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COST OF REARING LAMBS FROM FIRST CROSS EWES

Northumberland 1947

By

D.H. Dinsdale, M.A.

J.B. Butler, M.Sc., M.Com.

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Comments and inquiries arising from the report should be addressed to

The Provincial Agricultural Economist,
Farm Economics Branch,
King's College,
Newcastle-on-Tyne, 1.

I.

The term "Enterprise Cost Study" is now in general use amongst Agricultural Economists to describe those investigations which attempt to pick out from the total economy and financial accounts of mixed farms the items of expense and income attributable to a specific product, which may be a particular crop, a particular class of livestock, a particular livestock product, or a particular set of operations. Provincial Agricultural Economists and their staffs have carried out a large number of enterprise cost studies in recent years; many more are in progress; and the resulting reports now comprise a considerable volume of literature, which may be expected to increase.

These studies serve two main purposes. First, they provide material to assist the Price Reviews which are now an accepted part of the statutory machinery for the administration of national agricultural policy. Secondly they provide information for farmers and general readers who are interested in various aspects of farm efficiency and other features of the farming economy.

This report presents the results of an enterprise cost study, the special object of which was to ascertain, if possible, the cost of rearing lambs from first-cross ewes. If the results are to be correctly appraised and usefully applied it is important that the scope of the inquiry and the methods of accounting which have been used should be fully grasped. Printed figures too easily take on the air of authority and exactness. The supporting text may contain all sorts of warnings and qualifying phrases to protect the reader against being misled but experience sometimes suggests that the more warnings are given, the more readily the reader takes the easy road of assuming that since all possible snags have apparently been allowed for, the tabulated figures may be used forthwith for any and every purpose to which they may seem to be relevant. If readers will behave like this, we cannot prevent them. We shall continue to sound the warnings, however, and do our best to signpost the road to correct understanding.

II.

Most enterprise cost studies are made on the basis of a selected sample of the enterprises to be studied and it is useful therefore to outline the general background and setting of the selected enterprise with which this report deals.

One of the accepted canons of sheep husbandry is that the sheep and the system of management should be fitted to their environment. Consequently there are many breeds of sheep and many ways of farming them. The county of Northumberland, in which this study was made, has a wide range of soils, topography and climate. Its total agricultural area of nearly 1,100,000 acres includes, at the one extreme, half a million acres of rough (hill) grazings, and, at the other, some of the most fertile lowland in the country.

In the sheep husbandry of the county, taking broad lines of classification, it is possible to distinguish three levels or stages. On the higher hill grazings there is pure breeding of the hill breeds proper, i.e., Scotch Blackface, Cheviot and Swaledale. As altitude falls, and land fertility and climatic conditions become more favourable, the use of Leicester rams (Border or Hexham type) on ewes of the hill breeds marks what may be called the first crossing stage, pro-

ducing Mule, Half-bred and Greyface ewes* from Blackface, Cheviot and Swaledale ewes respectively. Under good lowland conditions, these first cross ewes are crossed with Down rams, Oxford and Suffolk principally, and this may be regarded as the second crossing stage. The successive stages are marked by increasing prolificacy and size of sheep as the environment improves.

The demarcation lines between these crossing stages cannot be drawn between farm and farm since many farms combine two or even all three stages. On some hill farms, for example, pure breeding is confined to the younger ages of ewes, while the older ewes are crossed by the Leicester type of ram. Where conditions are favourable a proportion of the first cross ewes thus produced may be further crossed with the Oxford or Suffolk tup.

Moreover, most flockmasters endeavour to avoid the uncertainties and generally lower prices of store markets by fattening as big a proportion of their lambs and cast ewes as the conditions of the farm permit.

Throughout the three crossing stages the need for maintaining type calls for continuing reliance upon the basic hill breeds and so establishes their recognised function of foundation stock. The connecting links between the successive stages are the transfers of mature ewes - the draft ewes - or of ewe lambs and shearling ewes from the poorer to the better conditions, to serve as flock replacements. At the same time, surplus wether lambs which cannot be finished on the farms which produce them are sold in store condition to be finished elsewhere.

III.

Against this general background the present cost study requires to be focussed. Before dealing with the flocks brought under review, however, it will be advisable to refer to the accountancy aspect of the investigation.

Sheep provide one of the commonest examples quoted in economic text books of what is called "joint production", i.e., the production of two or more separate products from a single set of operations. The text books usually refer to mutton and wool only as the joint products of sheep farming but, as the profit and loss accounts given later in this report show (Tables 12 and 14) six separate products of the flock may be distinguished, namely, draft ewes, fat ewes (including culled ewes), rams, store lambs, fat lambs, and wool. These products differ, of course, in their relative importance as sources of income.

