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Lambs - Cost of prod.



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Agricultural Economics Unit

Agricultural Enterprise Studies  
in England and Wales

Economic Report No. 57

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# LOWLAND SHEEP

Economics of lamb production  
in England 1976

W. J. K. Thomas

December 1977  
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ECONOMICS OF LAMB PRODUCTION  
IN ENGLAND 1976

W J K Thomas

University of Exeter  
Agricultural Economics Unit  
St German's Road  
Exeter EX4 6UL

December 1977

## AGRICULTURAL ENTERPRISE STUDIES IN ENGLAND AND WALES

University departments of Agricultural Economics in England and Wales have for many years undertaken economic studies of crop and livestock enterprises, receiving financial and technical support from the Ministry of Agriculture, Fisheries and Food.

The departments in different regions of the country conduct joint studies of those enterprises in which they have a particular interest. This community of interest is recognised by issuing the enterprise studies reports, prepared and published by individual departments, in a common series entitled "Agricultural Enterprise Studies in England and Wales".

Titles of recent publications in this series and the addresses of the University departments are given at the end of the report.

### Author's acknowledgements

The author is very grateful for the help of colleagues in the Universities of Nottingham, Reading and London (Wye College) for the collection and scrutiny of the field records in their areas and to Miss E Burnside and Mr A Sheppard (University of Exeter) for this work in South West England.

He also wishes to thank the farmers who co-operated and took an interest in this survey. He trusts that they found some benefit in determining the levels of performance in their own flocks and from the comparisons with the results of other flocks.

The author is solely responsible for the analysis of the information and for the commentary on it.

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## Economics of lamb production in England 1976

### Chapter 1 Introduction and survey sample

This study continues a series of investigations into lowland sheep production which began in 1968<sup>(1)</sup>. For some years before then the number of breeding ewes on lowland farms had been declining and the sheep enterprise, in the main, could not successfully compete financially with other forms of lowland production, dairying and cereal growing in particular. The fall in the supplies of home-produced lamb and mutton in the late '60s was a cause for concern, the position was noted by a Select Committee on agriculture<sup>(2)</sup> not least because of the significant increase in imports of sheep meat in 1969-70.

The decline in the total ewe flock in England continued until 1971, as it did in the regional flocks with the exception of those in the Northern and Yorkshire/Lancashire regions, both largely hill areas. It was then followed by a brief revival in the sheep industry. At the Annual Review 1972<sup>(3)</sup> the decline in the breeding flock in the United Kingdom was noted and in the year to December 1971 a slight increase in ewe numbers was recorded for the first time since 1965. The upward trend in ewe numbers in England was, however, short-lived and lasted only until 1974. Table 1 shows the changes in the regional and national flocks over the period 1971 to 1973 and again from 1974 to 1976. Comparisons between the figures for 1974 and earlier years for some of the regional flocks are invalidated by boundary changes but it can be assumed that the flocks in all regions increased up to 1974. From then until 1976 the flocks in each region, except again in the Northern & Yorkshire/Lancashire regions, declined and the national flock in England in that year was 3.7 per cent less than in 1974. By contrast the national flock in Wales has continued to increase gradually since 1971.

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(1) See page 82 for titles of other studies

(2) Report from the Select Committee on Agriculture 1968-69 HMSO 1969

(3) Annual Review and Determination of Guarantees 1972, HMSO Cmd 4928



The provisional figures from the June 1977 census show a slight rise in ewe numbers in England and Wales, with the breeding flock standing at 9425 thousand, but whether the modest increase is all due to a continuation of the trend to a larger flock in Wales will become evident only when the final results of the census are available. Certainly the successful financial year enjoyed by sheep farmers generally in 1976, despite the drought, seems to have renewed an interest in sheep production and there was a strong demand for breeding stock at the 1977 sales. Prices of £50 per ewe were not uncommon and were good value according to the breeders.

One trend relating to the sheep enterprise which, unlike the total ewe population over the last 10 years, is steadily moving in one direction concerns the number of producers or, more precisely, the number of agricultural holdings with sheep. These continue to go down each year and, correlated with this, despite the fluctuating total number of ewes, is an increase in the size of the average flock. Statistics for these variables for lowland flocks in England, the main concern of this report, are not available but the figures in Table 2 for all flocks in the United Kingdom illustrate the trend. It is probable that the movement is similar in direction, if not in magnitude, in the English lowlands.

The rapid changes in the late '60s, e.g. the number of small flocks fell by 27 per cent between 1967 and 1971, have now steadied and evidence of growth in the number of larger flocks is seen in the latest figures. Perhaps the sheep industry is now entering a period of relative stability although the future is confused by the undetermined (as at November 1977) proposals for the Common Agricultural Policy for sheep. These were scheduled to be introduced on 1 January 1978 but will not now operate from that date. Some comments are made on this subject later in the report.

The publication is primarily concerned with the economic results of producing and selling the 1976 lamb crop from a sample of lowland flocks in England and an examination of some aspects of the sheep husbandry involved.

The survey was conducted on lowland farms which were chosen from the lists of sheep farmers who had co-operated either in the most recent postal survey or an earlier one<sup>(1)</sup>. The farms were located mainly in three areas of England, the East Midlands (Nottingham University), Central-Southern England (Reading University), South West England (Exeter University) while data were also available for a small number of flocks in South East England (Wye College, University of London).

The flocks were sub-divided for analysis according to the proportions of lambs which were disposed of for different purposes. There were three main categories of lambs.

- i) Lambs sold directly for slaughter either off the ewes or off grass after weaning but, because of the drought in 1976, some were given a little supplementary feed to get to the required weight; this was an exceptional season.
- ii) Lambs which were disposed of in a store or non-finished condition, they were either sold or 'transferred' on the same farm to a hogget enterprise and finished on a fodder crop. All were called 'Store lambs'.
- iii) Lambs for breeding, in the main these were ewe lambs but an occasional ram lamb was also reared.

In addition to these three categories a small number of lambs was sold with ewes as couples, still fewer were sold as 'orphans' or very young lambs at lambing time and there were also a few sales of casualty lambs.

Lambs in category (i) above have in the past been described as 'fat lambs' but the author, along with others<sup>(2)</sup> involved in

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(1) Postal surveys were carried out in 1968 and 1974, see page for details of the publication of the results.

(2) "The general level of fat acceptance is falling. Nobody wants lambs which are classified four (fat) or five (very fat) in the MLC classification" - Mr David Maunder, Lloyd Maunder Ltd, Cullompton, Devon, speaking at the opening of the firm's new sheep abattoir in October 1977.

these matters, is keen to have the word 'fat' abandoned in descriptions of livestock. 'Fat' is almost a dirty word in the meat trade for any fat, in excess of the coverage of a properly finished carcass, is not wanted at any price. As fat is also more expensive to produce than lean meat its production is a double waste of expensive resources. The author, therefore, proposes to use the term 'carcass lambs' when referring to the lambs described in (i) and in Appendix A explains the reasoning behind the choice of this particular term.

If 50 per cent or more of the lambs reared were in category (i) the flock was classified as a 'carcass lamb' one. If the percentage was less the flocks were designated as 'store lamb' ones, with the greater proportion of the lambs being sold for finishing or being finished in a hogget enterprise on the same farm.

The flocks were further divided according to size and the numbers of flocks by type and size are shown in Table 3. The latter division was for the convenience of handling the data not because it was proved that there was any statistical differences between the results for flocks of varying size, although some differences become apparent as the analysis proceeds.

Chapters 2 - 6 describe the results of the main survey of 103 carcass lamb flocks, Chapter 7 the results of the store lamb flocks while Chapter 8 examines the effects of the severe drought in 1976 on sheep production. Most of the statistical information is presented at the end of each chapter, in order to avoid interrupting the text or the compilation of a large statistical appendix at the end of the publication.

Table 1 Ewe numbers in England & Wales 1971 to 1976

<u>Region</u>	June	June	% change	June	June	% change
	1971	1973		1974	1976	
	'000			'000		
Eastern	107.4	136.2	+ 26.8	142.6	126.2	- 11.5
South Eastern	531.4	619.0	+ 16.5	638.5	592.2	- 7.3
East Midland	456.1	553.0	+ 21.2	562.3	529.0	- 5.9
West Midland	762.5	868.9	+ 14.0	894.7	846.9	- 5.3
South West	1179.5	1303.0	+ 10.5	1347.9	1264.1	- 6.2
Northern	1538.5	1693.8	+ 10.1	1830.1	1837.8	+ 0.4
Yorks & Lancs	703.8	798.8	+ 13.5	715.9	710.5	- 0.8
England	<u>5279.2</u>	<u>5972.8</u>	+ 13.1	<u>6132.2</u>	<u>5906.9</u>	- 3.7
Wales	3085.7	3309.4	+ 7.2	3401.2	3478.7	+ 2.3

Source: Agricultural Statistics, Ministry of Agriculture, Fisheries & Food

Note: Because of roundings the England total is not exactly the sum of the regional totals.

Table 2 Numbers of agricultural holdings with breeding ewes  
United Kingdom 1967-1976

<u>Ewes per holding</u>	1967	1971	1976(prov)	Change 1967 to 1976
	<u>'000 holdings</u>			%
Under 100	71.6	52.1	44.9	- 37
100 - 499	34.0	28.5	29.2	- 14
500 & over	4.6	4.6	5.6	+ 12
Total	110.2	85.2	79.7	- 28
Average no of ewes per flock	123	142	165	+ 34
% of ewes in flocks of 500 or more	29.4	33.0	38.0	+ 29

Source: Annual Review White Papers 1973 and 1977

Table 3 The survey flocks by type and size

<u>Ewes per flock</u>	East Midlands	Central Southern	South West	South East	All flocks	Average no of ewes
	<u>Carcass lamb flocks</u>					
Under 150	9	5	22	-	36	98
150 - 299	13	3	13	-	29	219
300 & over	10	13	10	5	38	528
Totals	32	21	45	5	103	291
	<u>Store lamb flocks</u>					
Under 300	5	-	2	2	9	153
300 & over	2	7	1	3	13	651
Totals	7	7	3	5	22	447

Note: Information was also collected from 2 flocks (one each in East Midlands & Central Southern England) in which breeding lambs formed a large proportion of the output & consequently the flocks did not fit into the groups of flocks which were analysed.

## Chapter 2

Carcass lamb flocks - the survey period

The survey is concerned with the 1976 lamb-crop which, in this instance, comprises lambs born mainly in the spring of 1976 but also some early lambs born at the end of 1975. For each flock the survey started on the date when the rams were turned in with the ewes. For most flocks this was one specific date but some flocks were split and the rams turned with groups of ewes at different times. Over all the flocks, the tupping dates were spread over a 5 month period from July to November (1975). The distributions of these dates is shown by size-of-flock and regionally in Table 4.

The sheep year, or cycle, really begins in most flocks earlier than the first date of mating the ewes, for before this date the flocks are made up by the purchase of ewe replacements, if they are not reared, and again in some flocks the ewes are flushed on fresh grazing prior to going to the rams. The cycle could be taken to start at either of these points in time but this would mean extending the costings for a period much in excess of a year which is the normal period in this type of work. It is also more usual to start costing each unit in a survey on the same date, but it can be seen from Table 4 that it would be difficult to do this in a sheep study and the spread of starting dates, based on tupping, has to be accepted.

The choice of the date for turning in the rams varies with the region and the size of flock and there is also a degree of inter-correlation between these factors. Thus the earliest tupping dates were in the South West but this province, however, also contributed a majority of the flocks of less than 150 ewes in which breeding tends to be earlier. Given this, the modal (most frequently chosen) period for turning in rams was in early October in the East Midlands, late October in Central-Southern England and September and earlier in the South West.

Taking the sample as a whole, October was the main month for mating, when the ewes were put to the ram in 46 flocks, 45 per cent of the total. During October 1975, sheep farmers exercised their choice in this matter to the extent that the rams were turned in on 18 of the 31 days in the month. Of these, Wednesday, the first of the month, was the most popular day, being the "awaited" time for the rams in 28 per cent of the October tuppings flocks.

The decision when to turn the rams in is a central one for the sheep-farmer for it has a large effect on the husbandry of the flock over the remainder of the sheep year and perhaps a lesser influence on the economics of the enterprise. It obviously determines the lambing period and then lamb marketings, it has a less apparent, but still significant, influence on winter feeding, spring and summer grazing and, later still, the need to grow catch crops (e.g. rape or stubble turnips) for finishing lambs in the following autumn.

While every sheep farmer would agree that the lambing period in his flock was long enough it is unlikely that it would drag on for such a sustained period as in this sample of flocks as a whole. Adding a standard gestation period of 21 weeks to the date of turning in the rams results in an estimate of the first ewes lambing down in November 1975 in South West England (July tuppings) and lambing would continue almost continuously through to April 1976 when the early November matings would come to fruition. If, to the first lambings, about 14 weeks are added this will give an estimate of the timing of the first sales of prime lambs but in this much depends on the feeding practised. The pattern of lamb disposals is examined in Chapter 4, but some attention is now given to the timing of the end of the survey, for the dry summer of 1976 will have produced an abnormal sheep year and it is of interest to examine one aspect of this now.

For the carcass lamb flocks the survey ended and the books closed when in each flock either:-

- a) all or the majority of lambs had been sold, with any remaining lambs being valued out as stores at prevailing market prices, or
- b) when any sizeable number, say 20 per cent or so, of the lambs on hand were transferred to a hogget enterprise for finishing on roots or catch crops; these lambs were also valued out as stores.

Table 5 indicates that the survey ran on until December 1976 for about a quarter of the flocks, while another 31 per cent sold their last lambs in November. A link between the early matings in the smaller flocks in the South West and early prime lamb sales is seen in these tables.

When the survey was brought to an end in the autumn of 1976 there were probably more unfinished (store) lambs on farms than normal as a result of the drought earlier in the year. A precise estimate of this extra number cannot be made without comparative data for previous years. The prevalence of store lambs on hand in 1976 is indicated in Table 6 and 7.

The problem of store lambs, if it can be described as such, was only serious in some of the larger flocks outside the South West for in this area 87 per cent of the flocks had fewer than 50 'unfinished' lambs on hand when it was decided to close the survey. Overall, only 11 per cent of all lambs reared had to be valued as stores on hand at the end of the survey. These were, of course, in addition to any lambs which had been sold earlier in store condition from the carcass lamb flocks, a point which is elaborated in the analysis of the disposal of lambs in Chapter 4.



