Milk Cost of Production O.S.

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INTERIM REPORT

on

COST OF MILK PRODUCTION, WINTER 1953-54.

by

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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:- 1945-6, 1946-7, 1947-8, 1948-9, 1949-50, 1950-1, 1951-2, 1952-3.

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.
(d) Cattle Rearing, 1951-52.

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

Wheat and Barley Costs, 1952.

DAIRY LABOUR IN THE EAST OF SCOTLAND.

ECONOMICS OF BRACKEN ERADICATION, 1951, 1952, 1953.

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

I. INTRODUCTION

This report deals with the first half of the ninth year of the Milk Costs Investigation and covers the winter six months ending 31st March 1954. Details of all items of cost were obtained from weekly records completed by the farmer who used specially prepared returns. This information was supplemented by the investigators on their periodic visits to the farms.

Fifty dairy herds were costed during the period covered by the report. Full details about these herds and about the method used in costing production can be found in the appendices at the end of the report.

II. WINTER MILK COSTS

Table I. below sets out the average cost of production for 50 herds.

TABLE I. WINTER MILK COSTS (PROVISIONAL)∓ . 1953-54.

NUMBER OF HERDS COSTED 50
AVERAGE NUMBER OF COWS IN HERD 51
AVERAGE MILK YIELD PER COW (GALLONS).....368

Items		Per Cow		Per Gallon		Per Cent.	
		£ s. d.		d.			
FOODS	- Purchased	17.12.10		11.52		33	
	- Home Grown	18.19. 2		12.38		36	
	TOTAL		36.12. -		23.90		69
LABOUR	- Hired	7.12. 3		4.97		14	
	- Family	-. 4. 2		.13		-	
	- Farmer & Wife	1. 7. 5		.90		3	
	TOTAL		9. 3.10		6.00		17
MISCELLANEOUS			7.13. -		5.00		14
	GROSS COSTS		53. 8.10		34.90		100
Less:	CREDITS for Calves, U.M.R.		3.10.11		2.32		-
	NET COSTS		£49.17.11		32.58d.		-

∓ Excluding the costs of Herd Maintenance (or "Cow Replacement")

A comparison of the items of cost show the following results.

FOODS. Total foodstuffs take up the same percentage of gross costs as during the previous year - more than two-thirds or 69 per cent.

The costings for the winter period have however shown a new trend in the feeding of dairy cows. Over the former eight years of the costings it was evident that the rationing of purchased concentrates was resulting in the replacement of purchased foodstuffs by home grown foods and in particular by silage. The de-rationing of concentrate feeding, which took place immediately prior to the beginning of the winter period for 1953-54, seems to have had the effect of reversing this trend if the detailed costings of 50 representative herds in South East Scotland for six months is anything to go by. In both winter periods, 1952-53 and 1953-54, foods took up 69 per cent. of total gross costs./

costs. When the average of the 1953-54 costings is examined it is seen that of the total 69 per cent. of gross costs taken up by foodstuffs, 33 per cent. was allotted to purchased feedingstuffs and 36 per cent. to home grown foods. In the previous winter period only 28 per cent. of the total 69 per cent. was taken up by purchased foods. Thus there has been a distinct change in the feeding policy of dairy farmers in this area. It should be noted that this is not due either to any significant changes in the cost of purchased foodstuffs - dairy cake prices varied very little during last winter and if anything tended to fall slightly - or to any changes in the sample of herds costed.

This is borne out by the further fact that the quantity of concentrates fed per gallon of milk produced rose from 3.95lb. in winter 1952-53 to 4.39lb. during the winter period under review. The really striking fact about the results of the latest costings, and one that presents an important management problem, is that despite the greatly increased use of concentrates the average yield per cow rose by only two gallons over that for the previous period.

The average cost of feeding a cow for the winter six months of 1953-54 worked out at £36.12/- per cow of which £17.12.10d. represented the cost of purchased feedingstuffs. Food cost almost 2/- per gallon of milk produced and home grown feedingstuffs accounted for 1/0½d. of this total.