In the management of the flock as a producing unit, a large part of the operations, and consequently, the expenses are common to all products. The accountant, called upon to ascertain the cost of production of one of the products, must therefore decide upon some method for allocating these items of common expenditure between the selected product and the others. Where the selected product is demonstrably of outstanding economic importance, contributing the major share of the total income earned by the flock, it is an accepted principle to charge the whole flock costs against that product in the first place, calling them "Gross Cost", and to offset against this Gross Cost, the income from the less important products, to arrive at a Net Cost for the selected major product. This is the general method adopted for this inquiry and its effects are summarised in the following paragraphs.

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* On the central and south Pennines a more common practice is to use the Wensleydale ram on the Swaledale ewe to produce the Masham at the first crossing stage.

Averaging the 36 flocks concerned, the year began with a flock of ewes and rams valued at £1312. It ended with a flock of ewes, rams and retained lambs valued at £1864, an increase of £552. Add to this the sales of sheep and wool during the year which amounted to £1032, and total output was £1584.

The cost of producing this composite output was £1117, leaving a profit of £467.

In the total output (£1584), lambs, taken altogether accounted for £1214 (76%). They constituted the major product, though they comprised three categories, store lambs (sold or retained for finishing), fat lambs sold, and ewe lambs retained for flock maintenance. The balance of income, £370, treated as sales of by-products, would reduce the Gross Cost (£1117) to £747, this last figure being then taken as the net cost of producing 252 lambs, which was the average number reared per flock. The net cost per lamb according to this calculation was there- £2. 19. 3. The significance of this final figure depends on the methods used for arriving at the charges made for the various items of cost. Full details of the methods are given as an appendix on page 15.

Certain other questions of general principle can be dealt with to advantage here.

(1) The costs charged are the costs appropriate to the year's production only, i.e., the costs of maintaining the ewe flock itself and of handling the 1947 lamb crop. The point here is that when the year began in November 1946, most farms would still be carrying substantial numbers of lambs from the 1946 crop, in process of finishing. In this study, the costs incurred during 1946-47 in finishing these carried-over lambs and the returns from their disposal have been excluded. The ewe lambs retained from the 1946 crop as flock replacements have, of course, been charged as part of the cost of flock maintenance in 1946/47.

(2) The calculation of the depreciation of the ewe flock itself is given in detail in Table 4. The amount of depreciation obviously depends on (a) the valuations placed upon the ewes and rams carried over, (b) the cost of ewes, gimmers, ewe lambs and rams bought and the values placed on home reared replacements brought into the flock and (c) the prices received for draft ewes, fat and culled ewes, and rams. In the table, the returns from wool sales have also been brought in to offset the gross depreciation of the flock. This has been done partly as a matter of convenience, but also in accordance with the principle of treating "minor" items of output as by-products. All these "variables" affect the amount of flock depreciation and, consequently, the cost of rearing lambs.

It should be clear that the more important the "minor" products become, the more arbitrary becomes this method of calculating flock depreciation and charging the whole of it against the lamb output. It is arguable, for example, that the draft ewe is as important an objective of production as the store lamb and that the economics of flock management are presented in a distorted way when the draft ewe is treated merely as a by-product of lamb production. This argument would have much greater force when applied to hill flocks proper. For the type of flock dealt with in this study, as the Profit and Loss Statements show in Tables 12 and 14, the dominance of the lamb output as the major source of income justifies the accounting method adopted.

(3) The final product which this study attempts to identify is the "reared lamb". Strictly speaking this should mean the reared store lamb. From the circumstances of the case, however, fine distinction between rearing and finishing is impossible. Many lambs fatten as they grow and it is largely the extent to which they do so which determines whether they are sold through the grading centre or the store ring, subject let it be said, to the prospective prices by either outlet. Comparisons between the sub-groups of farms will indicate that wide variations are possible in the proportions of lambs fattened within the year. The general conclusion is then that the term "per lamb reared" must be interpreted with latitude.

(4) The methods used for arriving at the charges for particular items of cost need careful notice. For example, whether foods fed to stock should be charged at cost of production, or feeding value, or market value is one of the perennial debating points in farm cost accounting. The basis on which grazing costs are calculated and distributed between different categories of stock is another point on which opinions may differ. The same applies to the treatment of overheads and general farm expenses. The choice of method for dealing with these matters must necessarily be somewhat arbitrary and readers are specially referred to the Appendix, in which details are given of the methods used in this study.

IV.

