Milk – Cost of prod. O.S.

THE ON FARM COSTS OF PRODUCING

MILK IN NEW SOUTH WALES

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New South Wales Department of Agriculture
Division of Marketing and Economics

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PREFACE

Under the Dairy Industry Authority Act, 1970 the Division of Marketing and Economics is required to supply, on a regular basis, information of on-farm milk production costs to the Dairy Industry Prices Tribunal.

This report revises and updates a report that was presented to the Tribunal in 1975. The report is based on a B.A.E. survey covering the years 1971-72 - 1973-74 and the discussion on the quota policy, pricing policy and equalisation refers to the conditions that existed at the time of the survey.

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1 INTRODUCTION

1.1 BACKGROUND TO THE REPORT

Under the Dairy Industry Authority Act, 1970 the Division of Marketing and Economics (D.M.E.) is required to supply, on a regular basis, information of on-farm milk production costs to the Dairy Industry Prices Tribunal. To comply with this Act the D.M.E. has relied on the Dairy Industry Surveys[1] conducted by the Bureau of Agricultural Economics (B.A.E.). Information from the B.A.E. surveys was used to calculate the average cost of producing market milk[2] in New South Wales (N.S.W.).

Two B.A.E. industry surveys have been used by the D.M.E. These were the surveys covering the periods 1967-68 to 1969-70 and 1971-72 to 1973-74[3]. In order to assess cost movements between these surveys and since the 1971-72 to 1973-74 survey the D.M.E. used an indexation process whereby each individual cost item was indexed forward.

This bulletin reports on the D.M.E.'s use of the 1971-72 to 1973-74 survey. An outline is given of the cost of production calculation for milk and the movement in this figure since the survey, using the indexing process.

1.2 OUTLINE OF THE REPORT

The report commences with some background information on the N.S.W. dairyfarming industry at the time of the survey and proceeds by describing the sampling procedure used and the major results of the survey. The indexation method used is then explained together with the results of using this process to give a cost of production figure for market milk in N.S.W. to 1st April 1977.

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1. The B.A.E. has undertaken three Dairyfarming Industry surveys since 1960. These surveys covered the years 1961-62 to 1963-64, 1967-68 to 1969-70 and 1971-72 to 1973-74 respectively.

2. The term "market milk" is used here to denote milk accepted by the Dairy Industry Authority for the liquid milk trade while the term "manufacturing milk" has been used to denote that part of milk sales not accepted for the liquid milk trade and not consisting of fresh cream.

The term "wholemilk" has been used to denote liquid equivalent of total milk and cream sales.

3. These surveys were reported by the B.A.E. in:-

B.A.E., 1973, The Australian Dairyfarming Industry; A Report on an Economic Survey - 1967-68 to 1969-70. Australian Government Publishing Service Canberra; and

B.A.E., 1975, The Australian Dairyfarming Industry; A Report on an Economic Survey - 1971-72 to 1973-74. Australian Government Publishing Service Canberra.

The cost of production has been calculated using various values of imputed costs. The reason for this is that imputed costs represent such a high proportion of the total production cost calculation. The two most important imputed costs are interest on the capital value of land and labour costs. The method of imputing a cost to interest on land and to family and operator labour is discussed in the Appendices.

1.3 THE INDUSTRY

(a) Introduction

At the time of the survey the N.S.W. dairy industry was a significant part of the State's agricultural industry as can be seen from Table 1.1. In 1973-74 dairy farms formed the fourth largest category of farms with one main activity following beef cattle, sheep and sheep/cereal grain farms. In that same year the gross value of milk production was the fourth greatest contributor to the gross value of agricultural production following wheat, wool and cattle slaughtered.

TABLE 1.1

THE NEW SOUTH WALES DAIRY INDUSTRY COMPARED WITH OTHER NEW SOUTH WALES AGRICULTURAL INDUSTRIES

Number of Rural Holdings by Main Type of Activity : 1973-74

Beef Cattle	12,353
Sheep	10,110
Sheep and Cereal Grain	7,299
Dairy cattle	5,309
Cereal Grain	4,598
Other Specialist	8,725
Multi-purpose	5,374
Total Commercial	53,768

Gross Value of Production : 1973-74

	$'000
Wheat	415,788
Wool	408,019
Beef and Dairy Cattle Slaughtered	306,430
Milk for all Purposes	105,063
Sheep Slaughtered	103,485
Other	567,054
Total Agricultural Production	1,905,839

Source : Australian Bureau of Statistics : Rural Landuse, Improvements, Agricultural Machinery and Labour 1974-75; and Value of Primary Commodities Produced (Excluding Mining) and Indexes of Quantum and Average Unit Gross Value of Agricultural Commodities Produced, Australia 1973-74.

