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Lambs - Cost of production

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COSTS AND RETURNS OF FAT LAMB
PRODUCTION IN SOUTHERN ENGLAND IN 1956.

by

ALAN HARRISON

MISCELLANEOUS COST STUDIES NO. 33

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Price 2/-

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The fieldwork was carried out by Alan Harrison and D.S. Thornton. The subsequent tabulation was supervised by H. Casey.

C O N T E N T S

	Page
Summary	
Introduction	
Effects of certain management factors	1
Comparison of best and poorest flocks	2
Size of flock	4
Date of lambing	5
Expenditure on veterinary services & medicines . . .	7
Value of stock	9
Density of stocking	10
Breeds	11
Marketing	12
Appendix A. Descriptive data . . .	
" B. Costs and returns per ewe	
" C. Employment of capital	

S U M M A R Y

1. This report is based on the records of 60 flocks in Southern England in the year 1955/56. The average size of flock is 115 ewes.
2. Average results per ewe are

	£	s	d
Stock Inputs	8	12	7
Stock Outputs	17	7	7
Gross Margin	8	15	7
Other Inputs	5	7	0
NET MARGIN	3	8	7

3. Average return on capital is 24.5%.
4. The flocks showing the greatest net margin per head tend to have the following characteristics.
 1. A high gross margin per head reflecting a high lambing ratio (lambs born alive as a percentage of ewes put to the ram) and a high price per lamb.
 2. An expenditure on labour and food of less than average.
 3. A relatively low density of sheep stocking in terms of acres of grass per ewe and of acres of all crops per ewe.
5. Over the period studied there is little evidence that early lambing, in itself, guarantees a high margin per ewe. The high price spring lamb market is of short duration and while to sell in it may permit additional expenditure, the market must be met if this additional layout is to be justified.
6. Expenditure on veterinary services and medicines (including dips) suggests that use of preventive medicines is too low on at least one half of the flocks studied.
7. The results shed doubt on the criteria according to which farmers

select their breeding stock. The most expensive animals do not produce the highest margin per head. Their poorer performance is further emphasised when net margin is expressed as a percentage of capital invested.

8. Most farmers in the group tend to sell their lambs in small batches and not to sell all their animals in one market. A number of farmers with larger flocks tend, however, to sell their animals in large batches to the Fatstock Marketing Corporation or at the annual sheep fairs, so as to avoid the expense and inconvenience of frequent trips to market.

I N T R O D U C T I O N

The sixty ewe flocks, on whose records this report is based, have many common features.

They are essentially grassland flocks intended to graze after dairy cows, with young stock or with fattening cattle. Management of grassland is not designed primarily to satisfy their needs; rather are they looked upon as a means of increasing the efficiency of herbage utilisation and a help in maintaining fertility. They are moreover flying flocks - about only one lamb in twenty being retained for flock replacement.

They are relatively small - 48, that is 80% being of less than 150 head, 27 of less than 100 head. Few farms are heavily stocked with breeding ewes. Only 17 flocks have less than two acres of grass per ewe; 37 flocks have over three acres of crops and grass per ewe. With capital investment in the enterprise amounting, on the average, to about £14 per ewe, relatively few flocks involve an investment of over £5 per acre of crops and grass. They represent in the main, therefore, small subsidiary enterprises.

On average, only some 5/5 worth of roots is fed per ewe. Thirty-six flocks are fed no roots at all. Of the remaining 24 flocks, only 6 are fed over £1 worth of roots per ewe, 2 of these being over £2 per ewe. Hurdles are regularly employed with four flocks so as to control grazing. The electric fence is similarly used to control grazing, but for part of the time, only, on nine of the sixty flocks.

Only five flocks lamb in January and February - four of them in February - the rest have the ewes lambing down in March and April. By the end of October 1956, 86% of the lambs reaching saleable age had been sold fat or store. The farmers are concerned therefore with the summer and autumn production of lambs ready for the butcher at time of sale or requiring only a relatively short further fattening period. Relatively few lambs - 4.3% of those sold fat - are produced for the May market.

None is sold in April.

The average weight of lamb sold fat is 45 lbs. dressed carcase weight.

In the body of this report the evidence is assembled so as to try to answer two questions. Why did flocks achieve the level of performance they in fact achieved? How could this be expected to be improved?

Descriptive and other material not considered directly relevant for this purpose is contained in the appendices.

Effect of certain management factors

If flocks are grouped according to whether they do better than average in the following five factors:-

1. gross margin per ewe
2. lambs born as a percentage of ewes put to the ram
3. price per lamb
4. income from wool
5. low death loss of ewes and lambs

it is seen that the effect of successive factors is to increase net margin per ewe. The effect is far from being a steadily cumulative one, however.

