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REARING CATTLE FOR BEEF BY SINGLE SUCKLING

A Comparison of Costs and Returns on Eight Yorkshire Farms in 1951.

UNIVERSITY OF LEEDS

Department of Agriculture: Economics Section

This report is written by Mr. I. G. SIMPSON and deals with the costs and returns of rearing beef cattle by single suckling in 1951.

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Since 1947 details of the costs of rearing cattle for beef have been obtained for a number of farms in Yorkshire. Reports dealing with the data obtained from 1947 to 1950 were issued in 1950 and 1951, (Farmers' reports Numbers 89 and 99). During 1951 information on rearing costs was obtained from a smaller number of farms than in previous years. In particular very few costs were obtained for cattle reared by multiple suckling or on the bucket. Because of this, it has been decided to discuss only the costs and returns relating to single suckled cattle in this report. These costs were obtained from eight farms in different parts of Yorkshire. A breeding herd of cows was kept on each farm; the average size was 27 cows. On seven of the farms the cattle were Hereford or Hereford cross; on the other farm, pure-bred Angus cattle were kept.

The method of rearing was basically the same on all eight farms. The cows were wintered in yards and calved in the spring. Each cow reared its own calf which was weaned at seven to eight months old, in the autumn. On five of the farms the cattle were usually sold as stores but on the other three many of them were finished on the farm and graded. Most of the farms were large, six of them being over 300 acres in size, while the other two were about 150 acres. A high proportion of all eight farms was arable.

The costs incurred on cattle of different ages during 1951 are given in Tables I to III. The methods used in calculating these costs are the same as those outlined in the earlier reports. The cost per cow which is given in Table I is the cost for a period of approximately one year running from weaning in the autumn of 1950 until weaning in the autumn of 1951. In calculating the cost per cow, all costs on the breeding herd (including bull costs and an allowance for grazing by the suckling calves) have been calculated and this cost divided by the number of cows in the herd. If every cow in the herd reared a calf, the cost of rearing a calf up to weaning would be the same as the cost per cow for the year. But since in most herds there were cows which were either barren or lost their calves, the cost per calf reared to weaning was rather greater than the yearly cost per cow.

The costs given in Table II for rearing from weaning up to eighteen months old refer to cattle born in 1950. These costs cover a period of about ten months running from the autumn of 1950 until the end of the summer of 1951. The costs for rearing from eighteen to thirty months old refer to cattle born in 1949.

It might be expected that on a sample of farms where the methods of calf rearing were so similar as on the eight studied here there would be no big variation between the costs of the highest and lowest cost herds. So far from this being true, there was, in fact, a difference of no less than £26 12s. 0d. per head between the highest and lowest at thirty months old. An average cost which is made up of such a wide range of individual costs loses much of its authority, and it is thought that more value will be obtained from this report if the emphasis is placed on explaining the reasons why costs on some herds were higher than on others, rather than on the average costs themselves. Tables I to III, therefore, give the highest and lowest costs in each of the main constituents, as well as the average costs. Where these constituent costs are given, they refer to the costs on the farms highest or lowest in that particular item, and not necessarily to the farm where total costs were highest or lowest.

In considering these differences it must of course be remembered that high costs are not undesirable if accompanied by correspondingly high returns. But on these eight farms the returns from the cattle reared at a low cost did not appear to be significantly different from those reared more expensively. Unfortunately the sample of farms is far too small to allow a useful comparison of costs to be made with returns.

An important factor affecting the cost of rearing a calf up to weaning is the proportion of cows which rear a calf each year. Normally an average of over 90 per cent of the cows in the herds costed reared a calf each year. In some years, however, the proportion of cows rearing calves has fallen appreciably below this level in individual herds. This increased the cost per calf reared since each calf had to bear a proportion of the costs of keeping the cows which had not reared a calf. The highest cost per calf given in Table I occurred in a herd where only 79 per cent of the cows reared a calf; this increased the cost per calf by 12.7 per cent above what it would have been if all the cows had reared a calf.

