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**NORTH OF SCOTLAND COLLEGE OF AGRICULTURE**  
**School of Agriculture, Aberdeen**  
**Agricultural Economics Department**

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**Economics of Milk Production  
in the North of Scotland,  
1963/64; 1964/65; 1965/66**

*by Margaret A. Haughs, B.Sc. and  
Roy M. Sutherland, B.Sc.*

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THE NORTH OF SCOTLAND COLLEGE OF AGRICULTURE

AGRICULTURAL ECONOMICS DEPARTMENT

ECONOMICS OF MILK PRODUCTION IN THE NORTH OF SCOTLAND

1963/64; 1964/65; 1965/66

by

Margaret A. Haughs, B.Sc.

and

Roy M. Sutherland, B.Sc.

THE ECONOMICS OF MILK PRODUCTION IN THE NORTH OF SCOTLAND

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# ECONOMICS OF MILK PRODUCTION IN THE NORTH OF SCOTLAND

## INTRODUCTION

This report is an omnibus one for the period 1st October 1963, to March 31st 1966, and is based on information collected during investigations into the economics of milk production in the Aberdeen & District Milk Marketing Board Area and in the North of Scotland Milk Marketing Board Area.

The first section of the report presents some background information on the size of the dairy industry and its importance in relation to the national milk economy. Included in this section are statistics regarding numbers of producers, herd size, cow numbers and milk output. An outline of Government policy and of guaranteed prices to milk producers is also incorporated along with graphs relating to the disposal of milk within the area. It is hoped that this first section will clarify the importance of the milk industry in the North of Scotland.

The second section of the report presents the results of the 1965/66 milk costs investigation covering the period 1st April 1965 - 31st March 1966. A description of the sample is given, followed by financial and physical data relating to farms in both Boards' Areas and also for all farms. An analysis of the main items of cost - feed, labour, miscellaneous and herd replacement costs - is also provided. Tables showing costs, returns and margins in relation to seasonality of milk production, level of milk yield per cow, herd size, type of housing, breed of cow and milk quality have also been incorporated in this section in an attempt to indicate factors affecting profitability.

Trends in costs, returns and margins for an identical sample of 14 herds for a period of 12 years are investigated in the third section of the report. Points of interest relating to the way in which these farmers have coped with increased costs and decreased returns are examined.

In the appendix, the results for the years 1963/64 and 1964/65 (1st October - 30th September) are presented. Financial and physical data for these two years are given. Other tables, relating to the two Board areas and details of accounting methods and definitions are also included in the Appendix.

CHAPTER I

THE MILK INDUSTRY IN THE NORTH-EAST OF SCOTLAND

GENERAL

The Aberdeen and District Milk Marketing Board covers the counties of Aberdeen, Banff and Kincardine. This area is well known for live-stock rearing and fattening, but the dairy industry is also of some importance. The majority of the dairy farms are situated within 20 miles of the City of Aberdeen, but there are smaller concentrations around the larger towns. There are also a few milk producers in the more remote regions, mainly retailing to the local population.

The North of Scotland Milk Marketing Board serves the counties of Caithness, Inverness, Moray, Nairn, Orkney, Ross and Cromarty and Sutherland, excluding the Islands of Skye, the Outer Hebrides and the Shetlands, which are not covered by any milk marketing scheme. Milk production is not one of the main agricultural activities in this region, except perhaps in Orkney, where almost a third of the dairy farms in the Board's area are found. The majority of the remaining milk producers are situated on the Eastern coastal strip.

NUMBER OF PRODUCERS

There were at March, 1965, 529 milk producers in the Aberdeen and District Milk Marketing Board Area and 323 in the North of Scotland Milk Marketing Board Area. Table 1 shows that in terms of the percentage of producers in the United Kingdom, only 0.4 per cent are in the Aberdeen and District Milk Marketing Board Area and 0.3 per cent in the North of Scotland Milk Marketing Board Area, making a total of 0.7 per cent in the North and North-East.

Table 1: Registered Milk Producers in Each Board Area, March, 1965

Milk Marketing Board	Number of Producers	% of Total
England and Wales	100,449	80.6
Scottish	6,022	4.8
Aberdeen and District	529	0.4
North of Scotland	323	0.3
Scotland	6,874	5.5
Northern Ireland	17,365	13.9
United Kingdom	124,688	100.0

Source: United Kingdom Dairy Facts and Figures 1965. The Federation of United Kingdom Milk Marketing Boards.

Table 2 shows the changes that have occurred in the number of producers in each Board area during the period 1955 to 1965. The decrease in the number of producers appears to have been less in Scotland than in England and Wales and Northern Ireland. In particular, the reduction of only 14.7 per cent within the area of the Aberdeen and District Marketing Board was considerably less than the national decrease of 28.8 per cent.

Table 2 Registered Milk Producers in Each Board Area 1955 and 1965

Milk Marketing Board	Number of Producers 1955	Number of Producers 1965	Decrease in Number of Producers	% Decrease in Number of Producers
England and Wales	142,792	100,449	42,343	29.7
Scottish Aberdeen and District	7,575 620	6,022 529	1,553 91	20.5 14.7
North of Scotland	430	323	107	24.9
Scotland	8,625	6,874	1,751	20.3
Northern Ireland	23,744	17,365	6,379	26.9
United Kingdom	175,161	124,688	50,473	28.8

Source: United Kingdom Dairy Facts and Figures 1965. The Federation of United Kingdom Milk Marketing Boards.

The fact that the withdrawal from milk production was lower in the Aberdeen and District Milk Marketing Board Area than in the United Kingdom as a whole during the 10 years 1955 to 1965 may be related to the size-distribution of herds in the area. Withdrawal from milk production has been most common amongst farmers possessing small herds. Tables 3 and 4 reveal that the percentages of producers in the lowest groups for size of milk sales and herd size were notably less in the Aberdeen and District Milk Marketing Board Area than in the other Marketing Boards' Areas. Only 1.4 per cent of producers in the area sold less than 500 gallons of milk in the month of June 1964, compared with 16.9 per cent of producers in the United Kingdom as a whole. Again, only 7.5 per cent of producers in the area had herds of less than 20 cows in May 1965, compared with 51.2 per cent of producers in the United Kingdom as a whole. The different size-distribution of herds in the area is further demonstrated by the average size of dairy herd, which was 51 cows, compared with the United Kingdom average of 25 cows in 1965.



The association between the smaller reduction in the number of producers and the greater average size of herd is also shown by the figures for the North of Scotland Milk Marketing Board Area, although the percentage decrease in the number of producers in this area was much nearer the national average.

Table 3 Distribution of Producers\* by size of Milk Sales  
In month of June, 1964

Gallonage Group	England and Wales (a)	Scottish	Aberdeen and District	North of Scotland	Northern Ireland	United Kingdom
Gallons	%	%	%	%	%	%
Under 500	13.5	3.4	1.4	3.3	43.2	16.9
500 - 999	20.2	5.6	7.5	6.3	33.4	21.1
1,000 - 1,999	31.4	19.6	22.7	23.2	18.5	29.0
2,000 - 2,999	16.3	23.3	35.0	32.7	3.2	14.9
3,000 - 3,999	8.6	20.2	12.8	15.6	1.0	8.2
4,000 - 4,999	4.6	12.2	7.8	9.8	0.4	4.5
5,000 - 7,499	4.2	11.8	9.1	8.2	0.3	4.2
7,500 - 9,999	0.9	2.9	2.1	0.6	-	0.9
10,000 and Over	0.3	1.0	1.6	0.3	-	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

\* Based on the Number of Wholesale Suppliers  
(a) May 1964

Source: United Kingdom Dairy Facts and Figures 1965. The Federation of United Kingdom Milk Marketing Boards.

Table 4 Distribution of Producers by Size of Herd, 1965

Herd Size Group	England and Wales	Scottish	Aberdeen and District	North of Scotland	Northern Ireland	United Kingdom*
Dairy Cows per Herd	%	%	%	%	%	%
Under 20	46.9	11.8	7.5	14.9	91.8	51.2
20 - 39	34.6	35.8	37.1	37.3	} 8.2	30.7
40 - 59	11.3	30.2	29.5	25.1		10.9
60 - 79	4.4	13.5	11.2	14.0		4.3
80 and Over	2.8	8.7	14.7	8.7		2.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

\* Calculations based on an estimated herd size distribution for Northern Ireland for herd sizes over 20 cows.

Source: United Kingdom Dairy Facts and Figures 1966. The Federation of United Kingdom Milk Marketing Boards.

#### DAIRY COW NUMBERS

It is difficult to estimate accurately the number of dairy cows on dairy farms in the British Isles. Table 5 is based on the number of dairy cows recorded in the Agricultural Statistics issued by the Ministry of Agriculture, Fisheries and Food, the Ministry of Agriculture for

Northern Ireland and the Department of Agriculture and Fisheries for Scotland. The number of dairy cows in herds of non-registered producers, as well as a certain percentage of dairy cows kept on non-dairy farms are included in these figures. Considered in conjunction with Table 1, Table 5 again illustrates that the size of dairy herd in the North-East of Scotland is considerably greater than the national average, the two Boards' areas having 1.6 per cent of the total number of dairy cows in the national herd, but only 0.7 per cent of the total number of producers.

Table 5 Numbers of Dairy Cows in Each Board Area, June 1964

Milk Marketing Board	Number of Cows (thousands)	% of Total
England and Wales	2,605	82.9
Scottish Aberdeen and District North of Scotland	291 31 19	9.3 1.0 0.6
Scotland	341	10.9
Northern Ireland	196	6.2
United Kingdom	3,142	100.0

Source: United Kingdom Dairy Facts and Figures, 1965.  
The Federation of United Kingdom Milk Marketing Boards.

#### MILK PRODUCTION

The total production of milk is also difficult to determine because of the lack of figures to indicate the quantity of milk used on the dairy farms by the farmers, farm workers and livestock. However, the total sales of milk off farms in 1964/65 are given in Table 6, showing that the North and North-East of Scotland produced 1.4 per cent of total national sales in that year.

Table 6

Total Sales of Milk Off Farms, 1964/65

April to March Year

Million Gallons

Milk Marketing Board	Liquid Sales	Manufactured (a)	Total Sales	% of Total
England and Wales	1,463	527 (26%)	1,990	84.5
Scottish Aberdeen and District	121	85 (41%)	206	8.7
North of Scotland	11	12 (54%)	23	1.0
	6	4 (40%)	10	0.4
Scotland	138	101 (42%)	239	10.1
Northern Ireland	41	86 (68%)	127	5.4
United Kingdom	1,642	714 (30%)	2,356	100.0

(a) The figures in brackets denote the quantity of milk manufactured as a percentage of total sales.

Source: United Kingdom Dairy Facts and Figures 1965. The Federation of United Kingdom Milk Marketing Boards.

Despite the decline in the number of producers, milk production has been increasing and Table 7 indicates the percentage increase in total sales over the ten years 1954/55 to 1964/65. The increase of 14.9 per cent in Scotland as a whole is considerably lower than the 25.2 per cent increase in England and Wales. This results from the fact that while the number of dairy cows in England and Wales increased by 10.3 per cent over the period, in Scotland the number of dairy cows decreased by 5.0 per cent. Thus the increase in total sales of milk in Scotland results solely from the improvement in yields per cow.

Table 7

Total Sales of Milk off Farms, 1954/55 and 1964/65

Million Gallons

Milk Marketing Board	Total Sales		Increase in Total Sales	% Increase in Total Sales
	1954/55	1964/65		
England and Wales	1,653.4	1,990.0	336.6	20.4
Scottish Aberdeen and District	181.3	205.7	24.4	13.5
North of Scotland	19.7	23.2	3.5	17.8
	8.6	10.0	1.4	16.3
Scotland	209.6	238.9	29.3	14.0
Northern Ireland	96.0	127.5	31.5	32.8
United Kingdom	1,959.0	2,356.4	397.4	20.3

Source: United Kingdom Dairy Facts and Figures 1965. The Federation of United Kingdom Milk Marketing Boards.

Table 8

Standard Quantity and Excess Production Over Standard Quantity in Each Board AreaMillion Gallons

Year	England and Wales		Scottish		Aberdeen and District		North of Scotland		Northern Ireland	
	Standard Quantity	Excess Production Over Standard Quantity	Standard Quantity	Excess Production Over Standard Quantity	Standard Quantity	Excess Production Over Standard Quantity	Standard Quantity	Excess Production Over Standard Quantity	Standard Quantity	Excess Production Over Standard Quantity
1954/55	1,651.0	2.4	183.6	(-) 1.7	19.5	0.2	9.0	(-) 0.4	95.0	1.0
1955/56	1,651.0	18.9	183.0	1.2	19.5	0.7	9.0	(-) 0.2	95.0	2.9
1956/57	1,651.0	161.8	183.0	12.0	19.5	1.1	9.0	-	95.0	11.4
1957/58	1,654.5	223.5	183.0	16.3	19.5	1.8	9.0	-	95.0	16.2
1958/59	1,654.5	110.7	183.0	7.7	19.5	1.5	9.0	(-) 0.1	95.0	6.3
1959/60	1,661.5	136.9	183.0	15.3	19.5	2.6	9.0	0.4	95.0	5.3
1960/61	1,678.8	272.5	183.9	24.2	19.6	2.6	9.2	0.4	96.0	15.7
1961/62	1,698.2	353.4	184.8	27.8	19.7	3.3	9.3	0.5	97.1	23.5
1962/63	1,721.1	351.1	185.8	24.5	19.8	3.3	9.4	0.3	97.6	26.9
1963/64	1,742.5	257.9	186.5	17.4	19.8	2.9	9.5	0.2	98.2	24.1
1964/65	1,778.3	211.2	187.8	17.9	20.0	3.2	9.8	0.2	99.7	27.8
1965/66	1,779.9	289.0	187.0	18.8	20.0	3.2	9.9	0.8	100.4	34.4

Source: United Kingdom Dairy Facts and Figures 1966. The Federation of United Kingdom Milk Marketing Boards.

GOVERNMENT POLICY AND GUARANTEED PRICES

Under the Agriculture Acts of 1947 and 1957 guaranteed prices for milk are determined by the Government, the actual guaranteed price for the year ahead being determined at the Annual Price Review held in February each year. Since 1954 this price has been related to a specific quantity of milk, called the Standard Quantity on which the full guarantee is paid. Supplies in excess of the Standard Quantity realise a lower price approximating to the value of milk manufactured. The Standard Quantity has been raised periodically to allow for increases in liquid sales in the areas covered by the different Boards. Table 8 shows the changes in the Standard Quantity and also the excess production over the Standard Quantity in each Board area. These changes are further illustrated by Graphs 1 and 2 for the Aberdeen and District and North of Scotland Milk Marketing Board Areas.

In Table 9 the guaranteed price per gallon in each Board area is detailed. The guaranteed price in the Aberdeen and District Milk Marketing Board Area is 0.65d. per gallon greater than in the England and Wales and Scottish Milk Marketing Boards' Areas while the guaranteed price in the North of Scotland Milk Marketing Board Area is 1.74d. per gallon greater than in the England and Wales and Scottish Milk Marketing Boards' Areas. This price difference is granted to ameliorate the disadvantages of the geographical situation of the two Boards' Areas, which results in a higher cost of foods, fertilisers, etc. to the farmers, because of transportation distances.

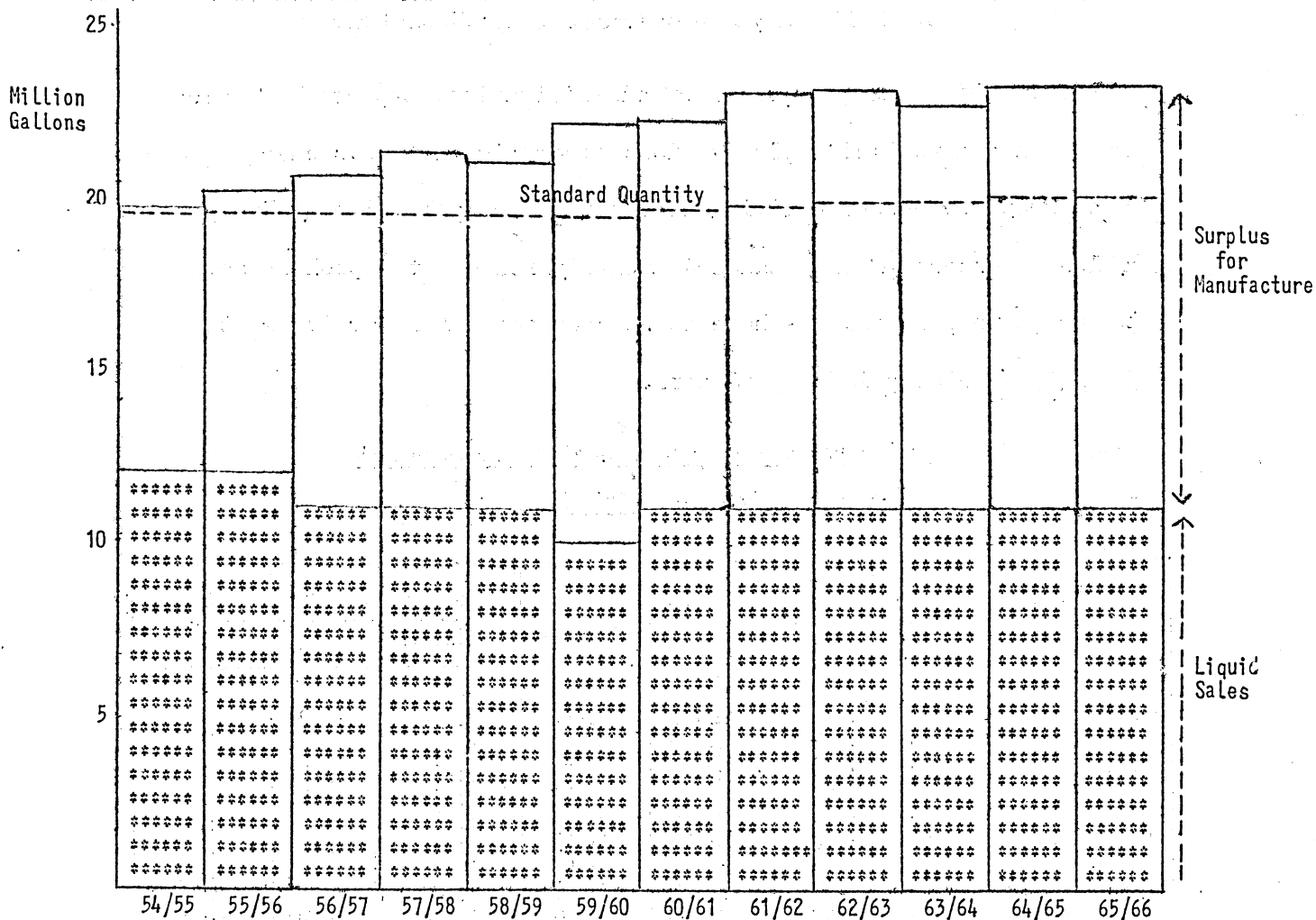
Table 9 Guaranteed Price in Each Board Area  
Pence per Gallon

Year	England and Wales	Scottish	Aberdeen and District	North of Scotland	Northern Ireland	United Kingdom
1954/55	37.32	37.33	37.97	39.07	35.97	37.27
1955/56	38.09	38.10	38.75	39.83	36.74	38.04
1956/57	38.50	38.51	39.15	40.24	37.16	38.45
1957/58	38.75	38.76	39.40	40.49	37.41	38.70
1958/59	37.75	37.76	38.40	39.49	36.41	37.70
1959/60	37.75	37.76	38.40	39.49	36.41	37.70
1960/61	37.50	37.51	38.15	39.24	36.16	37.45
1961/62	38.30	38.31	38.95	40.04	36.96	38.25
1962/63	37.90	37.91	38.44	39.64	36.56	37.85
1963/64	38.40	38.41	39.05	40.14	37.06	38.35
1964/65(a)	40.90	40.91	41.55	42.64	39.56	40.85
1965/66(a)	41.90	41.91	42.55	43.64	40.56	41.85

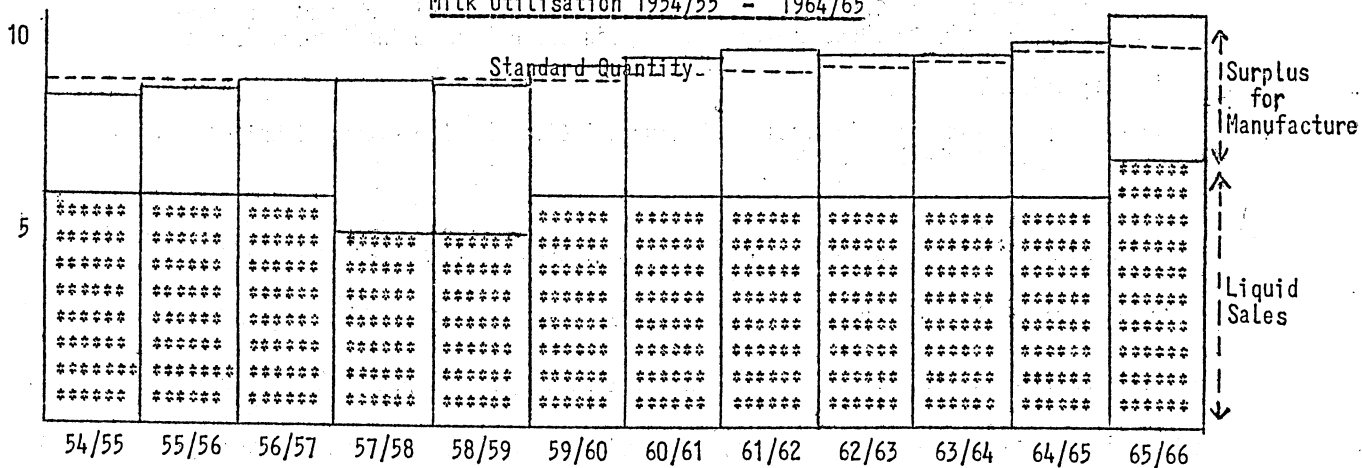
(a) Includes the 0.25d. per gallon earmarked for the Boards' Compositional Quality Schemes  
Source: United Kingdom Dairy Facts and Figures 1965. The Federation of United Kingdom Milk Marketing Boards.



