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December, 1953

Economic Report No. 26

*Farm
business
analysis O.S.*

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ENTERPRISE COSTS STUDIES

- I. WHEAT - 1952 Crop by J.A. MacLennan
- II. BARLEY - 1952 Crop by B. Peart
- III. CATTLE REARING - 1951-52 by J.D. Rowbottom

EDINBURGH AND EAST OF SCOTLAND COLLEGE OF AGRICULTURE
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RECENT PUBLICATIONS

FINANCIAL RESULTS OF EAST OF SCOTLAND FARMS:-

Group	1946- 1947	1947- 1948	1948- 1949	1949- 1950	1950- 1951	1951- 1952
	----- No. of Farms -----					
1. Hill Sheep Farms)	52	48	54	52	53	57
2. Stock Rearing Farms)						
3. Stock Raising and) Feeding Farms)	153	143	184	175	178	173
4. Arable Farms)						
5. Dairy Farms)						
	<u>205</u>	<u>191</u>	<u>238</u>	<u>227</u>	<u>231</u>	<u>230</u>

COSTS OF MILK PRODUCTION 1945-46, 1946-47, 1947-48, 1948-49, 1949-50, 1950-51, 1951-52.

ECONOMICS OF LIVESTOCK PRODUCTION:-

- (a) Winter Fattening of Sheep : 1947-48, 1948-49, 1949-50.
- (b) Winter Fattening of Cattle : 1947-48, 1948-49, 1949-50.
- (c) Commercial Egg Production : 1949-50, 1950-51, 1951-52.

ENTERPRISE COSTS:- Economics of Silage Making in East of Scotland, 1950, 1951, 1952.

DAIRY LABOUR IN THE EAST OF SCOTLAND.

ECONOMICS OF BRACKEN ERADICATION, 1951, 1952.

Inquiries regarding the above publications
should be addressed to either the Secretary of the College
or the Provincial Agricultural Economist.

WHEAT COSTS, 1952 CROP

This brief report relates to an investigation into the cost of growing wheat in the East of Scotland - an area, which, on account of its size and favourable geographical position, produces a large proportion of the wheat crop in Scotland.

Altogether 28 farmers co-operated, six of whom each costed two crops, thus giving a total of 34 completed records. The total area costed was 492 acres which gives an average of 15 acres per crop costed.

Most of the counties in the East of Scotland were fairly equally represented, Fife furnishing seven records, Roxburgh five, Angus, Midlothian, Peebles and Berwick four each, Perth three, East Lothian two and Selkirk one.

Soil Conditions

Nearly all of the crops in the sample were grown below the 500 ft. level. The soils were, in the main, medium or medium heavy - most suitable for successful wheat growing. The average rent per acre was 30s., fairly typical of good arable land in the area.

Manures

In the majority of cases, wheat was sown after a crop of potatoes which usually received fairly heavy dressings of farmyard manure. This meant that the charge for manurial residues was fairly high. In addition, in most cases, standard dressings of a compound grain fertiliser were applied.

Varieties of Wheat

Many varieties were grown but the most popular were Hybrid 46 (4) and Bersee, Eclipse, Squarehead's Master and Scandia (3 each). The majority of these were sown in the autumn.

Yields

The year 1952 was a good harvest year, and the average yield per acre was slightly over 33½ cwt. Yields varied from 18 cwt. per acre on a dairy arable farm with important crop sales, situated at over 500 ft. above sea level, to as high as 51 cwt. per acre for an arable and feeding farm on the Berwickshire coastal strip. Table I. shows that most of the crop yields were in the 30-40 group

TABLE I. RANGE OF CROP YIELDS

	Under 20 cwt.	20- 29 cwt.	30- 39 cwt.	40 cwt. and over	TOTAL
No. of crops costed	1	9	20	4	34

Methods of Harvesting

Harvesting by binder, stacking and then threshing by mill was carried out on 27 of the crops costed. In addition, in 4 costs, the binder was used but the crops were threshed from the stook, one by the combine harvester, the other 3 by the mill. In another 3 costs, combine harvesters were used for the complete harvesting operation. It will be seen that not very much wheat is harvested by combine.

