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*Cattle - Cost of production
O.S.*

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INTERIM REPORT

on

COSTS OF CATTLE PRODUCTION

1961-62

by

J. A. MACLENNAN, B.Sc.

Dept. of Economics

THE EDINBURGH SCHOOL OF AGRICULTURE
WEST MAINS ROAD
EDINBURGH 9

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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
Hill and Upland Sheep Production Costs

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

FOREWORD

This report summarises the results of an extensive study of court and grass fed cattle, during the winter of 1961-62 and the summer grazing of 1962. Perhaps the most important aspect of the results of this study is the problem of what types of beef animal are most suitable to fit into the economy of winter feeding and summer grazing. In the main the traditional types of beef cattle compare unfavourably on the basis of profitability with the Friesian. This has been partly due to higher buying prices per cwt for the established beef types of stores and to the fact that the Friesian is as economic a converter of feed into beef as the other breeds.

Looked at from the point of view of the feeder it appears that a much more realistic attitude should be adopted when buying stores. The basic factors are the weight of the store beast, the anticipated rate of gain associated with the feeding policy and the probable selling price. The first and third elements should be capable of being assessed fairly closely, the second may well be a matter of judgment. Taken together it should be possible to assess the upper limit of the buying price which appears to be such a decisive factor if a profit is to be made out of fattening cattle. Under present conditions it seems open to question whether the traditional concepts of quality associated with particular breeds have the same economic significance as traditions would imply.

J. D. NUTT

Advisory Economist

INTRODUCTION

This is an interim report on the results of an investigation into the costs of and returns from fat and store cattle production in the East of Scotland. The results are for a year commencing in the autumn of 1961 and include data for both court and grass feeding.

The Sample

Fifty-two farmers supplied records for 108 enterprises and 6208 cattle. Eighty-two of these records were for cattle fed in the courts (58 producing fat cattle and 24 stores) for a total of 4712 cattle. Twenty-six were for those fattened on the grass, totalling 1496 cattle. It was only possible to cost all the feeding cattle on about half of the farms in the sample, either as a whole or as separate enterprises. Only sample lots were studied on the remainder.

COURT FEEDING

The enterprises could be divided into two main groups, those fattening stores of $7\frac{1}{2}$ cwt initial live weight and over and those in which speaned calves were fattened. The heavier stores could, in turn, be classified into those from $7\frac{1}{2}$ -9 cwt and those over 9 cwt initial live weight; the speaned calves into Friesians and Aberdeen-Angus and Shorthorn crosses (largely crosses of the former breed) to be sold fat. Crosses of beef breeds were also fed and sold as stores in the spring or kept on the farm for summer fattening on the grass.

Stores over 9 cwt

This group was made up of 21 enterprises totalling 2031 head of cattle giving an average size of 97. The majority of the cattle were Aberdeen-Angus cross bullocks (85%), followed by the Shorthorn crosses (7%) and smaller numbers of Friesians and Herefords. In all, 86% were Irish cattle and the remaining 14%, home-bred. Only about one quarter of the total number of stores costed were put directly into the courts after purchase, the remainder having been first of all kept on the grass for about a month. This policy has the twofold advantage of enabling surplus grass to be kept down as well as allowing stores to be bought over a longer period. The average age, prior to going into the courts was two years and the average weight, estimated or that taken over a weigh-bridge, 9.79 cwt. The total feeding time was 117 days and the average live weight prior to slaughter 11.06 cwt.

Stores from $7\frac{1}{2}$ -9 cwt

This weight group consisted of 23 enterprises totalling 1021 cattle mostly bullocks giving an average size of 44. The Aberdeen-Angus cross was again the most popular type of store (75%) followed by the Hereford cross (17%) and the Shorthorn cross (8%). Sixty-seven per cent of the total cattle were Irish, 24% home-bred and 9% own-bred. Nearly all the purchased cattle had been on the grass for about seven weeks prior to going into the courts. These cattle averaged 8.41 cwt at the start of fattening and put on 1.52 cwt over a period of 132 days. The results for the two groups are shown in Table I.