LABOUR. This was once again the second largest item of cost to milk producers and it took up 17 per cent. of gross cost during this winter period. Despite the statutory increase in wages granted to all agricultural workers in September 1953 there was no change in the proportional representation of labour as regards total cost. In monetary terms however labour cost increased by 3/7d. per cow to £9.3.10d. or by .09d. to 6d. per gallon. The effect of the wage increase is seen in the distribution of labour costs where hired labour takes up 14 per cent. of gross cost during this period as against 13 per cent. of gross cost during the previous winter.

MISCELLANEOUS COSTS. Those showed a slight increase of 4/8d. per cow or .13d. per gallon over the previous period but this was doubtless due to an increase in the cost of all the small items which are included in this category of costs.

CREDITS. Also showed a very small rise but as it only amounted to 1/- per cow it can be regarded as almost negligible.

Once again dairy farmers in South East Scotland experienced rising costs in the field of milk production This was evident from both the cost per cow and cost per gallon figures, the former rising by 18/7d. and the latter by .47d. when compared with the previous winter period.

III. AN EXAMINATION OF SOME FACTORS AFFECTING PROFITABILITY OF WINTER MILK PRODUCTION.

The table below shows percentage increases in winter costs, yields and prices over the past four years when the figures for each period are compared with those for the preceding winter. It must be stressed that these percentages relate only to production during the winter six months by the herds undertaking milk costs in the Edinburgh area.

TABLE II./

TABLE II. PERCENTAGE CHANGES IN YIELD, COST AND PRICE, 4 WINTERS 1950-51 to 1953-54.

	Per Cent. change over previous period - winter six months.			
	1950-51	1951-52	1952-53	1953-54
	%	%	%	%
Yield	102	101	105	100½
Cost per Cow	110	106	107	102
Cost per Gallon	108½	105	104	101½
Rise in Price	103	107	105	101

This table brings out several factors of interest namely,

1. The obvious connection between yields, cost per cow and cost per gallon. During winter 1950-51 there was a great increase in cost per cow and readers with long memories will recall that this was partly due to a great rise in the cost of purchased concentrates during that period. There was only a small rise in yield and the result was that cost per gallon showed a considerable increase also. The same holds true of the following winter. In winter 1952-53 however the cost per cow rose by 7 per cent. but because of a rise in yields of 5 per cent., cost per gallon rose by only 4 per cent. During last winter cost per cow showed a much smaller percentage increase (during this period the price of purchased concentrates tended to fall slightly for the first time in several years), the rise in yield was almost nil and cost per gallon therefore rose almost as much proportionately as cost per cow.

2. That over the past four winters cost per gallon has tended to rise but at a decreasing rate due to the increasing efficiency of dairy farmers who have been faced during the greater part of this period with rises in the costs of almost all factors of production, particularly purchased feeding-stuffs and hired labour.

3. Despite this rise in cost profitability up to the last period was maintained through greater percentage increases in prices. The last column of figures speaks for itself. Although cost per gallon only increased by 1½ per cent. the increase in the price of the product was rather less, and this means that there has been a drop in the profitability of winter milk production. Dairy farmers cannot foresee the future but the straws in the wind are the announcement by the Government that milk prices will tend to remain static or fall, in other words that the ceiling in prices has been reached for the present. This fact coupled with the increasing surplus of production over consumption in the liquid market during the winter must lead to a fall in the price of milk during the winter months.

The lesson is evident. Through greater efficiency and rising yields dairy farmers must continue to strive for lower costs of production if they wish to ensure the continuance of profitable winter milk production.

IV. MILK YIELD PER COW.

The preceeding section has underlined the great importance of high yields in profitable milk production.

The eight years of milk costings have seen great improvements in yields and never more so than during the winter period. During the first winter of costings (1945-46) the average yield per cow was 286 gallons; during the last winter costed (1953-54) the average yield had risen to 368 gallons per cow. Although this is a great achievement over so short a period of time as eight years dairy farmers must not rest on their laurels in this sphere of production but must/

must press on to even higher milk yields if they wish to maintain the profitability of their industry.