To do better than average for two factors results in a low net margin (£1. 5s. 6d per head), to do better than average for three, however, has a large effect (£4. 14s. 10d) which is hardly improved upon by excelling in four or even five factors (£4. 18s. 1d and £4. 18s. 5d respectively).

Of the 13 flocks excelling in two factors, only one achieves a better than average gross margin; on the other hand 11 of the 14 flocks excelling in three factors have a better than average gross margin. Income from wool appears to have no bearing on the large difference in net margin per ewe for these two groups and the three factor flocks have moreover, a higher death loss. Of the three factor flocks, 8 (as against 4 of the two factor flocks) have, however, a better than average lamb crop. Whereas only 7 of the 13 two factor flocks, receive above average for their lambs no less than 13 of the 14 three factor flocks achieve better than average in this.

A high gross margin is essential if a high net margin is to be earned. A high lambing ratio and high price per lamb appear frequently to be characteristics of a high gross margin.

Further light is shed on factors affecting performance when comparison is made of the main items of costs and returns for the best ten and the poorest ten flocks.

Comparison of Best and Poorest Flocks

	Ewes put to Ram	Acres of Crops & Grass per ewe	Acres of Grass per ewe	Gross Margin per ewe	Lamb Crop	Average Price per lamb	Income from Wool per ewe
Best 10	98	3.4	2.6	£11.12.8	1.73	£7. 5.2	£1.11.0
Poorest 10	160	2.7	1.6	£5. 18.6	1.29	£5.17.2	£1.10.8

	P E R E W E					Lambs to sale as % lambs born	Months of Lambing
	Death Loss	Exp.on Vet. & Medicines	Labour	Supp. Feed	Total Feed		
Best 10	0.24	4/2d	£0.17.10	£0.18.8	£3.2.8	89.1	March April
Poorest 10	0.22	5/6d	£2. 7.11	£2. 1.0	£4.1.11	87.0	March April

The same poorest ten flocks are the poorest when judged by the criterion of return on capital. Three of the best ten according to net margin per ewe are no longer included in the best ten, however, when judged by return on capital.

The ten flocks showing the highest return on capital have the following characteristics:-

Ewes put to Ram	Acres of Crops & Grass per ewe	Acres of Grass per ewe	Gross Margin per ewe	Lamb Crop	Average price per lamb	Income from wool per ewe
110	3.2	2.4	£10.16.0	1.62	£7.4.1	£1.9.6

P E R E W E					Lambs to sale as % lambs born	Months of Lambing
Death Loss	Exp. on vet. & medicines	labour	Supp. Feed	Total Feed		
0.24	3/8d	£0.14.0	£0.12.6	£2.16.0	88.8	March April

Size of flock is influenced by the fact that all three flocks of over 300 ewes are included in the poorest ten. One of these had excessive disease which the veterinary surgeons were unable to solve while, on the other two, the poorer performance was due in the main to low fertility and expensive system of feeding relying in the main on folding. It is not clear in what respects size alone - within the range of flocks studied here - should influence overall performance.

The best ten farms have a considerably smaller ewe population per unit of ground - crops and grass as well as grass alone. It seems likely that they found it easier to prevent the ground becoming worm infested for they also spent less on veterinary services and medicines than did the poorer flocks.

While labour might not be capable of profitable employment if there were not a flock of ewes on the farm it is difficult to avoid the conclusion that on these poorer flocks labour is inefficiently employed. Death losses are only slightly lower than on the better farms. The wool clip is no higher. Overall production is very poor. Few lambs are born and growth is far from satisfactory.

The factors therefore which appear to account for the greater part of the difference between these groups are lambs born per ewe, price received per lamb, labour and food costs. Gross returns on the better farms are almost double those on the poorer ones.

In each group nine of the ten flocks lambed down in March and April while in each group only one flock lambed down earlier than March.

SIZE OF FLOCK

Although the best ten flocks are much smaller on average than the poorest ten, overall there is no clear and simple relationship between size of flock and net margin per ewe and size of flock and return on capital.

