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Economic Report No. 27.

Milk
Cost of
Production O.S.
EDINBURGH AND EAST OF SCOTLAND COLLEGE OF AGRICULTURE.

(Department of Economics).

INTERIM REPORT

ON

COST OF MILK PRODUCTION. SUMMER 1953.

BY

HELEN L. SMITH, B.Sc. (Econ.)

22 Rose Street, Edinburgh, 2.

January, 1954.

R. 426

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RECENT PUBLICATIONS.

FINANCIAL RESULTS OF EAST OF SCOTLAND FARMS:-

Group	1948-49	1949-50	1950-51	1951-52	- - No. of farms - -	
					---	---
(1. Hill sheep farms						
(2. Stock-rearing farms	54	52	53	57	}	}
(3. Stock-rearing and feeding farms						
(4. Arable farms	184	175	178	173	}	}
(5. Dairy farms						
	238	227	231	230	=====	=====
					=====	=====

COSTS OF MILK PRODUCTION:- 1945/6, 1946/7, 1947/8, 1948/9, 1949/50, 1950/51, 1951/52.

ECONOMICS OF LIVESTOCK PRODUCTION:-

- (a) Winter Fattening of Sheep, 1947/8, 1948/9, 1949/50.
- (b) Winter Fattening of Cattle, 1947/8, 1948/9, 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.
Wheat, Barley, Cattle Rearing, 1952.

DAIRY LABOUR IN THE EAST OF SCOTLAND.

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

I. INTRODUCTION.

The milk production year includes two periods, "winter" and "summer", in which management differs very markedly, and it has been the custom in the Economics Department to issue brief interim reports on each period before compiling a full report for the whole year. These interim reports offer the opportunity of discussing the various aspects of the costs for either winter or summer while the details are still fresh in mind and thus serve a useful purpose. The present interim report deals with the costs of milk production during the "summer" of 1953. During this period 48 herds were costed - a slight fall in numbers from the 52 costed during the preceding six months.

II. GENERAL DESCRIPTION OF FARMS AND HERDS STUDIED.

The herds costed varied considerably between farm and farm, the smallest herd had 11 cows milking over the period while the largest herd had 130 and, since such disparities would tend to unbalance a straight average of the sample all the averages in this Report are calculated on a "per cow per herd" basis. The average number of cows per herd during the summer six months was 51, two more than that for the previous winter period but this is no doubt due to the fact that, of the smaller herds which were costed during the winter period/ were not costed during the summer period. The proportion of dry cows kept in the herd during the summer was 19.6 per cent. a figure which shows little difference from previous summer periods, but when compared with the figure of 24.3 per cent. dry cows kept during winter 1952-53, indicates that there is still a trend towards summer milk production in the area despite the price differentials for the two periods. The average cost of production was ascertained for 2427 cows compared with 2555 cows during the winter but again this was due to the smaller sample. Of this total 218 cows were suckling calves. Despite the slight change in the sample there was little change in breed, pedigree status or quality of stock.

The variations in the size of farm on which the dairy herds were kept was still great, the smallest being a town dairy of 25 acres and the largest an upland farm of 912 acres of which 352 acres were rough grazing. The average size of farm was 263 acres of which 36 acres were rough grazing, the rent for this "average farm" was approximately 26/- per acre.

Only three herds out of the 48 costed were not producing the highest quality of milk viz. Tuberculin Tested, and it is interesting to note that two of these herds are at present in the process of grading up to this level. The Scottish Milk Marketing Board bought most of the milk although 13 of the herds still sold the greater proportion of their production on the retail market.

All the herds costed were milked mechanically, eleven of them using autorecorders and the other 37 milking machines. Byres were still the most common means of housing the herd although there were seven herds kept in courts. Ayrshires were the predominant breed, only five of the herds costed being Friesian and five of mixed breeds. Several of the herds were grading up to pedigree status and 17 were already fully pedigreed. Milk records were kept officially for 35 of the herds which meant that only 13 did not record their production.

III. YIELDS.

One very promising feature of this investigation, which has been undertaken over the past eight years, is the very marked rise in yields per cow which has taken place. This is undoubtedly due to good management on the part of the farmers particularly during the first few years when purchased concentrates were so strictly rationed. During the summer of 1953, however, there was a slight/

slight fall in the average yield when compared with that of the previous summer, when the average yield per cow was 416 gallons. During the 1953 summer it was only 413 gallons per cow. This was probably due to the poorer grazing season as compared with the previous year when the weather was particularly favourable. The summer milk yield was 47 gallons higher than that for the previous winter period the gap between the two yields is less than in previous years but it is doubtful whether it will ever be closed since the summer period with grazing is always more favourable for milk production.

Table I. below shows the herds grouped according to milk yields per cow per herd and the last line of the table gives grounds for comparison between yields for the summer of 1953 and the summer of 1946.

