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*Cattle -  
Cost of  
Production*

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# UNIVERSITY OF BRISTOL

Department of Economics (Agricultural Economics)  
Bristol II. Province



## CATTLE FATTENING ON GRASS

A Study in South West England

1954

*Price One Shilling and Sixpence*

I, COURTENAY PARK,  
NEWTON ABBOT,  
DEVON.

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K.G. Tyers has been responsible for the collection and analysis of the data in connection with this study.

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Provincial Agricultural Economist.

FOREWORD

The South West has long been renowned as a source of supply of store cattle for up-country graziers, but changing economic circumstances have, over the years, brought new aims and practices to the industry. Especially has this been true over the last 20 years.

As far back as the end of the last century declining incomes from rearing store cattle, which incidentally represents one of the most extensive systems of farming, had forced many farmers in Devon and Cornwall to turn their attention to fattening the stock they reared, instead of sending them away to be fattened. Certain areas, such as the Exminster Marshes, the valleys of the Taw, Torridge, Exe, Credeney, Culm, Tamar and 'pockets' of land in the coastal regions of North and South Cornwall had established a reputation as summer cattle grazing areas. The farmers enjoying the natural advantages of these localities and operating larger farms have resisted the general switch to milk selling which took place in the late thirties and early war years, despite the greater profitability of the milk enterprise. In fact, the larger scale of operation, together with increasing specialisation and new knowledge of grassland management have enabled reasonable incomes from feeding cattle on grass to be made. On such farms, fluctuating incomes due to the changing price and supply position of store cattle have probably been a bigger problem than the absolute level of income.

These specialist farms by no means account for all the grass fattening of cattle in the South West. A considerable amount of small scale grazing is carried on under widely varying circumstances. Over wide areas there is quite a degree of flexibility between milk selling, store rearing and fattening, and between winter fattening indoors and summer fattening on grass, especially in the Southern parts of the region where the dual purpose South Devon predominates. Incidentally, this breed has proved itself extremely flexible in meeting the demands of the changing economic order and, to a lesser extent, the same is true of the Northern localities where, despite the dependence on milk, the North Devon beef breed is numerous. In short, the grass feeding of cattle for beef in the South West assumes many forms. It will be appreciated how difficult an undertaking it is to devise an investigation which will represent such a heterogeneity of fattening systems, at least without much better knowledge of the industry than exists.

The best that can be claimed for the present investigation is that it does give some indication of the economics of this small but valuable segment of the agricultural industry in the South West. In interpreting the results it should be borne in mind that the investigation refers to one year's results only. The season covered by this investigation — the summer of 1954 — will long be remembered in these parts as one of the

wettest on record. Grass was generally in good supply even if conditions for grazing were not too favourable. Liveweight increase was probably somewhat above average and almost certainly better than that for the season just finishing. In fact, the general level of profitability of the enterprise, indicated by this investigation, was likely to have been better than that for the 1955 season when a combination of high spring store prices and bare pastures in the latter half of the season combined to narrow the feeders' gross margin. The point that is being made is that one year's figures are inadequate as a measure of the general level of returns which may be expected from this particular enterprise.

What the study does bring out is the great variations in profit margins as between one farm and another operating within the same general market and physical environment. After making all allowances for the limitations of the data and individual farm circumstances, the fact remains that the cost of producing a hundredweight of beef on these farms showed very wide variations. Not all these differences can be accounted for by differences in business acumen. Management of the grassland and of the grazing animal must be held to account for some part of the differences in the costs as between one farm and another. In this respect the figures presented in the following tables provide some food for thought.

S.T.M.