Carcass lamb flocksTable 4 Periods when rams turned in with ewes

<u>Period</u>	<u>Ewes per flock</u>			<u>Region</u>			<u>All flocks (i)</u>
	<u>Under 150</u>	<u>150 - 299</u>	<u>300 &amp; over</u>	<u>East Mid</u>	<u>Cent-South</u>	<u>South West</u>	
	<u>Number of flocks</u>						
July	3	-	-	-	-	3	3
August	10	5	3	6	-	12	18
Sept 1 - 15	4	3	4	2	1	7	11
Sept 16- 30	5	5	3	4	2	7	13
Oct 1 - 15	9	11	12	13	8	10	32
Oct 16- 31	5	2	7	6	5	3	14
November	-	1	3	1	1	2	4
Flock split	-	2	6	-	4	1	8
Totals	36	29	38	32	21	45	103

Table 5 Month of last sale of carcass lambs

<u>Month of last sale</u>	<u>Size groups as above</u>			<u>Regions as above</u>			<u>Number of flocks</u>
July or before	6	3	3	2	1	8	12
Aug - Sept	7	6	4	7	3	6	17
October	3	6	5	5	4	4	14
November	13	6	13	14	9	8	32
December	5	8	13	4	4	17	26
No data	2	-	-	-	-	2	2
Totals	36	29	38	32	21	45	103

(i) Including South East flocks

Carcass lamb flocks - store lambs on hand at end of surveyTable 6a By size of flock

<u>Ewes per flock</u>	<u>% of flocks with store lambs</u>	<u>Store lambs as a % of lambs reared</u>
Under 150	53	5.9
150 - 299	69	13.1
300 & over	71	10.8
All flocks	62	10.8

Table 6b By region

<u>Store lambs on hand per flock</u>	East Midlands	Central Southern	South West	All flocks (i)
	<u>Number of flocks</u>			
None	10	10	17	39
1 - 49	11	4	22	37
50 - 149	6	2	5	15
150 & over	5	5	1	12
Totals	32	21	45	103
% of store lambs on hand	12.0	12.6	7.5	10.8

(i) Including South East flocks

## Chapter 3

Some aspects of husbandry in carcass lamb flocksBreeds

Though the sample flocks do not cover a very great number of ewes the breed composition of the regional flocks, Tables 7a and 7b, show some features which are probably of wider application. In the production of carcass lambs few sheep farmers nowadays rely on the pure-bred ewe. Among the flocks in the East Midlands and Central Southern England only two pure breeds showed up in significant numbers. These were Clun and Welsh Mountain ewes, the latter obviously being drafted in from hill areas for crossing with a meat lamb sire. In the South West the local pure breeds are still used for meat production but of the total ewes, the Longwools, Closewools, Dorset Horns and South Devons formed only small proportions compared with ewes of these breeds which had been put to Suffolks, Border Leicesters and other meat producing rams.

Linked with this first feature, the sample also illustrates the historical stratification of the sheep industry in the use of hill and upland breeds to produce the crossbred ewes which are then used for meat production in the lowlands. The two now famous Halfbreeds, the Scottish (Border Leicester X Cheviot) and Welsh (B Leicester X Welsh Mountain) are examples as are the Mules (or Greyface) (Border Leicester X Blackface) and Mashams (Wensleydale X Swaledale). The latter two crossbreeds have not yet spread widely in the South West but given the extent of the local genetic material for crossbreeding in the area this is not perhaps surprising.

Another feature worth noting in the breed analysis is the predominance everywhere of the Suffolk breed. The use of Suffolk rams in the production of crossbreeds is revealed in the ewe breed analysis and, of particular interest, is the popularity in the three areas of the ewe resulting from the cross of the Suffolk ram and Scottish Half-bred ewe. Its popularity must stem from its prolificacy, mothering ability

and ease of shepherding while its lambs derived by breeding back to Suffolk or Dorset Down rams must also find favour in the meat trade. Perhaps this type of ewe deserves a distinguishing name to go along with the Mules and Mashams and "Suffolk Halfbred" would identify its parenthood.

The overwhelming importance of the Suffolk ram as a meat producer is obvious from the ram breed analysis where it tops the list in each region, although it is only marginally more popular than the Dorset Down in the South West.

Some of the newer breeds, Cadzow's and Thornber Colbreds (TC1's) were kept in the sample flocks but the continental breeds were of no significance.

#### Tubbing practices

The wide spread in the dates at which the rams were turned in with the ewes was examined in Chapter 2 and there was also variation in the periods when the rams were taken from the ewes. The main variants of this aspect of sheep husbandry, as far as it was able to assess them, are shown in Table 8. The extremes here were from a breeding period of 3-5 weeks to one of an unlimited duration in those flocks in which the rams are left with the ewes.

There will be some overlapping in the less precise of these time-periods e.g. 'at lambing' will be contemporary with 'in the winter' (up to March) in some flocks but the main point of this analysis is to illustrate the extent to which some sheep farmers are restricting the period of mating so that the onerous lambing time will also be curtailed. This is the 'crunch' work period in the sheep cycle and those farmers, who are separating the rams from the ewes after about five weeks (equivalent to two periods of 'heat' in the ewes) have decided that the advantages of limited lambing days outweigh the disadvantages of a greater proportion of barreners due to ewes returning to service. In this choice it is not really possible to calculate the economic consequences by means of a partial budget. The expected gains in the lamb-crop cannot

be estimated, neither can the effects of prolonged lambing by way of interruption of other farming activities (or loss of sleep) be measured precisely. A farmer may simply decide he wants no ewes to lamb after say mid-March and then plans his sheep programme backwards from that time. He also accepts the economic results from that decision.

#### Winter feeding of ewes

With relatively few exceptions lowland ewes in England remain at grass at all times through the year, the exceptions being the ewes which are housed continuously before and during lambing, or are housed/yarded at night during lambing or thirdly when they are folded on a root or fodder crop without a grass run-back (which is not usual). Despite being at grass few ewes are expected to rely on grazing as the sole source of food during the winter months. In the survey only 3 of the 103 carcass lamb flocks were so treated during the winter of 1975-76.

Table 9 indicates the combinations of feeds used while Table 10 shows the levels of feeding concentrates and hay. In Table 11 the areas of the various crop feeds that were available in the winter of 1975-76 are given. The amount of supplementary feeding is determined to a significant extent by the weather and in this context it should be remembered that the 1975-76 winter was not a very hard one. In the South West it was a very open one, so that the levels of feeding were rather less than are required in a more normal winter.

The modal, i.e. the most frequent usage of concentrates in the East Midlands and Central-Southern England was 20-40 kg (44-88 lb) per ewe but, in the South West, less than 20 kg was generally fed and no concentrates were given in 1 in 6 of the flocks in this region. The pattern was similar for feeding hay except that in about 40 per cent of the Central Southern flocks upwards of 60 kg (132 lb) per ewe were fed.

The smaller rations of hand-fed feeds to flocks in the South West region were supplemented by the growing of more

crops for the sheep, from Table 8 it can be seen that they were grown for 35 of the 45 flocks, 78 per cent. This is a much higher proportion than in the other areas of England, especially if sugar beet tops are excluded as the crop is not primarily for sheep.

#### Lambing rates

Although the lamb-crop represents the initial stage of the 'harvest' for the sheep farmer there is still a long way to go before the actual harvest in the form of lamb sales is realised. At lambing time itself most of the losses of lambs will occur but, without recording such deaths as they happen, accurate figures of this aspect of the ewe flock are not obtainable. Few sheep farmers do this recording since they have more than enough to do to see to the living lambs, while some shepherds deem it unlucky to make any count of lambs at this time. The figures in Table 12 are, therefore, calculated from the numbers of lambs reared to maturity and represent effective lambing rates rather than potential ones.

Like almost every other ratio in agricultural production, there is much variation in the lambing performances achieved, with maximum divergences of + 40 per cent to - 30 per cent of the averages shown. The average percentage of 143 is close to the rate of  $1\frac{1}{2}$  lambs per ewe (150 per cent) which the author suggests should be a minimum target in lowland flocks. The East Midland and Central Southern England results are virtually on this target but the South West is still some way behind. This must, to some extent, reflect the breed composition of the flocks in this area in which the local breeds are not the most prolific, but as Table 6a indicates there is much crossbreeding going on designed to achieve higher lambing rates while at the same time trying to keep some of the characteristics which make the local breeds suitable to the environment of the area.

Another feature of the flocks in the three areas which would also partly account for the variations in lambing performances is the age-composition of the flocks. Given the prevalence

of cross-bred ewes other than in the South West, it follows that few or no ewe-lamb replacements will be reared in each flock. The purchased replacements are usually two-tooth or older ewes which produce more lambs than younger ewe-lambs. The reverse is the case in the South West, where some of the local pure-bred ewes are used to produce ewe lambs for flock replacements. This was the pattern in more than half of the South West flocks compared with only 22 and 38 per cent respectively in the East Midlands and Central Southern flocks. It is not difficult to record the number of lambs born to ewe-lambs which usually lamb down later than the main flock but it is difficult to keep a track of whether these lambs survived to maturity so as to be able to calculate an effective lambing rate. A reasonable estimate of the effective lambing rate for ewe-lambs is 60 - 70 per cent.

The economic effects of the variations in lambing rates are examined in Chapter 6.

#### Stocking rate

Whatever hand-fed feeds are given in the pre-lambing and lambing periods the basic feed for ewes is of course grazed grass supplemented by a fairly limited area and range of fodder crops, as was seen in the feed section. From the areas of land on the farm down to grass and forage crops and their use for grazing and conservation, a stocking rate of ewes per hectare can be calculated. This factor is one of the determinants of the profitability of sheep in comparisons with other land-using enterprises. However, without detailed records of grazing, conservation and allocations of fodder crops calculated stocking rates are inevitably arbitrary assessments but the use of a standard method for each flock produces results which are applicable for the purpose of inter-flock comparison.

Information on stocking rates is given in Table 13 on both the size-of-flock and regional bases. While the tables show the results for the flocks when grouped in several ranges they do not reveal the extreme variations. These extended

from a low of 4 ewes per hectare (1.6 per acre) to over 17 (7 ewes per acre). The overall average of less than 9 ewes per hectare (3.6 per acre) is, therefore, even less illuminating.

Information on this aspect of husbandry is of limited interest in itself for it is combination of the per-ewe results together with the stocking rate which produces the more significant ratios of outputs, costs and margins per unit area of land used. These will be analysed in Chapter 6.

### Labour

Sheep are not regarded as an intensive labour-using livestock but, with hourly labour costs rising steadily, the total labour bill for the flock (including own and family work) may well cause surprise to some sheep farmers. In this survey time-sheets or other labour records were not kept and the hours spent directly on the flock were accumulated by noting the jobs done through the year and assessing the time involved. The duration of the sheep "year" has been discussed (Chapter 2) but basically it ran from the date of tupping to the month of last sale or transfer out of the lambs.

The ranges in the hours spent directly on the flock are given in Table 14. For the majority of flocks, 63 per cent, less than 4 hours per ewe was the estimated figure. An average calculated over all the flocks would be about 4 hours, or  $\frac{1}{3}$  standard man-days per ewe. With each man-hour valued at £1.35 the cost per ewe is £5.40, or £1350 for a flock of 250 ewes. This emphasises the point made above and also that it is worth considering economies in labour-use.

A profile of the annual labour input for a flock of 250 ewes is given in Table 15, from which possible economies can be determined.



Breeds of ewes and rams in carcass lamb flocksTable 7a Ewe breeds

<u>East Midlands</u>		<u>Central-Southern</u>		<u>South West</u>	
<u>Breed</u>	<u>%</u>	<u>Breed</u>	<u>%</u>	<u>Breed</u>	<u>%</u>
Suffolk X SHB	19.8	Mule	15.4	DLW X Suffolk	11.7
Mule	12.5	T C 1's	13.7	Suffolk Xs <sup>(i)</sup>	9.6
Masham	11.9	Clun	13.2	Suffolk X SHB	8.4
Suffolk X Kerry	11.2	Scottish Halfbred	10.2	Dorset Horn Xs	8.0
Scottish Half'd(SHB)	7.8	Cadzow Xs	7.0	Devon Long'1(DLW)	6.2
Suffolk X BL	7.0	Suffolk X SHB	6.8	DCW X Suffolk	6.0
Suffolk Xs <sup>(i)</sup>	6.3	Welsh Mountain	6.8	Scottish Halfbred	5.0
Border Leicester(BL)	4.5	Welsh Halfbred	6.4	DCW X B Leicester	4.5
Clun Forest	3.9	Suffolk Xs <sup>(i)</sup>	6.2	DCW X DLW	3.9
Welsh Halfbred	3.6	BF Leicester X	4.9	DCW Xs	3.8
Suffolk X Clun	2.4	Suffolk	2.0	South Devon	3.4
BFL'ester X Sw'dale	2.1	Suffolk X Clun	2.0	Devon Closew'1 DCW	3.3
Romney Halfbred	1.3			Polled Dorset	3.1
Suffolk	1.0			SHB X S Devon	2.9
				Dorset Horn	2.5
Other	<u>4.0</u>	Other	<u>5.4</u>	Other	<u>14.5</u>
Total	<u>100.0</u>	Total	<u>100.0</u>	Total	<u>100.0</u>
'000 ewes	9.1		9.0		8.2

Table 7b Ram breeds

<u>Breed</u>	<u>%</u>	<u>Breed</u>	<u>%</u>	<u>Breed</u>	<u>%</u>
Suffolk	86.2	Suffolk	59.8	Suffolk	32.0
Suffolk Xs	3.1	Dorset Down	24.8	Dorset Down	30.6
Dorset Down	2.6	Clun	3.7	Hampshire	12.1
B Leicester	1.5	Colbred	2.8	Poll Dorset	5.8
Hampshire	1.0	Hampshire	2.3	Dorset Horn	4.4
Clun	1.0	South Down	2.3	Devon Longwool	4.4
Oxford	0.5	Meatmaster	2.3	B Leicester	1.5
Other	<u>4.1</u>	Other	<u>2.0</u>	Other	<u>9.2</u>
Total	<u>100.0</u>		<u>100.0</u>		<u>100.0</u>
No of rams	195		214		206

(i) Particulars of the ewe breed not identified

Abbreviations: BFL'ester - Blue-faced Leicester, Sw'dale - Swaledale; the other abbreviations are made clear in the tables.