TABLE I. - MILK YIELD PER COW PER HERD FOR 6 MONTHS.
SUMMER 1953 c.f., SUMMER 1946.

	201 to 250	251 to 300	301 to 350	351 to 400	401 to 450	451 to 500	Over 500	Total
	Galls.	Galls.	Galls.	Galls.	Galls.	Galls.	Galls.	
No. of herds in 1953	-	1	4	17	14	10	2	48
1953 Percentages	-	2	8	36	29	21	4	100
1946 Percentages	10	10	31	27	14	4	4	100

As is to be expected when figures for a sample of 48 herds are compared there was a big divergence between the lowest and highest yielding herds in 1953. The range was from 282 gallons per cow per herd to 572 gallons per cow per herd. This latter figure compares particularly well with previous ones and, as the Americans would say, is an "all time high" in this investigation. The fact that the highest yielding herd produced twice as much milk per cow as the lowest yielding herd shows that in some of the herds there is still great scope for improvement in management since high yields usually mean high profits and this is the primary aim of every dairy farmer. That there has been great improvement in yields over the past eight years is shown when the last two lines of the table are compared. From this it can be seen that while 51 per cent. of the herds costed in 1946 had yields of under 350 gallons per cow, by 1953 only 10 per cent. of the herds had such low yields - a very considerable achievement indeed. At the other end of the table the same holds true, 54 per cent. of the herds costed in 1953 had yields of over 400 gallons per cow compared with 22 per cent. of the herds costed in 1946. The fact that over half the herds costed during summer 1953 had yields of 400 gallons per cow or more is a credit to dairy farmers in the East of Scotland but there is undoubtedly still room for improvement in many dairy herds.

IV. 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)/

(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 1952 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:-

<u>Crop</u>	<u>Price per ton</u>	<u>Crop</u>	<u>Price per ton</u>
	£. s. d.		£. s. d.
Oats } including	17. 11. 8	Swedes & Turnips	2. 13. 4
Beans } grinding,	25. -. -	Mangolds	2. 3. 4
Mashlum) etc.	19. 5. -	Kale	2. 3. 4
Hay, Rotation	9. 10. -	Cabbage	2. 3. 4
Straw, fed	3. 1. 8	Silage (Grass)	2. 5. -
		Silage (Arable)	2. 13. 4

No charge has been made for straw used as litter.

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

(iv) Labour

Any labour which should 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 is in the wholesale container at the pick-up point. For milk sold retail, costings are up to and including cooling.

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 5/6d. 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. /

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 ~~when~~ detailed information covering the whole year is available. Some guidance as to the probable cost of this item may be found in the seven published annual reports. The average cost over the seven years was 1.84d. per gallon of milk produced, equivalent to £2. 8. 1d. per cow for the summer period.

(vii) Items excluded.

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

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 agreed bases.

SUMMER MILK COSTS 1953.

The average costs for 48 herds for the summer six months of 1953 are shown in Table II. below.

TABLE II. - COSTS PER COW AND PER GALLON (Provisional) #.
AVERAGE YIELD PER COW 413 GALLONS.

	Per Cow	Per Gallon	Per Cent
	£. s. d.	d.	
FOODS - Purchased	8.13. 8	5.04	23
- Home Grown	5. 7. 4	3.12	15
- Grazing	7. 4. 8	4.20	20
TOTAL	21. 5. 8	12.36	58
LABOUR- Hired	7. 1. 9	4.11	19
- Family	-. 4. 8	.14	1
- Farmer & Wife	1. 6. 5	.77	3
TOTAL	8.12.10	5.02	23
MISCELLANEOUS COSTS	6.19. 2	4.04	19
GROSS COSTS	36.17. 8	21.42	100
Less: CREDITS for Calves) U.M.R.)	1.17. 4	1.09	-
NET COSTS	£35. 0. 4	20.33d.	-

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

Once/

Once again there has been a trend towards rising costs, a trend which has been apparent since the beginning of the investigation in 1945. In previous years rising costs per cow have been partially offset by rising yields which meant that there was a smaller proportionate rise in cost per gallon. During the summer of 1953, however, yields showed a slight decline which meant that while there was only a 2 per cent. rise in cost per cow, cost per gallon rose by 3 per cent. The rate of increase in the cost per cow has declined, during summer 1952 cost per cow rose by 6 per cent, but during summer 1953 the rise was only in the region of 2 per cent. It is to be hoped that this is a welcome sign that the long trend towards rising costs is now coming to an end and that this together with increasing efficiency on the part of the dairy farmer, will make for decreasing costs in the field of milk production during the years to come.