It can be seen that the group of heavier stores made a profit of £1:1s. per head, whereas the lighter stores sustained a loss of 11s.4d. The main reasons for the difference in the profitability between the groups is brought out in the lower section of the table which gives the comparative data relating to weights, prices and costs. It may be seen that the group of heavier stores had a slightly poorer live weight increase per head per day - 1.21 lb compared to 1.29 lb. They also realised 4s. less per cwt live weight and had feeding costs per cwt live weight gain greater by £2:9s.10d. However, they had a store cost of 8s.11d. per cwt lower. It was this lower initial store cost that was chiefly responsible for their greater profitability. This was also found to be the principal factor affecting profitability of many of the enterprises in each of the groups and

brings/

brings out the importance of the purchase price per live cwt in the feeding of cattle for beef. The fact that younger stores can put on weight more cheaply has been offset by their high initial cost.

TABLE I. STORES FATTENED IN THE COURTS

I T E M	Store Weights	
	Over 9 cwt	7½-9 cwt
<u>Average Costs.</u>	£ s. d.	£ s. d.
Store Animal	73: -: 5	66: 13: 4
* Food - Home-grown	11: 3: 5	13: 2: 1
Purchased	4: 2: 11	2: 7: 7
Labour	2: 13: 10	2: 16: 1
Sundries (incl. Overheads and Power)	2: 7: 3	2: 5: 11
Total Feeding Costs	£20: 7: 5	£20: 11: 8
Total Cost	£93: 7: 10	£87: 5: -
/ Realisation Price	£94: 8: 10	£86: 13: 8
Net Profit	£ 1: 1: -	£ -: -: -
Net Loss	£ -: -: -	£ -: 11: 4
<u>General Data: Averages</u>		
Live weight - Store	9.79 cwt	8.41 cwt
Live weight - Fat	11.06 "	9.93 "
Live weight - gain	1.27 "	1.52 "
Feeding Period	117 days	132 days
Live weight gain per day	1.21 lb	1.29 lb
Buying Price per cwt	£ 7: 9: 2	£ 7: 18: 1
/ Realisation Price per cwt live weight	£ 8: 10: 10	£ 8: 14: 10
Feeding Cost per cwt live weight gain	£16: -: 8	£13: 10: 10

* These are net costs after deducting manurial residues
/ Including deficiency payment

Speaned Calves Sold Fat

(a) Aberdeen-Angus and Shorthorn Crosses The total number of calves in this group of eleven enterprises was 382 giving an average size of 36. These were more intensively fed than the heavier and older stores. The average age was nine months and they were fed for 182 days. Their initial weight averaged 5.45 cwt and they sold at 8.12 cwt. Home-bred and own-bred cattle made up almost equal numbers and were predominantly Aberdeen-Angus cross calves.

(b) Friesians This group which was very intensively fed consisted of three enterprises with an average size of 20. The average age was ten months and the starting and finishing weights 5.92 cwt and 9.28 cwt live weight respectively. The average feeding time was 186 days.

Speaned Calves Sold as Stores

Stores were sold from 12 enterprises with an average size of 38. These were mainly /

mainly Aberdeen-Angus and Shorthorn cross calves, equal proportions being home-bred and own-bred. The average age was twelve months and they were smaller than the stores of this type sold fat. The average live weight at the start was 4.99 cwt and they were sold at 7.23 cwt live weight. They were much less intensively fed than those sold fat.

Speaned Calves for Fattening on the Grass

Twelve lots of speaned calves were fed in the courts and kept as stores for fattening on the grass. The average number was 64 and they were mainly Aberdeen-Angus crosses with smaller numbers of Shorthorn crosses. Most of the calves were home-bred and about nine months of age at the start of feeding. The initial weight per head was 4.9 cwt and after being fed for 153 days went to the grass at an estimated average live weight of 6.7 cwt. A comparison of the costs and returns per head for those sold fat or as stores and the costs per head for those retained for fattening on the grass is shown in Table II.

