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COSTS and RETURNS FROM STORE WINTERED GRASS-FINISHED CATTLE ON NORTHUMBERLAND FARMS 1947-48

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by

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ACKNOWLEDGMENT

The Provincial Agricultural Economist expresses thanks for the interest shown in this series of reports and gratefully acknowledges the indebtedness of the Branch to the collaborating farmers whose ready and willing co-operation made the material available. In addition to any benefit the collaborators have had from the analysis of their particular costs and returns, the combined results have proved of wide general interest and participation in the investigation has provided a service to the industry at large which deserves full recognition.

Moreover the investigations have provided many opportunities for discussion and exchange of ideas extending outside the range of the particular matters under inquiry, and the value of the contacts so developed is specially appreciated by those engaged in this field of applied economics.

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Previous reports in this series.

G.19. The Economics of Winter-fed Cattle in Northumberland 1944-45.
G.21. The Economics of Yard-Fed Cattle in Northumberland, 1945-46.
G.23. The Economics of Yard-Fed Cattle in Northumberland, 1946-47.
G.26. Costs and Returns for Wintered Cattle in Northumberland, 1946-47.

As far as the limited remaining supplies allow, the Farm Economics Branch will endeavour to meet requests for these publications.

1. INTRODUCTION

This report is the last of a series arising from investigations, begun in the winter of 1944-45, into costs and returns of feeding cattle on a number of Northumberland farms. The investigations have followed a general trend in feeding policies in that, while the first two years' inquiries dealt with yard-finished cattle, the subsequent inquiries were concerned with cattle wintered inside and finished on grass.

Various reasons may be suggested for this change in emphasis. In one way or other they concern the way in which fat stock feeding integrates with arable cropping. Cattle feeding is itself an enterprise from which direct net returns are sought. It is also a means by which, through the conversion of straw to dung, land fertility is maintained; labour is retained on farms during the relatively slack winter season; and roots, straw and other roughages are converted to a saleable product.

Direct net returns from yard finished cattle, at the time these inquiries started, were shown to be negative, or at best unattractive. One effect of the high tillage policy, however, is to increase the area under temporary leys and therefore to provide considerably more summer feed. (In Northumberland, in 1948 the acreage under temporary grass was nearly twice as extensive as in the years immediately before the war). In the absence of wintering facilities on the feeding farms themselves, the stocking and utilization of the enlarged area of grass could be expected to lead to such a concentration of spring store buying as would absorb any margin the feeder might hope to make in these days when cattle are in relatively short supply, while the demand is strong. The high tillage area, however, provides ample supplies of roots, straw and other roughages for wintering needs and so offers the alternative of store cattle buying during the summer and autumn, wintering in improving condition, and finishing on the grass. In effect this means that the feeder takes over some part of the rearing stages in the total process of beef cattle production, and though the feeding period is lengthened, the cost of feeding is lower than with yard finishing.

From the aspect of fertility maintenance it may be also that as phosphates, potash and nitrogen have become more freely available in alternative forms, farmers have become less inclined to look upon dung as a high priced necessity, though the need for humus remains. The latter need can still be met when yard feeding is modified on the lines indicated, in addition, of course, to the contribution from the leys when ploughed.

In the balancing of the various considerations outlined, the significance of the greatly increased areas under temporary grass seems to be of major importance and is worth further discussion.

The violent changes which have taken place in levels of prices and costs make the financial comparison with pre-war conditions more or less academic. What is more significant is the fact that, despite a reduction of more than 25% in the total grass acreage between 1939 and 1948 (excluding rough grazings) the total head of cattle carried in June between the same years, has increased by very nearly 5%. The greater intensity of stock carried in relation to the grass acreage may be expressed thus:-

In the years 1938-1948 the numbers of cattle (all ages) at June 4th for each 100 acres of grass were as follows:-

Year	Head of Cattle per 100 acres of Grass
1938	33.0
1939	33.6
1940	35.3
1941	33.5
1942	39.7
1943	43.4
1944	48.0
1945	47.4
1946	46.3
1947	43.2
1948	47.1

These figures are for Northumberland. Grass means Temporary and Permanent Grass, excluding Rough Grazings.

The increase in intensity of stocking which began after the period during the early war years when beef cattle (and some dairy cattle) were being liquidated, is seen to have been substantial and well maintained.

Note, however, how during the same period the proportion of temporary grass rose in the total grass acreage. The acreage under temporary grass in each 100 acres of Total Grass in each year was as follows:-

Year	Acres of Temporary Grass in each 100 acres of Total Grass
1938	9.1
1939	10.4
1940	10.7
1941	11.3
1942	13.2
1943	17.9
1944	21.5
1945	24.6
1946	25.4
1947	24.2
1948	24.3

The significance of these figures is greater than would appear at first sight, in that the term "temporary grass" as used before the war could include leys of up to seven or eight years duration and possibly some longer. In more recent years most of the temporary leys will be of no more than three years duration.

