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COSTS AND RETURNS FROM FATTENING CATTLE
IN YARDS ON 19 YORKSHIRE FARMS, 1949 - 50.

UNIVERSITY OF LEEDS

Department of Agriculture: Economics Section

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during the winter and spring of 1950.

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COSTS AND RETURNS FROM FATTENING CATTLE

IN YARDS ON 19 YORKSHIRE FARMS, 1949-50

Although the number of cattle finished in yards during the winter has decreased considerably in recent years, many farmers in arable areas still buy in cattle to fatten during the winter and retain their faith in the value of good bullock dung for maintaining heavy crop yields. This report deals with costs collected from nineteen Yorkshire farmers. They were visited two or three times during the course of the winter and provided information verbally on the amounts of different foods fed, the bought-in price of the cattle, the time spent in attendance on them and other matters relevant to the costs of and returns from fat bullocks. The costs are based on this information. All the farms were situated in the Vale of York and all grew appreciable acreages of cash root crops such as potatoes and sugar beet. On two of the farms two different bunches of cattle were costed separately so that in all 21 bunches of cattle were costed.

A total of 586 cattle, including 578 bullocks and 8 heifers, were costed - an average of 28 cattle per bunch. Seven farmers purchased Irish cattle, four reared their own stores, the remainder purchased cattle in Scotland, Northumberland, Cumberland, Westmorland and Herefordshire or locally. The cattle were generally brought in at the end of October or in November and spent an average of 154 days in the yards. The longest period in yards was 199 days and the shortest 130 days. Table I shows that over half the cattle were disposed of in May when prices were at their peak.

Table I. Numbers of winter fed cattle sold in each month, 1950.

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>
Number of cattle sold.	8	26	85	156	301	10

The average weight of the cattle at slaughter was 11.81 cwts. (this is the price paid on and does not include the 1 qr. deduction made from the actual weight). 536 or 94.8 per cent of the cattle were sold to Ministry of Food through grading centres. Table II shows how the cattle graded. The remaining cattle, less one casualty, were sold as stores or kept to finish on grass.

Table II. Grading of Cattle.

Grade	SS	S	A+	A	A-	Bt
No. of Cattle	151	182	128	72	20	3

Table III. Costs and Returns per Head from Yard Fed Cattle.

	Average of 21 bunches, 286 cattle.				Your Farm			
	£	s	d	Per cent	£	s	d	Per cent
<u>Cost of Fat Cattle</u>								
Cost of Store Animal	48	7	0	65.5				
Foods	21	19	6	29.8				
Man Labour	2	11	1)	3.7				
Horse & Tractor Labour		3	5)					
Grazing		2	11)	1.0				
Marketing		4	4)					
Sundries		4	7)					
Total Cost	73	12	10	100.0				
Return from Fat Cattle	68	6	11					
Loss	5	5	11					
Profit		-						
Margin between buying and selling price	19	19	11					
Cost of Fattening	26	5	10					
Cost of Production of F.Y.M.per ton		16	2					

Table III gives a summary of the costs and returns on the nineteen farms. The following methods have been used in calculating the costs. The cost of the store animal represents the purchase price of the store animals plus transport to the farm. Home reared cattle have been valued at market price on entering the yards. All home grown foods have been charged at the average cost of production per ton as calculated from records kept by a sample of farmers co-operating in a milk cost investigation. (The only exception is sugar beet tops which are charged on a food value basis). A list of these costs is given in the appendix. Purchased foods are charged at actual prices. Man labour has been charged at a standard rate of 2/6d. per hour. Horses have been charged at 1/3d. per hour. The cost of grazing represents the short period some cattle spend at grass between arrival on the farm and entering the yards. Marketing expenses include the cost of transport or of driving the cattle to the grading centre. Sundries include a standard charge for rent of the yards which is entered at 2/6d. per head, and an estimate of the cost of drinking water.

It should be noted that in arriving at the final cost no allowance has been made for overhead costs nor has any credit been allowed for the manurial residues of foods consumed. It is considered more realistic to include these residues with the rest of the manure as a by-product of the fattening process. The cost of straw used for litter has not been included.

Table III shows that the difference between the total cost of producing the fat beast and the price received for it amounted to a loss of £5. 5.11d. per head. The gross margin (difference between buying and selling price) was £19.19.11d. per head and the cost of fattening (including the price of the store animal) was £26. 5.10d. per head. The value of the store accounted for 65.5 per cent of the total cost of the fat animal, food costs accounted for a further 29.8 per cent, and the remaining items of cost accounted for only 4.7 per cent. These average figures conceal considerable variations in the costs and returns from the individual farms in Appendix I, and it will be seen from that table that the return per head varied from a loss of £16.12.1d. to a profit of £4.12.2d. A profit was made on 3 bunches of cattle and a loss on 18 bunches.