FOODS. Feeding as always, was the highest item in the cost of milk production and during this period accounted for 58 per cent. of total gross costs. One feature worthy of note was the increased use of home grown foods which now claimed 15 per cent. of total gross costs as compared with 13 per cent. during the summer period - the rising cost of purchased concentrates may well have been the decisive factor in this. The total feeding cost increased by approximately £1. per cow over the previous summer period and indeed accounted for the whole of the rise in total net costs. The cost of purchased feeding stuffs and of grazing remained almost constant and the increase must therefore be attributed to the greater use being made of home grown feeding stuffs - this will be discussed at greater length in another part of the report.

LABOUR. The cost of labour per cow for the six summer months fell slightly when compared with summer 1952. Labour accounted for 23 per cent. of total gross costs in summer 1953 as compared with 25 per cent. in summer 1952. This slight fall was probably due to the somewhat smaller sample and the longer summer grazing period. The effect of the increase in wages which was granted to all farm workers in mid September did not make itself felt since it occurred only a fortnight before the end of the period under review, but it will doubtless be evident during the present costing year which began on 1st October 1953.

MISCELLANEOUS COSTS AND CREDITS. These both showed very little change and accounted for the same proportion of total costs as before.

NET COSTS. During the summer of 1953 the average net costs per cow per herd rose by approximately 17/- or 2 per cent. and net cost per gallon per herd rose by $\frac{1}{2}d.$ or 3 per cent. while the yield per cow per herd fell by 3 gallons to 413 gallons per cow. Despite this relatively small rise in cost per gallon economic conditions were not so bright for the milk producer as they had been during the previous summer period when cost per gallon rose 1 per cent. and prices rose by 6 per cent. During summer 1953 cost per gallon rose 3 per cent. but prices only rose by 2 per cent. which meant a decreasing margin of profitability for the producer. While it is difficult to forecast future economic conditions it is quite possible that this is a straw in the wind indicating that the time when prices rose sufficiently to cover all increases in costs has now passed. If this proves to be so then dairy farmers will have to concentrate on all the management factors which make for increased efficiency if they wish to maintain the profitability of the industry.

The following table shows the herds grouped according to their costs per gallon of milk produced, and their costs per cow in the herd.

TABLE III./

TABLE III. - DISTRIBUTION OF HERDS ACCORDING TO COST PER GALLON OF MILK PRODUCED AND COSTS PER COW, SUMMER 1953.

No of Herds	Net Cost Per Gallon						Total Number of Herds
	Under 12d.	12-15	15-18	18-21	21-24	Over 24d.	
No of Herds	-	5	10	15	5	13	48
No. of Herds	Net Cost Per Cow						Total Number of Herds
	Under £25	£25-30	£30-35	£35-40	£40-45	Over £45	
No. of Herds	3	10	13	8	7	7	48

The effect of the rising cost of milk production is evident from this table. During this period only five of the farms costed (10 per cent.) were able to produce milk at under 1/3d. per gallon while for 13 of the herds (27 per cent.) the cost of producing milk was over 2/- per gallon. During the summer of 1952, 20 per cent. of the herds produced milk at cost of 1/3d. per gallon or under and 20 per cent. at a cost of 2/- per gallon or over. The same movement towards higher cost production is shown in the second line of the table where the herds are grouped according to cost per cow. Last summer (i.e. summer 1952) 37 per cent. of the herds produced milk at a cost of less than £30. per cow while during this summer (1953) only 27 herds were able to produce milk at such a low cost. The same trend is again evident at the other end of the scales where the comparable figures are 29 per cent. and 22 per cent. respectively for producers with a cost of over £40. per cow.

V. THE WINTER AND SUMMER FEEDING OF DAIRY COWS.

Table IV. below sets out the average amount of food consumed per cow per herd for summer 1952, and summer 1953.

TABLE IV. - FOOD CONSUMPTION PER COW - SIX MONTHS SUMMER PERIODS.
(Excluding Grazing).

	Average of 63 farms Summer 1952	Average of 48 farms Summer 1953
	Cwt. per cow	Cwt. per Cow
Purchased Concentrates	4.29	4.41
Home Grown Concentrates	1.92	2.39
Total Concentrates	6.21	6.80
Dried Grass	.11	.48
Hay	4.07	3.46
Straw	1.66	2.06
Draff	3.84	3.44
Roots	7.87	7.34
Green Fodder & Oat Sheaves	1.18	.94
Silage	2.03	2.82
TOTAL	26.97	27.34
Concentrates fed (lb. per Gallon)	1.72lb.	1.84lb.

When/

When the consumption of food during summer 1953 is compared with that for summer 1952 three points of interest are evident namely:-

- a) That the consumption of concentrates per cow and per gallon was greater during the period under review.
- b) That the trend towards increased use of silage in the ration of dairy cows is still evident.
- c) That there has been a slight increase in the total consumption of food per cow and particularly in the consumption of home grown concentrates in the form of oats, beans or mashlum.

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 1953 Summer Period along with this report; the full year's records and the report on the full year's costs will be circulated as soon as possible.