Cattle - Feeding

University of Exeter

Department of Economics (Agricultural Economics)



# A Study of Cattle Fattening on Grass in South-West England

1963

Summary of Results

1, Courtenay Park,

Newton Abbot,

Devon.

January 1964.

Price:-
One Shilling & Sixpence

ACKNOWLEDGEMENTS.

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# C O N T E N T S.


| | | Page |
|---|---|---|
| Summary of Investigation | | 1 |
| Table 1. | Financial Results 28 Farms - 1963 | 4 |
| Table 2. | Gross Output, Inputs & Margin per Head - All Farms | 5 |
| Table 3. | Gross Output, Inputs & Margin per Head for the Highest & Lowest Margin Groups. | 6 |
| Table 4. | Comparison of Gross Output, Inputs & Margin per Head 1958 & 1963 | 7 |
| Appendix I. | Costing Method | 8 |
| Appendix II. | Individual Farm Results | 10 |


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## Summary of Investigation.

1. The study on which this report is based was undertaken on 28 farms during the summer of 1963. These farms were located mainly in Devon, 10 in the Exe and Culm Valleys north of Exeter, 7 in the Milton Abbot/Lamerton districts near Tavistock and 6 in the Taw Estuary area of North Devon. The remaining 5 farms were situated in the Callington/Launceston districts of East Cornwall.

2. Altogether, 776 head of cattle were covered by the study, comprising 586 steers and 190 heifers. In terms of breeds, the Friesian-cross bullock was the most popular type encountered, accounting for approximately 37% of the total sample. The native Devon and South Devon breeds accounted for 23% and 16% respectively of the total. It is interesting to note that in 1958, when a similar investigation was last conducted by this Department, these two native breeds, together, accounted for nearly 90% of the sample. An analysis of the 1963 cattle by breed is presented below:-

| Breed | No. Cattle | % |
|---|---|---|
| Devon | 176 | 23 |
| South Devon | 124 | 16 |
| Friesian X Devon | 236 | 30 |
| Friesian X Hereford | 50 | 7 |
| Friesian | 42 | 5 |
| Mixed | 148 | 19 |
| Total | 776 | 100 |

3. Just under three-quarters (560 head) of the total cattle were purchased as stores during the spring and early summer of 1963. The number of stores purchased in the autumn of 1962 and over- wintered was insignificant. Hence, the cattle entered in the opening valuation in Table 1 refer to the number of home-reared stores on the farm when the grazing season was deemed to have commenced. Cattle in the closing valuation refer to those which were unfinished on grass and were brought indoors for hand-feeding.

4. The investigation extended over a period of 8 months, from April to November. The average duration of the grazing period for any particular bunch of cattle was just under four months, but this varied considerably between farms, from about one and a half months to a little over six months.

5. The gross output and inputs for the 28 study farms are analysed in

Tables 1 and 2. The total value added to the 776 cattle during the 1963 grazing season, inclusive of attested bonus payments, was £12,205, equivalent to £15. 15s. per head. This sum represents the gross feeders' margin, and is the difference between the sum of the closing valuation plus sales (inclusive of attested bonus) and the sum of the opening valuation plus purchases. Cattle on hand, both at the beginning and end of the grazing period, were entered at their estimated market values. The inputs employed in fattening - feed, labour, marketing charges etc. - amounted in total to £6,436 or £8. 5s. per head, which left a total margin of £5,769 or £7. 10s. per head for the grazier. Profit margins, however, varied considerably between farms, from a deficit of £3. 2s. to a surplus of £16 per head. The distribution of the study farms according to profit margins is set-out below:-

| | Margin/Head £ | No. Farms |
|---|---|---|
| Deficit | 3 | 1 |
| Surplus | 1 - 3.9 | 1 |
| | 4 - 6.9 | 12 |
| | 7 - 9.9 | 8 |
| | 10 -11.9 | 3 |
| | 12 and over | 3 |
| | Total | 28 |

The main input item was grazing, which at £4. 12s. per head accounted for 55.8% of total costs. Marketing and haulage was the next most important at £1. 6s. or 15.8%, followed by labour at £1. 4s. or 14.5% of total costs. The average grazing period amounted to 118 days, during which time an average live-weight gain of 2.1 cwt. per head was achieved, equivalent to a daily live-weight increase of 2.0 lb.