SUMMARY OF INVESTIGATION

1. The investigation was undertaken in the summer of 1954 and confined to 24 farms located in four localities in the Counties of Devon and Cornwall where summer grazing of cattle is practised, viz., (1) the Taw estuary in North Devon where marshes are rented exclusively for the fattening of cattle together with a few sheep (2) the Exe valley in the vicinity of Exeter where the fattening cattle graze the meadows near the river (3) South East Cornwall (St. Germans) and (4) West Cornwall (Helston).
2. Altogether, 761 head of cattle were costed. Two farms accounted for 250 of these. Two of every three cattle grazed were steers. Cows and young cows accounted for 3% of the total. Two main breeds — Devons and South Devons — predominated in the sample. Together, these breeds accounted for 92% of the total cattle. South Devons outnumbered Devons by 2 to 1, largely due to the inclusion of the two large units mentioned.
3. Over three-quarters of the total cattle were purchased either in the previous autumn or in the spring of 1954 — roughly in equal proportions — of autumn and spring purchases. Cattle in the opening valuation (Table 1.) are those which were on the farm when the summer grazing was deemed to have commenced. Cattle entered in the closing valuation were those still on the farm when grazing had ceased and were being brought indoors for hand feeding.
4. Altogether, the investigation covered a period of 8 months, but on average the grazing period for any particular bunch of cattle was 4 months. Thus, of the cattle on hand when the investigation commenced the majority were disposed of by the end of July or early August. The fattening period varied considerably as between one farm and another and on the same farm as between one bunch of cattle and another, depending on locality, initial weight and condition of animal, rate of liveweight gain and quality of finish.
5. During the period of the investigation the method of marketing fat cattle was considerably altered. From July 1st, the industry returned to free market conditions after nearly a decade and a half of control. 80% of the cattle costed were sold after July 1st when the farmer, if he wanted to get the price guaranteed by the Government, had either to sell his cattle by auction at an 'approved' fatstock market or by grade and deadweight through the Fatstock Marketing Corporation or by private treaty through a certification centre. The majority chose to sell by auction.
6. The small size of the sample does not warrant any very detailed analyses of the data being carried out, but the series of tables at the end of this summary do give some indication of the profitability of the enterprise

in the year under investigation. At the same time, the data gives some economic pointers of the relative profitableness of individual units as compared with others.

7. Financials results. The total value added to the 761 cattle during the grazing period was £11,064 (£14. 13s. 4d. per head on average). This sum represents the gross feeders' margin and is the resultant of the initial cost price per cwt., the selling price per cwt. and the amount of live weight added.

Feeding costs — food, labour etc. — amounted to £5780 (£7. 18s. 7d. per head) which left a sum of £5284 (£6. 14s. 9d. per head) to meet any overhead charges and provide a return to the grazier.

All farms had a surplus margin of income over direct costs but as between one fattening unit and another there was a wide range.

The lowest margin per head was 14s. 5d. and the highest £11. 14s. 8d. The average margin per acre was £9. 0s. 0d. and ranged from 16s. 5d. to £29. 17s. 2d.

The main cost item was grazing which at £5. 9s. 5d. per head of cattle accounted for 69% of direct costs. Labour (herding) was the next in importance at £1. 0s. 4d. per head. For each animal week, grazing and labour average 6s. 3d. and 1s. 2d. respectively.

Costs varied widely as between herds. For each hundredweight of liveweight gain, total direct costs averaged £4. 10s. 0d. and ranged from £2. 8s. 0d. to £6. 15s. 0d. On a per head basis grazing cost alone varied from £2. 14s. 0d. to £10. 16s. 0d. — a difference of over £8. Generally, the higher per head grazing costs were associated with higher than average daily liveweight gains.

The average grazing period amounted to 123 days and during this time the average gain per animal was 1.80 cwt. liveweight, equal to 1.7 lb. per day. The density of stocking on the fattening pastures was equivalent to 2 acres per animal unit. (See Appendix I, page 12)

The initial cost and selling prices were important factors in determining the level of profitability as between one farm and another. The highest margin farms not only showed an advantage in initial cost of 5s. 8d. per cwt. (£2. 16s. 0d. per animal) but they also showed an advantage of 6s. 3d. per cwt. (£3. 13s. 0d. per animal) in the selling price, despite the fact that on average the disposal weight for animals in this group was higher than that for the group with the lowest margins. (The general experience in this investigation was that the lighter animals commanded a higher selling price per cwt. than the heavier animals.)