The study concerns 36 flocks disposed in three equal groups in different parts of Northumberland. With the exception of one mixed flock, all the flocks consisted of first cross ewes, mostly Half-bred (Cheviot x Border Leicester) though here and there some mules were included. The tups used for lamb production were mostly Suffolks, the rest being Oxfords.

The first group is located in the south of the county on the higher land adjoining the eastern slopes of the Pennines. Elevation is between 300 and 700 feet above sea level and the farms are rather large. (Table 1). As a result of the war, tillage occupies about 22% of the area of the farms, but the main farming enterprise continues to be summer feeding of beef cattle with the sheep flock as an important subsidiary. The extension of the tillage area caused some reduction in the ewe flocks. Geographically the area is disposed around and to the west of the village of Matfen and this group of farms is conveniently described as the Matfen group.

The second group is located some twenty miles north of Matfen and north-west of the small market town, Rothbury. Here elevation is similar to that of the Matfen group but the area is more tightly bounded by hills and the contours are steeper. Tillage, in about the same proportions of farm area as in the first group, is mainly devoted to fodder cropping. In this group, referred to as the Rothbury group, sheep take precedence over cattle, though fairly large numbers of the latter are reared and some fattening is carried on.

The third group, referred to as the Tweedside group, is scattered over the northern corner of the county between Wooler, Berwick-on-Tweed and Coldstream. Soil types in this area are more variable but most are light or loamy and the farming is more mixed. Arable crops are a strong feature, tillage amounting to 43% of area on the farms covered by this study and the livestock enterprises are closely integrated with the cropping to sustain fertility. The high proportion of temporary leys is notable.

Under pre-war conditions the half-bred flock could almost be regarded as the centrepiece in the farming economy. Lambs were partly sold fat off grass and partly finished as medium weight hoggs off roots and other arable crops. In addition beef cattle, both grass fed, and yard fed, were handled on some scale.

The war has shifted the emphasis more strongly to the arable cash crops; yard fed cattle are now considered uneconomic and though ewe flocks have been reduced, they still occupy an important part in the farm economy of the area. The balance of prices favours the heavier lamb.

Details of the average farm in each group, the flocks and the turnover in sheep and lambs are given in Tables 1, 2, 3, and 7. The largest flocks studied were in the Rothbury group and the smallest in the Matfen group. Some indication of the relative importance of the sheep flock in the general farm economy is given by the fact that in the Rothbury group the ewe flock averaged 52 per 100 acres of farm and in each of the other groups, 34.

In all groups the accounting year for the study ran from 1st November 1946 and Tables 2 and 3 indicate the general practice of flock maintenance. In considering the extent to which flock numbers are maintained by home reared ewe lambs and purchased ewes and gimmers respectively, two points are to be noted. First, home reared does not usually mean home bred. The flocks themselves being crossbred, only those farms which carry both a pure bred Cheviot flock (crossing the older ewes with the Border Leicester ram) and a Half-bred flock can provide their own half-bred ewe lambs for replenishment of the Half-bred flock. Such cases are comparatively few. The majority of the farms buy in their replacements either as ewe hoggs or as shearling gimmers. Practice varies somewhat between the groups.

In the Rothbury group, the area being essentially a rearing and not a finishing area, most replacements are bought as hoggs, carried for a year, and put to the ram as shearling gimmers. The ewe hoggs may be bought from the higher farms in the area, though considerable numbers are imported from Scotland through the auctions at Hawick and St. Boswells.

Tweedside practice is similar, and, as Table 3 indicates, the bulk of the replacements in this and the Rothbury group consisted of home-reared (but not home-bred) ewe hoggs.

Flockmasters in the Matfen group, on the other hand, prefer to buy replacements as shearling gimmers rather than as hoggs and such hoggs as are bought are usually sufficiently well-grown to be tupped as hoggs.

There are differences also in the method of disposing of the ewes when their service in the flock ends. See Tables 2 and 3. In the Rothbury and Tweedside groups the greater part of the ewes are drafted as stores for further breeding (usually to flying flocks in other lowland areas). In the Matfen group the tendency is to carry the ewes longer and fatten them before disposal. It should perhaps be pointed out that the differentiation between draft ewes and fat ewes is based on the market to which the ewes were consigned. Fat ewes are those sold through a grading centre; draft ewes are those sold through a store market. Relative prices between the two markets will affect the differentiation. In the Rothbury area, for instance, all fit ewes are normally consigned to the store market but in 1947, grading prices were frequently 10/-. a head or more above store prices; hence a more than usual proportion of ewes sold fat in this area in this year.