Carcass lamb flocksTable 8 Analysis of periods when rams taken from ewes

<u>Period when rams removed</u>	<u>Ewes per flock</u>			<u>All flocks</u>
	<u>Under 150</u>	<u>150 - 299</u>	<u>300 &amp; over</u>	
	<u>Number of flocks</u>			
After 3 - 5 weeks	4	2	6	12
" 5 - 7 "	4	2	7	13
" 8 - 10 "	2	-	5	7
At lambing	7	4	4	15
In the winter (1975)	3	8	10	21
In the summer (1976)	3	1	-	4
Rams left with ewes	6	5	-	11
No information	7	7	6	20
Totals	36	29	36	103

Table 9 Combination of feeds for sheep in winter 1975-76

<u>Feeds</u>	<u>East Midlands</u>	<u>Central Southern</u>	<u>South Western</u>	<u>All flocks (i)</u>
	<u>Number of flocks</u>			
Hay, conc's and crop	12	11	23	50
Hay and concentrates	15	8	8	31
Concentrates and crop	1	-	7	8
Concentrates only	2	-	1	3
Other combinations	1	2	5	8
No extra feed	1	-	1	3
Totals	32	21	45	103

(i) Including South East flocks

Carcass lamb flocksTable 10 Levels of winter feeding of ewes

<u>kg per ewe</u>	<u>Concentrates</u>				<u>Hay</u>			
	East Mid	Cent- South	South West	All flocks (i)	East Mid	Cent South	South West	All flocks (i)
	<u>Number of flocks</u>							
None	1	1	3	11	4	-	11	16
1 - 19.9	2	5	21	30	7	9	23	43
20 - 39.9	15	11	13	39	11	3	6	20
40 - 59.9	9	2	3	15	5	1	4	10
60 & over	5	2	-	8	5	8	1	14
Totals	32	21	45	103	32	21	45	103
Av kg per ewe	48	32	19	34	35	55	14	33

(i) Including South East flocks

Table 11 Crop feeds for sheep in winter 1975-76

	East Midlands		Central Southern		South West	
	No of flocks	Average ha	No of flocks	Average ha	No of flocks	Average ha
<u>Catch crops</u>						
Rape	2	22.0	-	-	8	2.8
Stubble turnips	3	3.2	5	21.1	5	4.9
Others (i)	-	-	1	7.7	7	3.9
<u>Full crops</u>						
Turnips/swedes	-	-	3	5.4	16	2.7
Kale	3	2.0	1	13.0	10	2.2
Other (ii)	3	0.4	-	-	7	0.2
<u>Other crop</u>						
Sugar beet tops	6	17.2	1	24.3	-	-

(i) Ryegrass, ryecorn, kale.

(ii) Mangolds, fodder beet, flatpoll cabbage.

Table 12 Lambing rates in carcass lamb flocks

Lambing % (i)	<u>By size of flock</u>			<u>By region</u>			
	<u>Ewes per flock</u>			East Mid	Cent South	South West	All flocks (ii)
	Under 150	150 - 299	300 & over				
	<u>Number of flocks</u>						
Under 120	10	8	3	1	3	17	21
120 - 134	3	5	6	2	1	10	14
135 - 149	11	4	16	6	10	11	31
150 - 164	7	5	9	12	3	6	21
165 & over	5	7	4	11	4	1	16
Totals	36	29	38	32	21	45	103
Average %	141	142	143	153	148	129	143

(i) Lambs reared per 100 ewes put to the ram.

(ii) Including South East flocks.

Table 13 Stocking rates in carcass lamb flocks

<u>Ewes per hectare</u>	<u>Size groups (as above)</u>			<u>Regions (as above)</u>			
	<u>Number of flocks</u>						
Under 6	3	4	7	6	4	3	14
6 - 7.9	13	6	6	9	4	11	25
8 - 9.9	7	8	10	9	4	11	25
10 - 11.9	9	8	8	5	3	16	25
12 & over	4	3	7	3	6	4	14
Totals	36	29	38	32	21	45	103
Average ewes/ha	7.6	10.1	8.8	8.9	9.6	8.4	8.9

Carcass lamb flocksTable 14 Annual hours per ewe

<u>Hours per ewe</u>	<u>By size of flock</u>			<u>By region</u>			
	<u>Ewes per flock</u>			East Mid	Cent South	South West	All flocks (i)
	Under 150	150 - 299	300 & over				
	<u>Number of flocks</u>						
Under 3	4	10	9	9	7	6	23
3 - 3.9	14	11	17	19	5	15	42
4 - 4.9	5	3	9	2	8	7	17
5 - 5.9	5	4	2	1	-	10	11
6 & over	8	1	1	1	1	7	10
Totals	36	29	38	32	21	45	103
Average hours/ewe	4.3	3.5	3.5	3.2	3.4	4.1	3.6

(i) Including South East flocks

Table 15 Annual labour profile for flock of 250 ewes

<u>Period or job</u>	<u>Hours per day</u>	<u>No of days</u>	<u>Annual hours</u>	<u>%</u>
Prelambing:				
feeding & shepherding	1½	30	45	5
Lambing: 1st 3 weeks	10	21	210	34
2nd 3 weeks	5	21	105	
Post lambing:				
feeding & shepherding	2	30	60	6
Shepherding - rest of year (i)	1	260	260	28
Vet & med:				
Drench, vaccinate	(½ hour per ewe)		125	18
Dipping - twice			25	
Dagging - once (ii)			20	
Shearing: 240 ewes				9
6 rams	(6 per hour)		41	
300 lambs	(8 per hour)		38	
Equal to 3.7 hours per ewe			929	100

(i) Includes attention at tupping, moving sheep, 'foot-rotting', preparation for sale and usual daily supervision.

(ii) Tail-docking (tail-trimming) against fly-strike.

## Chapter 4

Output from carcass lamb flocks

The main physical or non-financial factor contributing to the output of a flock is the lambing performance of the ewes and the great variation in this feature was noted in the previous chapter on husbandry. The conversion of lambs reared into lamb sales produces a correspondingly wide range of results and the distributions of flocks by output groups are given in Tables 23 and 24 but the first aspect of output to be considered is the disposal of the lamb-crop. Tables 16 and 17 show the actual and percentage disposals of lambs born alive.

In order to calculate the figures estimates had to be made of the losses of lambs to add to the total of lambs sold and those retained in the flock. Lamb deaths were dealt with in two categories, i) deaths of 'strong' lambs i.e. those dying some weeks after lambing and ii) deaths at or very near to lambing time. Sheep farmers in all but the largest flocks know the number of deaths of 'strong' lambs for each such death makes an impact. There were, in fact, very few deaths in this category; with good shepherding and barring accidents that is how it should be.

Both tables show the percentages of 'Deaths-later' (later than lambing) ranging from 1.7 to 2.2, so that a loss of 2 in every 100 is a reliable estimate of the average number of deaths of 'strong' lambs.

Though, as was remarked in the section on lambing rates, few farmers record the deaths at lambing time most sheep farmers provided estimates of these losses. The fact that the average numbers of lambing deaths in each size-of-flock group and each regional group ranged from 5 to 6 per cent suggests that reasonable figures were given. A slight inexactitude in the count of lambing deaths would only marginally affect the overall composition of disposals.

In the sample of 103 flocks the sale of carcass lambs accounted for 74 per cent of lamb disposals. On a size-of-flock basis

the percentage ranged from 81 per cent in the smallest flocks to 71 per cent in the medium-size flocks. There were relatively few other sales. The next largest disposal categories were lambs still on hand, either stores or ewe lambs for flock replacements.

In the regional flocks the percentage sales of carcass lambs was highest in the East Midlands with 79 per cent. This was 10 per cent more than in the Central Southern flocks; they had, relatively, the greatest disposal of store lambs which accounted for 17 per cent of the total reared. The percentage of ewe lambs, mostly kept for breeding rather than sold, was highest in the South Western flocks (9.4 per cent). This confirms the comment made on lambing rates concerning the importance of lambs as flock replacements in this area. By contrast, in the East Midland flocks, only 2.3 per cent of the lamb crop was used for flock replacements.

In the monthly pattern of carcass lamb sales, Table 18, the all-flock figures show the build-up from March (only 0.1 per cent of sales and all from the South West) to the maximum of 23 per cent in July and then tailing off to 4.6 per cent in December. The drought played some part in determining this distribution but it is almost impossible to demonstrate its effects. Some further thoughts on this are expressed in Chapter 7. The correlation between the sales on the size-of-flock basis and on those on the regional one is due to the large contribution to the early lamb sales in March-May made by the smaller flocks in South West England.

The price series (last two columns of Table 18) are almost the inverse of the supply (sales) series with the prices per lamb and per kg falling significantly in each month from April to August and then picking up again in the autumn and early winter months. The decline of over £6.0 per lamb (24 per cent) from April to August and then the increase of £5.4 (31 per cent) from the latter month to December represent an exaggeration of the normal price trend which can be partly blamed on the 1976 drought. During this period farmers were anxious to dispose of their lambs because of

the shortage of keep but at the same time the meat trade did not want them because of lack of demand. Consumption of mutton and lamb (and beef) declined marginally in July-September quarter in 1976 compared with the previous year but, significantly, that of pork and poultry increased. This change in the demand for various meats was partly the result of the consumers' response to price (price elasticity) and their switching to the cheaper meats as real disposable income was falling.

The value of lamb disposals as sales and retentions accounted for 85 per cent of total output, the remaining 15 per cent being derived from wool sales and flock appreciation.

The distributions of wool sales per ewe, both in weight (kg) and value in the regional flocks are given in Table 20, (this analysis by size-groups is of little interest). For flocks in the East Midlands and Central Southern England wool sales (ewe and lamb wool) averaged less than 3kg per ewe, valued at £2.20. In the South West flocks the production of wool was generally much higher, averaging 4.5 kg (11 lb) and bringing a return of £3.15 per ewe. In 16 per cent of flocks the wool-clip amounted to £4-5 per ewe while in 11 per cent it was over £5. These higher figures reflect the breed composition in the South West and the contribution from the heavy-fleeced Longwool, Closewool and South Devon breeds.

In the South West flocks the wool share of lamb and wool output was 11 per cent in 1976 but in a study in 1970 this proportion was 18 per cent, and the relative decline in the contribution of wool to output is an important factor for farmers in this area to consider. It is a reflection of the fact that the price of lambs for meat has increased considerably more than the price of wool, the former by 143 per cent between 1970 and 1976 but the wool price by only 70 per cent. Whereas in the 'olden' days farmers in the South West regarded the fleece as equivalent to  $\frac{1}{4}$  of a lamb (25%) and, therefore, could afford to be satisfied with a correspondingly lower lambing rate, the situation today is that the wool clip per ewe is worth about 18 per cent of a carcass lamb and in order to



maintain output, the number of lambs reared per ewe must be increased.

### Flock appreciation

The final component of output, as defined for this survey, is the annual change in the valuation of the flock and this is calculated as below. Normally this equation would give a positive figure indicating a depreciation of the flock but, as explained, for most flocks in 1975-76 it produced a negative figure indicating an appreciation.

a	Valuation of ewes and ewe lambs brought forward from 1974-75 season plus		c	Sales of ewes plus
		LESS	d	Deaths of ewes (occasional fleece value) plus
b	Purchases of ewes and ewe lambs in 1975		e	Valuation of ewes carried forward to 1976-77 season.

The valuations (a) and (e) were related to the prevailing market prices for breeders which increased substantially from the summer/autumn 1975 to 1976<sup>(1)</sup>. In order to reflect this, the closing valuations of the ewes (e) were increased by about 20 per cent over the opening valuation and this approach led to most flocks showing an appreciation over the survey year (Table 21). A large sale of ewes at a poor killing price, however, was enough to offset the higher valuation and cause a flock depreciation.

From Table 22 it can be seen that the percentage of the flock carried forward to the next breeding season varied minimally around 80 per cent. The 20 per cent turnover in flock numbers indicates a flock life for lowland ewes of 5 years. This table also shows that the estimates of ewe mortality for the three flock size-groups were very similar with an overall average of 3.4 per cent.

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(1) The increase from 1976 to 1977 was much greater.

Total output

Adding the three items; lamb disposals, wool sales and flock appreciation, together gives the figure of Total output and this is analysed in the last group of tables, 23 to 26. For comparative purposes, the figures relating to a standard flock of 100 ewes are used but the actual flock averages indicate the substantial sums of money that are involved even with a small flock.

As the flocks increased in size the average lamb and wool output was reduced, that for the largest flocks being 10 per cent less than that for the smallest. Flock appreciation was greater in the largest flocks for, as indicated in Table 21, the larger flock-owners tended to value their sheep more highly than the smaller flock owners. As with all variables in agricultural production there was the usual wide dispersion of the results around the average. The average output for all flocks was £3169 per 100 ewes but Table 24 shows that 19 flocks obtained over £400 less than this and that 18 achieved over £600 more than the average. Between the 'best' and 'worst' output groups there was a difference of £1000, equal to 32 per cent of the average.

The regional results (Table 25 and 26) indicate that the highest average output was obtained in the East Midlands, £3559 per 100 ewes or £35.6 per ewe. In the South West the average was £30.5 and £29.6 per ewe in the Central Southern flocks. The variation about the averages is again a noticeable feature and, if attention is drawn to the principle of Economics that scarce national resources should be used to the very best advantage, there is seemingly much leeway to be made up in the significant number of flocks with outputs of less than £2750 per 100 ewes. In the farmer's own interest there is also much to be gained by increasing output for, as shown later, there is a close relationship between output and profit margin.

While pointing out the gains obtainable from increasing output, it is not one of the author's precepts that every farmer

should strive and strain for the very last £ of output. In sheep production this may involve more attention and, therefore, less sleep at lambing time, or more expenditure on feed or drugs but it is the farmer's freedom to decide his level of efficiency inspite of, or despite, any management advice offered.

Table 16 Carcass lamb flocks - disposal of lambs by size of flock

Ewes per flock	<u>Ewes per flock</u>					
	Under 150		150 - 299		300 & over	
	98		219		528	
<u>Disposal</u>	<u>Nos</u>	<u>%</u>	<u>Nos</u>	<u>%</u>	<u>Nos</u>	<u>%</u>
<u>Sold:</u>						
Carcass lambs	120	80.7	240	71.0	591	72.7
Store lambs	2	1.2	7	2.1	37	4.6
Ewe lambs	**	0.3	2	0.4	5	0.6
Other lambs	-	-	1	0.3	5	0.6
	<u>122</u>	<u>82.3</u>	<u>250</u>	<u>73.8</u>	<u>638</u>	<u>78.5</u>
<u>On hand:</u>						
Store lambs	8	5.5	41	12.3	80	9.9
Ewe lambs	6	4.0	19	5.5	38	4.7
	<u>136</u>	<u>91.8</u>	<u>310</u>	<u>91.6</u>	<u>756</u>	<u>93.1</u>
<u>Others</u> <sup>(i)</sup>	1	0.4	2	0.6	2	0.2
<u>Deaths:</u>						
At lambing	11	6.0	20	5.8	40	4.9
Later	3	1.8	7	2.0	14	1.8
	<u>150</u>	<u>100.0</u>	<u>339</u>	<u>100.0</u>	<u>812</u>	<u>100.0</u>

(i) Orphan lambs, casualties

\*\* Less than an average of 1 per flock

Table 17 Carcass lamb flocks - disposal of lambs (%) by region

<u>Disposal</u>	East	Central	South	All
	Midlands	Southern	West	flocks
	<u>percentages</u>			
Carcass	79.1	69.1	71.5	73.5
Store lambs	12.3	17.0	10.3	13.5
Ewe lambs	2.3	5.1	9.4	5.4
Other lambs	0.3	0.3	1.4	0.6
<u>Deaths:</u>				
at lambing	4.3	6.3	5.7	5.2
later	1.7	2.2	1.7	1.8
<u>Totals</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

