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# British Agriculture in the Common Market

AND

THE OUTLOOK FOR NORTH OF SCOTLAND FARMING  
TO 1977/78

(Based on Papers Presented at a Conference on  
British Agriculture and the Common Market.  
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## MILK

by

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Although dairying is not the most important sector of agriculture in the North of Scotland, the average herd size is the largest in the country, particularly in Moray and Nairn and some parts of Banff-shire, Aberdeenshire and Kincardine-shire. One of the main questions arising from Britain's entry into the E.E.C. is the future of the Milk Marketing Boards. Will they be allowed to continue exercising their statutory powers, i.e. will producers be compelled to remain as members? If not, many important difficulties could arise such as producer-retailers opting out as distributors for the Boards and manufacturers making direct private contracts with producers. However, the Ministry of Agriculture has stated that the Government would defend the maintenance of disciplinary and other powers on which the essential functions of the Boards depend. Another important issue is the future of the present arrangements for pooling returns between the liquid and manufacturing sectors of the market. If these arrangements were suspended, prices could vary widely between areas, depending on the particular markets supplied. The foregoing questions are, however, outside the scope of this paper although they should always be borne in mind.

Total milk production was almost 16,000 million gallons last year in the six member states of the E.E.C. and in the enlarged Community of the Ten would be in excess of 20,000 million gallons annually. Total United Kingdom milk production of 2,750 million gallons would represent approximately 14 per cent of the expanded E.E.C. total. Output in the North-East of Scotland amounts to approximately 36 million gallons or just over 1 per cent of the U.K. total. In the United Kingdom about two-thirds of total milk production are utilised for liquid milk and cream compared with under a quarter in the E.E.C. as a whole, but only 45 per cent is so used in the Aberdeen Board area and approximately 60 per cent by the North of Scotland Board.

The need for seasonal pricing of milk is currently less in the E.E.C. than in the U.K. In the Six a lower proportion of annual output goes to the liquid market and there are ample supplies for

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this sector even in the season of lowest production. Seasonal variations in prices in the U.K. would almost certainly have to remain in order to ensure supplies of liquid milk in the winter unless the public could be persuaded to drink long-life milk or its equivalent.

The E.E.C. Price Support System is based on a Target Price for milk delivered to the processing plant. Farmers' prices are less by the cost of haulage in the same way as the Pool Price here is subject to transport deductions. The Target Price is also linked to 3.7 per cent butter fat and farmers' prices vary upwards or downwards from this base by approximately 0.40p gallon per 0.1 per cent of butterfat. Milk prices in the E.E.C. are maintained by an elaborate system of import control with provision for export subsidies and official buying of certain types of dairy products when there is an internal surplus. Import control is based on threshold prices which are calculated after the Target Price has been established and which take into account estimated manufacturing costs, profits, etc. These threshold prices are calculated for twelve groups of dairy products including butter, milk powders, condensed milk, some forms of cheese and lactose. Intervention prices for butter and skim milk powders, in particular, are set so that producer's returns approximate the target price for milk (net of transport deductions), although in periods of heavy surplus his receipts might fall by six per cent or more below the target price.

In 1971/72 the average price received by milk producers in the E.E.C. was around 21.33p per gallon, exceeding the Target Price of 21.26p for the first time since the Common Agricultural Policy came in force. However, with Italy excluded, the average price received by producers in the other five countries was 20.53p, or virtually the same as in the Aberdeen Board area, 20p, and the North Board area, 20.5p.

Between 1970/71 and 1971/72 the E.E.C. Target Price had increased by 1.18p per gallon while returns to producers rose by almost 2p per gallon as a result of the world shortage of butter during 1971. The rapid disappearance of the "butter mountain" was caused by a combination of circumstances — fewer dairy cows in the E.E.C. and other countries, droughts in New Zealand and Australia followed by floods in the latter — which are unlikely to arise again at one and the same time. Further, butter consumption in the U.K. is likely to fall drastically in response to large increases in price as was seen by the fall of approximately 25% in the last

two years.\* One source has estimated that butter consumption will fall to one quarter of the 1970/71 level by 1977/78.

