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AGRICULTURAL ECONOMICS DEPARTMENT

ECONOMIC REPORT NO. 25

CALF COSTS 1950/51 - PART I

CAITHNESS FARMS

by

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AGRICULTURAL ECONOMICS DEPARTMENT

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CALF COSTS 1950/51 - PART I - CAITHNESS FARMS

During the year 1950-51 the cost of producing and rearing calves was obtained from farms in some of the main breeding areas of the North of Scotland and this report deals with the results from 15 farms in the County of Caithness.

The limitations of enterprise costs are freely recognised and in many matters arbitrary decisions have to be made.

A synopsis of the standards used in these costings appears in the Appendix.

METHOD OF COSTING

The breeding cows are kept mainly for rearing calves and since one calf is usually produced each spring, the cost of keeping a breeding cow for a year will also be the cost of a calf to the age of weaning. Minor adjustments have to be made to allow for barren cows and dairy cows. A bull service charge is also added and in some cases a depreciation cost has been incurred. Some of the calves were sold as weaned calves in the Autumn Sales 1951 whilst others are still on the breeding farms to be sold as stores or retained for breeding.

TYPES OF FARMS

The 15 herds were scattered fairly evenly through the northern and eastern parts of Caithness. The farms averaged 2 miles from the sea (range being $\frac{1}{2}$ to 8 miles) and lay between 50-350 ft. above sea level. The average size was 106 acres arable land and 143 acres rough grass or moor. All the farms except 2 had some rough land attached to them.

SUBSIDIES

Fourteen of the farmers received the hill cattle subsidy and 11 of them received marginal land grants. Only one farmer received the hill sheep subsidy.

SIZE OF HERD

Ten of the herds had between 7 and 12 breeding cows - a size of herd very common in Caithness. The average number of cows kept was 11.5.

BREED

Most of the cows were cross-bred but the herds could be classified thus.

Cross Shorthorn	5	Cross Galloway	2	Mixed	4
Cross Angus	3	Cross Highland	1		

18 bulls were used - 12 Aberdeen Angus - 5 Shorthorn and 1 Hereford.

METHOD OF REARING

Almost all the calves were suckled and 11 of the herds kept rigidly to "1 calf on 1 cow". In the other four herds occasional cows suckled 2 calves.

Eleven farmers had their cows indoors and tied up through the winter. Three farmers let their cows out during the day just bringing them in at night. One herd was out day and night.

SEASON

The winter 1950-51 was very long and many of the cows were on full winter feed for over 6 months. On some farms food ran short and the difficulties were increased by a poor growth of grass in the early summer due to a very dry spell. Grazing in the late summer and autumn was generally good.

COST OF KEEPING THE COWS: AUTUMN 1950-51

The cost per week and the cost for the whole year of the various items is set out in Table I.

TABLE I

AVERAGE COST OF KEEPING A BREEDING COW FOR 12 MONTHS 1950/51

	Item	Cost per week	Cost per year	
		s. d.	£ s. d.	£ s. d.
WINTER 1950/51 25½ weeks	FOODS Turnips	7: 3¼	9: 5: 5¼	
	Eating Straw	1: 10¾	2: 8: 5	
	Bedding Straw	1: 7¾	2: 2: 2	
	Oats	2: 6	3: 4: 2½	
	Hay	1: -½	1: 6: 6¾	
	Concentrates	-: 3½	-: 6: 10½	
	Winter Grazing	-: -½	-: 1: 5½	
	Gross Foods	14: 8	18: 15: 2	
	Less - Residual Manurial Values	2: 5	3: 2: 6¾	
	Net Foods	12: 3	15: 12: 7¼	
Man Labour	3: 10¼	4: 5: 11		
Power	-: 2	-: 4: 1¼		
Overhead Costs	1: -¾	1: 7: 6½		
Miscellaneous	-: 2	-: 4: 1½		
	WINTER COST	17: 6	21: 14: 3½	21: 14: 3½
SUMMER 1951 26½ weeks	Grazing	2: 7½	3: 9: 6½	
	Labour	-: 9	1: -: 2	
	Overheads	-: 3¼	-: 7: -½	
	SUMMER COST	3: 7¾	4: 16: 9	4: 16: 9
GENERAL	Cow Depreciation			1: 2: 2½
	Bull Charge			-: 16: 11½
	NET COST PER COW PER YEAR			£28: 10: 2½