Size of Flock	0-49	50-99	100-149	150-199	200-249	250-299	300-349
Number of flocks	9	18	21	5	3	1	3
Net Margin per ewe	£2.17.4	£2.14.5	£4.13.11	£4.12.9	£3.3.6	£1.14.5	£0.19.4
Lamb Crop	1.54	1.45	1.59	1.65	1.42	1.60	1.45
Death loss	.22	.27	.24	.16	.23	.08	.90
Average price per ewe	£6.13.1	£6. 9.3	£6.19.11	£7. 0.0	£5.19.8	£5.18.0	£6. 1.0
Veterinary Services & Medicines	3/9d	5/6d	3/11d	4/4d	2/8d	3/7d	4/10d
<u>Net Margin %</u> Gross Capital	22.4	22.0	37.8	33.4	30.5	11.1	-5.9

On the whole the flocks over 200 ewes are the less successful. Up to 150 ewes size of flock, net margin per ewe and yield on capital are directly correlated. Labour costs decline steadily with increasing size of flock. Flocks of under 200 ewes receive considerably more for their lambs than do the larger flocks.

The movement of other factors is less systematic. Percentage lamb crop, percentage death loss and expenditure on veterinary services and medicines do not appear to vary directly with size of flock.

DATE OF LAMBING

There is hardly any very early lamb production from these flocks. Only 4.3% of those lambs sold fat were sold before the end of May. We have already seen that date of lambing varies very little between the best and poorest flocks.

Date of lambing affects costs as well as returns and no simple and direct relationship might be expected between the performance of early and late lambing flocks. And indeed, if the flocks are divided into early (lambing completed in March) and late (lambing carrying on after March) groups, it will be seen that, on balance, there is little difference between the groups for those factors which might be expected to be more directly influenced by date of lambing.

	29 Early Lambing Flocks	31 Late Lambing Flocks
Supplementary Feed per ewe	£1. 11. 2	£1. 0. 5
Death Loss	0.24	0.22
Average Price per Lamb	£6. 15. 6	£6. 11. 6

While, in the early lambing flocks, 4/- more is received per lamb there are more deaths and over 10/- more per ewe is spent on supplementary feed.

As analysis of sales shows, over this period, variation in the

To the extent that the deficiency payment - acting as it does against the movement of market prices - weakens response to the need to even out seasonal production of lamb it may well be doing farmers a disservice.

While, for any farm, the decision as to the best time to lamb must take into account additional capital requirements and the relative merits of competing enterprises, the evidence so far assembled would suggest that though early lamb production may pay well, just failing to catch the early market, though being unable to avoid the additional expenditure that this entails, is probably far from worthwhile.

EXPENDITURE ON VETERINARY SERVICES AND MEDICINES (including dips)

This is a poor measure of standard of management or of health of the flock. Treatment may be correct or incorrect diagnostically; applied correctly or incorrectly both in time and quantitatively.

Not surprisingly, therefore, division of the flocks into low and high expenditure on veterinary services and medicines groups reveals no difference in mortality between the groups; the high expenditure on veterinary and medicines group shows, moreover, only a slightly better price per lamb.

There is, on the other hand a direct correlation between expenditure on veterinary services and medicines and the percentage of lambs reared to point of sale.

Exp. on Vet. & Medicines per ewe	0 to 1/11	2/- to 3/11	4/- to 5/11	6/- to 7/11	8/- to 9/11	10/- +
Number of Flocks	12	17	16	10	4	1
% Lambs to Sale	88.8	89.2	89.0	92.2	90.3	97.0

The average expenditure per ewe on veterinary services and medicines is only 4/5 or about 1½% of gross capital making no allowance for the time period of investment. This covers the cost of dips and all treatment for lambs as well as ewes. The range in costs is from 8d to 14/6d.

Twenty-nine flocks have an expenditure of less than 4/- per ewe; 15 exceed 8/- per ewe.

The average expenditure of 4/5d might cover two treatments of P.T.Z. for a ewe and two lambs a cost of approximately 2/6d to 3/-. This would leave over sufficient to cover perhaps two dips and other miscellaneous treatment - foot rot for example. This average covers, however, a number of expensive treatments of disease (sterility and magnesium deficiency in particular) and in many cases pulpy kidney or lamb dysentery inoculations costing about 1/- per lamb. It covers, too, veterinary services. Thus it seems likely that in perhaps as many as one half of the flocks routine preventive dosing against worms is far from adequate.

It is not possible to say just what losses farmers suffered because of this but almost 10% of lambs born alive died and no account is taken of lambs born dead or that were so weak that they died shortly after birth.

Work at the Grassland Research Station, Hurley, recently sheds light on the seasonal pattern of worm infestation and on the losses which may be expected to result from such infestation even where this does not produce clinical symptoms. Thus Clun Forest lambs infected with a low level of *T. axei* gained 17 lbs. per head less than their worm-free controls in a year (Spedding, 1956).

