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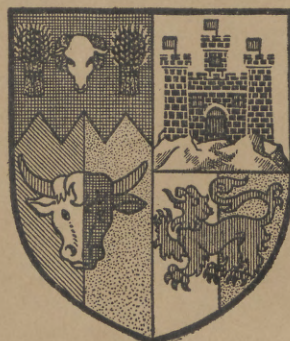
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Sheep - Cost of prod. O.S.

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HILL AND UPLAND SHEEP PRODUCTION COSTS— 1960 LAMB CROP

by

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SHEEP PRODUCTION COSTS -
1960 LAMB CROP

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Piece-Work Potato Gathering
Hill Farming During the Post-War Period
Some Notes on Reseeding Old Grassland on Hill and Upland Farms, 1955-57
Diesel Tractor Costs and Performance in the East of Scotland, 1956-57
Some Notes on Grain Drying - 1957 Harvest
Report on Grain Drying - 1958 Harvest
Organisation of Hill and Upland Farming in Selkirkshire
Economic Aspects of Tractor Work, 1957-58
Some Notes on the Depreciation and Repair Costs of Farm Machinery.

Copies of these publications may be obtained on request to the
Secretary of the College or the Advisory Economist.

FOREWORD

The economy of the hill sheep or the upland farm may, at first sight, appear to be relatively simple when compared with that of the more intensive arable farm on the low ground. The latter has a multiplicity of arable crops worked in conjunction with various types of livestock; the former is largely restricted to making use of rough grazing with one type of livestock. But, as is so often the case in agriculture, any apparent simplicity disappears on closer examination, such as is undertaken in this report. Conditions are shown to vary widely from farm to farm both as regards the extent and quality of the rough grazings and their stock carrying capacity and the types of sheep stocks best suited to these conditions. Considerable variations are also met with in the production policies of hill and upland farmers and in the systems of management which have been evolved with these objectives in view.

The report is mainly concerned with the costs incurred. Figures of average costs are given for keeping hill and upland ewes and ewe hoggs, of producing lambs up to the weaning stage and of the gimmer at the point of entry into the breeding flock. Some of the more important factors which bear on the efficiency and, hence, profitability of these flocks are also discussed on the basis of average figures for the various categories of sheep.

It may be claimed with some justification that average figures such as these are rarely applicable to any particular farm but they do at least bring the data concerning an important sector of farming in the south-east of Scotland into focus and, together with information on the range of costs and other factors, may well provide a useful basis for considering the problems which face the hill and upland farmer.

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HILL AND UPLAND SHEEP PRODUCTION COSTS - 1960 LAMB CROP

I. INTRODUCTION

Following a previous report* on the organisation of hill and upland farms in Selkirkshire and in view of the importance attached to these types of farms in south-east Scotland, it was decided to make a more detailed study of the economics of sheep production on the high ground in this area. The investigation was started in October and November 1959 at the time the rams were turned out to the ewes on the hills and was continued until a year later, thus covering a full cycle of operations. The work is being carried on for a further year with a view to reducing, at least to some extent, the variations introduced by weather conditions and the movements of market prices which have especial significance for these types of farms. The two year's study should lead to the production of data which need not be unduly biased by the conditions during one particular year. In the meantime it was thought that an interim report on the first year's work would be interesting and useful.

The principal aims of the investigation were to ascertain

- (1) the cost of keeping a hill or upland ewe for 12 months and from this to calculate the cost of producing a store lamb at spanning time.
- (2) the cost of keeping a ewe hogg for a year and
- (3) the cost of producing a gimmer to its point of entry into the breeding flock.

During the course of the investigation a good deal of information was collected on fleece weights and values for the three breeds of sheep involved, on the different techniques used in feeding and hogg wintering, on lambing and spanning percentages and on mortality rates, as well as the direct items of cost.

The Sample

In all, fifty-two costs were completed. Of these thirty-two were hill sheep farms with either pure Blackface or pure South Country Cheviot flocks - in some cases separate flocks of both breeds were kept on the same farms. Of the twenty upland farms ten had flocks of Blackface ewes crossed mainly with Border Leicester rams; the other ten had North Country Cheviot flocks either bred pure or mated to Border Leicester rams to produce Half-Bred lambs. The geographical distribution of the fifty-two farms is seen in Table I below.

TABLE I. GEOGRAPHICAL DISTRIBUTION OF CO-OPERATING FARMS

COUNTY	HILL FLOCKS			UPLAND FLOCKS		ALL FLOCKS
	Blackface	S.C. Cheviot	B.F. and S.C. Cheviot	Blackface	N.C. Cheviot	
Berwick	5	-	-	1	2	8
Roxburgh	1	3	2	-	2	8
Selkirk	6	7	1	-	4	18
Peebles	4	-	-	2	2	8
Fife	-	-	-	2	-	2
Angus	1	-	-	1	-	2
East Perth	2	-	-	4	-	6
TOTAL	19	10	3	10	10	52

General/

* Bulletin No. 61. "The Organisation of Hill & Upland Farming in Selkirkshire", by W.D. Duthie.