6. The results for the 5 highest and 5 lowest margin farms, set-out in Table 3, show that both the initial purchase price or valuation and the selling price were important factors affecting the level of profitability. Those farms with the highest margins showed not only an advantage in initial cost of 8s. per cwt., but also an advantage of a further 8s. per cwt. in the selling price.

Cattle in the highest margin group achieved a bigger daily gain in weight than in the lowest margin group, 2.3 lb. compared with 1.7 lb. This quicker fattening rate, coupled with lower input cost, enabled the highest margin group of farms to show an overall advantage of just over £1. 12s. in the fattening costs per cwt. of live-weight gain.

On a per acre basis, the high margin farms showed a significantly higher level of profitability than the low margin farms, £16. 11s. 5d. compared with £4. 13s. 4d. This was in part the result of a lower acreage requirement per beast fattened, 0·7 acres relative to 0·9 acres, and in part the result of higher margins per head.

7. A comparison of the 1963 results with those obtained in 1958 for a similar study reveals that, on average, profit margins were £5 per head higher in 1963 than in the earlier year. This was brought about by the substantially higher feeders' margin obtained in 1963, £15. 15s. compared with £10. 0s., which was the result of lower store prices in the latter year since in both years the returns per live cwt. for fat cattle were identical. Input costs in 1963 were 15s. per head higher than in the earlier period.

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Table 1. Financial Results - 28 Farms. 1963.

Dr. Cr.

| Opening Valuation | | | Closing Valuation | | |
|---|---|---|---|---|---|
| No. | cwt. | £ | No. | cwt. | £ |
| 216 Cattle | 1723 | 13,254 | 146 Cattle | 1409 | 10,408 |
| **Purchases** | | | **Sales** | | |
| 560 Cattle | 4654 | 35,788 | 630 Cattle | 6584 | 50,798 |
| | | | Attested Bonus | | 41 |
| Gross Output carried down | 1616 | 12,205 | | | |
| 776 | 7993 | 61,247 | 776 | 7993 | 61,247 |

| Inputs | £ | | Gross Output brought down | 12,205 |
|---|---|---|---|---|
| Grazing | 3572 | | | |
| Other Foods | 579 | | | |
| Labour:- | | | | |
| Manual | 825 | | | |
| Tractor/Car | 115 | | | |
| Marketing & Haulage | 1010 | | | |
| Sundries | 129 | | | |
| Share of Overheads | 206 | 6,436 | | |
| MARGIN | | 5,769 | | |
| | | 12,205 | | 12,205 |

Note: No charge has been made for management or interest on capital.

No credit has been allowed for manure.

Table 2. Gross Output, Inputs and Margin per Head.

28 Farms - 1963.

| | £ s. | % |
|---|---|---|
| Returns for Fat Cattle | 78 19 | |
| Value of Store Cattle | 63 4 | |
| Gross Output | 15 15 | |
| Inputs | £ s. | % |
| Foods:- Grazing | 4 12 | 55.8 |
| Other | 15 | 9.1 |
| Total Foods | 5 7 | 64.9 |
| Labour:- Manual | 1 1 | 12.7 |
| Tractor/Car etc. | 3 | 1.8 |
| Total Labour | 1 4 | 14.5 |
| Marketing & Haulage | 1 6 | 15.8 |
| Sundry Costs | 3 | 1.8 |
| Share of Overheads | 5 | 3.0 |
| Total Inputs | 8 5 | 100.0 |
| Margin | £7 10 | |
| Value of Store per Live cwt. | £7 14 | |
| Return per Live cwt. | £7 13 | |
| Weight of Store (cwt.) | 8.2 | |
| Weight of Fat Beast (cwt.) | 10.3 | |
| Gain in Live weight (cwt.) | 2.1 | |
| Input Costs per cwt. Gain | £3. 19s. 7d. | |
| Average No. Grazing Days | 118 | |
| Gain per Grazing Day (lb.) | 2.0 | |
| Acres per Beast Fattened | 0.8 | |
| Margin per Acre devoted to Cattle | £9. 5s. 2d. | |
| Number of Cattle Fattened | 776 | |

Table 3. Gross Output, Inputs and Margin per-Head for the Five Highest & Lowest Margin Groups - 1963.