Further experiments have confirmed that the difference in growth rate between a lightly infected animal and one almost entirely free from worms is a depression in the growth rate of the order of 15%. Moreover, the infected animal produces an inferior carcass - probably a difference of 2% or more in the killing out percentage.

- As well as producing an inferior carcass sheep sub-clinically infected with worms may produce 10 - 18% less wool.

It is sometimes forgotten that under normal grazing conditions the ewe rather than the pasture is the more important source of worm infection for the lamb; moreover this pattern of infestation by the flock

follows a regular seasonal movement. From October to early March egg output by the ewes is very low. From April to June, however, it rises very quickly and maintains a high level throughout the period.²² This 'spring rise' in egg output results in a rise in the number of infective larvae on the pasture. The lamb, lacking in age and in acquired resistance helps to rapidly reinfest the pasture. As it grows it acquires resistance but - as the figures quoted show - growth rate is retarded.

Experimental work by Leiper (1951) designed to show the effectiveness of feeding P.T.Z. in the ration so as to combat this spring rise in egg output and worm infestation of the pasture showed that if the ewes were given 30 grms. of P.T.Z. 10 days before lambing and then 1 gr. of P.T.Z. to every 1 lb. of concentrates during the first 5 weeks followed by $1\frac{1}{2}$ grms. to every 1 lb. of concentrates after 5 weeks and until the 9th week, then, at $5\frac{1}{2}$ months the lambs from the treated ewes gained an average of 7 lbs. per head more than did those from the untreated ewes.

Allowing therefore as much as 110 - 120 grms. of P.T.Z. per ewe at a cost of approximately £12. 5. 0d per 100 ewes or less than 2/6d per ewe, or 1/6d per lamb at a lambing percentage of 1.7, would give a return of something like 10/- per lamb in a matter of a few months.

VALUE OF STOCK

It has been shown, on average, that the value of the stock accounts for well over half the capital invested in the sheep enterprise. It is, in addition, that part tied up for the longest period.

The experience of these flocks, however, suggests that farmers are probably far from making the best use of their capital in this respect, for the more expensive ewes failed to show as high a margin per head as the cheaper ones.

²² C.R.W. Spedding, "Worm Infestation in Sheep" Outlook on Agriculture, Vol. No. 3, Autumn 1956.

	/ Low (less than £8 per head) valued stock.	High (over £8 per head) valued stock.
Net Margin per Head	£3. 10. 5	£3. 7. 8
Number of Farms	27	33

/ Stock are valued at market prices.

This results in return on capital for the cheaper flocks being some 10% higher than for the ones employing more expensive stock, (32.7% against 22.9%).

The results throw serious doubts on the criteria - or lack of them - by which stock are selected. It happens regularly that large theaves bring very high prices, yet such stock almost certainly did not breed as a lamb and indeed may have failed to do so, that is, be genetically slow to mature, have been over-prepared for market and - worst of all - be from a strain of singles.

Selection of stock should aim at those sheep capable of producing twins; it should be known therefore whether the animal is itself a twin or has produced twins at earlier lambings. Selection should be made at a time when it is possible to note the qualities thought desirable in the progeny at their point of sale. In particular, while it is likely to be comparatively easy to pick early maturing animals at three or four months if it is known whether they are twins or not, it will be virtually impossible at 18 or 19 months not knowing whether they are twins or singles.

DENSITY OF STOCKING

Density of stocking in terms of acres of crops and grass per ewe are only rough guides as to intensity of sheep stocking; no account is taken of quantity and quality of herbage, density of other grazers nor relationship of sheep to other grazers with regard to grazing management. It may, however, be claimed that, other things being equal, there will be greater danger of worm infestation on the more densely sheep

stocked farms.

Classification of farms according to density of stocking in terms of crops and grass together and of grass alone, and calculation of net margin per ewe for the different levels of stocking, suggests indeed that the problems of heavier stocking are such that there is considerable risk of net margin per ewe being affected.

The 43 farms with less than three acres of crops and grass per ewe averaged £3. 3. 10d net margin per head, the 17 with three acres and over £3. 15. 11d per head. The trend in yield on capital, for the well represented stocking densities of 4 acres per ewe and less, is steadily upwards with diminishing density in stocking. Thus:-
1 acre per ewe 21.6%, 2 acres 22.0%, 3 acres 30.3%, 4 acres 32.5%

Only two of the 17 most densely sheep-stocked farms exceeded a net margin of £5 per ewe whereas 10 of the next group - 26 farms with 2 acres of grass per ewe - exceeded this figure.