General Management.

On the twenty-nine hill farms situated in the Border counties there were no marked differences in management apart possibly from the feeding of the ewes and ewe hoggs. Depending largely on the severity of the winter, hay was fed on all but four of the farms, while concentrates were used on only seven farms. Away-wintering of ewe hoggs was carried out on only six farms and on only two of these were all the hoggs sent away. In every case all stock surplus to actual breeding requirements were disposed of through the autumn sales. This was in direct contrast to the three Angus and Perthshire hill farms in the sample as here all the ewe hoggs speaned were wintered away, retained on the farm the following summer and the surplus sold off as gimmers in the autumn. One of these three farms gave no feeding to the ewes and hoggs but the other two both provided hay and some concentrate feeding, while turnips were even given on one farm.

On the ten upland farms with Blackface ewes hay was fed to the ewes on all but three farms, turnips on only four farms and a concentrate mixture on all but one farm. Ewe hoggs were away-wintered off four of the farms.

Feeding was fairly intensive on the ten Border upland farms with North Country Cheviot ewes, all the ewes getting varying amounts of hay, turnips and concentrates; hay was fed to all but one lot of ewe hoggs, turnips to all but one other lot of hoggs and concentrates to all hoggs. All N.C. Cheviot ewe hoggs were wintered at home. There was no marked difference in the disposal of surplus stock on the two upland groups - lambs not required as flock replacements were sold off in the autumn and the oldest age group of ewes disposed of as four or five crop ewes.

II. COSTING PROCEDURE

The procedure adopted to collect the data was to visit each farm three times during the course of the survey period. This enabled all the necessary details to be obtained in a satisfactory manner and at the same time obviated the necessity for the farmer and/or the shepherd to keep anything but the minimum of additional records.

Valuations

Because of the long-term nature and the self-replacing aspects of hill sheep flocks it was decided to adhere to level values for the breeding blocks at each end of the year in spite of the fluctuations which can take place in the market and which must, in the long run, affect the capital values of sheep stocks. The values chosen for home-bred stock were as follows - £6 per head for Blackface and South Country Cheviot ewes, and £10 per head for North Country Cheviot ewes and £8 and £12 per head respectively for gimmers of these categories; purchased gimmers were valued at buying price and rams on the basis of purchase price and period of use.

Flock Depreciation

This was restricted to the breeding flock and was calculated by taking the difference between the sum of the opening valuation plus purchases and transfers into the flock and the sum of the closing valuation plus sales and transfers out of the flock. To bring this to a per ewe basis the resultant figure was divided by the number of ewes and gimmers put to the ram at the time of the opening valuation.

Feeding Costs

The cost of the feeding the rams was included in the total feed cost of the ewes and gimmers but feeding of the ewe hoggs has been kept separate and was only used in the cost of keeping a ewe hogg for twelve months.

Purchased/

Purchased foods were charged at their purchase prices but fixed charges were made for home-grown foods. For example, hay was charged at £7 per ton, oats at £20 per ton, and turnips were lifted at £60 per acre and where folded at £45 per acre. The concentrate mixture fed to rams of all breeds and to many of the ewes was charged at £25 per ton unless the actual price of the mixture was obtained.

Grazing costs were calculated for all types of grazing encountered on the individual farms. For example, for rough grazing the charges made were rent plus the net cost of any lime and manures applied plus $\frac{1}{15}$ th of the net cost of any reseeding, draining, bracken eradication or other such improvements carried out in recent years. For permanent grass the main items of cost were rent and a share of any manures and lime recently applied, while for rotation grass rent, establishment costs and a share of manures and lime applied formed the bases. Thus all the grazings on which the sheep stock went were costed. To differentiate between the values of summer and winter grazing the former was charged at $\frac{4}{5}$ th of the total and the winter grazing the remaining $\frac{1}{5}$ th. The allocation of the grazing cost of the actual sheep concerned was done on a livestock-unit basis whereby ewes, gimmers and rams were rated at $\frac{1}{5}$ th unit per year, ewe hogs and feeding hogs $\frac{1}{7}$ th unit, lambs $\frac{1}{16}$ th unit; horses, cows, bulls and all cattle over 2 years were rated at one unit per year, yearling cattle at $\frac{2}{3}$ rd unit and calves at $\frac{3}{8}$ th unit per year. The grazing costs of rams and the lambs at foot were included in the total grazing costs of the ewes; grazing costs of the ewe hogs were kept separate from those of the ewes.

Labour Costs

Labour, particularly on the hill farms, tends to be specialised and the costs did not present many difficulties. The charges made included the shepherds' wages plus any perquisites etc. less deductions for the estimated time the shepherds helped with other farm work such as hay and harvest. Any extra help such as at lambing, dipping or clipping was charged at the actual amount paid if known or at 4s. 6d. per man hour if not known. An estimate was made in agreement with the farmer of the division of the labour costs between ewes and ewe hogs.

Miscellaneous Costs

The exact amounts paid for dip, medicines, vaccines etc. during the year were obtained quite easily and charged under this heading. In a few isolated cases only were estimates made and accepted.