Most of the other differences in costs, apart from the calving factor, can be attributed to variations in the costs per head of foods, labour and grazing. Foods account for the major part of the total costs incurred at all stages of rearing. There are three main reasons for varying food costs. These are the length of the period of hand feeding during the year, the level of feeding during that period, and the cost of the foods fed per unit of nutritive value.

Although on all the farms the cattle were yarded during part of the winter, the actual time spent in yards varied considerably. The average time the cows were in yards was 151 days but this varied from 103 days to 190 days on individual farms. For the weaned calves the variation was still greater, from 99 to 221 days. It is considerably cheaper to feed cattle when they are grazing than when they are in yards. The average cost per day for foods fed to the cows when in yards was 1s. 2d. per head, the average cost per day of summer grazing was 3½d. Although feeding in yards is relatively expensive compared with grazing, it must be remembered that one of the reasons for keeping the cattle on some of the farms was in order to tread straw into manure.

TABLE I

COST OF KEEPING COWS USED FOR SUCKLING

AND COST OF REARING CATTLE FROM BIRTH TO WEANING

ON 8 FARMS

	Average Cost	Highest Cost	Lowest Cost	Your Farm
Cost per Cow	£ s d	£ s d	£ s d	£ s d
Foods: Hay	1 11 6			
Straw	2 11 6			
Roots	3 11 0			
Home-grown Concentrates	9 0			
Purchased Concentrates	12 6			
Other Foods	9 0			
Total	9 4 6	12 10 0	6 9 0	
Grazing	4 3 6	6 15 0	1 19 6	
Labour	2 19 0	4 7 6	1 13 6	
Herd Depreciation	1 0 0	- - -	- - -	
Overheads	14 0	- - -	- - -	
Other Costs	9 0	- - -	- - -	
Total Cost per Cow	18 10 0	23 9 6	13 17 6	
Cost per Calf reared to Weaning	20 16 0	29 13 0	13 17 6	

TABLE II

COST OF REARING CATTLE BORN IN 1950

FROM WEANING TO EIGHTEEN MONTHS

ON 8 FARMS

	Average Cost	Highest Cost	Lowest Cost	Your Farm
Cost per Head	£ s d	£ s d	£ s d	£ s d
Foods: Hay	2 4 0			
Straw	7 6			
Roots	1 17 6			
Home-grown Concentrates	2 9 0			
Purchased Concentrates	1 11 6			
Silage	2 0			
Total	8 11 6	12 7 6	4 17 6	
Grazing	1 13 0	2 19 6	13 6	
Labour	2 9 6	3 16 6	19 0	
Overheads	11 6	- - -	- - -	
Other Costs	3 0	- - -	- - -	
Total Cost Weaning to 18 Months	13 8 6	18 7 0	8 17 6	
Cost from Birth to Weaning	19 4 0	- - -	- - -	
Cost from Birth to 18 Months	32 12 6	38 14 0	22 19 0	

TABLE III

COST OF REARING CATTLE BORN IN 1949

FROM EIGHTEEN TO THIRTY MONTHS

ON 6 FARMS

	Average Cost	Highest Cost	Lowest Cost	Your Farm
Cost per Head	£ s d	£ s d	£ s d	£ s d
Foods: Hay	1 11 0			
Straw	2 0 6			
Roots	2 18 0			
Home-grown Concentrates	16 6			
Sugar Beet Pulp	13 0			
Silage	2 6			
Total	8 1 6	9 15 0	5 17 0	
Grazing	3 7 0	5 1 6	1 14 0	
Labour	2 7 6	3 10 6	1 [illegible] 0	
Overheads	11 0	- - -	- - -	
Other Costs	5 0	- - -	- - -	
Total Cost 18 to 30 Months	14 12 0	16 10 6	10 10 0	
Cost from Birth to 18 Months	31 15 6	- - -	- - -	
Cost from Birth to 30 Months	46 7 6	58 0 6	31 8 6	

Thus quite apart from such questions as the ability of their land to stand winter grazing and the wellbeing of their cattle, some farmers may feel justified in keeping the cattle in yards for a fairly long period even if this increases rearing costs, provided straw is being turned into dung.

