Sheep - Cost & production O.S.

ECONOMIC REPORT No. 89

INDOOR SHEEP MANAGEMENT INTERIM REPORT 1964-65

FATTENING HOGGS
INWINTERING HILL EWE HOGGS

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THE EDINBURGH SCHOOL
OF AGRICULTURE,

Dept of Economics

WEST MAINS ROAD,
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by

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FOREWORD

Sheep production, in common with all other types of farming enterprises, is subject to the pressures set up by the current economic environment. While it may be claimed that the Price Review system tends to stabilise the returns from fat sheep and, indirectly, to establish some corresponding stability in the returns from breeding flocks, in both cases there is no easy margin between returns and costs. Working under such conditions the farmer must be fully alive to the need to consider what contribution his sheep may make towards his net income and must consider this problem, broadly speaking, in one of two ways. First, he must assess the alternatives of using land for sheep or for other production lines; secondly, if he decides that sheep still have a place in the farm policy, he must consider what is the most efficient method of sheep management.

This report discusses data concerning two types of sheep management, the indoor feeding of fattening hoggs and the indoor wintering of hill ewe hoggs. These types of management are not new but hitherto have only been practised by relatively few individual farmers. The traditional practices of feeding hoggs off the turnip break and the away-wintering of ewe hoggs have proved to be costly relative to the level of returns and more farmers are being obliged to consider the alternatives of sheep or no sheep (the basic problem on the feeding farm) and, if sheep are to be kept, what is the most efficient (the highest returns - cost ratio) technique for handling them.

Many of the farmers co-operating in these studies were, in fact, trying out the indoor management of sheep experimentally before committing themselves to the capital investment entailed in new or modified buildings. In this respect the available data is weighted against the system. It has also been apparent that the system itself will not make up for lack of quality in the sheep themselves or for poor management or stockmanship. In the sense that the system is being experimented with the information on both forms of indoor management suggest that they can be well worth while provided the "ifs" are all resolved satisfactorily - such as the best type of store lamb for this technique, what the degree of intensive feeding prior to going indoors should be, how much the feeding hoggs should be pushed along and what the best timing of the operation should be. The suggestions are that with feeding hoggs the aim should be a quick period of intensive feeding aiming at sales in the late winter or early spring.

With indoor wintering of ewe hoggs the objective is the production of a ewe hogg in good shape to take her place in the hill flock and the system has to take account of the very factors which have necessitated away-wintering - the feed and weather conditions on the hill. These factors entail the careful assessment of the feeding policy both before and during the indoor period which will vary according to circumstances. The information on this system of carrying the ewe hoggs over the winter suggests that it can be well worth while in terms of cost and an acceptable alternative to the practice of away-wintering on arable farms.

J. D. Nutt,

Advisory Economist.

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INDOOR SHEEP MANAGEMENT INTERIM REPORT 1964-1965

I INTRODUCTION

An investigation into the economics of indoor sheep management was started during the winter of 1964-65 to continue for two years. This interim report covers only the fattening of lambs and hoggs under this system and the inwintering of hill ewe hoggs. Details of the costs etc. of keeping ewes indoors, based on a period of twelve months, will be included in the final report.

A recent report* on the mid and late season fattening of lambs and hoggs in the east of Scotland indicated that profits under traditional systems were low, averaging no more than 6d. per head in 1962-63 and 5s.1d. in 1963-64. The present investigation was initiated to study the alternative system of indoor feeding in which a number of farmers are interested. Information on such developments in sheep management with the possibility of increased efficiency arising, particularly, from greater control of rationing and environment, is important at a time when many farmers are considering excluding feeding sheep from their farms.

The fact that the overall guaranteed price for fat sheep has remained at 3s.2d. per lb d.c.wt. since 1962, no higher than in 1956, makes the study of alternative systems all the more important. There may be scope for improvement on the marketing side but, initially, the farmer is concerned with production techniques which will provide a margin of profit in relation to market conditions as they exist for the time being.

II SOME NATIONAL STATISTICS

Scotland, having between a quarter and a third of the United Kingdom sheep population, at times fares rather badly as regards prices mainly because of the distance from the main centres of consumption. Table I has been compiled from statistics published weekly in the national press and shows the discrepancy between Scottish average market prices plus relative deficiency payments and those for the United Kingdom as a whole.