Financial support to the dairy industry in the E.E.C. is paid on the end products and not on raw milk. Accordingly, there are wide variations among the prices paid to producers by the various creameries, depending mainly upon the product mix of each processor but also upon his efficiency in production and marketing. The special importance of the liquid market in the U.K. means that British farmers should receive more than the average E.E.C. price for milk, but a high standard of marketing and management will be required to maintain these above prices in those areas where a high proportion of milk goes to manufacturing.

Gross Margins on dairying in the North of Scotland have been calculated for (1) dairy replacements, (2) dairy cows fed on home-mixed rations, and (3) dairy cows fed on purchased cake. In all cases it has been assumed that the herd is Friesian, the predominant breed in the area. Many herds in the North of Scotland are fed intensively on the forage acreage and all calculations have been made in recognition of this fact.

Table 7.1 shows the gross margin for dairy replacements, and the most critical assumptions underlying the calculation.

(1) The value of a Friesian down calving heifer in 1971/72 was around £140, namely the weighted average prices of £120 in April 1971 rising to £164 in March 1972 calculated from prices received in various markets during the year. On the same basis the weighted average price was £24 for a Friesian heifer calf, or £13 in April 1971 rising to £31 in March 1972, and £28 for a steer calf.

(2) Assuming British farmers had been operating completely under the Common Agricultural Policy, a heifer would have been valued at around £200 in 1971/72, based on the fact that pedigree breeders were consistently receiving more than that amount and even up to £250 from European buyers for heifers two months from calving. The value of a heifer calf under E.E.C. 1971/72 conditions would have been around £31, and around £33 for steers. Between December 1971 and June 1972 there had been a sharp rise in calf prices from £27 to £35 and it was noticeable that European buyers withdrew from the market at this time.

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\*See page 38

**Table 7.1** **GROSS MARGINS**  
**ON DAIRYING IN THE NORTH OF SCOTLAND**

Actual 1971/72, with Estimated 1971/72 and Projected 1977/78

Under E.E.C. Prices and Costs

**DAIRY REPLACEMENTS**

	(1)	(2)	(3)	(4)
	1971/72		1977/78	
	At E.E.C. Prices and Costs			
	At U.K. Prices and Costs	At E.E.C. Prices and Costs	1971/72 Standards of Farming	1977/78 Standards of Farming
	£ per Head	£ per Head	£ per Head	£ per Head
<b>OUTPUT</b>				
Value of Down Calving Heifer	140.00	200.00	215.00	215.00
Less Value of Heifer as Calf	24.00	31.00	36.00	36.00
<b>TOTAL OUTPUT</b>	<b>116.00</b>	<b>169.00</b>	<b>179.00</b>	<b>179.00</b>
<b>VARIABLE COSTS</b>				
Milk	5.00	5.33	5.75	5.75
Purchased Concentrates	12.30	15.35	19.14	19.14
Barley	6.10	9.62	11.44	11.44
Grazing	9.95	12.41	20.80	20.27
Silage	4.35	5.35	9.09	7.09
Hay	0.40	0.48	0.75	0.61
Miscellaneous	6.00	6.00	9.80	9.80
<b>TOTAL VARIABLE COSTS</b>	<b>44.10</b>	<b>54.54</b>	<b>76.77</b>	<b>74.10</b>
<b>GROSS MARGIN</b>	<b>71.90</b>	<b>114.46</b>	<b>102.23</b>	<b>104.90</b>
<b>GROSS MARGIN PER FORAGE ACRE</b>	<b>53.26</b>	<b>84.79</b>	<b>75.73</b>	<b>85.63</b>
<b>ASSUMPTIONS</b>				
Breed	Friesian	Friesian	Friesian	Friesian
<b>COSTS</b>	£	£	£	£
Milk - Per Gallon	0.20	0.2133	0.23	0.23
Purchased Concentrates - per Cwt.	2.28	2.87	3.39	3.39
Barley - Per Cwt.	1.11	1.75	2.08	2.08
<b>QUANTITIES PER DAIRY REPLACEMENT</b>				
Milk - Gallons	Gall. 25	Gall. 25	Gall. 25	Gall. 25
Milk Substitute - Cwt.	Cwt. 0.24	Cwt. 0.24	Cwt. 0.24	Cwt. 0.24
Purchased Concentrates - Cwt.	4.30	4.30	4.30	4.30
Barley - Cwt.	5.50	5.50	5.50	5.50
Fertilisers to Grazing - Units Per Acre	N/P/K 156 36 30	N/P/K 156 36 30	N/P/K 156 36 30	N/P/K 242 48 40
Fertilisers to Silage - Units Per Acre	156 36 30	156 36 30	156 36 30	156 36 30
Fertilisers to Hay - Units Per Acre	54 36 30	54 36 30	54 36 30	54 36 30
<b>FORAGE ACREAGE REQUIREMENTS</b>	Acres	Acres	Acres	Acres
Per Replacement	1.35	1.35	1.35	1.225