BREEDS

Although these flocks are, in the main, grassland flocks producing fat lamb during the period June to October there are no less than ten distinct breeds of ewes even after classifying 5 flocks as Down Crosses, 5 as Grassland x Suffolk and a further 3 as Hill Crosses. Ten breeds of rams are represented.

Scotch Halfbreeds (Border Leicester x Cheviot) 21 flocks, are by far the most popular ewe; Wiltshire Horn (21) and Suffolk (24), are the chief rams used (See Appendix A).

Some of the breeds are thinly represented. A fairer indication of performance is given by comparison of breed types than by direct comparison of breeds. Thus:-

Type of Ewe	Net Margin per Ewe	Lamb Crop	Yield on Capital	Av. Price per lamb
Light Grassland (28)	£4. 10. 10	1.55	35.4%	£6. 15. 3
Heavy Grassland (26)	£2. 15. 4	1.48	22.8%	£6. 11. 8
Downland (6)	£1. 16. 9	1.45	10.3%	£6. 11. 10

The light grassland flocks appear to possess a clear advantage over the others not only producing more lambs but somewhat higher priced ones.

There are only six flocks with over 80% Downland ewes so that firm conclusions are not permissible. It is interesting to note, however, that while lambing percentage is somewhat lower - a well-known characteristic of those breeds - the price per lamb is lower too.

Food and labour costs are higher for the downland and heavy grassland flocks.

While the hill and hill type ewes produce a relatively low margin per head - £2. 13. 11 for the two Scotch Blackface flocks and £3. 11. 8 for the three hill cross flocks - the latter, nevertheless being above average - their relative cheapness in the light of the high proportion of capital investment which the ewe represents, results in their showing highly satisfactory returns on capital. The Scotch Blackface yields 33.5%, the Hill crosses 32.1%.

The Scotch Halfbred at 36.9% showed the highest yield on capital.

Breeds of Ram

Type of Ram	Net Margin per ewe	Lamb Crop	Yield on Capital	Price per Lamb
Grassland (57)	£3. 7. 7	1.50	27.0	£6. 12. 3
Downland (16)	£3.17. 3	1.61	29.2	£7. 3. 6

The Downland rams are not well represented. The above figures tend to confirm, however, the value of these breeds for the final crossing for fat lamb production.

In part of the area covered by this study there is repeated argument among farmers regarding the merits of Wiltshire Horn and Suffolk rams for crossing. While these results could hardly be taken as final proof one way or another, it is worth noting that the Wiltshire Horn cross lambs leave a margin of £4. 2. 2d per ewe, a yield on capital of 33.8% and the Suffolk cross lambs £3. 4. 9d per ewe, a yield on capital of 24.9%. The average price of the Wiltshire Horn cross lambs, however, is only 1/- per head more than the Suffolk cross lambs.

MARKETING

Over the six months May to October inclusive, 4,650 lambs were sold fat from the 40 flocks selling fat lambs and providing full and accurate information regarding date of sale, weight and price of carcase. These 4,650 lambs weigh in total 209,145 lbs. so that the average weight of carcase is approximately 45 lbs.

Sales per month are as follows :-

Month	May	June	July	Aug.	Sept.	Oct.
Number of flocks selling	13	23	32	28	21	19
Lambs sold	199	641	1184	1197	625	804
<u>Sales per month</u> Total sales % by number	4.3	13.8	25.5	25.7	13.4	17.3
lbs. Lamb sold	8183 lbs.	27035 lbs.	52143 lbs.	54191 lbs.	28403 lbs.	39190 lbs.
<u>Sales per month</u> Total sales % by weight	3.9	12.9	24.9	25.9	13.6	18.8
Receipts per Month	£1357	£4201	£7816	£8186	£4417	£5964
<u>Receipts per Month</u> Total Receipts %	4.3	13.1	24.5	25.6	13.8	18.7

Over half the lambs therefore are sold in July and August and less than 5% in May. Over 30% of the lambs are sold in September and October.

As the season progresses the average weight of the lambs sold increases. Price per lb. falls slightly and then recovers as the summer passes. Overall, there is no fall in price per lb. The average price per lb. in September is the same as that in June. Thus :-

Month	May	June	July	August	Sept	Oct.
Av. wt. of Carcase	41.1 lbs.	42.2 lbs.	44.0 lbs.	45.3 lbs.	45.4 lbs.	48.7 lbs.
/Av. Price per lamb	£6-10	£6-11	£6-12	£6-17	£7-1	£7-8
/ Av. Price per lb. (D.C.W.)	3/4d	3/1d	3/0d	3/0d	3/1d	3/0d

/ Including deficiency payment. During the period June to October inclusive this was never below 6d. nor above 6½d. per lb.

