Milk Cost Production O.S.

Economic Report No. 25

EDINBURGH AND EAST OF SCOTLAND COLLEGE OF AGRICULTURE

(Department of Economics)

INTERIM REPORT

on

COST OF MILK PRODUCTION, WINTER 1952-53

by

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22 Rose Street, Edinburgh, 2.

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RECENT PUBLICATIONS

FINANCIAL RESULTS OF EAST OF SCOTLAND FARMS:-

Group	1946-7	1947-8	1948-9	1949-50	1950-51
	-- No. of farms --				
(1. Hill sheep farms (2. Stock-rearing farms	52	48	54	52	53
(3. Stock-raising and feeding farms (4. Arable farms (5. Dairy farms	153	143	184	175	178
	205	191	238	227	231

COSTS OF MILK PRODUCTION:- 1945-6, 1946-7, 1947-8, 1948-9, 1949-50, 1950-51, 1951-2

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.

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 eighth year of the Milk Costs Investigation began on 1st October 1952 and this interim report deals with the winter period which covers the six months ending 31st March 1953. Herd records were again obtained from specially prepared weekly returns distributed in book form to the farmers for the purpose of the investigation.

The report summarises the various factors entering into the cost of milk production in 52 herds in the South Eastern Area of Scotland. All of these herds, except one, had costed their production in previous years.

II. GENERAL DESCRIPTION OF FARMS AND HERDS STUDIED

The distribution of herds over the area has been altered by the reduction in the number of herds costed. Fife, Midlothian and East Perth provide 30 of the 52 herds costed, while the other 7 counties provide only 22 herds; in particular the border counties of Berwick, Roxburgh, Selkirk and Peebles are very poorly represented.

TABLE I. GEOGRAPHICAL DISTRIBUTION AND SIZE OF HERD : 52 FARMS

County	Average No. of Cows in Herd						Total Number of Herds
	Under 21	21-40	41-60	61-80	81-100	Over 100	
Angus	-	-	1	1	1	1	4
East Perth	-	1	6	-	-	1	8
Fife	-	2	6	2	1	-	11
West Lothian	2	4	-	1	-	-	7
Midlothian	-	1	5	3	1	1	11
East Lothian	-	1	-	-	-	-	1
Berwick	1	3	-	-	-	-	4
Roxburgh	2	1	-	-	-	-	3
Selkirk	-	1	-	-	-	-	1
Peebles	1	-	1	-	-	-	2
TOTAL 1952-53	6	14	19	7	3	3	52
TOTAL 1951-52	9	20	16	11	5	3	64

Table I. above shows that there has been very little change in the distribution of herds according to size compared with the previous year. Forty per cent of the herds were still in the under 40 cow per herd groups and this has helped to maintain the average herd size at 49, the same as for the previous year. The size of the herds costed varied from a lower limit of 6 cows to an upper limit of 147 cows. The total number of cows costed was 2,555, a decrease of almost 600 from the previous winter but this is due to the smaller number of herds costed. Of the total 622 or 24.3 per cent were dry cows (compared with 25.8 per cent /

cent dry cows during winter 1951-52) and 14 were suckling calves. The proportion of dry cows varied from a town dairy with 5 per cent dry to a herd with 53 per cent dry - approximately the same range as during the previous winter period.

To most of the farmers the dairy herd was the most important source of income although the majority of farms were situated in good arable districts where crop sales were also fairly important. The average size of farm was 223 "adjusted acres"¤ with a rental value of £313 which was equivalent to 28s. per acre. The size of farm varied from a small holding of 40 acres to a farm of 912 acres of which 352 acres were classed as rough grazing.