Haulage included mainly the transport to market of cast rams, draft ewes and store lambs during the year. A charge was made here for any tractor work done on the farms in connection with the sheep stocks, e.g. haulage of turnips, hay and other feeding and of lambing pens etc. which in the case of the North Country Cheviot ewes came to quite an appreciable amount.

Depreciation of equipment, never very high on hill farms, was estimated according to the numbers of sheep involved and the general appearance of the dipper, buckets etc.

Overheads

After careful consideration it was decided to fix flat charges of 12s. per head for Blackface and South Country Cheviot ewes and 15s. per head for North Country Cheviot ewes under this heading. Away-wintered Blackface ewe hogs were charged 6s. per head for overheads, home-wintered Blackface and South Country Cheviot hogs 9s. per head and North Country Cheviot hogs 11s. 3d. per head.

It was assumed that the production of store lambs is the primary function of the ewe flock and that the production of the wool clip is a by-product of secondary importance the income from which is usually offset against costs. Thus/

Thus the cost of producing a store lamb at speaning time can be calculated as follows:- Deduct the value of the ewe's fleece from the cost of keeping a ewe for twelve months, multiply the resultant figure by 100 and divide by the number of lambs speaned per 100 ewes and gimmers put to the ram.

The cost of keeping a ewe hogg for twelve months was worked out on similar lines; the cost of producing a gimmer was the cost of a store lamb plus the cost of keeping a ewe hogg for twelve months. Where the ewe hoggs were purchased as happened on some of the upland farms, the cost of producing a gimmer was the cost price plus the keep of the hogg for six or twelve months depending on time of purchase.

III. HILL SHEEP COSTS

Of the thirty-two hill sheep costs nineteen were concerned with flocks of Blackface sheep only, ten were of the South Country Cheviot breed only and the remaining three had hirsels of both breeds. In every case the breeds were kept pure.

Table II below shows average figures for the nineteen Blackface flocks, the ten pure S.C. Cheviot flocks and also the average figures for all thirty-two hill flocks. The figures relate to the costs of keeping a ewe for twelve months and the cost per head of the store lambs produced.

TABLE II. HILL EWE AND LAMB COSTS - 1960

Breed of Sheep	Blackface		South Country Cheviot		Blackface and S.C. Cheviot	
Number of Farms	19		10		52	
Average Number of Ewes and Gimmers per Farm	857		862		937	
	Per Ewe 12 mths.	Per Cont	Per Ewe 12 mths.	Per Cent	Per Ewe 12 mths.	Per Cent
<u>Costs:</u>	£ s.	%	£ s.	%	£ s.	%
Flock Depreciation	1:11.	38	1:10.	41	1:11.	39
Feeding	-:11.	14	-: 9.	12	-:11.	14
Labour	1: 3.	28	1: -.	27	1: 2.	28
Miscellaneous	-: 4.	5	-: 3.	4	-: 3.	4
Overheads	-:12.	15	-:12.	16	-:12.	15
Total	£4: 1s.	100%	£3:14s.	100%	£3:19s.	100%
Cost of producing a store lamb	£3: 13: 9d.		£3: 14: 7d.		£3: 16: 6d.	

The average number of ewes and gimmers per farm is the average of the numbers put to the rams in November 1959. The Blackface flocks varied in size from a minimum of 161 ewes and gimmers to a maximum of 2,106. The range in the S.C. Cheviot flocks was from 460 ewes and gimmers to 1,868 while the three farms having both breeds were all large units, the numbers ranging from 1,521 ewes and gimmers to 1,857.

In actual acreage the individual Blackface only farms varied from 895 acres to 8,000 acres, averaging 2,683 acres per farm, of which 51 acres were in-bye land; the average stocking intensity was 3.1 acres rough grazing per ewe. The corresponding figures for the ten S.C. Cheviot farms were 750 acres to 4,073 acres, with an average of 1,783 acres per farm of which 44 acres were classified as in-bye land, the stocking intensity averaging 2.0 acres rough grazing per ewe. The three farms having both breeds averaged 3,659 acres in size of which only 18 acres were classified as in-bye land; the average stocking intensity was 2.2 acres rough grazing per ewe.

Thus/

Thus for all the thirty-two hill farms being studied the average size of farm was 2,493 acres of which 46 acres were classified as in-bye land capable of cultivation; the stocking intensity averaged 2.6 acres rough grazing per ewe with extremes of 1.6 acres per ewe on a small S.C. Cheviot farm and 6.1 acres per ewe on a large Blackface farm.

Costs per Ewe

From Table II it can be seen that the cost of flock depreciation was the largest individual item in the cost of keeping a hill ewe for twelve months, averaging 39% of the total. Labour at 28% was the next most important item, while overheads and feeding costs came next at 15 and 14% respectively. The average cost of keeping a hill ewe for the year worked out at £3:19s. per head.