Graph 1 Aberdeen and District Milk Marketing Board Area  
Milk Utilisation 1954/55 - 1964/65



Graph 2 North of Scotland Milk Marketing Board Area  
Milk Utilisation 1954/55 - 1964/65



The monthly prices payable to wholesale producers in each Board area are shown in Table 10. The effective guaranteed price per gallon is calculated as follows:-

$$\frac{(\text{Standard Quantity} \times \text{Guaranteed Price}) + (\text{Excess Production over Standard Quantity} \times \text{Manufacturing Price})}{\text{Standard Quantity} + \text{Excess Production over Standard Quantity}}$$

From this price, expenses of administration, expenses of sales promotion and publicity plus various other miscellaneous charges have to be deducted before arriving at the average pool price. Every gallon in excess of the Standard Quantity reduces the pool price. Ex-farm transport charges have to be deducted before arriving at the actual price paid to producers.

Table 10 Monthly Prices Payable to Wholesale Producers in Each Board Area, 1965/66

Month	England and Wales (a)	Scottish	Aberdeen and District	North of Scotland		Northern Ireland
	s. d.	s. d.	s. d.	Mainland s. d.	Orkney s. d.	
April	3: 1½	3: 1	2: 11½	3: -½	3: 1½	2: 8½
May	2: 5	2: 4½	2: 6½	2: 6½	2: 7½	2: 1½
June	2: 5	2: 3¾	2: 7	2: 6½	2: 6½	2: 1½
July	2: 9	2: 7	2: 7½	2: 7½	2: 8	2: 1½
August	3: 1¾	2: 11½	2: 10	3: 1¾	2: 11½	2: 1
September	3: 4½	3: 3½	3: 4½	3: 7¾	3: 4½	2: 4½
October	3: 5	3: 5½	3: 5	4: -½	3: 6½	2: 10½*
November	3: 4¾	3: 9½	3: 5½	4: -½	3: 10½	3: 5
December	3: 6¾	3: 9¾	3: 6¾	4: -½	3: 10	3: 5½*
January	3: 6½	3: 9¾	3: 7½	4: -½	3: 9½	3: 5½*
February	3: 6	3: 8¾	3: 5½	3: 10	3: 9½	3: 5½*
March	3: 6½	3: 6	3: 3½	3: 7¾	3: 8½	3: 1½
Guaranteed Price	3: 5	3: 5	3: 5½	3: 6¾	3: 6¾	3: 3½
Effective Guaranteed Price	3: 3	3: 3½	3: 2¾	3: 6	3: 6	2: 10½
Average Pool Price	3: 2½	3: 2½	3: 1¾	3: 5½	3: 5½	2: 10½

(a) The monthly price payable to wholesale producers in England and Wales has been calculated by taking the simple average of prices paid in the eleven regions and adding back 1.08d. transport charge in order to make the figures for each area comparable.

\* Provisional

Source: United Kingdom Dairy Facts and Figures 1966. The Federation of United Kingdom Milk Marketing Boards.

Producers in the Aberdeen and District Milk Marketing Board Area often express discontent at the lower price received per gallon compared with their counterparts under the North of Scotland Milk Marketing Board. The difference is partly due to an extra 1d. per gallon in the guaranteed price for the North of Scotland Milk Marketing Board Area and partly due

to the greater surplus production over the Standard Quantity in the Aberdeen and District Milk Marketing Board Area, which reduces the pool price. This problem has been practically overcome in recent months because of increased production in the North of Scotland Milk Marketing Board Area and decreased production in the Aberdeen and District Milk Marketing Board Area resulting in a levelling out of prices paid to producers in both areas. The price received by producers in the Aberdeen and District Milk Marketing Board Area is fairly similar to that in the England and Wales and Scottish Milk Marketing Boards' Areas and considerably more than that in Northern Ireland.

CHAPTER II  
RESULTS OF THE 1965/66 INVESTIGATION

THE SAMPLE

For the year under review, physical and financial data were obtained from 41 dairy farms in the Aberdeen and District Milk Marketing Board Area and from 26 herds in the North of Scotland Milk Marketing Board Area. The distribution of the sample by county and by size of herd is given in Table 11.

Table 11 Distribution of Sample by County and by Size of Herd

County	Size of Herd (No. of Cows)						Total
	19 and Under	20-39	40-59	60-79	80-99	100 and Over	
Kincardine	1	3	1	1	-	2	8
Aberdeen	1	6	10	5	4	3	29
Banff	-	1	1	1	1	-	4
Moray and Nairn	1	1	1	5	-	1	9
Inverness	-	-	9	-	-	-	9
Ross and Cromarty	-	2	1	2	1	-	6
Orkney	-	-	1	1	-	-	2
Total	3	13	24	15	6	6	67

The sample covered 4,151 cows kept under various systems, the average size of herd being 62 cows. The herds varied considerably both in size and type, but were mainly of good class, commercial animals. The Friesian and Ayrshire breeds are predominant in the area, several of the herds being pedigreed.

The dairy herds were located on farms which ranged in size from 49 to 1,077 acres. Although the majority of the farms were owner-occupied, 24 were tenanted with the rent per acre ranging from £1 3s. 10d. to £7 3s. 6d. per acre. Table 12 shows the frequency distribution of farms by size of farm and by size of herd.

Table 12 Distribution of Sample by Size of Farm and Size of Herd

Acres \ No. of Cows	19 and Under	20-39	40-59	60-79	80-99	100 and Over	Total
99 and Under	3	8	2	-	-	-	13
100 - 199	-	4	8	2	-	-	14
200 - 299	-	1	13	7	6	1	28
300 - 499	-	-	-	4	-	1	5
500 and Over	-	-	1	2	-	4	7
Total	3	13	24	15	6	6	67

CROPPING AND STOCKING OF FARMS IN THE SAMPLE

The average acreage of the 67 farms in the sample was 303 acres, but when rough grazing was excluded, the average acreage of crops and grass was 282 acres. As illustrated in Table 13, the grass acreage covered 54.6 per cent of the arable acreage and barley was the most important cash crop enterprise on the farms in the sample.

Table 13

Cropping

Cropping	Per Farm	Per 100 Acres Crops and Grass
	Acres	%
Wheat	12	4.2
Barley	76	27.0
Oats	11	3.9
Potatoes	12	4.2
Turnips	11	3.9
Kale	1	0.4
Other Crops	5	1.8
TOTAL CROPS	128	45.4
Hay	12	4.2
Grass Silage	50	17.7
Rotation Grass (not cut)	82	29.1
Permanent Grass (not cut)	10	3.6
TOTAL GRASS	154	54.6
TOTAL CROPS AND GRASS	282	100.0
Rough Grazing	21	-

The average stocking of the farms in the sample is presented in Table 14. The livestock population is also expressed as livestock units per farm and per 100 acres crops and grass. On the average farm, dairy cattle constituted 65.9 per cent of all livestock units, the pig enterprise being next in importance (12.2 per cent). Beef cattle and sheep were found to have little importance on the average dairy farm.



Table 14

Stocking

Stocking	Numbers Per Farm	Livestock Units Per Farm	Per Cent of Livestock Units Per Farm	Livestock Units Per 100 Acres Crops and Grass
Cows in Milk	52	65.0	37.3	23.0
Cows, Suckling	-	-	-	-
Cows, Dry	9	9.0	5.2	3.2
Heifers in Calf	17	17.0	9.7	6.0
Heifers, 1-2 Years Old	21	14.0	8.0	5.0
Heifer Calves	21	7.9	4.5	2.8
Bulls	2	2.0	1.2	0.7
<b>TOTAL DAIRY CATTLE</b>	<b>122</b>	<b>114.9</b>	<b>65.9</b>	<b>40.7</b>
Beef Cows	1	1.0	0.6	0.4
Feeding Cattle (1-2 Years Old)	7	4.7	2.7	1.7
Beef Calves	13	4.9	2.8	1.7
<b>TOTAL BEEF CATTLE</b>	<b>21</b>	<b>10.6</b>	<b>6.1</b>	<b>3.8</b>
Ewes	47	9.4	5.4	3.3
Rams	1	0.3	0.2	0.1
Feeding Sheep	11	1.1	0.6	0.4
<b>TOTAL SHEEP</b>	<b>59</b>	<b>10.8</b>	<b>6.2</b>	<b>3.8</b>
Breeding Pigs	14	7.0	4.0	2.5
Fattening Pigs	100	14.3	8.2	5.1
<b>TOTAL PIGS</b>	<b>114</b>	<b>21.3</b>	<b>12.2</b>	<b>7.6</b>
Layers	677	13.5	7.7	4.8
Broilers	163	3.3	1.9	1.1
<b>TOTAL POULTRY</b>	<b>840</b>	<b>16.8</b>	<b>9.6</b>	<b>5.9</b>
<b>TOTAL LIVESTOCK</b>	<b>1,156</b>	<b>174.4</b>	<b>100.0</b>	<b>61.8</b>

Standard output figures were calculated for each farm so that the importance of the dairy unit could be measured in financial terms. The standard output of a sale crop or type of livestock is its average price, including deficiency payments, multiplied by its yield or physical output. The total standard output for a farm is simply the sum of the products of the standard outputs and the respective acres of sale crops and numbers of livestock.

Table 15 shows the average standard output per farm derived from different enterprises. Milk and dairy replacements formed 44.1 per cent of the standard output on the average farm in the sample, cereals formed 18.7 per cent and pigs 14 per cent.

Table 15 Average Standard Output Per Farm Derived From Different Enterprises

Enterprise	Average Standard Output per Farm	%
<u>Cash Crops</u>	£	
Cereals	3,638	18.7
Roots (Including Horticultural Products)	1,590	8.2
Total Cash Crops	5,228	26.9
<u>Livestock and Livestock Products</u>		
Milk	6,720	34.6
Dairy Replacements	1,830	9.5
Beef Cattle	860	4.4
Sheep	542	2.8
Pigs	2,720	14.0
Poultry	1,517	7.8
Total Livestock and Livestock Products	14,189	73.1
All Enterprises	19,417	100.0

The importance of the milk output expressed as percentage of total farm output according to size of farm is given in Table 16. As might be expected, the milk output expressed as a percentage of total farm output and the size of farm are more or less in inverse proportion.

Table 16 Importance of the Milk Output Expressed as Percentage of Total Farm Output

Acreage Size Group	Total Standard Output Per Farm	Milk Output Per Farm	Milk Output Expressed as a Percentage of Total Standard Output
Acres	£	£	£
99 and Under	5,613	2,982	52.6
100 - 199	9,384	4,499	51.6
200 - 299	17,054	7,328	47.0
300 - 499	31,626	8,690	35.4
500 and Over	66,413	14,322	22.3
All Farms	19,417	6,720	34.6

COSTS, RETURNS AND MARGINS

The average costs, returns from milk and calves and margins per cow and per gallon are shown in Tables 1 and 2 in Appendix B for the Aberdeen and District and the North of Scotland Milk Marketing Boards' Areas whilst in Table 17 the average results for all 67 herds costed in the area covered by the North of Scotland College of Agriculture are shown. Tables 1 and 2 in Appendix B provide a comparison of the

average cost in the Milk Marketing Boards' Areas with the average of the 6 most profitable herds in each area. General data on the sample of farms costed in 1965/66 are given in Table 18.

Table 17 Costs, Returns and Margins 1965/66  
Average Results from 67 Herds in College Area

	PER COW	% OF COST	PER GALLON
	£ s.	%	s. d.
<b>FOODS</b>			
Purchased - Concentrates	16: -	13.9	-: 4
Roughages - Draff, etc.	4:14	4.1	-: 1½
Home-grown - Grain	7:16	6.8	-: 2½
Roughages	19:10	16.9	-: 5½
Grazing	11:10	9.9	-: 3
<b>TOTAL FOODS</b>	<b>59:10</b>	<b>51.6</b>	<b>1: 3¾</b>
<b>LABOUR</b>			
Hired	16: 4	14.0	-: 4½
Family	4:12	4.0	-: 1¼
<b>TOTAL LABOUR</b>	<b>20:16</b>	<b>18.0</b>	<b>-: 5½</b>
<b>MISCELLANEOUS</b>			
Direct Costs	14:18	12.9	-: 4
Overheads	10:16	9.4	-: 3
<b>TOTAL MISCELLANEOUS</b>	<b>25:14</b>	<b>22.3</b>	<b>-: 7</b>
<b>HERD REPLACEMENT</b>	<b>9: 8</b>	<b>8.1</b>	<b>-: 2¾</b>
<b>GROSS COST</b>	<b>115: 8</b>	<b>100.0</b>	<b>2: 7</b>
<b>RECEIPTS</b>			
Milk (Sales + Retentions)	143:16	-	3: 2½
Calves (Sales + Retentions)	12: 2	-	-: 3¼
<b>TOTAL RECEIPTS</b>	<b>155:18</b>	<b>-</b>	<b>3: 5½</b>
<b>PROFITS</b>	<b>40:10</b>	<b>-</b>	<b>-:10½</b>

Table 18

General Data on Sample, 1965/66

	ABERDEEN BOARD AREA		NORTH BOARD AREA		WHOLE SAMPLE
	Average of 41 Herds	Average of 6 Most Profitable Herds	Average of 26 Herds	Average of 6 Most Profitable Herds	Average of 67 Herds
Av. No. of Cows/Herd	66	72	56	71	62
% Dry Cows in Herd	21%	18%	22%	17%	21%
% Herd Replaced During Year	34%	39%	31%	27%	33%
	Galls.	Galls.	Galls.	Galls.	Galls.
Yield/Cow	922	1,068	875	1,000	904
Milk Produced/Cow/Day	2.5	2.9	2.4	2.7	2.5
Milk Produced/Cow in Milk/Day	3.2	3.6	3.1	3.3	3.1
% Milk Produced in Winter 6 Months	48.4%	52.2%	47.7%	51.5%	48.2%
	Acres	Acres	Acres	Acres	Acres
Av. Size of Farm	266	305	243	330	257
No. of Acres Grass/Cow	0.92	0.79	0.99	0.81	0.95
No. of Forage Acres (Grass, Turnips, Kale, Hay, Silage)/Cow	1.70	1.61	1.83	1.66	1.75
	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
<u>Foods Fed/Cow</u>					
Purchased Concentrates	11.0	9.9	11.0	5.9	11.0
Home-grown Grain	6.3	8.2	6.3	10.2	6.3
Draff	33.0	44.0	34.8	40.1	33.7
Hay	7.7	5.0	9.2	9.5	8.3
Straw	4.9	2.3	5.2	-	5.0
Silage	61.4	57.2	55.9	120.7	59.3
Roots	54.6	67.0	57.2	10.1	55.6
Other Roughages	4.1	9.2	2.9	9.4	3.6
TOTAL	183.0	202.8	182.5	205.9	182.8
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
<u>Concentrates fed per Gallon</u>					
Winter	3.0	2.5	2.9	2.5	3.0
Summer	1.3	1.2	1.3	1.1	1.3
Year	2.1	1.9	2.1	1.8	2.1
	Hours	Hours	Hours	Hours	Hours
Labour Hours/Cow in Milk	101	82	112	78	105
	£	£	£	£	£
Milk Output/£100 Food Fed	235	273	252	295	242
Milk Output/£100 Labour	695	805	766	1,027	722
Milk Output/£100 Food and Labour	175	201	193	227	182

Over the total sample, the average annual receipts from milk and calves exceeded the cost per cow by £40 10s. and the cost per gallon by 10½d. The margin per cow in the North of Scotland Milk Marketing Board Area was £44 4s. and in the Aberdeen and District Milk Marketing Board Area the margin was £38 2s. Higher gross costs per cow in the Aberdeen Board Area were mainly responsible for this difference. The total receipts per cow were similar for both Boards' Areas, because although the receipts for milk were greater in the North of Scotland Milk Marketing Board Area the receipts for calves were less. The yield per cow was

47 gallons lower in the North of Scotland Milk Marketing Board Area, but the receipts per gallon for milk were greater by 3<sup>1</sup>/<sub>4</sub>d.

The distribution of herds according to production costs and profits or losses are shown in Tables 19 and 20. The Gross Costs of keeping a cow ranged from £66 10s. to £154 8s. while the gross costs per gallon varied from 1s. 11d. to 4s. 6d. Margins ranged from a profit of £89 10s. to a loss of £17 18s. per cow and from a profit of 1s. 7<sup>1</sup>/<sub>4</sub>d. to a loss of 8<sup>3</sup>/<sub>4</sub>d. per gallon.

Table 19 Distribution of Herds According to Production Costs

Gross Costs per Cow		Gross Costs per Gallon	
Cost	No. of Herds	Cost	No. of Herds
Under £80	1	1s. 10d. - 2s. 0d.	1
£80 - £89	1	2s. 0d. - 2s. 2d.	3
£90 - £99	8	2s. 2d. - 2s. 4d.	14
£100 - £109	8	2s. 4d. - 2s. 6d.	14
£110 - £119	23	2s. 6d. - 2s. 8d.	9
£120 - £129	16	2s. 8d. - 2s. 10d.	15
£130 - £139	8	2s. 10d. - 3s. 0d.	4
£140 - £149	1	3s. 0d. - 3s. 2d.	4
£150 and Over	1	Over 3s. 2d.	3
Total	67	Total	67

Table 20 Distribution of Herds According to Profits or Losses

Profit or Loss per Cow		Profit or Loss per Gallon	
Profit or Loss	No. of Herds	Profit or Loss	No. of Herds
Profit:-		Profit:-	
£80 and Over	3	Over 1s. 6d.	3
£70 - £79	2	1s. 4d. - 1s. 6d.	5
£60 - £69	7	1s. 2d. - 1s. 4d.	9
£50 - £59	9	1s. 0d. - 1s. 2d.	12
£40 - £49	11	0s. 10d. - 1s. 0d.	10
£30 - £39	13	0s. 8d. - 0s. 10d.	8
£20 - £29	11	0s. 6d. - 0s. 8d.	10
£10 - £19	8	0s. 4d. - 0s. 6d.	6
£0 - £9	1	0s. 2d. - 0s. 4d.	2
		0s. 0d. - 0s. 2d.	-
Loss:-		Loss:-	
-£10 - -£1	1	-2d. - 0d.	1
-£20 - -£11	1	Over -2d.	1
Total	67	Total	67

The distribution of herds by profit or loss per cow and by size of herd is given in Table 21. Herds of under 40 cows generally show a lower profit per cow than larger herds and this point will be borne out later on in the report.