Unfortunately the winter of 1953-54 has seen a slackening off in the trend towards rising yields. The average yield per cow for the 50 herds costed was 368 gallons as compared with 366 gallons per cow in the previous winter period. The range in yield per herd was even greater than during the previous winter when the lowest yield was 184 gallons per cow and the highest was 521 gallons per cow. During the period under review the lowest yield was 222 gallons and the highest was 578 gallons per cow - a considerable improvement over the previous year.

Table III. below shows the distribution of herds according to their milk yields.

TABLE III. MILK YIELD PER COW PER FARM : WINTER 1953-54.
c.f. WINTER 1952-53.

	151 to 200 Galls.	201 to 250 Galls.	251 to 300 Galls.	301 to 350 Galls.	351 to 400 Galls.	401 to 450 Galls.	Over 450 Galls.	Total
No. of herds 1953-54	-	1	7	16	10	9	7	50
1952-53	1	4	8	6	16	9	8	52

A probable corollary to the raising of both the lowest and the highest yields would have seemed to be a considerable rise in the average yield per herd. This was not so - why?. The above table shows that despite the raising of the limits of the sample, there has been a greater number of herds with yields below average and this has naturally worked to offset any great rise in average yield per herd when compared with the previous period.

The average yield of 368 gallons per cow falls in the same group as did the average yield for the previous winter period namely the 351-400 gallons per cow yield group. In winter 1953-54, 24 herds had yields of less than 351 gallons and 16 herds had yields of more than 401 gallons per cow compared with 19 herds with lower yields than 351 gallons and 17 herds with higher yields than 401 gallons during the previous winter period. From this evidence there seems to be a definite tendency to falling yields since there was almost no change in the herds costed (4 herds dropped out and 2 came in, in winter 1953-54).

The greatest problem facing the dairy industry at present is that individual milk producers aims are conflicting with the good of all producers. Because of over-production (especially during the winter months) and the much lower price received for milk sold to manufacturers a fall in price seems more than likely to be the result. For the industry as a whole the best solution would seem to be a cut in total production, while the individual farmer will tend to favour increased production in order to keep his income from milk production constant or rising. For all concerned the answer seems to be rigorous culling of low yielding cows or herds and concentration on high yields from the remainder. Whether this will be the path chosen remains to be seen but the fact remains that high yields are undoubtedly one of the best means of keeping average costs per gallon as low as possible and the dairy farmer should take all possible steps to achieve this aim.

V. AVERAGE COST PER COW AND PER GALLON.

As stated in the text accompanying the main table in this report on milk production/

production costs there has been a slight rise in average cost per cow and per gallon for the 50 herds taking part in the investigation. This amounted to 18/7d. per cow or .47d. per gallon equivalent to a rise of 2 per cent. per cow or 1½ per cent. per gallon when compared with the previous winter period.

Table IV. below shows the distribution of herds according to cost per cow and cost per gallon.

TABLE IV. DISTRIBUTION OF HERDS ACCORDING TO COST PER COW AND COST PER GALLON OF MILK PRODUCED.

	Net Cost per Cow						Total Number of Herds
	Up to £35	£ 35-40	£ 40-45	£ 45-50	£ 50-55	Over £55	
No. of Herds	3	6	10	8	10	13	50
	Net Cost per Gallon						Total Number of Herds
	Up to 1/8d.	d. 1/8-2/1	d. 2/1-2/6	d. 2/6-2/11	d. 2/11-3/4	Over 3/4d.	
No. of Herds	-	6	9	19	8	8	50

In dealing with the first part of the table the first factor to be noted is that only 3 herds had a cost of under £35. per cow - last winter 5 fell into this category and the previous winter 16! The average cost fell into the £45. to £50. group and the number of herds below this group in the sample was only 19 out of the total 50, 23 of the herds having a cost of over £50. per cow. The limits of the sample were £33. for the lowest cost and £75. per cow for the highest cost - this compares with £24. and £83. during the previous winter.