TABLE II. SPEANED CALVES FED IN COURTS

I T E M	Sold Fat		Sold as Stores	Kept for Grazing
	Aberdeen-Angus & Shorthorn Crosses	Friesians	Aberdeen-Angus & Shorthorn Crosses	Aberdeen-Angus Crosses
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
<u>Average Costs</u>				
Store Animal	46: 5:11	41: 6: 2	40: 6:10	44: 6: 9
Feeding Cost	24: 3: 4	27: 6: 2	21:10: -	18:10: 7
Total Cost	£70: 9: 3	£68:12: 4	£61:16:10	£62:17: 4
/ Realisation Price	78:17: 2	82: 3: 5	63:11: 3	- - -
Net Profit	£ 8: 7:11	£13:11: 1	£ 1:14: 5	- - -
<u>General Data: Averages</u>				
Live weight - Store	5.45 cwt	5.92 cwt	4.99 cwt	4.90 cwt
Live weight at end of feeding period	8.12 "	9.28 "	7.23 "	*6.70 "
Live weight - gain	2.67 "	3.36 "	2.24 "	1.80 "
Feeding Period	182 days	186 days	182 days	153 days
Live weight gain per day	1.61 lb	2.02 lb	1.38 lb	1.32 lb
Concentrates per head per day	5.30 "	8.16 "	4.13 "	4.11 "
Buying Price per cwt	£ 8: 9:11	£ 6:19:10	£ 8: 1: 8	£ 9: 1: -
/ Realisation Price per cwt live weight	£ 9:14: 3	£ 8:17: 1	£ 8:15:10	-
Feeding Cost per cwt live weight gain	£ 9: 1: -	£ 8: 2: 7	£ 9:12: -	£10: 5:10

* Estimated

/ Fat stock prices include deficiency payments

Speaned Calves Sold Fat

The Friesians made the highest average profit per head of the two groups sold fat, amounting to £13:11s.1d.; the Aberdeen-Angus and Shorthorn crosses averaged £8:7s.11d. It can be seen that the Friesians were fed much more intensively than the crosses of the beef breeds, receiving 8.16 lb concentrates per head per day as against 5.30 lb for the crosses. This was the chief factor in the Friesians making a live weight increase per head per day of 2.02 lb compared to 1.61 lb per head/

head per day for crosses of the beef breeds. The better live weight gain per head per day was largely responsible for the Friesians having lower costs per cwt live weight gain - less by 18s.5d. The other advantage these calves had over the crosses of the beef breeds was their much lower store cost per cwt - £6:19s.10d. as against £8:9s.11d. - a difference of £1:10s.1d. per cwt. These advantages, however, were somewhat offset by their lower realisation price per cwt live weight - less by 17s.2d.

Speaned Calves Sold as Stores

The Aberdeen-Angus and Shorthorn crosses sold as stores made a much lower profit per head than those of the same type sold fat, lower by £6:13s.6d. This was chiefly due to their relatively low realisation price per cwt which was lower by 18s.5d. This more than offset their more favourable cost price which was lower by 8s.3d. per cwt. Their feeding costs per cwt live weight gain was greater by 11s., reflecting their lower live weight increase per head per day - 1.38 lb as against 1.61 lb for those sold fat.

Speaned Calves Kept for the Grass

Those Aberdeen-Angus cross calves kept for feeding on the grass received almost the same weight of concentrates per head per day and made similar daily live weight gains as those crosses of the beef breeds sold as stores. Their feeding cost per cwt live weight gain, however, cost 13s.10d. more. They also cost 19s.4d. per cwt more as stores. The main reason for their relatively high feeding cost per cwt live weight gain was their appreciably higher consumption of hay per head per day coupled with less favourable housing conditions. These high feeding costs, however, as will be shown in the next section were largely offset later by relatively cheap live weight gains made possible on the grass.

GRASS FATTENING

On twenty-six enterprises, store cattle were fattened on the grass. These were divided into two main groups according to their initial weights, viz. stores $7\frac{1}{2}$ cwt and over and those less than $7\frac{1}{2}$ cwt. Most of the cattle were grazed along with sheep, the grazing costs being apportioned according to the size and type of animal and the length of the grazing period.