The average cost per acre is shown in Table II. and to show extreme variations from the average cost per acre the four highest costs per acre and the four lowest costs per acre have also been set out alongside it.

TABLE II. 1952 WHEAT CROP : COSTS PER ACRE
34 Crops in the East of Scotland

	Average Costs			4 Highest Costs			4 Lowest Costs					
Size of Field	15 acres			8½ acres			16½ acres					
Yield per acre	33.7 cwt.			41.7 cwt.			32 cwt.					
	£	s.	d.	Per Cent	£	s.	d.	Per Cent	£	s.	d.	Per Cent
<u>LABOUR AND POWER</u>												
<u>1. Cultivations</u>												
Manual	-	17.	6	4	1.	10.	10	5	-	12.	1	3
Horse	-	3.	7	-	-	3.	2	-	-	-	-	-
Tractor	-	18.	9	4	1.	9.	11	5	1.	-	10	5
Contract	-	-	4	-	-	5.	1	1	-	-	-	-
Total Cultivations	£2.	-	2	8%	£3.	9.	-	11%	£1.	12.	11	8%
<u>2. Harvesting and Threshing</u>												
Manual	3.	18.	-	16	5.	13.	10	17	3.	10.	9	19
Horse	-	1.	4	-	-	-	-	-	-	-	3	-
Tractor	1.	2.	-	4	2.	-	4	6	-	18.	6	5
Combine Costs	-	4.	-	-	-	-	-	-	-	-	-	-
Contract	-	9.	8	2	-	3.	2	1	-	11.	10	3
Total Harvesting	£5.	15.	-	22%	£7.	17.	4	24%	£5.	1.	4	27%
TOTAL LABOUR & POWER ...	£7.	15.	2	30%	£11.	6.	4	35%	£6.	14.	3	35%
<u>SEEDS</u>	3.	16.	-	15	5.	2.	2	16	3.	2.	-	17
<u>MANURES (NET)</u>	6.	14.	-	28	7.	14.	7	23	2.	14.	6	14
<u>RENT</u>	1.	10.	-	6	2.	3.	2	6	1.	-	-	5
<u>OTHER COSTS</u>	1.	3.	-	5	1.	7.	-	4	1.	15.	2	10
<u>OVERHEADS</u>	4.	1.	-	16	5.	4.	5	16	3.	12.	2	19
TOTAL OTHER COSTS ...	£17.	4.	-	70%	£21.	11.	4	65%	£12.	3.	10	65%
TOTAL NET COSTS ...	£24.	19.	2	100%	£32.	17.	8	100%	£18.	17.	2	100%
<u>TOTAL GRAIN COST (6/7 to Grain)</u>												
	£21. 8. -				£28. 3. 6				£16. 3. 6			
<u>RETURNS PER ACRE</u>												
	£50. 5. 5				£65. 17. 1				£46. 12. 9			
<u>PROFIT PER ACRE</u>												
	£28. 17. 5				£37. 13. 7				£30. 9. 3			
<u>COST PER CWT. (GRAIN)</u>												
	- . 12. 9				- . 13. 6				- . 10. 1			
<u>SELLING PRICE PER CWT.</u>												
	1. 9. 10				1. 11. 8				1. 9. 2			

For /

For Costing Procedure see APPENDIX.

For the 34 crops costed, the average costs per acre work out at £21. 8s. (allowing 1/7th of the net cost to the straw) and the total returns per acre at £50. 5. 5d., thus giving a net profit of £28.17. 5d. per acre. Labour and power and manures (net) account for a relatively high proportion of the net cost.

Contrasting the four highest cost farms and the four lowest cost farms, it is seen that high costs per acre incurred by the former were more than compensated for by high yields and subsequent high returns. In the next section, however, it will be shown that in the great majority of the enterprises studied, costs did not vary proportionately to yields. On the four farms with the highest costs it will also be noted that 9% more was spent on manures but 6% less on what are listed as "other costs".

