Milk Cost Production O.S.

Economic Report No. 34

EDINBURGH AND EAST OF SCOTLAND COLLEGE OF AGRICULTURE

(Department of Economics)

INTERIM REPORT

ON

COST OF MILK PRODUCTION, SUMMER 1954

by

A.S. HORSBURGH, B.Sc.

22 Rose Street,
EDINBURGH, 2.

February, 1955.

R.540.

DEPARTMENT OF ECONOMICS

STAFF

D. WITNEY, B. Com.
J.D. NUTT, B.A., N.D.A.
D.M.R. LEASK, B.Sc.
W.B. DUTHIE, B.Sc.
C.J. BLACK, B.Sc., B.Litt., N.D.A.
J.A. MACLENNAN, B.Sc.
J.D. ROWBOTTOM, B.Sc.
B. PEART, B.A.
HELEN L. SMITH, B.Sc.
A.S. HORSBURGH, B.Sc.
R.T. BUCHANAN, M.A.

RECENT PUBLICATIONS

FINANCIAL RESULTS OF EAST OF SCOTLAND FARMS:-

Group	1947-8	1948-9	1949-50	1950-1	1951-2	1952-3
		-- No. of farms --				
1. Hill sheep farms 2. Stock-rearing farms	48	54	52	53*	57*	58
3. Stock raising and feeding farms 4. Arable farms 5. Dairy farms	143	184	175	178	173*	183
	191	238	227	231	230	241

COSTS OF MILK PRODUCTION:- 1947-48, 1948-49, 1949-50, 1950-51, 1951-52, 1952-53.

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*.
(d) Cattle Rearing : 1951-52, 1952-53.

ENTERPRISE COSTS:- Economics of Silage Making in East of Scotland, 1950, 1951, 1952*, 1953.

Wheat Costs - 1952, 1953.

Barley Costs - 1952, 1953.

DAIRY LABOUR IN THE EAST OF SCOTLAND.

ECONOMICS OF BRACKEN ERADICATION, 1951, 1952, 1953.

TEAM WORK IN GRASS SILAGE MAKING.

* Out of Print.

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

I. INTRODUCTION

This report summarises the costs of milk production during the summer period of 1954, the purpose being to analyse and discuss the cost structure of milk production in the South East of Scotland before preparing a full report for the whole year. During this period only 43 herds were costed compared with the 50 costed in the winter period and the 48 costed during the summer of 1953.

II. GENERAL DESCRIPTION OF FARMS AND HERDS COSTED

The sample of herds is fairly representative of the types of dairy enterprises found in the East of Scotland area. The average herd size, which was rather above the general average for the area, was 50 cows of which 20 per cent. were dry, while for the summer of 1953 the average herd size was 51 cows of which 19.6 per cent. were dry. The smallest herd had 6 cows in milk over the period while the largest herd had 101.

The average size of farm was 271 acres of which 32 acres were rough grazing. The average rent was 26/5d. per acre. Variations in size of farm ranged from the smallest of 39½ acres to the largest farm of 832 acres, this being an upland farm with 441 acres of rough grazing.

Ayrshires were the most popular breed, only 6 herds being Friesian and 3 herds were of mixed breeds. Fourteen of the herds were of pedigree status while 9 were in the process of grading up, the remainder being non-pedigree commercial herds. Of the herds costed 37 were producing Tuberculin Tested Milk, 5 produced Certified Milk and only 1 herd was producing Non-Graded Milk. Milk records were officially kept for 32 herds, one was privately recorded and 10 did not record. Most of the milk was sold through the Scottish Milk Marketing Board; only 3 of the herds sold all their milk on the retail market. All herds were milked mechanically, 12 of them using autorecorders and the others bucket type milking machines. Most of the herds were housed in byres, only 7 herds being kept on the court system.