Only 7 of the herds were of mixed breeds, the majority of farmers preferring to keep their stock pure; the most popular breed was again the Ayrshire of which there were 39 herds and the Friesian came in a very poor second in the popularity poll with a representation of only 6 herds among the sample costed. Eighteen of the herds were fully pedigreed or had a high proportion of pedigree stock while one herd was grading up to pedigree status. Milk recording was practised in the majority of the herds costed, 34 recording officially and 3 privately. There were 47 attested herds (83 per cent of the total) in the sample all producing the highest grade of milk Certified or Tuberculin Tested, three producing Standard Milk and two pro-:ducing Non Graded or Ordinary Milk. The majority of the producers costed disposed of their milk on the wholesale market but 12 of them still main-:tained a retail trade.

One small herd was still hand milked and of the other 51 herds, which were milked by machines, 10 used autorecorders. It is interesting to note that the two herds which were kept outside in previous years during the winter period are now being housed in byres. The byre system was most favoured by the herds costed - only 6 of the 52 using the court and milking parlour method of housing and the average size of those six herds was 86 cows.

TABLE II. MILK YIELD PER COW PER FARM : WINTER 1952-53
cf. WINTER 1951-52

	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 1952-53	1	4	8	6	16	9	8	52
1952-53 Percentages	2	8	15	12	31	17	15	100
1951-52 Percentages	5	14	8	25	22	15	11	100

The above table shows the distribution of herds according to their average milk yield. The general improvement in yields can be seen from a study of the percentages of the sample in the lowest and highest yield groups during the two periods under comparison. During the winter period of 1952-53 only 10 per cent of the herds had yields of under 250 gallons per cow compared with 19 per cent during the winter period of 1951-52. At the other end of the scale 32 per cent of the herds had yields of over 400 /

¤ 4 acres rough grazing equal 1 "adjusted acre"

400 gallons per cow compared with 26 per cent during the previous period. The concentration of herds was still in the yield groups from 251-400 gallons but the general upward movement within those groups was a further favourable sign.

Comparing the two periods the average yield per cow rose from 348 to 366 gallons, that is by 18 gallons or 5 per cent - a fairly substantial rise. Weather conditions during the period under review were favourable, there was a very mild autumn which meant an extended grazing period and even the winter months were very mild in comparison with those of previous years; added to this the harvest of 1952 was particularly good and this meant that there was no scarcity of home grown foods. It is little wonder therefore that yields did rise and it must be emphasised that it is essential that this trend is not broken if profitable milk production is to continue. Low cost production is a first requisite if the present prosperity of the dairy industry in this country is to be maintained particularly at this time when there are warning signs that the consumption of liquid milk is not continuing to rise but appears to be slackening off and government policy seems to be turning from the emphasis on milk production to an emphasis on beef. This will mean that rising costs will not be covered by rising prices to the same extent as they have been in the past.

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-months 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 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 or corn crops:-

Crop	Price per ton £ s. d.	Crop	Price per ton £ 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 those averages were made in the light of ascertained costs of individual farms, or because of their special circumstances.

(iv) /

(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) 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 5/9d. 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 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 seven published annual reports. The average cost over the seven years was 1.84d. per gallon of milk produced or £2. 8. 1d. per cow for the winter 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 calculated on agreed basis.

WINTER MILK COSTS /

WINTER MILK COSTS

Table III. below sets out the average costs for 52 herds.

TABLE III. WINTER MILK COSTS (PROVISIONAL)*, 1952-53

NUMBER OF HERDS COSTED	52
AVERAGE NUMBER OF COWS IN HERD	49
AVERAGE MILK YIELD PER COW (GALLONS) ...	366

Items		Per Cow		Per Gallon		Per Cent	
		£ s. d.		d.			
FOODS	- Purchased	14.16. 3		9.71		28	
	- Home Grown	21. 4. 5		13.92		41	
	TOTAL		36. -. 8		23.63		69
LABOUR	- Hired	7. 1. 5		4.64		13	
	- Family	-. 3. -		.10		-	
	- Farmer & Wife	1.15.10		1.17		4	
	TOTAL		9. -. 3		5.91		17
MISCELLANEOUS			7. 8. 4		4.87		14
	GROSS COSTS		52. 9. 3		34.41		100
Less:	CREDITS for Calves) U.M.R.)		3. 9.11		2.30		
	NET COSTS		48.19. 4		32.11d.		-

* Excluding Herd Maintenance (or "Cow Replacement")

As is to be expected in a period of mild inflation the table shows that the cost of milk production in this area was still rising although apparently at a decreasing rate, due to better management and greater efficiency on the farm which shows in the rising milk yield per cow.