The costs of stores varied from £35 to £56 per head, but the majority cost between £40 and £50. It has not been possible with the small sample of costs available to find any relation between cost of stores and the margin available to the feeder.

Some farmers will show a better return than others owing to their ability to buy their cattle relatively cheaply. Reference to the table in appendix I shows that in 17 out of the 21 bunches costed the gross margin (difference between buying and selling prices) was within £3 of £20 per head. This would seem to suggest that under prevailing conditions and when cattle are kept for a fairly long period under similar conditions to those on the farms costed, the feeder can expect a margin of around £20 per head. When considering the gross margin it should be remembered that the majority of cattle received the benefit of a 2/- cwt. rise in prices which came into force on April 2nd. This had the effect of increasing the margin by nearly 24/- per head beyond what it would otherwise have been on cattle sold after that date.

The general level of store prices for many years has not favoured the feeder. However, since the introduction of the calf subsidy in August 1947 there has been a very substantial increase in the rearing of store cattle and it is probable that the increased number of cattle available will have an increasing effect on store prices. Table IV shows the number of male cattle under one year old in England and Wales on June 4th in recent years.

Table IV. Male Calves under one year old. June 4th Returns for England and Wales.

	1947	1948	1949	1950 ^H
No. of Cattle (thousands)	279	356	408	473
Percentage Increase over Previous Year	-	27.6%	14.6%	15.9%

^H 1950 returns are provisional.

The increase in male cattle under one year between June 1947 and June 1950 amounts to 69.5 per cent. Appreciable numbers of cattle on which subsidy has been paid would not come on the store market until the spring of 1950. There are indications that the general level of prices for two-year old stores was between £2 to £4 lower in April and May this year than in 1949, but part of this fall may be due to unfavourable conditions for the growth of grass in the spring. It is probable that a more positive effect on store prices will be apparent as increasing numbers of stores are available.

There is more scope for the farmer to reduce his food costs than to save on the price he pays for stores. Foods account for 29.8 per cent of the cost of the fat animal and for 86.9 per cent of the cost of fattening. The cost of foods per head varied from £12. 16. 6d. to £31. 10. 2d. with an average of £21. 19. 6d.

Table V. Feeding Costs and Amounts of Different Foods Fed per Head.

Food	Average of 21 Bunches.		Number who fed.	Your Farm	
	£ s d	cwt.		£ s d	cwt.
Clover	18 11	4.82	14		
Hay	9 8	2.22	4		
Straw	1 16 6	15.69	19		
Roots	5 12 9	62.30	17		
Silage	3 0	2.24	3		
Sugar Beet Tops	1 5 11	14.04	7		
*Sugar Beet Pulp	5 0 6	6.55	19		
Home Grown Concentrates	4 17 10	7.12	20		
Purchased Concentrates	1 13 0	1.31	11		
Other Foods	1 5	-	2		
TOTAL	21 19 6				
Pounds S.E. fed per £1 Gross Margin	120.5				

* The weight of Sugar Beet Pulp does not include a small amount of wet pulp fed. The cost refers to both wet and dry pulp.

The average figures given in Table V conceal considerable differences in methods on feeding on individual farms. 15 bunches of cattle received some clover; hay was fed only where clover was not fed. Straw was usually fed ad lib; what was unconsumed was used as litter. It has accordingly been necessary to estimate the amount fed. Because of this the amounts of straw fed may be open to a fairly wide margin of error, but as straw is a cheap food per ton the effect of any such error on the costs is not likely to be significant. Four bunches of cattle received no roots at all: in other bunches the amount fed per day per head varied from 3 to 7 stones. Sugar beet tops were fed to seven bunches of cattle, up to 1 cwt. per day per head being consumed for a short period before Christmas. Silage was fed to three bunches of cattle but only one bunch received as much as 30 lbs. per head per day. All except two bunches of cattle received some sugar beet pulp; the amounts vary from 1 to 12 lbs. per head per day. All farmers fed some home-grown concentrates, usually ground oats or a mixed corn meal. Up to a stone per head per day was fed. Eleven bunches received some purchased concentrates, in spite of its present price, usually in the form of compound cake. Other foods include some molasses and cauliflower tops.