Stores $7\frac{1}{2}$ cwt and over

This group was divided into two lots - nine enterprises, mainly Aberdeen-Angus and Shorthorn cross bullocks with an average number of 84 and three consisting mainly of Friesians and averaging 23 in number. Both lots averaged about 21 months and were fed for a little over three months, the cross-bred cattle for 91 days and the Friesians for 96 days. The latter were slightly heavier, starting at 10.00 cwt per head as against 9.30 cwt. Both lots made the same live weight gain of 1.06 cwt per head.

Stores less than $7\frac{1}{2}$ cwt

Fourteen lots were included in this group with an average number of 48. These animals were much lighter than in the former group, averaging 6.47 cwt at the start and finishing as fat animals at 8.06 cwt live weight. Most of the stores were Aberdeen-Angus crosses (79%) followed by Shorthorn crosses (14%). The average age of all the animals was 14 months. Two-thirds of the total numbers were home-bred and the remainder own-bred.

The comparative data for the three groups are shown in Table III.

TABLE III. /

TABLE III. STORES FATTENED ON THE GRASS

I T E M	Stores Exceeding 7½ cwt		Stores less than 7½ cwt
	Aberdeen-Angus & Shorthorn Crosses	Friesians	Aberdeen-Angus & Shorthorn Crosses
	£ s. d.	£ s. d.	£ s. d.
<u>Average Costs</u>			
Store Animal	78:13: 9	77: -: 1	60: 1: 9
Grazing and Feed	2:17:11	2:13: -	3: 5: 4
Labour and Sundries	1: 4: 2	1:11: 4	1: 4:11
Total Feeding Cost	£ 4: 2: 1	£ 4: 4: 4	£ 4:10: 3
Total Cost	£82:15:10	£81: 4: 5	£64:12: -
Realisation Price	£88:10: 9	£94:17: 9	£68:10:10
Net Profit	£ 5:14:11	£13:13: 4	£ 3:18:10
<u>General Data: Averages</u>			
Live weight - Store	9.30 cwt	10.00 cwt	6.47 cwt
Live weight - Fat	10.36 "	11.06 "	8.06 "
Live weight - gain	1.06 "	1.06 "	1.59 "
Length of Grazing period	91 days	96 days	135 days
Live weight gain per day	1.31 lb	1.24 lb	1.32 lb
Buying price per cwt	£ 8: 9: 2	£ 7:14: -	£ 9: 6: 5
* Realisation Price per cwt live weight	£ 8:10:11	£ 8:11: 8	£ 8:10: 1
Feeding Cost per cwt live weight gain	£ 3:17: 5	£ 3:19: 7	£ 2:16: 9

* Including deficiency payment

A comparison of the results for the two heavier groups shows the Friesians to have earned a profit of £13:13s.4d. per head for 96 days compared to a figure of £5:14s.11d. for 91 days for the crosses of the beef breeds - a difference of £7:18s.5d. in favour of the Friesians for an additional five days on the grass. It can be seen that although both groups made the same total live weight gain per head of 1.06 cwt, the beef type crosses made slightly better live weight gains per head per day being 1.31 lb as against 1.24 lb for the Friesians. The feeding cost per live weight gain, however, was relatively similar for both groups. It may be seen, with both groups having very similar selling prices per cwt live weight, that the main advantage the Friesians had over the crosses of the beef breeds was a lower store cost per cwt - less by 15s.2d. The lighter weight stores of the beef breeds showed the lowest margin of profit at £3:18s.10d. for 135 days. These cattle had much the lowest cost per cwt live weight gain, being fully £1 per cwt lower than for the other two groups. This advantage, however, was more than offset by their appreciably greater store cost per cwt live weight which was 17s.3d. more than for the group of heavier stores of the same type.