In the foregoing analysis no distinction is made between dairy cattle and beef cattle. Clear separation of the two categories on the basis of the official statistics is not possible, particularly as regards the younger ages. It may be noted however, that in 1938, 20.6% of all cattle consisted of cows in milk or in calf, while in 1948 the corresponding proportion was 18.6%. The county's interest in and dependence upon beef production have been fully sustained during the past eventful decade and take on new significance at the present time (March 1949).

Although the general implication of the foregoing analysis is to stress the part played by the ley towards increasing the cattle output and inducing a shift in emphasis towards grass finishing, it cannot be too often stressed that every beast finished on summer grass must first have been carried somewhere through at least two winters. So long as the present stringencies persist in the country's external trading position and Government buying policy holds to the pattern of the past two years, the industry must continue to look to its own internal resources for increased supplies of store cattle and increased supplies of feeds on which to finish them. Direct grazing may be the simplest and most obvious way to convert leys to cash but, since leys greatly intensify summer food supplies, two corollaries follow, (a) either the numbers of cattle wintered must be raised to keep pace with summer grazing requirements, or (b) the excess supply of summer grass must be conserved and carried over to keep in balance with the supplies of cattle available. Wintering remains the crux of the problem and recent movements in store cattle prices reflect the stresses set up between breeders, rearers and feeders when all wish to reap the advantage of the increased prices now being paid for fat cattle.

The evidence disclosed by these investigations indicates clearly how the grass feeder's margin is limited by the price of stores, and this emphasises once again the significance of the indirect benefits associated with the wintering of cattle in a mixed arable cropping and stock feeding economy. These indirect benefits will continue to defy the efforts of economic analysts to put precise measures to them but will nevertheless remain as important elements in the feeder's calculations of pros and cons.

2. THE SAMPLE IN 1947-48.

The 1947-48 investigation was concerned with 924 cattle, distributed over 12 farms. The costings dealt with easily identifiable batches of cattle, and not with all the cattle on the farms.

Owing to the small size of the sample, its geographical distribution has little statistical significance and results are averaged for the farms as a whole. In fact, five of the farms were in the south of the county (Stagshaw area) and the other seven were in the north (Tweedside-Belford area). In both areas, fat stock feeding has been a well-established enterprise over a long period of time, and characteristically, the farms themselves are large. Table 1 gives a general picture of land use for the 'average farm' in the sample. There were, however, notable dissimilarities between the two area sub-groups. Those in the south were all under 400 acres, while those in the north, with one exception, were all over 500 acres. The southern farms also had less than 30% of their area in tillage, while all but two of the Tweedside farms had a higher proportion than this. The average rent of the southern farms was 7/- an acre less than that of the northern farms. Beyond these dissimilarities it would be unwise to argue about differences in practices and results on the strength of the small samples available.

AVERAGE LAND USE (12 farms)

	Acres	%
Tillage	186	34
Temporary Grass	145	25
Permanent "	204	37
Rough Grazing .	31	4
Total	566	100

The overall Average Rent per acre was 26/5d.

The following figures show the different classes of cattle covered by this year's inquiry.

	Nos.	%
Irish Heifers	293	32
Home-bred Heifers ..	240	26
Total Heifers	533	58
Irish Bullocks	278	30
Home-bred Bullocks .	113	12
Total Bullocks	391	42
Total Cattle Costed	924	100

Of these 924 cattle, eight proved to be in calf and were credited at an appropriate figure; eight became casualties; 43 were sold in strong store condition; and some 67 remained to be graded either off the grass or out of the yards after mid-November. The costs of maintaining and feeding all these cattle despite their differing ends have been taken into account, as have the sales, transfers, and valuations (of the left-over cattle) in arriving at the return per head. The fact that, for one reason and another, 126 out of the original 924 cattle were not graded within the accounting period of the investigation (November 1947 to October 1948 inclusive) reflects the transitional character of feeding policies at the present time. It may well be that the method by which supplies of store cattle are collected during the summer and autumn results in greater lack of uniformity in age and growth amongst the cattle than was usual under more regularised feeding systems, when supplies of stores permitted more selective buying to a defined type.

3. GRADING RESULTS AND FEEDING PERIODS

The following is an analysis of the disposal of the cattle. It masks some differences between the two area groups of farms, in that of the 201 cattle on the five farms around Stagshaw, of which 174 in all were graded, only 26 were graded higher than A+ and none were in the top grade.