(3) Variable Costs have been calculated on the basis of the assumptions shown in Table 7.1 where Miscellaneous Costs include veterinary treatment and medicines, straw and bull upkeep.

Comparing the first and final columns in Table 7.1, Variable Costs increased from £44.10 in 1971/72 to a projected £74.10 in 1977/78 at 1977/78 standards of farming. The corresponding gross margins per replacement unit are £71.90 and £104.90.

Table 7.2 sets out the assumptions and results for gross margins from dairy cows fed on home-mixed rations. Important assumptions include the following.

(1) Under 1977/78 standards of farming it has been assumed that the yield per cow will rise to 1,000 gallons while the quantity of concentrates fed will remain constant, reflecting the belief that the quality of silage will improve over the six year period.

(2) Similarly, more fertiliser will be applied so that the forage acreage per unit could be reduced.

(3) The calving rate (the percentage number of calves born alive per year) and the herd replacement rate have been kept constant between 1971/72 and 1977/78, namely at 90 per cent and 25 per cent respectively. The herd replacement rate includes a two per cent mortality factor. Accordingly, the output of calves is based on the 90 per cent calving rate and herd replacement has been calculated by subtracting the average price for farrow cows plus the value of deaths from the value of an in-calf heifer and then taking 25 per cent of the result.

(4) The cost of draff per ton through 1977/78 is kept in line with the price of barley projected elsewhere in this report.

(5) Miscellaneous costs include veterinary treatments and medicines, detergents, straw and litter, A.I. fees, bull upkeep, milk recording fees and insurance.

Variable Costs increase from £62.84 in 1971/72 to £104.26 in 1977/78, assuming farmers continue to improve their farming practices. Gross margin per cow is projected to remain virtually unaltered at around £141, but to increase by approximately £10 per forage acre.

Gross margin for dairy cows fed on purchased cake are given in Table 7.3. Currently many of the smaller dairy farms are com-

**Table 7.2** **GROSS MARGINS**  
**ON DAIRYING IN THE NORTH OF SCOTLAND**  
 Actual 1971/72, with Estimated 1971/72 and Projected 1977/78  
 Under E.E.C. Prices and Costs  
**DAIRY COWS — FED ON HOME—MIXED RATION**