The second half of the table dealing with net cost per gallon shows a much more even distribution around the average. Average cost per gallon was 2/8½d. and 19 herds fell into the group (2/6d. to 2/11d.) containing this cost. The even distribution is evident from the fact that while 15 herds had average costs per gallon of less than 2/6d., 16 herds, had average costs of more than 2/11d. The previous winter 22 herds had costs of less than 2/6d. per gallon and the winter before that 35 herds had such low costs - once again the trend towards rising cost is evident. The range between the lowest and highest cost producers is once again great. The lowest cost of production was 1/9d. per gallon and the highest cost was 3/11d. per gallon - a difference of 2/2d. The herd with the lowest cost was one of average size with a low average cost per cow and a high yield which combined to give a low cost per gallon. On the other hand the herd with the highest cost was a small herd on a small farm where most of the work was done by the family and most of the feedingstuffs had to be bought in. The result was a high cost per cow and this combined with a yield which was well below the average resulted in a very high cost per gallon.

The two examples quoted above emphasise once again the great importance of high yields in the profitable production of milk.

VI. THE WINTER FEEDING OF DAIRY COWS.

Table V. below sets out the average food consumption per herd for the winter six months and compares it with that for the two previous winter periods.

TABLE V./

TABLE V. FOOD CONSUMPTION PER COW - SIX MONTHS WINTER PERIODS.

A Comparison between 1951-52, 1952-53 and 1953-54.

	Average of 64 farms 1951-52 Cwt. per Cow	Average of 52 farms 1952-53 Cwt. per Cow	Average of 50 farms 1953-54 Cwt. per Cow
Concentrates			
Purchased	7.44	7.37	9.05
Home Grown	5.09	5.58	4.88
	12.53	12.95	13.93
Dried Grass	.68	.43	1.61
Hay	14.18	16.09	13.63
Straw	7.68	8.12	8.13
Draff	8.95	7.57	8.08
Roots	34.43	35.19	33.90
Green Fodder & Oat Sheaves	12.19	11.51	12.93
Silage	10.36	14.82	14.04
TOTAL	101.00	106.68	106.25

Before going into the above table in detail it is advisable to remember that this is not an example of the actual rations fed to any one cow over six months but an average of those fed to all herds costed. The real value of the table lies in the fact that it shows quite clearly the trends in the feeding of dairy cows in South East Scotland, whether more or less concentrates are being fed, and so on. From the table the following trends can be clearly seen over the past three years.

1. The most important is the greatly increased use of concentrates in 1953-54. During winter 1951-52, 12.53cwts. of concentrates were fed, this increased to 12.95cwt. during the next winter and then jumped to 13.93cwt. during the period under review. The most interesting pointer the table gives however is the conclusive proof of the theory advanced in another part of the report that the de-rationing of feedingstuffs has led to an increase in the use of purchased concentrates. In 1952-53 only 7.37cwt. of purchased concentrates was fed to the average cow but one year later 9.05cwt. were fed - an increase of over one and a half cwts. per cow or 23 per cent. At the same time there has been a drop in the amount of home grown concentrates used (oats, beans, peas or mashlum). This drop in the use of home grown concentrates was possibly partly due to the fact that the 1953 harvest in this area was not so good as that in 1952 which was a bumper year for grain crops. It would be interesting to speculate on whether this increased use of purchased concentrates is due to relative prices in the markets for concentrates and for grain. In other words whether price supports for grain have induced the farmer to sell his crops and substitute purchased concentrates in the diet of his dairy herd. Nevertheless the evidence points quite clearly towards increased utilisation of purchased concentrates following their de-rationing in 1953.

2. The second important factor is the increased use of dried grass which is also a type of concentrate feeding. This rose from .68cwt. per cow two winters ago to 1.61cwt. per cow in winter 1953-54 - this increase took place not in the category of purchased foods but in that of home grown foods. In other words more dairy farmers in this area are beginning to realise just how important is the proper utilisation of grassland. This is achieved not only through the use of dried grass but also through the use of hay, silage and such techniques as strip grazing. All dairy farmers should be alert to find all possible ways of increasing the productivity of their land/

land as well as of their dairy herds and this is undoubtedly one way in which they can do so.