GRADING and DISPOSAL OF CATTLE

	No.	%
Fat SS	228	24
S	239	26
A+	156	17
A	89	10
A-	62	7
B+	15	2
B	4	-
Other Grades .	5	-
Remaining to Grade	67	7
Store	43	5
Heifers calved ...	8	1
Casualties	8	1
Total Cattle	924	100

In the absence of weighbridges the weights of store cattle could not be accurately determined and no attempt has been made therefore to calculate the live weight increases during the feeding and grazing period. Average weights of cattle sold were Bullocks 12 cwts; Heifers 10 cwts. 1 qr. and for all cattle the average was 11 cwts. 2 qrs. Once again the previous year's finding that heifers were somewhat heavier from the Tweedside farms, was borne out. (No bullocks were costed in the Stagshaw district)

The wintering or feeding period was assumed for convenience to start on November 1st, though in most cases, thanks to the open autumn, cattle were actually brought into the courts somewhat later than this. The advantage of the common starting point for all individual costs lies in the greater ease in obtaining a valuation at a particular date. This was made on the basis of purchase price plus appropriate additions for keep prior to that date.

The feeding period inside averaged 128 days or about 18 weeks, but a range in this respect from 14 to 23 weeks was recorded.

The grazing period after the cattle were turned out in spring ranged from as few as 53 days for 4 of the cattle on one farm to a maximum of 208 days for 3 cattle on another farm. This maximum is however, set by the costing period, not by the final disposal of the cattle by sale.

RANGE OF GRAZING PERIOD - FAT CATTLE

Between:-	50-70	70-90	90-110	110-130	130-150	150-170	170-190	Over 190 days
No. of Beasts	22	47	194	128	181	140	72	14

A more enlightening figure however, is the average number of grazing days for the cattle sold. This was 130 days or about 19 weeks. The range for individual farms was from an average of 15 weeks on one farm to an average of 21 weeks on another.

Earlier reference has been made to the protracted feeding period as a whole, and a possible explanation suggested.

The following figures analyse grading dates. Both in this and the preceding table the concentrations of sales in July and September are noteworthy.

TIME OF GRADING

	Bullocks		Heifers		Total	
	No.	%	No.	%	No.	%
June	-	-	18	3	18	2
July	63	18	208	40	271	31
August	77	22	86	17	163	19
September	157	45	118	23	275	32
October	20	6	40	8	60	7
Still to grade	30	9	48	9	78	9
Total	347	100	518	100	865	100

The average return per beast over all the 924 cattle which were costed was £53. 7. 10. The sale prices or values for the fat and other cattle, from which the overall average is derived, are given below.

DISPOSAL PRICES OR VALUES

798	Fat Cattle sold	@ £54.12. 9.	per head
43	Store Cattle sold	@ £51. 3.10.	" "
8	Casualties sold	@ £10. 2. 8.	" "
8	Calved Heifers transferred out	@ £41. 4. 4.	" "
67	Cattle still to grade, valued	@ £46.13. 0.	" "

4. FEEDING COSTS AND MARGINS

Of the total net cost of keeping these cattle through the winter and finishing them on the grass, feeding other than grazing represented more than two-thirds, while grazing accounted for only slightly more than one-sixth of the total. Labour, mainly in feeding, made up the greater part of the remainder. Rations consisted in most cases of hay, straw, and roots; the total weight of straw fed being almost twice that of hay. In addition a little bought or home-grown concentrate was fed in four cases.

The bought concentrate was charged at actual price. Home-grown foods were charged at a 'flat' average cost of production in all cases. The rates used were as follows:-

Turnips	2/0d. per cwt.
Mangels	2/5d. " "
Silage	2/7d. " "
Hay	3/7d. " "
Straw	1/7d. " "
Oats, Barley & Beans	12/0d. " "

The total feeding bill per beast was made up as follows:-

Hay and Straw	28¼ cwt.	£3. 3. 5.
Roots	30¾ "	3. 2. 4.
Silage	1⅞ "	3. 6.
Home-grown Concentrate	¾ "	9. 1.
Total Home Grown		£6.18. 4.
Bought Concentrates ..	1 "	11. 7.
Total Feeding		£7. 9.11.

The use of uniform charges for home-grown foods means that individual farm efficiencies in fodder crop production have been disregarded.

Total costs and returns for all the 924 cattle and the averages per beast are set out below. In addition, similar figures are included per beast sold fat, assuming costs to be the same on these cattle as on the remainder.

	Total	Per Beast	Per Fat Beast
	£. s.d.	£. s. d.	£. s. d.
Value of finished Beasts 924	49,337. 1.3.	53. 7.10.	54.12. 9.
Value of Store Beasts 924	33,969.16.6.	36.15. 3.	36.15. 3.
GROSS FEEDING MARGIN	15,367. 4.9.	16.12. 7.	17.17. 6.
Expenses - Feeding	6,924.15.1.	7. 9.11.	
Grazing	1,778.16.9.	1.18. 6.	
Labour	1,522.11.9.	1.13. 0.	
Miscellaneous ...	174.10.6.	3. 9.	
TOTAL COST	10,400.14.1.	11. 5. 2.	11. 5. 2.
NET MARGIN (PROFIT)	4,966.10.8.	5. 7. 5.	6.12. 4.