*Economic Report No. 87.

TABLE I AVERAGE RETURNS FOR FAT LAMBS AND HOGGS IN SCOTLAND COMPARED WITH THE UNITED KINGDOM 1964-65

Month	Range of average market prices (Scotland) per lb d.c.wt.				Range of deficiency payments per lb d.c.wt.				Range of average returns (Scotland) per lb d.c.wt.				Range of average returns (U.K.) per lb d.c.wt.			
	s.	d.	s.	d.	d.		d.		s.	d.	s.	d.	s.	d.	s.	d.
1964																
April	3	2	to 3	$6\frac{3}{4}$	5	to	2		3	7	to 3	$9\frac{1}{4}$	3	$7\frac{1}{4}$	to 3	$7\frac{3}{4}$
May	3	$6\frac{3}{4}$	to 3	9	1	to	nil		3	$7\frac{3}{4}$	to 3	9	3	6	to 3	$7\frac{1}{4}$
June	3	2	to 3	$8\frac{1}{4}$	nil				3	2	to 3	$8\frac{1}{4}$	3	$3\frac{1}{2}$	to 3	$6\frac{1}{4}$
July	2	$10\frac{1}{2}$	to 3	$1\frac{1}{2}$	nil	to	$2\frac{1}{4}$		3	$-\frac{1}{2}$	to 3	$1\frac{1}{2}$	3	$2\frac{1}{4}$	to 3	3
Aug.	2	$8\frac{1}{4}$	to 2	$10\frac{1}{2}$	$1\frac{3}{4}$	to	$2\frac{3}{4}$		2	11	to 3	$-\frac{1}{4}$	3	$1\frac{1}{4}$	to 3	$2\frac{1}{4}$
Sept.	2	$8\frac{1}{2}$	to 2	$9\frac{1}{4}$	$2\frac{3}{4}$	to	4		2	$11\frac{3}{4}$	to 3	$-\frac{3}{4}$	3	$-\frac{3}{4}$	to 3	$1\frac{1}{4}$
Oct.	2	$7\frac{1}{2}$	to 2	8	$4\frac{1}{4}$d.				2	$11\frac{3}{4}$	to 3	$-\frac{1}{4}$	3s.-$\frac{3}{4}$d.			
Nov.	2	$8\frac{1}{2}$	to 2	10	$3\frac{3}{4}$	to	4		3	$-\frac{1}{2}$	to 3	$1\frac{3}{4}$	3	$-\frac{3}{4}$	to 3	$1\frac{3}{4}$
Dec.	2	$10\frac{1}{2}$	to 2	$11\frac{3}{4}$	$2\frac{3}{4}$	to	$3\frac{3}{4}$		3	$1\frac{3}{4}$	to 3	3	3	2	to 3	$3\frac{1}{2}$
1965																
Jan.	2	$11\frac{1}{2}$	to 3	$-\frac{1}{2}$	$2\frac{3}{4}$	to	$3\frac{1}{4}$		3	$2\frac{3}{4}$	to 3	$3\frac{1}{4}$	3	$3\frac{1}{2}$	to 3	$4\frac{1}{4}$
Feb.	3	$1\frac{1}{4}$	to 3	$2\frac{1}{4}$	$2\frac{1}{2}$	to	$2\frac{3}{4}$		3	4	to 3	$4\frac{3}{4}$	3	$4\frac{3}{4}$	to 3	$5\frac{3}{4}$
March	3	$1\frac{3}{4}$	to 3	$2\frac{3}{4}$	3	to	$4\frac{1}{4}$		3	$5\frac{1}{2}$	to 3	$6\frac{1}{4}$	3	$6\frac{1}{2}$	to 3	$7\frac{1}{2}$
April	3	$-\frac{3}{4}$	to 3	3	$1\frac{1}{2}$	to	$4\frac{1}{4}$		3	$3\frac{1}{2}$	to 3	$5\frac{1}{2}$	3	7	to 3	$7\frac{3}{4}$
May	3	$-\frac{1}{2}$	to 3	$3\frac{1}{4}$	nil	to	$1\frac{1}{2}$		3	$1\frac{3}{4}$	to 3	$4\frac{3}{4}$	3	$5\frac{1}{2}$	to 3	$6\frac{1}{2}$
June	3	$3\frac{1}{4}$	to 3	$4\frac{3}{4}$	nil				3	$3\frac{1}{4}$	to 3	$4\frac{3}{4}$	3	$3\frac{1}{4}$	to 3	$6\frac{1}{4}$