The second point of special interest in connection with flock replacements is that the year 1947 was marked, and marred, by most exceptionally severe snowstorms and frosts in the critical season before lambing. On the basis of this one year's figures it is difficult and may be dangerous to attempt firm conclusions about the effects and costs of the storms. It would certainly be wrong to use this study as a measure of the storm effects in all areas.

The actual death rates in the ewe flocks, recorded in Tables 2 and 3, may not seem so high as might have been expected and the same applies to deaths of lambs. (Table 7). When allowance is made for the replacements bought or brought in during the year, the ewe flocks in all three groups were slightly higher at the year end, than at the beginning. The question how far the intake of replacements was above normal could be answered with greater certainty if figures for normal years were available. It would seem that, in the Rothbury group at least, the rate of replacement this year was exceptional.

It is also to be remembered, in view of the small samples presented here, that, while the incidence of the storms was very uneven, it was more severe on the high lying farms. Generally the flocks reported upon here are Half-bred flocks on farms which might be expected to be in a somewhat better position to cope with the exceptional conditions. Moreover, the Half-bred ewe is notably prolific and a good mother, so that, even when lamb losses are severe, there may still be a sufficient crop to provide for necessary flock replacements. That lamb crops were sub-normal is indicated by the numbers of lambs born per 100 ewes, given at the foot of Table 3. Under lowland conditions, as on Tweedside, Half-bred ewes may normally be expected to produce average crops of between 160 and 170 lambs per 100 ewes.

Apart from the question of flock replacement the storms made necessary an abnormal amount of hand feeding, especially oats, concentrates and hay, i.e., the accessible foods. On most farms the opening of root clamps was impossible and transport of any kind of food was extremely difficult and arduous.

The exceptional labour involved in snow-cutting and associated tasks made necessary by the storms raised a difficulty in accountancy, and, after full consideration, it seemed advisable to treat this exceptional item, which was general to all farm operations at the time, as part of the general farm overheads. As explained in the appendix on methods, general farm overheads (other than rent) have been excluded from the charges brought in against the sheep flocks in this study and the net margins arrived at need to be interpreted in the light of this decision.

Table 6 gives details of the kinds, cost and quantities of foods fed in each group. As stated earlier, foods are charged at average cost of production, as ascertained from independent studies, subject to adjustment when necessary, to allow for current wage and price levels.

TABLE 1. AREA and CROPPING OF FARMS

	Matfen	Rothbury	Tweedside	All Groups
No. of farms	12	12	12	36
Cropping				
Tillage	73	117	242	130
Leys 1-3 years	47	98	125	83
Permanent Grass	206	216	175	189
Rough Grazing	4	92	18	37
Woods and Waste	1	10	7	6
Total	331	533	567	445
Average Farm Rent per acre	£1.14.0.	18s.0d.	£1.6.0.	£1. 2. 0.

TABLE 2. NUMBERS OF EWES IN COSTED FLOCKS

No. of Flocks	Matfen 12		Rothbury 12		Tweedside 12		All Groups 36	
	Total	Per Farm	Total	Per Farm	Total	Per Farm	Total	Per Farm
Ewes at Nov. 1, 1946	1129	94	3339	278	2337	195	6805	189
Home-reared ewe lambs added	91	8	826	69	505	42	1422	40
Ewes & Gimmers bought	172	14	255	21	125	10	552	15
	1392	116	4420	368	2967	247	8779	244
Draft ewes sold	37	3	456	38	284	24	777	22
Fat " "	82	7	282	23	138	11	502	14
Deaths	115	10	213	18	164	14	492	13
	234	20	951	79	586	49	1771	49
Ewes at Nov. 1, 1947	1158	96	3469	289	2381	198	7008	195

TABLE 3. FLOCK MAINTENANCE AS % OF OPENING FLOCK

	Matfen	Rothbury	Tweedside	All Groups
Ewe Flock at commencement	100.0%	100.0%	100.0%	100.0%
Home-reared lambs added .	8.1	24.7	21.6	20.9
Ewes & Gimmers bought ...	15.2	7.6	5.3	8.0
Draft ewes sold	3.3	13.7	12.2	11.4
Fat " "	7.3	8.4	5.9	7.4
Deaths	10.1	6.4	7.0	7.2
Ewe Flock at end of year.	102.6	103.9	101.0	103.0
Lambs born per 100 ewes	135	136	139	137

TABLE 4. RANGE IN SIZE OF OPENING EWE FLOCKS.