The cost per cow rose by £3. 2. 9d. and the cost per gallon by 1.21d. over that for the previous winter period. The decreasing rate of rising cost is evident when the figures of percentage rises in cost are considered over the past three years. During the winter period 1950-51 the cost per cow rose by 10 per cent and the cost per gallon by 8½ per cent, during the winter period of 1951-52 the cost per cow rose by 6 per cent and the cost per gallon by 5 per cent, while during the period dealt with in this report the cost per cow rose by 7 per cent but the cost per gallon rose by only 4 per cent. The divergences between the percentage increases in cost per cow and per gallon are due to the increasing efficiency shown by the farmers through rising yields.

FOODS show a very substantial increase in cost over the period and now account for more than two-thirds of the total cost of production. The continuously rising prices of concentrates was not reflected directly in the cost of feeding stuffs since the cost of purchased feeding stuffs had fallen by 5s. per cow compared with the previous winter period. This is even more obvious when it is seen that purchased feeding stuffs now accounted for only 28 per cent. of total gross cost compared with 31 per cent during the winter period of 1951-52. The indirect effect of the rising cost of purchased concentrates can be seen quite clearly however. Dairy farmers are now turning to home grown feeding stuffs in an effort to cut their cake bills. Home grown foods accounted for more than the total rise in the cost of foods over the period namely £4. 8. 6d. per cow or 2½d. per gallon and increased their share of total gross costs from 34 to 41 per cent.

The /

The quantity of concentrates - both purchased and home grown - fed per gallon of milk fell from 4.12 lb. per gallon in winter 1951-52 to 3.95 lb. per gallon during the present winter period. This drop was significant when it was recalled that 4.64 lb. per gallon were fed the winter before last. The trend therefore seems to be to feed less con-:centrates - particularly purchased concentrates - and to replace these in the diet of the dairy herd by silage and other home grown foods.

LABOUR. During the period there has been no official rise in wage rates and thus while still holding its place as the second largest item in the cost of milk production labour has shown a slight decrease in cost. In fact the cost of labour has dropped by 2s. per cow or .37d. per gallon and its share of total costs has dropped from 19 per cent to 17 per cent. There has been little change in the distribution of the cost of labour between the three types of labour listed in the report, namely hired, family and farmer and wife.

MISCELLANEOUS COSTS showed a slight decrease amounting to 5/6d. per cow or .43d. per gallon which was equivalent to a drop of 2 per cent in the proportion of gross costs taken up by all those small items of costs which go under this heading.

CREDITS also showed a slight decrease over the year. In fact over the period foods alone have increased in cost while the other three main items of costs have decreased.

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

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

	Net Cost per Gallon						Total Number of Herds
	Up to 20d.	d. 20-25	d. 25-30	d. 30-35	d. 35-40	Over 40d.	
No. of Herds	1	6	15	12	11	7	52
	Net Cost per Cow						Total Number of Herds
	Up to £25	£ 25-30	£ 30-35	£ 35-40	£. 40-45	Over £45	
No. of Herds	1	1	3	6	11	30	52

The rising cost of production is reflected in the distribution of the sample in the table. Only 22 of the herds were producing milk at a cost of less than 30d. per gallon during this period (last year 35 herds produced milk at a cost of less than 2/6d. per gallon). The majority of the herds were producing milk at a cost of between 2s. and 3/4d. per gallon and once again there has been a widening in the range between the lowest and highest cost producers. During this winter period the range was from 1/4d. per gallon - a very low cost indeed - to 7/9d. per gallon compared with a range from 1/8d. to 7/2d. per gallon during the previous period. The herd with the lowest cost per gallon owed this to a very low cost per cow combined with an above average yield while the herd at the other end of the scale had a very high cost per cow and an extremely low yield. This is a clear pointer to the importance of high yields in the profitable production of milk.