It must be appreciated that it is impossible from the available data to split early fat lamb statistics from those of fat hoggs over a year old in the late spring and early summer months of both years. For the three months' period from April to June, 1964 Scottish average returns exceeded the weekly standard price in all but two weeks but from July to September, 1964 they were higher on only three weekly occasions. In the following three quarterly periods, i.e. October to December, 1964, January to March, 1965 and April to June, 1965, average Scottish returns exceeded the standard price in only four weeks out of each thirteen. From mid April to mid June 1964 the average Scottish market price exceeded the United Kingdom average price every week by amounts ranging from $\frac{1}{4}$d. to 3d. per lb dressed carcase weight but for the identical period in 1965 the reverse was the case with the average Scottish market price being anything up to $3\frac{3}{4}$d. per lb below the United Kingdom average.

Table II is also compiled from the weekly statistics to indicate firstly, the monthly percentage of supplies coming from Scotland and secondly, the proportion of sales taking place on a deadweight basis.

TABLE II COMPARABLE FAT SHEEP DATA FOR SCOTLAND AND THE UNITED KINGDOM 1964-65

Month	Scottish sales as percentage of U.K. sales	Scottish sales on deadweight basis as percentage of total Scottish sales	U.K. sales on deadweight basis as percentage of total U.K. sales
	%	%	%
1964			
May	10.1	21.0	30.0
June	9.8	24.2	30.7
July	13.8	35.1	34.9
Aug.	18.2	47.8	38.3
Sept.	18.8	45.3	37.8
Oct.	20.2	45.6	39.7
Nov.	20.9	45.6	38.6
Dec.	23.7	37.6	35.2
1965			
Jan.	24.7	42.6	37.0
Feb.	24.6	35.2	29.1
March	28.2	30.7	25.6
April	28.3	28.2	26.3
May	14.1	20.1	29.3

The first column of the table shows the pattern of Scottish supplies in the United Kingdom market, the proportion rising gradually from early summer to reach a peak in the months of March and April with the disposal of the last of the previous year's lamb crop off the turnip break. Scottish supplies from then until about the end of June consist mainly of early fat lambs, born about Christmas or the New Year, a system of special techniques which has limited scope in Scotland.

Much has been written and spoken about the merits and demerits of selling fat sheep on a deadweight basis as against the liveweight basis through the auction rings. Columns two and three of Table II give an indication of the proportion of fat sheep sold on the deadweight basis for both Scotland and the United Kingdom. The Scottish percentage exceeds that of the United Kingdom when supplies are plentiful, i.e. from July through to April.

III ECONOMICS OF INDOOR SHEEP FATTENING, 1964-65

Quite a few of the farmers who co-operated in this investigation were trying indoor fattening for the first time and, before laying out much capital on new or improved buildings, they wanted to see for themselves how profitable the system would be. Unfortunately many of these farmers tried to experiment with only the smallest of their own home-bred lambs, many of which would normally have died under the traditional open-air system of fattening. All the main breeds and crosses of sheep encountered in the east of Scotland were included but, largely because of the fact that so

many of the individual lots of sheep being costed contained two or more breeds or crosses, any data relating to breed or cross would tend to be misleading in a small sample affected by individual differences in management as well.

These differences in management are related almost entirely to the feeding policy. All nineteen lots (3451 head) of costed sheep received a concentrate mixture based largely on home-grown barley or oats or both plus protein, while nine lots received in addition cut turnips in varying amounts. Hay was omitted from the ration in only one case. For indoor fattening of large lots of sheep the feeding of cut turnips must be mechanised with some form of p.t.o. cutter cart with a side delivery. However, it has been shown that sheep can be fattened on an ad. lib. ration of 17 parts barley and 3 parts protein balancer plus hay and water, though great care has to be taken to avoid digestive troubles. Some farmers using this method managed to cut down the length of period the sheep were indoors by increasing the hand feeding of the mixture for some three weeks before bringing them inside, whereas it took others about a month inside before ad. lib. feeding could be established. The ideal aim of indoor fattening would appear to be a rapid turnover of ad. lib. barley fed hoggs to be sold in late winter and early spring when prices are more advantageous. The slowness of increase in sale price in late autumn and early winter of 1964-65 tended to slow down the sales of many lots of lambs, the farmers refusing to market their lambs until the price became more favourable. Another important point brought out by this investigation was the inherent differences between different lots of sheep of the same breed or cross, emphasised possibly by management during fattening. One lot of sheep of a certain breed or cross could put on twice as much liveweight gain per day as another similar lot on the same ad. lib. barley ration. Much appears to depend on factors other than the actual feeding, e.g. the quality of the store sheep, environment and control of disease.