The cost of winter foods is seen to be easily the biggest item. This is clearer when we consider the percentage due to cost of the various items (Table II).

TABLE II

<u>COST OF COW FOR THE YEAR 1950/51</u>				<u>Your Farm</u>
<u>Percentage Costs</u>	<u>£ s. d.</u>	<u>%</u>	<u>£ s. d.</u>	
Winter Foods	15:12:7 $\frac{1}{4}$	54.8		
Labour & Power	5:10:2 $\frac{1}{4}$	19.3		
Grazing	3:9:6 $\frac{1}{2}$	12.2		
Overheads	1:14:7	6.0		
Cow Depreciation	1:2:2 $\frac{1}{2}$	3.9		
Bull Charge	-:16:11 $\frac{1}{4}$	3.0		
Miscellaneous	-:4:1 $\frac{1}{2}$	0.8		
	<u>£28:10:2$\frac{1}{4}$</u>	<u>100.0</u>		

The cold bleak climate of Caithness means that ample winter feeding is essential if the cows are to keep fit.

TURNIPS & SWEDES formed the basis of the feeding on 14 of the farms and 57% of the average winter food cost is due to turnips which are thus the most important single item in the cost of keeping breeding cows.

It is likely that the amount of Oats fed was greater than would have been used in a normal winter. Several of the farmers had to feed extra sheaves or grain because they were short of turnips. There were only 3 farms on which some oats were not fed and it did seem that the practice on some farms of feeding oats to the cows months before they calved was wasteful and increased costs unnecessarily. Specially prepared concentrates were fed on two farms to overcome troublesome mineral deficiencies.

TABLE III

AVERAGE FOODS FED PER COW: WINTER 1950-51

	<u>Cwt. per</u>	<u>Lb. per</u>	<u>Your Farm</u>
	<u>Winter</u>	<u>Day</u>	<u>Cwt. per</u>
			<u>Winter</u>
Turnips	88.1	55	
Eating Straw	14.9	9 $\frac{1}{2}$	
Bedding Straw	13.5	8 $\frac{1}{2}$	
Hay	4.8	3	
Oats	3.5	2 $\frac{1}{4}$	
Concentrates	0.2	$\frac{1}{8}$	

LABOUR

The average hours per cow per week was 1.334. This may seem rather high, but the majority of the steadings are ill designed for labour saving. The variation in labour hours per cow week is shown in Table IV.

TABLE IV

VARIATION IN MAN HOURS PER COW WEEK: WINTER 1950-51

<u>No. of Farms</u>	<u>Under 1 hr. per</u>			
	<u>Animal Week</u>	<u>1 - 1.25</u>	<u>1.26 - 1.50</u>	<u>1.51 and Over</u>
3		2	4	6

The item power comes in on three farms on which the animals were fed outside.

MISCELLANEOUS costs refer to veterinary treatment, mineral licks, and any other odd items of expenditure.

SUMMER COSTS PER COW

The summer costs is only $3/7\frac{3}{4}$ per cow per week compared with $17/6$ in the winter. The actual grazing cost itself is low in Caithness because there is usually plenty of rough grazing in the summer months.

Grass is the cheapest of foods and the longer the grazing season the cheaper the cost of keeping the cows. However, in both spring and autumn there is very often competition between sheep and cows for the rotational grass and the Caithness farmers are probably justified in giving the sheep priority.