	(1)	(2)	(3)	(4)
	1971/72		1977/78	
	At E.E.C. Prices and Costs			
	At U.K. Prices and Costs	At E.E.C. Prices and Costs	1971/72 Standards of Farming	1977/78 Standards of Farming
<b>OUTPUT</b>	£	£	£	£
Milk	195.00	202.64	218.50	230.00
Calves	23.40	27.90	33.30	33.30
<b>TOTAL</b>	<b>218.40</b>	<b>230.54</b>	<b>251.80</b>	<b>263.30</b>
Less Herd Replacement	14.30	16.25	17.15	17.15
<b>TOTAL OUTPUT</b>	<b>204.10</b>	<b>214.29</b>	<b>234.65</b>	<b>246.15</b>
<b>VARIABLE COSTS</b>				
Purchased Concentrates	12.08	12.06	15.73	15.73
Barley	15.30	23.62	28.08	28.08
Draff	6.25	9.62	11.49	11.49
Grazing	7.96	9.93	16.64	16.21
Silage	6.25	8.98	13.06	10.19
Miscellaneous	15.00	15.00	22.56	22.56
<b>TOTAL VARIABLE COSTS</b>	<b>62.84</b>	<b>79.21</b>	<b>107.56</b>	<b>104.26</b>
<b>GROSS MARGIN</b>	<b>141.26</b>	<b>135.08</b>	<b>127.09</b>	<b>141.89</b>
<b>GROSS MARGIN PER FORAGE ACRE</b>	<b>111.23</b>	<b>106.36</b>	<b>100.07</b>	<b>121.27</b>
<b>ASSUMPTIONS</b>				
Breed	Friesian	Friesian	Friesian	Friesian
Milk Prices Per Gallon —	p	p	p	p
U.K. Guaranteed	22.38			
Actual	20.00			
E.E.C. Target		21.26		
Actual		21.33	23.0	23.0
<b>COSTS</b>	£	£	£	£
Purchased Concentrates Per Cwt.	2.68	2.68	3.50	3.50
Barley Per Cwt.	1.13	1.75	2.08	2.08
Draff Per Ton	5.00	7.70	9.19	9.19
<b>QUANTITIES</b>				
Yield Per Cow	Gall. 950	Gall. 950	Gall. 950	Gall. 1,000
Purchased Concentrates Per Cow	Cwt. 4.5	Cwt. 4.5	Cwt. 4.5	Cwt. 4.5
Barley Per Cow	13.5	13.5	13.5	13.5
Draff Per Cow	25.0	25.0	25.0	25.0
	N/P/K	N/P/K	N/P/K	N/P/K
Fertilisers to Grazing — Units Per Acre	156 36 30	156 36 30	156 36 30	242 48 40
Fertilisers to Silage — Units per Acre	156 36 30	156 36 30	156 36 30	156 36 30
<b>FORAGE ACREAGE REQUIREMENTS — Per Cow</b>	Acres	Acres	Acres	Acres
	1.27	1.27	1.27	1.17
	%	%	%	%
Calving Rate	90	90	90	90
Herd Replacement Rate	25	25	25	25



**Table 7.3 GROSS MARGINS  
ON DAIRYING IN THE NORTH OF SCOTLAND**  
Actual 1971/72, with Estimated 1971/72 and Projected 1977/78  
Under E.E.C. Prices and Costs

	(1)	(2)	(3)	(4)
	1971/72		1977/78	
	At E.E.C. Prices and Costs			
	At U.K. Prices and Costs	At E.E.C. Prices and Costs	1971/72 Standards of Farming	1977/78 Standards of Farming
<b>OUTPUT</b>	£	£	£	£
Milk	195.00	202.64	218.50	212.75
Calves	23.40	27.90	33.30	33.30
<b>TOTAL</b>	218.40	230.54	251.80	246.05
<i>Less Herd Replacement</i>	14.30	16.25	17.15	17.15
<b>TOTAL OUTPUT</b>	204.10	214.29	234.65	228.90
<b>VARIABLE COSTS</b>				
Purchased Cake	37.98	43.20	53.28	32.56
Druff	6.25	9.62	11.49	11.49
Grazing	7.96	9.93	16.64	16.21
Silage	6.25	8.98	13.06	10.19
Miscellaneous	15.00	15.00	22.56	22.56
<b>TOTAL VARIABLE COSTS</b>	73.44	86.73	117.03	93.01
<b>GROSS MARGIN</b>	130.66	127.56	117.62	135.89
<b>GROSS MARGIN PER FORAGE ACRE</b>	102.88	100.44	92.61	116.15
<b>ASSUMPTIONS</b>				
Breed	Friesian	Friesian	Friesian	Friesian
Milk Prices Per Gallon —	p	p	p	p
U.K. Guaranteed	22.38			
Actual	20.00			
E.E.C. Target		21.26		
Actual		21.33	23.00	23.00
<b>COSTS</b>	£	£	£	£
Purchased Cake Per Cwt.	2.11	2.40	2.96	2.96
Druff Per Ton	5.00	7.70	9.19	9.19
<b>QUANTITIES</b>	Gall.	Gall.	Gall.	Gall.
Yield Per Cow	950	950	950	925
	Cwt.	Cwt.	Cwt.	Cwt.
Purchased Cake Per Cow	18.0	18.0	18.0	11.0
Druff Per Cow	25.0	25.0	25.0	25.0
Fertilisers to Grazing —	N/P/K	N/P/K	N/P/K	N/P/K
Units Per Acre	156 36 30	156 36 30	156 36 30	242 48 40
Fertilisers to Silage —				
Units per Acre	156 36 30	156 36 30	156 36 30	156 36 30
<b>FORAGE ACREAGE</b>	Acres	Acres	Acres	Acres
<b>REQUIREMENTS Per Cow</b>	1.27	1.27	1.27	1.17
	%	%	%	%
Calving Rate	90	90	90	90
Herd Replacement Rate	25	25	25	25