As explained earlier, home-grown foods are costed at an average cost of production figure. A farmer may grow his fodder crops at a cost below or above the average. To this extent the food costs do not represent the true costs on each farm. Most farmers grow some crops more expensively and others less expensively than the average, and the differences tend to rule each other out. In Appendix II the cost per acre and yields per acre on which the cost per ton is based are given.

A note may be made on the cost of straw and sugar beet tops. These are by-products in the production of corn and sugar beet respectively. It may be argued that no charge should be made for these. If no charge was made for feeding straw or for beet tops, the loss on the cattle would be reduced to £2. 3. 6d. per head. This, however, would ignore the cost of collecting straw if the grain was combined. (Under the present method there is no collection charge if the crop from which the straw was threshed had been stacked in the vicinity of the foldyard).

Table VI. Cost of Production of 100 lbs. Starch Equivalent and Yield per Acre of Starch Equivalent as supplied by Certain Foods.

	Cost per 100 lbs. S.E.			Yield per Acre S.E.
	£	s	d	lbs.
Seeds Hay		9	3	1463
Grass Silage		9	6	2139
Meadow Hay		12	2	749
Arable Silage		16	0	2056
Kale		16	10	3820
Ground Oats		18	10	1436
Dried Sugar Beet Pulp	1	1	2	-
Mangolds	1	3	2	2860
Swedes	1	11	3	1972

(The above figures are based on average yields and costs of fodder crops as calculated by the Milk Cost Investigation in Yorkshire for 1949 crops. Starch Equivalents are taken from Rations for Livestock, Ministry of Agriculture Bulletin No. 48, eleventh edition).

It has not been possible to draw any conclusions in respect of methods of feeding and returns to the farmer from the small sample of costs available. It may be useful, however, to consider some of the possibilities of reducing food costs. In feeding fattening cattle a farmer should keep several aims in view. He should aim at feeding a ration which provides an adequate protein allowance and sufficient starch, without excessive bulk, to fatten his stock at the required rate.

After utilising farm by-products as far as possible he should aim at providing the remaining food necessary to meet these requirements at minimum cost. At the same time he should attempt to grow these crops on a minimum acreage in order to make available a larger acreage for cash crops. The decisions on what crops to grow for the cattle are also arrived at after taking into account the need to include in the rotation cleaning and recuperative crops such as roots and seeds.

The protein requirements for fattening cattle are comparatively low and so long as excessive reliance is not placed on starchy foods such as straw and roots it should not be difficult to provide an adequate ration of protein. The rations fed to the stock costed did meet the protein requirements. Thus it would seem more important to concentrate attention on the production of starch which is the main requirement of fattening cattle. The aim should be to combine low cost per unit of starch equivalent with high production per acre.

Table VI shows on the basis of yields in 1949 how different crops compare in cost of production per 100 lbs. of S.E. and in the production per acre in terms of S.E. 100 lbs. of S.E. supplied by swedes cost over three times as much as when supplied by seeds hay but the yield per acre of swedes in pounds of S.E. is about a third higher. The high yield of kale in pounds of S.E. per acre, five times as much as that of meadow hay, combined with its fairly low cost per unit of S.E. tempts one to wonder why none was fed to any of the cattle costed. There would appear to be a strong case for replacing swedes by kale in the first half of the fattening period. Another food combining low cost of production per unit of S.E. with high production per acre is grass silage. The increase in the price of dried sugar beet pulp brings its cost per unit of S.E. above that of ground oats which have a similar feeding value. It will, however, still pay a farmer to purchase his full allocation of pulp since, while oats can be fed to stock at their cost of production figure of £11.11.7d. per ton, they can be sold for £20 per ton, or an alternative profitable cereal crop can be grown. A farmer must grow those crops which fit best into his system of farming, but an examination of the figures in Table VI suggest that economies in feeding costs are possible on many farms.

A measure of the efficiency with which a farmer both buys and feeds his cattle is the amount of starch equivalent fed per £1 of gross margin, that is, the total amount of S.E. fed to the cattle divided by the gross margin. Thus a large number of pounds of S.E. fed per £1 gross margin indicates that either the cattle were bought badly or have not used the foods fed satisfactorily, or possibly a combination of both factors. The individual figures

for farmers co-operating in the investigation are given at the foot of Table V. The average number of pounds of S.E. fed per £1 gross margin was 120.5 but the range on individual farms was fairly wide. However on 11 of the 21 bunches of cattle costed the figure is within 20 lbs. of the average.