The average cost of keeping a Blackface ewe for a year was £4:1s. some 7s. per head in excess of the corresponding cost of a S.C. Cheviot ewe; labour costs were 3s. more, feeding 2s. and miscellaneous and flock depreciation were both 1s. higher in the case of the Blackface ewe. The difference between the labour costs was probably due to the increased stocking intensity of the Cheviots, while the difference in feeding costs was the result of extra feeding, discussed in detail later in this report.

The importance of a high speaning percentage is emphasised by the fact that the average cost of producing a store lamb for the thirty-two farms was £3:16:6d. per head, while the average of the nineteen Blackface flocks was £3:13:9d. and for the ten S.C. Cheviot flocks was £3:14:7d. per head though the cost of keeping a Cheviot ewe was 7s. less than for the Blackface ewe. The respective speaning percentages were 85.5% for Blackface ewes but only 78.4% for Cheviots. The three large units with both breeds had an average speaning percentage of only 72.2% which affected the overall cost per lamb for all thirty-two farms. The average cost of keeping a ewe for twelve months on these three farms was £3:18:2d.; because of the small number of lambs speaned the average cost of producing a store lamb was £4:5:8d. per head.

Costs per Ewe Hogg

Owing to the expense involved in away-wintering ewe hoggs the nineteen Blackface only flocks have been sub-divided in Table III into those farms where away-wintering was practised even on a small scale and those farms, all in the Borders, where home-wintering was the common practice. The S.C. Cheviot hoggs were all home-wintered.

TABLE III. COST OF KEEPING A HILL EWE HOGG FOR 12 MONTHS

Breed of Hogg Type of Wintering	Blackface 78.4% away		Blackface 100% home		South Country Cheviot 100% home	
	Per Hogg	Per Cent	Per Hogg	Per Cent	Per Hogg	Per Cent
<u>Costs:</u>	£ s.	%	£ s.	%	£ s.	%
Feeding	1:11	65	-:10	26	-: 5	17
Labour	-: 8	17	-:17	43	-:12	42
Miscellaneous	-: 2	4	-: 3	8	-: 3	10
Overheads	-: 7	14	-: 9	23	-: 9	31
Total	£2: 8s.	100%	£1:19s.	100%	£1: 9s.	100%

Feeding costs included the away-wintering of hoggs and were naturally highest in the first group comprising 65% of the total cost compared with 26 and 17% for home-wintered Blackface and S.C. Cheviot hoggs. Labour, however because of their being at home for only six months, averaged 17% of the total cost for away-wintered Blackface hoggs. For home-wintered hoggs labour/

labour was the most important item, averaging 43 and 42% respectively for the two breeds.

The total cost of keeping a ewe hogg for twelve months came to £2.8s. for an away-wintered Blackface hogg, £1:19s. for a home wintered Blackface hogg and £1:9s. for a S.C. Cheviot hogg.

Costs per Gimmer

The cost of the ewe hogg of each breed added to the corresponding cost of a ewe lamb gave the cost of producing a hill gimmer. The costs for the different categories are given in Table IV.

TABLE IV. COST OF PRODUCING A HILL GIMMER

Breed of Sheep	Blackface ⁽¹⁾	Blackface ⁽²⁾	S.C. Cheviot
	£ s.	£ s.	£ s.
Cost of producing a ewe lamb	3:14	3:14	3:15
Cost of keeping ewe hogg for 12 months	2: 8	1:19	1: 9
Cost of producing a gimmer	£6: 2s.	£5:13s	£5: 4s.

(1) Hoggs nearly all away-wintered

(2) Hoggs all home-wintered

The average cost of producing a Blackface gimmer which was wintered away from home as a ewe hogg came to £6:2s., while for a home wintered Blackface gimmer the average cost was £5:13s. and for a S.C. Cheviot gimmer the cost averaged £5:4s.

Factors affecting Productivity

In addition to the actual costs involved there are a number of factors which affect the productivity of sheep on hill farms. The main differences between the two hill breeds of sheep for the year up to November 1960 for a number of these factors are set out in Table V. The average figures given here were taken from the nineteen Blackface flocks and the ten S.C. Cheviot flocks only as it was not always possible to obtain separate information for the three farms with both breeds.

TABLE V. FACTORS AFFECTING PRODUCTIVITY OF HILL SHEEP

Breed of Sheep	Blackface	S.C. Cheviot
1960 Lambing Percentage	88.3%	80.7%
1960 Speaning Percentage	85.5%	78.4%
Mortality Rate - Ewes and Gimmers	5.7%	6.9%
- Ewe Hoggs	4.0%	5.1%
- Lambs	3.2%	2.8%
- Rams	14.0%	16.1%
Average Fleece Weight - Ewes and Rams	4.0 lb.	3.5 lb.
" " " - Ewe Hoggs	4.2 lb.	3.9 lb.
" " Value - Ewes and Rams	17s.4½d.	15s.9d.
" " " - Ewe Hoggs	18s.7½d.	17s.5½d.

In every instance except the lamb mortality rate the average figures shown in the table favour the Blackface breed. Lambing percentage, i.e. the number of lambs at the cutting count taken as a percentage of the number of ewes and gimmers put to the ram the previous November, averaged 88.3% for the nineteen Blackface flocks with extremes of 117.0% on a farm in Berwickshire and 71.6% on a farm in Selkirkshire. For the ten S.C. Cheviot flocks the average was 80.7% with extremes of 91.7% and 69.6% respectively, both in Selkirkshire.