| | 5 Farms with Highest Margins | | 5 Farms with Lowest Margins | |
|---|---|---|---|---|
| | £ s. | | £ s. | |
| Returns for Fat Cattle | 70 18 | | 85 12 | |
| Value of Store Cattle | 53 12 | | 73 16 | |
| Gross Output | 17 6 | | 11 16 | |
| | £ s. | % | £ s. | % |
| Inputs | | | | |
| Foods:- Grazing | 2 10 | 43.9 | 4 8 | 57.9 |
| Other | 2 6 | 40.3 | - | - |
| Total Foods | 4 16 | 84.2 | 4 8 | 57.9 |
| Labour:- Manual | 6 | 5.2 | 16 | 10.6 |
| Tractor/Car etc. | 2 | 1.8 | 2 | 1.3 |
| Total Labour | 8 | 7.0 | 18 | 11.9 |
| Marketing & Haulage | 8 | 7.0 | 1 18 | 25.0 |
| Sundry Costs | - | - | 4 | 2.6 |
| Share of Overheads | 2 | 1.8 | 4 | 2.6 |
| Total Inputs | 5 14 | 100.0 | 7 12 | 100.0 |
| MARGIN | £11. 12s. | | £4. 4s. | |
| Value of Store per Live cwt. | £7. 6s. | | £7. 14s. | |
| Return per Live cwt. | £7. 10s. | | £7. 2s. | |
| Weight of Store (cwt.) | 7.6 | | 8.8 | |
| Weight of Fat Beast (cwt.) | 9.6 | | 10.5 | |
| Gain in Weight (cwt.) | 2.0 | | 1.7 | |
| Input Costs per cwt. Gain | £2. 17s. 0d. | | £4. 9s. 5d. | |
| Average No. Grazing Days | 98 | | 111 | |
| Gain per Grazing Day (lb.) | 2.3 | | 1.7 | |
| Acres per Beast Fattened | 0.7 | | 0.9 | |
| Margin per Acre devoted to Cattle | £16. 11s. 5d. | | £4. 13s. 4d. | |
| Number of Cattle Fattened | 87 | | 126 | |

Table 4. Gross Output, Inputs & Margin per Head

1958 and 1963

| | 1958 | 1963 |
|---|---|---|
| | £ s. | £ s. |
| Returns for Fat Cattle | 80 3 | 78 19 |
| Value of Store Cattle | 70 3 | 63 4 |
| Gross Output | 10 0 | 15 15 |
| Inputs | | |
| Foods:- Grazing | 4 13 | 4 12 |
| Other | 8 | 15 |
| Total Foods | 5 1 | 5 7 |
| Labour:-Manual | 18 | 1 1 |
| Tractor/Car etc. | 3 | 3 |
| Total Labour | 1 1 | 1 4 |
| Marketing & Haulage | 1 2 | 1 6 |
| Sundry Costs | 1 | 3 |
| Share of Overheads | 5 | 5 |
| Total Inputs | 7 10 | 8 5 |
| MARGIN | 2 10 | 7 10 |
| Value of Store per Live cwt. | 8 2 | 7 14 |
| Return per Live cwt. | 7 13 | 7 13 |
| Weight of Store (cwt.) | 8.7 | 8.2 |
| Weight of Fat Beast (cwt.) | 10.5 | 10.3 |
| Gain in Weight (cwt.) | 1.8 | 2.1 |
| Input Costs per cwt. Gain | £4. 3s. 10d. | £3. 19s. 7d. |
| Average No. Grazing Days | 125 | 118 |
| Gain per Grazing Day (lb.) | 1.6 | 2.0 |
| Acres per Beast Fattened | 0.7 | 0.8 |
| Margin per Acre devoted to Cattle | £3. 8s. 3d. | £9. 5s. 2d. |
| Number of Farms | 57 | 28 |
| Number of Cattle Fattened | 2262 | 776 |

## APPENDIX I.

## COSTING METHOD.

### LABOUR CHARGES

| | | | |
|---|---|---|---|
| Manual | Adult Male | 5s. | 0d. per hour |
| Tractor | Medium Power | 4s. | 6d. per hour |
| Car/Van | | | 9d. per 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.

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.

Allocation of Grassland Cost 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:-

| | | |
|---|---|---|
| Cattle:- | Cows and Other Cattle over two years old | = 1.0 |
| | Cattle 1 - 2 years old | = 0.8 |
| | Cattle 0 - 1 year old | = 0.5 |
| Sheep:- | Ewes and Rams | = 0.2 |
| | Fattening Sheep & Replacements | = 0.2 |

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 percentages of 54.0% has been used. Farmers' estimated weights were entered for those cattle remaining on the farm when the grass fattening ceased.