Table 21 Distribution of Sample by Profit or Loss Per Cow and Size of Herd

No. of Cows Profit Per Cow (£)	19 and Under	20-39	40-59	60-79	80-99	100 and Over	Total
-20 - -11	-	-	1	-	-	-	1
-10 - -1	1	-	-	-	-	-	1
0 - 9	1	-	-	-	-	-	1
10 - 19	1	2	3	1	-	1	8
20 - 29	-	3	6	2	-	-	11
30 - 39	-	3	1	8	1	-	13
40 - 49	-	4	1	2	2	2	11
50 - 59	-	-	4	2	2	1	9
60 - 69	-	1	5	-	-	1	7
70 - 79	-	-	1	-	-	1	2
80 and Over	-	-	2	-	1	-	3
Total	3	13	24	15	6	6	67

An assessment of herd profits and losses was made for the 67 herds included in this report. Table 22 shows the distribution of the sample by profit and loss per herd and size of herd and this table again shows that profitability increases with the size of unit.

Table 22 Distribution of Sample by Profit or Loss Per Herd and Size of Herd

No. of Cows Profit (£)	19 and Under	20-39	40-59	60-79	80-99	100 and Over	Total
Loss	1	-	1	-	-	-	2
0 - 499	2	2	-	-	-	-	4
500 - 999	-	6	3	1	-	-	10
1,000 - 1,999	-	4	8	-	-	-	12
2,000 - 2,999	-	1	6	10	-	-	17
3,000 - 3,999	-	-	3	3	2	1	9
4,000 - 4,999	-	-	2	1	2	1	6
5,000 - 5,999	-	-	1	-	1	-	2
6,000 - 6,999	-	-	-	-	-	2	2
7,000 - 7,999	-	-	-	-	1	-	1
8,000 - 8,999	-	-	-	-	-	1	1
9,000 and Over	-	-	-	-	-	1	1
Total	3	13	24	15	6	6	67

FEEDING

Food was the most important cost item comprising 51.6 per cent of the annual gross cost per cow. Purchased foods accounted for 34.6 per cent of the total food costs and consisted mainly of cakes, grain balancer meals and draff. Only a very small quantity of hay, sugar beet pulp and roots were bought. Home-grown concentrates fed consisted mainly of oats and barley. Some of the home-grown concentrates were bruised and fed along with draff to provide a certain amount of the production ration, while some grain was mixed with grain balancer

meals or straights to produce a cheaper concentrate ration than purchased cakes. Many farmers mix their own concentrate mixtures and even if a slightly higher level of total concentrate feeding per gallon produced is necessary as a result of using home-mixed feeds, the total concentrate food cost per cow can be reduced slightly. In order to achieve high profits per cow, strict attention has to be paid to the rationing of concentrates, particularly when purchased concentrates only are used.

Roughages accounted for 71.4 per cent of the total cost of home-grown foods. The amount of these foods used varied with the feeding systems, some of which were clearly defined while others varied according to weather conditions etc. The majority of the dairy farmers (36) favoured a maintenance ration of turnips and silage; 14 fed turnips plus hay; 10 fed silage only; whilst 7 fed turnips for a short period at the beginning of the winter, but changed over to silage only during November or December. The winter of 1965/66 was a hard one and the farms which were dependent on roots had great difficulty in maintaining their normal feeding pattern towards the end of the winter because, by that time, many of the roots were of little value for feeding purposes. These farmers had to rely mainly on stock feed potatoes, sugar beet pulp, hay and draff to supply the maintenance rations from the end of February onwards.

In Table 23 the food consumption in cwts. per cow and in cwts. of Starch Equivalent (S.E.) per cow for winter, summer and the full year are given.

Table 23 Foods Fed Per Cow Expressed as Cwts. and Cwts. S.E. Excluding Grazing

	Cwts. per Cow			Cwts. S.E. Per Cow		
	Summer	Winter	Year	Summer	Winter	Year
CONCENTRATES:						
Purchased	3.8	7.1	10.9	2.5	4.6	7.1
Home-Grown	1.6	4.6	6.2	1.1	3.2	4.3
TOTAL	5.4	11.7	17.1	3.6	7.8	11.4
ROUGHAGES:						
Druff	8.2	25.2	33.4	1.5	4.5	6.0
Hay	1.6	6.7	8.3	0.5	2.1	2.6
Straw	0.8	4.2	5.0	0.2	0.8	1.0
Silage	9.3	47.6	56.9	1.1	5.7	6.8
Roots	9.5	46.9	56.4	0.9	4.2	5.1
Other	0.5	3.3	3.8	0.1	0.6	0.7
TOTAL	29.9	133.9	163.8	4.3	17.9	22.2
TOTAL FOODS	35.3	145.6	180.9	7.9	25.7	33.6

N.B. Grazing has been excluded

The value of conventional feeding standards for calculating the nutritional requirements of livestock and the feeding values of rations, especially for milk production, may be unreliable to a certain extent, but, despite this, the Starch Equivalent standards remain the only simple basis for calculating the adequacy of rations fed to livestock. In theory, the Starch Equivalent requirements to keep a Friesian cow for a year (i.e. 7 lbs. per day for maintenance) are 22.8 cwts. Starch Equivalent, while a further 21.8 cwts. Starch Equivalent would be required to produce the average yield (904 gallons) of cows in the sample, giving a total theoretical requirement of 44.6 cwts. Starch Equivalent for the year. In practice, 33.6 cwts. Starch Equivalent were fed, but no account has been taken of the value of grazing.

During the winter six months, 25.7 cwts. Starch Equivalent were fed, 17.9 cwts. of which came from roughages. Using the above standards, it can be calculated that roughages supplied sufficient nutrients to provide maintenance plus one and a half gallons per day whilst the 7.8 cwts. Starch Equivalent from concentrates supplied sufficient nutrients for almost two gallons per day. Thus, in theory, sufficient Starch Equivalent was fed to supply maintenance plus three and a half gallons per day. The average yield per cow in milk during the winter six months was 545 gallons which suggests that each cow in milk averaged

three gallons of milk per day. The average yield per cow in herd (in milk and dry) was, however, only 436 gallons with the result that on average, each cow in herd averaged approximately two and a half gallons per day. It would appear therefore, that Starch Equivalent was being fed above the theoretical requirements during the winter.

Grass is the most important source of Starch Equivalent during the summer six months and it is difficult to calculate exactly how many cwts. of Starch Equivalent are derived from grass. In this area, cows are not normally put out to grass until the end of April or the beginning of May, with the result that cows are at grass for approximately 150 days during the summer. In the months of May and June grass usually supplies maintenance plus production, in July maintenance plus three gallons, in August maintenance plus two gallons and in September maintenance plus, at least, one gallon. Therefore, it is safe to assume that grass supplies maintenance plus two and a half gallons over the summer grazing period as a whole. This would amount to approximately 17.7 cwts. Starch Equivalent, which added to the 7.9 cwts. of Starch Equivalent provided by other foods would give a total of 25.6 cwts. Starch Equivalent fed during the summer six months. This would be sufficient, as in the winter six months, to supply, in theory, Starch Equivalent for maintenance plus three and a half gallons per day. The average yield per cow in milk during the summer was 585 gallons suggesting that each cow in milk averaged three and a quarter gallons per day, whereas the average yield per cow in herd was only 468 gallons suggesting that on average each cow in the herd averaged slightly more than two and a half gallons per day. It would appear from these figures that there was also over-feeding above theoretical requirements in the summer.

Taking the year as a whole, there appears to have been some over-feeding in relation to theoretical requirements, but there are certain factors which may help to explain this. For example, steaming up rations have not been taken account of specifically in the calculation of total requirements; the standards used may not be absolutely accurate as no account has been taken of the breed or quality of milk produced;

again the Starch Equivalent factors used may not be entirely accurate particularly in the case of foods such as silage, the quality of which can vary considerably depending on weather conditions at the time of ensiling the grass etc.

Grazing accounted for £11 10s. or 19.4 per cent of the total feed cost of £59 10s. The cost structure of grazing is given in Table 24.

Table 24 Grazing Cost Per Acre and Per Farm

	£ s. d.	£ s. d.
<u>Labour</u>		
Operational Cost - Man	-:13: 1	
Tractor	-: 9:11	1: 3: -
<u>Other Costs</u>		
Manures Applied in 1965	4:17: 8	
Proportion of Cost of Sowing Out	1:12: 5	
Rent	3: 3: 7	
Overheads	2: 4: 8	11:18: 4
TOTAL GROSS COST PER ACRE		13: 1: 4
<u>Less</u> Proportion of Cost Removed in Hay	1: 3: 9	
<u>Less</u> Proportion of Cost Removed in Silage	2:13: 3	3:17: -
TOTAL NET COST PER ACRE		9: 4: 4
Total Average Grazing Cost per Farm (Including rented grass)		813:11: 5
<u>Less</u> Allowance of 1/5th for Winter Grazing		162:14: 4
NET COST OF SUMMER GRAZING PER FARM		650:17: 1
Average No. of Livestock Units* Grazing per Farm		1,882
Weekly Grazing Cost per Livestock Unit		6s. 11d.
Weekly Grazing Cost of One Cow in Milk (1½ Livestock Units)		8s. 8d.

\* See Appendix A

The cows grazed for approximately 21 weeks during the summer period and on average 1.31 livestock units (1.05 dairy cows) grazed per acre. There was a wide variation in the number of dairy cows per acre ranging from 1.95 to 0.64. Farmers who practise intensive grass-land management carry far more cows per acre than farmers grazing extensively. Although the cost per acre of grazing is considerably greater when intensive use of grassland is made, more than double the quantity of milk can be produced per acre which offsets the high cost per acre. Where grassland is not utilised to the full extent there is a wastage of valuable food material which is easily the cheapest source of Starch Equivalent.

### LABOUR

The total cost of labour was 18 per cent of the gross cost and amounted to £20 16s. per cow and 5½d. per gallon. Of this, approximately 78 per cent represented hired labour. The overall average number of labour hours required per cow in milk was 105, but this figure concealed a very wide range of results, running from 65 to 153 hours. Herds with high labour requirements are generally small, when the farmer and family do nearly all the work themselves and are not too concerned about the number of hours worked. On farms where silage is self-fed and where there is a court and parlour system the number of hours worked tended to be reduced. Nevertheless costs were not reduced on farms following such a system because it was found that wages of dairy cattlemen were higher because of the greater number of cows to be looked after. Dairy cattlemen are normally employed for herds of 40 cows and over and there would appear to be no real relationship between labour requirements and herd size. Considerable economies could be made in the use of labour on many farms, the range in labour hour requirements being too great to be attributable to size of herd, yield per cow or poorly designed buildings.

### MISCELLANEOUS COSTS

The miscellaneous costs accounted for 22.3 per cent of the gross cost and amounted to £25 14s. per cow and 7d. per gallon. Overhead costs form 42 per cent of the total miscellaneous costs. Table 25 itemises the various costs and shows that of costs other than overheads, veterinary expenses and medicines, power, litter and general dairy expenses form the greatest proportion.

Table 25

Analysis of Miscellaneous Costs Per Cow

	Aberdeen Board Area	North Board Area	Whole Sample
No. of Herds	41	26	67
	£ s.	£ s.	£ s.
Upkeep of Dairy Buildings	1: 6	1: 6	1: 6
Bull Upkeep and/or A.I. Fees	1: -	-:16	-:18
Vet. and Medicines	2:10	2: 4	2: 8
Dairy Equipment and Milking Machine Depreciation	1: -	1: 2	1: -
Dairy Equipment and Milking Machine Repairs	1:12	1:12	1:12
Bulk Tank Depreciation and Repairs	1: 4	1: 2	1: 4
Power (Electricity, Petrol, etc.)	2: 4	2: 4	2: 4
General Dairy Expenses (Milk Recording Fees, etc.)	1:18	2: -	1:18
Litter, Bought and/or Home-Grown	2: 6	2: 4	2: 6
Tractor Work	-: 2	-: -	-: 2
Overheads	11: 2	10: 8	10:16
<b>TOTAL MISCELLANEOUS COSTS</b>	<b>26: 4</b>	<b>24:18</b>	<b>25:14</b>

HERD REPLACEMENT

Herd replacement costs formed 8.1 per cent of the gross cost and amounted to £9 8s. per cow or 2<sup>3</sup>/<sub>4</sub>d. per gallon. Details of the average cost of herd replacement per herd are given in Table 26.

Table 26

Average Cost of Herd Replacement Per Herd

	No. of Cows	£		No. of Cows	£
Opening Valuation - Cows	62	3,862	Deaths - Cows	1	23
Purchases - Cows and Heifers	5	494	Sales - Cows	18	1,120
Transferred-in - Heifers	16	1,324	Closing Valuation - Cows	64	3,979
			Cost of Replacement		558
<b>Total</b>	<b>83</b>	<b>5,680</b>	<b>Total</b>	<b>83</b>	<b>5,680</b>

At the opening valuation date, the average herd of 62 cows was valued at £62 per cow, while at the closing valuation date there were 64 cows valued also at £62 per head. Cows and heifers were purchased at an average price of £99 whereas home-bred heifers were transferred in at an estimated market value of £83. The average price received for cows sold was £62, high prices being paid for farrow cows in the summer of 1965 when many cows, particularly Friesians, were bought by foreign buyers for export to the Continent. The death rate, at an average of one cow per herd was not high, the main causes of deaths,

being grass staggers, septicemia, and accidents. The price received for dead cows may, however, appear to be high at £23, but many farmers now insure their cows with the result that insurance claims have tended to increase the value of cows which have died.

The majority of the farms in the sample rear their own replacement stock, but some have to buy in a few of their replacements because of a limited acreage available for rearing purposes. Higher replacement costs occur on farms where the majority of replacements are purchased, but the difference in costs between purely self-maintained herds and partially self-maintained herds is not significant. On individual farms the cost of herd replacement varied from £2 8s. to £23 4s. per cow. On average, one-third of the cows in the sample were replaced during the year and this figure suggests that there is a high wastage of dairy cows in the area.

#### COSTS, RETURNS AND MARGINS FOR SUMMER AND WINTER MILK

Tables 3 and 4 in Appendix B and Table 27 give the average cost of winter and summer milk production for the two Milk Marketing Boards' Areas and for the sample as a whole.



Table 27 Costs, Returns and Margins, Winter and Summer Milk Production 1965/66  
Averages of Results From 67 Herds Costed in College Area

<u>AVERAGE COST OF SUMMER MILK PRODUCTION</u> (1st April, 1965 - 30th September, 1965)			
	PER COW	% OF COST	PER GALLON
	£ s.	%	s. d.
<u>FOODS</u>			
Concentrates (Purchased + H.G.)	7:10	15.3	-: 3 $\frac{3}{4}$
Roughages (Purchased + H.G.)	4: 6	8.8	-: 2 $\frac{1}{4}$
Grazing	9:10	19.3	-: 4 $\frac{3}{4}$
TOTAL FOODS	21: 6	43.4	-:10 $\frac{3}{4}$
Labour	10:14	21.8	-: 5 $\frac{1}{4}$
Miscellaneous	12: 6	25.0	-: 6 $\frac{1}{2}$
Herd Replacement	4:16	9.8	-: 2 $\frac{1}{2}$
GROSS COST	49: 2	100.0	2: 1
<u>RECEIPTS</u>			
Milk (Sales + Retentions)	67:14	-	2:10 $\frac{1}{4}$
Calves (Sales + Retentions)	5:14	-	-: 2 $\frac{3}{4}$
TOTAL RECEIPTS	73: 8	-	3: 1
PROFIT	24: 6	-	1: -
<u>AVERAGE COST OF WINTER MILK PRODUCTION</u> (1st October, 1965 - 31st March, 1966)			
	PER COW	% OF COST	PER GALLON
	£ s.	%	s. d.
<u>FOODS</u>			
Concentrates (Purchased + H.G.)	16: 6	24.5	-: 8 $\frac{1}{2}$
Roughages (Purchased + H.G.)	21:18	33.0	1: - $\frac{3}{4}$
TOTAL FOODS	38: 4	57.5	1: 9 $\frac{1}{4}$
Labour	10: 2	15.2	-: 5 $\frac{3}{4}$
Miscellaneous	13: 8	20.2	-: 7 $\frac{1}{2}$
Herd Replacement	4:14	7.1	-: 2 $\frac{3}{4}$
GROSS COST	66: 8	100.0	3: 1 $\frac{1}{2}$
<u>RECEIPTS</u>			
Milk (Sales + Retentions)	76: -	-	3: 6 $\frac{1}{2}$
Calves (Sales + Retentions)	6: 8	-	-: 3 $\frac{3}{4}$
TOTAL RECEIPTS	82: 8	-	3:10 $\frac{1}{4}$
PROFIT	16: -	-	-: 8 $\frac{3}{4}$

It can be seen from the tables that it costs 1s. 0 $\frac{1}{2}$ d. more per gallon to produce winter milk than summer milk and that the cost of feeding is greater by 10 $\frac{1}{2}$ d. per gallon during the winter period. Labour and miscellaneous costs are also slightly less per gallon in the summer. The margins per cow and per gallon are also greater during the summer six months because of the decreased costs of production.

MILK YIELD

Milk yield per cow averaged 904 gallons and it will be shown later that milk yields per cow have tended to increase steadily over the years. Table 28 shows the percentage milk production per month and the percentage calvings.

Table 28 Percentage Milk Production and Calvings per Month

MONTH	MILK PRODUCTION	CALVINGS
	%	%
April	9.2	6.5
May	9.9	5.0
June	8.9	4.3
July	8.2	8.5
August	7.9	9.1
September	7.7	12.0
October	7.2	11.7
November	7.4	10.4
December	8.0	7.9
January	8.3	6.6
February	7.9	8.9
March	9.4	9.1
	100.0	100.0

The peak period for milk production was during the months March to June. This may be attributed to spring calvings plus the fact that milk production of autumn calved cows and heifers is often increased when cows are put out to grass in the spring. The peak months for calvings were September to November. The percentage of milk produced in the winter was 48.2 per cent compared with 51.8 per cent in the summer six months.

PROFITABILITY

It has been pointed out earlier in this report that the profit per cow and per gallon varied considerably from farm to farm. Again, when figures relating to the most profitable herds are compared with the average of all herds in the two Boards' Areas (Tables 1 and 2 in the Appendix), it can be seen that the gross costs per cow were very similar, but that the receipts in both cases were higher. It was felt that it might be of interest to undertake further analysis of the data to examine the effect of seasonality of milk production, milk yields per cow, size of herd, breed of cow and type of housing on the costs, returns and margins.

A. COSTS, RETURNS AND MARGINS ACCORDING TO SEASONALITY OF MILK PRODUCTION

Table 29 indicates that the margin per cow increases as the percentage of milk produced in the winter increases. Of the twelve most profitable herds in the sample, however, only two produced more than 55 per cent of their milk in the winter, seven produced 50 - 54.9 per cent, two produced 45 - 49.9 per cent and one produced 40 - 44.9 per cent. It would appear, that, in general, all costs tend to increase as more milk is produced in the winter, but receipts for milk increase at a greater rate than costs. It has been found by various bodies, including the Livestock Records Bureau\* that autumn calvers generally produce more milk than spring calvers and this would appear to be the case in the sample of herds costed as the milk yield per cow increases when a greater percentage of milk is produced in the winter.