The percentage of lambs speaned, i.e. the number of lambs weaned as a percentage of the number of ewes and gimmers put to the ram the previous year, averaged 85.5% for the Blackface flocks and 78.4% for the S.C. Cheviot flocks. Extremes in the Blackfaces were 114.6% and 68.5%, five of the nineteen farms having 100% or over. The range in the S.C. Cheviot flocks was from 89.7% to 67.8%.

There was little variation from the average death rate for the various classes of sheep stock irrespective of breed though the tendency was for higher percentage death rates on the larger units.

Blackface ewe and ram fleece weights in 1960 averaged 4.0 lb. as against 3.5 lb. for the corresponding S.C. Cheviot fleece average. The highest average weights recorded were 4.9 lb. for three Blackface flocks and 4.2 lb. for one S.C. Cheviot flock; the minimum for each breed was 3.0 lb. and 3.1 lb. respectively. Hogg fleeces varied in weight from 5.4 lb. to 3.9 lb. in the Blackface breed, averaging 4.2 lb.; for the S.C. Cheviot hogg fleeces the range was from 4.3 lb. to 3.2 lb. with an average of 3.9 lb.

The range of Blackface ewe and ram fleece values was from £1:2s. to 12s.11d. with an average of 17s.4½d.; for S.C. Cheviot fleeces the variations were from 18s.6d. to 14s.5d. with an average of 15s.9d. per fleece. The average value for Blackface hogg fleeces was 18s.7½d. while the extremes were £1:3:10d. and 15s.4d. The corresponding figures for S.C. Cheviot hogg fleece values were an average of 17s.5½d. with extremes of 19s.2d and 14s.10d.

Feeding of Hill Sheep

Before completing this section on the two breeds kept under hill conditions some information about feeding techniques and the amounts of the various foods fed may be given here. In one respect, the feeding of rams, there was considerable uniformity of practice. For a period of 4-5 weeks before tupping commenced, rams of both breeds received about $\frac{3}{4}$ lb. to 1 lb. per head per day of either oats alone or a mixture of bruised oats, bran and beet pulp or of bruised oats and cake was given. This was stopped when the rams were put to the ewes on the hill but after the New Year the rams were kept on the in-bye fields and given some hay, turnips if available and a little extra feeding until the grass came away in the early summer.

The feeding of the ewes and ewe hogs where these were home-wintered varied greatly from farm to farm. On three of the nineteen Blackface only farms and on three of the S.C. Cheviot only farms no additional feeding was given at all during the year to the female stocks. Hay in varying amounts was fed on all but five of the Blackface only farms, on all but four of the S.C. Cheviot only farms and on all three of the farms with both breeds. Turnips were given only on one Blackface farm in Angus while a protein-rich supplement was fed on eight of the nineteen Blackface only farms, on four of the ten S.C. Cheviot farms and on two of the three farms with both breeds. A cheaper mixture such as was fed to the rams before tupping time was also fed on three Blackface only farms.

Average amounts fed on a per farm basis were as follows:-

- (a) Nineteen Blackface only farms with 857 ewes and gimmers per farm - 4 tons 6 cwt. hay, 16 cwt. protein-rich supplement and 13 cwt. cheaper supplement
- (b) Ten S.C. Cheviot only farms with 862 ewes and gimmers per farm - 1 ton, 12 cwt. hay, 6½ cwt. protein-rich supplement and 2 cwt cheaper supplement.

Because/

Because of similarity of flock size these per farm average figures explain the difference of 2s. per ewe and 5s. per hogg in Tables II and III respectively.

Where the ewe hogs were home-wintered on the hills, allowance has been made for the estimated amount of food consumed by them though the food was primarily intended for the in-lamb ewes and gimmers.

IV. UPLAND SHEEP COSTS

Of the twenty upland farms ten had Blackface ewes mated to Border Leicester rams only or to both Border Leicester and Blackface rams; the other ten had North Country Cheviot ewes mated to Border Leicester rams only or to N.C. Cheviot rams only or to rams of both breeds.

Flock sizes for the ten farms with Blackface ewes averaged 329 ewes and gimmers per farm ranging from 600 down to 42, two of the costs being for small flying flocks of Blackface draft ewes crossed with the Border Leicester ram. For the ten N.C. Cheviot flocks the average size was 469 ewes and gimmers with extremes of 661 and 161 ewes and gimmers.

The average acreage of grassland available to the sheep in conjunction with other livestock on the ten farms with Blackface ewes was 650 acres per farm of which 518 acres or 80% was rough grazing. For the ten farms with N.C. Cheviot ewes the average acreage of grassland available to the sheep and other stock was 514 acres of which 230 acres or 45% of the total was classified as rough grazing.

Costs per Ewe

Average figures for both groups of the cost of keeping a ewe for twelve months and the resultant cost of producing a store lamb at speaning time are shown in Table VI.