A distribution of the net costs of the whole sample is shown in Table III. It will be seen that most of the costs are in the £20-£25 per acre group.

TABLE III. RANGE OF COSTS PER ACRE

	Under £20	£20- £25	£25- £30	£30- £35	Over £35	TOTAL
No. of crops costed	3	17	6	7	1	34

2. COSTS, RETURNS AND PROFITS

To show the relationship between these three factors the yields per acre ranging from under 20 cwts. per acre to over 40 cwts. per acre have been set out in Table IV. below.

TABLE IV. YIELDS, COSTS, RETURNS AND PROFITS

Yield per Acre	No. of Crops Costed	Average Yields Per Acre	Average Net Cost Per Acre [*]	Average Return Per Acre	Average Margin Per Acre
cwt.					
Under 20	1	18	£17.15. -	£23.17. -	£ 6. 2. -
20-24	4	22	22.17. -	28.18. -	6. 1. -
25-29	5	27½	20. 9. -	42. 9. -	22. -. -
30-34	9	31½	21. 6. -	46.18. -	26.12. -
35-39	11	37	21.18. -	56. 7. -	34. 9. -
40 and Over	4	47¼	25.13. -	71.14. -	46. 1. -

* Charging 6/7ths of the costs to the grain.

It will be seen that 29 of the crops costed i.e. 85 per cent. with yields from 20 cwt. per acre to 39 cwt. per acre varied very little from the average cost of £21. 8s. per acre and that there was a progressive increase in profits from £6. 1s. to £34. 9s. per acre. It can be said therefore that for yields from 20 cwt. to 39 cwt. per acre there was little or no variation of costs with yields but a clearly defined one between yields and profits. Yields of 40 cwt. per acre and over, however, proved highly profitable and confirm the fact already brought out in Table II. that for very high yields it was profitable to spend relatively large amounts mainly on manures, and seeds and labour, these additional outlays being more than covered by additional returns.

It /

It should be borne in mind that the 1952 crop year was one of exceptionally favourable weather conditions, so that the figures of average costs shown in the report must be treated with reserve. In order to provide data on variations due to seasonal differences the investigation is being continued for one additional year relating to the 1953 crop, a very difficult year, by comparison. It is hoped that this will be equally well supported by co-operating farmers.

SUMMARY

1. The average cost per acre from 34 wheat crops costed in 1952 was £24.19. 2d. (including cost of straw), for an average yield of 33.7 cwt. Returns average £50. 5. 5d. per acre thus giving an average profit of £28.17. 5d. per acre (allowing 6/7ths of total costs as a charge against the grain).
 2. The 1952 harvest year was a year of very good wheat yields in the East of Scotland area.
 3. Most of the wheat costed was grown on medium or medium heavy soil with an average rent of 30s. per acre.
 4. Manures and labour were the highest individual items in the average net cost structure, being 28% and 20% of the net costs respectively.
 5. For yields between 20-39 cwt. per acre there was no increase of costs with yields but a well defined relation between yields and profits.
 6. Yields over 39 cwt. per acre entailed high costs per acre but resulted in more than proportionate returns, reflected in correspondingly higher profits.
-

II. BARLEY COSTS, 1952 CROP

Of the cereal crops grown in East and South East Scotland barley is of considerably less importance than oats, but in certain counties, notably East Lothian, Berwickshire, Roxburghshire and Fife, the barley crop occupies an important position. This brief report on the costs of barley production in East and South East Scotland covers results obtained from a sample of 55 farms in this area, 14 in Fife, 13 in Berwickshire, 9 in Angus, 8 in Roxburghshire and the rest spread throughout the remaining counties.

Yields

The weather conditions in 1952 were generally favourable to barley growing and the average yield per acre for the sample was 33 cwt. The range in yields was wide and the table below shows the distribution.