8. The daily gain in weight was another important factor in determining the level of profitability. For the 5 herds having the highest margins per head of returns over direct costs the daily gain in liveweight was 2.1 lb. as compared with 1.6 lb. in the 5 herds with the lowest margins per head — see Table 3.

The quicker fattening rate of the highest margin group enabled it to show an overall advantage of nearly £1. 8s. 0d. in the fattening costs per cwt. of liveweight gain — namely, £3. 7s. 6d. as compared with £4. 15s. 4d. for the lowest margin group.

In comparing the high and low margin herds by their margins per acre the former group showed a much higher level of profitability — £18. 12s. 9d. as compared with £2. 12s. 8d. The acreage requirement per animal unit was considerably lower for the high margin herds, 1.8 acres as compared with 2.2 acres, so that this factor, together with higher margins per head, was responsible for the greater profitability per acre.

From the individual figures of the 24 herds it is found that there is a close relationship between high margins per head and high margins per acre.

9. On a breed basis, as would be expected, the South Devon cattle were, on average, the heavier animals; in fact, their initial weight was some  $1\frac{3}{4}$  cwt. a head more than that of the Devon. Since the fattening period was the same length for both breeds and since the South Devons put on weight at a faster rate, 1.9 lb. per day as compared with 1.6 lb. per day, their final disposal weight was just over 2 cwt. per head above that of the Devon.

The quicker fattening rate of the South Devons was, however, accompanied by higher direct costs of fattening which at £9. 1s. 3d per head were some £1. 14s. 0d. per head above those of the Devons. The result was that the costs for each hundredweight liveweight gain were similar for each breed — £4. 9s. 7d. and £4. 9s. 0d. respectively.

The advantage in the margin per animal in favour of the South Devons was due to their having an initial store value some 8s. 0d. per cwt. lower than the Devon since the disposal price per cwt. of the latter breed was nearly 6s. 0d. per cwt. higher.

What was perhaps remarkable was that the South Devon cattle utilised only 1.9 acres of fattening pasture per animal unit as compared with 2.2 acres for the Devons. Calculated on an acreage basis, therefore, the level of profitability was higher for the South Devons — £9. 8s. 7d. as compared with £7. 8s. 3d. One assumes that the bigger South Devon animal required as much, if not more, grazing than the Devon so that one is led to conclude that the pastures in the North Devon group were less heavily stocked.



In previous investigations carried out by this department in the South West Province it has been found that, on average, the heaviest stocking per acre occurred in Cornwall. The greater intensity of stocking of the South Devon cattle in this investigation can no doubt be partly attributed to this factor, for six of the seven herds comprising the sample for this breed were located in Cornwall, as compared with only one of the Devon herds.

S.T.M.

K.G.T.



Table 2. RETURNS, COSTS AND MARGINS - ALL FARMS

ITEM	PER HEAD OF CATTLE			
	£	s	d	
Return for Fat Cattle	75	7	8	
Cost of Store Cattle	60	14	4	
Gross Feeders' Margin	14	13	4	
<u>Costs of Fattening</u>			%	
<u>Foods</u> - Grazing	5	9	5	69.0
Other		5	7	3.5
Total Foods	5	15	0	72.5
<u>Labour</u> (herding)				
- Manual		18	2	11.4
Tractor/Car etc.		2	2	1.4
Total Labour	1	0	4	12.8
<u>Marketing Costs</u>		17	7	11.1
<u>Transport to Market</u>		4	2	2.6
<u>Miscellaneous Expenses</u> *		1	6	1.0
Total Fattening Costs	7	18	7	100.0
MARGIN	6	14	9	-
Average Cost of Store per Live Cwt.	6	11	5	
Average Selling Price " " "	6	16	6	
Weight of Store Cattle (cwt.)		9.24		
Weight of Fat Cattle (cwt.)		11.04		
Gain in Weight (cwt.)		1.80		
Fattening Costs per Cwt. Gain	£	4	10	0
Average No. of Grazing Days		123		
Gain per Grazing Day (lb.)		1.7		
Acres per Animal Unit		2.0		
MARGIN PER ACRE	£	9	0	0
No. of Farms		24		
No. of Cattle		761		

\* See Appendix I, page 12.

