6	922	6	1,897
	1963/64	8	533	6	830	7	2,199
	1964/65	8	581	9	1,311	10	2,826
5 years' mean		8	548	7	1,050	7	2,142
Management and Investment Income	1960/61	-2	-121	3	480	4	1,075
	1961/62	1	82	4	543	5	1,609
	1962/63	1	51	2	313	4	1,318
	1963/64	-1	-47	1	205	5	1,596
	1964/65	—	— 6	5	660	7	2,216
5 years' mean		—	— 8	3	440	5	1,563
		Per Acre					
Tenant Capital	1960/61	40		36		34	
	1961/62	40		37		34	
	1962/63	41		36		34	
	1963/64	42		37		34	
	1964/65	42		39		37	
5 years' mean		41		37		35	

APPENDIX A

TABLE XI  
Welsh Livestock Rearing Farms  
Poor Land

Identical Sample for Five Years 1960/61—1964/65

(a) STOCKING DENSITY

Size Group (adj. acres)	Under 100	100—200	200 Acres and Over	
			Under 80% Rough Grazing	Over 80% Rough Grazing
No. of Farms ...	14	14	11	11
Average Acreage (adj.)	69	135	384—423	440—455
		<u>Per 100 Adjusted Acres</u>		
No. of Cows 1960/61	9	7	7	2
1961/62	10	8	7	2
1962/63	10	8	7	2
1963/64	10	8	7	2
1964/65	10	7	7	3
5 years' mean	10	8	7	2
No. of Sheep (breeding) 1960/61	168 (13 Farms)	183 (All Farms)	180 (11 Farms)	222 (All Farms)
1961/62	173 (13 " )	184 ( " )	178 (11 " )	226 ( " )
1962/63	179 (13 " )	192 ( " )	182 (11 " )	231 ( " )
1963/64	183 (13 " )	198 ( " )	183 (11 " )	239 ( " )
1964/65	183 (13 " )	202 ( " )	194 (11 " )	238 ( " )
5 years' mean	177	192	183	231
Grazing Units (in Cow Units) 1960/61	40	37	36	29
1961/62	40	36	34	30
1962/63	41	38	35	30
1963/64	41	38	36	32
1964/65	41	39	37	32
5 years' mean	41	38	36	31

APPENDIX A

TABLE XII  
Welsh Livestock Rearing Farms (Identical Sample)  
Poor Land

(b) ECONOMIC DATA

Size Group (adj. acres) ...	Under 100	100—200	200 Acres and Over				
			Under 80% Rough Grazing		Over 80% Rough Grazing		
			Per (adjusted) Acre				
	£	£	£	£	£	£	
Gross Output	1960/61	19	16	13	7		
	1961/62	21	18	14	8		
	1962/63	20	17	14	8		
	1963/64	21	17	13	8		
	1964/65	24	19	17	10		
5 years' mean		21	17	14	8		
Costs (excl. labour of farmer and wife)	1960/61	17	12	9	5		
	1961/62	17	13	9	5		
	1962/63	17	13	10	6		
	1963/64	19	14	10	6		
	1964/65	19	13	11	6		
5 years' mean		18	13	10	5		
Net Farm Income	1960/61	per acre 2, per farm 147	per acre 4, per farm 543	per acre 4, per farm 1,492	per acre 2, per farm 683		
	1961/62	4, 261	5, 655	5, 1,993	3, 1,285		
	1962/63	3, 179	4, 551	4, 1,792	2, 1,106		
	1963/64	2, 144	3, 459	3, 1,231	2, 671		
	1964/65	5, 338	6, 840	6, 2,681	4, 1,927		
5 years' mean		3, 214	4, 610	4, 1,838	3, 1,134		
Management and Investment Income	1960/61	-5, -341	- — 3	3, 1,009	—, 123		
	1961/62	-4, -255	1, 116	4, 1,500	2, 712		
	1962/63	-5, -333	- — 15	3, 1,263	1, 511		
	1963/64	-6, -390	-1, -124	2, 679	—, 60		
	1964/65	-2, -159	2, 226	5, 2,116	3, 1,313		
5 years' mean		-4, -296	—, 40	3, 1,313	1, 544		
Tenant Capital	1960/61	27	Per Acre		22	19	12
	1961/62	27	22	19	12		
	1962/63	27	22	20	12		
	1963/64	27	22	20	12		
	1964/65	28	23	22	12		
5 years' mean		27	22	20	12		

## APPENDIX B

### GLOSSARY OF TERMS AND DEFINITIONS USED IN FARM MANAGEMENT

**ADJUSTED ACREAGE.** This is arrived at by deducting from the actual acreage of a farm the area occupied by roads, woodland, waste land and buildings, and expressing the rough grazings in terms of their value as a "normal" pasture. For example, three acres of rough grazings may be useful as one acre of permanent grassland and would therefore be estimated as one adjusted acre.