Table 7.4

## CASE STUDY — DAIRY FARM — 300 - 350 ACRES

Actual 1971/72, with Estimated 1971/72 and Projected 1977/78  
Under E.E.C. Prices and Costs

	(1)	(2)	(3)	(4)
	1971/72		1977/78	
	At E.E.C. Prices and Costs			
	At U.K. Prices and Costs	At E.E.C. Prices and Costs	1971/72 Standards of Farming	1977/78 Standards of Farming
	£	£	£	£
<b>GROSS MARGINS</b>				
Dairy Cows	16,951	16,209	15,250	25,540
Dairy Replacements	2,157	3,434	3,067	4,720
Barley	3,895	4,740	5,350	4,662
<b>TOTAL GROSS MARGIN</b>	<b>23,003</b>	<b>24,383</b>	<b>23,667</b>	<b>34,922</b>
<b>FIXED COSTS (excluding Rent)</b>				
Labour	5,600	5,600	8,136	8,136
Power	3,375	3,375	4,523	5,278
Overheads	2,110	2,110	3,443	4,018
<b>TOTAL FIXED COSTS (excluding Rent)</b>	<b>11,085</b>	<b>11,085</b>	<b>16,102</b>	<b>17,432</b>
<b>SURPLUS AVAILABLE FOR RENT AND FARMER'S INCOME</b>	<b>11,918</b>	<b>13,298</b>	<b>7,565</b>	<b>17,490</b>
Rent	1,500	1,500		
<b>NET FARM INCOME</b>	<b>10,418</b>	<b>11,798</b>		
<b>CROPPING AND STOCKING</b>	Acres	Acres	Acres	Acres
Size of Farm	300	300	300	350
Forage Acres	193	193	193	266
Barley Acres	107	107	107	84
<b>LIVESTOCK</b>				
No. of Cows	120	120	120	180
No. of Replacement Units	30	30	30	45

pletely dependent on purchased cake for their rations so that under the price regime of the Common Agricultural Policy many will likely change to summer milk production, particularly if the present seasonal differential between summer and winter milk prices is reduced or discarded. Accordingly, for 1977/78 at 1977/78 standards of farming the critical assumptions are that a change over to summer milk production has occurred, that the yield per cow has fallen to 925 gallons and that the quantity of concentrates fed would fall from 18 cwts. to 11 cwts. Increased fertiliser application to grazing land would result in a reduced forage acreage.

Accordingly, variable costs increase from £73.44 in 1971/72 to £93.01 in 1977/78 at that year's standards of farming. Gross margins would correspondingly increase from £130.66 to £135.89 per cow and from £102.88 to £116.15 per forage acre.

The first case study, shown in Table 7.4, is based on the gross margins for replacements and for cows fed on home-mixed rations, a system taken as representative for a 300 acre dairy farm in 1971/72. The number of men employed remains at four, with assistance from the farmer at peak periods, but with a change in composition — two dairy cattlemen plus two others in 1971/72 and three dairy cattlemen (providing their own relief) plus one other in 1977/78. 1977/78 standards of farming would enable the number of cows kept to increase from 120 to 180 and the number of replacement units from 30 to 45, but an extra 50 acres would need to be acquired. Without an increase in farm size only 34 acres of barley could be grown, insufficient to justify home-mixing.