Table 3. RETURNS, COSTS & MARGINS PER HEAD FOR HIGHEST & LOWEST MARGIN GROUPS

ITEM	5 FARMS HAVING HIGHEST MARGINS			5 FARMS HAVING LOWEST MARGINS				
	£	s	d	£	s	d		
Return for Fat Cattle	80	15	2	73	18	10		
Cost of Store Cattle	63	8	0	62	15	11		
Gross Feeders' Margin	17	7	2	11	2	11		
<u>Costs of Fattening</u>	£	s	d	%	£	s	d	%
<u>Foods</u> - Grazing	4	1	8	67.9	5	11	5	66.9
Other		2	1	1.7		8	9	5.3
Total Foods	4	3	9	69.6	6	0	2	72.2
<u>Labour</u> (herding)								
- Manual	12	0		10.0	17	3		10.4
Tractor/Car etc.	-			-	3	7		2.1
Total Labour	12	0		10.0	1	0	10	12.5
<u>Marketing Costs</u>	19	7		16.3	1	0	1	12.1
<u>Transport to Market</u>	3	3		2.7	2	9		1.6
<u>Miscellaneous Expenses</u>	1	9		1.4	2	8		1.6
Total Fattening Costs	6	0	4	100.0	8	6	6	100.0
MARGIN	11	6	10	-	2	16	5	-
Average Cost of Store per Live Cwt.	6	7	1		6	12	9	
Average Selling Price " " "	6	17	4		6	11	1	
Weight of Store Cattle (cwt.)	9.98				9.46			
Weight of Fat Cattle (cwt.)	11.76				11.28			
Gain in Weight (cwt.)	1.78				1.82			
Fattening Costs per Cwt. Gain	£ 3	7	6		£ 4	15	4	
Average No. of Grazing Days	96				130			
Gain per Grazing Day (lb.)	2.1				1.6			
Acres per Animal Unit	1.8				2.2			
MARGIN PER ACRE	£18	12	9		£ 2	12	8	
No. of Cattle	226				223			

Table 4. RETURNS, COSTS AND MARGINS PER HEAD BY BREED

ITEM	DEVONS			SOUTH DEVONS		
	£	s	d	£	s	d
Return for Fat Cattle	72	11	8	83	12	0
Cost of Store Cattle	59	7	2	67	6	0
Gross Feeders' Margin	13	4	6	16	6	0
<u>Costs of Fattening</u>						
<u>Foods</u> - Grazing	5	1	0	6	2	7
Other		2	10		12	4
Total Foods	5	3	10	6	14	11
<u>Labour</u> (herding)						
- Manual	19	6		18	6	
Tractor/Car etc.		2	11		2	2
Total Labour	1	2	5	1	0	8
<u>Marketing Costs</u>		15	8		19	0
<u>Transport to Market</u>		3	7		5	0
<u>Miscellaneous Expenses</u>		1	5		1	8
Total Fattening Costs	7	6	11	9	1	3
MARGIN	5	17	7	7	4	9
Average Cost of Store per Live Cwt.	6	15	3	6	7	7
Average Selling Price " " "	6	18	8	6	13	0
Weight of Store Cattle (cwt.)	8.78			10.55		
Weight of Fat Cattle (cwt.)	10.47			12.57		
Gain in Weight (cwt.)	1.69			2.02		
Fattening Costs per Cwt. Gain	£ 4	9	0	£ 4	9	7
Average No. of Grazing Days	123			124		
Gain per Grazing Day (lb.)	1.6			1.9		
Acres per Animal Unit	2.2			1.9		
MARGIN PER ACRE	£ 7	8	3	£ 9	8	7
No. of Farms	13			7		
No. of Cattle	245			457		

APPENDIX I.