**BUDGETING** is a method of estimating future costs and returns from available information.

**Partial Budgeting** applies to one or a few of the enterprises of a farm or to adjustments to them.

**Total Budgeting** is usually concerned with planning a farm as a whole, by choosing the type and size of the enterprises and the intensities at which they should be run.

*See also* GROSS MARGIN.

**CAPITAL** can be divided into:

**Landlord's Capital**, which consists of the land, buildings, and fixed equipment.

**Tenant Capital**, i.e. livestock, machines, tenant's (removable) fixtures and crops. It is usually expressed as the average of the opening and closing valuations for the year.

**Working Capital**, which is the amount of cash necessary to finance operations (pay labour, pay traders' bills and living expenses, feed the stock). Crops necessary for the feeding of livestock till the next harvest are also in this category.

A further sub-division consists of Own Capital and Borrowed Capital (*see* CREDIT).

**COSTS (Inputs)** may be:

**Variable (or direct, real, avoidable) costs**, representing that part of the total costs which is related to any output. Purchased feed, seed, fertilisers, most fuel and oils and, in some cases, avoidable casual labour costs fall into this category.

**Fixed costs**, which are that part of total costs which would be incurred even if no output were produced. They comprise the total cash expenditure on the farm *less* the following items—(a) livestock purchases, (b) purchases of machinery (allowed for in "Machinery depreciation"), (c) wages paid to farmer's wife, (d) capital expenditure and (e) mortgage and interest payments, and *plus* the following items—(a) rent or rental value in the case of owner-occupied farms, (b) regular labour and unpaid family labour except that of the farmer and wife, (c) depreciation on and repairs to machinery and buildings, (d) payments in kind to employees and (e) annual charges for any capital expenditure. The costs are adjusted where necessary to take account of the private share of expenditure and of changes in the value of stock in hand.

**Average cost (Unit cost)** is the total cost divided by the output to which it pertains.

**Marginal cost** is the amount which is added to the total cost when the output is increased by one unit.

**Cost of production** is an ambiguous term. In most cases it changes as the output changes and should be stated in relation to a particular output.

**ENTERPRISE COSTS.** These consist of the variable costs of a separate enterprise plus its estimated charge on the fixed costs of the farm.

**CREDIT** can take the following forms:

**Mortgage**, when the farm is pledged to the lender (mortgagee);

**Overdraft**, when the bank promises to honour cheques up to a certain sum;

**Private**, relatives, friends, through solicitors, auctioneers, etc.

**Merchant**, when goods are paid for after one, two or more months;

**Hire-purchase**, when an object or animal is acquired on credit but remains the property of the creditor, until the debt and charges have been repaid. Mortgage is long-term credit: overdraft or H.P. can be medium- or short-term; while merchant credit is always intended to be short-term.

**EFFICIENCY STANDARDS** express some particular relationship between input and output factors. The simplest and most useful one is related to acreage. Examples of this are given below:

$$\begin{aligned} \text{Gross Output per Acre} &= \frac{\text{Total gross output}}{\text{Total Acreage}} \\ \text{,, ,, ,, 100 Acres} &= \frac{\text{Total gross output}}{\text{Total Acreage}} \times 100 \\ \text{Acres per Livestock Unit} &= \frac{\text{Acres}}{\text{Livestock Units}} \\ \text{Cost of an Item per Acre} &= \frac{\text{Cost of item}}{\text{Total Acreage}} \end{aligned}$$

and so on.

**Some Other Efficiency Standards:**

$$\begin{aligned} \text{Gross Output per } \pounds 100 \text{ Labour Costs} &= \frac{\text{Gross Output}}{\text{Labour Cost}} \times 100 \\ \text{,, ,, ,, ,, Capital} &= \frac{\text{Gross Output}}{\text{Capital}} \times 100 \\ \text{Livestock Production per } \pounds 100 \text{ Purchased Feed} &= \frac{\text{Livestock Production}}{\text{Purchased Feed}} \times 100 \end{aligned}$$

**FARM PLANNING** entails working out the technical details of a farm's enterprises as well as budgeting for their economic effect.

**GROSS MARGIN** is that part of the income which remains after the deduction of variable (avoidable or direct) costs. Gross Margin account analysis is a rough shortcut to full costings but takes very much less time. It involves breaking down in detail, to the various enterprises, the cost of purchased foods and other variable expenditure and also homegrown foods and casual or contract work. Regular labour, fertilisers, machinery, rent etc. are regarded as fixed (unavoidable or overhead) costs. This method can be useful for mixed farms or for large arable farms, but is hardly justified on specialised farms with only one or two enterprises. Gross margin technique is extremely useful for budgeting.