Compared with the previous year, the costs of keeping the cattle show little change. There was a slight fall in cost, due to less feeding, attributable to the more normal spring. The previous year's results, however, showed a considerable amount of 'windfall' profit, arising from the unexpected price rise in August 1947. Of the cattle dealt with in this report, some were bought before this rise in grading prices was announced and could affect the store price. These cattle were valued at the beginning of the accounting period on a cost plus keep basis, as were those bought in the autumn of 1947. The returns here set out, therefore include, in part, a similar element of windfall profit.

Assuming that grading prices and feeding costs were to continue unchanged, it would be anticipated that net returns from this method of feeding would be lower, in so far as the addition to the fat price is passed back to the store producer. As it happens, however, new factors have been brought into play by the revised prices for purchased feeds, and further advances in the prices for fat stock (March 1949).

The significance of the prices paid for store cattle - well appreciated both by rearers and feeders - deserves further comment. In the calculation made below the results for 1946-47 and 1947-48 are compared on the basis of constant prices and costs, except for the price of the store beast. The resulting net profit is then expressed as a percentage return on the cost of the store. In 1946-47 the net return was at the rate of 27%. Had the price increase announced in August 1947 been withheld, the rate would have been 11%.

In 1947-48, when the average price of stores was £6 a head higher, the net return was at the rate of 15%.

The "forecast" figures for 1948-49 use an average store price based on 158 cattle purchased by 4 farms for feeding in 1949 and, assuming no change in other costs and prices, the rate of return comes out at 7% on the store price.

Since this table was prepared higher prices for fat cattle have been announced. These hypothetical calculations are only intended to illustrate how, in the current demand/supply context, the increased prices for the finished beasts are passed back to the rearers of the stores.

COMPARISONS WITH 1946-47 and 1948-49 ASSUMING CONSTANT PRICES and COSTS

	1946-47 Actual	1946-47 Less price increase	1947-48 Actual	1948-49 Assumed *
	£. s. d.	£. s.d.	£. s.d.	£. s. d.
Value of Fat Beast	51. 2.11.	46. 7.1.	53. 7.10	54.12. 9.
Value of Store "	30.15. 4.	30.15.4.	36.15.3.	40. 5. 9.
Gross Margin	20. 7. 7.	15.11.9.	16.12.7.	14. 7. 0.
Cost	12. 1. 7.	12. 1.7.	11. 5.2.	11.13. 4.
Net Margin (Profit)	8. 6. 0.	3.10.2.	5. 7.5.	2.13. 8.
% Return on Stores bought	27%	11%	15%	7%

* Value of Store Beasts calculated from a 9.8%rise over 1947 on 4 farms for 158 cattle bought in 1948.

Finally it may be useful to summarise the general trends in costs and returns over the past five years as revealed in these investigations. The following table does this but reference should be made to the annual reports for details of certain minor changes in methods of accounting, if an analysis beyond the general trend is required.

SUMMARY OF FOUR YEARS FINANCIAL RESULTS. ALL CATTLE. PER BEAST

(A) Cattle Finished in Yards

Year	1944-45	1945-46	1946-47
No. of Cattle Costed	1100	800	530
" " " Graded	1041	767	511
	£. s. d.	£. s. d.	£. s. d.
Average Return	44. 9. 5.	46.17. 7.	48. 4. 4.
" Store Value.	32.16.10.	34.13. 6.	35. 8. 6.
Gross Feeding Margin	11.12. 7.	12. 4. 1.	12.15.10.
Costs (Feed, Labour, etc)	16.11. 0.	15. 8. 6.	14. 2. 6.
Net Margin	4.18. 5. (Loss)	3. 4. 5. (Loss)	1. 6. 8. (Loss)

(B) Cattle Over-Wintered and Finished on Grass

Year	1946-47	1947-48
No. of Cattle Costed	904	924
" " " Graded	898 *	798
	£. s. d.	£. s. d.
Average Return	51. 2.11.	53. 7.10.
" Store Value.	30.15. 4.	36.15. 3.
Gross Feeding Margin	20. 7. 7.	16.12. 7.
Costs (Feed, Labour etc.)	12. 1. 7.	11. 5. 2.
Net Margin	8. 6. 0. (Profit)	5. 7. 5. (Profit)

* Most of these cattle had the benefit of the price increase in August 1947. At pre-increase prices the net margin would have been £3.10.2. (Profit).

These calculations relate to All Cattle Costed. The numbers of Cattle graded are those graded within the accounting period each year.