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Milk Cost
of production O.S.

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Economic Report No. 10.

EDINBURGH AND EAST OF SCOTLAND COLLEGE OF AGRICULTURE.

(Department of Economics.)

INTERIM REPORT

ON

COST OF MILK PRODUCTION, SUMMER - 1950.

BY

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13 George Square, Edinburgh, 8.
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RECENT PUBLICATIONS.

FINANCIAL RESULTS OF EAST OF SCOTLAND FARMS: (Hill Sheep, Stock Rearing, Stock Raising and Feeding, Arable and Dairy Farms), viz.,

1946-47	-	205 farms
1947-48	-	191 "
1948-49	-	238 "

CROP COSTS STUDIES - Oats, Potatoes and Sugar Beet 1945 *, 1946, 1947 and Sugar Beet 1948.

COST OF MILK PRODUCTION - Whole Year 1945-46, 1946-47, 1947-48, 1948-49.

INTERIM REPORT ON COST OF MILK PRODUCTION - Winter 1949-50.

MECHANISATION STUDIES - Combine Harvesters in East and South East Scotland, 1944, 1945, 1946, 1947.

- Economic Aspects of Farm Mechanisation.

ECONOMICS OF LIVESTOCK PRODUCTION - Winter Fattening of Sheep 1947-48, 1948-49.

- Winter Fattening of Cattle 1947-48, 1948-49.

* No further copies available.

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

I. INTRODUCTION.

The costs of milk production for the Summer Period 1950 are set out in this interim report which covers the six months from 1st April to 30th September 1950. In all, records were completed for 78 herds, two less than for the Winter Period. After the costs for the Summer Period have been discussed the report sets out a table showing the cost of milk production for the year ended 30th September 1950, and final tables for the Winter and Summer Periods incorporating a figure for Herd Maintenance.

II. GENERAL DESCRIPTION OF FARMS AND HERDS STUDIED.

Location and size of Herds. It is pleasing to note that despite the trials of a bad summer the interest in this investigation on the part of collaborating farmers has been well maintained, only two farmers being obliged to give up the keeping of the necessary records. The effect therefore on the distribution of the location of herds is very slight - viz: one less in Clackmannan and Kinross and one less in Perth.

The average size of herd for the period under review was 50 cows - a decrease of one from the Winter Period 1949-50. During the five years covered by the costs it has been noticeable that on the average there has been one more cow kept in each Winter Period than in the following Summer.

Type and Size of Farms. The average size of farm was 274 acres, an increase of one acre compared with the Winter Period, both the farms for which records were not completed being rather smaller than the average. The average rental is 26/6d. per acre, almost identical with that for the Winter Period. Rough grazing accounted for about 14 per cent of the area of the farms costed.

Type and composition of Herds. As the herds costed in the Summer Period were virtually identical with those costed in the Winter Period, there were no radical changes in breeds, pedigree status, or quality of stock.

A total of 3942 cows were costed, including 28 temporarily suckling calves and 850 dry cows, the latter representing 21.5 per cent of the total. This is almost the same proportion of dry cows as for the Summer Period 1949 and compares with 26.8 per cent for the Winter Period, 1949-50. There was a wide variation from the highest - a herd with 31 per cent dry cows - to the lowest - a town dairy with less than 4 per cent dry. The average size of herd for the period was 50 cows, individual herds ranging from 9 to 112 cows.

Quality of Milk. Of the 78 herds costed - 67 (i.e. 85.9 per cent) were producing the highest grade of milk Certified or Tuberculin Tested. The Standard Grade of milk was produced by 7 herds and only 4 herds produced Ordinary or Non Graded Milk. One of the herds producing ordinary milk is in the process of becoming attested.

As in the Winter Period only two of the herds out of a total of seventy-eight were hand milked. Most of the milk produced was sold wholesale but there were twenty herds i.e. 25.6 per cent, from which the major portion of the production was sold direct to the consumer.

Milk Yield per Cow. Following a mild winter which was rather favourable to milk production, as shown by the increased milk yield for this period, the spring weather was rather warm and dry. The summer months were unusually wet and none too warm, and farmers found themselves in considerable difficulties with the hay crop and harvesting. The rain however probably had a beneficial effect in keeping the grazing land green at a time when grass usually begins to go back. Despite all the setbacks with the outside work, milk production was well maintained and averaged 398 gallons per cow, an increase of 15 gallons, or almost 4 per cent over the previous summer six months. The difference between winter and summer yields was 59 gallons which is slightly less than the difference between the corresponding periods in 1948-49.

Below/

Below in Table I, the herds are grouped according to the milk yield per cow per herd.