GENERAL FARM OVERHEADS

A charge of 5s. 0d. per £ of manual labour has been made to cover the general farm overheads such as use of farm car, telephone, general farm insurance, office expenses etc.

AVERAGES

Weighted averages have been used throughout the analyses.

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# APPENDIX II.

## INDIVIDUAL RESULTS.

| | |
|---|---|
| Your Farm Code No. is | |

FAT CATTLE INVESTI-

| Code No. | GROSS OUTPUT | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Home Reared | | Purchased | | Total | | Closing Valuation | | Sold | | Total | | Cutput |
| | No. | £ | No. | £ | No. | £ | No. | £ | No. | £ | No. | £ | £ |
| 180 | 10 | 600 | 32 | 2025 | 42 | 2625 | 13 | 910 | 29 | 2388 | 42 | 3298 | 673 |
| 475 | - | - | 47 | 3344 | 47 | 3344 | 1 | 75 | 46 | 3793 | 47 | 3868 | 524 |
| 730 | - | - | 65 | 2903 | 65 | 2903 | 17 | 1010 | 48 | 3155 | 65 | 4165 | 1262 |
| 806 | 9 | 540 | - | - | 9 | 540 | - | - | 9 | 739 | 9 | 739 | 199 |
| 808 | 15 | 810 | - | - | 15 | 810 | - | - | 15 | 1090 | 15 | 1090 | 280 |
| 813 | 12 | 630 | - | - | 12 | 630 | 10 | 710 | 2 | 125 | 12 | 835 | 205 |
| 826 | - | - | 62 | 4340 | 62 | 4340 | 2died | - | 60 | 5400 | 62 | 5400 | 1060 |
| 829 | - | - | 12 | 921 | 12 | 921 | 1 | 76 | 11 | 911 | 12 | 987 | 66 |
| 968 | 8 | 496 | 19 | 1201 | 27 | 1697 | - | - | 27 | 2101 | 27 | 2101 | 404 |
| 975 | 18 | 1170 | - | - | 18 | 1170 | - | - | 18 | 1502 | 18 | 1502 | 332 |
| 990 | 13 | 754 | - | - | 13 | 754 | 3 | 165 | 10 | 748 | 13 | 913 | 159 |
| 1204 | 35 | 1960 | - | - | 35 | 1960 | - | - | 35 | 2503 | 35 | 2503 | 543 |
| 1210 | 8 | 520 | - | - | 8 | 520 | - | - | 8 | 691 | 8 | 691 | 171 |
| 1211 | 17 | 1060 | 17 | 987 | 34 | 2047 | 2 | 120 | 32 | 2523 | 34 | 2643 | 596 |
| 1218 | 21 | 1425 | 23 | 1459 | 44 | 2884 | 19 | 1559 | 25 | 2057 | 44 | 3616 | 732 |
| 1220 | - | - | 31 | 2487 | 31 | 2487 | - | - | 31 | 2973 | 31 | 2973 | 486 |
| 1221 | 6 | 510 | 9 | 465 | 15 | 975 | 3 | 238 | 12 | 922 | 15 | 1160 | 185 |
| 1223 | - | - | 65 | 4678 | 65 | 4678 | 14 | 1120 | 51 | 4596 | 65 | 5716 | 1038 |
| 1224 | - | - | 39 | 2426 | 39 | 2426 | 12 | 855 | 27 | 2119 | 39 | 2974 | 548 |
| 1225 | 9 | 737 | 2 | 160 | 11 | 897 | 4 | 350 | 7 | 678 | 11 | 1028 | 131 |
| 1236 | 8 | 570 | 4 | 198 | 12 | 768 | 6 | 396 | 6 | 561 | 12 | 957 | 189 |
| 1424 | - | - | 56 | 2926 | 56 | 2926 | - | - | 56 | 3887 | 56 | 3887 | 961 |
| 1425 | 4 | 248 | 5 | 298 | 9 | 546 | 9 | 689 | - | - | 9 | 689 | 143 |
| 1426 | 12 | 484 | - | - | 12 | 484 | 6 | 330 | 6 | 344 | 12 | 674 | 190 |
| 1427 | - | - | 8 | 404 | 8 | 404 | 8 | 496 | - | - | 8 | 496 | 92 |
| 1428 | - | - | 20 | 1301 | 20 | 1301 | 10 | 800 | 10 | 833 | 20 | 1633 | 332 |
| 1430 | - | - | 44 | 3266 | 44 | 3266 | - | - | 44 | 3721 | 44 | 3721 | 455 |
| 1431 | 11 | 740 | - | - | 11 | 740 | 6 | 510 | 5 | 437 | 11 | 947 | 207 |