Table 29 Costs, Returns and Margins According to Seasonality of Milk Production

	% of Milk Produced in Winter				
	39.9% and Under	40.0 - 44.9%	45.0 - 49.9%	50.0 - 54.9%	55.0% and Over
No. of Herds	8	9	23	18	9
<u>COSTS PER COW:</u>	£ s.	£ s.	£ s.	£ s.	£ s.
Food	55: 8	54:10	59:14	62: -	62:12
Labour	20: 2	20: 2	20:12	21:14	21: 4
Miscellaneous	25: 2	25: 6	25: 2	26: 6	27: -
Herd Replacement	8:14	7:16	9:16	9:12	10: 6
TOTAL COST PER COW	109: 6	107:14	115: 4	119:12	121: 2
<u>RECEIPTS PER COW:</u>					
Milk	123:14	127: 6	144: 4	151:12	162: 6
Calves	14:16	11:10	11:12	12:18	9:10
TOTAL RECEIPTS PER COW	138:10	138:16	155:16	164:10	171:16
MARGIN PER COW	29: 4	31: 2	40:12	44:18	50:14
	s. d.	s. d.	s. d.	s. d.	s. d.
TOTAL COST PER GALLON	2: 8 $\frac{1}{4}$	2: 7 $\frac{1}{4}$	2: 6	2: 7 $\frac{3}{4}$	2: 7 $\frac{1}{4}$
TOTAL RECEIPTS PER GALLON	3: 4 $\frac{3}{4}$	3: 4 $\frac{1}{4}$	3: 4 $\frac{1}{2}$	3: 6 $\frac{1}{2}$	3: 8 $\frac{1}{4}$
MARGIN PER GALLON	-: 8 $\frac{1}{2}$	-: 9	-:10 $\frac{1}{2}$	-:10 $\frac{3}{4}$	1: 1
Yield per Cow - Gallons	818	841	923	930	941
Size of Herd	38	49	66	75	59
% Milk Produced in Winter	36.1%	42.8%	47.4%	52.1%	58.1%

\* Reference: Livestock Records Bureau - Newsletter No. 19

B. COSTS, RETURNS AND MARGINS ACCORDING TO MILK YIELD PER COW

From a study of Table 30 it would appear that the most profitable herds, measured on the basis of profit per cow, were producing at a yield level in excess of 1,000 gallons per cow. Of the twelve most profitable herds in the sample, eight had yields per cow in excess of 1,000 gallons, three had yields of 900 to 999 gallons, and only one had a yield per cow in the range 800 to 899 gallons. As the milk yield increases, all costs per cow except herd replacements tend to increase, but the higher costs are more than offset by the higher level of total receipts. Costs per gallon, on the other hand tend to decrease as milk yield increases until the higher levels of yield are attained. Friesians are the predominant breed where high yields are concerned and as a breed they have a higher potential to yield milk,\* but require more food to do so. If a farmer has a potentially high-yielding herd it is worthwhile feeding concentrates fairly generously in order to achieve these yields. To achieve a high level of production, however, good managerial ability is required.

Table 30 Costs, Returns and Margins According to Milk Yield per Cow

	Milk Yield per Cow					
	699 Galls. and Under	700 - 799 Galls.	800 - 899 Galls.	900 - 999 Galls.	1,000 - 1,099 Galls.	1,100 Galls. and Over
No. of Herds	4	10	16	24	7	6
	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.
<u>COSTS PER COW:</u>						
Food	47:18	51: 4	56: 8	63:16	60:18	70: 4
Labour	16: 6	20:18	21:10	20:16	20: 2	23: -
Miscellaneous	21: 8	24: 6	26:18	25:16	25:12	27:10
Herd Replacement	12: -	10: -	9:14	8: -	10: 4	10:14
TOTAL COST PER COW	97:12	106: 8	114:10	118: 8	116:16	131: 8
<u>RECEIPTS PER COW:</u>						
Milk	95:18	122: 4	138:10	148: 2	167: 8	181:16
Calves	11:10	10: 8	10: 6	12:16	14:18	13:10
TOTAL RECEIPTS PER COW	107: 8	132:12	148:16	160:18	182: 6	195: 6
MARGIN PER COW	9:16	26: 4	34: 6	42:10	65:10	63:18
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
TOTAL COST PER GALLON	3: 3	2:10	2: 7 $\frac{3}{4}$	2: 6	2: 3	2: 4
TOTAL RECEIPTS PER GALLON	3: 6 $\frac{1}{4}$	3: 6 $\frac{1}{2}$	3: 5 $\frac{1}{2}$	3: 5	3: 6	3: 5 $\frac{3}{4}$
MARGIN PER GALLON	-: 3 $\frac{1}{4}$	-: 8 $\frac{1}{2}$	-: 9 $\frac{3}{4}$	-:11	1: 3	1: 1 $\frac{3}{4}$
Yield per Cow - Galls.	612	753	862	928	1,041	1,128
Size of Herd	37	51	60	71	67	54
% Milk Produced in Winter	38.1%	45.6%	50.2%	47.8%	52.0%	50.7%

\* Reference: Livestock Records Bureau - Newsletter No. 23

C. COSTS, RETURNS AND MARGINS ACCORDING TO SIZE OF HERD

In Table 31, it can be seen that the cost per cow remained fairly static between herd size groups, but the most profitable size of herd was between 80-99 cows. However, the over 100 cows group and the 40-59 cows group were also profitable. An analysis of the twelve most profitable herds shows that seven herds are in the 40-59 group, three in the over 100 cows group and one each in the 80-99 size group, and 20-39 size group. Labour costs are lowest in the 40-59 and 80-99 cows group. In the first case the size indicates a typical one-man unit, whereas in the second case the herds can be run fairly easily by two men. In the under 39 cow groups insufficient cows are being kept to keep one man fully employed, whereas herds in the 60-79 cows group, particularly those housed in byres, are too large for one man to run efficiently and yet too small to employ two men full-time. As indicated in Table 22 the margin per herd varies considerably with size of herd and this fact is brought out in Table 31.

Table 31 Costs, Returns and Margins According to Size of Herd

	Size of Herd					
	19 and Under	20-39	40-59	60-79	80-99	100 and Over
No. of Herds	3	13	24	15	6	6
<u>COSTS PER COW:</u>	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.
Food	61:10	59: 4	60:12	53:18	60: 4	68: 8
Labour	25:18	21: 6	20: -	21:10	18:10	20:16
Miscellaneous	28: -	26:10	25: 8	26: 6	24: 2	24: 4
Herd Replacement	8:10	10:16	10: -	8: 6	10:16	5:18
TOTAL COST PER COW	123:18	117:16	116: -	110: -	113:12	119: 6
<u>RECEIPTS PER COW:</u>						
Milk	114: 2	139: -	148: -	139: -	154:16	154: 2
Calves	14: 4	14:12	12: 6	7:16	12: 8	14:14
TOTAL RECEIPTS PER COW	128: 6	153:12	160: 6	146:16	167: 4	168:16
MARGIN PER COW	4: 8	35:16	44: 6	36:16	53:12	49:10
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
TOTAL COST PER GALLON	3: 2 $\frac{3}{4}$	2: 8 $\frac{1}{2}$	2: 6 $\frac{3}{4}$	2: 6 $\frac{1}{2}$	2: 4 $\frac{1}{4}$	2: 5 $\frac{1}{2}$
TOTAL RECEIPTS PER GALLON	3: 4	3: 6 $\frac{1}{4}$	3: 5 $\frac{3}{4}$	3: 4 $\frac{3}{4}$	3: 5 $\frac{1}{2}$	3: 5 $\frac{3}{4}$
MARGIN PER GALLON	-: 1 $\frac{1}{4}$	-: 9 $\frac{3}{4}$	-:11	-:10 $\frac{1}{2}$	1: 1 $\frac{1}{4}$	1: - $\frac{1}{4}$
Yield per Cow - Galls	775	876	927	863	966	972
Size of Herd	19	32	48	72	88	151
% Milk Produced in Winter	41.6%	44.4%	49.0%	48.8%	52.0%	50.7%

D. COSTS, RETURNS AND MARGINS ACCORDING TO BREED OF COW

On studying Table 32 it would appear that the most profitable breed of cow is Friesian and of the twelve most profitable herds, nine are Friesian, two are mixed herds and one is Ayrshire. Food costs are considerably higher in the case of Friesians, but other costs are lower. Herd replacement costs are lower because of the better trade for Friesian farrow cows. Receipts per cow are also higher because of the higher milk yields and better prices for bull calves. Of the Ayrshire herds in the sample three have introduced Friesian bulls to their herds during the past year and there will be a gradual change-over to the Friesian breed in future years. It is likely that other farmers with Ayrshiré herds will follow suit in the future.

Table 32 Costs, Returns and Margins According to Breed of Cow

	Breed		
	Friesian	Ayrshire	Mixed
No. of Herds	30	22	14
	£ s.	£ s.	£ s.
<u>COSTS PER COW:</u>			
Food	63: -	55:18	57: 4
Labour	20: 2	22: 8	19:16
Miscellaneous	25:12	26: 4	25: -
Herd Replacement	9: 2	11: 2	7: -
TOTAL COST PER COW	117:16	115:12	109: -
<u>RECEIPTS PER COW:</u>			
Milk	149: 6	142: 4	133: 4
Calves	16: -	6: 8	12:14
TOTAL RECEIPTS PER COW	165: 6	148:12	145:18
MARGIN PER COW	47:10	33: -	36:18
	s. d.	s. d.	s. d.
TOTAL COST PER GALLON	2: 6½	2: 8½	2: 6½
TOTAL RECEIPTS PER GALLON	3: 5¾	3: 5	3: 5
MARGIN PER GALLON	-:11½	-: 8¾	-:10¾
Yield per Cow - Gallons	950	878	864
Size of Herd	56	72	61
% Milk Produced in Winter	47.8%	50.3%	44.9%

E. COSTS, RETURNS AND MARGINS ACCORDING TO TYPE OF HOUSING

An analysis has been made of the costs, returns and margins according to whether cows were housed in byres or in some form of loose housing, either courts and parlour or cubicles and parlour. Herds housed loose appear to be the most profitable. Although food and herd replacement costs were higher in the case of loose housing, labour costs were lower. Contrary to the opinion of many farmers, the average yield per cow was higher under loose-housing conditions than under conditions where cows were housed in byres. Many farmers are being faced with the proposition that in the near future, it may be impossible to hire dairy cattlemen to work in byres unless there is an automatic mucking system, pipe-line milking and perhaps front-feeding and it might be less costly in many cases to convert the buildings into some form of loose housing. With the results available from the present sample, it would appear that, so long as the capital cost is not too great, it might be advisable for some farmers to change to some form of loose-housing in the near future before being faced with labour difficulties.

Table 33 Costs, Returns and Margins According to Type of Housing

	BYRES		LOOSE HOUSING	
	Average of 53 Herds	Average of 6 Most Profitable Herds	Average of 14 Herds	Average of 6 Most Profitable Herds
<u>COSTS PER COW:</u>	£ s.	£ s.	£ s.	£ s.
Food	58:16	57:16	62: 6	60: 4
Labour	21: 4	21:14	19:10	18: 6
Miscellaneous	25:16	25:10	25: 8	23: 2
Herd Replacement	8:16	7: -	11:10	11:10
<u>TOTAL COST PER COW</u>	114:12	112: -	118:14	113: 2
<u>RECEIPTS PER COW:</u>				
Milk	140:18	165:10	155: 2	172: 6
Calves	11:14	15:14	13: 4	13: 8
<u>TOTAL RECEIPTS PER COW</u>	152:12	181: 4	168: 6	185:14
<u>MARGIN PER COW</u>	38: -	69: 4	49:12	72:12
	s. d.	s. d.	s. d.	s. d.
<u>TOTAL COST PER GALLON</u>	2: 7½	2: 3	2: 6	2: 2¾
<u>TOTAL RECEIPTS PER GALLON</u>	3: 5½	3: 7½	3: 6	3: 7¾
<u>MARGIN PER GALLON</u>	-:10	1: 4½	1: -	1: 5
Yield per Cow - Gallons	888	1,008	961	1,020
Size of Herd	52	47	99	94
% Milk Produced in Winter	47.4%	53.7%	51.1%	51.4%

From the analyses shown in the five foregoing tables, the hypothesis might be drawn that the most profitable herd judged on the basis of margin per cow is one where the farmer aimed at either:-

(i) A herd yielding over 1,000 gallons of milk per cow housed in some form of loose-housing, producing over 50 per cent of milk in the winter and with a herd size of between 40-59 cows (a one-man unit); or

(ii) A herd yielding over 1,000 gallons of milk per cow, housed in some form of loose-housing, producing over 50 per cent of milk in the winter and with a herd size of 90 plus cows (a two-man unit).

#### MILK QUALITY SCHEMES

Milk quality schemes are in operation in both Boards' Areas. In the North of Scotland Milk Marketing Board Area, a sample of milk is tested each month and the result of the current test of that month is added to the results of the previous eleven months and a simple average is calculated for Total Solids, Butter Fat and Solids not Fat. These average results determine the quality payment band into which the producer's supplies will be placed. By this method of payment producers generally stay in one band for a period and in the case of wholesale producers co-operating in the costing scheme, all were classified as either Grade I or Grade III producers. The classification of the milk quality bands in the North of Scotland Milk Marketing Board Area are as follows:-

Grade I	Total Solids of 12.7% and over	= Producers' Price plus 2d. per gallon
Grade II	Total Solids of 12.0% to 12.6%	= Producers' Price
Grade III	Total Solids of 11.9% and less	= Producers' Price less 3d. per gallon

In the Aberdeen and District Milk Marketing Board Area the milk quality scheme is operated on a monthly basis and a producer could be in a premium band one month and a penalty band the next month. The scheme is based on four weekly tests per calendar month and the results of the scheme are calculated as a straight average of the four test



results or of three or less, when, for any reason, four tests cannot be made. The rates of penalties incurred and premiums paid have been worked out on the basis that the amount of money paid out by the Board in premium payments should be balanced over the year by the amount of money accrued from penalty deductions. The scheme introduced in April 1964 was as follows:-

<u>% Total Solids</u>	<u>Premium</u>
13.00 and Over	1½d.
12.80 - 12.99	1d.
12.60 - 12.79	¾d.
12.20 - 12.59	Pool Price
<u>% Total Solids</u>	<u>Penalty</u>
12.00 - 12.19	- 1d.
11.80 - 11.99	- 2d.
11.50 - 11.79	- 3d.
11.49 and Under	- 4d.

Of the 41 herds costed in the Aberdeen Board Area, 35 were classified as wholesale producers and Table 34 shows the average costs, returns and margins according to milk quality of these wholesale producers. The herds were divided into sections according to the number of monthly payments at premium rates which they received during the year. Gross costs were highest in herds receiving 7-12 monthly payments at premium rates. Food costs, in particular, were higher because more expensive concentrates were being fed in the majority of cases in order to achieve better quality milk. Although the receipts per gallon for milk declined as fewer premium payments were received, the receipts per cow remained similar partly due to the higher level of yield per cow in those groups receiving fewer premium payments. The Ayrshire breed predominated in the group receiving 7-12 premium payments, whereas the Friesian breed predominated in the other two groups. Margins per cow and per gallon increased as the number of premiums paid to producers decreased - the majority of herds producing better quality milk had lower yields. The question can be posed as to whether the

incentives given for higher quality milk are large enough, but in order to give greater incentives, the penalties for lower quality milk would have to be increased and this idea might not be greeted very favourably by producers in the lower quality bands.

Table 34 Costs, Returns and Margins According to Milk Quality

	7-12 Monthly Payments at Premium Prices	4-6 Monthly Payments at Premium Prices	3 or Less Monthly Payments at Premium Prices
No. of Herds	11	14	10
Av. % Total Solids from Monthly Measurements	12.84%	12.53%	12.37%
<u>COSTS PER COW:</u>	£ s.	£ s.	£ s.
Food	64: -	60:10	61:14
Labour	22: -	21: -	21:12
Miscellaneous	27: 2	27:14	24:12
Herd Replacement	8:14	8:14	8:14
<b>TOTAL COST PER COW</b>	<b>121:16</b>	<b>117:18</b>	<b>116:12</b>
<u>RECEIPTS PER COW:</u>			
Milk	144: 4	141:12	145: 8
Calves	11:10	15: 6	16: 8
<b>TOTAL RECEIPTS PER COW</b>	<b>155:14</b>	<b>156:18</b>	<b>161:16</b>
<b>MARGIN PER COW</b>	<b>33:18</b>	<b>39: -</b>	<b>45: 4</b>
	s. d.	s. d.	s. d.
<b>TOTAL COST PER GALLON</b>	<b>2: 7<math>\frac{3}{4}</math></b>	<b>2: 6<math>\frac{3}{4}</math></b>	<b>2: 4<math>\frac{1}{2}</math></b>
<u>RECEIPTS PER GALLON:</u>			
Milk	3: 1 $\frac{1}{2}$	3: - $\frac{1}{2}$	3: -
Calves	-: 3	-: 4	-: 4
<b>TOTAL RECEIPTS PER GALLON</b>	<b>3: 4<math>\frac{1}{2}</math></b>	<b>3: 4<math>\frac{1}{2}</math></b>	<b>3: 4</b>
<b>MARGIN PER GALLON</b>	<b>-: 8<math>\frac{3}{4}</math></b>	<b>-: 9<math>\frac{3}{4}</math></b>	<b>-:11<math>\frac{1}{2}</math></b>
Yield per Cow - Gallons	921	931	981
Size of Herd	72	63	65
% Milk Produced in Winter	52.6%	46.0%	51.4%
<u>BREED DISTRIBUTION WITHIN GROUPS:</u>			
Friesian	3	10	7
Ayrshire	6	3	1
Mixed	2	1	2

GROSS MARGINS

It is often stated that from the management point of view enterprise costings are confusing and are somewhat unrealistic and that it is more realistic to deduct the variable costs, which are directly attributable to a particular enterprise, from the gross output, in order to arrive at the gross margin. The gross margin from that enterprise is then available to cover the overhead or fixed costs which are not

directly attributable to a particular enterprise, but are part of the system of farming as a whole, and to make a contribution towards net farm income. Table 35 presents data relating to the gross margins and profits per cow and per forage acre for the year 1965/66.

Table 35 Average Gross Margin and Profit Per Cow and Per Forage Acre

	Per Cow	Per Forage Acre
	£ s. d.	£ s. d.
<u>Gross Output</u>		
Milk	143:16: -	82: 4: -
Calves	12: 2: -	6:18: -
	155:18: -	89: 2: -
Less Herd Depreciation	9: 8: -	5: 8: -
<b>TOTAL GROSS OUTPUT</b>	<b>146:10: -</b>	<b>83:14: -</b>
<u>Variable Costs</u>		
Purchased Concentrates	16: -: -	9: 2: -
Purchased Roughages	4:14: -	2:14: -
Home-grown Grain	7:16: -	4:10: -
Home-grown Forage Crops	12: 2: -	6:18: -
Miscellaneous	9: -: -	5: 2: -
<b>TOTAL VARIABLE COSTS</b>	<b>49:12: -</b>	<b>28: 6: -</b>
<b>GROSS MARGIN</b>	<b>96:18: -</b>	<b>55: 8: -</b>
<u>Fixed Costs</u>		
Home-Grown Forage Crops	18:18: -	10:16: -
Labour (including unpaid)	20:16: -	11:18: -
Miscellaneous	16:14: -	9:10: -
<b>TOTAL FIXED COSTS</b>	<b>56: 8: -</b>	<b>32: 4: -</b>
<b>PROFIT</b>	<b>40:10: -</b>	<b>23: 4: -</b>

It should be pointed out that the costs recorded for the dairy enterprise were not designed to be analysed on a fixed and on a variable cost basis, but the following methodology has been used. Definite variable costs are purchased foods and home-grown grain because of the fact that grain is transferred to the dairy herd at market value.

Home-grown forage crops, on the other hand, have been split between variable and fixed costs. The cost of seed, manures, casual labour and crop expenses such as spray have been considered as being variable, while the cost of rent, regular farm labour, power etc. have been treated as fixed costs. The miscellaneous costs in the milk enterprise which have been allocated to variable costs are A.I. charges, veterinary expenses and medicines, consumable stores, milk recording fees, milking machine replacements and litter. All depreciation charges, power, overheads and labour have been treated as fixed costs.

The gross margin per cow ranged from £38 to £132 per cow. The average gross margin per forage acre was £55 8s., but it must be remembered that this is the gross margin from keeping dairy cows and does not include the land requirements or the cost and returns of rearing dairy replacements. The gross margin per forage acre had a wide range from around £18 to £94 per forage acre.

The distribution of herds according to the gross margins per cow and per forage acre are shown in Table 36.

Table 36

Distribution of Herds According to Gross Margins

GROSS MARGINS PER COW		GROSS MARGINS PER FORAGE ACRE	
Gross Margin	No. of Herds	Gross Margin	No. of Herds
£130 and Over	1	£90 and Over	1
£120 - £129	8	£80 - £89	6
£110 - £119	5	£70 - £79	8
£100 - £109	10	£60 - £69	10
£90 - £99	13	£50 - £59	20
£80 - £89	18	£40 - £49	18
£70 - £79	7	£30 - £39	2
£60 - £69	3	Under £30	2
Under £60	2		
Total	67	Total	67

CHAPTER III

A COMPARISON OF 12 YEARS' RESULTS FROM AN IDENTICAL SAMPLE  
OF 14 HERDS, 1953/54 TO 1964/65

THE SAMPLE

14 farms in the Aberdeen and District Milk Marketing Board Area have kept milk costs consistently for 12 years and Tables 37, 38, and 39 and Graph 3 provide comparisons of costs, returns, margins and general data for these years.