The length of the grazing season varied from $22\frac{1}{2}$ to $31\frac{1}{2}$ weeks, most of the cows being turned out to grass towards the end of May, 1951 and brought in late in November, 1951.

COW DEPRECIATION

On many cows no depreciation cost is incurred because they are kept for several years calving each spring and when at length they are sold they will often make a good price as cow beef. However, occasional cows die from disease and accidents, and others may be sold barren at a low price so that sometimes a cow depreciation charge does have to be made. In the present costings a charge was made on 7 of the herds.

BULL CHARGE

Six of the farmers had no bull and the service charge in such cases was between 4/- and 8/- per cow. Of the remaining herds three used their own bulls under a "premium" scheme whilst the remaining six farmers owned their own bulls absolutely. The charge per cow for the latter varied between $13/11$ and $44/4$ per cow with three of the charges between 22/- and 25/- per cow.

The average cost of the six herds using their own bull is worked out below (Table V). Bull depreciation is the difference between the buying price and the expected selling price divided by the number of seasons it is proposed to use the bull

TABLE V

CALCULATION OF BULL CHARGE PER COW

Average of 6 Bulls

Winter Cost of Bull	£22:12:10
Summer Cost of Bull	4:19:4 $\frac{3}{4}$
Bull Insurance	2:10:10
Depreciation	9:4:8
	<hr/>
Total Cost	£39:7:8 $\frac{3}{4}$
	<hr/>
Number of cows served	33
Average Charge per cow	£1:3:1 $\frac{1}{2}$

VARIATION IN THE COST OF KEEPING A COW FOR THE YEAR

A very wide range in the costs could be expected in view of the different types of cow kept and the methods employed. The range of costs is shown in Table VI.

TABLE VI

VARIATION IN THE COST PER COW YEAR 1950/51

Cost per Cow per Year	Under £20	£20-£25	£25-£30	£30-£35	Over £35
No. of Herds	1	3	2	7	2

It was to be expected that the herds of the hardy breeds (Highland and Galloway) show the lowest 3 costs. These herds were partially outwintered, and the average cost per cow in the 3 herds was only £18 compared with £31:10:- for the herds kept indoors through the winter. Low costs are of course not necessarily linked with efficiency.

NUMBERS OF COWS AND CALVES

These appear in Table VII which gives a summary of purchases, births, sales and deaths for both cows and calves.

TABLE VII

NUMBERS OF COWS AND CALVES 1950/51

Numbers	Start	Born	Purchased	TOTAL	Sold	Died	End
Cows	174	-	1	175	7	6	162
Calves	-	159	10	169	-	6	163 (Reared)

Most of the calves were born from February to May, 1951 with odd ones earlier and later.

TABLE VIII

NUMBER OF CALVES BORN IN VARIOUS MONTHS 1951

Month	Before February	February	March	April	May	After May
Number of Calves born	9	19	59	43	19	10

The time of calving is important. If the calves are to be sold as spent calves February and March are the optimum times for calving since later born calves will be very small at the Autumn Sales. Calving too early is also undesirable since then heavier feeding of the cow may be necessary because the calf will be taking a lot of milk before the cow goes out to grass.

COST OF A CALF TO WEANING

The net cost per calf to weaning is shown in Table IX. To the cost of keeping the cows for a year there is added.

1. The cost of additional calves purchased.
2. The cost of keeping any cows sold during the year.
3. Carriage and auctioneers fees for those calves sold in the autumn sales.

In some of the herds one of the cows was a dairy cow and the proportionate cost of the dairy cows has been deducted from the Gross Herd Cost to give the Net Herd Cost. This divided by the number of calves reared in the herd gives the net cost per calf to weaning.