Table 18 Monthly distributions of carcass lamb sales  
- by size of flock

Deadweights and prices of carcass lambs in all flocks

<u>Month (1976)</u>	<u>Ewes per flock</u>			<u>All flocks</u>	<u>All flocks</u>		
	<u>Under 150</u>	<u>150 - 299</u>	<u>300 &amp; over</u>		<u>Average ddwt</u>	<u>Price per kg</u>	<u>Price per lamb</u>
	<u>% of sales</u>				<u>kg</u>	<u>pence</u>	<u>£</u>
March	0.3	-	0.1	0.1	-	-	-
April	7.2	3.6	0.5	2.0	18.9	124.5	23.5
May	11.4	8.6	4.7	6.4	18.4	116.5	21.4
June	17.5	22.7	20.4	20.5	18.1	102.9	18.6
July	19.7	20.9	24.3	23.0	18.2	96.4	17.6
August	14.3	17.3	15.5	15.7	18.9	91.8	17.3
September	11.0	9.7	10.5	10.4	18.9	100.5	19.0
October	4.1	6.7	11.1	9.3	18.4	112.9	20.8
November	10.7	7.1	7.7	8.0	18.7	115.1	21.5
December	3.8	3.4	5.2	4.6	19.0	119.6	22.7
Total/average	100.0	100.0	100.0	100.0	18.5	103.4	19.1

Table 19 Monthly distributions of carcass lamb sales by region

<u>Month (1976)</u>	<u>East Midlands</u>	<u>Central Southern</u>	<u>South West</u>
	<u>% of sales</u>		
March	-	-	0.5
April	1.0	-	6.0
May	7.0	4.0	9.5
June	16.1	28.3	15.8
July	23.0	29.9	16.4
August	19.9	13.1	12.5
September	11.1	6.6	14.3
October	11.3	8.5	7.9
November	6.3	5.4	11.5
December	4.3	4.2	5.6
Total	100.0	100.0	100.0

Table 20 Production of wool (i) in carcass lamb flocks - by region

a) Kilograms per ewe

<u>kg per ewe</u>	East Midlands	Central Southern	South West	All flocks (ii)
	<u>Number of flocks</u>			
Under 2.5	6	4	4	14
2.5 - 2.9	6	7	5	20
3.0 - 3.4	14	8	3	27
3.5 - 3.9	5	1	8	14
4.0 - 4.4	1	-	8	9
4.5 & over	-	1	17	19
Totals	32	21	45	103
Average kg	2.9	2.8	4.5	3.4

b) £ per ewe

<u>£ per ewe</u>	<u>Number of flocks</u>			
Under 2.0	6	6	5	17
2.0 - 2.9	22	14	21	61
3.0 - 3.9	4	-	7	11
4.0 - 4.9	-	1	7	9
5.0 & over	-	-	5	5
Totals	32	21	45	103
Average £	2.25	2.19	3.15	2.55
Wool price pence per kg	77.2	77.4	70.6	74.9

(i) Includes ewe and lamb wool

(ii) Including South East flocks

Carcass lamb flocksTable 21 Incoming and outgoing ewe numbers, values  
and ewe appreciation

	Ewes per flock					
	Under 150		150 - 299		300 & over	
	Nos per flock	£ per head	Nos per flock	£ per head	Nos per flock	£ per head
<u>Incoming ewes</u>						
Brought forward:						
Ewes & 2-tooths	86	16.3	192	16.7	445	17.1
Ewe-lambs	3	16.7	14	16.8	15	16.6
Purchased:						
Ewes	5	16.1	7	14.5	23	15.6
2-tooths	4	19.4	5	19.8	29	20.5
Ewe-lambs	-	-	1	22.0	16	17.4
Opening valuation	<u>98</u>	<u>16.4</u>	<u>219</u>	<u>16.7</u>	<u>528</u>	<u>17.2</u>
<u>Outgoing ewes</u>						
Sold:						
for killing	12	15.7	28	13.8	54	14.2
for breeding	1	19.4	1	26.4	37	22.1
as casualties	**	9.8	7	7.0	**	11.3
Deaths	4	-	7	-	18	-
Carried forward	<u>81</u>	<u>19.4</u>	<u>176</u>	<u>19.8</u>	<u>419</u>	<u>20.8</u>
Closing valuation	<u>98</u>	<u>18.1</u>	<u>219</u>	<u>18.5</u>	<u>528</u>	<u>19.5</u>
Ewe appreciation		+ 1.7		+ 1.8		+ 2.3

\*\* Less than an average of 1 per flock

Table 22 Percentage disposals of ewes

	<u>Size groups as above</u>			<u>All flocks</u>
	<u>percentages</u>			
Sold:				
for killing	12.6	12.9	10.2	11.0
for breeding	1.2	3.3	6.9	5.5
as casualties	0.5	0.2	0.1	0.2
Deaths	3.8	3.2	3.4	3.4
Carried forward	<u>81.9</u>	<u>80.4</u>	<u>79.4</u>	<u>79.9</u>
Total	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

Carcass lamb flocksTable 23 Output per flock and per 100 ewes

	<u>By size of flock</u>			
	<u>Ewes per flock</u>			All flocks (i)
	<u>Under 150</u>	<u>150 - 299</u>	<u>300 &amp; over</u>	
Ewes per flock	98	219	528	291
	<u>£ per flock</u>			
Lambs	2831	6178	14027	7904
Wool	295	619	1258	741
Lambs and wool	3126	6797	15285	8645
Flock appreciation	160	402	1094	573
Output	3286	7199	16379	9218
	<u>£ per 100 ewes</u>			
Lambs	2884	2821	2655	2717
Wool	300	282	238	255
Lambs and wool	3184	3103	2893	2972
Flock appreciation	162	183	207	197
Output	3346	3286	3100	3169

Table 24 Distribution of flocks by Output per 100 ewes

<u>Output</u> <u>£ per 100 ewes</u>	<u>No of flocks</u>			
Under 2750	6	4	9	19
2750 - 2999	5	4	8	17
3000 - 3249	4	7	6	17
3250 - 3499	9	5	4	18
3500 - 3749	5	3	6	14
3750 & over	7	6	5	18
Totals	36	29	38	103

(i) Including South East flocks



Carcass lamb flocksTable 25 Output per flock and per 100 ewes

	<u>By region</u>			
	East Midland	Central Southern	South West	All flocks <sup>(i)</sup>
Ewes per flock	289	441	203	291
	<u>£ per flock</u>			
Lambs	8862	11421	5173	7904
Wool	651	964	640	741
Lambs and wool	9513	12385	5813	8645
Flock appreciation	772	655	382	573
Output	10285	13040	6195	9218
	<u>£ per 100 ewes</u>			
Lambs	3067	2591	2546	2717
Wool	225	219	315	255
Lambs and wool	3292	2810	2861	2972
Flock appreciation	267	149	188	197
Output	3559	2959	3049	3169

Table 26 Distribution of flocks by Output per 100 ewes

<u>Output</u> <u>£ per 100 ewes</u>	<u>No of flocks</u>			
Under 2750	-	8	10	19
2750 - 2999	2	2	11	17
3000 - 3249	4	3	8	17
3250 - 3499	7	3	8	18
3500 - 3749	7	2	5	14
3750 & over	12	3	3	18
Totals	32	21	45	103

(i) Including South East flocks

## Chapter 5

Costs of production in carcass lamb flocks

It is usual nowadays in agricultural economics surveys to subdivide the costs of production into the variable and fixed costs for the purpose of analysis. In this way both the Gross margin and the Net margin can be calculated. Occasionally it is also useful to re-iterate the definitions of the two categories.

According to 'Terms & Procedures'<sup>(1)</sup> variable costs are those costs which can both be readily allocated to a specific enterprise and will vary in approximately direct proportion to changes in the scale of that enterprise. Contrariwise, fixed costs are those costs which cannot readily be allocated to a specific enterprise and/or will not vary in direct proportion to small changes in the scale of individual enterprises on the farm.

Simple examples of each group of costs in sheep production are: (i) the variable costs of keeping sheep dogs, one dog will be sufficient for a small flock, in a large flock two or more dogs may be required, (ii) the fixed cost of running a tractor, much of this cost cannot easily be put to the sheep nor will it change if the tractor is used for half hour for the daily winter feeding of the flock or for  $1\frac{1}{2}$  hours.

In sheep production the main variable costs are those of feed and veterinary fees and medicines. The physical usage of feed was considered in the husbandry chapter and, as with the variations in the kilograms of feed used per ewe, there is an equally wide range in the costs of feeding ewes; Tables 27 and 28 show the expenditures in concentrates and total feed. The flock size-group and regional figures taken together reveal that the bigger flocks in the East Midlands received far more concentrates than the smaller flocks in the South West. The average concentrate bill in East Midlands of

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(1) Terms and Procedures used in Farm & Horticultural Management  
MAFF 1970

£4.18 per ewe was more than double that for the South West flocks and was the main reason for the total cost of feed in this region being over £10 per ewe (£1010 per 100 ewes) as against £7.26 in the South West. The Central Southern flocks were the most expensive to feed with the highest fodder and grassland costs and a medium concentrate one.

Feed accounted for 86-88 per cent of the total variable costs so that while the expenditure on veterinary and medicine items is relatively small (7-8 per cent) it is of interest to examine the range in this category of costs (Table 29). Sheep are susceptible to a seemingly endless list of diseases and disorders, against some of which the flock can be protected, but it does not necessarily follow that a large expenditure on 'vet and med' will pay dividends in the form of higher output. The aim, of course, is to achieve this both by reducing mortality and improving the productivity (growth rate and numbers) of ewes and lambs. In 40 flocks (39 per cent) 'vet and med' costs ranged between £50-74 per 100 ewes; in 20 flocks, mostly in the South West, the cost was less than this while in another 21 flocks (20.4 per cent) the expenditure amounted to more than £1 per ewe. The average 'vet & med' cost was £81 per 100 ewes, but this does not include the time spent on rounding up the sheep, drenching, vaccinating and so on; the labour profile (p22) estimated that 18 per cent of all labour would be spent on medical care, equal to 40 minutes per ewe per year and costing 90 pence.

Total variable costs are summarised in Tables 30 and 31 and the averages vary from £903 per 100 ewes in the smallest flocks to £1085 in the largest size-group. Regionally the variable costs were lowest in the South West, £848 per 100 ewes, or £8.5 per ewe, as against £11.8 in the other two areas.

#### Fixed costs

The Fixed costs of sheep production assessed in this survey were:

- i) the cost of labour directly employed on the sheep, no 'overhead' labour was allocated,

- ii) the costs of tractors and other farm transport used for moving sheep, sheep-feed, temporary fencing and so on,
- iii) the rent or rental value of the grassland and fodder crops (except catch crops) used by the sheep including grass-keep taken,
- iv) a depreciation allowance on the capital equipment and buildings used for the sheep.

The costs of labour and of land were the two substantial items of fixed costs.

The hours employed on sheep by the farmer, family and hired workers were analysed in the husbandry chapter and Table 32 simply translates these into financial terms at a standard hourly charge. This was taken at £1.35 which was assumed to be high enough to cover all the "overtime" hours worked in the lambing period, insurances, pension contributions and holiday payments. For 80 of the 103 flocks the labour cost per ewe was less than £6.00 but 9 per cent of the flocks, mostly small ones in the South West, could be classed as labour-intensive with labour costing more than £8 per ewe.

The rent or rental value (both subsumed as 'rent' hereafter) charged per flock depends, fairly obviously, on the area of land used and the rent per hectare. The former item is considered in a later section dealing with the financial results related to hectares. Here it is intended to show the quality of the land used by the sheep as far as this is indicated by the rent per hectare. The rent figures used were assessed in discussions with the farmers. The distribution of per hectare rents is given in Table 33, from which it can be seen that the modal rent range was £24.7 - 32.0 per hectare (£10-13 per acre) with 39 flocks in this group. A few flocks in each size-group and in each region used land valued at £49.4 per hectare (£20 per acre) and a simple calculation will show the amount of extra production which would be required in these flocks, compared with the average, to pay for this higher value land.

A flock of 100 ewes stocked at the average rate of 9 ewes per hectare requires 11.1 hectares, which at a rent differential of £16.4 per ha<sup>(1)</sup> is equivalent to a cost of £182 and would be paid for by the sale of  $9\frac{1}{2}$  extra carcass lambs. Alternatively, given the same lambing percentage, the stocking rate on the higher value land would need to be 13.5 ewes per hectare in order to keep a constant rent charge for the flock.<sup>(2)</sup> Both achievements would demand increased shepherding.

#### Total fixed costs

An examination of the costs of production without relating them to the related levels of output is of limited interest and all that will be noted in this section is the range of Total fixed costs which are given in Tables 34 and 35 on the size-of-flock and regional groupings. Despite the different cost structures within them, the totals in the several groups are remarkably close to an average figure of £10 per ewe, with labour accounting for 49 per cent, rent 39, tractor 8 and capital 4 per cent.

In contrast to the levels of variable costs, which were lowest in the South West, fixed costs in this region were slightly higher mainly because of the greater labour cost component of £5.5 per ewe as against £4.2 - 4.3 in the other regions.

The use of farm tractor or other farm transport for sheep worked out at about 80 pence per ewe, equivalent to less than one hour's work per year. As is acknowledged the sheep enterprise is not capital intensive and the average depreciation allowance of 34 pence per ewe shows how little capital is required. This is to some extent an underestimate for, where jobs such as shearing and dipping were done on contract, the cost of the capital equipment necessary for these jobs was included in the contract charge and entered under labour and vet & med costs respectively.

In Chapter 6 the costs described in this chapter are put into perspective with levels of output.