A total of nineteen costs were collected for this part of the investigation during the winter of 1964-65 and, because of the large variations due to a number of causes, the average of the five most profitable and of the five least profitable enterprises are set out in Table III beside the average for the nineteen costs.

TABLE III COSTS, RETURNS, PROFITABILITY ETC. OF INDOOR SHEEP FATTENING, 1964-65

	Overall Average		5 Most Profitable		5 Least Profitable	
	Per Head	Per Cent	Per Head	Per Cent	Per Head	Per Cent
	£ s. d.	%	£ s. d.	%	£ s. d.	%
Food - concentrate mixture	1 - 5	65.5	14 1	74.1	2 6 1	77.2
- swedes	1 11	6.1	1	.5	9	1.3
- hay	2 5	7.8	8	3.5	5 10	9.8
Total net food costs	£1 4 9	79.4	£- 14 10	78.1	£2 12 8	88.3
Labour	1 10	5.9	9	3.9	1 9	2.9
Sundry costs (including overheads)	4 7	14.7	3 5	18.0	5 3	8.8
Total fattening costs	£1 11 2	100%	£- 19 -	100%	£2 19 8	100%
Value of store lamb or hogg	6 5 5		6 4 1		6 6 9	
Total costs	£7 16 7		£7 3 1		£9 6 5	
Returns (including deficiency payments)	£7 14 11		£8 2 10		£7 17 4	
Margin - Profit	- - -		£- 19 9		- - -	
- Loss	£- 1 8		- - -		£1 9 1	
Number of sheep being fattened (per lot)	182		145		183	
Liveweight of sheep at start (per head)	79 lb		74¾ lb		78 lb	
Liveweight of sheep on disposal (per head)	98½ lb		93¼ lb		103½ lb	
Liveweight increase (per head)	19½ lb		18½ lb		25½ lb	
Number of days indoors	59 days		37 days		102 days	
Liveweight increase per head per day	0.33 lb		0.50 lb		0.25 lb	
Cost per lb liveweight gain	1s. 7d.		1s. -d.		2s. 4d.	
Food given per lb liveweight increase						
concentrate mixture	5.0 lb		4.0 lb		8.4 lb	
roots	11.3 lb		0.9 lb		2.6 lb	
hay	1.7 lb		0.6 lb		3.1 lb	
Margin over net food cost	+4s. 9d.		+£1.3s.11d.		-£1.2s. 1d.	
Death rate as percentage of sheep at start	1.7%		1.5%		2.5%	

From Table III it can be seen that, on average, net food costs accounted for almost eighty per cent of the total fattening costs with the concentrate mixture forming the largest part. It will be noticed that while swedes make up 6.1 per cent of the average costs the root crop only amounts to 0.5 and 1.3 per cent in the other two groups. This is explained by the fact that only one of the five most profitable lots and one of the five least profitable lots actually fed swedes at all. The importance of feeding is further emphasised by the fact that it only cost the most profitable group 14s.10d. per head for net food costs compared with £2.12s.8d. per head for the least profitable group but the average period indoors was 37 days in the first case compared with 102 days in the second case. The most profitable group, however, have a food conversion ratio of 4:1 while the least profitable group average out at 8.4:1; the overall average was 5:1. Liveweight gain per head per day at $\frac{1}{2}$ lb for the most profitable lots is exactly twice that of the least profitable group; the overall average was $\frac{1}{3}$ lb per head per day.

Labour averaged 1s.10d. per head, i.e. 5.9 per cent of total fattening costs, being less per head in the most profitable group which were mainly on ad. lib. feeding and about average in the least profitable group. As two lots of the five most profitable group were on slatted floors labour was reduced by the absence of bedding which, next to feeding, is the most time-consuming practice.