Table 7.4 shows that the surplus available for rent and farmer's income was £11,918, or £39.70 per acre in 1971/72 at prices and costs then ruling in the U.K. as against £17,490, or approximately £50 per acre, in 1977/78 at 1977/78 standards of farming. Without any improvement in technology the final year would have shown a total surplus of £7,565, or £25.20 per acre. Two other results have been considered for 1977/78.

(1) If only 120 cows were kept on 300 acres but if in all other respects 1977/78 standards of farming were achieved the surplus would be £9,732 or £32.40 per acre.

(2) 180 cows plus followers on 300 acres at 1977/78 standards of farming would yield a theoretical surplus of £16,045 or £53.50 per acre. However, this system would involve the purchase

Table 7.5

## CASE STUDY — DAIRY FARM — 100 ACRES

Actual 1971/72, with Estimated 1971/72 and Projected 1977/78

Under E.E.C. Prices and Costs

	(1)	(2)	(3)	(4)
	1971/72		1977/78	
	At E.E.C. Prices and Costs			
	At U.K. Prices and Costs	At E.E.C Prices and Costs	1971/72 Standards of Farming	1977/78 Standards of Farming
£	£	£	£	
<b>GROSS MARGINS</b>				
Dairy Cows	7,839	7,653	7,057	8,153
Dairy Replacements	1,222	1,946	1,738	2,518
<b>TOTAL GROSS MARGIN</b>	<b>9,061</b>	<b>9,599</b>	<b>8,795</b>	<b>10,671</b>
<b>FIXED COSTS (excluding Rent)</b>				
Labour	1,400	1,400	2,284	2,284
Power	910	910	1,219	1,219
Overheads	980	980	1,597	1,597
<b>TOTAL FIXED COSTS (excluding Rent)</b>	<b>3,290</b>	<b>3,290</b>	<b>5,100</b>	<b>5,100</b>
<b>SURPLUS AVAILABLE FOR RENT AND FARMER'S INCOME</b>				
Rent	5,771	6,309	3,695	5,571
<b>NET FARM INCOME</b>	<b>5,271</b>	<b>5,809</b>		
<b>CROPPING AND STOCKING</b>				
	Acres	Acres	Acres	Acres
Size of Farm	100	100	100	100
Forage Acres	100	100	100	100
<b>LIVESTOCK</b>				
No. of Cows	60	60	60	60
No. of Replacement Units	17	17	17	24

of barley for home-mixing and there would be very little lee-way in cropping and stocking acreages.

Table 7.5 shows a case study for a 100 acre all-grass dairy farm with accommodation for 60 cows based on the gross margins for replacements and for stock fed on purchased cake. Massive structural alterations would be necessary to increase cow numbers and would not be undertaken unless the acreage could be increased substantially. However, 1977/78 standards of farming permit an increase in replacement units in that year, those surplus to requirements being sold as in-calf heifers. One man is employed in both years.

The total surplus in 1971/72 at U.K. prices and costs is £5,771 or £57.71 per acre, compared with £5,571, or £55.71 per acre, in 1977/78 with the improved standards of farming for that year. By improving his technology the farmer is able to stand still, but if he did not make these improvements his situation would have deteriorated substantially, namely to a surplus of £3,695, or £36.95 per acre, in 1977/78. If he had not changed to summer milk production, but had increased the yield of his cows to 1,000 gallons while using the same quantity of concentrates as in 1971/72, the 1977/78 surplus would be £5,364, or £53.64 per acre. The farmer is, therefore, marginally better off by changing to summer milk production — in contrast to the 300 acre farm using home-mixed rations where the producer would be marginally better off to stay with his present seasonal pattern of production.

Tables 7.4 and 7.5 emphasise the need for dairy farmers to continue raising their efficiency, by improving stocking rates and the quality of their silage, and to increase the yields of their cows if an autumn-calving policy is continued.