COSTING METHOD

LABOUR CHARGES

Manual	Adult Male	3s. Od.	per hour
Horse		1s. 6d.	" "
Tractor	Medium Power	4s. 6d.	" "
Car		8d.	" mile

GRASSLAND COSTS

Manurial Residues - No Manurial residues from previous years have been charged to the pasture nor have any residues been carried forward to the succeeding years due to the difficulty of collecting data on the numerous small fields so common to farms in the South West.

Machinery Depreciation - No depreciation allowances have been charged for implements used on the grassland. It was considered that the charges would be negligible.

Manures - Artificial manures and lime have been charged at net cost to the farmer after deducting subsidy. Farmyard manure has been charged at 15s. Od. per ton.

Share of Cost of Establishing Leys - The cost of sowing, harrowing-in and rolling the seeds have been charged to the grassland in the first year.

Allocation of Grassland Costs to the Fattening Cattle - The utilisation of the grassland has been the basis on which the grassland costs have been allocated. For this purpose all classes of livestock have been converted into cattle equivalents. The conversion rates were as follows:-

<u>Cattle:</u>	Cows and Other Cattle		
	over two years old	=	1.0
	Cattle 1-2 years old	=	0.7
	Cattle 0-1 year old	=	0.3
<u>Sheep:</u>	Ewes and Hoggs	=	0.2
	Lambs	=	0.1
<u>Horses:</u>		=	1.4

Winter Grazing - The value of the grazing during the winter months (November to March inclusive) has been taken as one-third that of summer grazing.

MISCELLANEOUS EXPENSES

This item includes such expenses as veterinary fees, warble fly dressing etc.

WEIGHT OF STORE CATTLE

The initial weights of the store cattle were in all instances estimated by the farmer.

WEIGHT OF FAT CATTLE

Where the cattle were sold by auction the liveweights are the actual weights when sold. For those cattle sold by deadweight an estimated killing out percentage of 54.0% has been used. Farmers' estimated weights were entered for those cattle remaining on the farm when the grass fattening ceased.

ACRES PER ANIMAL UNIT

This measurement of the output of the grass relates only to the fattening pastures. An animal unit is taken as representing one adult cattle on the pasture for one year assuming that summer grazing from April to October (inclusive) is at full value and that grazing from November to March (inclusive) is worth one-third of summer grazing.

GENERAL FARM OVERHEADS

No charge has been made to cover the general farm overheads such as use of farm car, telephone, general farm insurances, office expenses etc.

AVERAGES

Simple averages have been used throughout the analyses.

APPENDIX II.

GUARANTEE PAYMENTS

From July 1st. 1954 cattle which were sold by auction or by grade and deadweight or by private treaty and which were accepted for the guarantee received a COLLECTIVE GUARANTEE when the general level of prices did not reach the standard price fixed at the Annual Price Review. This payment is based on liveweight with a limit imposed over which no payment is made. The limit has been 15 cwt. for steers and heifers and 12 cwt. for special young cows (S.Y.C's) and other cows. The rates of payment during 1954/5 are set out below:-

	PER LIVE CWT.			
	Steers, Heifers & S.Y.C's		Other Cows	
	s	d	s	d
July 1st. to July 18th. 1954	4	0	-	-
July 19th. " Aug. 15th. 1954	4	0	-	-
Aug. 16th. " Sept. 12th. 1954	3	6	-	-
Sept. 13th. " Oct. 10th. 1954	3	0	-	-
Oct. 11th. " Nov. 7th. 1954	2	6	-	-
Nov. 8th. " Dec. 5th. 1954	2	0	-	-
Dec. 6th " Jan. 2nd. 1955	1	6	-	-

In addition to the Collective Guarantee, steers, heifers and S.Y.C's sold by auction or by grade and deadweight are covered by an INDIVIDUAL GUARANTEE. This means that if the price paid in the auction for any particular animal is below its guaranteed individual price then a payment will be made to bring the auction price up to the guaranteed individual price. This individual guarantee depends on the weight, the grade and the time of the year. The limit over which no payment is made is the same as for the Collective Guarantee. The rates of payment are set out in the "Farmers' Guide to the Fatstock Guarantee Scheme (1954-55) - Cattle", issued by the Ministry of Agriculture and Fisheries.