Distribution of Yields per acre

Yields per acre	Under 20 cwt.	21-25 cwt.	26-30 cwt.	31-35 cwt.	36-40 cwt.	41-45 cwt.	Over 45 cwt.
Number of crops costed	2	8	10	14	13	5	3

Varieties

Ymer was easily the most popular variety, and was grown on 25 of the 55 farms. Ten costs related to Spratt Archer and 4 each to Carlsberg and Freja. The average yield of Ymer barley was 35 cwt. per acre, compared with 25½ cwt. per acre for Spratt Archer. The four records of Freja showed an average yield of 37 cwt. but the number of crops costed was so small as to make comparison inadvisable.

Methods of Harvesting

The only significant differences in the technique of production lay in the methods of harvesting. Twenty-five of the 55 farms used the binder and the remaining 30 used the combine-harvester, 16 owning their own and 14 hiring machines. Two farms who used the combine-harvester, swathed the grain. There was no marked tendency for the short-strawed varieties to be combined and the long-strawed varieties to be binder-harvested, but all those owning their own combines in this sample grew short-strawed barley and in all cases where long-strawed barley was combined it was done by contract.

COSTS OF PRODUCTION *

The Table below sets out the average costs of production for the 55 crops costed. The costs have been carried to the dressing stage and include the cost of handling the straw.

TABLE I. /

* For Costing Procedure see APPENDIX.

TABLE I. 1952 BARLEY CROP : COSTS PER ACRE
55 Crops in the East of Scotland

	Average Cost per Acre		Per Cent
	£ s. d.	£ s. d.	%
<u>LABOUR AND POWER</u>			
1. <u>Cultivations</u>			
Labour	-.16. 5		
Horse	-. 1. 2		
Tractor	1. 2. 1		
Contract	-. 2. 2	2. 1.10	8.7%
2. <u>Harvesting & Threshing</u>			
Labour	2.12. 6		
Horse	-. 1. 1		
Tractor	-.15. 7		
Contract	1. 7. 9		
Combine	1. -. 7	5.17. 6	24.3
TOTAL LABOUR & POWER		£7.19. 4	33.0%
<u>SEED</u>		3.17. 1	15.9
<u>MANURES (NET)</u>		6. 1. 9	25.3
<u>RENT</u>		1.11. -	4.6
<u>MISCELLANEOUS COSTS</u>		1. 3.10	6.4
<u>OVERHEADS</u>		3.10. 7	14.8
TOTAL NET COST PER ACRE		£24. 3. 7	100%
<u>YIELD OF GRAIN</u>		33 cwt.	
<u>RETURNS PER ACRE</u>		£45.10.11	
<u>PROFIT PER ACRE</u>		£21. 7. 4*	
<u>COST PER CWT. OF GRAIN</u>		-.14.11	
<u>SELLING PRICE PER CWT.</u>		£1. 7. 5	

* The full costs of production have been charged to the grain and nothing to the straw.

Charging all the costs against the grain, the average cost per cwt. of barley was 14/11d. The range in costs per cwt. was from 8/6d. to 38/1d. which is undoubtedly wide, but the great majority fell into the range 10s. to 17s. per cwt. If one uses the formula of charging 6/7ths of the total cost against the grain and 1/7th against the straw then the average cost per cwt. of grain would be 12/9d.

There was a wide range in costs per acre as is brought out by the Table below. However, the majority of the crops costed lie in the range of £17 to £29 per acre and are fairly evenly distributed about the average.

Range in Costs per Acre

Average Cost per Acre	£14- £17	£17- £20	£20- £23	£23- £26	£26- £29	£29- £32	£32- £35	Over £35
Number of crops costed	5	10	13	7	9	5	4	2

As was to be expected, long-strawed varieties realised a higher selling price per cwt. than did the short-strawed varieties. The average selling price for long-strawed varieties (chiefly Spratt Archer) was 30/10d. per cwt. which compares with 27s. per cwt. realised for short-strawed varieties (chiefly Ymer). Selling prices of long-strawed varieties varied between 28s. and 34/4d. per cwt. The short-strawed varieties showed a wider range of selling prices from a minimum of 24s. per cwt. to one exceptional case of 36/3d. per cwt. at the other end of the scale.