The sizes of the farms in the sample have remained constant over the period, apart from one farm, whose acreage has been slightly reduced. The average area of crops and grass per farm in the sample was 1.97 acres in 1965, whilst the average size of herd in the sample was 54 cows. Cow numbers on the farms in the sample have remained fairly static, a rather surprising fact, considering that many farmers in the area, have been increasing the sizes of their herds.

The average yield per cow in the sample in 1965 was 899 gallons, an increase of 80 gallons in 12 years. The yields per cow tended to vary between years, but there has been a definite upward trend over the years. The proportion of Friesian cows on farms in the identical sample, at 60 per cent, is similar to that for the sample as a whole.

The average costs, returns and margins for this small identical sample of farms did not differ widely from those of the total sample in 1963/64 and 1964/65.

The sample of 14 farms is fairly representative of dairy farms in the Aberdeen and District Milk Marketing Board Area and the average results may, therefore, give a useful guide to the trends in milk production in the area over the 12 year period.

FEEDING

Total feed costs per cow have remained fairly static over the period, though deviating between individual years. However, total feed costs per gallon show a small, but distinct reduction. This is due to the increase of approximately 80 gallons in average yield per

Table 37

## Costs Returns and Margins per Cow for 12 Years 1953/54 to 1964/65

## Average of 14 Identical Herds

	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
<u>Foods</u>												
Purchased Foods	25: 6: -	31: 4: -	28: 15: -	25: 10: -	22: 14: -	23: 4: -	26: 2: -	21: 10: -	20: 13: -	23: 1: -	26: 6: -	23: 10: -
Home-Grown Foods	23: 6: -	21: 16: -	21: 5: -	22: 6: -	22: 16: -	25: 10: -	25: 1: -	24: 14: -	26: 17: -	23: 7: -	21: 10: -	25: 9: -
Grazing	7: 6: -	7: 12: -	8: 6: -	9: 10: -	8: 10: -	9: 6: -	8: 16: -	9: 9: -	9: -: -	8: 10: -	10: 4: -	10: 11: -
Total Foods	55: 18: -	60: 12: -	58: 6: -	57: 6: -	54: -: -	58: -: -	59: 19: -	55: 13: -	56: 10: -	54: 18: -	58: -: -	59: 10: -
<u>Labour</u>												
Hired	11: 6: -	11: 19: -	10: 13: -	9: 18: -	11: 14: -	12: 6: -	12: 14: -	12: 17: -	13: 3: -	13: 17: -	13: 14: -	15: 3: -
Family	5: 14: -	5: 14: -	6: 10: -	8: 6: -	7: 16: -	7: 11: -	7: -: -	7: -: -	7: 1: -	7: 11: -	8: 10: -	7: 10: -
Total Labour	17: -: -	17: 13: -	17: 3: -	18: 4: -	19: 10: -	19: 17: -	19: 14: -	19: 17: -	20: 4: -	21: 8: -	22: 4: -	22: 13: -
Miscellaneous	13: 8: -	13: 7: -	12: 13: -	13: 16: -	17: 14: -	18: 15: -	17: 5: -	18: 15: -	18: 19: -	19: -: -	22: 8: -	24: 13: -
Herd Replacement	6: 12: -	4: 16: -	3: 18: -	5: 17: -	7: -: -	3: 8: -	1: 14: -	6: 12: -	7: 19: -	6: 4: -	6: 14: -	8: -: -
Gross Cost	92: 18: -	96: 8: -	92: -: -	95: 3: -	98: 4: -	100: -: -	98: 12: -	100: 17: -	103: 12: -	101: 10: -	109: 6: -	114: 16: -
<u>Less Credits</u>												
Manurial Residues	2: 12: -	3: -: -	2: 12: -	2: 8: -	2: 10: -	2: 17: -	2: 14: -	2: 11: -	2: 15: -	-: -: -	-: -: -	-: -: -
Net Cost	90: 6: -	93: 8: -	89: 8: -	92: 15: -	95: 14: -	97: 3: -	95: 18: -	98: 6: -	100: 17: -	101: 10: -	109: 6: -	114: 16: -
<u>Receipts</u>												
Milk (Sales + Retentions)	128: 3: -	138: 10: -	125: 19: -	120: 19: -	116: 19: -	119: 4: -	118: 14: -	121: 3: -	123: 6: -	117: 11: -	130: 18: -	133: 11: -
Calves (Sales + Retentions)	4: 5: -	4: 6: -	4: 4: -	4: 9: -	5: 15: -	6: 19: -	6: 6: -	5: 3: -	5: 5: -	7: 14: -	8: 6: -	12: 4: -
Total Receipts	132: 8: -	142: 16: -	130: 3: -	125: 8: -	122: 14: -	126: 3: -	125: -: -	126: 6: -	128: 11: -	125: 5: -	139: 4: -	145: 15: -
Margin per Cow	42: 2: -	49: 8: -	40: 15: -	32: 13: -	27: -: -	29: -: -	29: 2: -	28: -: -	27: 14: -	23: 15: -	29: 18: -	30: 19: -

Table 38

## Costs, Returns and Margins Per Gallon for 12 Years 1953/54 to 1964/65

## Average of 14 Identical Herds

	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
<u>Foods</u>												
Purchased Foods	7 $\frac{1}{4}$	8 $\frac{3}{4}$	8 $\frac{1}{2}$	7 $\frac{1}{2}$	7	6 $\frac{3}{4}$	7 $\frac{1}{4}$	6	5 $\frac{1}{2}$	6 $\frac{1}{2}$	7	6 $\frac{1}{2}$
Home-Grown Foods	6 $\frac{3}{4}$	6	6 $\frac{1}{2}$	6 $\frac{1}{2}$	6 $\frac{3}{4}$	7 $\frac{1}{2}$	6 $\frac{3}{4}$	7	7 $\frac{1}{4}$	6 $\frac{3}{4}$	6	6 $\frac{3}{4}$
Grazing	2 $\frac{1}{2}$	2 $\frac{1}{4}$	2 $\frac{3}{4}$	2 $\frac{3}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Total Foods	1: 4 $\frac{1}{4}$	1: 5	1: 5 $\frac{1}{2}$	1: 4 $\frac{1}{2}$	1: 4 $\frac{1}{4}$	1: 5	1: 4 $\frac{1}{2}$	1: 3 $\frac{1}{2}$	1: 3	1: 3 $\frac{1}{4}$	1: 3 $\frac{1}{2}$	1: 3 $\frac{3}{4}$
<u>Labour</u>												
Hired	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3	2 $\frac{3}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	3 $\frac{1}{2}$	4
Family	1 $\frac{3}{4}$	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{4}$	2	2	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Total Labour	5	5	5	5 $\frac{1}{4}$	6	6	5 $\frac{1}{2}$	5 $\frac{1}{2}$	5 $\frac{1}{2}$	6	6	6 $\frac{1}{4}$
Miscellaneous	4	3 $\frac{3}{4}$	3 $\frac{1}{2}$	4	5 $\frac{3}{4}$	5 $\frac{1}{2}$	4 $\frac{3}{4}$	5 $\frac{1}{2}$	5	5 $\frac{1}{2}$	6	6 $\frac{1}{2}$
Herd Replacement	2	1 $\frac{1}{2}$	- $\frac{1}{2}$	1 $\frac{3}{4}$	2	1	- $\frac{1}{2}$	1 $\frac{1}{2}$	2	1 $\frac{1}{2}$	1 $\frac{3}{4}$	2
Gross Cost	2: 3 $\frac{1}{4}$	2: 3 $\frac{1}{2}$	2: 2 $\frac{1}{2}$	2: 3 $\frac{1}{2}$	2: 6	2: 5 $\frac{1}{2}$	2: 3 $\frac{1}{4}$	2: 4 $\frac{1}{4}$	2: 3 $\frac{1}{2}$	2: 4 $\frac{1}{2}$	2: 5 $\frac{1}{4}$	2: 6 $\frac{1}{2}$
<u>Less Credits</u>												
Manurial Residues	-: - $\frac{3}{4}$	-: - $\frac{3}{4}$	-: - $\frac{3}{4}$	-: - $\frac{3}{4}$	-: - $\frac{3}{4}$	-: - $\frac{3}{4}$	-: - $\frac{3}{4}$	-: - $\frac{3}{4}$	-: - $\frac{3}{4}$	-: -	-: -	-: -
Net Cost	2: 2 $\frac{1}{2}$	2: 2 $\frac{1}{2}$	2: 1 $\frac{3}{4}$	2: 2 $\frac{3}{4}$	2: 5 $\frac{1}{4}$	2: 4 $\frac{3}{4}$	2: 2 $\frac{1}{2}$	2: 3 $\frac{1}{2}$	2: 2 $\frac{3}{4}$	2: 4 $\frac{1}{2}$	2: 5 $\frac{1}{4}$	2: 6 $\frac{1}{2}$
<u>Receipts</u>												
Milk (Sales + Retentions)	3: 1 $\frac{1}{2}$	3: 3 $\frac{1}{4}$	3: -	2: 10 $\frac{1}{2}$	2: 10 $\frac{3}{4}$	2: 10	2: 8 $\frac{1}{2}$	2: 9 $\frac{1}{2}$	2: 8 $\frac{1}{2}$	2: 8 $\frac{1}{2}$	2: 10 $\frac{3}{4}$	2: 11 $\frac{1}{2}$
Calves (Sales + Retentions)	-: 1 $\frac{1}{2}$	-: 1 $\frac{1}{4}$	-: 1 $\frac{1}{2}$	-: 1 $\frac{3}{4}$	-: 1 $\frac{3}{4}$	-: 2	-: 1 $\frac{3}{4}$	-: 1 $\frac{1}{2}$	-: 1 $\frac{1}{2}$	-: 2 $\frac{1}{2}$	-: 2 $\frac{1}{2}$	-: 3 $\frac{1}{4}$
Total Receipts	3: 2 $\frac{3}{4}$	3: 4 $\frac{1}{2}$	3: 1 $\frac{1}{2}$	3: - $\frac{1}{4}$	3: - $\frac{1}{2}$	3: -	2: 10 $\frac{1}{4}$	2: 11	2: 10	2: 10 $\frac{3}{4}$	3: 1	3: 2 $\frac{3}{4}$
Margin per Gallon	1: - $\frac{1}{4}$	1: 2	-: 11 $\frac{1}{2}$	-: 9 $\frac{1}{2}$	-: 7 $\frac{1}{2}$	-: 7 $\frac{1}{4}$	-: 7 $\frac{3}{4}$	-: 7 $\frac{1}{2}$	-: 7 $\frac{1}{4}$	-: 6 $\frac{1}{4}$	-: 7 $\frac{3}{4}$	-: 8 $\frac{1}{4}$

cow during the 12 years.

Despite the rise in yields, economies have been achieved in the feeding of concentrates, as shown by the moderate, but discernible decline in the quantity of concentrates fed per gallon and in the expenditure on concentrates. The quantities of draff and hay fed per cow have increased somewhat and there has been a considerable rise in the quantity of silage fed. In the last two years sugar-beet pulp has been used more commonly, being the primary feed included under "Other Roughages" in Table 39. The quantities of roots and straw fed have decreased, although roots are still one of the main sources of food requirements.

The cost of home-grown foods fed per gallon has not increased despite the steep rise in wages. This is the result of economies in labour with mechanisation and new methods of cultivation, together with improvements in crop yields. Grazing costs have increased, but this can be attributed to the increasingly intensified use of grazing. This involves more use of fertilisers and labour-demanding methods of rationing by strip or paddock grazing, but it enables a considerable increase in the utilised output of starch equivalent per acre and thus an increase in the output of milk per acre.

#### LABOUR

The average wage rate for dairymen in the North of Scotland rose from 3s. 2d. per hour in 1953/54 to 5s. 7d. per hour in 1964/65, an increase of over 75 per cent. However, the total labour cost per cow in the sample rose by only 33 per cent and the total labour cost per gallon by only 25 per cent. This reveals the economies which have been achieved in labour use as shown in Table 39 by the reduction in labour hours per cow from 106 in 1953/54 to 81 in 1964/65.

#### MISCELLANEOUS

Miscellaneous costs per cow have shown a steadily rising trend since 1957/58. However, the large increase in that particular year was due to a change in the method of calculating overheads.

#### HERD REPLACEMENT

Herd replacement costs per cow have varied considerably, but over



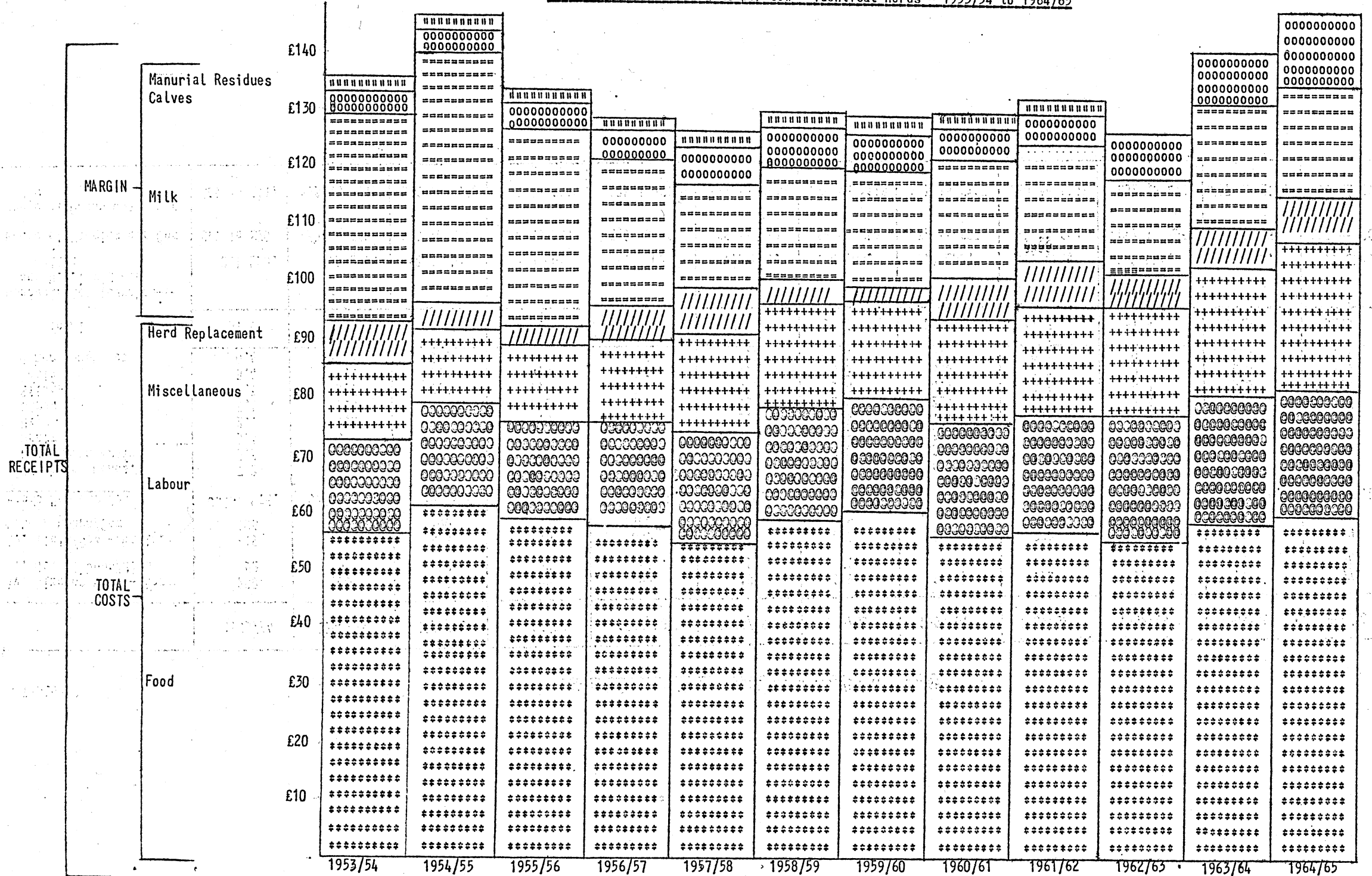
Table 39

General Data on 14 Identical Herds 1953/54 to 1964/65

	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65
Av. Size of Farm - Acres	200	200	200	199	199	199	199	198	198	198	198	197
Av. No. of Cows/Herd	52	50	52	52	51	50	51	51	53	53	52	54
Av. Yield/Cow - Galls.	819	849	835	846	809	843	878	824	908	863	886	899
Labour Hours/Cow	106	111	100	97	100	95	89	85	82	86	85	81
<b>Foods Fed per Cow</b>	<b>Cwts. S.E.</b>	<b>Cwts. S.E.</b>	<b>Cwts. S.E.</b>	<b>Cwts. S.E.</b>	<b>Cwts. S.E.</b>	<b>Cwts. S.E.</b>	<b>Cwts. S.E.</b>	<b>Cwts. S.E.</b>	<b>Cwts. S.E.</b>	<b>Cwts. S.E.</b>	<b>Cwts. S.E.</b>	<b>Cwts. S.E.</b>
Purchased Concs.	7.2	8.6	8.3	7.0	6.7	6.9	7.6	6.6	6.6	7.5	7.9	7.1
Home-Grown Grain	3.3	3.1	2.3	2.8	2.2	2.7	2.8	2.7	2.9	2.3	2.5	3.0
Druff	3.4	3.7	3.2	3.3	3.5	3.5	3.5	3.5	3.9	3.6	4.1	4.2
Hay	2.1	1.8	1.5	1.8	2.2	2.4	2.3	1.9	2.0	2.6	2.8	2.6
Straw	3.4	3.4	3.1	3.2	2.9	3.1	2.9	2.5	2.6	2.3	1.7	1.7
Silage	3.3	3.7	2.8	3.4	5.1	5.2	3.8	4.1	5.3	5.7	5.0	5.3
Roots	8.4	8.0	9.0	8.0	7.1	7.2	8.3	8.5	8.3	7.1	6.8	7.5
Other Roughages	0.4	0.1	0.2	-	0.1	0.3	0.4	0.1	0.1	0.2	0.7	1.1
<b>Total</b>	<b>31.5</b>	<b>32.4</b>	<b>30.4</b>	<b>29.5</b>	<b>29.8</b>	<b>31.3</b>	<b>31.6</b>	<b>29.9</b>	<b>31.7</b>	<b>31.3</b>	<b>31.5</b>	<b>32.5</b>
Concentrates (Purchased and H.G.) fed per Gallon	2.1 Lbs.	2.5 Lbs.	2.2 Lbs.	2.0 Lbs.	1.9 Lbs.	1.9 Lbs.	1.8 Lbs.	1.8 Lbs.	1.5 Lbs.	1.9 Lbs.	2.0 Lbs.	1.9 Lbs.
Range of Margins per Cow	£14 to £70	£30 to £69	£26 to £64	£14 to £60	-£20 to £64	-£5 to £50	£6 to £46	£2 to £53	£7 to £49	-£17 to £55	£10 to £51	£13 to £64
Range of Gross Costs per Cow	£65 to £117	£73 to £113	£66 to £112	£75 to £119	£75 to £115	£77 to £120	£75 to £118	£83 to £117	£80 to £132	£82 to £122	£87 to £134	£91 to £154

Graph 3

Costs, Returns and Margins per Cow - Identical Herds - 1953/54 to 1964/65



the last 5 years have remained at a high level, not falling below £6. The rise in herd replacement costs results from the fact that the cost of dairy replacements, both purchased and reared, has risen considerably, while the prices received for farrow cows have not risen greatly on average. The average price paid for purchased replacements within the sample rose from £78 to £96 between 1959/60 and 1964/65 and the average cost of rearing increased from £56 to £79, while the average price received for farrow cows rose only from £53 to £59. Reducing the rate of turnover of cows in the herd is a sure way of overcoming the increasing cost of herd replacement, but there is no sign of increased efficiency in this direction, for the rate of replacement appears to be fairly static at about 30 per cent on average.