Cows used for single suckling can be fed at a fairly low level when kept in yards. On six of the eight farms straw and roots formed the basis of their ration. Some hay was also fed on six farms but only on the two farms where no roots were fed did the amount fed per head per day exceed 7 lbs. Up to 2 lbs. per head per day of a meal based on home-grown corn was fed on four farms. On the other four farms no concentrates were fed.

The average amount of starch equivalent fed per head per day was 8.3 lbs. compared with a theoretical maintenance requirement of 7 lbs. for an 11 cwt. cow. The variation in the eight herds in daily amounts of S.E. fed was from 5.4 to 10.0 lbs. per head: there was also a wide variation in the ratio of digestible protein to starch equivalent in the rations fed. This varied from 1:6 to as wide as 1:15; the average was 1:11½ which is considerably wider than the theoretical standard of 1:9. Probably, therefore, no more protein than was necessary was being fed on most of the farms which fed an excess of starch.

On all except one farm hay was fed to the weaned calves, the calves receiving on average just over half a stone per head per day. Some home-grown corn meal was fed on all the farms and purchased concentrates (including sugar beet pulp) on three farms. The total of home-grown and purchased concentrates averaged 4.4 lbs. per head per day varying from 2.0 to 7.1 lbs. on different farms. Roots were fed on five farms, an average of 22 lbs. being fed per head per day on these farms. The average amount of S.E. fed per head per day to the weaned calves during their first winter was 6.3 lbs., the variation being from 4.9 to 8.5 lbs. The amount of S.E. fed per day appeared to be higher on those farms where the cattle were sold at a fairly early stage. The average ratio of digestible protein to starch equivalent was 1:9; this is considerably narrower than that in the rations fed to the cows but still appreciably wider than the theoretical standard for cattle at this stage of development. The variation in the ratio was from 1:7 up to 1:11.

The rations fed to the cattle during their second winter (18 - 30 months period) were generally similar to those fed to the cows. These cattle were not outwintered on any of the farms.

It will be realised from the above that variations in the level of feeding were in themselves sufficient to cause considerable differences in the daily cost of feeding. Another factor which was also very important was the cost at which the foods utilized provided a given amount of nutritive value. The cost of starch equivalent fed to the breeding cows varied from 13s. 1d. to 19s. 3d. per 100 lbs. while that fed to the weaned calves varied from 14s. 7d. to 21s. 6d. per 100 lbs. In considering these differences it must be remembered that all home-grown foods have been charged at prices equivalent to their average cost of production on the farms co-operating with the University in the scheme for ascertaining the costs of milk production. On any

particular farm the actual cost of growing a crop may be appreciably different from the average. A food which is expensive to produce per unit of starch equivalent according to the average figures may be relatively cheap to grow on a particular farm. Moreover, crops with which it is possible to produce food requirements cheaply are often those which yield a relatively small amount of food value per acre. It will pay to reduce the acreage required for feeding the cattle so long as the cost of doing this is more than offset by the extra profits made on the land which becomes available for alternative uses such as the growing of cash crops. The cost of rearing cattle may thus be increased by feeding foods which are expensive to produce but if feeding these reduces the total acreage required for the cattle the total farm profit may be increased.