The /

The trend towards higher costs in milk production is even more marked when the second part of the table is considered. Only 5 herds had a net cost per cow less than £35 compared with 16 herds during winter 1951-52. There is a very definite concentration of herds in the upper groups, over half the herds costed having an average cost of more than £45 - and the average cost was only approximately £49. The cost of keeping a cow for the winter six months varied greatly within the sample, the lower limit being £24. 2.11d. and the upper limit £83. 6. 9d.; this showed little difference from the previous period when the corresponding limits were £23. 8. 5d. and £82. 1. 1d. per cow. The cost per cow over the period was 7 per cent higher than during the previous period but rising yields meant that the cost per gallon was only 4 per cent higher than during winter 1950-51. The price of milk rose by 5 per cent which meant that the continued profitability of the industry was largely due to higher yields. This point cannot be too strongly emphasised,namely, that rising yields must be maintained through greater efficiency in the dairy. That the margin of profitability in the industry is decreasing is seen when it is remembered that during the winter period of 1951-52 cost per gallon increased by 5 per cent while prices increased by 7 per cent. The aim of every dairy farmer should therefore be to increase his efficiency in pro-:duction particularly through achieving higher milk yields.

IV. THE FEEDING OF DAIRY COWS

Table V. below sets out the food consumption for the six months and compares this with the three previous winter periods.

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

A Comparison between 1949-50, 1950-51, 1951-52 and 1952-53

	Average of 80 farms 1949-50 Cwt. per cow	Average of 67 farms 1950-51 Cwt. per Cow	Average of 64 farms 1951-52 Cwt. per Cow	Average of 52 farms 1952-53 Cwt. per Cow
Concentrates				
Purchased	8.31	8.57	7.44	7.37
Home Grown	4.76	5.73	5.09	5.58
	13.07	14.30	12.53	12.95
Dried Grass	.63	.46	.68	.43
Hay	14.51	13.88	14.18	16.09
Straw	9.97	10.15	7.68	8.12
Draff	9.77	9.95	8.95	7.57
Roots	37.37	33.04	34.43	35.19
Green Fodder & Oat Sheaves	12.05	10.28	12.19	11.51
Silage	6.89	11.28	10.36	14.82
TOTAL	104.26	103.34	101.00	106.68

One noticeable feature of the table is the increase in total foods fed per cow, an increase amounting to 5½ cwts. per cow which makes the total ration fed higher than during any winter period of the past three years. The amount of concentrates fed has increased slightly but the increase has taken place only in the use of home grown concentrates while the use of purchased concentrates has decreased - this bears out Table III. which showed that expenditure on purchased foods (which includes purchased concentrates) has fallen despite rising prices.

More /

More hay, roots and straw have been fed to the average cow but she has eaten slightly less draff and green fodder.

The table also emphasises one important change in the feeding of dairy cows in this area which was pointed out in the last report namely the increasing popularity of silage. Four years ago less than 6 cwt. of silage was fed per cow in the average herd, now almost 15 cwt. are fed per head, two and a half times as much! Four years ago only 23 per cent of the herds in the total sample fed silage, now 47 per cent of the herds include it in the dairy ration. Whether this trend has any connection with the continuously rising yields is a matter for speculation but while silage has often been used mainly to replace roots, in many cases it has also been fed to replace purchased concentrates.

The changes in the average ration fed to dairy herds in South East Scotland when compared with the previous winter period are therefore a slight increase in the use of concentrates, hay, straw and roots and a slight decrease in the use of draff and green fodder but, most important of all, a large increase in the use of silage.

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 investi-:gators 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.