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- 1) Average rent £33.0 per hectare, ∴ differential £49.4-33.0=£16.4  
 2) Rent charge for average land £33.0 x 11.1 ha = £366.3  
     £366.3 ÷ £49.4 per ha=7.4ha, ∴ stocking rate 100 ewes ÷ 7.4  
     = 13.5 ewes per ha

Table 27 Distribution of the costs of concentrate feeds  
per 100 ewes

<u>£ per</u> <u>100 ewes</u>	<u>Ewes per flock</u>			<u>Region</u>			<u>All</u> <u>flocks (i)</u>
	<u>Under</u> <u>150</u>	<u>150 -</u> <u>299</u>	<u>300 &amp;</u> <u>over</u>	<u>East</u> <u>Mid</u>	<u>Cent-</u> <u>South</u>	<u>South</u> <u>West</u>	
	<u>Number of flocks</u>						
Under 74	12	2	3	1	2	13	17
75 - 149	6	6	7	2	4	11	19
150 - 224	6	4	9	6	3	10	19
225 - 299	4	5	8	8	4	5	17
300 - 374	5	4	3	5	5	2	12
375 & over	3	8	8	10	3	4	19
Totals	36	29	38	32	21	45	103
Average £	182	282	313	418	275	180	291

Table 28 Distribution of the costs of all feed per 100 ewes

<u>£ per</u> <u>100 ewes</u>	<u>By size-group (as above)</u>			<u>By region (as above)</u>			
	<u>Number of flocks</u>						
Under 500	6	3	2	3	1	6	11
500 - 649	7	9	8	5	2	16	24
650 - 799	8	4	10	7	4	10	22
800 - 949	6	1	4	1	1	7	11
950 -1099	5	4	4	5	6	2	13
1100 & over	4	8	10	11	7	4	22
Totals	36	29	38	32	21	45	103
Average	773	875	938	1010	1040	726	905

(i) Including South East flocks

Table 29 Distribution of veterinary & medicine costs :  
per 100 ewes

<u>£ per 100 ewes</u>	<u>Ewes per flock</u>			<u>Region</u>			<u>All flocks (i)</u>
	<u>Under 150</u>	<u>150 - 299</u>	<u>300 &amp; over</u>	<u>East Mid</u>	<u>Cent- South</u>	<u>South West</u>	
	<u>Number of flocks</u>						
Under 50	11	5	4	1	3	16	20
50 - 74	10	13	17	18	7	13	40
75 - 99	9	7	6	7	3	10	22
100 - 124	2	3	5	3	4	2	10
125 & over	4	1	6	3	4	4	11
Totals	36	29	38	32	21	45	103
Average £	70	71	86	85	88	69	81

Table 30 Composition of variable costs per 100 ewes

<u>Variable cost</u>	<u>By size-group (as above)</u>			<u>By region (as above)</u>			
	<u>£ per 100 ewes</u>						
Feed:							
Concentrates	182	282	313	418	275	180	291
Podder	132	183	215	128	316	172	198
Grassland	459	410	410	464	449	374	416
Total feed	773	875	938	1010	1040	726	905
Vet & med	70	71	86	85	88	69	81
Miscellaneous	60	56	61	81	51	53	60
Total	903	1002	1085	1176	1179	848	1046

(i) Including South East flocks

Table 31 Distribution of total variable costs per 100 ewes

<u>£ per 100 ewes</u>	<u>Ewes per flock</u>			<u>Region</u>			<u>All flocks (i)</u>
	<u>Under 150</u>	<u>150 - 299</u>	<u>300 &amp; over</u>	<u>East Mid</u>	<u>Cent- South</u>	<u>South West</u>	
	<u>Number of flocks</u>						
Under 600	6	3	8	1	1	14	17
600 - 799	8	10	9	5	4	17	27
800 - 999	10	4	8	10	3	7	22
1000 - 1199	7	3	4	3	5	5	14
1200 - 1399	3	3	4	8	2	-	10
1400 & over	2	6	5	5	6	2	13
Totals	36	29	38	32	21	45	103
Average £	903	1002	1085	1176	1178	948	1046

Table 32 Distribution of labour costs per 100 ewes

<u>£ per 100 ewes</u>	<u>By size-groups (as above)</u>			<u>By region (as above)</u>			
Under 400	4	10	10	11	6	6	24
400 - 599	19	13	24	18	13	21	56
600 - 799	5	5	4	2	1	11	14
800 - 999	4	1	-	-	1	4	5
1000 & over	4	-	-	1	-	3	4
Totals	36	29	38	32	21	45	103
Average £	587	475	455	423	462	554	475

(i) Including South East flocks



Table 33 Distribution of rents (or rental values) per hectare

<u>£ per hectare</u>	<u>Ewes per flock</u>			<u>Region</u>			<u>All flocks (i)</u>
	<u>Under 150</u>	<u>150 - 299</u>	<u>300 &amp; over</u>	<u>East Mid</u>	<u>Cent South</u>	<u>South West</u>	
	<u>Number of flocks</u>						
Under 24.7	8	5	7	7	5	7	20
24.7 - 32.0	16	11	12	8	5	25	39
32.1 - 39.4	10	8	11	12	5	10	29
39.5 - 46.8	-	3	4	3	4	-	7
46.9 & over	2	2	4	2	2	3	8
Totals	36	29	38	32	21	45	103

Table 34 Composition of fixed costs per 100 ewes

By size-groups (as above)      By region (as above)

<u>Fixed costs</u>	<u>£ per 100 ewes</u>						
Labour	587	475	455	423	462	554	475
Rent	383	409	379	412	375	364	386
Tractor <sup>(ii)</sup>	76	79	83	91	78	74	82
Capital <sup>(iii)</sup>	26	44	33	48	33	22	34
Totals	1072	1007	950	974	948	1014	977

(ii) Tractor &amp; other farm transport

(iii) Depreciation of capital equipment &amp; buildings

Table 35 Distribution of fixed costs per 100 ewes

By size-groups (as above)      By region (as above)

<u>£ per 100 ewes</u>	<u>Number of flocks</u>						
Under 700	4	3	5	2	3	7	12
700 - 849	4	4	8	3	4	8	16
850 - 999	8	7	9	10	6	6	24
1000 - 1149	6	6	9	8	2	9	21
1150 - 1299	4	7	3	8	2	4	14
1300 & over	10	2	4	1	4	11	16
Totals	36	29	38	32	21	45	103
Average £	1072	1007	950	974	948	1014	977

(i) Including South East flocks

## Chapter 6

Margins of profitability in carcass lamb flocks

This chapter brings together the effects of the factors in sheep production which are considered earlier in the report. Thus the husbandry features were reflected in costs and output and the relationship between these determines the margin of profitability earned. For most of the 103 carcass lamb flocks the margins in 1976 were positive but a few losses were also sustained.

One weakness in a survey such as this is that it examines the enterprise in isolation from the rest of the farming programme on each farm and the contribution of the particular enterprise to the whole cannot be determined. It is important to note this, for in any well-planned farm programme the different livestock and crop enterprises complement and supplement one another making the whole more productive than the sum of the parts. This is especially true of the sheep enterprise for its full and proper share of the whole farm success is not reflected in a simple financial assessment of its own costs and returns. The extra and immeasurable contribution of a flock of sheep is however acknowledged by the various descriptions applied to it - 'golden hoof', 'cleaners-up of pastures', 'four-legged manure distributors', 'scavengers' and so on. In these days of economic stringency, however, the flock must also make a financial contribution to the farm income and the figures show that, in 1976, the contributions were often substantial.

The results calculated as averages per flock for the size-of-flock and regional groupings, Tables 36 and 37, are of limited interest for, being based on samples of varying sized flocks they are not comparable. They simply reveal the levels of achievement that were obtained for the particular group of flocks in 1976; the actual financial sums involved are enormous relative to a few years ago and depict, to some extent, how inflation has affected this branch of farming.

Of more use analytically are the figures for the same groups of flocks but related to a flock of standard size of 100 ewes as in Table 38 and 39. Four trends can be discerned as the size of flock increases:

- i) lower output
- ii) lower variable costs
- iii) greater fixed costs
- iv) lower net margins.

The net margin as a percentage of output fell from 41 to 39 and to 34 as the flock-size increased from less than 150 ewes to 300 ewes and over.

On a regional basis the East Midlands flocks had the greatest output - £3559 per 100 ewes, but also the highest level of costs - £2151, but despite the latter their net margins were above those of the flocks in Central-Southern and South West England.

While the purpose of the survey is primarily to provide information and not to compare the performances of flocks in different parts of the country it is of interest to note that the sheep farmers in the South West operated on a different scale from those in the East Midlands. South West sheep farming might be described as a low output: low cost system compared with a high output: high cost regime in the East Midlands. In relative terms, output was 14 per cent less, costs 15 per cent less and the net margin 16 per cent lower in the South West. Here, however, it was still substantial at £11.9 per ewe. A further contrast is that the much larger (on average) flocks in Central Southern England worked on a low output: high cost system which is not to be recommended and earned the lowest net margin of £8.3 per ewe in the three regions. In this region the ratio of net margin to output was 28 per cent, well below the figure of 34 which was the average for all the largest flocks.

All the figures referred to so far are averages for groups of flocks, but the ranges (distributions) of gross and net margins are also very illuminating. These are shown in Tables 40 and 41 and reveal the very wide range in the margins earned. It is often more sensible to exclude the best and worst results for there are, for example, usually good reasons why some flocks suffer disastrous losses in one season, disease is an obvious one, but even ignoring the deficit margins there is still an enormous gap between the top and bottom results. In spite of the drought, 1976 was generally a good year for sheep production and in 1 in 9 of the sheep flocks net margins of £18 per ewe or more were earned, but at the other end of the scale margins of less than £10 per ewe in about 19 per cent of the flocks. What were the reasons for this disparity? A second purpose of these enterprise studies is to pinpoint the factors which contribute to such diverging achievements and to illustrate these some of the main features of the two groups of flock mentioned are set out in Table 42.

Table 42 Comparison of flocks with high and low net margins

<u>Factor</u>	<u>Net margins per 100 ewes</u>	
	Less than £1000	£1800 or more
No of flocks	33	19
Ewes per flock	321	237
	<u>£ per 100 ewes</u>	
Gross output	2789	3844
Total costs	2240	1841
Net margin	549	2003
<u>Some costs:</u>		
Concentrates	304	321
All feed	1078	804
Labour	512	446
Rent	373	384
<u>Other factors:</u>		
Lambing %	133	159
Ewes per hectare	9.1	8.4
Rent per hectare	£34.0	£32.4

Summing up these figures very briefly they show that the high margin flocks produced much more output per unit of resources employed than the low margin ones. The two factors that stand out as the major contributors to the margin differential are the lambing percentage and the cost of feed. The 19.5 per cent difference in lambing rate, equivalent to an extra 26 lambs reared per 100 ewes, is reflected in the 37.8 per cent difference in output, while the lower feed costs, £274 per 100 ewes less in the high margin flocks, makes up the greater part of the difference in total costs. It is not possible to elaborate on the variation in feed costs because on each farm the system of feeding the ewes, the grassland management, availability of fodder crops and so on will be different, but the effect of all these in the average high margin flock led to the more productive use of the feed inputs.

The effect of lambing rates on the economies of sheep production is, however, so important that a further financial analysis of the whole sample was undertaken with the flocks grouped according to the lambing rates achieved. These figures are given in Table 43 from which the main statistics below are extracted.

	Lambing percentages					Average
	Under 120	120 - 134	135 - 149	150 - 164	165 or more	
Lambing %	112	123	141	156	176	143
	<u>£ per 100 ewes</u>					
Output	2643	2935	3049	3464	3876	3169
Net margin	815	1052	1093	1248	1570	1146

The increase in the lambing rate over the whole range was from 112 to 176 per cent (+ 57%) and it was accompanied by a growth of 47 per cent in output and an even more substantial change of + 97 per cent in the average net margin. The latter increments are of course, not all due to the extra lambs reared but as, is seen in Figure 1, in which the two variables are plotted, the upward trend of the plots indicates the strength of the relationship between the variables.

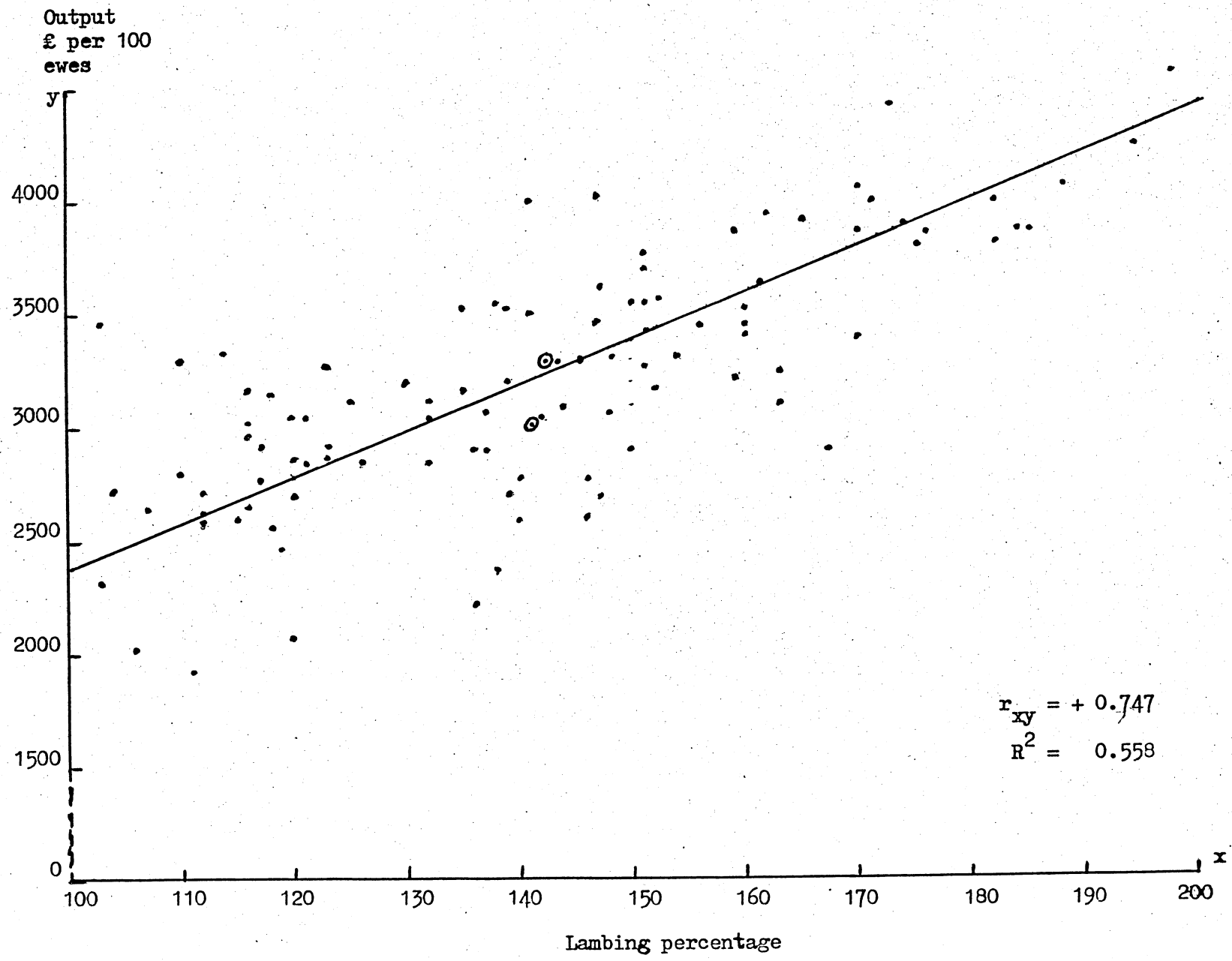


Figure 1 Relationship between output & lambing rate (%)

For the statistically minded the correlation coefficient ( $r$ ) between lambing percentage ( $x$ ) and output ( $y$ ) for this sample of flocks was + 0.747, and  $r^2 = 0.558$ . The latter figure indicates that 56 per cent of the variations in output are attributable to variations in the lambing percentage, thus demonstrating the importance of the latter variable. The correlation coefficient between lambing percentage and net margin is much less positive at 0.464, obviously net margin is determined not only by output (& lambing %) but also by the level of costs so that a weaker correlation between the former variables would be expected. (These calculations are set out in Appendix B).

Some other trends were also discernible when the flocks are classified according to lambing percentages. Total variable costs increased as lambing performances improved but this was not due to higher levels of concentrate feeding, the cost of which varied erratically at the different lambing rates. The cost of all feed per 100 ewes went up steadily as did veterinary and medicine expenditure, the latter starting at £0.59 per ewe at the lowest lambing rate and rising to £0.94 for the most prolific ewes.