GATION - SUMMER 1963.

| INPUTS | | | | | | | | | | | | MARGINS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Foods | | | | Labour | | | Sundry | | | | Total | | |
| Grazing | Corn | Hay | Total | Manual | Car/Van | Total | Overheads | Vet. Meds | Market Expenses | Total | Inputs | Total | Per Head |
| £ | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ |
| 175 | 20 | - | 195 | 10 | - | 10 | 2 | - | 51 | 53 | 258 | 415 | 9·9 |
| 217 | - | - | 217 | 9 | 9 | 18 | 2 | 4 | 24 | 30 | 265 | 259 | 5·5 |
| 313 | 102 | 12 | 427 | 120 | - | 120 | 30 | - | 70 | 100 | 647 | 615 | 9·5 |
| 30 | 36 | - | 66 | 9 | - | 9 | 2 | - | 15 | 17 | 92 | 107 | 11·9 |
| 59 | - | - | 59 | 7 | 1 | 8 | 2 | - | 19 | 21 | 88 | 192 | 12·8 |
| 75 | - | - | 75 | 6 | 4 | 10 | 1 | - | 2 | 3 | 88 | 117 | 9·7 |
| 350 | 180 | - | 530 | 31 | - | 31 | 8 | 10 | 136 | 154 | 715 | 345 | 5·6 |
| 82 | - | - | 82 | 4 | - | 4 | 1 | 3 | 13 | 17 | 103 | - 37 | - 3·1 |
| 168 | - | - | 168 | 23 | - | 23 | 6 | - | 38 | 44 | 235 | 169 | 6·3 |
| 66 | - | - | 66 | 13 | 1 | 14 | 3 | - | 52 | 55 | 135 | 197 | 10·9 |
| 72 | - | - | 72 | 12 | - | 12 | 3 | - | 13 | 16 | 100 | 59 | 4·6 |
| 188 | - | - | 188 | 33 | 4 | 37 | 8 | 10 | 37 | 55 | 280 | 263 | 7·5 |
| 46 | - | - | 46 | 4 | - | 4 | 1 | - | - | 1 | 51 | 120 | 15·0 |
| 98 | - | - | 98 | 72 | 13 | 85 | 18 | 5 | 54 | 77 | 260 | 336 | 9·9 |
| 292 | - | - | 292 | 21 | - | 21 | 5 | 1 | 35 | 41 | 354 | 378 | 8·6 |
| 156 | - | - | 156 | 38 | 12 | 50 | 10 | 21 | 90 | 121 | 327 | 159 | 5·1 |
| 70 | - | - | 70 | 19 | - | 19 | 5 | - | 21 | 26 | 115 | 70 | 4·7 |
| 285 | 5 | - | 290 | 156 | - | 156 | 39 | 55 | 145 | 239 | 685 | 353 | 5·4 |
| 170 | - | - | 170 | 60 | 25 | 85 | 15 | 6 | 34 | 55 | 310 | 238 | 6·1 |
| 60 | - | - | 60 | 12 | - | 12 | 3 | 1 | 18 | 22 | 94 | 37 | 3·4 |
| 72 | - | - | 72 | 24 | 9 | 33 | 6 | - | 13 | 19 | 124 | 65 | 5·4 |
| 95 | 200 | - | 295 | 10 | 6 | 16 | 3 | 1 | 17 | 21 | 332 | 629 | 11·2 |
| 45 | - | - | 45 | 18 | 10 | 28 | 4 | - | 2 | 6 | 79 | 64 | 7·1 |
| 75 | - | - | 75 | 34 | - | 34 | 9 | - | 9 | 18 | 127 | 63 | 5·2 |
| 21 | - | - | 21 | 6 | - | 6 | 1 | - | - | 1 | 28 | 64 | 16·0 |
| 104 | - | 24 | 128 | 32 | 19 | 51 | 8 | 4 | 13 | 25 | 204 | 128 | 6·4 |
| 110 | - | - | 110 | 22 | - | 22 | 5 | - | 87 | 92 | 224 | 231 | 5·1 |
| 78 | - | - | 78 | 20 | - | 20 | 5 | - | 6 | 11 | 109 | 98 | 8·9 |