TABLE IX

AVERAGE COST OF REARING A CALF TO WEANING (1950-51)

	£	s.	d.	Your Farm
	£	s.	d.	
Total Herd Cost for the year	294:	9:	5 $\frac{3}{4}$: : :
Cost of purchased calves	6:	11:	4	: : :
Add Cost of Part year Cows	14:	-	11 $\frac{3}{4}$: : :
Cost of Marketing Calves Sold	2:	1:	6 $\frac{1}{4}$: : :
Gross Herd Cost	£317:	3:	3 $\frac{3}{4}$	£ : : :
<u>Deduct</u> Costs of Dairy Cows	14:	3:	8	: : :
Net Herd Cost	£302:	19:	7 $\frac{3}{4}$	£ : : :
No. of Calves Reared	11			
Net Cost per Calf	£28:	17:	- $\frac{3}{4}$	£ : : :

Again there is a very wide variation, with the outwintered herds and herds raising more than one calf per cow showing distinctly lower costs than the others. Discussion on these points is deferred to page 8.

On 8 of the farms some or all of the calves were sold in the autumn sales at about 6 months old. The margin between the costs and sales is set out in Table X.

TABLE X

RETURNS FOR CALVES SOLD AUTUMN 1951

Total No. of Calves Sold - 74				
				Your Calves
Average Cost of Rearing Calf	£26:	4:	1	£ : : :
Average Sale Price	19:	4:	6	: : :
Net Loss	£ 6:	19:	7	£ : : :

[#] This is the "average of the averages" taking each farm as one. If the total number of calves is considered the average cost per calf is £27: 2: 6 $\frac{3}{4}$.

All the farmers made losses except one who made a profit of £1: 16/5 per calf. Those farmers who did not sell their calves were asked to give a valuation. It is recognised that such valuations may sometimes be wide of the mark, but in Table XI the average margin between costs and the sale price or valuation is given for all calves costed.

TABLE XI

AVERAGE MARGIN BETWEEN COSTS AND SALES OR VALUATION

Total No. of Calves	163			Your Calves
Average Cost of Rearing Calf	£28: 17:	$-\frac{3}{4}$	£	: : :
Average Sale Price or Valuation	£19: 2:	$4\frac{1}{2}$: : :
Net Loss	£ 9: 14:	$8\frac{1}{4}$	£	: : :

All farms showed a loss.

These figures confirm the opinion of most farmers that calf rearing is not a profitable undertaking as usually practiced in Caithness. Additional factors do however combine to make farmers continue in this enterprise.

1. The hill cow subsidy is usually received (£7 per cow rearing a calf). If this is included in the receipts the net loss drops to £3: 5/3 per calf and a small profit appears for 5 of the farms.

2. In many cases marginal land grants are received so that the real cost of producing turnips and the other home grown foods is less than has been charged. The precise effect of these grants cannot be measured but it would seem that if they could be taken into account with the hill cattle subsidy the average net loss would be wiped out.

3. Those steer calves not sold will bring in an extra £5 per head by way of the calf Subsidy. This was not wholly allowed for in their valuation figures and if it was added in, then the average loss in Table XI would be reduced by £1: 3/3 $\frac{3}{4}$.

4. The valuation of heifer calves unsold was based on market values. Last year these were low and there is a good prospect that the heifers unsold will appreciate in value rapidly.

5. Most farms are family farms and much of the labour is not paid, although in the costs it has of course been charged up. Hence the actual monetary expenditure is less than the costs here indicate.

6. Sheep are far more important than cattle on many Caithness farms and the breeding cows are looked upon as a side line which fit in well with the whole farming system. It is essential that the fertility of the land should be kept in a high state and cattle dung is a safe and sure method of achieving it.

There are therefore circumstances which lessen the relative unprofitability of calf rearing. Nevertheless even when they are fully allowed for these results still make one feel that from the economic point of view breeding cattle should be reduced to a minimum and not stand in the way of other enterprises which may well prove more profitable.