While on general grounds of changing demand towards the smaller, more quickly matured animal farmers are urged to produce a 40 lb. carcase it must be stressed that present price differentials show little evidence of this and even if it be granted that price differentials in the future may well favour this type of animal, the optimum point of sale for the individual flock is far from readily determinable.

Setting aside questions of imperfection in the market whereby the bidding of the butcher may not adequately reflect, under more ideal conditions, the demand of his customers for the particular animals being sold, the farmer needs to know four main factors to determine point of sale.

- (1) Present weight (live and D.C.W.) and price per lb. of animals.
- (2) Weight at point of comparison and price per lb. at that stage.
- (3) Additional resources necessary to carry the lambs to this point of comparison.

- (4) The yield to be earned elsewhere on the farm not only by the 'additional resources' capital above, but by that capital represented by the realisable value of the lambs at the first point of comparison.

We find that, in the face of such a complex issue, lambs tend to be sold in small batches. A small number of farmers with larger flocks, anxious to avoid having to go frequently to market and having to draw at regular intervals small batches of lambs fit for sale, sell off all lambs together either in fat or store condition. These are sent either to the Fatstock Marketing Corporation or to sheep fairs.

Excluding seven farms selling three or fewer batches we find that the range in weight of batches is less than 10 lbs. on 16 farms and over 10 lbs. on 17 farms. If, however, a single nontypical batch is excluded from 13 farms, 23 farms then sell their sheep in batches varying in weight by less than 10 lbs. while 10 sell them in batches varying by more than 10 lbs.

The evidence suggests therefore that, on the whole, farmers tend to produce a lamb at a weight which they regard as the most profitable for their farm, that they tend also to draw their lambs in small batches in order to minimise the risk of market variations and so as to fit head of stock more nearly to available food supplies.

The average monthly prices per pound give no indication of any marked overall seasonal price differential. Nor, do they suggest, in spite of the seasonal rise in weight of carcase, that there is any marked price for weight differential. Returns were substantially increased by carrying to higher weights rather than selling earlier in the season at lower weights.

Excluding sales during four weeks at the beginning of the period and two weeks at the end when four batches or fewer were sold weekly, there are sales records covering twenty-three weeks. If now the most common weight of batch sold each week is chosen (covering a range in carcase weight of not more than 3 lbs.) then it is possible to obtain

an indication of the range in price for these - presumably - roughly comparable animals.

Taking, for each month, the average of the weekly price ranges reveals the following seasonal pattern.

Month	May (1 week only)	June	July	August	Sept.	Oct.
Average of Weekly Price Ranges	6d.	10 $\frac{1}{2}$ d.	5 $\frac{3}{4}$ d.	6d.	4 $\frac{1}{2}$ d.	5 $\frac{3}{4}$ d.

If now any nontypical batch - in respect of price per pound - is excluded, the number of batches excluded, and the seasonal pattern of price ranges appear as follows :-

	May	June	July	August	Sept.	Oct.
Number of Batches Excluded per Month	0	4	1	2	0	2
Av. of Weekly Price Ranges	6d.	6 $\frac{1}{2}$ d.	5 $\frac{1}{4}$ d.	5d.	4 $\frac{1}{2}$ d.	3d.

Overall, the batch to batch range in price per pound at any point is of the order of 15% of price per pound. Moreover, as the season progresses the change in pattern tends to reduce rather than increase the range.

Over the whole sales period the heaviest batch of lambs secured the best price per pound on one occasion, the poorest price on five occasions; the lightest batch secured the best price on seven occasions and the poorest price on three occasions.

These results would suggest, therefore, that, over the period May to October, there is only a slight overall movement of prices showing a fall over the summer months and a recovery in early autumn; over this period and within the weight ranges studied there is only slight falling off in price per lb. as animals approach 50 lbs. dressed carcase weight.

On the other hand there appears to be fairly wide batch-to-batch, day-to-day and market-to-market price variations for animals of similar weight.

It is not surprising therefore that the farmer prefers to sell in small batches at fairly regular intervals and not always in the same market.

APPENDIX A

Records were obtained for sixty flocks during the period beginning 1st October, 1955 and ending 31st October 1956.