III. YIELDS

TABLE I. MILK YIELD PER COW PER HERD FOR 6 MONTHS SUMMER 1954 c.f. SUMMER 1946

	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	Average Yield Per Cow
No. of herds in 1954	-	-	7	10	14	7	5	43	420
1954 Percentages in each Yield Group	-	-	16	23	33	16	12	100	420
1946 Percentages in each Yield Group	10	10	31	27	14	4	4	100	356

The average yield per cow during the summer of 1954 was 420 gallons which was 7 gallons more than the average yield obtained in the previous summer. The summer milk yield was 52 gallons higher than that for the preceding winter while in the previous year the gap between the two periods was slightly less at 47 gallons. The bigger difference between winter and summer yields may have been due to a better grazing season than the previous year or it may be that farmers are feeding their cows rather more intensively /

intensively since the cost of feeding stuffs did not rise as much as other costs. Average yields per cow ranged from 320 gallons to 537 gallons; this divergence in yield between the lowest and highest yielding herds was not so great as that of the previous summer when the range was 282 gallons for the lowest yielding herd and 572 gallons for the highest yielding herd. The general improvement of yields during the past nine years is apparent when the last two lines of Table I. are compared, particularly the fact that the average yield per cow increased from 356 to 420 gallons. This trend towards higher yields would seem to be justified since output can be increased in this way at a lower cost due to the fixed costs per cow being spread over the larger number of gallons produced per cow.

IV. SYSTEM OF COSTING

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 centres 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 obtained for most of the grain, fodder and root crops in 1953 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 £ s. d.	Crop	Price per ton £ s. d.
Oats) including	17.10. -	Swedes & Turnips	2.13. 4
Beans) grinding,	24.10. -	Mangolds	2. 5. -
Mashlum) etc.	19. 3. 4	Kale	2. 5. -
Hay, Rotation	8. 5. -	Cabbage	2. 5. -
Straw, fed	3. -. -	Silage (Grass)	2. 5. -
		Silage (Arable)	2.13. 4

No charge has been made for straw used as litter.

Variations from those averages were made in the light of ascer-:tained costs on individual farms, or because of their special circumstances.

(iv) Labour

Any labour which is 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 /

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

Those 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 6/6d. 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 Agric-:ultural 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 the Interim Report, on the grounds that it can only properly be dealt with when detailed information covering a whole year is available. Some guidance as to the probable cost of this item may be found in the eight published annual reports. The average cost over the eight years for the summer period was 1.79d. per gallon of milk produced or £2.8.9d. per cow.

(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 calculated on agreed bases.

SUMMER MILK COSTS 1954

The average costs for 43 herds for the summer six months of 1954 are shown in Table II. below.

TABLE II. /

TABLE II. COSTS PER COW AND PER GALLON (Provisional)*
AVERAGE YIELD PER COW 420 GALLONS

	Per Cow		Per Gallon		Per Cent
	£ s. d.		d.		%
FOODS - Purchased	9.10. 5		5.44		24
- Home Grown	5. 5.10		3.02		14
- Grazing	7. 6. -		4.17		19
TOTAL		22. 2. 3		12.63	57
LABOUR - Hired	7.11.11		4.34		19
- Family	-. 4. -		.11		1
- Farmer & Wife	1. 5.10		.74		3
TOTAL		9. 1. 9		5.19	23
MISCELLANEOUS COSTS		7.15. 3		4.43	20
GROSS COSTS		38.19. 3		22.25	100
Less: CREDITS for Calves) U.M.R.)		1.18.10		1.11	-
NET COSTS		£37. -. 5		21.14d.	-

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

GENERAL TRENDS

The trend towards rising costs has continued during this period but although cost per cow rose by 5½ per cent. cost per gallon only rose by 4 per cent., due to the increased yield of 1½ per cent. obtained as compared with the previous summer. This again indicates the importance of high yields in offsetting rising costs by giving a lower cost per unit of output, and if the profitability of the industry is to be maintained this may be the only solution to the problem of rising costs and falling prices for milk.

ANALYSIS OF COST STRUCTURE

FOODS This was again the most important item of cost and accounted for 57 per cent. of the total gross costs which compares with 58 per cent. for the summer period 1953. It is worth noting, however, that the actual cost of feeding rose by 17s. per cow and it follows that, since this heavier cost took up a smaller proportion of the total cost, other items of costs must have risen more quickly than the total cost of food. The analysis of the food costs has shown that expenditure on purchased foods had risen by 1 per cent. of total costs but that this rise had been more than offset by equal reductions in both home grown foods and grazing.