VARIATIONS FROM THE USUAL SYSTEM

The usual method of rearing calves is to rear one calf to the cow and to tie the cows up in the byre for the six winter months, and seven of the fifteen farms adhered rigidly to this method. Four of the farmers reared one calf to the cow but partially or wholly outwintered the cows; four others tied the cows up in the winter, but a limited number of the cows suckled two calves.

COWS PARTIALLY OUTWINTERED

The cows were of the hardy breeds on three of the farms whilst on the fourth farm they were cross Aberdeen Angus. The mean cost of keeping the cows for the year was £21: 13/1½ compared with £31: 7/9 for the other farms. There was a distinct saving of foods which cost only £10: 4/1¼ per cow through the winter compared with £17: 7/7 per cow for the herds kept indoors.

These savings mainly occurred by not feeding much until January. The cows are not heavy in calf in November and December and there is usually a certain amount of late growth and foggage on the rough land that they can clear up then. After New Year in three cases turnips and straw were fed in amounts similar to the herds tied up, but very little oats were fed. In the other herd hay was the only food given. The winter grazing was on rough land. The average difference between the cost of producing these calves and their sale price or valuation in autumn 1951 is shown in Table XII and compared with the seven herds kept inside in the winter and rearing one calf to the cow.

TABLE XII

HERDS SUCKLING ONE CALF TO THE COW

	<u>Outwintered Herds</u>	<u>Herds Wintered in Byre</u>
Cost of Producing Calves	£24: 7: 2½	£32: 19: -½
Sale Price at Valuation (Autumn 1951)	19: 9: -½	19: -: 9½
	<hr/>	<hr/>
Net Loss	£ 4: 18: 2	£13: 18: 3
	<hr/> <hr/>	<hr/> <hr/>

(No subsidies taken into account)

From the table it would seem then that it might be better to partially outwinter breeding cows of the hardier breeds. Other factors however need to be stated which show that outwintering on rough land is not the answer to the poor financial returns from breeding cows in Caithness.

The heavy stocking of rough ground with cattle in the summer months is desirable and will effect a good improvement in the grazing. In the winter however it may well have a disastrous effect. Very often the cattle eat the land bare leaving nothing at all for the sheep and furthermore grass growth in the next summer will also be poor. This had begun to happen on two of the farms under review. Outwintering of cattle may be satisfactory in sheltered and good growing areas in the west of Scotland, but in cold windswept Caithness it has yet to be proved. The profitability of breeding cattle is doubtful anyway and it is foolish to exchange the substance of profitable sheep for the shadow of hill cows. Where however the sheep stock is low there is a case for a partial outwintering on rough grazing or (if available) on grass fields to be ploughed up. Costs will be lowered as some saving on food should be possible in the early winter, but it will still be necessary to allow ample food after the turn of the year.

REARING MORE THAN ONE CALF TO THE COW

In none of the herds were all the cows suckling two calves to the cow, but the results of the four herds in which a few (one cow in four) of the cows suckled two calves showed that the cost per calf reared was reduced by £5: 4/6 per calf thus:-

Average Cost per Calf if single suckling had been adopted	£30: 2: 11½
Average Cost per Calf (Some were suckling 2 calves)	24: 18: 5½
	<hr/>
Reduction in Cost per Calf	£ 5: 4: 6
	<hr/> <hr/>

The average sale/valuation price was £18: 18/- so that the net loss per calf was £6: -/5½. As it happened those of the calves that were sold in the autumn sales brought no lower prices than the single suckled calves of the herds costed.

There is a strong tradition in favour of single suckling in the main breeding areas, but unless top prices are obtained it is of very doubtful profitability. If double or multiple suckling were adopted there can be no doubt that rearing costs would be lowered greatly, although if all or most of the cows in a herd were given two calves there would likely be some calves of poorer quality.

The Economics Department have not enough data relating to local matters to discuss the problems and difficulties which inevitably arise in considering full scale double suckling or multiple suckling. The year's costs do however suggest that it is worth while farmers wintering their cows inside to get second calves for those of their cows which milk well and take a second calf without trouble.