Distribution of flocks by counties

County	Number of Flocks
Berkshire	7
Buckinghamshire	25
Hampshire	2
Northamptonshire	10
Oxfordshire	16

Distribution of flocks by sizes

Size of Flock (Ewes put to ram)	Number of Flocks
1 - 49	9
50 - 99	18
100 - 149	21
150 - 199	5
200 - 249	3
250 - 299	1
300 - 349	3

48, or 80%, of the flocks were of less than 150 ewes; 27, or 45%

APPENDIX A

were of less than 100 ewes.

Distribution of flocks by breeds

Breed of Ewe where this covers 80% of flock	Half bred	Cluns	Border Leicester	Down Cross	Suffolk Cross	Hill Cross	Scotch Black face	Kerry Hill	Suffolk	Hamp shire
No. of Flocks	21	11	9	5	5	3	2	2	1	1

Some of the Border Leicesters had some Cheviot blood.

Breed of Ram where these tup $\frac{2}{3}$ of flock ^{are}	Suffolk	Wilt shire Horn	Clun	Hamp shire Down	Dorset Down	Dorset Horn	Oxford Down	South Down	Kerry Hill	Border Leics.
No. of Flocks	24	21	10	7	4	2	2	1	1	1

^{are}

Where the flock is shared equally between breeds then entry is made under each breed.

The flocks may be classified further according to the following groups.

By Ewes

Number of Flocks

- | | | |
|-----------------|------|--|
| Light Grassland | (28) | Halfbred, Blackface, Kerry Hill, Hill Cross. |
| Heavy Grassland | (26) | Clun, Suffolk and Suffolk Cross, Border Leicester. |
| Down Breeds | (6) | Down Crosses, Hampshires. |

By Rams

- | | | |
|-----------|------|--|
| Grassland | (57) | Wiltshire Horn, Suffolk, Clun, Kerry Hill, Border Leicester. |
| Downland | (16) | Dorset Down, Dorset Horn, Southdown, Hampshire and Oxford Downs. |

APPENDIX ADATES OF LAMBINGDistribution of flocks according to dates of lambing

Month of Lambing	Number of Flocks
January	1
February	4
March	24
March/April	15
April	16

DISPOSAL OF LAMBS

Of the 10,242 lambs born alive in these sixty flocks, 5,371 were sold fat and a further 2,617 sold as stores. 954 died. At the end of the costing period only 1,301 remained either for breeding or further fattening.

Lamb Sales (Fat) per month

Month	May	June	July	August	September	October
No. of lambs sold	199	641	1184	1197	625	804
lbs. of lamb sold (dressed carcase weight)	8183 lbs	27035 lbs	52143 lbs	54191 lbs	28403 lbs	39190 lbs
Receipts from lamb sales	£1357.11.0	£4201.1.0	£7815.16.0	£8185.17.0	£4416.13.0	£5964.5.6
Av. Carcase Wt.	41.1 lbs	42.2 lbs	44.0 lbs	45.3 lbs	45.4 lbs	48.7 lbs
Av. price per lamb	£6 - 16	£6 - 11	£6 - 12	£6 - 16	£7 - 1	£7 - 8
Av. price per pound	3/4d.	3/1d.	3/0d.	3/0d.	3/1d.	3/0d.

APPENDIX B. Based on records of 60 flocks averaging 115 ewes per flock. Average costs and returns per head of ewes put to the ram. Range in individual flock averages of costs and returns.

	Average	Range	
		Lower Limit	Upper Limit
Opening Valuation	8. 9. 4	3. 12. 7	13. 16. 9
Purchases and Transfers	3. 3	-	3. 17. 8
Total Stock Inputs	8.12. 7	3. 12. 7	13. 16. 9
Sales of Breeding Stock	1. 2. 11	-	10. 2. 11
Sales of Lambs	6.16. 1	-	12. 5. 18
Deficiency Payments	17. 8		2. 4. 0
Wool	1. 9. 7	14. 0	2. 6. 2
Closing Valuation	7. 1. 11	4. 2	11. 13. 9
Total Stock Inputs	17. 7. 7	10. 17. 0	26. 19. 11
GROSS MARGIN (Stock Outputs - Inputs)	8.15. 7	3. 10. 7	13. 3. 2
Less Costs of :			
Labour	1. 9. 6	4. 4	4. 19. 2
Tractor	1. 0	-	15. 0
Purchased Concentrates	4. 11	-	1. 8. 6
Purchased other feed	1. 2	-	1. 2. 0
Homegrown Concentrates	8. 9	-	4. 2. 5
Roots	5. 5	-	2. 7. 1
Silage	7	-	1. 1. 7
Hay	4. 3	-	1. 3. 1
Grazing	2. 2. 8	16. 6	3. 5. 2
Total Feed	3. 7. 9	1. 12. 2	5. 17. 8
Rent	-	-	-
Veterinary & Medicines	4. 5	8. 0	14. 6
Other Direct Costs	8	-	4. 0
Depreciation & Repairs	1. 2	-	7. 3
Transport & Marketing	2. 6	-	6. 2
Total Other Inputs	5. 7. 0	2. 12. 0	10. 13. 2
NET MARGIN (Gross Margin - Total Other Inputs)	3. 8. 7	2. 6. 6	7. 15. 1

APPENDIX B

Opening and closing valuations of livestock and livestock transfers are at commercial market values.