LABOUR The cost of labour per cow rose by about 9s. when compared with the summer of 1953 but the percentage of total gross costs remained at 23 per cent.

MISCELLANEOUS These costs rose by 1 per cent. of total gross costs and in monetary terms constitutes a rise of 16/1d. per cow. The main cause of this rise was doubtless due to the increased charge made for overheads.

CREDITS showed a very slight rise amounting to only 1/6d. per cow.

V. COSTS PER COW AND PER GALLON /

V. COSTS PER COW AND PER GALLON

TABLE III. DISTRIBUTION OF HERDS ACCORDING TO COST PER GALLON OF MILK PRODUCED AND COSTS PER COW, SUMMER 1954

	Net Cost per Gallon						Total Number of Herds
	Under 15d.	d. 15-20	d. 20-25	d. 25-30	d. 30-35	Over 35d.	
No. of Herds	2	16	17	4	3	1	43
	Net Cost per Cow						Total Number of Herds
	Under £25	£ 25-30	£ 30-35	£ 35-40	£ 40-45	Over £45	
No. of Herds	3	7	9	8	7	9	43

The above table indicates that while most herds were to be found in the lower cost per gallon groups the distribution of herds according to cost per cow was more evenly spread. Thus most of the herds had a cost per gallon which was very close to the average for the whole sample, while relatively few herds had a cost per cow near the average. However the disparity between the highest and lowest cost per gallon was very marked; two herds being able to produce at under 1/3d. per gallon while one herd was producing at over 3s. per gallon which is about 130 per cent. above the lowest cost. On the other hand the difference between highest and lowest cost per cow was not so great, the highest being only about 80 per cent. above the lowest cost.

If the distribution of costs per gallon and per cow are compared with the previous summer it is apparent that cost per cow has risen fairly evenly in most herds while cost per gallon, although increasing very much in a few herds, has increased only slightly in the majority of herds. This may be due to the fact that cost per cow is influenced only by the level of net costs while cost per gallon is also dependent on the yield per cow.

VI. AMOUNT OF SUMMER FEEDING OF DAIRY COWS

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

	Average of 48 farms Summer 1953	Average of 43 farms Summer 1954
	Cwt. per cow	Cwt. per cow
Purchased Concentrates	4.41	5.39
Home Grown Concentrates	2.39	2.13
TOTAL CONCENTRATES	6.80	7.52
Dried Grass	.48	.12
Hay	3.46	3.19
Straw	2.06	2.18
Draff	3.44	2.33
Roots	7.34	8.16
Green Fodder & Oat Sheaves	.94	.47
Silage	2.82	4.81
TOTAL	27.34	28.78
Concentrates fed (lb. per Gallon)	1.84 lb.	2.00 lb.

A /

A study of the figures for food consumed during the past two summer periods, over and above grazing, brings out one or two interesting points. In the first place it is apparent from the quantities of roughages, roots etc. consumed that some typical winter feeding overlaps into the so-:called summer periods at both ends and the variations in the quantities fed do no more than illustrate the variation in rations fed to dairy stock on different farms. During these transition periods the farmers will supplement grazing with hand feeding. But the figures do draw attention to the quantity of concentrates fed during the summer periods, amounting to 6.80 cwt. per cow in 1953 and 7.52 cwt. per cow in 1954. This is an increase of 10.6 per cent. in the latter year. This increase may be a reflection of a number of factors - the difficulty of maintaining production without hand feeding when the quality of grazing might be low, or the ease of purchasing concentrates. What is more important is the quantity of concentrates which still appears to be necessary to supplement grazing. On the basis of the average yield per cow this works out at approximately 2 lb. per gallon for all milk produced during the summer. Where this is necessary, can it be said that grazing is doing all that it should in providing an abundant and cheap form of feeding?

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 1954 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.