#### GROSS AND NET COSTS

The gross cost has risen from £90: 6: - to £114:16: - per cow and from 2s. 3½d. to 2s. 6½d. per gallon due to the increases in labour, miscellaneous and herd replacement costs. The range of gross costs per cow within the sample, given for each year in Table 39, demonstrates the variability of this value between different farms. This variability has not tended to diminish over the years.

#### RECEIPTS

The average price received for milk within the sample declined from 3s. 3½d. in 1954/55 to 2s. 8½d. in 1962/63, but rose again to 2s. 11½d. in 1964/65. The increase in the average yield per cow was not sufficient to prevent a consequent fall in the receipts from milk per cow, though, with the upward turn in the price of milk after 1962/63, the receipts from milk in the last two years of the period regained the earlier level. The fall in the price of milk was partly a result of reductions in the guaranteed price by the Government, in order to check the over-production in the country as a whole, but it resulted also from the dilution of the pool price by over-production in the Aberdeen and District Milk Marketing Board Area.

Table 40

Order of Profitability (Margin per Cow) for 12 Years 1953/54 to 1964/65

Farm	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65
A	12	7	9	5	7	3	5	3	1	1	1	1
B	1	1	1	2	1	4	1	1	2	3	2	9
C	10	11	7	6	12	13	4	12	7	6	5	3
D	5	6	2	1	3	5	6	8	6	11	4	11
E	8	13	8	11	6	9	10	7	12	10	11	14
F	11	5	6	4	8	11	3	2	3	2	3	2
G	14	4	14	14	13	10	12	14	14	14	13	13
H	7	8	12	10	11	8	14	13	10	4	14	7
I	4	2	3	8	4	2	8	9	13	13	7	8
J	2	9	4	3	2	1	2	5	4	5	12	6
K	9	10	13	12	9	12	9	4	9	7	9	4
L	3	3	11	9	14	14	13	11	11	12	10	12
M	6	14	10	13	10	7	7	6	5	8	8	10
N	13	12	5	7	5	6	11	10	8	9	6	5

Receipts from calves almost trebled over the 12 year period so that they now make a more important contribution to total receipts. The rise in calf prices has counteracted to some extent the fall in receipts from milk. Thus, the total receipts per gallon in 1964/65 had regained the 1953/54 level, while the total receipts per cow were higher at the end of the period than at the beginning.

#### MARGINS

From 1954/55 to 1962/63 the gross cost was rising while the price of milk was falling, so that the margins fell from £49: 8: - per cow and 1s. 2<sup>1</sup>/<sub>4</sub>d. per gallon to £23:15: - per cow and 6<sup>1</sup>/<sub>4</sub>d. per gallon. The rise in the price of milk over the last two years of the period has increased the margins to £30:19: - per cow and 8<sup>1</sup>/<sub>4</sub>d. per gallon in 1964/65, but they are still far below the earlier level.

In Table 40 the order of the 14 farms according to margin per cow is shown for each year. The order of the farms differs considerably from year to year. This demonstrates the importance of external factors beyond the control of the farmer in determining profitability.

Farms A and B are outstanding in having been top of the group 4 times and 6 times respectively. It is interesting to note that these two farms differ considerably in their production policies. Farm A achieves a fairly high yield at a relatively low level of gross costs. Farm B has a high level of gross costs, partly due to a greater use of concentrates, but his output is very high, with an average yield well in excess of 1,000 gallons per cow. It is apparent that quite different patterns of production can be successful, given good management.

CONCLUSIONS

Actual prices paid to producers have increased by almost 3d. per gallon during the period 1963 to 1966, but despite this, the national trend has been for milk producers to go out of milk production. In the area covered by the Aberdeen and District Milk Marketing Board there has been an increasing exodus from dairying and in the year 1966 alone almost 8 per cent of the dairy farmers have ceased milk production. This has resulted in a decrease in milk production of over 850,000 gallons. The Aberdeen Board is gravely concerned about this development, but there would appear to be little hope for an upward production trend in the near future. Various factors are influencing the withdrawal of farmers from dairying at the present time:-

- (a) Some are retiring and their successors are not willing to continue dairying for one reason or another
- (b) The introduction of bulk tanks has made some of the smaller farmers decide to give up dairying
- (c) The requirement to provide some form of refrigerated cooling if bulk tanks are not installed has also affected the attitude of the smaller farmer
- (d) The high capital cost involved in converting or extending existing buildings to house more cows in order to evolve a more viable unit has influenced some farmers to withdraw from dairying and to re-invest in some alternative enterprise
- (e) The possibility of a five-day week for dairy cattlemen has induced some farmers to discontinue dairying particularly where one-man units are concerned.
- (f) Other factors such as the milk quality scheme, higher hygienic standards and tests for the presence of antibiotics in milk have also tended to accelerate the trend away from dairying

In the North of Scotland Milk Marketing Board Area, however, there has been a slight increase in production of approximately 2 per cent during 1966 and only 3 per cent of the dairy farmers have withdrawn from milk production. Reasons for the withdrawal from milk production are similar to those in the Aberdeen Board Area.

The National Plan stated that more beef from the dairy herd was required and it was thought that a rise in the size of the national dairy herd would occur, but latest figures show that Scotland has fewer dairy cows now than at any time since 1933. It would appear that many dairy farmers are apprehensive about the future of dairying, particularly with regard to the fact that Britain may soon join the Common Market. According to various authorities, beef and mutton production may receive a considerable fillip if Britain does join the Common Market and this might induce a number of farmers, particularly in areas such as that covered by the North of Scotland College of Agriculture, to switch from dairying to beef. If producers' prices for milk remain static or even decrease and the cost of concentrates increase, a greater withdrawal from dairying is almost inevitable unless calf prices and farrow cow prices more than make up for the loss in revenue from milk. In the immediate future, it is unlikely that milk production will increase, but in all probability it will continue to decline unless financial awards at the 1967 February Price Review<sup>\*</sup> are sufficient to instil more confidence into the dairy industry.

Margins per cow and per gallon have increased over the past three years, but dairy farmers are faced with continuing rising costs and although receipts have also increased, the declining prices for calves in recent months may reverse this trend. How can dairy farmers limit their costs? A more efficient use of home-grown foods or a stricter rationing of bought concentrates might maintain or even reduce costs on many farms. It was stated earlier in this report that there was a tendency for farmers to over-feed their cows and it is difficult to know whether this is due to over-liberal feeding of roughages or too generous feeding or wastage of concentrates. Very

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<sup>\*</sup>Since the above was written, the White Paper Cmd. 3229 'Annual Review and Determination of Guarantees 1967' has been published. The guaranteed price for milk will be increased by 1.31d. per gallon. This of course applies to the standard quantity and will be diluted when translated into pool price terms. The standard quantity for the United Kingdom as a whole has been increased on account of the rise in liquid consumption and this brings the total milk award to 1½d. The effect in different Board areas will vary according to the change in their liquid sales.

few of the herds are officially recorded and this may well be a factor contributing to over-feeding, although in non-recorded herds farmers may have a good idea of the quantity of milk given by an individual cow by visual means or by doing some private recording. Non-recording not only raises problems relating to the proper rationing of cows, but these herds, even those privately recorded, often contain cows which should have been culled because of low production. Many pastures are under-stocked and some form of controlled grazing should be more widely practised. Labour costs are becoming an increasing burden on dairy farmers and in order to keep these costs in check more cows should be kept per man. This might often involve considerable capital expenditure to instal labour-saving devices such as pipeline milking, mechanical mucking, cubicles etc., but if the labour force can be reduced or more cows kept per man such capital investment might well be worth-while. The herd replacement rate of 33 per cent in the North-East is high and it is possible that farmers might be able to reduce herd replacement costs by introducing changes in management practices. On many farms, heifers are not calved down until the age of 2 years 9 months or even 3 years, which suggests that the cost of rearing may be greater than is really necessary.

Farmers who achieved higher-than average results in one aspect of herd management were also above average in other respects. All systems of milk production can be successful, but the most successful were found to be operated by those farmers who had high-yielding herds in loose-housing systems which were producing more than 50 per cent of their milk in the winter six months. A farmer to succeed must have a high standard of technical and managerial ability. He must think, when organising a farm, of conditions such as the capital resources at his disposal, the quantity and quality of labour, the lay-out of farm buildings and the potential of the soil for growing grass and for arable cropping. The farmer who can choose the methods which are best suited to his farm and to his capabilities is the one most likely to succeed.



APPENDIX A

ACCOUNTING METHODS AND DEFINITIONS

METHOD OF COSTING DAIRY HERDS

Records either on a weekly or monthly basis were supplied by the co-operating farmers and included details of all cows in milk and dry, of all purchases, sales, transfers and deaths as well as births and disposals of all calves. Quantities and prices of purchased foods used and quantities of home-grown foods consumed; the hours of labour, both paid and unpaid; all miscellaneous costs incurred; and details of the disposal of milk were also recorded.

COSTING YEAR

The costing year is divided into two six-monthly periods - 1st October to 31st March, referred to as winter, and 1st April to 30th Spetember, referred to as summer.

FOODS

Purchased foods were charged at actual cost delivered on the farm, i.e. including carriage. Home-grown cereals were charged at market value whilst home-grown roughages i.e. hay, straw, roots and silage were allocated at cost of production based on enterprise cost records. Each farm is given individual consideration and the average figure modified to its particular conditions so that the quantities fed were charged at a realistic cost.

Oats	18s.	-	£1: 1: -	per cwt.
Barley	18s.	-	£1: 2: 6	per cwt.
Hay	£9: 5: -	-	£12:10: -	per ton
Straw	£2:15: -	-	£4: -: -	per ton
Grass Silage	£2: 3: 4	-	£2:10: -	per ton
Turnips	£2: 2: 6	-	£2:16: -	per ton
Green Fodder	£1:10: -	-	£2: -: -	per ton

The costs of grazing were calculated for each farm based on data relating to all fields used by the dairy herd. In these calculations the following rates were charged for summer 1965:-

Man Labour	6s. -d. per hour
Tractor Labour	4s. 6d. per hour

The overhead charges incorporated were those agreed by the Scottish Conference of Agricultural Economists. The cost of laying down grass included the share of cultivations and overheads plus the actual costs of seeds and labour involved: the total of this was apportioned in accordance with the length of time for which the leys were laid down. Manures were charged at actual cost less subsidies received. Where young stock and other classes of livestock grazed on the same pastures, the following standard livestock units were used to arrive at the cost to be charged to the dairy cow.

Horses	1
Bulls	1
Cows - Dairy	$1\frac{1}{4}$
Rearing	1
Cattle - Under 1 Year	$\frac{3}{8}$
1 - 2 Years	$\frac{2}{3}$
Over 2 Years	1
Sheep - Breeding Ewes	$1/5$
Lambs	$1/16$
Rams	$\frac{1}{4}$
Other Sheep	$1/10$

One-third of the total annual net cost of grassland was charged for grass where hay was taken, one-half when fields were cut once for silage and one-quarter when cut twice, whilst  $1/5$ th of the total annual grazing cost was allowed for the late Autumn and Winter grazing.

The Starch Equivalent conversion factors have been compiled by taking account of the recommendations of a number of sources.

	<u>S.E. Factor</u>
Purchased Concentrates	65 - 73
Barley	71
Oats	60
Draff	12
Hay	32
Straw	20
Silage	12
Roots	9

LABOUR

Production of milk is costed to the point when it is in the wholesale container at the pick-up point. In the case of milk sold retail, costing is up to and including cooling, but any labour used for bottling, washing bottles, etc. is not charged. The following rates were used for family labour in 1965/66:-

Farmer 6s. 2d. per hour

Wife 4s. 9d. per hour

MISCELLANEOUS COSTS

Items under this heading include bull upkeep, A.I., veterinary fees, medicines, consumable dairy stores, coal, oil, electricity and milk recording fees, bought and home-grown litter as well as all repairs to and depreciation of dairy plant and equipment. Overheads, i.e. an appropriate share of general farm expenses, have been calculated in the following way for 1965/66 -

Per £ Direct Man Labour 7s. 3d.

Per Tractor Hour 10s. 3d.

Per Acre 17s. 3d.

Per Livestock Unit Year 51s. 9d.

Tractor hours were charged at 4s. 6d. per hour

HERD REPLACEMENT

Purchased cows were introduced to the herd at cost price and heifers brought into the herd were transferred in at estimated market value.

Cows were valued on the basis of current market values for opening and closing valuation purposes.

RETURNS FOR MILK

In addition to the value of milk sold, all milk fed to livestock and used on farm was valued at market value.

RETURNS FOR CALVES

Calves which were sold were credited at actual realisation price, while calves which were retained were valued at an estimated rate of approximately £5 for heifers retained and £10 or over for steer calves to be reared as stores.

STANDARD OUTPUT

Details of the basis on which standard outputs have been calculated are given below:-

	<u>STANDARD OUTPUT PER YEAR</u>
<u>Livestock</u>	<u>£ per Head</u> (except where stated)
Dairy Cows (In Milk and Dry)	110
Dairy Replacements	30
Beef Cattle	40
Breeding Cows (Including Hill Cow Subsidy)	60
Ewes	10
Other Sheep	6
Sows	80
Other Pigs	8 (= £16 per year)
Laying Hens	2
Broilers	0.25 (= £1 per year)
<u>Crops</u>	<u>£ per Acre</u>
Wheat	35
Barley	38
Oats	30
Potatoes	120
Sugar Beet	80
Peas	80
Beans	80
Rhubarb	50
Raspberries	200
Other Fruit, Vegetables and Bulbs	500

APPENDIX B

MISCELLANEOUS TABLES - YEAR 1965/66

Table 1

COSTS, RETURNS AND MARGINS 1965/66

ABERDEEN AND DISTRICT MILK MARKETING BOARD AREA

	PER COW		PER GALLON	
	Average of 41 Herds	Average of 6 Most Profitable Herds	Average of 41 Herds	Average of 6 Most Profitable Herds
	£ s.	£ s.	s. d.	s. d.
<b>FOODS</b>				
Purchased - Concentrates	18:18	18: 2	4 $\frac{3}{4}$	4
Roughages - Draff, etc.	5: 6	6: 4	1 $\frac{1}{2}$	1 $\frac{1}{2}$
Home-Grown - Grain	6:10	8: 8	1 $\frac{1}{4}$	2
Roughages	18:18	17:12	5	4
Grazing	11:12	11:10	3	2 $\frac{3}{4}$
TOTAL FOODS	61: 4	61:16	1: 4	1: 2
<b>LABOUR</b>				
Hired	15:12	18:14	4	4 $\frac{1}{2}$
Family	5:14	2:16	1 $\frac{1}{2}$	- $\frac{1}{2}$
TOTAL LABOUR	21: 6	21:10	5 $\frac{1}{2}$	4 $\frac{3}{4}$
<b>MISCELLANEOUS</b>				
Direct Costs	15: 2	14: 6	4	3 $\frac{1}{2}$
Overheads	11: 2	11: -	3	2 $\frac{1}{2}$
TOTAL MISCELLANEOUS	26: 4	25: 6	7	5 $\frac{3}{4}$
<b>HERD REPLACEMENT</b>				
	8:18	9: 4	2 $\frac{1}{2}$	2
GROSS COST	117:12	117:16	2: 7	2: 2 $\frac{1}{2}$
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	141:14	165:16	3: 1	3: 1 $\frac{1}{2}$
Calves (Sales + Retentions)	14: -	18: 8	3 $\frac{3}{4}$	4 $\frac{1}{2}$
TOTAL RECEIPTS	155:14	184: 4	3: 4 $\frac{3}{4}$	3: 5 $\frac{1}{2}$
PROFITS	38: 2	66: 8	9 $\frac{3}{4}$	1: 3

Table 2

COSTS, RETURNS AND MARGINS 1965/66

NORTH OF SCOTLAND MILK MARKETING BOARD AREA

	PER COW		PER GALLON	
	Average of 26 Herds	Average of 6 Most Profitable Herds	Average of 26 Herds	Average of 6 Most Profitable Herds
	£ s.	£ s.	s. d.	s. d.
<b>FOODS</b>				
Purchased - Concentrates	11:10	10:14	3	2 $\frac{1}{2}$
Roughages - Draff, etc.	3:12	4: -	1	1
Home-Grown - Grain	9:16	10:18	2 $\frac{3}{4}$	2 $\frac{1}{2}$
Roughages	20:10	22: -	5 $\frac{1}{2}$	5 $\frac{1}{2}$
Grazing	11: 8	12: 4	3 $\frac{1}{2}$	3
TOTAL FOODS	56:16	59:16	1: 3 $\frac{1}{2}$	1: 2 $\frac{1}{2}$
<b>LABOUR</b>				
Hired	17: 6	17:18	4 $\frac{3}{4}$	4 $\frac{1}{4}$
Family	2:18	-: -	- $\frac{1}{4}$	-
TOTAL LABOUR	20: 4	17:18	5 $\frac{1}{2}$	4 $\frac{1}{4}$
<b>MISCELLANEOUS</b>				
Direct Costs	14:10	13:16	4	3 $\frac{1}{2}$
Overheads	10: 8	9:12	3	2 $\frac{1}{4}$
TOTAL MISCELLANEOUS	24:18	23: 8	7	5 $\frac{3}{4}$
<b>HERD REPLACEMENT</b>				
	10: 4	10: 8	3	2 $\frac{1}{2}$
GROSS COST	112: 2	111:10	2: 7	2: 3
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	147: 4	174:18	3: 4 $\frac{1}{4}$	3: 6
Calves (Sales + Retentions)	9: 2	11: 6	-: 2 $\frac{1}{2}$	-: 3
TOTAL RECEIPTS	156: 6	186: 4	3: 6 $\frac{3}{4}$	3: 9
PROFITS	44: 4	74:14	11 $\frac{3}{4}$	1: 6

Table 3 COSTS, RETURNS AND MARGINS, WINTER AND SUMMER MILK PRODUCTION, 1965/66

ABERDEEN AND DISTRICT MILK MARKETING BOARD AREA

AVERAGE COST OF SUMMER MILK PRODUCTION (1st April, 1965 - 30th September, 1965)				
PER COW		PER GALLON		
Average of 41 Herds	Average of 6 Most Profitable Herds	Average of 41 Herds	Average of 6 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<u>FOODS</u>				
Concentrates (Purchased + H.G.)	8: 6	8:12	4	3 $\frac{3}{4}$
Roughages (Purchased + H.G.)	4: 4	4: 6	2 $\frac{1}{4}$	2 $\frac{1}{4}$
Grazing	9:10	9: 8	4 $\frac{1}{2}$	4 $\frac{1}{2}$
TOTAL FOODS	22: -	22: 6	11	10 $\frac{1}{4}$
Labour	10:14	10:16	5 $\frac{1}{2}$	5
Miscellaneous	12:10	12: -	6 $\frac{1}{4}$	5 $\frac{1}{2}$
Herd Replacement	3:18	3: 6	2	1 $\frac{1}{2}$
GROSS COST	49: 2	48: 8	2: - $\frac{3}{4}$	1:10 $\frac{1}{4}$
<u>RECEIPTS</u>				
Milk (Sales + Retentions)	66: 6	71:18	2: 9 $\frac{1}{4}$	2: 9
Calves (Sales + Retentions)	6: 2	7:16	3	3 $\frac{1}{2}$
TOTAL RECEIPTS	72: 8	79:14	3: - $\frac{1}{4}$	3: - $\frac{1}{2}$
PROFIT	23: 6	31: 6	11 $\frac{1}{2}$	1: 2 $\frac{1}{4}$
AVERAGE COST OF WINTER MILK PRODUCTION (1st October, 1965 - 31st March, 1966)				
PER COW		PER GALLON		
Average of 41 Herds	Average of 6 Most Profitable Herds	Average of 41 Herds	Average of 6 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<u>FOODS</u>				
Concentrates (Purchased + H.G.)	17: 2	17:18	9 $\frac{1}{2}$	8
Roughages (Purchased + H.G.)	21:18	21: 4	1: - $\frac{1}{2}$	9 $\frac{1}{2}$
TOTAL FOODS	39: -	39: 2	1:10	1: 5 $\frac{1}{4}$
Labour	10:12	10:16	6	4 $\frac{3}{4}$
Miscellaneous	13:14	13: 4	7 $\frac{3}{4}$	5 $\frac{3}{4}$
Herd Replacement	5: -	5:16	2 $\frac{1}{4}$	2 $\frac{3}{4}$
GROSS COST	68: 6	68:18	3: 2 $\frac{1}{2}$	2: 6 $\frac{1}{2}$
<u>RECEIPTS</u>				
Milk (Sales + Retentions)	75:16	93: 6	3: 5 $\frac{1}{4}$	3: 5
Calves (Sales + Retentions)	7:16	10:14	4 $\frac{1}{2}$	4 $\frac{1}{2}$
TOTAL RECEIPTS	83:12	104: -	3: 9 $\frac{3}{4}$	3: 9 $\frac{3}{4}$
PROFIT	15: 6	35: 2	7 $\frac{1}{4}$	1: 3 $\frac{1}{4}$