	0-50	50-100	100-150	150-200	200-250	250-300	300-350	350-400	400-450
Matfen	2	6	1	3	-	-	-	-	-
Rothbury	-	-	1	-	4	2	3	-	2
Tweedside	-	-	4	3	4	-	-	1	-
All Groups	2	6	6	6	8	2	3	1	2

TABLE 5. DEPRECIATION ON BREEDING FLOCK PER 100 EWES.

	Matfen	Rothbury	Tweedside	All Groups
	£. s.d.	£. s.d.	£. s. d.	£. s. d.
Opening Valn. Ewes & Rams ..	632.13.8.	704. 2.8.	709.10. 0.	694. 2. 5.
Purchases of Ewes & Gimmers	115.11.7.	55.18.6.	34. 4. 0.	58. 7. 2.
Ewe lambs transferred in ...	49. 0.2.	165.12.7.	148.12. 6.	140. 8.10.
Purchases of Rams	24. 0.0.	10.18.0.	18.14. 0.	15.15. 0.
	821. 5.5.	936.11.9.	911. 0. 6.	908.13. 5.
Draft ewes sold	20. 9.7.	83. 8.7.	72. 3. 9.	69. 2. 6.
Fat " "	38. 3.5.	45. 9.4.	34. 8. 3.	40. 9. 3.
Rams sold	2. 2.2.	1.17.9.	1. 2. 5.	1.13. 2.
Closing Valn. Ewes & Rams ..	668.18.3.	717.14.0.	739. 5. 7.	717. 0. 4.
	729.13.5.	848. 9.8.	847. 0 0.	828. 5. 3.
Gross Depn.on Breeding Flock	91.12.0.	88. 2.1.	64. 0. 6.	80. 8. 2.
Less Sales of Wool	53. 9.4.	61. 2.6.	65. 2.11.	61. 4. 9.
Depn. on Breeding Flock less Wool Sales	38. 2.8.	26.19.7.	Ap.1. 2. 5.	19. 3. 5.

TABLE 6. COST OF FEEDING EWES PER 100 EWES

	Matfen		Rothbury		Tweedside		All Groups	
	Cwts	£. s. d	Cwts	£. s. d	Cwts	£. s. d	Cwts	£. s. d
Grazing		88.10. 9		71.19. 1		114.17. 8		89. 8.11
Supplementary Food								
Hay	117	20.18. 1	127	22.15.11	46	8. 7. 0	98	17.10. 5
Roots	227	13.17.11	884	54. 3. 6	1238	71.13. 4	897	53.10. 0
Oats & Beans	84	63. 5. 2	101	75.15.10	93	69.16.10	96	71.13. 4
Cake	17	10.17. 1	14	10.16. 7	23	13.16.11	18	11.17. 5
Total		197. 9. 0		235.10.11		278.11. 9		244. 0. 1

TABLE 7. DISPOSAL OF LAMBS

	MATFEN		ROTHBURY		TWEEDSIDE		ALL GROUPS	
	No.	%	No.	%	No.	%	No.	%
Lambs born	1520	100.0	4526	100.0	3253	100.0	9299	100.0
Store lambs sold	252	16.6	3150	69.6	347	10.7	3749	40.3
Fat " "	294	19.3	621	13.7	831	25.5	1746	18.8
Deaths	36	2.4	103	2.3	71	2.2	210	2.3
Retained for Breeding	37	2.4	251	5.5	110	3.4	398	4.3
" " Feeding	901	59.3	401	8.9	1894	58.2	3196	34.3
	1520	100.0	4526	100.0	3253	100.0	9299	100.0

TABLE 8. COST OF REARING LAMBS PER FARM

	Matfen	Rothbury	Tweedside	All Groups
	£. s. d	£. s.d	£. s. d	£. s. d
Depreciation on Ewe Flock	35.17. 6	75. 1.4	Ap.2. 3. 8	36. 5. 1.
Food & Grazing, Ewe Flock	185.15. 4	655. 8.1	542.10.10.	461. 4. 9.
Grazing (Lambs)	23. 8. 5	42.13.1	71. 5. 3	45.15. 7.
Additional Food (Lambs) .	1. 5.11	21.13.7	3.17.10	8.19. 2
Labour	71.18. 0	249.18.4	153.18. 4	158.11. 7
Dip, Vaccines, etc.....	16. 5.10	39. 1.3	28.13. 4	28. 0. 2.
Transport & Miscellaneous	3. 1. 3	16.13.9	7. 2.11	8.19. 3.
Total Cost	337.12. 3	1100. 9.5	805. 4.10	747.15. 7
Number of Lambs Reared ..	124	369	265	252

TABLE 9. RANGE IN NUMBER OF LAMBS REARED PER 100 EWES

	110-120	120-130	130-140	140-150	150-160
Matfen	-	5	3	3	1
Rothbury	3	2	1	6	-
Tweedside	-	4	2	4	2
All Farms	3	11	6	13	3