TABLE VI. UPLAND EWE AND LAMB COSTS - 1960

Breed of Ewe	Blackface		North Country Cheviot	
Breeds of Ram	Blackface and Border Leicester		N.C. Cheviot and Border Leicester	
Number of Farms	10		10	
Average Number of Ewes and Gimmers per Farm	329		469	
<u>Costs:</u>	Per Ewe 12 months	Per Cent	Per Ewe 12 months	Per Cent
	£ s.	%	£ s.	%
Flock Depreciation	1:13.	32	2:10.	27
Feeding	1:11.	31	4: 9	48
Labour	-:19	19	1: 4	13
Miscellaneous	-: 6	6	-: 8	4
Overheads	-:12	12	-:15	8
Total	£5: 1s.	100%	£9: 6s.	100%
Cost of producing a store lamb	£3:18:9d.		£5:17:3d.	

The figures in Table VI show that there are very considerable differences in cost between keeping Blackface and North Country Cheviot flocks. Every item of cost has worked out at a higher level per ewe for the N.C. Cheviot flocks to give a final figure of £9:6s. compared with £5:1s. for a Blackface ewe/

ewe. The extent of the increase in cost differed a good deal from item to item; this is particularly the case with regard to feed costs. The N.C. Cheviot apparently requires a much higher plane of nutrition and the feed cost per ewe amounted to £4:9s. compared with £1:11s. for the Blackface ewe, i.e. nearly three times as high. The flock depreciation cost is also much greater as the result of the higher values placed on this breed of sheep. The relative importance of the individual costs is shown by the percentage figures. These emphasize the importance of feed and flock costs for both breeds on upland farms when compared to the other items of cost, but whereas feed and flock costs both take up just over 30% of the cost of keeping a ewe in the Blackface flocks, the figures for the N.C. Cheviot are 48% and 27% respectively.

With average speaning percentages of 107.0 for Blackfaces and 139.5 for N.C. Cheviots, the average costs per lamb speaned were £3:18:9d., and £5:17:3d. respectively.

Not only were there differences in the absolute and relative costs as between the two breeds, there were also wide differences in the costs for individual farms. The range in the costs of keeping a Blackface ewe for a year was from £7:17s. to £3:12:11d. and of producing a lamb the range in cost was from £6:19:6d. (speaning 90.5%) to £2:19:10d. (speaning 119.5%). The corresponding cost figures for the N.C. Cheviots were £10:19:10d. to £7:6s. per ewe and £7:4:7d. (129.6%) to £4:7:6d. (142.1%) per lamb.

Costs per Ewe Hogg

Table VII below gives details of the cost of keeping a ewe hogg for twelve months for both groups of upland farms.

TABLE VII. COST OF KEEPING AN UPLAND EWE HOGG FOR 12 MONTHS.

Breed of Hogg	Blackface		N.C. Cheviot	
	Per Ewe Hogg	Per Cent	Per Ewe Hogg	Per Cent
<u>Costs:</u>	£ s.	%	£ s.	%
Feeding	1:11.	62	4: -	73
Labour	-: 9.	18	-:13.	12
Miscellaneous	-: 3.	6	-: 5.	4
Overheads	-: 7.	14	-:12.	11.
Total	£2:10s.	100%	£5:10s.	100%

Feeding at 62 and 73% of total costs respectively dominated the costs here and, as in the case of the ewes, every individual item was greater for the N.C. Cheviots than for the Blackface hogs.

Again it was the cost of feed which was so markedly higher in the case of the Cheviots, £4 per head compared with £1:11s. for the Blackface even though four of these latter farms away-wintered their ewe hogs, whereas all the N.C. Cheviots were wintered at home.

Costs per Gimmer

To distinguish between those upland farms which buy in ewe hogs in the autumn and those farms producing their own ewe hogs the Blackfaces are subdivided in Table VIII which details the cost of producing a gimmer.

TABLE VIII./

TABLE VIII. COST OF PRODUCING AN UPLAND GIMMER

Breed of Gimmer	Blackface		N.C. Cheviot
	£ s.	£ s..	£ s.
Cost of producing a ewe lamb	3:19.	-: -.	5:17.
Purchase price of ewe hogg in autumn	-: -.	6: 7.	-: -.
Cost of keeping of ewe hogg for 12 months	2:10.	2:10.	5:10.
Cost of producing a gimmer	£6: 9s.	£8:17s.	£11: 7s.

The average cost of the home-reared Blackface gimmer worked out at £6:9s. whereas the bought-in ewe hogg averaged £8:17s. as a gimmer. The home-produced N.C. Cheviot gimmer averaged out at £11:7s.

Factors Affecting Productivity

The main factors for both the breeds are set out in Table IX.