Sundry costs include (a) a share of the depreciation of buildings and equipment, (b) haulage both to and from the farm of the sheep being costed, (c) vaccines, medicines, formaldehyde for footbaths etc. and (d) overheads calculated on a basis agreed by the Scottish Conference of Agricultural Economists. These sundry costs averaged 4s.7d. per head overall with the most profitable five averaging 3s.5d. and the least profitable five 5s.3d. respectively.

The average total fattening costs came to £1.11s.2d. per head for a liveweight gain of $19\frac{1}{2}$ lb in 59 days inside. This compares with an average cost of £2.4s.6d. for a liveweight gain of $26\frac{1}{2}$ lb for a much longer period of less intensive fattening under the traditional system on on the turnip break*. Thus indoor fattening costs on average 1s.7d. per lb liveweight gain as against 1s.8d. for the traditional system but rate of turnover is very much in favour of the former.

The average total fattening cost of the five most profitable lots was only 19s.-d. per head compared with £2.19s.8d. for the five least profitable lots, every single item of cost being higher in the latter group. The potential of the system of indoor fattening is demonstrated by the costs per lb liveweight increase. The profitable farms averaged no more than 1s.-d. per lb compared with an overall average of 1s.7d. and a cost of 2s.4d. for the unprofitable group. To arrive at the average profit or loss per head, values were put on the sheep when they were brought indoors to correspond to purchase or rearing price plus an allowance for the keep since purchase or speaning. The realisation values included the deficiency payments received and in a few cases the wool clip where late-sold hoggs had been clipped before sale, clipping expenses being charged with labour.

From the table it will be seen that the average value of the store sheep in the most profitable group worked out at £6.4s.1d. per head which, taken in conjunction with the average weight of $74\frac{3}{4}$ lb, gave a cost of 1s.8d. per lb liveweight. This group consisted of two lots of Blackface lambs, one group of small home-bred Suffolk cross lambs and two lots of mixed lambs mainly of upland origin. In most cases the lambs had been kept on not much more than a maintenance ration until just prior to coming inside. The average of the whole group was £6.5s.5d. per head, equivalent to

*Economic Report No. 87.

1s.7d. per lb while the least profitable group averaged £6.6s.9d., i.e. 1s.7½d. per lb.

To emphasise the importance of marketing both on the selling and the buying side the five most profitable lots showed average returns of £8.2s.10d. per head, leaving a margin of £1.18s.9d. between selling and "buying" prices. The five least profitable lots had returns of £7.17s.4d. per head and a margin of £1.10s.7d., while the average of all nineteen costs was a return of £7.14s.11d. per head and a margin of £1.9s.6d. Taken on a per lb liveweight basis the five most profitable sold at 1s.9d. per lb, the five least profitable at 1s.6¼d. and the overall average at 1s.6¾d., the latter two at less than the ingoing price per lb. It may be of interest that fully two-thirds of the sheep in the five most profitable lots were sold either privately to butchers or to co-operative groups, i.e. paid for on a deadweight basis.

As regards the profitability of the whole enterprise ten lots showed profits and nine made losses with an overall loss of 1s.8d. per head. The five most profitable lots averaged 19s.9d. profit per head while the five least profitable lots showed an average loss of £1.9s.1d. per head.

Food consumed per lb liveweight gain (see Table III) lays emphasis on the main difference between the five most profitable lots and the five least profitable lots. It is difficult to say whether the fault lies in the actual sheep themselves or in their management indoors but it has been demonstrated that indoor fattening of sheep can be made to pay under certain conditions.

IV INWINTERING HILL EWE HOGGS

Most hill farmers in the College area lying south of the Firth of Forth normally winter their ewe hoggs at home but north of the Forth, in the foothills of the Grampians, the general practice has been to away winter the ewe hoggs from October to April on lower-lying, more arable types of farms. In recent years, however, the cost of this practice (approximately 40s. per head plus haulage) and the reduced availability of farmers willing to take these hoggs has led to second thoughts on the subject of wintering. The obvious alternative was to try inwintering at home and a study of this system was started in the Autumn of 1964.