The lower selling price per cwt. of the short-strawed varieties was more than offset in this sample by the higher yield achieved (37.7 cwt. compared with 26.8 cwt.), and, consequently, the average return was roughly £9.10s. per acre higher than was realised from the long-strawed varieties.

None of the crops showed losses; profits ranged from £12 an acre to over £50 an acre.

COST OF HARVESTING AND THRESHING

It is useful to compare the costs of barley production between the binder-harvested group and the combine-harvested group. Examination of the total cost structure of the two groups reveals that the only significant differences in the various items of cost are in the harvesting and threshing stage. Differences between the two groups in costs of cultivations, seeds, manures and rents were of no consequence.

Combine-Harvested Barley - Average cost per acre Harvesting and Threshing

Labour	£1. 3. 3
Horse	- . - . 3
Tractor	- .10. 6
Combine	<u>3.14. 3</u>
	<u>£5. 8. 3</u>

Binder-Harvested Barley - Average Cost per acre Harvesting and Threshing

(i) Harvesting

Labour	£2.16. 2	
Horse	- . 2. 2	
Tractor	<u>- .18. -</u>	£3.16. 4

(ii) Threshing

Labour	£1.11. 3	
Tractor	- . 3. 9	
Contract	<u>- .17. 2</u>	£2.12. 2
		<u>£6. 8. 6</u>

1952 BARLEY COSTS IN EAST OF SCOTLAND
Comparison of the Structure of Harvesting and Threshing
Costs between the two systems

Item of Cost	Combine-Harvested Group (30 crops costed)		Binder-Harvested Group (25 crops costed)	
	Costs per acre	Per Cent	Costs per acre	Per Cent
	£ s. d.	%	£ s. d.	%
Labour	1. 3. 3	21.5	4. 7. 5	68.1
Horse	-. -. 3	.2	-. 2. 2	1.6
Tractor	-.10. 6	9.7	1. 1. 9	17.0
Combine	3.14. 3	68.6		
Hire of Thresher			-.17. 2	13.3
TOTAL	£5. 8. 3	100%	£6. 8. 6	100%

Besides showing the higher total cost involved in the binder-harvested group, this table brings out forcibly the difference in labour costs between the two systems of harvesting. In the combine-harvested group the proportion of cost chargeable to the combine is roughly the same as that chargeable to labour in the binder-harvested group.

It should be pointed out that the figure for combining costs per acre related to an average of both farm-operated combines and combines hired from contractors. Likewise in the binder-harvested group the costs for those hiring a thresher and those using their own threshers have been averaged together and consequently the figure of 17/2d. per acre is no indication of how much it might cost to hire a thresher for an acre of barley. This latter figure was approximately 30s. per acre.

SUMMARY

1. Costs of barley production were compiled for 55 crops in the East of Scotland for the 1952 crop. The average cost per acre was £24. 3. 6d.
2. Yields were generally good and averaged 33 cwt. per acre, giving an average return per acre of £45.10.11d.
3. Ymer was the most popular variety, with Spratt Archer second in popularity.
4. The short-strawed varieties were generally more profitable than the long-strawed varieties.
5. There were 30 cases of combine-harvesting and 25 of binder-harvesting; harvesting plus threshing costs for the binder method of harvesting were £1. -. 3d. higher than the costs for combine-harvesting.

III. CATTLE REARING COSTS

General Description of Farms and Herds Studied

This report deals with the cost of rearing suckled calves up to the weaning stage in 27 herds in the East of Scotland during 1951-52 (November to November), the first stage in the long process of beef production. Berwick had the largest representation with six herds, Roxburgh, Angus and Fife had five each, Selkirk three, Peebles two and East Lothian one.