TABLE 10. COST OF REARING LAMBS PER LAMB

	Matfen	Rothbury	Tweedside	All Groups
	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Depreciation on Ewe Flock	5.10.	4. 1.	App. 2.	2.10.
Food & Grazing, Ewe Flock	1.10. 0.	1.15. 7.	2. 0.11.	1.16. 7.
Grazing (Lambs)	3.10.	2. 4.	5. 5.	3. 7.
Additional Food (Lambs) .	3.	1. 2.	3.	8.
Labour	11. 7.	13. 7.	11. 7.	12. 7.
Dip, Vaccines, etc.....	2. 7.	2. 1.	2. 2.	2. 3.
Haulage & Miscellaneous .	6.	11.	7.	9.
Cost per Lamb Reared	2.14. 7.	2.19. 9.	3. 0. 9.	2.19. 3.
Average Return per Lamb .	5. 4.11.	4. 7. 8.	5. 4. 0.	4.16. 3.
Profit per Lamb	2.10. 4.	1. 7.11.	2. 3. 3.	1.17. 0.

TABLE 11. RANGE IN COST OF REARING PER LAMB

	£2.0.0. to 2.10.0	£2.10.0 to £3. 0.0	£3. 0.0 to £3.10.0	£3.10.0 to £4. 0.0	£4. 0.0 to £4.10.0	£4.10.0 to £5. 0.0	£5. 0.0. to £5.10.0
Matfen	5	2	4	1	-	-	-
Rothbury	2	4	5	-	-	1	-
Tweedside	3	4	2	1	1	-	1
All Farms	10	10	11	2	1	1	1

TABLE 12. PROFIT & LOSS ACCOUNT ON SHEEP (per Farm)

	Matfen	Rothbury	Tweedside	All Farms
EXPENSES	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Opening Valuation of Ewes and Rams	595. 5. 0.	1959. 5. 0.	1381.15. 0.	1312. 1. 8.
Purchases				
Ewes	108.14.10.	155.12. 2.	66.12. 2.	110. 6. 4.
Rams	22.11. 8.	30. 6. 8.	36. 8. 4.	29.15. 6.
Ewe Lambs transferred in	46. 2. 0.	460.17. 3.	289. 8.11.	265. 9. 6.
Food				
Grazing - Ewes	83. 5.10.	200. 4. 4.	223.14. 9.	169. 1. 8.
" - Lambs	23. 8. 5.	42.13. 0.	71. 5. 3.	45.15. 7.
Other Foods - Ewes	102. 9. 6.	455. 3.10.	318.16. 1.	292. 3. 1.
" " - Lambs	1. 5.11.	21.13. 7.	3.17.11.	8.19. 2.
Lsbour	71.18. 0.	249.18. 4.	153.18. 4.	158.11. 6.
Dip, Vaccines, etc.....	16. 5.10.	39. 1. 3.	28.13. 4.	28. 0. 2.
Haulage & Miscellaneous	3. 1. 3.	16.13. 9.	7. 2.11.	8.19. 4.
Profit on Flock	310.18. 9.	515.11.11.	574. 2. 7.	466.17. 9.
	1385. 7. 0.	4147. 1. 1.	3155.15. 7.	2896. 1. 3.
INCOME				
Sales				
Draft Ewes	19. 5. 4.	232. 2. 9.	140.11. 8.	130.13. 3.
Fat Ewes	35.18. 3.	126.10. 3.	67. 0. 5.	76. 9. 8.
Rams	1.19. 8.	5. 5. 2.	2. 3. 5.	3. 2. 9.
Store Lambs	115.10. 2.	1123.18. 9.	122. 6. 7.	453.18. 6.
Fat Lambs	144. 7. 5.	237. 4. 3.	375.10.11.	252. 7. 7.
Wool	50. 6. 3.	170. 1. 7.	126.17. 7.	115.15. 1.
Closing Valuation, Ewes and Rams	629. 6. 8.	1997. 0. 0.	1439.15. 0.	1355. 7. 3.
Closing Valuation, Lambs	388.13. 3.	254.18. 4.	881.10. 0.	508. 7. 2.
	1385. 7. 0.	4147. 1. 1.	3155.15. 7.	2896. 1. 3.