Labour, feed (other than grazing) and other inputs are valued at cost to the farmer.

Grazing costs are based on an average figure of 9d. per ewe week and 6d. per lamb week excluding the first six weeks of the lamb's life. This average figure was obtained from the detailed costings of grazing per stock unit carried out as part of this Department's milk costs investigation.

Differences in grazing costs per ewe depend therefore, for the individual flocks, on the length of time the ewes were on the farm, the number of lambs reared to six weeks and the time they were carried beyond that age. No account is taken in this figure therefore, of any individual farm variations in costs of grassland management.

The average costs and returns given per head above are simple averages of the per head figures calculated for each of the sixty flocks.

APPENDIX CEmployment of, and yield on Capital

The average flock apportioned its capital invested per ewe in the sheep enterprise as follows :-

Item	Amount		
Opening Valuation	8.	9.	4
Purchases and Transfer in		3.	3
Total Stock Input	8.	12.	7
Labour	1.	9.	6
Tractor		1.	0
Purchased Concentrates		4.	11
Purchased Other Food		1.	2
Homegrown Concentrates		8.	9
Roots		5.	5
Silage			7
Hay		4.	3
Grazing	2.	2.	7
Total Food	3.	7.	9
Veterinary & Medicines		4.	5
Other Direct Costs			8
Depreciation & Repairs		1.	2
Transport & Marketing		2.	6
Total Other Inputs	5.	7.	0
Gross Investment	13.	19.	7
LESS:			
Grazing and Labour	3.	12.	1
Net Investment	10.	7.	6

By far the greater part of capital therefore is tied up for the whole year. Food and other inputs are relatively small and in the main invested for less than half the year.

Labour and grazing may not be variable costs. The effect of deducting them from gross investment is to increase the stock input to over 80% of capital invested.

APPENDIX C

Distribution of flocks according to net margin as a percentage of gross investment is as follows :-

-20-29	-10-19	0- -9	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109
4	5	5	7	11	11	7	7	2					1

And according to net margin as a percentage of net investment as follows :-

1	4	4	3	7	6	7	8	5	6	7		1	¹ 152.7
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There is a marked correlation between net margin per ewe and return on capital both on gross and net investment.

Net Margin per head £ s.		Number of Flocks	Net Margin Gross Investment %	Net Margin Net Investment %
7 - 10	7 - 19	2	78.45	114.65
7	7 - 9	4	59.45	86.2
6 - 10	6 - 19	4	47.05	59.28
6	6 - 9	4	55.45	72.03
5 - 10	5 - 19	2	41.75	53.9
5	5 - 9	3	31.97	41.97
4 - 10	4 - 19	5	40.14	58.62
4	4 - 9	5	27.6	35.1
3 - 10	3 - 19	1	19.8	26.5
3	3 - 9	6	23.95	32.82
2 - 10	2 - 19	4	30.1	44.44
2	2 - 9	2	14.75	18.45
1 - 10	1 - 19	3	12.33	16.43
1	1 - 9	4	8.38	12.55
10	19	1	6.6	9.3
0	9	1	2.9	4.8
- 0	- 9	2	- 2.25	- 3.05
- 10	19	2	- 4.6	- 6.3
-1 - 0	1 - 9	-	-	-
-1 - 10	1 - 19	3	-10.17	-14.03
-2	2 - 9	2	-13.7	-19.3

APPENDIX C

There are variations in trend and in individual results, however, and reference has been made in the text to some of the reasons for these.

By and large the flocks with more expensive stock are those with higher investment in other resources. This is not entirely so as the following figures show :-

Stock Inputs Range £	13-14	12-13	11-12	10-11	9-10	8-9	7-8	6-7	5-6	4-5	3-4
Other Inputs	£6.4.6	£5.2.6	£6.4.8	£5.17.9	£5.10.3	£4.19.6	£5.1.5	£5.7.6	£4.18.0	£3.16.4	£3.14.6
No. of Flocks	1	1	4	12	9	6	16	6	2	2	1