SUMMARY /

SUMMARY

1. Fifty-two farmers supplied records for 108 enterprises and 6208 store cattle. Eighty-two records were for 4712 cattle fed in the courts and 26 for 1496 cattle fattened on the grass.
2. The court-fed cattle were divided into two main groups - stores $7\frac{1}{2}$ cwt. and over and speaned calves. The former group, mainly Aberdeen-Angus crosses was sub-divided into those over 9 cwt and those from $7\frac{1}{2}$ -9 cwt; the latter group was sub-divided into Friesians sold fat, Aberdeen-Angus and Shorthorn crosses sold fat, sold as stores and retained for grass feeding. The grass fed cattle were divided into two main groups - stores $7\frac{1}{2}$ cwt and above and those under $7\frac{1}{2}$ cwt. The former group, in turn, was sub-divided into Friesians and crosses of the Aberdeen-Angus and Shorthorn breeds.
3. The groups of stores over 9 cwt and those from $7\frac{1}{2}$ -9 cwt fed in the courts made a profit of £1:1s. per head and a loss of 11s.4d. per head respectively. The chief factor responsible for the bigger profit from the heavier stores was their lower initial store cost, less by 8s.11d. per cwt.
4. Friesian speaned calves sold fat from the courts made a profit of £13:11s.1d. per head. Crosses of the Aberdeen-Angus and Shorthorn breeds were less profitable at £8:7s.11d. per head. The chief factors responsible for the Friesians greater gain were the lower initial store cost per cwt and the lower feeding costs per cwt live weight gain - less by £1:10s.1d. and 18s.5d. respectively.
5. Aberdeen-Angus and Shorthorn cross calves sold as stores had a lower profit per head than those of the same breeds sold fat, less by £6:13s.6d. The two factors chiefly responsible for their reduced profitability were a lower selling price per cwt live weight and a higher feeding cost per cwt live weight gain, lower by 18s.5d. and higher by 11s. respectively.
6. The Friesian stores exceeding $7\frac{1}{2}$ cwt fattened off the grass made a profit of £13:13s.4d. per head after 96 days; the Aberdeen-Angus and Shorthorn crosses in the same weight group made a profit of £5:14s.11d. per head after 91 days. A cheaper store cost per cwt was the chief factor responsible for the difference in profitability, being 15s.2d. cheaper for the Friesians. The group of Aberdeen-Angus and Shorthorn cross stores weighing less than $7\frac{1}{2}$ cwt made a profit of £3:18s.10d. per head after 135 days which is £1:16s.1d. less than for the larger stores of this type grazing for 91 days. This reduction in profit was largely due to a higher store cost per cwt for the lighter stores, more by 17s.3d. which more than offset a lower feeding cost per cwt live weight gain - less by over £1.

ACKNOWLEDGMENT

Grateful acknowledgment is made of the help given by the farmers who took part in the investigation and supplied the necessary records and other information and who always gave the investigators considerate and courteous attention on the occasion of their visits.

COSTING PROCEDURE

Purchased Foods

All foods purchased, whether concentrates or roughages have been charged at cost (including haulage to the steading) less the manurial values.

Home Grown Foods

These have been charged at prices intended to cover costs of production including carting to a point within close proximity to the courts from which stage the foods are handled by the cattleman and/or assistants. For "average" conditions the following net costs or values have been used (residual values having been deducted) :-

<u>Crop</u>	<u>Price per cwt</u>	<u>Crop</u>	<u>Price per cwt</u>
Oats	15s. 6d.	Beet Tops	1s. 6d.
Hay	6s. 8d.	Swedes & Turnips	1s. 6d.
Feeding Straw	2s. 11d.	Kale	1s. 5d.
		Silage	2s. 3d.

No charge has been made for straw used as litter.

Initial Cost of Stores

These are the actual cost of the stores purchased plus the value of any grazing prior to going into the courts. In the case of grass fattened cattle the cost of court feeding or supplementary feeding on the grass if outside, prior to going to full grazing in April, was added to the cost of the store beast.

Labour

This is based on the actual wages (including perquisites) paid to the cattleman; where the farmer looked after the cattle his time has been included at current rates. Other labour comprised the help given to regular cattleman in such tasks as slicing turnips and bedding the courts and has been charged at appropriate rates.

Power

Tractors used in feeding or bedding have been charged at 4s. 6d. per hour.

Sundry Expenses

Included in these are small expenses directly chargeable to the cost of beef production, e.g. haulage of cattle, veterinary fees, etc.

Overheads

These have been calculated on bases agreed upon by the Scottish Conference of Agricultural Economists.

Credits

Any receipts for animals which died or were sold as casualties have been deducted from the total costs to give the net costs.

Ungraded Animals

All expenses incurred in connection with these animals have been excluded from the costs of the fattened cattle.