TABLE I. - MILK YIELD PER COW PER HERD FOR 6 MONTHS.
SUMMER 1950 cf., SUMMER 1949.

	Under 201 Galls.	201 to 250 Galls.	251 to 300 Galls.	301 to 350 Galls.	351 to 400 Galls.	401 to 450 Galls.	451 to 500 Galls.	Over 500 Galls.	Total
No. of herds in 1950	-	-	5	15	24	16	12	6	78
1950 Percentages	-	-	6	19	31	21	15	8	100
1949 Percentages	1	-	9	22	28	26	8	6	100

Most of the herds are grouped around the average although the range from lowest to highest yield is very wide viz:- 258 gallons per cow to 571 gallons per cow, the highest yielding herd having a yield of more than double the lowest. The improvement in milk yields has been very general - a clear indication of how dairy farmers are striving their utmost to increase efficiency. The proportion of herds producing 300 gallons or less per cow has therefore decreased from 10 per cent to 6 per cent and the proportion of herds in the two highest yielding groups has increased from 14 per cent to 23 per cent, a very marked improvement.

III. COSTS OF PRODUCTION.

Preparation of Costs data. Every care has been taken to ensure the utmost comparability of the data not only between different farms, but also between our own and other colleges in Great Britain.

The following principles have been adhered to.

(i) Winter and Summer Periods.

The year has been divided into two six-monthly periods, viz.,

Winter 1st October to 31st March inclusive.

Summer 1st April to 30th September inclusive.

(ii) Purchased Foods.

All foods purchased whether concentrates or roughages have been charged at cost (including haulage to the dairy premises).

(iii) Home Grown Foods.

These have been charged at prices intended to cover costs of production including carting to a point within close proximity to the dairy premises. Costs were completed for most of the grain, fodder and root crops in 1949 by the Economics Department as a whole. From this and other information the following average prices were derived, which include milling charges in the case of corn crops:-

Crop	Price per ton			Crop	Price per ton		
	£	s.	d.		£	s.	d.
Oats) including	16	-	-	Swedes & Turnips	1	16	-
Beans) grinding,	22	10	-	Mangolds	1	16	-
Mashlum) etc.	17	10	-	Kale	1	15	-
Hay, Rotation	5	10	-	Cabbage	1	15	-
Straw, fed	2	12	-	Silage	2	6	8

No charge has been made for straw used as litter.

Variations from the averages were made in the light of ascertained costs of individual farms, or because of their special circumstances.

(iv) Labour

Any labour which may be regarded as a cost of distribution as distinct from production (e.g., bottling milk, sterilising bottles, etc.) has not been charged. The milk is really costed up to the point where it passes "over the cooler and into the cans".

Unpaid family labour, viz., manual work undertaken by the farmer and/or his wife or any member of his household, has been charged at the rates locally current for equivalent hired labour; appropriate adjustments have been made for overtime work.

(v) Miscellaneous Costs.

These comprise three elements, viz.,

(a) Expenses directly chargeable to the dairy herd or necessarily incurred in milk production e.g., bull upkeep, veterinary fees and medicines, consumable dairy stores, coal, milk recording fees etc.

(b) Repairs, depreciation and maintenance of dairy equipment; and

(c) Overheads i.e., an appropriate share of certain general farm expenses which has been calculated at the rate of 5/3d. per £. of the direct labour bill incurred on milk production. The basis upon which this item is calculated is in keeping with the recommendations made by the Scottish Conference of Agricultural Economists. Incidentally this is the biggest element in the composition of miscellaneous costs.

(vi) Herd Maintenance (or "Cow Replacement").

This important but fluctuating item of cost has been temporarily ignored in the preparation of our Interim Report, on the grounds that it can only properly be dealt with when we have detailed information covering a whole year. Some guidance as to the probable cost of this item may be found in the four published annual reports. The average cost over the four years was 2.03d. per gallon of milk produced or £2. 18. 1d. per cow for the Summer Period.

(vii) Items excluded.

The following items have not been included as items of cost:-

Managerial or supervisory work.
Milk haulage, and other costs of distribution.
Interest on capital.

(viii) Credits.

From the GROSS COSTS of milk production, credits have been deducted for the following items so as to arrive at the NET COSTS per cow and per gallon:-

Calves sold or retained.
Unexhausted manurial residues.

Both these items have been ascertained on an agreed basis.

SUMMER MILK COSTS 1950.

The average costs for the 78 herds included in the investigation are set out in Table II below.

TABLE II. - COSTS PER COW AND PER GALLON (PROVISIONAL) #.
AVERAGE YIELD PER COW 398 GALLONS.