Labour accounts for only 3.7 per cent of the total cost. On individual farms it varied from £4. 15. 5d. to £1. 0. 1d. per head. While this cost depends to some extent on the length of the feeding period, the wide variation suggests that there may be room for increased efficiency on some farms, for not all the labour of feeding the cattle falls at slack times.

It is generally realised that viewed by itself cattle fattening is uneconomic and its retention is usually justified by reference to the value of the manure produced. How much does this manure cost, and do its benefits justify its cost? An estimation of the amount of manure made on each farm has been made on the basis that each beast will produce 6 cwt. per week. By dividing the loss made on the cattle by the tonnage of manure the cost per ton of producing the manure can be calculated. (This cost will cover the cost of the animal droppings including manurial residues from foods and the treading of the straw to manure, but not the actual cost of straw used for bedding). On this basis the cost of the manure (excluding the cost of straw) averaged 16/2d. In other words the bullocks contributed at a cost of 16/2d. per ton of manure, the actual excreta and treading of the straw. The highest cost was £2. 10. 6d. per ton: on farms which make a profit there was a negative cost. Individual costs for farmers co-operating in the investigation are given at the foot of Table III.

It has recently been stated that at to-day's prices a ton of yard manure gives increases in crop yields over the rotation worth 62/-.ⁱⁱ On the majority of the farms costed it is likely that the cost of yard manure even when cost of straw and cost of spreading are included would be well below this figure.

There is much to be said for the inclusion of winter fattening of cattle in the system of farming on the larger arable farms of this country. No other class of stock is more suitable for treading large quantities of straw into first class manure.

ⁱⁱ Frank Rayns. Conference on Beef Production at Norwich, April 1949. (see Farmers' Weekly, April 21st 1950).

They are useful in consuming by-products such as beet tops. They do not require the same attention from the farmer as do dairy cattle or store stock rearing. It may be possible in future years with a possible easing of store prices, for a farmer, by careful attention to buying and feeding, to receive a return from his fat cattle that will cover his direct costs if not allowing him any substantial margin of profit. It would, however, seem desirable to utilise the farm by-products and to maintain fertility by methods which are more certain of yielding a direct profit.

Several farmers have successfully replaced bullocks in their yards by introducing a system of yard fattening of pigs. This system has undoubted merits but some farmers may doubt if the same quantities of straw can be converted to manure or if such full use can be made of farm by-products by pigs as by fattening bullocks. The other main alternative to yard fed cattle would seem to involve keeping some class of cattle all the year round which in turn involves an increased acreage of grass preferably in leys. Whether the keeping of a dairy herd or of rearing store stock on the large arable farms in the more fertile areas of Britain would increase the profits of the farm as a whole compared with the fattening of cattle in yards depends on the relative profits derived from crops which are fed to stock and those which are sold direct, and on the acreage which is required to support that head of stock which is considered necessary to maintain the fertility of the land. For example it would be better to fatten cattle in yards with a small direct loss rather than rear stores if the stores yielded a small profit per acre of crops and grass devoted to feeding them compared with the profit per acre from cash crops and yet a larger acreage of land had to be set aside to carry a large enough head of store cattle to maintain fertility than would be required for fattening cattle. These are wide problems and although they have been discussed by farmers and others for many years there is not yet sufficient data on which firm conclusions can be based,

Note: All averages in this report are simple averages of the results from each bunch of cattle and are not weighted to allow for herd size.

S U M M A R Y.

1. This report deals with the cost of fattening 586 cattle in yards during the winter of 1949-50. These cattle were costed in 21 bunches on 19 farms. All the farms were situated in the Vale of York.
2. The average period in yards was 154 days. The majority of cattle were purchased in October and November and sold in April and May.
3. 94.8 per cent of the cattle were graded at an average weight of 11.81 cwt. The majority were graded SS, S or A+.
4. The average cost of the fat animal was £73.12.10d. The store cost accounted for 65.5 per cent, food cost for 29.8 per cent and other costs 4.7 per cent of this total. The average return per head was £68.6.11d., so that there was a loss of £5.5.11d. per head.
5. On 17 out of 21 bunches the average gross or feeder's margin was between £17 and £23 per head.
6. The very considerable increase in store rearing since 1947 is likely to cause store prices in the future to become easier.
7. There was a wide variation in the cost of foods fed per head. An examination of the cost per unit and yield per acre of certain foods expressed in terms of starch equivalent suggests ways to improve efficiency in feeding.
8. The amount of starch equivalent fed per £1 gross margin is a measure of efficiency both in feeding and buying cattle. It averaged 120.5 lbs. S.E. fed per £1 gross margin on the 21 bunches of cattle costed.
9. The loss on the cattle can be taken to represent the cost of making manure. If this is done, the average cost of making manure was 16/2d per ton. This does not include any allowance for the straw in the manure.
10. While yard fattening has many advantages on the larger arable farms, alternative methods of utilising by-products and maintaining fertility which would show a direct profit should be carefully examined.