There was no noticeable trend in stocking densities and it was concluded that this factor had no effect on lambing rates. Stocking rates only become important either when a sheep flock is being fitted into the farming programme and the available land is limited or when the farmer deliberately decides to restrict the flock to a certain area of land on the farm. In order to determine the financial consequences of different levels of stocking the 103 prime lamb flocks were put into five groups on this basis, ranging from less than 6 ewes per hectare (average 4.8 ewes or 2 per acre) to more than 12 per hectare (average 14.9 ewes or 6 per acre). This analysis is shown in Table 44.

Output per hectare varied from the low figure of £170 to £453 at the other extreme. This represents an increase of 166 per cent and it was associated with a change in net margins

of + 125 per cent, from £67 to £151 per hectare. The sheep enterprise operated at the latter level was competitive in 1976 with other forms of agricultural production with the exception of dairying and winter-sown cereals.

None of the following factors examined with the flocks grouped by stocking density exhibited any particular trend: lambing percentage, concentrate costs, vet & med costs, labour cost or % carcass lambs sold. There were, however, very great differences in the levels of costs when expressed on a per hectare basis. Total costs per hectare for the most lightly stocked ewes were £103 and for the most densely stocked flocks £302. In order to achieve the highest stocking rates an expenditure on grassland (for fertilisers mainly but also reseeding, cultivations) of £53 per hectare was required compared with only £22 in the least densely stocked flocks, but when expressed per ewe the latter was £4.6 as against £3.5 for the former. Rents per hectare also increased with stocking density. The small group of sheep farmers at the top end of this scale were operating another version of the high output: high cost: high margin system, which was mentioned earlier, but this time in relation to the land used, the output per ewe being only average at £30.3. Land in their case was the limiting factor and the aim was to make the greatest possible use of it.

The various systems of keeping sheep which have been pinpointed illustrate one of the assets of a sheep flock as an enterprise on a mixed farm. The sheep can be run extensively to use poorer offlying land or clean-up behind the cows but they are also reasonably adaptable to an intensive high-income generating system provided that a careful watch is kept on the 'vet & med' programme and disease troubles are met before they cause disaster.

#### General farm overheads

On every farm there is a wide array of generally small expenditures which must be paid from the central farm account. These are classed as general overheads and from the point of



view of an enterprise study they are difficult to cope with because unlike variable costs and the major fixed costs they cannot easily be allocated to any of the separate enterprises. These costs are listed in Appendix A and, before it can be considered strictly profitable, an enterprise must make a contribution to their payment. This is so for the sheep flocks that have been dealt with but how does one measure the flock's contribution to paying e.g. the accountant's fees, or the upkeep of farm roads?

General farm overheads comprise two elements, labour and materials or services, and one approach to accounting for them is to make an arbitrary addition to the direct labour bill for the enterprise and also to its non-labour costs. The effect of doing so is shown in the table.

Table 45 Allocation of general farm overheads to sheep  
(Based on results for the average carcass lamb flock of 291 ewes)

	<u>£ per flock</u>		<u>£ per 100 ewes</u>	
	Less overheads	Plus overheads	Less overheads	Plus overheads
<u>Total output</u>	9218		3169	
<u>Costs</u>				
Labour	1382	1589 <sup>(i)</sup>	475	546 <sup>(i)</sup>
Non-labour	4503	4687 <sup>(ii)</sup>	1548	1611 <sup>(ii)</sup>
Total	5885	6276	2023	2157
<u>Net margin</u>	3333	2942	1146	1012

(i) 15% of direct labour bill added

(ii) 2% of output added

The significance of accounting for general farm overheads is not particularly for their effect on total costs, a 6.6 per cent addition in the above calculation, but for the much more substantial change they make to the net margin, a 12 per cent reduction. Cumulatively, this collection of miscellaneous farm expenses makes a significant inroad into the net farm income and must be accounted for in enterprise studies however arbitrary the allocation is determined.

Table 36 Output, costs and margins per flock - by size of flock

	<u>Ewes per flock</u>			All flocks (i)
	<u>Under 150</u>	<u>150 - 299</u>	<u>300 &amp; over</u>	
Ewes per flock	98	219	528	291
	<u>£ per flock</u>			
<u>Output:</u>				
Lambs	2831	6178	14027	7904
Wool	295	619	1258	741
Lambs & wool	3126	6797	15285	8645
Flock appreciation	160	402	1094	573
Total	3286	7199	16379	9218
<u>Variable costs:</u>				
Feed	759	1915	4953	2623
Other	127	280	780	411
Total	886	2195	5733	3043
<u>Gross margin</u>	2400	5004	10646	6175
<u>Fixed costs:</u>				
Labour	577	1040	2403	1382
Rent	376	895	2005	1123
Other	100	270	612	337
Total	1053	2206	5020	2842
<u>Net margin</u>	1347	2798	5626	3333

(i) Including South East flocks

Table 37 Output costs & margins per flock - by region

	East Midlands	Central Southern	South West	All flocks (i)
Ewes per flock	289	441	209	291
<u>Output:</u>				<u>£ per flock</u>
Lambs	8862	11421	5173	7904
Wool	651	964	640	741
Lambs & wool	9513	12385	5813	8645
Flock apprec'n	772	655	382	573
Output	10285	13040	6195	9218
<u>Variable costs:</u>				
Feed	2921	4584	1474	2632
Other	480	610	248	411
Total	3401	5194	1722	3043
<u>Gross margin</u>	6884	7846	4473	6175
<u>Fixed costs</u>				
Labour	1220	2037	1124	1382
Rent	1191	1654	739	1123
Other	403	489	196	337
Total	2814	4180	2059	2842
<u>Net margin</u>	4070	3666	2414	3333

(i) Including South East flocks

Table 38 Output, costs and margins per 100 ewes -- by size of flock

	<u>Ewes per flock</u>			
	<u>Under 150</u>	<u>150 - 299</u>	<u>300 &amp; over</u>	<u>All flocks (i)</u>
Ewes per flock	98	219	528	291
	<u>£ per 100 ewes</u>			
<u>Output:</u>				
Lambs	2884	2821	2655	2717
Wool	300	282	238	255
Lambs & wool	3184	3103	2893	2972
Flock apprec'n	162	183	207	197
Total	3346	3286	3100	3169
<u>Variable costs:</u>				
Feed	773	874	937	905
Other	129	128	148	141
Total	902	1002	1085	1046
<u>Gross margin</u>	2444	2284	2015	2123
<u>Fixed costs:</u>				
Labour	588	475	455	475
Rent	383	409	379	386
Other	101	123	116	116
Total	1072	1007	950	977
<u>Net margin</u>	1372	1277	1065	1146

(i) Including South East flocks

Table 39 Output, costs and margins per 100 ewes - by regions

	East Midland	Central Southern	South West	All flocks (i)
Ewes per flock	289	441	209	291
	<u>£ per 100 ewes</u>			
<u>Output:</u>				
Lambs	3067	2591	2546	2717
Wool	225	219	315	255
Lambs & wool	3292	2810	2861	2972
Flock apprec'n	267	149	188	197
Total	3559	2959	3049	3169
<u>Variable costs:</u>				
Feed	1011	1040	726	905
Other	166	139	122	141
Total	1177	1179	848	1046
<u>Gross margin</u>	2382	1780	2201	2123
<u>Fixed costs:</u>				
Labour	422	462	554	475
Rent	412	375	364	386
Other	140	121	96	116
Total	974	948	1014	977
<u>Net margin</u>	1408	832	1187	1146

(i) Including South East flocks

Table 40 Distributions of gross margins per 100 ewes  
by size-of-flock & region

<u>£ per</u> <u>100 ewes</u>	<u>Ewes per flock</u>			<u>Region</u>			
	<u>Under</u> <u>150</u>	<u>150 -</u> <u>299</u>	<u>300 &amp;</u> <u>over</u>	<u>East</u> <u>Mid</u>	<u>Central</u> <u>South</u>	<u>South</u> <u>West</u>	<u>All</u> <u>flocks</u> (i)
	<u>Number of flocks</u>						
Under 1800	3	4	11	2	9	7	18
1800 - 2199	10	9	7	4	5	14	26
2200 - 2599	11	7	11	11	4	12	29
2600 - 2999	8	5	8	9	2	10	21
3000 & over	4	4	1	6	1	2	9
Totals	36	29	38	32	21	45	103

Table 41 Distributions of net margins per 100 ewes  
by size-of-flock & region

<u>£ per</u> <u>100 ewes</u>	<u>Size groups (as above)</u>			<u>Regions (as above)</u>			
	<u>Number of flocks</u>						
Deficit	1	1	1	-	1	2	3
Surplus:							
Under 1000	9	9	12	4	11	14	30
1000 - 1399	11	5	13	9	5	12	29
1400 - 1799	7	6	8	9	3	9	22
1800 & over	8	7	4	10	1	8	19
Totals	36	28	38	32	21	45	103

(i) Including South East flocks

Table 43 Some financial & other results for flocks  
grouped according to lambing percentages

	Lambs reared per 100 ewes (i)					All flocks
	Less than 120	120 - 134	135 - 149	150 - 164	165 & over	
No of flocks	21	14	31	21	16	103
No of ewes	204	278	377	295	243	291
Lambing %	112	123	141	156	176	143
	<u>£ per 100 ewes</u>					
Output	2643	2935	3049	3464	3876	3169
Variable costs	823	895	1045	1100	1236	1046
Gross margin	1820	2040	2004	2364	2640	2123
Fixed costs	1005	988	911	1016	1070	977
Net margin	815	1052	1093	1248	1570	1146
	<u>Other factors</u>					
Conc's per ewe £2.39	1.32	3.74	2.42	3.32	2.90	
Vet & med/ewe £0.59	0.71	0.83	0.89	0.94	0.81	
Hours per ewe 3.5	3.6	3.6	3.5	3.7	3.6	
% carcass lambs 71	84	79	80	81	79	
Ewes per hectare 8.1	7.6	10.4	7.4	7.6	8.5	

(i) Ewes put to the ram

Table 44 Some financial & other results for flocks  
grouped according to stocking density

	Ewes per hectare <sup>(i)</sup>					All flocks
	Less than 6	6.0 - 7.9	8.0 - 9.9	10.0 - 11.9	12 & over	
No of flocks	14	25	25	25	14	103
Ewes per flock	298	217	298	236	503	291
Ewes per hectare	4.8	7.1	8.8	10.7	14.9	8.5
	<u>£ per hectare</u>					
Output	170	226	288	309	453	270
Variable costs	45	75	98	82	176	88
Gross margin	125	151	190	227	277	182
Fixed costs	58	75	84	98	126	83
Total costs	103	150	182	180	302	171
Net margin	67	76	106	129	151	99
	<u>Other factors</u>					
Lambing %	149	140	139	136	146	143
% Carcass lambs	75	79	81	76	81	79
	<u>£ per ewe</u>					
Concentrates	2.08	3.06	2.91	1.73	4.26	2.90
Grassland costs	4.59	4.10	4.44	3.34	3.52	3.97
Vet & med	0.69	0.77	0.77	0.70	1.03	0.81
Labour	4.48	5.17	4.55	4.96	4.61	4.75
	<u>£ per hectare</u>					
Grassland costs	22.2	30.5	41.5	37.5	52.7	35.1
Rent	29.9	28.9	34.0	36.1	39.7	33.0

(i) Hectares of grassland & fodder crops (excluding catch crops)



Chapter 7 Store lamb flocksSome physical & financial results

A store lamb flock was defined in Chapter 2 as one in which less than fifty per cent of the lambs reared were sold directly for slaughter i.e. as carcass lambs. This generally, but not always<sup>(1)</sup>, meant that the majority of lambs from these flocks were sold as stores or were on hand in store condition when the survey was brought to a close in the autumn of 1976. Flocks could come into this category for several reasons; i) because it is deliberate policy to sell stores in the August-September sales, ii) because it is policy to hold lambs as stores for finishing as hoggets in the winter on rape or other fodder crops, iii) because it is the aim to produce carcass and store lambs, the proportions depending on the particular season, and iv) as a corollary to iii) and peculiar to the 1976 season the main aim is to finish lambs but the drought prevented this achievement.

In this sample of 22 flocks the proportions of the total lambs which were disposed of as stores varied as shown below:

<u>% store lambs</u>	<u>Ewes per flock</u>	
	<u>Under 300</u>	<u>300 &amp; over</u>
	<u>No of flocks</u>	
40 - 49	2	1
50 - 64	4	3
65 - 79	-	5
80 & over	3	4
	<u>9</u>	<u>13</u>
Average %	62	71

The flocks at the higher end of the range are the 'deliberate' store lamb producers, about a third of the others were usually carcass lamb producers (category iv above) and another third

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(1) The rearing of a proportion of lambs for flock replacements or sale as breeders occasionally led to less than 50 per cent store lamb production.

were in the carcass/store lamb group (iii above). It is, thus, a small sample of flocks which, more by accident than design, produced mostly store lambs in 1976 and from which it is not really possible to make any real study of the economics of this type of enterprise.

Some of the results from the flocks are, however, given in Tables 46 to 51.

Among the ewe breeds represented in the flocks is noted the prevalence of Suffolk crosses with the particular cross of the Suffolk ram on the Scottish Half-bred ewe again being popular. The Kent (Romney Marsh) ewe figured largely because in the regional composition there were several South East flocks. As in the carcass lamb flocks the Suffolk ram was the predominant sire and more than half of the rams were of this breed. The appearance of the continental Friesland ram, even in small numbers, is worth noting.

'Tupping' was mostly confined to the months of October and November to give fairly late lambing which spread well into April. The overall lambing rate of 142 per cent was almost identical with that achieved in the carcass lamb flocks (143 per cent) but again showing a wide dispersion around the average.

The prices and valuations of lambs show some points of interest and reflect the peculiar nature of the 1976 season. The store lambs sold in the July-September period, some no doubt because of lack of keep, averaged £15.2 per head. This compared with the value of £19.4 per head put on the lambs that were kept through and valued at the end of the survey. This was a reflection of the increase in price of finished lambs in the autumn (see Table 18 p30). The store valuation was actually higher than the average price received for the carcass lambs sold from these flocks during the summer months when the market was poor.

The average price (including valuations) of all lambs disposed of from the store lamb flocks of £16.7 per head compares with

£19.2 in the carcass lamb ones and the difference of £2.5 per head was the main reason for the lower output of the store producing flocks. Table 51 shows that output averaged £2752 per 100 ewes as against £3169 in the carcass lamb flocks. Costs of production were higher in the store flocks, £21.4 per ewe, to leave a net margin of £6.1, which compares unfavourably with the figure of £11.5 in the flocks that finished most of their lambs.

These comparisons of outputs and margin between the different types of flock are given for illustrative purposes and only in order to set one figure in perspective with another. They are not made with any implied suggestion that store lamb production is not profitable and that the producers should, therefore, switch to finishing lambs instead of selling stores. This type of production is a system of sheep-keeping in its own right and its financial aspects can only be judged in relation to the appropriateness of the enterprise to the particular farm where it is being conducted. It is not part of a general survey to arrive at definitive conclusions on this, or any other, aspect of sheep production.