A similar argument applies to grazing costs. High grazing costs may be justified if they are linked with a heavy stocking per acre. Costs of grazing on the eight farms varied widely. This was partly due to the length of the grazing period at each stage in the development of the cattle. The length of this period varied inversely with the time spent in yards. A more important factor was the cost per unit of grazing. The cost per week of summer grazing for an adult beast varied from 1s. 1d. to 3s. 6d. per week with an average of 2s. 2d. This cost per week depended on the costs incurred per acre of grazing and upon the density of stocking. Costs per acre varied from £1 13s. 2d. to £5 0s. 0d. per acre. The varying costs per acre were due to three main factors - rent, cost of establishing leys and the cost of manuring. It is unfortunately not possible to relate these costs to production since the number of weeks' stocking per acre provides an inadequate guide to productivity of the grass. The only satisfactory measure of the productivity of the grassland which is grazed is liveweight increase per acre (or gallons of milk produced where dairy cows are grazing). The liveweight increases obtained per acre could only be discovered by much more detailed recording than was thought desirable on these eight farms. The differences in labour costs are in part due to the relative times spent by the cattle at grass and in yards on the different farms. There were, however, also wide variations in the daily time spent in feeding and littering the cattle. The time spent in attending to the cows when in yards averaged 5.7 minutes per cow per day. It varied from 3.9 to 8.7 minutes on different farms. Attention to the details of work organisation on some of the farms would probably reduce this variation.

Details of the sales of the cattle from the eight farms during 1951 are given in Table IV. All sales occurred after the increased price for fat cattle was announced at the beginning of April, 1951. Most of the sales took place in the autumn. None of the cattle was yard finished. One of the difficulties in comparing the sales from different farms is the varying ages at which the cattle are sold. In order partly to overcome this difficulty, the prices received for the cattle have been divided by their ages in months in order to give the gross returns per head per month. While this simplifies comparison of the sales from the different farms, a number of other factors which influence the prices received must still be borne in mind. The season at which the cattle are sold will affect the price. Heifers

TABLE IV

SALES OF CATTLE DURING 1951

Farm Number	Date of Sale	No. of Cattle Sold	Age at Sale	Type of Cattle	Price Received per Head*	Gross Return per Head per Month *
	1951		Months		£ s d	s. d.
S 1	September	12	18	Store Bullocks	44 0 0	49 0
S 1	September	27	30	Store Bullocks	68 0 0	45 0
S 2	August	6	27	Fat Heifers	56 19 3	42 0
S 5	November	17	33	(Store Bullocks (and Heifers	50 0 0	30 0
S12	April	5	24½	Store Bullocks	45 2 6	37 0
S13	November	2	30	(Fat Heifer (Fat Bullock	53 9 1	36 0
S 6	April	12	13	Store Heifers	32 18 9	51 0
S 6	July	12	16	Store Bullocks	38 6 8	48 0
S 6	October	2	19	Fat Heifers	44 11 0	47 0
S 3	October	3	18½	Store Bullocks	44 10 0	48 0
S 3	October	1	29	Fat Heifer	66 18 3	46 0

* Not including calf subsidy.

usually make rather lower prices than steers at the same age. Young cattle usually return a larger gross return per month than the other cattle. Cattle sold as stores do not necessarily make the same prices as those sold fat.

If the gross returns per head per month given in Table IV are examined, it will be seen that for most of the sales they are in the region of 45s. Od. to 50s. Od. On three farms (S5, S12 and S13) the gross returns per head per month were substantially lower, being equal to 30s. Od., 37s. Od. and 36s. Od. It is not easy to explain why returns should be lower on these three farms. A possible explanation might be that differences in quality of the grazing caused the cattle to make slower progress during the summer. The differences cannot be accounted for by lower total costs on the farms where the gross return per head per month was low. In fact the two farms with the highest costs were those with the lowest returns.

In this report attention has been drawn to the differences in costs, returns and levels of feeding on the eight farms. Unfortunately it has not been possible to explain fully why the relationship between costs and returns is so much more favourable on some farms than on others. A detailed investigation into all the factors affecting rearing on a small sample of farms might bring out the reasons for some of these differences and show how the methods of the low cost farms could be adopted on the high cost farms in order to bring about a more satisfactory relationship between cost and returns. If without reducing the quality of the cattle reared, costs on all farms could be brought down to the level found on the farms with lowest costs, it would be in both the farmers' and the nations's interests.

LIST OF REPORTS ON AGRICULTURAL ECONOMICS
ISSUED BY THE UNIVERSITY OF LEEDS
FROM FEBRUARY 1947 TO APRIL 1952.

Price 1s. 0d., except where otherwise stated.

A.