Items	Per Cow	Per Gallon	Per Cent
<u>FOODS</u> - Purchased	7.10. 7	4.54	25
- Home Grown	4. 2. 8	2.49	13
- Grazing	5.14. 5	3.45	18
TOTAL	17. 7. 8	10.48	56
<u>LABOUR</u> - Hired	5.18. 9	3.58	19
- Family	-.12. 6	.38	2
- Farmer & Wife	1. 1. 8	.65	4
TOTAL	7.12.11	4.61	25
<u>MISCELLANEOUS COSTS</u>	5.14. -	3.43	19
GROSS COSTS	30.14. 7	18.52	100
Less: <u>CREDITS</u> for Calves) U.M.R.)	1. 9.10	.90	-
NET COSTS	29. 4. 9	17.62	-

* Excluding Herd Maintenance (i.e. Cow Replacement).

Foods the most important item of cost, again accounted for over 50 per cent of the total cost of milk production. Compared with the previous summer six months there is an increase of £2. 15. 10d. per cow due, mainly, to a large increase in the cost of purchased feeding stuffs and lesser increases in the cost of home grown foods and grazing. The increase in yield per cow was not sufficient to offset higher food costs per cow, with the result that food costs per gallon of milk increased by nearly 1½d. per gallon compared with the Summer Period 1949. The increased cost is due almost entirely to the rising prices of purchased concentrates and the increased cost of producing home grown foods, although the quantity of purchased and home grown concentrates fed per cow and per gallon of milk produced did increase as compared with the previous Summer Period. The actual quantity of concentrates fed was 2.14 lbs. per gallon produced. Rising costs and more generous feeding more than outweighed the improved returns resulting from the better milk yields.

Labour costs per cow showed an increase of 3/10d. per cow compared with the previous summer six months. The increase in yield has been more than enough to offset this rise resulting in a cost per gallon of 4.61d. compared with 4.67d. for the Summer Period 1949.

Miscellaneous costs for the period were 3/6d. more per cow than for the same period last year but had decreased by 15/1d. per cow compared with the Winter Period 1949-50. The higher milk yield decreased the unit cost by a small fraction of a 1d. per gallon.

Credits for calves and unexhausted manurial residues for the foods consumed were slightly higher both per cow and per gallon than in the previous Summer Period.

The total net cost per cow averaged £29. 4. 9d. for the period, which is £3. 1. 10d. more than that for the Summer Period 1949. The higher average/

average milk yield has had the effect of keeping down the unit cost per gallon but despite this the net cost per gallon averaged 17.62d. which is an increase of slightly more than a 1d. per gallon compared with the corresponding period of last year, i.e., approximately 8 per cent.

In the Table below the herds are grouped according to their costs per gallon of milk produced, and their costs per cow in the herd.

TABLE III. - DISTRIBUTION OF HERDS ACCORDING TO COST PER GALLON OF MILK PRODUCED AND COSTS PER COW.

	Net Cost Per Gallon						Total Number of Herds
	Under 12d.	d. 12-15	d. 15-18	d. 18-21	d. 21-24	Over 24d.	
No. of Herds	4	17	24	21	6	6	78
	Net Cost Per Cow						Total Number of Herds
	Under £20	£. 20-25	£. 25-30	£. 30-35	£. 35-40	Over £40	
No. of Herds	7	12	28	14	12	5	78

On approximately one half of the farms it cost from 1/-d. to 1/6d. to produce one gallon of summer milk and from £20. - £30. to keep a cow for six months. The range in cost per gallon and cost per cow is again very wide - the cost per gallon varied from 7½d. to 3/6d. and the cost per cow ranged from £13. -. 2d. to £49. 16. 11d.

In the Summer Period 1949 the full effect of the rise in feeding stuffs prices was not felt because the increase only came into operation gradually. This summer, however, the increased prices of purchased feeding stuffs have had their effect. Costs per cow rose by 12 per cent compared with the previous Summer Period and milk yields although higher only increased by 4 per cent, thus the cost per gallon of milk produced rose by 8 per cent. At the same time the average wholesale price of milk was only 1d. per gallon or 2 per cent higher than the average price for the Summer Period 1949 which, in turn, was 2d. per gallon or 8 per cent higher than the average summer price in 1948. In the Summer 1948 and 1949 better milk prices and higher yields combined to keep in check the rising costs thus making milk production reasonably profitable. In Summer 1950, on the other hand, dairy farmers experienced very changed conditions, and as can be seen from the above figures rising costs have outweighed both higher yields and the slightly better average milk prices. Milk production therefore cannot have been as profitable for the six summer months under review as it was for the Summer Periods of 1948 and 1949.