The average size of farm in the sample studied was 928 acres rented at an average rental of 17/6d. per acre. Farm size ranged from a hill sheep farm of 3213 acres, the largest, to a low ground arable farm of 209 acres, the smallest. The average herd size was 35 breeding cows ranging from a herd of 16 cows to one with 131 cows. The 27 farms can roughly be classified into three broad types - lowland arable farms, semi-upland stock rearing farms and hill sheep farms. As one would expect on the lowland arable farms the majority of the herds were either beef Shorthorns, Blue Grey crosses, usually crossed with Aberdeen-Angus Bulls, and either inwintered or outwintered with adequate shelter and receiving liberal rations. The hardier breeds - Highland, Galloways and their crosses, were studied on the higher lying farms, outwintered on hill ground.

For purposes of comparison the sample has been divided into two main groups - inwintered cows and outwintered cows. A further subdivision of the outwintered group was made, comprising two sub-groups:-

- (a) those on lowland farms and receiving liberal rations,
- (b) the hardier breeds outwintered on upland farms.

The Table below sets out the cost per cow per annum for each of the three groups.

TABLE I. COST PER COW PER ANNUM

	In-Wintered Herds	Outwintered Herds	
		(a) Lowland farms	(b) Upland farms
No. of Herds	10	7	10
Average Herd Size	41 cows	44 cows	25 cows
<u>Cost per cow p.a.</u>	£ s. d.	£ s. d.	£ s. d.
<u>Foods</u>			
Purchased	-. 7. 1	-. 5. -	-. 5.11
Home-Grown	14.14. -	13. 2. 5	7.11. 2
Grazing	5.10.10	7.12. 9	4. 8. 5
Total	20.11.11	21. -. 2	12. 5. 6
<u>Labour</u>			
Winter	2. 7.11	1.10.11	1.10. 3
Summer	-. 7. 7	-. 9.10	-. 8. 2
Total	2.15. 6	2. -. 9	1.18. 5
* Miscellaneous Costs	1. 2.10	1.19. 9	2. 5. 2
Herd Maintenance	1. 7. 6	2.10. 2	2. 5. 3
TOTAL COSTS	£25.17. 9	£27.10.10	£18.14. 4

* Includes overheads, vet expenses, haulage, etc.

Table I. shows how the cost of keeping a cow for a year varies under different environmental and managerial conditions. As might be expected there was not a great variation in total cost between the in-wintered cows and those which were outwintered, receiving liberal rations, but the cost of the cows outwintered on upland farms was very much less than the other two groups. Foods formed by far the greatest single item of costs, accounting for over three-quarters of the total cost in the first two groups while in the case of the hardier breeds outwintered on the hill, food costs made up two-thirds of the total cost.

Labour costs were highest for those herds inwintered; they formed 11 per cent., 7 per cent. and 10 per cent. of the total cost in each of the groups respectively.

Miscellaneous costs were highest for the outwintered group (b) herds mainly due to greater use of tractors in hauling foods to the cows and consequently higher overheads.

The cost of herd maintenance was highest in the outwintered group (a) herds but this may be due to the smallness of the sample and not to any other factor causing a higher rate of replacement in these herds.

Having ascertained the cost of carrying a breeding cow right through the year, we may examine these costs from another angle by setting them out in such a way as to show the cost of producing a weaned calf (approximately 6-8 months old) for each of the three groups, as set out in Table II. below. The cost per weaned calf produced is slightly greater than the cost of keeping a cow per annum because not all the calves born reached the weaned calf stage and the cost of any purchased calves (although, in the sample studied, not of great significance in the total cost) must also be added to the cost per cow per annum to obtain the actual cost of a calf at the weaning stage.