68.	Summer Milk Production Costs in Yorkshire.	Feb. 1947.
69.	Milk Production Costs in Yorkshire, 1945-46.	Feb. 1947
70.	Sugar Beet Costs and Returns, 1946.	May 1947
71.	Barley Costs and Returns, 1946.	May 1947
72.	Some Costs of Growing Spring Oats in Yorkshire, 1946.	June 1947.
73.	Winter Milk Production Costs in Yorkshire, 1946-47.	July 1947
74.	The Economic Organisation of Some Types of Farming in Yorkshire, 1945-46.	July 1947
75.	Milk Production Costs in Yorkshire, 1946-47.	Jan. 1948
76.	Summer Milk Production Costs in Yorkshire 1947.	Jan. 1948
77.	Farm Accounts for Management Purposes. (Price 3s. 0d)	Aug. 1948
78.	Winter Milk Production Costs in Yorkshire, 1947-48.	Aug. 1948
79.	Costs of Growing Wheat on Some Holderness Farms 1947.	Nov. 1948
80.	Costs of Growing Spring Oats in Two Districts of Yorkshire, 1947.	Dec. 1948
81.	Milk Production Costs in Yorkshire, 1947-48.	Feb. 1949
82.	The Economic Organisation of Some Types of Farming in Yorkshire, 1946-47. (Price 3s. 0d.)	June 1949
83.	Some Yorkshire Sugar Beet Costs, 1949.	June 1949
84.	Winter Milk Production Costs in Yorkshire, 1948-49.	Aug. 1949
85.	A Study in the Costs of Operating Combine Harvesters and One Man Pick-up Balers in Yorkshire, 1949.	Mar. 1950
86.	Some Costs of Fodder Crop Production and Pasture on Yorkshire Dairy Farms during 1948.	Mar. 1950

87.	Costs and Returns from Wintering Store Cattle and Finishing on Grass on 7 Yorkshire Farms, 1948-49.	Mar. 1950
88.	Milk Production in Yorkshire, 1948-49.	Mar. 1950
89.	The Cost of Rearing Store Cattle on a Number of Yorkshire Farms, 1947-49.	June 1950
90.	Types of Farming in Yorkshire. (Price 3s. Od.)	July 1950
91.	Some Yorkshire Sugar Beet Costs, 1949.	July 1950
92.	Milk Production Costs in Yorkshire, Winter 1949-50.	Aug. 1950
93.	Costs and Returns from Fattening Cattle in Yards on 19 Yorkshire Farms, 1949-50.	Aug. 1950
94.	Land Ownership in Three Districts of Yorkshire.	Oct. 1950
95.	A Study in Costs of Operating Combine Harvesters and One Man Pick-up Balers in Yorkshire 1950.	Mar. 1951
96.	Costs of Growing Winter Wheat in Two Districts of Yorkshire, 1949-50. (Part I: Costs up to and including Harvesting.)	Mar. 1951
97.	Types of Farming in Yorkshire. A Study based on 215 Farm Accounts in 1949-50. (Price 3s. Od.)	June 1951
98.	Milk Production in Yorkshire, 1949-50.	June 1951
99.	Costs and Returns from Rearing Store Cattle on a Number of Yorkshire Farms, 1947-50.	June 1951
100.	Milk Production Costs in Yorkshire, Winter 1950-51.	Oct. 1951
101.	Costs and Returns from Fattening Cattle in Yards on 13 Yorkshire Farms from 1950-51.	Oct. 1951
102.	Costs of Growing Winter Wheat in Two Districts of Yorkshire, 1949-50. (Part II: Threshing Costs.)	Oct. 1951
103.	Study of Farm Machinery Found in Different Farming Systems in Yorkshire, 1950.	Nov. 1951
105.	Costs of Growing Winter Wheat in Two Districts of Yorkshire, 1950-51. (Part I)	Feb. 1952
106.	Milk Production in Yorkshire, 1950-51.	Mar. 1952
107.	Rearing Cattle for Beef by Single Suckling.	Apr. 1952