IV. MILK COSTS FOR YEAR ENDED 30th SEPTEMBER 1950.

As it will yet be some time before the report on the costs of milk production for the full year is ready the bare results are included in this Interim Report. Tables IV and V set out the final costs for the two six monthly periods (including Herd Maintenance) and Table VI gives the average cost per cow and per gallon for the Whole Year.

TABLE IV./

TABLE IV. - WINTER MILK COSTS 1949-50: AVERAGE OF 78 HERDS.
Average Number of Cows in Herd. 52
Average Milk Yield Per Cow (Gallons) 340

Items	Per Cow			Per Gallon	Per Cent
	£	s.	d.		
<u>FOODS</u> - Purchased	12	8	1	8.75	29
- Home Grown	14	2	8	9.97	33
TOTAL	26 10 9			18.72	62
<u>LABOUR</u> - Hired	6	3	9	4.37	15
- Family	-	10	6	.37	1
- Farmer & Wife	1	5	3	.89	3
TOTAL	7 19 6			5.63	19
<u>MISCELLANEOUS COSTS</u>	6 9 8			4.57	15
<u>HERD MAINTENANCE</u>	1 16 -			1.27	4
GROSS COSTS	42 15 11			30.19	100
Less: <u>CREDITS</u> for					
Calves)					
U.M.R.)	2 13 5			1.88	-
NET COSTS	40 2 6			28.31	-

TABLE V. - SUMMER MILK COSTS 1950: AVERAGE OF 78 HERDS.
Average Number of Cows in Herd 50
Average Milk Yield Per Cow (Gallons) 398

Items	Per Cow			Per Gallon	Per Cent
	£	s.	d.		
<u>FOODS</u> - Purchased	7	10	7	4.54	23
- Home Grown	4	2	8	2.49	13
- Grazing	5	14	5	3.45	17
TOTAL	17 7 8			10.48	53
<u>LABOUR</u> - Hired	5	18	9	3.58	18
- Family	-	12	6	.38	2
- Farmer & Wife	1	1	8	.65	3
TOTAL	7 12 11			4.61	23
<u>MISCELLANEOUS COSTS</u>	5 14 -			3.43	17
<u>HERD MAINTENANCE</u>	2 2 1			1.27	7
GROSS COSTS	32 16 8			19.79	100
Less: <u>CREDITS</u> for					
Calves)					
U.M.R.)	1 9 10			.90	-
NET COSTS	31 6 10			18.89	-

TABLE VI./

TABLE VI. - WHOLE YEAR COSTS 1949-50: AVERAGE OF 78 HERDS.
 Average Number of Cows in Herd 51
 Average Milk Yield Per Cow (Gallons) 736

Items	Per Cow			Per Gallon	Per Cent
	£	s.	d.		
<u>FOODS</u> - Purchased	19	18	-	6.49	26
- Home Grown	18	6	11	5.98	24
- Grazing	5	12	4	1.83	8
TOTAL	43	17	3	14.30	58
<u>LABOUR</u> - Hired	12	1	6	3.94	16
- Family	1	2	8	.37	2
- Farmer & Wife	2	6	2	.75	3
TOTAL	15	10	4	5.06	21
<u>MISCELLANEOUS COSTS</u>	12	2	4	3.95	16
<u>HERD MAINTENANCE</u>	3	18	1	1.27	5
GROSS COSTS	75	8	-	24.58	100
Less: CREDITS for					
Calves)					
U.M.R.)	4	2	11	1.35	-
NET COSTS	71	5	1	23.23	-

The above Table, setting out the cost per cow and cost per gallon for the whole year, shows that the average milk yield per cow is 736 gallons an increase of 30 gallons compared with 1948-49. The cost per cow for the whole year of £71. 5. 1d. shows an increase of £6. 15. 7d. over the previous year. The higher milk yield however has partly offset this big rise in cost per cow with the result that the average cost per gallon of milk produced is now 23.23d. an increase of 1.31d. over the 1948-49 period.

ACKNOWLEDGMENTS.

Grateful acknowledgment is made of the assistance of the dairy farmers who supplied the information necessary to complete this investigation, and who always gave the investigators considerate attention on the occasion of their visits. Many of these farmers have again given cost records for some of the home grown fodder crops and these will be utilised in the current Milk Costs year.

Each farmer will receive a copy of his own records for the 1950 Summer Period and the Whole Year 1949-50, along with this report; the report on the full year's costs, now in preparation, will be circulated as soon as possible.