Table 4 COSTS, RETURNS AND MARGINS, WINTER AND SUMMER MILK PRODUCTION, 1965/66  
NORTH OF SCOTLAND MILK MARKETING BOARD AREA

AVERAGE COST OF SUMMER MILK PRODUCTION (1st April, 1965 - 30th September, 1965)				
PER COW		PER GALLON		
Average of 26 Herds	Average of 6 Most Profitable Herds	Average of 26 Herds	Average of 6 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<b>FOODS</b>				
Concentrates (Purchased + H.G.)	6: 8	7: 8	3½	3½
Roughages (Purchased + H.G.)	4: -	4:16	2½	2½
Grazing	9:12	10: 2	4½	4½
<b>TOTAL FOODS</b>	20: -	22: 6	10½	10½
Labour	10:10	9:10	5½	4½
Miscellaneous	11:18	11: 8	6½	4½
Herd Replacement	5:18	6: 2	3	2½
<b>GROSS COST</b>	48: 6	49: 6	2: 1½	1: 9½
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	70:10	85:15	2:11½	2:11½
Calves (Sales + Retentions)	4: 8	5: -	2½	2½
<b>TOTAL RECEIPTS</b>	74:18	90:15	3: 2	3: 2½
<b>PROFIT</b>	26:12	41: 9	1: -½	1: 4½
AVERAGE COST OF WINTER MILK PRODUCTION (1st October, 1965 - 31st March, 1966)				
PER COW		PER GALLON		
Average of 26 Herds	Average of 6 Most Profitable Herds	Average of 26 Herds	Average of 6 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<b>FOODS</b>				
Concentrates (Purchased + H.G.)	14:14	14:14	8	7½
Roughages (Purchased + H.G.)	21:16	22:12	1: -¾	1: -
<b>TOTAL FOODS</b>	36:10	37: 6	1: 8¾	1: 7½
Labour	9:18	8: 8	5½	4½
Miscellaneous	13: 2	12: 2	7½	6½
Herd Replacement	4: 6	4: 4	2½	2
<b>GROSS COST</b>	63:16	62: -	3: -½	2: 8
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	76:18	89: 3	3: 8½	3:11½
Calves (Sales + Retentions)	4:18	6:10	3	3½
<b>TOTAL RECEIPTS</b>	81:16	95:13	3:11½	4: 2½
<b>PROFIT</b>	18: -	33:13	10¾	1: 6½

APPENDIX C

A COMPARISON OF RESULTS FROM 56 IDENTICAL HERDS FOR TWO YEARS  
1963/64 AND 1964/65

In Chapter II results are given for the year 1st April 1965, to 31st March 1966, but previously the costing year ran from 1st October to 30th September. The results published in this appendix refer to yearly periods - October to September.

In the Aberdeen and District Milk Marketing Board Area 45 farmers took part in the milk costs investigation for these two consecutive years whilst 11 farmers kept records in the North of Scotland Milk Marketing Board Area. Tables 5 to 10 give the average costs, returns and margins during the winter and summer periods per cow and per gallon in both Boards' Areas and in the College area as a whole for the two years 1963/64 and 1964/65. On comparing the figures for the College Area (Tables 7 and 10) it is interesting to note that the average profit per cow and per gallon increased from £8 and 3<sup>3</sup>/<sub>4</sub>d. respectively during the winter of 1963/64 to £12 and 5<sup>3</sup>/<sub>4</sub>d. during the winter of 1964/65. The profit per cow was the same at £22 for the summers of 1964 and 1965 whilst the profit per gallon decreased from 11<sup>1</sup>/<sub>2</sub>d. in 1964 to 10<sup>1</sup>/<sub>2</sub>d. in the summer of 1965.

The costs, returns and margins for the years 1963/64 and 1964/65 are shown for both Boards' Areas in Tables 11 to 14 and for the College Area as a whole in Tables 15 and 16. General data regarding the years with which this appendix is concerned are given in Tables 17 and 18.

Total feed costs per cow and per gallon rose in 1964/65, but there was a reduction in the cost of purchased food, particularly roughages. This can be attributed partly to the increasing tendency to store draff in the summer months when it is cheap. The cost of home-grown grain per cow increased because greater quantities were fed and the cost of home-grown roughages was also greater because of the prolonged winter of 1964/65. Labour and miscellaneous costs were also higher in 1964/65, but the cost of herd replacement remained static. The gross costs per cow were £7 higher in 1964/65, but the gross cost per gallon was <sup>1</sup>/<sub>2</sub>d. lower due to the increase in yield per cow of 37 gallons.



Milk receipts per cow and per gallon increased because of the greater yield per cow and because of the higher price being paid per gallon. Receipts for calves also increased due to the greater prices being received for calves. Although gross costs were higher, in 1964/65 total receipts increased by a greater amount with the result that profits per cow and per gallon were higher.

The distribution of herds according to production costs and according to profits or losses for the two years are given in Tables 19 to 22. The percentage of herds in the higher cost brackets has increased, but the percentage of herds in the higher profit brackets has also increased. The distribution of herds, according to gross margins per cow and per acre are shown in Tables 23 and 24.

Table 5 COSTS, RETURNS AND MARGINS, WINTER AND SUMMER MILK PRODUCTION 1963/64  
ABERDEEN AND DISTRICT MILK MARKETING BOARD AREA

AVERAGE COST OF WINTER MILK PRODUCTION (October 1st 1963 - 31st March 1964)				
PER COW		PER GALLON		
Average of 45 Herds	Average of 6 Most Profitable Herds	Average of 45 Herds	Average of 6 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<b>FOODS</b>				
Concentrates (Purchased + H.G.)	16: -	14:10	9 $\frac{1}{4}$	7 $\frac{1}{4}$
Roughages (Purchased + H.G.)	21: 1	21: 1	1: - $\frac{1}{4}$	10 $\frac{1}{4}$
TOTAL FOODS	37: 1	35:11	1: 9 $\frac{1}{2}$	1: 5 $\frac{1}{2}$
Labour	10: 6	8: 3	6	4
Miscellaneous	11: 8	11: -	6 $\frac{3}{4}$	5 $\frac{1}{2}$
Herd Replacement	4:14	6: 3	2 $\frac{3}{4}$	2 $\frac{3}{4}$
GROSS COST	63: 9	60:17	3: 1	2: 5 $\frac{3}{4}$
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	66:10	78:18	3: 2	3: 2 $\frac{1}{2}$
Calves (Sales + Retentions)	5: 6	7: 3	3	3 $\frac{1}{2}$
TOTAL RECEIPTS	71:16	86: 1	3: 5	3: 6
PROFIT	8: 7	25: 4	4	1: - $\frac{1}{4}$
AVERAGE COST OF SUMMER MILK PRODUCTION (April 1st 1964 - 30th September 1964)				
Average of 45 Herds	Average of 6 Most Profitable Herds	Average of 45 Herds	Average of 6 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<b>FOODS</b>				
Concentrates (Purchased + H.G.)	8: 3	6: 2	4	3
Roughages (Purchased + H.G.)	4:12	4:14	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Grazing	9:17	8:15	5	4 $\frac{1}{2}$
TOTAL FOODS	22:12	19:11	11 $\frac{1}{2}$	9 $\frac{3}{4}$
Labour	10:12	8:12	5 $\frac{1}{4}$	4
Miscellaneous	12: -	11: -	6	5 $\frac{1}{4}$
Herd Replacement	3:18	4:10	2	2
GROSS COST	49: 2	43:13	2: - $\frac{3}{4}$	1: 9
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	64:13	68:10	2: 8 $\frac{1}{2}$	2: 9
Calves (Sales + Retentions)	5: 4	5: 6	2 $\frac{1}{2}$	2 $\frac{1}{2}$
TOTAL RECEIPTS	69:17	73:16	2:11	2:11 $\frac{1}{2}$
PROFIT	20:15	30: 3	10 $\frac{1}{4}$	1: 2 $\frac{1}{2}$

Table 6 COSTS, RETURNS AND MARGINS, WINTER AND SUMMER MILK PRODUCTION 1963/64

NORTH OF SCOTLAND MILK MARKETING BOARD AREA

AVERAGE COST OF WINTER MILK PRODUCTION (October 1st 1963 - 31st March 1964)				
PER COW		PER GALLON		
Average of 11 Herds	Average of 3 Most Profitable Herds	Average of 11 Herds	Average of 3 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<b>FOODS</b>				
Concentrates (Purchased + H.G.)	17: 7	16:10	11½	10¾
Roughages (Purchased + H.G.)	18: 2	13:16	1: -¾	9½
TOTAL FOODS	35: 9	30: 6	2: -¾	1: 8
Labour	11: 1	10:12	7¼	7
Miscellaneous	11: 5	10:17	6¾	3½
Herd Replacement	3:16	1: 7	4	5
GROSS COST	61:11	53: 2	3: 6½	2:11½
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	65:19	70: 9	3: 7¾	3: 8¾
Calves (Sales + Retentions)	3: 7	2:16	2½	2
TOTAL RECEIPTS	69: 6	73: 5	3:10¼	3:10¾
PROFIT	7:15	20: 3	3¾	11¼
AVERAGE COST OF SUMMER MILK PRODUCTION (April 1st 1964 - 30th September 1964)				
Average of 11 Herds	Average of 3 Most Profitable Herds	Average of 11 Herds	Average of 3 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<b>FOODS</b>				
Concentrates (Purchased + H.G.)	7:18	6:14	4¾	4
Roughages (Purchased + H.G.)	3: 5	2: 9	1¾	1¾
Grazing	7:16	7: 3	4½	4
TOTAL FOODS	18:19	16: 6	10½	9¾
Labour	11: 4	10: 3	6¾	6
Miscellaneous	11:11	10:18	6¾	6½
Herd Replacement	2:16	3: 3	1½	1½
GROSS COST	44:10	40:10	2: 1	1:11
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	63: 8	62: 8	2:10¾	2:10¼
Calves (Sales + Retentions)	4:16	4:10	2¾	2½
TOTAL RECEIPTS	68: 4	66:18	3: 1½	3: -¾
PROFIT	23:14	26: 8	1: -½	1: 1¾

Table 7 COSTS, RETURNS AND MARGINS, WINTER AND SUMMER MILK PRODUCTION, 1963/64  
AVERAGE OF RESULTS FROM 56 HERDS COSTED IN COLLEGE AREA

AVERAGE COST OF WINTER MILK PRODUCTION (October 1st 1963 - 31st March 1964)			
Per Cow	% of Cost	Per Gallon	
£	%	s. d.	
Concentrates (Purchased + H.G.)	17	27.4	10 $\frac{1}{4}$
Roughages (Purchased + H.G.)	19	30.6	1: - $\frac{1}{2}$
TOTAL FOODS	36	58.0	1:10 $\frac{3}{4}$
Labour	11	17.7	6 $\frac{3}{4}$
Miscellaneous	11	17.7	6 $\frac{3}{4}$
Herd Replacement	4	6.6	3 $\frac{1}{2}$
GROSS COST	62	100.0	3: 3 $\frac{3}{4}$
Milk (Sales + Retentions)	66		3: 4 $\frac{3}{4}$
Calves (Sales + Retentions)	4		2 $\frac{3}{4}$
TOTAL RECEIPTS	70		3: 7 $\frac{1}{2}$
PROFIT	8		3 $\frac{3}{4}$
AVERAGE COST OF SUMMER MILK PRODUCTION (1st April 1964 - 30th September 1964)			
Per Cow	% of Cost	Per Gallon	
£	%	s. d.	
Concentrates (Purchased + H.G.)	8	17.0	4
Roughages (Purchased + H.G.)	4	8.5	2 $\frac{1}{4}$
Grazing	9	19.1	4 $\frac{1}{4}$
TOTAL FOODS	21	44.6	11
Labour	11	23.4	5 $\frac{3}{4}$
Miscellaneous	12	25.5	6 $\frac{1}{2}$
Herd Replacement	3	6.5	1 $\frac{1}{2}$
GROSS COST	47	100.0	2: - $\frac{3}{4}$
Milk (Sales + Retentions)	64		2: 9 $\frac{3}{4}$
Calves (Sales + Retentions)	5		2 $\frac{1}{2}$
TOTAL RECEIPTS	69		3: - $\frac{1}{4}$
PROFIT	22		11 $\frac{1}{2}$

Table 8 COSTS, RETURNS, AND MARGINS WINTER AND SUMMER MILK PRODUCTION 1964/65

ABERDEEN AND DISTRICT MILK MARKETING BOARD AREA

AVERAGE COST OF WINTER MILK PRODUCTION (October 1st 1964 - 31st March, 1965)				
PER COW		PER GALLON		
Average of 45 Herds	Average of 6 Most Profitable Herds	Average of 45 Herds	Average of 6 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<b>FOODS</b>				
Concentrates (Purchased + H.G.)	18: 1	19: 4	9 $\frac{3}{4}$	8 $\frac{1}{2}$
Roughages (Purchased + H.G.)	21: 3	21: 5	11 $\frac{1}{2}$	9 $\frac{3}{4}$
TOTAL FOODS	39: 4	40: 9	1: 9 $\frac{1}{4}$	1: 6
Labour	10: 10	10: -	5 $\frac{3}{4}$	4 $\frac{1}{2}$
Miscellaneous	13: 1	13: 16	7 $\frac{1}{4}$	6 $\frac{3}{4}$
Herd Replacement	4: 8	3: 19	2 $\frac{3}{4}$	1 $\frac{1}{2}$
GROSS COST	67: 3	68: 4	3: - $\frac{3}{4}$	2: 6 $\frac{1}{2}$
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	73: 6	87: 17	3: 3 $\frac{1}{2}$	3: 3 $\frac{3}{4}$
Calves (Sales + Retentions)	7: -	8: 6	3 $\frac{1}{4}$	3 $\frac{1}{2}$
TOTAL RECEIPTS	80: 6	96: 3	3: 7 $\frac{1}{4}$	3: 7 $\frac{1}{4}$
PROFIT	13: 3	27: 19	6 $\frac{1}{2}$	1: - $\frac{3}{4}$
AVERAGE COST OF SUMMER MILK PRODUCTION (April 1st 1965 - 30th September 1965)				
Average of 45 Herds	Average of 6 Most Profitable Herds	Average of 45 Herds	Average of 6 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<b>FOODS</b>				
Concentrates (Purchased + H.G.)	8: 10	11: 1	4	4 $\frac{3}{4}$
Roughages (Purchased + H.G.)	4: 4	4: 4	2 $\frac{1}{4}$	2
Grazing	9: 18	8: 19	5 $\frac{1}{2}$	4 $\frac{1}{4}$
TOTAL FOODS	22: 12	24: 4	11 $\frac{1}{2}$	11
Labour	10: 19	10: 2	5 $\frac{1}{2}$	4 $\frac{1}{2}$
Miscellaneous	12: 13	13: 10	6 $\frac{3}{4}$	6 $\frac{3}{4}$
Herd Replacement	3: 13	3: 5	2	1 $\frac{1}{2}$
GROSS COST	49: 17	51: 1	2: 1 $\frac{1}{4}$	1: 11 $\frac{1}{2}$
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	65: 19	73: 11	2: 9	2: 9 $\frac{1}{2}$
Calves (Sales + Retentions)	6: 2	7: 16	3	3 $\frac{1}{2}$
TOTAL RECEIPTS	72: 1	81: 7	3: -	3: 1
PROFIT	22: 4	30: 6	10 $\frac{3}{4}$	1: 1 $\frac{1}{2}$

Table 9 COSTS, RETURNS AND MARGINS, WINTER AND SUMMER MILK PRODUCTION 1964/65

NORTH OF SCOTLAND MILK MARKETING BOARD AREA

AVERAGE COST OF WINTER MILK PRODUCTION (October 1st 1964 - 31st March 1965)				
PER COW		PER GALLON		
Average of 11 Herds.	Average of 3 Most Profitable Herds	Average of 11 Herds	Average of 3 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<b>FOODS</b>				
Concentrates (Purchased + H.G.)	16:16	13:19	10 $\frac{3}{4}$	10 $\frac{1}{2}$
Roughages (Purchased + H.G.)	21:19	18: 3	1: 3 $\frac{1}{2}$	1: 3 $\frac{1}{2}$
TOTAL FOODS	38:15	32: 2	2: 2	2: 1 $\frac{1}{2}$
Labour	11:18	11:10	8 $\frac{1}{4}$	9 $\frac{1}{2}$
Miscellaneous	13: -	13: 4	8 $\frac{1}{2}$	10 $\frac{1}{2}$
Herd Replacement	2: 5	2: -	1 $\frac{1}{2}$	1 $\frac{1}{2}$
GROSS COST	65:18	58:16	3: 8 $\frac{1}{2}$	3:10 $\frac{3}{4}$
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	70:19	64:16	3: 9 $\frac{3}{4}$	3:11 $\frac{1}{2}$
Calves (Sales + Retentions)	4:14	6: 4	3 $\frac{1}{2}$	5 $\frac{1}{2}$
TOTAL RECEIPTS	75:13	71: -	4: 1 $\frac{1}{2}$	4: 5
PROFIT	9:15	12: 4	5	6 $\frac{1}{4}$
AVERAGE COST OF SUMMER MILK PRODUCTION (April 1st 1965 - 30th September 1965)				
Average of 11 Herds	Average of 3 Most Profitable Herds	Average of 11 Herds	Average of 3 Most Profitable Herds	
£ s.	£ s.	s. d.	s. d.	
<b>FOODS</b>				
Concentrates (Purchased + H.G.)	7: 2	9: 9	3 $\frac{1}{2}$	4 $\frac{1}{2}$
Roughages (Purchased + H.G.)	5: 7	3:17	2 $\frac{3}{4}$	2
Grazing	8:16	7: 9	4 $\frac{1}{2}$	3 $\frac{3}{4}$
TOTAL FOODS	21: 5	20:15	10 $\frac{3}{4}$	10
Labour	11:10	10: 6	6	5
Miscellaneous	11:16	12:11	6	6
Herd Replacement	5: 7	3:15	2 $\frac{3}{4}$	1 $\frac{3}{4}$
GROSS COST	49:18	47: 7	2: 1 $\frac{1}{2}$	1:10 $\frac{3}{4}$
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	65:14	71:15	2: 9 $\frac{1}{4}$	2:10 $\frac{1}{4}$
Calves (Sales + Retentions)	4:10	5: -	2 $\frac{1}{2}$	2 $\frac{1}{2}$
TOTAL RECEIPTS	70: 4	76:15	2:11 $\frac{3}{4}$	3: - $\frac{3}{4}$
PROFIT	20: 6	29: 8	10 $\frac{3}{4}$	1: 2

Table 10 COSTS, RETURNS AND MARGINS, WINTER AND SUMMER MILK PRODUCTION 1964/65  
 AVERAGE OF RESULTS FROM 56 HERDS COSTED IN COLLEGE AREA

AVERAGE COST OF WINTER MILK PRODUCTION (October 1st 1964 - 31st March 1965)		
Per Cow	% of Cost	Per Gallon
£	%	s. d.
Concentrates (Purchased + H.G.)	25.8	10½
Roughages (Purchased + H.G.)	33.3	1: 1½
TOTAL FOODS	59.1	1: 11¾
Labour	16.7	7
Miscellaneous	19.7	8
Herd Replacement	4.5	2
GROSS COST	100.0	3: 4¾
Milk (Sales + Retentions)		3: 6¾
Calves (Sales + Retentions)		3½
TOTAL RECEIPTS		3: 10½
PROFIT		5¾
AVERAGE COST OF SUMMER MILK PRODUCTION (1st April 1965 - 30th September 1965)		
Per Cow	% of Cost	Per Gallon
£	%	s. d.
Concentrates (Purchased + H.G.)	16.3	3¾
Roughages (Purchased + H.G.)	10.2	2¾
Grazing	18.4	4¾
TOTAL FOODS	44.9	11
Labour	22.4	5¾
Miscellaneous	24.5	6¼
Herd Replacement	8.2	2¾
GROSS COST	100.0	2: 1½
Milk (Sales + Retentions)		2: 9
Calves (Sales + Retentions)		3
TOTAL RECEIPTS		3: -
PROFIT		10½