**GROSS OUTPUT (PRODUCTION)** is the difference between the closing valuation plus sales and the opening valuation plus purchases. Valuation of machinery and implements is not included. For example, the production of sheep may be calculated thus:

	£	£
Closing Valuation of Sheep ... ..	500	
Plus Sales of Sheep and Wool ... ..	250	
	750	
<i>Less</i>		
Opening Valuation of Sheep ... ..	400	
and Purchases of Sheep... ..	100	
	500	
Production of Sheep... ..		250

The rental value of farmhouses and cottages and the value of farm produce consumed may be included in production under "Miscellaneous".

**NET OUTPUT** is Gross Output less expenditure on purchased feed and seeds.

**LAW OF DIMINISHING RETURNS** applies in many input-output situations when equal additions to input (e.g. of feed or fertilisers) produce proportionately smaller additions to output. For example, feeding a young bullock 3 lb. of cake may result in 1 lb. liveweight increase, 6 lb. in 1½ lb. and 9 lb. in 2½ lb. Returns at a constant rate in the above example would be 1 lb., 2 lb. and 3 lb.

**LIVESTOCK UNITS** (Livestock Equivalents, Cow Units) are a convention used to convert all classes of livestock to a common denominator. The convention is: 1 livestock unit=1 cow=1 bull=in-calf heifer=1 store over 2 years=2 yearlings=4 calves=5 lowland ewes=7 upland ewes=9 hill ewes=5 sows=50 hens. Sometimes dairy cows are rated higher, e.g. 1 dairy cow=0.75 beef cows etc. Grazing units are livestock units of cattle and sheep only.

**MAN UNIT REQUIREMENTS** are the number of days at statutory working hours employed on, or needed for, a task as calculated for one year. If one cow requires 20 minutes of daily labour in Winter and 10 minutes in Summer (15 minutes daily on the average), the man units required per cow will be:

$$\frac{15 \text{ min.} \times 365 \text{ (days)}}{9 \text{ hours (=1 day's work)}} = \frac{91.25 \text{ hours}}{9 \text{ hours}} = 10.13 \text{ Man Units}$$

Requirements of Standard Man Units are those accepted as being representative of "average" conditions. Actual Man Units may differ considerably in practice.

$$\text{Calculation of Available Man Units} = \frac{\text{Actual Wages Charged or Paid}}{\text{Wages paid to Worker over 20 years old}}$$

For example, if an adult worker earns £500 p.a. and a boy £300 then the boy's labour expressed in man units is  $\frac{300}{500} = 0.6$ . Another example:

A full-time farmer's labour worth £500, plus his wife's, half-time, at £190, plus that of a part-time boy earnings £120, would equal:

$$\frac{500+190}{500} = \frac{690}{500} = 1.38 \text{ Man Units}$$

**MARGINAL FARMS** are those which can only provide a living for an average competent farmer when economic conditions are favourable, i.e. when the value of their output is high in relation to the cost of inputs.

Marginality of farms is largely a matter of farm size in relation to the quality of the land. Even on very good land, farms may become marginal as they become too small to allow of keeping up with rising standards of living.

**MARGIN OVER CONCENTRATES (OR FEED)** is a simpler method of determining roughly the profitability of livestock enterprises (winter milk, or various classes of cattle, pigs and poultry). It is particularly useful for estimating additional (marginal) profit from additional units of stock.

**NET FARM INCOME** (also Farm Profit) is the excess of Gross Output over Costs and represents the profit available to the farmer (and his wife) for their labour, management risk, and interest on capital.

**MANAGEMENT AND INVESTMENT INCOME** (also Enterprise Profit) is arrived at by deducting a charge for the value of the labour of the farmer and wife from the Net Farm Income. It is the reward for management and risk and should cover the interest on invested capital.

**STOCKING RATE** should be in Grazing Livestock Units, since pigs and poultry are mostly irrelevant. It can be expressed per acre, per 100 acres (actual or adjusted), or per feed acre (or 100 ac.) which means that sale crops are excluded.

**STOCKING RATE PER ADJUSTED FEED ACRE** denotes that an acre (or other estimate of area) has been added to the total acreage for each ton of purchased concentrates.

**SUBSIDIES AND GRANTS** include: ploughing, hill sheep, hill cow, calf, small farm scheme and bull or boar grants. Deficiency payments on cereals, fat cattle, sheep and pigs are added to receipts and included in Production.

Fertilizers are shown net of subsidies.

**RENTAL VALUE** may be pre-war, post-war or "recent". It is deducted instead of Rent from the Net Farm Income of an owner-occupier in order to make it comparable with that of a tenant farmer. "Recent" rental values tend to be higher than actual rents (owing to the scarcity value of farms with vacant possession).