3. There has been a distinct drop in the use of hay in the past year. In fact when the figures of average hay consumption over the three years are taken into account there seems to be a distinct co-relation between the size of the crop in the preceding summer and the amount of hay fed to the dairy herd in the following winter months. In other words dairy farmers do not tend to fix a hay ration for the herd but rather to feed the available hay to it probably because there is a very poor market for surplus hay in good years. Taking the three years; in winter 1951-52 the amount of hay fed was 14.18cwt - the summer before had been an average year for hay. During winter 1952-53 there was a rise in average hay consumption to 16.09cwt. per cow and this followed a particularly good summer with a very heavy hay crop in 1952. During winter 1953-54 hay consumption fell to 13.63cwt. per cow and every dairy farmer will recall the poor summer of 1953 which preceded it with the resulting poor hay crop.

4. There has been very little variation in the use of the other foodstuffs - straw, draff, roots, green fodder and silage - which constitute the dairy ration. It is noteworthy however that silage has maintained the place in the ration of dairy cows which it has won over the past few years.

5. The total ration fed to the average dairy herd has not altered to any great degree, despite the changes which have been observed in its composition.

ACKNOWLEDGMENT.

Grateful acknowledgment is made of the valuable assistance of the dairy farmers who took part in this investigation, supplied the necessary records and other information, and unfailingly gave the investigators considerate attention on the occasion of their visits. Each collaborating farmer will receive along with this report a copy of his own records and costs. The investigation is continuing and again, this summer, details are required of the costs of some of the fodder crops. It is hoped that farmers will favour us with their continued help and interest.

APPENDIX I.

GENERAL INFORMATION.

TABLE I. AVERAGE SIZE OF HERDS COSTED, WINTERS 1952-53, 1953-54.

	Average Number of Cows in Herd						Total No. Herds	Average Size of Herd Costed
	Under 21	21-40	41-60	61-80	81-100	Over 100		
1952-53	6	14	19	7	3	3	52	51
1953-54	5	11	20	8	4	2	50	51

There has been a tendency for the smaller herds to increase in size and move into higher size groups but this has not led to any increase in the average herd size costed. As in previous years all averages in the report have been calculated on a "per cow per herd" bases.

In all the production of 2559 cows was costed in 1953-54, 7 of these cows were suckling calves, and 631 or 24 per cent. were dry. The smallest herd costed was 9 cows and the largest 130 cows.

TABLE II. QUALITY AND DISPOSAL OF MILK, WINTERS 1952-53, 1953-54.

	Quality of Milk Produced			Disposal of Milk Produced			
	Tuberculin Tested	Standard	Ordinary	Wholesale	Semi-Wholesale	Retail	Used on Farm
	Number of Herds			%	%	%	%
1952-53	47	3	2	66	5	20	9
1953-54	48	1	1	65	6	20	9

During the past winter 41 of the herds were Ayrshires, 5 Friesian, and the remainder of mixed breeds. Byres were used by 44 herds and 6 were housed in courts; 27 of the herds contained no pedigree stock, 19 were fully pedigreed and the remainder were grading up. None of the herds were milked by hand and only 14 were not recorded.

Location, and Size of Farm.

Angus	5	Berwick	3	East Lothian	1	East Perth	7
Fife	10	Kinross	1	Midlothian	12	Peebles	2
Roxburgh	2	Selkirk	1	West Lothian	6		

The average size of farm was 236 "adjusted" acres (4 acres rough grazing or 1 acre arable is equivalent to 1 "adjusted" acre). The rental value was £340.14. 4d. which was equivalent to a rent of 28/11d. per acre.

APPENDIX 2.

METHOD 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 ascertained 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 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)/

(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 bases 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 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 winter 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.