Two of the eight costs dealt with in this section refer to the winter of 1963-64 but the remainder were for the 1964-65 winter. As with the indoor hogg fattening previously dealt with, some co-operators were trying inwintering largely as an experiment before laying out capital on new or improved buildings. However, as long as there was ample ventilation in the building without having an actual draught on the sheep and as long as the hoggs' feet were in good condition on entry no real trouble was encountered, though footbaths were used periodically on some farms. The general idea of inwintering hill ewe hoggs is to keep them growing on a fairly level plane of nutrition putting on some five or six pounds liveweight over the period. The inwintering period did not exactly coincide with the away-wintering practice as, in general, the hoggs did not go inside until the end of November depending on the prevailing weather conditions and the date when the tups went out to the ewes.

Table IV sets out the main items of average costs on a per head and a per cent basis, covering a total of 1273 ewe hoggs.

TABLE IV INWINTERING HILL EWE HOGGS

Items	Average cost per head	Per cent	Range of individual items
	£ s. d.	%	£ s. d. £ s. d.
Concentrate mixture	- 16 8½	48.1	1 8 to 1 8 8
Hay and grazing	- 10 5	29.9	6 11 to 1 1 3
Total net food costs	£1 7 1½	78.0	12 8 to 2 9 11
Labour	- 3 3	9.3	2 5 to 4 10
Sundry costs (incl. overheads)	- 4 5	12.7	3 7 to 6 11
Total inwintering costs	£1 14 9½	100%	1 1 - to 3 - 6
Number of days inside	117 days		96 to 139 days
Death rate	1.3%		nil to 7.4%
Number of ewe hoggs at end of winter	159		28 to 600
Concentrates consumed per head per day	0.6 lb		¼ lb to ¾ lb
Hay consumed per head per day	0.9 lb		½ lb to 1½ lb

An average total cost of £1.14s.9½d. per head, while less than the normal away-wintering charge, must be looked at in perspective because, as can be seen from the range of feeding costs, there are the extreme cases. For example, very low concentrate per head figure of 1s.8d. referred to a small lot of hoggs fed on a proprietary mixture which they refused to eat with resultant loss in weight and condition, while the high figure of 28s.8d. per head referred to a farmer who had inwintered tup hoggs for a number of years but on trying a small lot of ewe hoggs for the first time gave them too rich a mixture.

Two lots of hoggs were kept on slatted floor houses which, of course, were used for other purposes as well, such as for clipping, storing wool etc. Two lots of hoggs were run outside every day, being brought inside at night and in very stormy weather. One of the last-mentioned lots had to walk or run some 200 yards on a hard tarmacadamed road when leaving and returning to the shed and this had the effect of keeping the feet clean and healthy. This farmer has actually been inwintering his ewe hoggs for the last five years and the farmer who has bought his cast ewes every year stated that last year's draft ewes (the first lot to be inwintered as hoggs) were as good if not better than usual.

The average death rate at 1.3 per cent was not high for a four month winter period. The main trouble encountered was pneumonia but, where there is ample ventilation in the shed and preliminary precautions are taken, this disease was usually held in check. Provided the hoggs' feet were in good condition on coming inside and the bedding, where utilised, was kept dry no real trouble was encountered with footrot though in many cases footbaths were used periodically.

V FARM MANAGEMENT DATA

Table V sets out details of outputs, variable cost inputs and gross margins per 100 sheep fattened indoors with average figures for the whole investigation on the left and those of four lots of intensive ad. lib. barley-fed sheep on the right.

TABLE V OUTPUTS, INPUTS AND GROSS MARGINS PER 100 FATTENING SHEEP

Type of system	Indoor fattening			Indoor fattening Intensive ad. lib feeding of barley mixture plus hay and water		
Breed of sheep	B.F., G.F., N.C.Ch., H.B. and Down X.			Do.		
Number of days inside	59 days			31 days		
Death rate	1.7%			0.5%		
Liveweight gain per head	19½ lb			21¼ lb		
OUTPUT	Number		£	Number		£
Fat sheep sold	98		775	99		891
Less						
Store sheep purchased	100		627	100		718
			£148			£173
INPUTS	Weight	Acres	£	Weight	Acres	£
Concentrates	87½ cwts	-	102	62½ cwts*	-	78*
Hay (home-grown, low ground)	25 "	⅝	5	8½ "	⅕	2
Turnips (lifted and stored)	10 tons	¼	4	nil	-	-
Haulage, medicines etc.	-	-	15	-	-	12
Total variable costs			£126			£ 92
Gross margin per 100 sheep			£ 22			£ 81
" " " forage acre			£ 25			£405
Labour requirements		35 hours			7 hours	
Tractor requirements		nil			nil	

*53⅛ cwts Barley @ 21s. per cwt £56
9⅜ " Protein balancer @ 47s. per cwt £22

The left hand figures are compiled from the average of an investigation into indoor fattening while the right hand figures concern only the intensively fed sheep getting the barley mixture ad. lib. as soon as possible.