TABLE IX. FACTORS AFFECTING PRODUCTIVITY OF UPLAND SHEEP

Breeds of Sheep	Blackface	S.C. Cheviot
1960 Lambing Percentage	110.7%	144.9%
1960 Speaning Percentage	107.0%	139.5%
Mortality Rate - Ewes and Gimmers	7.3%	5.1%
- Ewe Hogs	2.7%	2.3%
- Lambs	3.3%	3.7%
- Rams	10.1%	5.5%
Average Fleece Weight - Ewes and Rams	3.8 lb.	4.7 lb.
" " " - Ewe Hogs	4.4 lb.	5.5 lb.
" " Value - Ewes and Rams	16s.6d.	£1:1:11½d.
" " " - Ewe: Hogs	19s.2½d.	£1:5: 5½d.

The lambing percentage (in the case of these upland farms this is the number of lambs born taken as a percentage of the number of ewes and gimmers put to the ram the previous October or November) averaged 110.7% in the Blackface group and 144.9% in the N.C. Cheviot group. Extremes in the former group were 121.7 and 82.7% and in the latter group 152.8 and 129.5% respectively.

Speaning percentages averaged 107.0 and 139.5% for the two groups with extremes of 119.5 and 81.3% in the Blackface group and 146.9 and 120.5% in the N.C. Cheviot group.

The most important difference in the incidence of mortality in these flocks was found in the death rate for ewes and gimmers, the Blackface being higher at 7.3% than the N.C. Cheviot at 5.1%. There appeared to be no significant differences between the mortality rates for the hogs and lambs.

Blackface ewe and ram fleeces averaged only 3.8 lb. in 1960. The highest weight was 4.8 lb. bringing in £1:-:9d. while the lowest was 3.4 lb. valued at 14s.11d. per fleece; the average fleece value for this group was 16s.6d. N.C. Cheviot ewe and ram fleeces averaged 4.7 lb. in weight/

weight with a range of 5.5 lb. down to 3.8 lb. In value the fleeces averaged £1:1:11½d. with extremes of £1:5:10d. and 17s.3d.

Blackface hogg fleeces weighed 4.4 lb. on the average at a value of 19s.2½d. per fleece. Only seven of the ten Blackface farms had hoggs to clip and the ranges were from maxima of 5.5 lb. and £1:4:3d. to minima of 3.5 lb. in weight and 15s.5d. in value. Only one of the ten N.C. Cheviot farms had no hoggs to clip and while the average fleece weight came to 5.5 lb. the extremes were 7.1 lb. and 4.0 lb.; the average fleece value was £1:5:5½d. and the range was from £1:13s. down to 18s. 4d. per fleece.

Feeding of Upland Sheep.

The feeding of the rams of both breeds was exactly the same as for the hill rams previously dealt with except that on a few upland farms feeding was given while the rams were running with the ewes at tupping time and on two farms the rams were wintered inside.

In every instance extra feeding was given to the ewes and gimmers of both breeds on the upland farms. Of the ten farms with Blackface ewes only three gave no hay, six received no turnips and only one fed no concentrated mixtures. A protein-rich supplement was given to six of the ten lots of Blackface ewes. Average amounts fed on a per farm basis, i.e. for 329 ewes and gimmers, came to 2 tons 19 cwt. hay, approximately 2 acres of turnips, 4 tons 4½ cwt. oats plus 15 cwt. high-protein supplement i.e. about 20 lb. hay, 3 cwt. swedes and 34 lb. concentrates per head.

From the available information there is little that can be written about the feeding of Blackface ewe hoggs on upland farms. Of the ten farms in the group three had no hoggs at all, on one farm hoggs were bought in the spring time, four wintered the ewe hoggs away leaving two for which information was obtainable. On the larger of these two farms the hoggs were given no extra feeding of any kind - hay, roots or concentrates - while on the smaller farm all three types of food were fed in small amounts.

Hay, turnips and a concentrate mixture based on home-grown oats were fed to all ten lots of N.C. Cheviot ewes and gimmers over the winter but no protein-rich supplement was given. The common practice was to feed hay in increasing amounts from about the New Year to lambing time, to put the ewes on the turnip break for about four hours per day from the beginning of February until near lambing time after which previously-pitted turnips were thrown out to the ewes at grass each day. The concentrate mixture usually started in mid-January at about ½ lb. per head per day, was increased gradually up to lambing time and carried on into May. The average amounts fed on a per farm basis, i.e. for 469 ewes and gimmers, were 22 tons 18 cwt. hay (approximately 1 cwt. per head), 17½ acres turnips (1 acre to 27 ewes) and 18 tons 4 cwt. concentrated mixture (fully ¾ cwt. per head).

The N.C. Cheviot ewe hoggs all received the same feeding as the ewes except that one lot of hoggs got no turnips. Hay was normally fed from about November to April at up to 1 lb. per head per day, turnips were given on the break from about mid-November to mid-April and the concentrated mixture from about November to April at the rate of ½ to ¾ lb. per head per day. The average figures of consumption on a per farm basis for the nine farms having ewe hoggs (144 per farm) came to 4 tons 12 cwt. hay (approximately 2⅓ cwt. per head), 6½ acres turnips (1 acre to 22 hoggs) and 7 tons 1½ cwt. feeding mixture (1 cwt. per head).