TABLE 13. RANGE IN PROFITS ON SHEEP PER FARM

	0-£100	100-200	200-300	300-400	400-500	500-600	600-700	700-800	800-900	900-1000	1000-1100
Matfen	-	2	5	3	1	-	-	-	1	-	-
Rothbury	1	-	3	1	1	1	1	-	1	2	1
Tweedside	1	2	-	-	1	1	3	1	1	2	-
All Farms	2	4	8	4	3	2	4	1	3	4	1

TABLE 14. PROFIT & LOSS ACCOUNTS PER 100 EWES

	Matfen	Rothbury	Tweedside	All Groups
EXPENSES	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Opening Valuation of Ewes & Rams	632.13. 8.	704. 2. 8.	709.10. 0.	694. 2. 5.
Purchases				
Ewes and Gimmers	115.11. 7.	55.18. 6.	34. 4. 0.	58. 7. 2.
Rams	24. 0. 0.	10.18. 0.	18.14. 0.	15.15. 0.
Ewe lambs transferred in	49. 0. 2.	165.12. 7.	148.12. 6.	140. 8.10.
Food				
Grazing - Ewes	88.10. 8.	71.19. 1.	114.17. 8.	89. 9. 0.
" - Lambs	24.17.10.	15. 6. 7.	36.11.10.	24. 4. 4.
Other Foods - Ewes	108.18. 3.	163.11.10.	163.14. 0.	154.11. 2.
" " - Lambs ...	1. 7. 7.	7.15.10.	2. 0. 0.	4.14. 9.
Labour	76. 8. 5.	89.16. 4.	79. 0. 8.	83.17.10.
Dip, Vaccines, etc.....	17. 6. 4.	14. 0. 9.	14. 14. 5.	14.16. 4.
Haulage & Miscellaneous	3. 4.11.	5.19.11.	3.13. 4.	4.14.10.
Profit on Flock	330.10. 1.	185. 6. 0.	294.16. 1.	247. 0 0.
	1472. 9. 6.	1490. 8. 1.	1620. 8. 6.	1532. 1. 8.
INCOME				
Sales				
Draft Ewes	20. 9. 7.	83. 8. 7.	72. 3. 9.	69. 2. 6.
Fat Ewes	38. 3. 5.	45. 9. 4.	34. 8. 3.	40. 9. 3.
Rams	2. 2. 2.	1.17. 9.	1. 2. 5.	1.13. 2.
Store Lambs	122.15. 5.	403.18. 7.	62.16. 3.	240. 2. 9.
Fat Lambs	153. 9. 1.	85. 5. 1.	192.16. 8.	133.10. 3.
Wool	53. 9. 5.	61. 2. 6.	65. 3. 0.	61. 4. 9.
Closing Valuation, Ewes and Rams	668.18. 3.	717.14. 0.	739. 5. 7.	717. 0. 4.
Closing Valn. Lambs ...	413. 2. 2.	91.12. 3.	452.12. 7.	268.18. 8.
	1472. 9. 6.	1490. 8. 1.	1620. 8. 6.	1532. 1. 8.

TABLE 15. RANGE IN PROFIT PER 100 EWES

	£50-100	100-150	150-200	200-250	250-300	300-350	350 400	400-450	450-500
Matfen	-	-		1	3	3	3	2	-
Rothbury	1	4	2	3	1	1	-	-	-
Tweedside	1	2	1	-	1	2	2	2	1
All Farms	2	6	3	4	5	6	5	4	1

V.

The foregoing discussions of management systems and methods of accounting should, it is hoped, make detailed commentary on the various tables unnecessary. In a general summing-up, the following points might be stressed.

(1) While the primary purpose of this inquiry was to arrive at a cost of rearing lambs the primary objective of the enterprises studied was presumably to make the best overall profit from the flocks. Overall profits, per flock and per 100 ewes, are shown in Tables 12 and 14 respectively. Taking all groups together, they averaged £467 per flock, and nearly 50/- per ewe. They were higher in the two feeding groups, Matfen and Tweedside (66/- and 59/- per ewe respectively) and lower in the store producing Rothbury group (37/- per ewe).

The term profit, as used here, has not quite the same meaning as in normal accountancy practice. The main points are (a) the costs and returns are related only to the 1947 output from the ewe flocks and not to all transactions in sheep falling within the accounting year and (b) no allocation of farm overheads (apart from rent charged through grazing and fodder crops) has been made. Attention is drawn to those tables which set out the range of variation between farm and farm in respect of profit margins, lamb rearing cost, lamb crops and so on. The overall average results from this study, in common with similar averages in other cost studies, give no indication by themselves of the extent to which farms can differ in their cost/return relationships.