TABLE II. COST PER WEANED CALF APPROXIMATELY 6-8 MONTHS OLD

Group	In-Wintered	Out-Wintered	
		(a)	(b)
Average No. of Weaned Calves per Herd	39	44	24
Weaned Calves Produced as percentage of cows in Herd	96.2%	100%	97.7%
<u>Costs</u>	£ s. d.	£ s. d.	£ s. d.
<u>Foods -</u>			
Purchased	-. 7. 2	-. 5. -	-. 5.11
Home-Grown	15. 5. 6	13. 2. 5	7.15. 3
Grazing	5.13.10	7.12. 9	4.11. -
Total	£21. 6. 6	£21. -. 2	£12.12. 2
<u>Labour</u>			
Winter	2. 9. 3	1.10.11	1.11. 9
Summer	-. 8. 1	-. 9.10	-. 8. 7
Total	£ 2.17. 4	£ 2. -. 9	£ 2. -. 4
Miscellaneous #	1. 3. 7	1.19. 9	2. 7.10
Herd Maintenance	1. 8. 5	2.10. 2	2. 7.11
Purchased Calves	-. 1. 6	-. 1. 8	-. 3. 4
TOTAL COST	£26.17. 4	£27.12. 6	£19.11. 7

Includes overheads, vet. expenses, haulage, etc.

The main point brought out by the above table is the relatively low number of weaned calves produced per 100 cows in the case of the in-wintered herds. This may be due to a higher death rate of young calves because of a greater prevalence of disease in the in-wintered herds but more likely it is due to the smallness of the sample when sub-divided into these groups.

RANGE IN COSTS PER WEANED CALF PRODUCED

Table III. shows the distribution of costs for each of the groups.

TABLE III. DISTRIBUTION OF COSTS

Group	Under £20	£20- £25	£25- £30	£30- £35	Over £35	TOTAL
In-Wintered	1	4	2	1	2	10
Out-Wintered (a)	-	3	2	1	1	7
Out-Wintered (b)	7	2	1	-	-	10
TOTAL	8	9	5	2	3	27

The cost of producing a weaned calf showed a wide variation, ranging from the lowest of £10.13. 8d. per calf on a semi-upland farm (where the cows were out-wintered on straw and silage with very little hay) to the highest cost of £39. 3. 2d. per calf on a low ground arable farm where the cows were out-wintered but were being liberally fed, their rations consisting of turnips, straw, oats, hay and beet pulp. In each group the individual results are fairly well grouped around the average with the in-wintered group showing the widest variation in individual costs.

RETURNS AND MARGINS

The Table below shows the average selling price and average margin of profit per calf for each of the groups.

TABLE IV. RETURNS AND MARGINS PER CALF

Group	Calves sold as percentage of weaned calves reared	Average cost per Calf	Average selling price per calf	Average Margin per Calf *
In-Wintered	25%	£26.17. 4	£35. 3. 7	£8. 6. 3
Out-Wintered (a)	22%	£27.12. 6	£34. 2.10	£6.10. 4
Out-Wintered (b)	40%	£19.11. 7	£27. 2. 5	£7.10.10

* Excluding all subsidies

Table IV. shows that for the sample studied the in-wintered herds were just a little more profitable than the other two groups. The cost of production was high, but having obtained a good quality calf the selling price was also high leaving a margin of £8. 6. 3d. per calf. The out-wintered group (a) herds would seem to be the least profitable. It must, however, be remembered that in this case and also in the case of the in-wintered /

in-wintered group the breeding herd forms only a small part of the cattle enterprise on these farms.

It will be noticed also that, as a general rule, the majority of the calves produced by all three types of herds are not sold as weaned calves but are kept on the farm to be sold later. The margin of profit at the weaned calf stage is of more importance to the hill group where 40 per cent. of the weaned calves produced are sold. Those not sold at this stage are usually sold as yearlings or at 18 months old.

Assuming that the weaned calves are sold at the October sales and that management and other factors are equal the tendency will be for the early born calf to realise the biggest profit, and as far as late born calves are concerned it might well prove to be more remunerative to keep them on to a later stage, though much will depend on the individual circumstances of each farm.