WHEN SHOULD THE CALVES BE SOLD?

This is a question which perplexes many farmers and no generalisation can be made as each farmer has his own particular circumstances to consider.

With single suckling many farmers are bound to sell the weaned calves as there is no food or winter accommodation for them. With double suckling the question may be easier as not so many cows need be kept and if prices are low in the autumn the farmer may be able to hold on to the calves to the yearling or 6/4 stage or whenever prices are good.

APPROXIMATE COSTS OF REARING

It is found in practice that many farmers are keen to have an approximate idea of the Economics Department's cattle and calf costs for the various stages of production. Relying on data gathered for this report and the Economics Report No. 22 of this department the following Table XIII has been compiled. It relates to single suckled calves in Caithness and the figure for double suckled calves should be at least £10 less throughout. No subsidies have been taken into account in making it up.

TABLE XIII

APPROXIMATE COST OF REARING STORES

(Cows inside in winter. One calf suckled to the cow)

	Age	Period Cost	Total Cost
Born Spring say 1951	Born	-	-
Autumn 1951	6 months	At least £30	£30
Spring 1952	1 year	£9: -: -	£39
Autumn 1952	1½ yrs.	£3: 5: -	£44: 5/-
Spring 1953	2 yrs.	£14: 5: -	£58: 10/-
Autumn 1953	2½ yrs.	£4: 5: -	£62: 15/-
Spring 1954	3 yrs.	£16: 10: - (fattened)	£79: 5/-

The previous figures are of course only approximate and their limitations must be realised. Perhaps the obvious feature of the table is the difficulty (for most farmers) of making any profit from single suckling no matter when the animals are sold.

ACKNOWLEDGMENT

The Economics Department wish to thank those farmers who have co-operated in the giving of data for this report.

The costings are being continued during the 1951/52 year and records from herds not previously costed will be included.

APPENDIX

HOME GROWN FOODS have been charged at cost of production. A sliding scale was used so that on farms with low yields the cost per cwt. or ton was higher. The figures were based on the cost of production figures in Economic Report No. 21 of this Department.

PURCHASED FOODS have been charged at purchase price.

LABOUR has been charged at rates recommended by the Conference of Scottish Agricultural Economists.

	s. d.
These were - Man	2/6
Horse	1/3
Wheeled Tractor	3/9

OVERHEADS have also been charged at the recommended rates.

	s. d.
These were - 5/9 per £ direct man labour	
3/6 per tractor hour or 4 horse hours	
13/9 per acre	

MANURIAL RESIDUES of foods and manures (R.M.V.'s) have been calculated as set down in Miscellaneous Publications No. 7 of D.O.A.S.

CALCULATION OF THE GRAZING COST

The total cost of the grass is obtained for each field grazed. A proportion is deducted if hay or silage has been made (usually $\frac{2}{3}$ in the case of hay and $\frac{1}{2}$ or $\frac{3}{4}$ for silage).

The feed grass costs are added together to give a grass cost per farm. One sixth is deducted for winter grazing and the remainder is the farm summer grazing cost.

This divided by the number of livestock units grazing the grass gives a grazing cost per livestock unit.

Livestock Units The Table used is:-

1 horse, bull, cow, 2-3 year cattle	=	1 unit
1-2 year old cattle	=	.75 unit
Young horses; cattle 6 months - 1 yr.	=	.50 unit
Sheep over 6 months	=	.25 unit
Sheep 3 - 6 months	=	.07 unit
Lambs under 3 months	}	= No charge
Calves suckling		

FIELD GRAZING COST

The items making up the cost are:-

1. Rent
2. Labour on the Grass
3. Manures applied and manurial residues
4. Overhead Costs
5. Sowing Down Charge - i.e.

Average Cost of Establishing the Grass
(Estimated Years duration of Lea + 1)