Sheep Grazing Techniques on Upland Farms

Because of the wide differences in the proportions and qualities of rough grazings and in-bye grassland to be found on the twenty upland farms under review and other considerations, such as away-wintering, it is very difficult to work out accurate figures for stocking intensity as was done for the hill sheep. The average figures for the ten Blackface farms were as follows/

follows on a per farm basis:- Available grazing 518 acres rough grazing plus 132 acres in-bye grassland for an average of 328 ewes, 73 ewe hoggs and 9 rams plus other livestock. For the ten N.C. Cheviot farms the equivalent averages were:- Available grazing 230 acres rough grazing plus 284 acres in-bye grassland for 469 ewes, 130 hoggs and 15 rams and other livestock. If it is assumed that 8 acres of rough grazing were equivalent in grazing value to one acre of in-bye grassland this gives 197 adjusted grazing acres for 410 Blackface sheep and 313 adjusted acres for 614 N.C. Cheviots, both lots averaging approximately two sheep per adjusted acre. On this basis there is little difference in the average stocking intensities of the two lots assuming the cattle stocking rates are similar.

The different uses made of the different types of grassland, especially among the N.C. Cheviot farms, are worth mentioning. At tupping time the ewes, gimmers and rams were usually on the in-bye grazings and the ewe hoggs on the rough grazings. After tupping time the rams remained on the in-bye fields, the ewes and gimmers went to the rough grazings and the hoggs came on to the in-bye fields to start extra feeding. About the end of December the ewes and gimmers were brought down to the in-bye fields to start extra feeding. Lambing took place on the in-bye fields after which, in April, the hoggs went back to the rough grazings until almost tupping time. Ewes with twin lambs would stay on the in-bye grazings until speaning time but ewes with single lambs would go to the rough grazings from May until speaning. After speaning the lambs stayed on the in-bye fields and the ewes went to the hill grazings until shortly before tupping time.

This system seemed to work very well on these upland Border farms lying at elevations between roughly 500 and 1,000 feet above sea level where the N.C. Cheviot breed with its pure and/or Half-bred lambs has become increasingly popular during the last three or four decades. This type of sheep does exceedingly well when brought down to lower levels for feeding or for breeding purposes.

V. CONCLUSION

The object of this interim report has been to discuss the principal differences which exist in the utilisation of hill and upland grazings by one or other of the three important breeds of hill and upland sheep. The report has been confined to the costs or inputs associated with variations in management as they apply to the different breeds. It is hoped that the additional data from the continuing study will enable a reasonable discussion of such aspects as profitability to be made.

VI. SUMMARY

The first year's results of a survey carried out on fifty-two hill and upland sheep farms in the south-east of Scotland are contained in this interim report. The sample comprised thirty-two hill farms, nineteen of which had Blackface sheep only, ten had South Country Cheviots only while the other three had hirsels of both breeds. The remaining twenty flocks were on upland farms, ten of them having Blackface ewes mainly crossed with Border Leicester rams while the other ten had North Country Cheviot ewes kept pure or crossed with Border Leicester rams.

Hill Farms

Under the system of costing outlined in the report, the cost of keeping a hill Blackface ewe from November 1959 to November 1960 averaged £4:1s., while for a South Country Cheviot ewe the corresponding figure was £3:14s. Due to a higher speaning percentage (85.5% against 78.4%) the cost of producing a Blackface lamb was £3:13:9d. compared with £3:14:7d. for a S.C. Cheviot lamb at speaning.

The/

The average cost of keeping an away-wintered Blackface ewe hogg for twelve months was £2:8s., while a similar home-wintered hogg cost £1:19s. and a home-wintered S.C. Cheviot £1:9s. Thus the cost of producing a Blackface gimmer which was wintered away as a hogg averaged £6:2s.; the corresponding figures for Blackface and S.C. Cheviot gimmers, home-wintered as hoggs, averaged £5:13s. and £5:4s. per head respectively.

In almost every respect as regards the 1960 lambing and speaning percentages, death rates and fleece weights and values, the Blackface proved a superior breed to the S.C. Cheviot.

Upland Farms

On the ten upland farms where Blackface ewes were mainly crossed with Border Leicester rams the average cost of keeping a ewe for twelve months was £5:1s.; with an average speaning percentage of 107.0 the cost of producing a store lamb at speaning time was £3:18:9d. Corresponding figures for the ten upland farms with N.C. Cheviot ewes were as follows:- Cost of keeping a ewe for twelve months £9:6s.; cost of producing a store lamb at speaning time £5:17:3d., the average speaning percentage being 139.5.

The average cost of keeping an upland Blackface ewe hogg for twelve months worked out at £2:10s. the corresponding average figure for the keep of a N.C. Cheviot ewe hogg was £5:10s. Thus the cost of producing a home-bred gimmer came to £6:9s. for a Blackface and £11:7s. for a N.C. Cheviot, while the average cost of a Blackface gimmer purchased as a ewe hogg a year before came to £8:17s. per head.

To conclude the report some details are given of the average amounts of hay, turnips and concentrates fed to the hill and upland flocks, together with some notes on the grazing systems practised on these hill and upland farms.

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