SUMMARY

1. The sample consisted of 27 herds of suckling cows widely scattered over the College area. Average farm size was 928 acres rented at 17/6d. per acre. The total number of breeding cows costed was 967 and the average herd size was 35 cows. Included in the sample were hill herds of Highland, Galloway and Cross cows and herds of Shorthorn or Blue Grey Crosses on low ground farms, almost all crossed with either Aberdeen-Angus or Shorthorn bulls.
2. The average cost of producing a weaned calf was as follows:-

In-Wintered Herds	- £26.17. 4
Out-Wintered a) on lowland farms	- £27.12. 6
b) on hill and upland farms	- £19.11. 7
3. Feeding stuffs were by far the largest item of cost in all cases, accounting for over 75 per cent. of the total cost in the first two groups and 66 per cent. of the total cost for the out-wintered group (b) herds.
4. Individual costs per calf ranged from £10.13. 8d. for an out-wintered herd receiving only straw and silage to £39. 3. 2d. also for an out-wintered herd receiving liberal rations.
5. A comparison of profit margins showed the in-wintered herds to be the most profitable with a margin of £8. 6. 3d. per calf sold. The margins for the other two groups were £6.10. 4d. and £7.10.10d. per calf sold respectively.

ACKNOWLEDGMENT

Grateful acknowledgment is made of the valuable help given by farmers taking part in any of the three investigations covered by this report, not only by keeping the necessary records and furnishing us with all the other information needed, but also for the courtesy unfailingly shown on the occasion of our visits. Each collaborating farmer receives a summary of his own costs set out alongside those of the average cost. The investigation into wheat and barley costs is being continued so as to cover the 1953 crop only, but the inquiry into cattle rearing costs is to be carried on for a further two years. It is therefore hoped that wherever possible those farmers who have so far participated in the investigations will maintain their interest therein, and will continue to give their generous help.

APPENDIXCOSTING PROCEDURE1. WHEAT, BARLEY and CATTLE COSTSManual Labour

This was charged at hourly rates ruling on the farm, adjusted to include holidays; any overtime rate was charged at the rates paid. A charge was made for work done by the farmer.

Horse Work

Charged at 1/6d. per hour.

Tractor Work

Charged at 4/6d. per hour for wheeled tractors and 6/6d. per hour for track-laying tractors.

Seeds

Purchased - at cost
Home Grown - at 18s. per cwt.

Manures and Manurial Residues

- (a) Dung was charged at 17/6d. per ton plus cost of application.
- (b) Artificials were charged at cost, plus cost of application.
- (c) Residual Values brought and carried forward.

Proportion Chargeable to:-

	<u>1st Crop</u>	<u>2nd Crop</u>	<u>3rd Crop</u>	<u>4th Crop</u>
1. Dung	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$
2. Compound Manures	$\frac{2}{3}$	$\frac{1}{6}$	$\frac{1}{6}$	-
3. Phosphates	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$
4. Lime	1/7 of net cost for 7 years			

5. After Lea

Where wheat or barley was sown after lea a value was put on the lea according to the following scale:-

After 1 year lea	36s.
" 2 "	55s.
" 3 "	63s.
" 4 "	76s.
" 5 "	86s.
" 6 "	98s.

Foods

Purchased Foods - were charged at purchase price less a deduction for the manurial value of the foods fed.

Home-Grown Foods - were charged on a cost of production basis less a deduction for manurial values. The following were the net charges per cwt. for the home-grown foods:

Oats /

Oats	16/6
Straw	3/-
Hay	6/1
Roots	2/1½
Silage - grass	1/11
- arable	2/3
Green Oats	1/10

Grazing

The total grazing available on each farm was costed and proportioned between the various stock on the following basis of stock equivalents:

	<u>Stock equivalent</u>
Cow	1 unit
Calf at foot	1/3 "
Stirk	2/3 "
Ewes	1/6 "
Lambs at foot	1/18 "
Lambs weaned	1/9 "
Feeding Sheep	1/6 "
Horse	1 "

A deduction was also made from the total cost of rotational grass to allow for ley residues.

Other Costs

This included binder or baler twine and any spraying material used and in the case of cattle costs, veterinary expenses and any direct charges attributable to the cattle.

Contract Work

This includes both labour and machine costs.

Rent

Charged at the average rental for the arable land on the farm. No rent was charged directly against the cattle.

Overheads

These were charged at suitable rates agreed by the Scottish Conference of Agricultural Economists. No charge has been made for interest on capital or for any managerial work undertaken by the farmer.