APPENDIX I.

Summary of Costs and Returns per Head from Yard Fattening 1949-50.

Bunch	Initial Cost			Foods			Labour			Other Costs			Total Cost			Return			Profit or Loss			Gross Margin		
	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d	£	s	d
20	48	0	0	12	16	6	4	3	9		5	4	65	5	7	69	17	9	+ 4	12	2	21	17	9
8	48	18	10	15	6	9	2	3	10		9	1	66	18	4	68	8	4	+ 1	10	0	19	9	6
13	43	0	0	24	5	0	1	17	0	1	0	9	70	7	9	71	13	6	+ 1	5	9	28	13	6
9A	51	10	6	20	11	8	1	3	0		5	0	73	0	2	71	10	9	- 1	9	5	20	10	3
35	52	0	0	21	16	4	1	11	4		13	3	76	0	11	74	7	10	- 1	13	1	22	7	10
12B	50	0	0	19	18	2	2	18	3		8	6	72	4	11	69	14	5	- 2	10	6	19	14	5
34	54	13	9	19	7	8	3	7	7		15	0	78	4	0	75	7	1	- 2	16	11	20	13	4
28	45	5	8	21	18	8	4	18	5		10	3	72	13	0	69	8	4	- 3	4	8	24	2	8
31	48	0	7	23	18	10	1	17	2		17	9	74	14	4	70	17	6	- 3	16	10	22	16	11
9B	55	18	0	21	2	7	1	0	1		4	11	78	5	7	74	8	5	- 3	17	2	22	7	7
12A	40	0	0	22	13	3	2	17	6		10	8	66	3	5	61	16	0	- 4	7	5	21	16	0
10	35	0	0	20	2	8	2	2	9		6	0	57	11	3	53	3	2	- 4	8	1	18	13	2
3	50	7	6	13	5	7	1	12	10		7	8	65	13	7	60	7	7	- 5	6	0	10	0	1
21	41	3	7	22	10	5	3	14	0	1	15	1	69	3	1	63	6	4	- 5	16	9	22	2	9
25	48	0	0	20	11	11	1	13	10		9	4	70	15	1	63	10	2	- 7	4	11	15	10	3
33	43	0	5	19	18	8	2	13	1		10	1	66	2	3	57	13	7	- 8	8	8	14	13	2
30	56	3	10	26	7	7	3	2	4		10	2	86	3	11	76	13	6	- 9	10	5	20	9	8
14	44	17	5	28	19	6	2	19	8		10	0	77	6	7	65	3	3	-12	13	4	20	5	10
37	56	15	3	26	2	8	3	7	5		8	4	86	13	8	74	4	11	-12	8	9	17	9	8
36	48	8	9	28	6	10	4	3	1		13	3	81	11	11	68	10	11	-13	1	10	20	3	2
15	54	13	10	31	10	2	4	15	5		14	3	91	13	8	75	1	7	-16	12	1	20	7	9

Appendix II.

Cost of Home-Grown Foods.

These average costs were collected from farmers co-operating in the Milk Cost Investigation in Yorkshire. They are for crops grown in 1949. Costs include hauling the foods from the fields to the farm buildings.

Crop	Cost per Acre			Yield per Acre		Cost per Ton		
	£	s	d	Tons	cwts.	£	s	d
Meadow Hay	4	11	5	1	1	4	7	2
Seeds Hay (including Clover)	6	15	7	1	14½	3	18	5
Feeding Straw		-			-	2	6	5
Mangolds	31	12	7	20	12½	1	10	10
Swedes	29	18	0	12	1½	2	9	7
Kale	32	4	10	18	15½	1	14	5
Grass Silage	10	0	0	7	11½	1	6	5
Arable Silage	16	11	10	7	1½	2	6	10
Oats	15	3	0 ⁺	1	1½	11	11	7
Mixed Corn	13	16	2 ⁺	1	2	12	13	7
Sugar Beet Tops		-			-	1	17	10 ^x

^x Cost based on feeding value.

⁺ This includes cost of straw.