Table 11

COSTS, RETURNS, AND MARGINS 1963/64  
ABERDEEN AND DISTRICT MILK MARKETING BOARD AREA

	PER COW		PER GALLON	
	Average of 45 Herds	Average of 6 Most Profitable Herds	Average of 45 Herds	Average of 6 Most Profitable Herds
	£ s.	£ s.	s. d.	s. d.
<u>FOODS</u>				
Purchased - Concentrates	18:15	13:14	5	3 $\frac{1}{4}$
Draff, etc.	7:10	8: 6	2	2
Home-Grown - Grain	5: 3	6:19	1 $\frac{1}{4}$	1 $\frac{3}{4}$
Roughages	17: 5	15:16	4 $\frac{3}{4}$	3 $\frac{3}{4}$
Grazing	11: 3	10: 4	3	2 $\frac{3}{4}$
TOTAL FOODS	59:16	54:19	1: 4	1: 1 $\frac{1}{4}$
<u>LABOUR</u>				
Hired	15:10	16:15	4 $\frac{1}{4}$	4
Family	5:10	-: 2	1 $\frac{1}{2}$	-
TOTAL LABOUR	21: -	16:17	5 $\frac{3}{4}$	4
<u>MISCELLANEOUS</u>				
Direct Miscellaneous Costs	13: 2	13: 8	3 $\frac{1}{2}$	3 $\frac{1}{2}$
Overheads	10: 3	8:13	2 $\frac{3}{4}$	2
TOTAL MISCELLANEOUS	23: 5	22: 1	6 $\frac{1}{4}$	5 $\frac{1}{4}$
<u>HERD REPLACEMENT</u>	8:12	10:14	2 $\frac{1}{4}$	2 $\frac{3}{4}$
GROSS COST	112:13	104:11	2: 6 $\frac{1}{4}$	2: 1 $\frac{1}{4}$
<u>RECEIPTS</u>				
Milk (Sales + Retentions)	131: 3	147:18	2:11	2:11 $\frac{1}{2}$
Calves (Sales + Retentions)	10:12	12:11	2 $\frac{3}{4}$	3
TOTAL RECEIPTS	141:15	160: 9	3: 1 $\frac{3}{4}$	3: 2 $\frac{1}{2}$
PROFITS	29: 2	55:18	7 $\frac{1}{2}$	1: 1 $\frac{1}{4}$

Table 12

COSTS, RETURNS, AND MARGINS, 1963/64  
NORTH OF SCOTLAND MILK MARKETING BOARD AREA

	PER COW		PER GALLON	
	Average of 11 Herds	Average of 3 Most Profitable Herds	Average of 11 Herds	Average of 3 Most Profitable Herds
	£ s.	£ s.	s. d.	s. d.
<u>FOODS</u>				
Purchased - Concentrates	20: 4	17:19	6	5 $\frac{1}{2}$
Draff, etc.	3:16	2:16	1 $\frac{1}{2}$	1 $\frac{1}{2}$
Home-Grown - Grain	5: 3	5: 6	1 $\frac{1}{4}$	1 $\frac{1}{4}$
Roughages	16: 7	12: 3	5	3 $\frac{1}{4}$
Grazing	9: -	8: 3	2 $\frac{3}{4}$	2 $\frac{3}{4}$
TOTAL FOODS	54:10	46: 7	1: 4 $\frac{1}{2}$	1: 1 $\frac{1}{2}$
<u>LABOUR</u>				
Hired	13: -	16: 1	4	4 $\frac{1}{4}$
Family	9: 5	4:16	2 $\frac{3}{4}$	1 $\frac{1}{2}$
TOTAL LABOUR	22: 5	20:17	6 $\frac{1}{4}$	6 $\frac{1}{4}$
<u>MISCELLANEOUS</u>				
Direct Miscellaneous Costs	12: 5	11:14	3 $\frac{1}{2}$	3 $\frac{1}{2}$
Overheads	10:12	10: 1	3 $\frac{1}{2}$	3
TOTAL MISCELLANEOUS	22:17	21:15	6 $\frac{3}{4}$	6 $\frac{1}{2}$
<u>HERD REPLACEMENT</u>	6:14	4:11	2	1 $\frac{1}{4}$
GROSS COST	106: 6	93:10	2: 8	2: 3 $\frac{1}{2}$
<u>RECEIPTS</u>				
Milk (Sales + Retentions)	129: 7	133: -	3: 3	3: 3 $\frac{1}{4}$
Calves (Sales + Retentions)	8: 3	7: 9	2 $\frac{1}{2}$	2 $\frac{1}{4}$
TOTAL RECEIPTS	137:10	140: 9	3: 5 $\frac{1}{2}$	3: 5 $\frac{1}{2}$
PROFIT	31: 4	46:19	9 $\frac{1}{2}$	1: 2



Table 13

COSTS, RETURNS, AND MARGINS 1964/65  
ABERDEEN AND DISTRICT MILK MARKETING BOARD AREA

	PER COW		PER GALLON	
	Average of 45 Herds	Average of 6 Most Profitable Herds	Average of 45 Herds	Average of 6 Most Profitable Herds
	£ s.	£ s.	s. d.	s. d.
<b>FOODS</b>				
Purchased - Concentrates	20: 1	23:13	5	5½
Draff, etc.	4:14	6:13	1¾	1½
Home-Grown - Grain	6:13	6:17	1½	1¾
Roughages	18:10	16:18	4¾	3¾
Grazing	12: 1	10:19	3½	2½
TOTAL FOODS	61:19	65: -	1: 4	1: 2¾
<b>LABOUR</b>				
Hired	16: 4	15:17	4½	3½
Family	5: 5	4: 5	1½	1
TOTAL LABOUR	21: 9	20: 2	5¾	4½
<b>MISCELLANEOUS</b>				
Direct Miscellaneous Costs	14: 9	15:15	3¾	3½
Overheads	11: 6	11: 9	3	2½
TOTAL MISCELLANEOUS	25:15	27: 4	6¾	6
<b>HERD REPLACEMENT</b>	8: -	7: 5	2	1½
GROSS COST	117: 3	119:11	2: 6½	2: 2¾
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	139: 9	162: 8	3: -	3: -½
Calves (Sales + Retentions)	13: 3	16: 2	3½	3½
TOTAL RECEIPTS	152:12	178:10	3: 3½	3: 4
PROFIT	35: 9	58:19	9	1: 1¾

Table 14

COSTS, RETURNS, AND MARGINS, 1964/65  
NORTH OF SCOTLAND MILK MARKETING BOARD AREA

	PER COW		PER GALLON	
	Average of 11 Herds	Average of 3 Most Profitable Herds	Average of 11 Herds	Average of 3 Most Profitable Herds
	£ s.	£ s.	s. d.	s. d.
<b>FOODS</b>				
Purchased - Concentrates	16: 9	19:13	4½	5
Draff, etc.	3:13	3: 3	1¾	1
Home-Grown - Grain	7: 7	4: 5	2	1½
Roughages	21: 4	17: 2	6	5
Grazing	10:16	9:10	3	2¾
TOTAL FOODS	59: 9	53:13	1: 4½	1: 3
<b>LABOUR</b>				
Hired	14: 2	18: 3	5	5½
Family	9: 7	3:16	1½	1½
TOTAL LABOUR	23: 9	21:19	6½	6½
<b>MISCELLANEOUS</b>				
Direct Miscellaneous Costs	13: 4	14:14	3¾	4½
Overheads	11:18	11: 6	3½	3½
TOTAL MISCELLANEOUS	25: 2	26: -	7¼	7½
<b>HERD REPLACEMENT</b>	7:10	5:18	2½	1½
GROSS COST	115:10	107:10	2: 8½	2: 6½
<b>RECEIPTS</b>				
Milk (Sales + Retentions)	136: 3	136:13	3: 2¾	3: 3½
Calves (Sales + Retentions)	9: 6	11: 4	2¾	3½
TOTAL RECEIPTS	145: 9	147:17	3: 5½	3: 6¾
PROFIT	29:19	40: 7	9	1: -¾

Table 15

COSTS, RETURNS AND MARGINS, 1963/64  
AVERAGE RESULTS FROM 56 HERDS IN COLLEGE AREA

	Per Cow	% of Cost	Per Gallon
	£	%	s. d.
<u>FOODS</u>			
Purchased - Concentrates	19	17.4	5½
Druff, etc.	6	5.5	1¾
Home-Grown - Grain	5	4.6	1¼
Roughages	17	15.6	4¾
Grazing	10	9.2	2¾
TOTAL FOODS	57	52.3	1: 4
<u>LABOUR</u>			
Hired	14	12.9	4
Family	7	6.4	2¾
TOTAL LABOUR	21	19.3	6¼
<u>MISCELLANEOUS</u>			
Direct Miscellaneous Costs	13	11.9	3½
Overheads	10	9.2	3
TOTAL MISCELLANEOUS	23	21.1	6½
<u>HERD REPLACEMENT</u>	8	7.3	2¾
GROSS COST	109	100.0	2: 7
<u>RECEIPTS</u>			
Milk (Sales + Retentions)	130		3: 1
Calves (Sales + Retentions)	9		2¾
TOTAL RECEIPTS	139		3: 3½
PROFIT	30		8½

Table 16

COSTS, RETURNS AND MARGINS 1964/65  
AVERAGE RESULTS FROM 56 HERDS IN COLLEGE AREA

	Per Cow	% of Cost	Per Gallon
	£	%	s. d.
<u>FOODS</u>			
Purchased - Concentrates	18	15.5	5
Druff, etc.	4	3.5	1½
Home-Grown - Grain	7	6.0	1½
Roughages	20	17.2	5¼
Grazing	11	9.5	3½
TOTAL FOODS	60	51.7	1: 4½
<u>LABOUR</u>			
Hired	15	12.9	4¾
Family	7	6.0	1½
TOTAL LABOUR	22	18.9	6
<u>MISCELLANEOUS</u>			
Direct Miscellaneous Costs	14	12.1	3¾
Overheads	12	10.3	3¾
TOTAL MISCELLANEOUS	26	22.4	7
<u>HERD REPLACEMENT</u>	8	7.0	2
GROSS COST	116	100.0	2: 7½
<u>RECEIPTS</u>			
Milk (Sales + Retentions)	138		3: 1½
Calves (Sales + Retentions)	11		3¾
TOTAL RECEIPTS	149		3: 4½
PROFIT	33		9

Table 17

GENERAL DATA ON SAMPLE, 1963/64

	ABERDEEN BOARD AREA		NORTH BOARD AREA		WHOLE SAMPLE
	Average of 45 Herds	Average of 6 Most Profitable Herds	Average of 11 Herds	Average of 3 Most Profitable Herds	Average of 56 Herds
Av. No. of Cows/Herd	58	67	45	49	55
% Dry Cows in Herd	21%	19%	25%	24%	22%
% Herd Replaced During Year	32%	42%	25%	18%	31%
Yield/Cow	Galls.	Galls.	Galls.	Galls.	Galls.
Milk Produced/Cow/Day	900	996	795	810	879
Milk Produced/Cow in Milk/Day	2.4	2.7	2.2	2.2	2.4
% Milk Produced in Winter 6 Months	3.1	3.2	2.9	2.9	3.1
	46.8%	49.5%	44.4%	45.6%	46.3%
Av. Size of Farm	Acres	Acres	Acres	Acres	Acres
No. of Acres Grass/Cow	245	245	172	195	231
No. of Forage Acres (Grass, Turnips, Kale, Hay, Silage)/Cow	1.1	0.9	1.1	1.2	1.1
	1.8	1.5	1.8	1.8	1.8
<u>Foods Fed/Cow</u>	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
Purchased Concentrates	11.3	6.9	12.9	10.1	11.6
Home-Grown Grain	5.3	6.3	5.4	6.2	5.3
Druff	30.6	46.1	27.6	26.8	30.0
Hay	7.0	4.8	10.6	8.1	7.7
Straw	6.6	7.3	4.8	2.7	6.2
Silage	54.0	56.3	40.5	45.6	51.3
Roots	56.0	53.7	43.4	18.0	53.5
Other Roughages	2.4	1.0	7.9	18.1	3.5
TOTAL	173.2	182.4	153.1	135.6	169.1
<u>Concentrates Fed/Gallon</u>	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Winter	3.1	2.5	4.3	3.6	3.3
Summer	1.3	1.0	1.4	1.3	1.3
Year	2.1	1.7	2.5	2.2	2.2
Labour Hours/Cow in Milk	Hours	Hours	Hours	Hours	Hours
	106	94	117	101	108
Milk Output/£100 Food Fed	£	£	£	£	£
	223	274	244	290	227
Milk Output/£100 Labour	653	897	595	673	642
Milk Output/£100 Food and Labour	164	211	172	204	166

Table 18

GENERAL DATA ON SAMPLE, 1964/65

Av. No. of Cows/Herd  
 % Dry Cows in Herd  
 % Herd Replaced During Year

Yield/Cow  
 Milk Produced/Cow/Day  
 Milk Produced/Cow in Milk/Day  
 % Milk Produced in Winter 6 Months

Av. Size of Farm  
 No. of Acres Grass/Cow  
 No. of Forage Acres (Grass,  
 Turnips, Kale, Hay, Silage)/Cow

Foods Fed/Cow

Purchased Concentrates  
 Home-Grown Grain  
 Draff  
 Hay  
 Straw  
 Silage  
 Roots  
 Other Roughages

TOTAL

Concentrates Fed/Gallon

Winter  
 Summer  
 Year

Labour Hours/Cow in Milk

Milk Output/£100 Food Fed  
 Milk Output/£100 Labour  
 Milk Output/£100 Food and Labour

ABERDEEN BOARD AREA		NORTH BOARD AREA		WHOLE SAMPLE
Average of 45 Herds	Average of 6 Most Profitable Herds	Average of 11 Herds	Average of 3 Most Profitable Herds	Average of 56 Herds
58 21% 32%	69 20% 37%	46 22% 25%	47 23% 27%	56 21% 30%
Galls. 927 2.5 3.2 48.2%	Galls. 1,064 2.9 3.6 50.8%	Galls. 842 2.3 3.0 42.4%	Galls. 827 2.3 2.9 37.4%	Galls. 916 2.5 3.2 47.4%
Acres 245 1.1 1.8	Acres 284 0.9 1.6	Acres 172 1.2 1.8	Acres 144 1.3 1.7	Acres 225 1.1 1.8
Cwts. 11.9 6.6 30.1 7.0 4.5 56.3 62.8 1.8	Cwts. 14.0 6.8 39.8 5.0 4.1 69.2 64.4 2.4	Cwts. 11.2 7.3 30.5 14.1 7.9 36.9 66.5 -	Cwts. 16.5 4.3 24.3 10.9 3.3 43.5 48.6 -	Cwts. 11.8 6.7 30.2 7.9 4.9 53.7 63.3 1.6
181.0	205.7	174.4	151.4	180.1
Lbs. 3.2 1.3 2.2	Lbs. 2.8 1.5 2.1	Lbs. 4.0 1.2 2.3	Lbs. 4.2 1.7 2.6	Lbs. 3.3 1.3 2.2
Hours 104	Hours 85	Hours 115	Hours 87	Hours 106
£ 229 677 169	£ 256 855 195	£ 239 588 168	£ 268 624 184	£ 250 665 169

Table 19 DISTRIBUTION OF HERDS ACCORDING TO PRODUCTION COSTS 1963/64

GROSS COSTS PER COW		GROSS COSTS PER GALLON	
Cost	No. of Herds	Cost	No. of Herds
Under £70	1	Under 1s. 10d.	1
£70 - £79	-	1s. 10d. - 2s. 0d.	-
£80 - £89	4	2s. 0d. - 2s. 2d.	3
£90 - £99	7	2s. 2d. - 2s. 4d.	5
£100 - £109	13	2s. 4d. - 2s. 6d.	15
£110 - £119	14	2s. 6d. - 2s. 8d.	16
£120 - £129	11	2s. 8d. - 2s. 10d.	8
£130 and Over	6	2s. 10d. - 3s. 0d.	4
Total	56	Over 3s. -d.	4
	==	Total	56
			==

Table 20 DISTRIBUTION OF HERDS ACCORDING TO PROFITS OR LOSSES 1963/64

PROFIT OR LOSS PER COW		PROFIT OR LOSS PER GALLON	
Profit or Loss	No. of Herds	Profit or Loss	No. of Herds
Profit:-		Profit:-	
£50 and Over	4	Over 1s.	5
£40 - £49	8	10d. - 1s.	10
£30 - £39	15	8d. - 10d.	11
£20 - £29	16	6d. - 8d.	15
£10 - £19	8	4d. - 6d.	6
£0 - £9	5	2d. - 4d.	5
Total	56	0d. - 2d.	4
	==	Total	56
			==

Table 21 DISTRIBUTION OF HERDS ACCORDING TO PRODUCTION COSTS 1964/65

GROSS COSTS PER COW		GROSS COSTS PER GALLON	
Cost	No. of Herds	Cost	No. of Herds
Under £80	1	Under 2s. 2d.	3
£80 - £89	-	2s. 2d. - 2s. 4d.	6
£90 - £99	4	2s. 4d. - 2s. 6d.	16
£100 - £109	10	2s. 6d. - 2s. 8d.	12
£110 - £119	20	2s. 8d. - 2s. 10d.	9
£120 - £129	12	2s. 10d. - 3s. 0d.	7
£130 - £139	8	3s. 0d. - 3s. 2d.	2
£140 - £149	-	3s. 2d. - 3s. 4d.	-
£150 and Over	1	Over 3s. 4d.	1
Total	56	Total	56
	==		==

Table 22 DISTRIBUTION OF HERDS ACCORDING TO PROFITS OR LOSSES 1964/65

PROFIT OR LOSS PER COW		PROFIT OR LOSS PER GALLON	
Profit or Loss	No. of Herds	Profit or Loss	No. of Herds
Profit:-		Profit:-	
£60 and Over	1	Over 1s. 2d.	4
£50 - £59	11	1s. - 1s. 2d.	10
£40 - £49	10	10d. - 1s. 0d.	10
£30 - £39	10	8d. - 0s. 10d.	13
£20 - £29	16	6d. - 0s. 8d.	10
£10 - £19	6	4d. - 0s. 6d.	6
£0 - £9	1	2d. - 0s. 4d.	1
Loss:-	1	0d. - 0s. 2d.	1
	<u>56</u>	Loss:-	<u>1</u>
Total	<u>56</u>	Total	<u>56</u>

Table 23 DISTRIBUTION OF HERDS ACCORDING TO GROSS MARGINS - 1963/64

GROSS MARGINS PER COW		GROSS MARGINS PER FORAGE ACRE	
Gross Margin	No. of Herds	Gross Margin	No. of Herds
£120 and Over	1	£80 and Over	1
£110 - £119	2	£70 - £79	1
£100 - £109	7	£60 - £69	9
£90 - £99	15	£50 - £59	17
£80 - £89	14	£40 - £49	16
£70 - £79	7	£30 - £39	8
£60 - £69	7	£20 - £29	2
£50 - £59	<u>3</u>	Under £20	<u>2</u>
Total	<u>56</u>	Total	<u>56</u>

Table 24 DISTRIBUTION OF HERDS ACCORDING TO GROSS MARGINS - 1964/65

GROSS MARGINS PER COW		GROSS MARGINS PER FORAGE ACRE	
Gross Margin	No. of Herds	Gross Margin	No. of Herds
£120 and Over	1	£80 and Over	2
£110 - £119	8	£70 - £79	5
£100 - £109	7	£60 - £69	7
£90 - £99	15	£50 - £59	16
£80 - £89	16	£40 - £49	17
£70 - £79	5	£30 - £39	6
£60 - £69	3	£20 - £29	2
£50 - £59	<u>1</u>	Under £20	<u>1</u>
Total	<u>56</u>	Total	<u>56</u>