(2) These differences in relative profitability are the effect of a combination of factors. The composite character of the flock output, and the prices obtainable for the separate categories of sheep sold are of major importance. They are also interdependent and changes in the demand/supply relationship for any one of the categories may be expected to produce reactions on the demand/supply relationships of the others, - with consequential reactions on prices all round. The end prices fixed for the various classes, grades and weights of sheep, with their seasonal variations, provide the ceilings under which individual flockmasters operate, but the interactions of fat and store prices upon each other and upon the prices of draft ewes and replacement stocks cannot be predetermined or reduced to a simple formula, which would also have to allow for changes in items of cost, such as labour and feeds.

Some simple approximations might be made to illustrate this point, by assuming a change in one of the factors affecting profit, and assuming that other factors remained unchanged - a state of affairs which would be altogether unlikely in practice.

Thus, on the figures presented, an overall increase of 10% in lamb prices (other prices and costs remaining as they were) would have raised profits by more than 25%. Such an increase, of course, would in fact react in the opposite direction on the cost of ewe hoggs and gimmers bought as replacements.

Similarly, an increase of 10% in the prices realised for draft and fat ewes would have raised profits by only 4½% (assuming no other price changes).

A 10% increase in the price of wool would have raised profits by no more than 2½%.

10% increase in the cost of foods, bought and home-grown, and excluding grazing, would have reduced profits by about 6%. A similar increase in shepherds' wages would have reduced profits by 3½%. The effect of a general increase in all farm wages on grazing and home-grown food costs is a much more complicated problem and the precise effect cannot be stated.

Calculations of this kind, approximations as they are, merely emphasise the interrelations between the many factors by which the final profit is determined. They provide factual illustrations of the difficulties of analysis associated with enterprises in joint production.

They illustrate also why it is that economists, who are analysts only and who take no direct part in the buying and selling of sheep or the management of flocks - the operations by which prices are determined - are so often compelled to express themselves in such terms as, "It depends .....", "provided that ....." and so on.

(3) Despite substantial differences between the groups studied in methods of flock maintenance, the total costs of rearing lambs in each group were comparatively uniform. The Matfen and Tweedside groups had some advantage over the Rothbury group in being able to market bigger proportions of fat lambs. The advantage follows from soils and situation rather than from better management. The figures however, do not attempt to follow the whole lamb output to the grading stage, this study being confined to the rearing aspect. For this reason, the costings were taken to the 30th October 1947. Such fat lambs as have figured in the accounts are those finished within the costings year, i.e., those finished mainly off grass, and they are brought in because there is no satisfactory method of accountancy by which rearing and finishing can be separated in the case of such lambs.

This restriction in the scope of the study was stressed in the introductory section of the report and is again stressed at the close.

APPENDIX

The following notes indicate the methods used in calculating the figures presented in this report.

Home-grown foods fed have been charged at the same average costs of production throughout, the averages being derived from separate cost studies on farms outside this study. The actual values used are as follows:-

Oats, Barley and Beans	15. 0	per cwt.
Hay	£3. 12. 0	per ton
Straw	£2. 5. 0.	" "
Swedes	£1. 4. 6.	" "
Mangolds	£1. 10. 6.	" "
Kale	£1. 5. 6.	" "

Purchased Foods have been charged at actual cost delivered on the farm.

Manurial Residues. No allowance has been made for the value of manurial residues of Foods.

Grazing costs. The cost of grazing includes:

(a) Rent or rental value,

(b) Cost of manuring carried out during the current year,

(c) Cost of harrowing, rolling, hedging, fencing, thistle cutting and other similar work,

(d) In the case of leys a share of the cost of establishment spread over not more than three years. Leys over three years old have been treated as permanent grass.

(e) Where aftermaths of mowing fields were grazed, one-third of the total cost as calculated above (but excluding hay-making costs) has been charged to grazing.

Stock Units. In order to apportion the cost of grazing between different classes of stock the following scale of grazing equivalents has been used.

Adult cattle and horses	= 1 unit per head,
Cattle 1-2 years	= ¾ " " "
Cattle under 1 year	= ½ " " "
Ewes and Rams	= ½ " " "
Lambs under 6 months	= 1/10th " "
Lambs over 6 months	= ¼ unit " "

Labour. Cost of labour is based on farmers' estimates of the number of hours spent in feeding and shepherding, including any extra labour for lambing, dipping, shearing, etc. Abnormal costs incurred during the snow storms of 1947 have been regarded as overheads, and not covered by the charges shown. (See p. 6).

Dips, Vaccines, etc. have been charged at actual cost, excluding labour.

Miscellaneous Charges include carriage charges to and from marts, Vets.' bills and sundry expenses.

Overheads. General farm expenses, other than rent, have been disregarded. (See p. 13).