Table VI shows the details of the variable costs of inwintering hill ewe hoggs with some other relevant data.

TABLE VI FARM MANAGEMENT DATA RE INWINTERING HILL EWE HOGGS

Inputs per 100 ewe hoggs			
Concentrates	3T.5 cwts		£ 84
Hay	4T.14 "	3 acres at £5	15
			£ 99
Vaccines etc.			2
Total variable costs			£101
Length of intwintering period		= 117 days	
Death rate		= 1.3%	
Liveweight gain		Not known but probably about 6 lb per head	
Labour requirements		= 59 man hours	
Tractor requirements		= nil	

VI SUMMARY

Indoor Fattening

1. Nineteen lots of sheep were costed during the winter of 1964-65. These comprised a total of 3451 sheep of various breeds and crosses fattened under different intensities of feeding. Averages of the five most profitable lots and the five least profitable lots are set out and discussed alongside the overall average figures.

2. The five most profitable lots cost only 19s.-d. per head to fatten and left a profit of 19s.9d. per head; the five least profitable lots cost £2.19s.8d. to fatten, leaving a loss of £1.9s.1d. per head. The overall average fattening cost worked out at £1.11s.2d. per head, resulting in a loss of 1s.8d. per head.

3. The most profitable lots were on a fairly intensive feeding system, being indoors for an average period of only 37 days and putting on an average of $\frac{1}{2}$ lb liveweight per head per day. The least profitable lots on the other hand were 102 days inside on average and put on $\frac{1}{4}$ lb liveweight per head per day. The overall average worked out at 59 days inside at $\frac{1}{3}$ lb liveweight gain per head per day.

4. In general the most profitable method of indoor fattening of sheep would appear to lie in the careful use of ad. lib. barley feeding, i.e. 17 parts barley to 3 parts protein balancer plus hay and water, keeping the sheep on a maintenance diet outside until a week or two before bringing them inside on to intensive methods to grade at a period when the price is high.

Inwintering Hill Ewe Hoggs

1. The average cost came to £1.14s.9½d. per head for a sample of 8 costs covering 1273 ewe hoggs. These hoggs were inside for an average of 117 days though 2 lots were run outside through the day and brought inside at night and during rough weather.

2. Feeding accounted for 78 per cent of the total cost. Concentrates were consumed at an average of 0.6 lb per head per day, hay at 0.9 lb and no swedes were given.

Farm Management Data

Farm Management data for indoor fattening and inwintering are shown in detail.

VII COSTING PROCEDURE

Feeding

All purchased foods have been charged at cost price plus haulage to the farm less residual manurial values. Home-grown foods have been charged at estimated cost of production prices less residual manurial values. For "average" conditions the following are examples before the deduction of the manurial values.

Crop	Price per ton	Crop	Price per ton
Oats	£18. -s.-d.	Hay	£9.10s.-d.
Barley	£18. -s.-d.	Turnips (lifted)	£1. -s.-d.

Grazing which only appeared in the case of two lots of inwintered hill ewe hogg costs was negligible, being mountain and heathland in the middle of winter.

Initial Cost of Store Lambs

Purchased lambs have been charged at cost price excluding haulage to the farm which appears under sundry costs. Home-bred lambs have been valued at estimated cost of production according to breed or cross of sheep and type of farm. To both these values something has been added to allow for keep from time of purchase or speaning until the sheep were put indoors.

Labour

This is based on the actual wages (including perquisites) paid to the workers connected with the enterprise. The farmer's own manual labour has been charged at 5s.6d. per hour.

Sundry Costs

These include (a) a share of the depreciation of the building and equipment used, (b) haulage of the costed sheep both to and from the farm, (c) vaccines, medicines etc. used and (d) overheads which were calculated on bases agreed upon by the Scottish Conference of Agricultural Economists.

VIII ACKNOWLEDGMENT

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