Store lamb flocks

<u>Table 46</u>	<u>Periods when</u>	<u>Table 47</u>	<u>Lambing rates</u>
<u>Period</u>	<u>No of flocks</u>	<u>Lambing %</u>	<u>No of flocks</u>
September	2	Under 120	6
Early October	8	120 - 134	3
Late October	3	135 - 149	3
November	8	150 - 164	5
Flock split	1	165 & over	5
Total	22	Total	22
		Average %	142

<u>Table 48</u>	<u>Ewe breeds</u>		<u>Ram breeds</u>	
<u>Ewe breeds</u>	<u>Ewes per flock</u>		<u>Ewes per flock</u>	
	<u>Under 300</u>	<u>300 &amp; over</u>	<u>Under 300</u>	<u>300 &amp; over</u>
	<u>% of ewes</u>		<u>% of rams</u>	
Kent (Romney Marsh)	22.7	14.2	Suffolk	56.7 58.9
Kent Xs	-	1.2	Kent	13.3 -
Swaledale	20.8	-	Dorset Down	10.0 13.1
Suffolk crosses:			Clun	- 13.6
X Scottish H <sup>b</sup> bred	7.3	12.2	Blue-faced Leicester	16.7 -
X Border Leicester	18.2	3.1	Southdown	- 6.8
X Clun	-	4.0	Friesland	- 3.8
X Kent	-	1.7	Other	3.3 3.8
Other	16.9	14.7	Total	100.0 100.0
Border Leicester Xs	8.7	-	No of rams	30 236
Scottish Halfbred	-	7.5		
Welsh Halfbred	-	18.8		
Mules (Greyface)	-	13.9		
Masham	5.4	2.4		
Other	-	6.3		
Total	100.0	100.0		
No of ewes '000	1.4	8.7		

Store lamb flocksTable 49 Disposal of lambs

<u>Category of lamb</u>	<u>Ewes per flock</u>		<u>All flocks</u>
	<u>Under 300</u>	<u>300 &amp; over</u>	
	<u>% of lambs</u>		
Store lambs:			
Sold	29.9	55.4	52.2
On hand	31.3	15.8	17.8
	61.2	71.2	70.0
Carcass lambs	26.0	20.5	21.2
Ewe lambs:			
Sold	3.6	0.4	0.8
On hand	8.4	4.6	5.1
Other lambs	0.8	3.2	2.9
Total	100.0	100.0	100.0
No of lambs '000	1.8	12.2	14.0

Table 50 Prices and valuations of lambs

<u>Category of lamb</u>	<u>Ewes per flock</u>		<u>All flocks</u>
	<u>Under 300</u>	<u>300 &amp; over</u>	
	<u>£ per head</u>		
Store lambs:			
Sold	16.55	15.11	15.22
On hand	19.81	19.29	19.41
Carcass lambs	18.50	18.23	18.27
Ewe lambs:			
Sold	17.18	18.00	17.54
On hand	20.71	22.80	22.35
Other lambs (i)	4.80	4.95	4.94
All lambs	18.35	16.45	16.70

(i) Couples and orphan(cade) lambs

Table 51 Output, costs and margins in store lamb flocks

Ewes per flock	Ewes per flock				All flocks 447
	Under 300		300 & over		
	153	651	£ per flock	£ per 100 ewes	
	£ per flock	£ per 100 ewes	£ per flock	£ per 100 ewes	£ per 100 ewes
<u>Output:</u>					
Lambs	3719	2436	15398	2365	2375
Wool	365	239	1451	223	225
Lambs & wool	4084	2675	16849	2588	2600
Flock appreciation	121	79	1066	164	152
Total	4205	2754	17915	2752	2752
<u>Variable costs</u>					
<u>Feed:</u>					
Concentrates	315	206	2504	384	360
Fodder	185	122	2471	380	343
Grassland	422	276	2659	409	390
Total	922	604	7634	1173	1093
Vet & med	117	76	551	84	84
Other	117	76	487	75	75
Total	1156	756	8672	1332	1252
<u>Gross margin</u>	3049	1998	9243	1420	1500
<u>Fixed costs</u>					
Labour	723	474	2832	435	440
Rent	596	390	2280	350	356
Other	171	112	592	91	94
Total	1490	976	5704	876	890
<u>Net margin</u>	1559	1022	3539	544	610

## Chapter 8

The 1976 drought and lowland sheep production

The drought in 1976, which generally set in in June and lasted through to the end of August, was the worst suffered in this country for some hundreds of years and affected agriculture along with many other forms of production. Its effect on farming was manifold and the cost to the industry in the way of extra expenditure and lost production is not measurable. For some farmers it brought bonuses in form of astronomical prices for potatoes and vegetables but for the general arable and livestock farmers the effects were less precise and often unfavourable.

This chapter examines the effects that some three months of dry, hot weather had on lowland sheep production and these can be divided into several categories:

- 1 Feed costs
- 2 The marketing of the 1976 lamb crop
- 3 The effect on pastures
- 4 The effect on ewes and rams and the 1977 breeding system.

In the course of the survey of lowland flocks, which is reported on in this publication, the field workers were specifically asked to discuss with the farmers the effects of the drought on their flocks and to obtain information on the measurable consequences. The response to this questioning of the 125 farmers surveyed is shown below.

Table 52 Response to drought enquiries

		Ewes per flock			
		Under 150	150 - 299	300 & over	All flocks
No of flocks		40	34	51	125
Drought responses	Nos	10	16	22	48
	%	25	47	43	38
Drought effects:					
on feed		7	9	11	27
less finishing	(i)	2	4	9	15
lower weights	(i)	1	1	1	3
other		-	2	1	3

(i) of carcass lambs

Before dealing with the three main effects, it is of interest and a little surprising to note that two of the three 'other' responses were from farmers stating they had no difficulty in finishing all their lambs in 1976 and that this achievement was not normal. The third 'other' response was the observation on the effect of the hot weather on the performance of rams. Of a batch of ewes put to the ram in August only one-third were served during the first oestrus (heat period!)<sup>(1)</sup>. Certainly the drought had another effect on reproduction which is mentioned later.

The most numerous comment made by the farmers in the survey was on the need to give supplementary feed to ewes and lambs to counter the bare and dried up pastures. While sheep are supposed to reject dry feed at this time of the year, it was that or starve in 1976 and corn, compound feeds, feed blocks and hay were consumed in varying quantities. The average expenditure on drought feed in the flocks, in which it was recorded separately from the normal winter feed, is shown in Table 53.

Table 53 Expenditure on drought feed

<u>Type of feed</u>	<u>Ewes per flock</u>			<u>All flocks</u>
	<u>Under 150</u>	<u>150 - 299</u>	<u>300 &amp; over</u>	
		<u>£ per ewe</u>		
Concentrates	1.15	0.35	0.89	0.79
Hay	0.60	0.22	0.13	0.18
Other	0.03	0.04	-	0.01
Total drought feed				
(a)	1.78	0.59	1.02	0.98
(a) as % of Total feed	17.4	<u>Percentages</u>		
		8.8	9.9	10.3
% increase in net margin if no extra feed given	(b)11.6	10.5	11.0	10.9
(b) averaged over all flocks in survey	3.5	2.6	2.4	2.5

(1) The rams obviously found it hot too!



In the 27 flocks which recorded the extra feed, the net margin would have been 10.9 per cent greater if this expenditure had not been incurred and in the economists' usual qualifying phrase "Other things being equal". As the table shows this was worth about £1 per ewe or £312 for the average flock. If all flocks had been similarly affected that is an estimate of the 'loss' to sheep farmers caused by the drought, but not all flocks suffered in this way. There were relatively few records of extra feed in the flocks in East Midland and Central Southern England.

The other extreme is to assume that the survey sample is representative of all lowland flocks in the areas covered and apply the sample proportion affected (22 per cent) to the population of flocks. While it is not claimed that the survey sample does represent the whole, this assumption enables a calculation to be made of the minimum feed effects of the drought. These are shown in the final row of figures in the table and provide the estimate that the overall net margin would have been increased by 2.5 per cent if no extra feed was required; this is equal to £0.21 per ewe or £68 per flock.

A further and more reasonable assumption is that the correct figure lies somewhere between these extremes and, if £0.60 per ewe is taken (a half-way estimate), the drought would have cost the sheep farmers in the three areas (with some  $2\frac{1}{2}$  million ewes) about £1.5 million.

Although relatively few farmers in the survey, 15 out of 125, explicitly stated they had finished fewer lambs in 1976 there were many more flocks in which the percentage of carcass lambs sold was less than in a normal season. In order to estimate the number of flocks affected a comparison was made in each flock of the actual percentage of carcass lambs sold (x) and a theoretical percentage (y) i.e. the proportion that would have been sold normally. If in a flock y was greater than x it was presupposed that more lambs would have finished if conditions in 1976 had been normal. For the small and medium

sized flocks  $\gamma$  was put at 80 per cent, for the largest flocks it was 70 per cent. Thus if a 100 ewe flock produced only 65 per cent carcass lambs it was concluded that 15 per cent extra lambs would have been finished but for the drought. For the 125 flocks the statistics of this exercise are shown below.

Table 54 Estimate of extra finishing of (carcass) lambs but for drought

	<u>Ewes per flock</u>	
	Under 300	300 & over
No of flocks affected	24	27
Ewes per flock	165	585
Total carcass lambs sold	3130	10994
% " " "	65	64
Normal no of carcass lambs	4460	15852
% " " "	80	70
Extra carcass lambs	1330	4858
" " " per flock	55	155

The majority of the so-called "extra carcass lambs" were, in fact, disposed of in 1976 as stores (either sold or on hand) and it would be easy, but erroneous, to conclude that the farmers 'lost' on each lamb the difference between the carcass lamb price and the store lamb price (or value) because they could not finish the lambs in the drought<sup>(1)</sup>. Part of the reasoning for stating that such a conclusion is wrong was given earlier in the report, when it was pointed out the retail demand for lamb during the summer months was reduced. It follows, therefore, that a greater supply of carcass lambs to the market at that time would have undoubtedly brought the farm-gate price down even further. So, although farmers may have complained about the reduced amount of finishing of the 1976 lamb-crop this did not, in the event, have unfavourable financial consequences<sup>(2)</sup>. If the monthly prices for carcass lambs through the year are measured in relation to the April

(1) About £2.30, if the July-August carcass lamb price of £17.5 (Table 18) and the store lamb price of £15.2 (Table 50) are used.

(2) The author does not overlook the husbandry difficulties.

price, when the first new lambs are marketed in significant numbers, it can be seen from Table 55 that in 1976 the summer prices held up better than in the two previous years and in 1977.

Table 55 Index numbers of carcass lamb prices<sup>(i)</sup> 1974-77

<u>Month</u>	1974	1975	1976	1977
April	100	100	100	100
May	89.3	96.8	92.9	88.8
June	72.6	80.2	80.8	75.5
July	65.0	69.4	74.6	71.5
August	56.4	66.2	70.8	71.1
September	51.9	68.5	79.4	78.3
October	46.9	75.0	91.9	77.3
November	56.0	83.1	91.6	78.8
December	68.6	88.2	94.5	n a

(i) Excluding guarantee payments, the inclusion of which improved producer's returns particularly in 1974 and 1975. The April prices were respectively 106.1, 102.3, 130.3 and 162.4 pence per kg.

Source: MAFF Agricultural Market Reports (medium weight lambs 18-20.5 kg)

It can be argued, but not proven, that the producers who were 'obliged' to keep their lambs off the market did a good turn to the sheepmen who actually finished and sold their lambs at the height of the drought. For the farmers who were able to hold on to lambs, the rapidly rising prices in September and onwards should have offset some of the costs of keeping the lambs on for the extra months, while hogget production in early 1977 also paid well, aided by a special subsidy of 3 pence per kg in January-March.

Another drought response referred to the marketings of carcass lambs at lower weights than normal.<sup>(1)</sup> It is impossible to

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(1) The Winter 1976 edition of the MLC Market Survey indicated that no significant change in average sheep carcass weights had been apparent, while this may be correct over all flocks it is not necessarily so for some individual ones.

demonstrate whether this is so without recourse to statistics on lamb carcass weights for an identical sample of flocks in one or more earlier years. Only a minimum of evidence is available to the author and it relates to 19 flocks in South West England for which data is available for the 1976 survey and for one carried out in 1970. The relevant figures are given in Table 56.

Table 56 Comparison of carcass lamb weights from an identical sample of flocks in South West England 1970 and 1976

	June		July		August		September		April-Dec average		
No of flocks selling	11		12		10		8		19		
	70	76	70	76	70	76	70	76	70	76	
No of lambs sold	318	411	323	377	195	315	427	320	3126	3062	
	<u>No of flocks</u>										
Lambs lighter in '76	3		5		5		8		13		
Lambs heavier in '76	6		7		4		-		6		
No difference	2		-		-		-		-		
Av ddwt of all lambs (19 flocks)	kg	18.5	18.8	18.5	18.9	19.5	18.9	19.4	18.1	19.2	19.0
	lb	40.9	41.5	40.8	41.7	42.9	41.7	42.8	40.0	42.3	41.9

Lambs got off to good start in 1976 and the early lambs made good weights, from these flocks the lambs were generally heavier in June and July 1976 than in 1970, after which it is presumed that the drought had a greater effect and lambs in August and September were, on average, lighter in the later year. Over the whole lamb marketing period from April to December just over 3000 lambs were sold from the 19 flocks and the difference in carcass weights between 1970 and 1976 was -0.2 kg (about  $\frac{1}{2}$  lb). Valuing this decrement at 21 pence (103 pence per kg) and applying it (very arbitrarily) to the 34,000 lambs sold from the survey flock would produce a figure of some £7000 as a 'guestimate' of the loss of returns through lower carcass weights in 1976. This is equal to 7.8 per cent of the total net margins earned but should be regarded as a very suspect maximum estimate of this particular effect of the drought.

Like every other weather trick nature plays on agriculture the drought will have had different repercussions on individual farmers but, for sheep production as a whole, output in financial terms in 1976 was considerably greater than in previous years. The forecast for 1976-77 made at the 1977 Annual Review<sup>(1)</sup> was that sheep output would be £260 million, 26 per cent up on 1975-76, and information from the Beef and Sheep farms in the Farm Management Survey in South West England shows sheep output to have increased by 36 per cent in 1976-77 compared with the previous year. However, the net income from sheep will not have increased so substantially because of extra costs generally and those necessitated by the drought. Of the latter, feed has been examined but extra labour was also needed (often to find the sheep) and attention to fencing was also demanded.

This chapter so far has dealt with the effects of the drought in sheep production which were felt in 1976 but it also had longer term effects some of which are showing up in 1977. As these are even less measurable than the immediate results they will be dealt with briefly in the remainder of this chapter.

There can be little doubt that the lower lambing rates achieved in 1977 can be partly blamed on the poorer condition of the ewes at tugging in the summer and autumn 1976, more especially those put to the ram in August and early September. By October, with the grass growing again to flush the ewes, lambing in the later flocks was possibly less affected. Another unfavourable effect of the drought on the breeding side of the flock was that some of the ewe lambs for flock replacements were not sufficiently well-grown to be put to the ram in 1976 and had to be kept over to two-tooths before taking their place in the breeding flock. If small ewe lambs were tugged it is possible that they will be stunted in growth permanently with whatever consequences (if any) may follow.

Finally there are circumstantial but unproved effects of the drought in sheep flocks and the farms on which they are run.

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(1) Annual Review of Agriculture 1977 HMSO Cmnd 6703

Although grassland in general recovered remarkably well when the 'rains came' there is little doubt that many leys suffered irretrievably from the close grazing and the tearing out of grass roots by sheep in their search for something to eat. Much of the reseeding that was necessary in 1977 can therefore be 'blamed' on the drought.

From the 'Vet & med' aspect, the impossibility of moving sheep around the farm for fresh grazing will have contributed to a build-up of the worm population in pastures and a greater expenditure on drenching in 1977. In contrast, the continuous hot weather in 1976 must have dried up many wet spots on farms, the habitations of the liver-fluke snail, so that one bonus was the lesser incidence of fluke and smaller purchases of fluke drenches.

Now that a full farming year has passed since the drought ended it would be opportune to study the longer term effects of this event and some research would seem to be desirable, if solely in the interests of history.

It is impossible to evaluate completely the manifold effects of the drought on lowland sheep production in 1976. While the three summer months were worrying, tiresome and costly in some respects it can be argued, but not statistically proved, that it was not altogether a disastrous period for sheep producers and some would say that the short term effects were, in fact, favourable.

## Chapter 9

Summary & commentary on sheep situation

The report examines the physical and financial results of lamb production in 125 lowland flocks mainly in three areas of England in 1975-76. The areas are the East Midlands, Central Southern England and South West England. In 103 flocks the emphasis was on the production of carcass lamb (previously described as 'fat lamb'), in the remaining flocks more animals were disposed of as stores, primarily because the drought prevented a greater degree of finishing in the summer months.

The 1975-76 sheep year started well with the ewes in very good condition when put with the rams. Lambing rates were consequently very good, the overall percentage being 143 and in one-third of the flocks a level of  $1\frac{1}{2}$  lambs per ewe (& more) were obtained. This should be a minimum target for lowland flocks these days. Lambs got away to a good start and, overall, in the carcass lamb flocks 29 per cent of the lambs were finished by the end of June. Both the good lambing performance and level of early finishing in the sample were typical of all sheep flocks.

The drought set in in June and caused many husbandry problems for sheep farmers and agriculture generally. In many flocks supplementary feed was given to ewes and/or lambs during the summer. Some flocks were also housed or yarded at different periods to prevent sheep wandering in search of food. The bare, dried up pastures took a 'beating' from the close grazing of sheep causing, it is thought, much reseeding to be undertaken later.

The report concludes that the immediate financial effect of the drought on lowland sheep production was generally not unfavourable despite the shepherding difficulties. The enforced lower levels of finishing decreased the supply of lamb at a time when retail demand was declining and this helped to prevent prices falling even further. Lamb prices later rose quickly and were supplemented by a special subsidy of 3 pence per kg

which was paid in the early part of 1977. The higher returns to producers at that time helped to offset the extra costs of keeping lambs over a longer period.

The net margin for the average carcass lamb flock (of 291 ewes) was £3.3 thousand, from an output of £9.2 thousand and costs of production of £5.9 thousand, of which feed (concentrates, fodder and grassland) accounted for £3.0 thousand. Expressed on the basis of a standard sized flock of 100 ewes, the average net margin per ewe was £11.5, and ranged from £14.1 in the East Midlands to £8.3 in Central Southern England. The South West average was £11.9 per ewe.

In the report a comparison is made of high margin and low margin flocks and concludes that the difference in lambing rates (averaging 159 & 133 per cent respectively) and the more efficient utilisation of feed were the major causes of the margin differential.

The effects of lambing rates and stocking density on the financial results are also examined. The average net margin per hectare of £99 compared favourably with that earned from dairying in 1976-77<sup>(1)</sup> while the margins in the more densely stocked flocks handsomely surpassed the average margin from milk production.

A small group of flocks (22 in all) were classified as store lamb flocks because, from them, less than half the lambs were finished and sold as carcass lambs. In several flocks this was a deliberate policy but for others it was the result of the drought and, in a normal season, they would be reclassified in the carcass lamb group. Output from these flocks averaged £27.5 per ewe and with fairly high costs the net margin was down to £6.1 per ewe, 47 per cent less than in 'finishing' flocks.

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(1) e.g. £75 per hectare in South West England. The basis of calculations is not identical but the comparison is valid if not exact.



The year, 1975-76, was generally a good one for sheep producers but it did not lead to a much larger national breeding flock in the United Kingdom as recorded at 1976 December census. An encouraging sign, however, was that the number of ewe lambs retained for breeding was 10 per cent higher than the previous year and suggest that producers were confidently planning to increase their flocks. There was the expectation that the June 1977 census would reveal the upward trend but the provisional results for England & Wales show the expansion was modest and the flock only marginally greater than in the previous year.

The following twelve months, 1976-77, started badly for sheep producers and many ewes were in a poor condition at tugging, a legacy of the drought. This, combined with a generally wet winter, led to lambing rates being 2-3 per cent lower than the high levels achieved in 1976. Conditions in the spring did not favour the growth of lambs so that marketings in the April-June quarter were well down on those in 1976. Prices for carcass (fat) lambs in 1977 have been well above those in 1976 (without allowing for the fall in the value of the £) and have been mostly higher than the weekly standard prices. Small guarantee payments were, however, paid for some six weeks in mid-summer.

Whether the net margins made in 1977 will be on the scale of the previous year, as measured in the survey, depends on the interaction of higher prices and fewer lambs on the output side and higher costs, including a greater usage of feeding-stuffs in the winter period but no supplementary feed in the summer months. The apparent prosperity in the industry has, however, been reflected in the high prices paid for breeding stock and store lambs in the second half of 1977.

Market reports from the north of England indicated prices of £50-70 per head for Mule, Scottish Half-bred and Scottish Half-bred x Suffolk ewes which were shown earlier in the report to be popular in lowland flocks for carcass (fat) lamb production. These prices were up to £20 higher than in 1976.

The paying of £38 for a Mule ewe-lamb, £10 up on a year ago, is a sign of confidence in the future of the sheep industry. Further south at the important Craven Arms (Salop) sales, prices for Cluns and Kerry Hill ewes were at record levels; two-year old Cluns making over £44 per head, almost 50 per cent higher on the year.

If the short-term outlook for sheep is bright, what about the longer-term future? This, like the prospects for any product, depends on a multiplicity of factors which are outside the scope of this publication. One aspect cannot, however, be completely ignored.

The time is imminent for sheep-meat to be embraced in the entanglements of the European Common Agricultural Policy. According to the schedule, the policy should have been determined by 31 December 1977 in readiness for implementation in 1978. The schedule is, however, behind time for the two governments mainly concerned, the French and British<sup>(1)</sup>, seem to have been reluctant to move in this matter. This is understandable considering the very disparate implications for each country.

The British farmer, producing sheep-meat on relatively low cost grass-based systems, would like to have continuous and freer access to the attractive French market. The French producer, naturally, wants protection for his own high cost: high price product. The difficulties of resolving these conflicting interests are great but not insoluble. It is to be hoped that their solution will avoid creating another surplus problem and thus provide British consumers with lamb at reasonable prices. Proposals that would accelerate the currently falling demand for lamb in the United Kingdom would create more problems than they solve. The outcome of the Commission's deliberations on these matters is keenly awaited.

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(1) The Irish government is concerned for its comparatively small sheep industry, while New Zealand is, of course, even more concerned for its very large industry.

## APPENDIX A

Definitions of termsOutput

Sales - all sale prices were net of marketing costs (transport, commission & tolls) and MLC levy. The price of carcass lambs included any guarantee payments.

For ewes and lambs sold as couples, the ewes were priced as for breeders and the remainder of the payment counted as the lamb price.

For wool, the net amount received was recorded.

Purchases - the purchase price of sheep bought during the year included transport to the farm.

Valuations - Breeding ewes, including ewe lambs, were valued in relation to the prevailing market prices at the beginning and end of the survey year. Prices at the end of the year (summer & autumn 1976) were generally put 20 per cent higher than in the opening valuation.

Store lambs on hand in each flock were valued according to market prices (of stores & carcass lambs) when the survey was closed.

Flock appreciation/depreciation was calculated as:

Opening valuation		Sales of ewes plus
of ewes & ewe lambs		Deaths of ewes (fleece value
		- if any) plus
brought forward plus	LESS	Closing valuation of ewes
Purchases of ewes		carried forward to
and ewe lambs		1976-77 season

(see also Chapter 4)

Total output is the sum of lamb disposals (sales & valuations), wool sales and flock appreciation less (in 2 flocks only) the payment for store lambs.

Costs of productionVariable costs

Concentrates included compound feeds, feed blocks and home-grown corn. The latter was valued at the market prices prevailing at the time it was used.

Fodder crops were valued at standard costs of production per hectare or per tonne as follows:-

Full crops - Swedes & turnips - £88 per ha (£40 per acre)

Kale - £73 per ha (£33 per acre)

Mangolds - £6 per tonne

Flatpoll cabbage - £5 per tonne

Catch crops - Rape, stubble turnips at £22 per ha (£10 per acre)

Hay - valued at market prices varying from £40 - 60 per tonne for home-grown, and at actual market price if purchased.

Arable by-products or vegetable residues were not charged unless some folding was done or the crop carried, in which case the labour was counted.

Grassland

The actual annual costs of fertilisers, sprays were recorded, plus £2.2 per hectare for spreading fertilisers and £1.3 per ha for chain harrowing and rolling.

Periodic costs e.g. reseeding and liming were treated as follows:

Direct reseeding - £73 per ha x average area per annum

Undersown - £33 per ha x " " "

Farmyard manure - £0.50 per tonne spread or £11 per ha x actual area treated in 1976

Liming and slagging - the annual average cost of applications.

Total variable costs include the total cost of feed, veterinary and medicine expenses, dipping fluid and miscellaneous items e.g. sheep dogs, rubber rings, ram colours, tags, etc.

Fixed costs

Labour - the hours of work directly involved with the sheep were estimated and valued at £1.35 per hour. The latter figure allowed for overtime payments, insurances, holidays and perquisites.

Rent - actually paid for the area of land used by sheep (grassland and fodder crops except catch crops) or the rental value of such land as assessed in consultation with the farmer.

Tractor or other transport used for sheep

Tractor	-	£1.00 per hour
Van, car	-	10 pence per mile
Land rover	-	15 pence per mile.

Depreciation

Equipment - handling and feeding equipment, spray races, shearing machines - 20 per cent of the estimated written down value.

Buildings - specialised, yards, dips - 10 per cent of the estimated written down value.

Margins of profitability

Gross margin is output less variable costs

Net margin is output less total costs (variable & fixed).

Physical factors

Number of ewes - always refers to the number of ewes and ewe lambs put to the ram; and the flocks are classified by size on this basis.

Lambs reared is the number of lambs reared to maturity, it therefore excludes orphan (cade) lambs & casualties. Lambs sold with ewes as couples are included.

Lambing rate (or percentage) is the lambs reared divided by the number of ewes.

Ewe mortality (%) is the number of ewes dying divided by number of ewes multiplied by 100.

Land used by sheep is the number of hectares of grassland & of full year fodder crops but excluding hay & silage.

Metric terms - kg is the abbreviation for kilogram (2.205 lb) and 1000 kg = 1 tonne (2205 lb). A hectare = 2.47 acres.

Digression on the use of the word 'fat' in the description of lambs

In its use to describe lambs (or other livestock) that were sold for slaughter directly from the farm, the word 'fat' implied that the lambs had reached a sufficient degree of finish (enough lean meat and enough fat). In the past when the substance 'fat' was not objected to, farmers did, in fact, really fatten their stock before sale. These days are gone and, as stated in Chapter 1, 'fat' is almost a dirty word in the meat trade; any surplus over that required in a properly finished carcass is not wanted. Lectures and demonstrations were put on at the December 1977 Smithfield Show to bring home this point to farmers; not altogether without opposition it may be added.

It would, therefore, seem sensible for those writing about farming to abandon the use of 'fat' in descriptions of slaughter stock. A substitute word is, however, necessary in order to distinguish these animals from stores and breeding stock. There are a few possible alternatives e.g. finished, prime or slaughter lambs. The first two imply a certain (good) quality and the term used should not have this implication for not all lambs sold in this category will grade well. The phrase 'slaughter lambs' describes the destination of the particular lambs but is, possibly, a little too realistic for general use. The author has, therefore, adopted a variation of the latter and in the report such lambs are classified as 'carcass lambs'. This also pinpoints the purpose for which the lambs are reared and has no quality connotation, for the resulting carcasses (bodies of meat) may be good, bad or indifferent. Comments on this matter will be welcomed by the author.

General farm overheads (see page 50)

These include such miscellaneous items as telephone, postage, stationery, farming papers, accountants' fees, subscriptions (NFU etc), secretarial expenses, share of farm car, show fees, fire insurance, upkeep of farm roads, buildings, hedges and ditches.

## A P P E N D I X B

Calculation of correlation coefficients

Correlation between output per 100 ewes (y) and lambing % (x) for carcass lamb flocks.

Calculated using a correlation table with grouped data for 103 flocks.

Output in class intervals of £200

Lambing % in class intervals of 6 points.

Mean output ( $\bar{y}$ ) = £3234

Standard deviation  $\sigma_y$  = £530

Mean lambing % ( $\bar{x}$ ) = 142.32

Standard deviation  $\sigma_x$  = 19.08

Correlation coefficient  $r_{xy}$  = + 0.747

$$R^2 = 0.558$$

Regression of y on x

$$(y - \bar{y}) = r_{xy} \frac{\sigma_y}{\sigma_x} (x - \bar{x})$$

$$(y - 3234) = 0.747 \times \frac{530}{19} (x - 142.32)$$

$$\underline{y = 20.75x + 281}$$

$$\begin{aligned} \text{If } x = 120\%, y &= (20.75 \times 120) + 281 \\ &= \underline{\underline{£2771}} \end{aligned}$$

$$\begin{aligned} \text{If } x = 150\%, y &= (20.75 \times 150) + 281 \\ &= \underline{\underline{£3394}} \end{aligned}$$

These points were plotted in Figure 1 (page 47) and the 'line of best fit' drawn.

Correlation between net margins per 100 ewes (y) & lambing % (x) for carcass lamb flocks.

Calculated using a correlation table with grouped data for 103 flocks.

Net margins in class intervals of £200

Lambing % in class intervals of 6 points.

Mean net output (y) = £1243.6

Standard deviation y = £608

Mean lambing % (x) = 142.55

Standard deviation x = 19.15

Correlation coefficient  $r_{xy}$  = + 0.467;  $R^2$  = 0.218

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## APPENDIX C (cont'd)

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