The B.A.E. have classified the industry into three sectors. They have defined a fluid milk sector, as those farms obtaining half their dairy produce income from the sale of market milk; a manufacturing sector, as those farms who supply no milk licensed for the market milk trade; and a group of non sector farms as those farms supplying at least some market milk but obtaining less than half their dairy produce income from this source.

(b) A Changing Industry

The N.S.W. dairy industry has undergone rapid changes at the farm level. This change has been characterised by a large decline in the number of dairy farms (see Table 1.2) and a general decline in the numbers of dairy cows (see Table 1.3).

TABLE 1.2

NUMBER OF DAIRYMEN REGISTERED UNDER THE DAIRY INDUSTRY AUTHORITY ACT, 1970

Year ended 30th June	Number of Dairymen
1971	7,952
1972	7,319
1973	6,360
1974	5,339
1975	4,834
1976	4,626

Source : Dairy Industry Authority of New South Wales, Liquid Milk Industry Digest, 3rd Ed.

TABLE 1.3

TOTAL NUMBER OF DAIRY COWS AND CALVES IN NEW SOUTH WALES

Year	Number '000
1968	1,019
1969	958
1970	898
1971	827
1972	773
1973	740
1974	670
1975	627
1976	620

Source : Australian Bureau of Statistics : Livestock Statistics, Various issues.

The number of registered dairyfarmers fell from 7,952 in 1971 to 4,626 in 1976. In 1968 there was just over one million dairy cows and calves in N.S.W. This number had fallen to 670,000 by 1974 and 620,000 by 1976.

Milk production has not decreased at the same rate as the decline in cow numbers. Between 1964-65 and 1975-76 a slight downward trend in milk production may be evident though production has been fluctuating (see Table 1.4). This is an indication of the rise in productivity that has occurred over this time.

TABLE 1.4

WHOLEMILK PRODUCTION IN NEW SOUTH WALES

Year	'000 litres
1964-65	1,327,145
1965-66	1,367,191
1966-67	1,468,364
1967-68	1,409,542
1968-69	1,268,041
1969-70	1,413,272
1970-71	1,237,346
1971-72	1,170,819
1972-73	1,176,962
1973-74	1,068,826
1974-75	958,254
1975-76 (p)	979,948

(p) Preliminary.

Source : Australian Bureau of Statistics, Dairying Industry, Various Issues.

Increased productivity has arisen from pasture improvement, disease control, improved milking techniques and artificial breeding. Many of these technological innovations have necessitated the investment of relatively large amounts of capital into the dairying enterprise.

There has been an increasing proportion of the total milk produced going to the liquid milk trade. In 1969-70 the proportion of milk production going into the manufacture of butter was approximately equal to that going to the liquid milk trade. In 1975-76 nearly twice as much milk was sold for the liquid milk trade than was manufactured into butter (see Table 1.5).

(c) The Dairy Industry Authority

The Dairy Industry Authority of New South Wales (D.I.A.) was constituted under the Dairy Industry Authority Act, 1970 to replace the N.S.W. Milk Board. Under Section 23 of this Act all milk supplied for human consumption and for use in the production or manufacture of dairy products in New South Wales is vested in the D.I.A.

The D.I.A. does not accept all vested milk but accepts a proportion of that milk based on individual quotas. Milk accepted by the D.I.A. is pasteurized for city delivery or for the local trade. The remainder of the milk delivered to country receival factories is for manufacture into such products as butter, cheese, flavoured milk, milk powder, yoghurt and ice cream.

TABLE 1.5

UTILIZATION OF WHOLEMILK IN AUSTRALIA

Year	Percentage Wholemilk Used for:-				
	Factory Butter	Non-Processed Cheese	Processed Milk Products(a)	Other(b)	Total
1969-70	43.7	5.3	8.7	42.3	100
1970-71	36.6	5.2	9.4	48.8	100
1971-72	34.9	5.1	8.0	52.0	100
1972-73	31.8	6.3	8.9	53.0	100
1973-74	26.7	6.9	8.9	57.0	100
1974-75	27.3	8.0	7.0	57.7	100
1975-76(p)	27.7	10.0	5.9	56.4	100

(a) Quantities used to produce two or more products (e.g. initially as full cream milk and subsequently as skim milk) are only counted once.

(b) Mainly liquid milk for domestic purposes.

(p) Preliminary.

Source : Australian Bureau of Statistics, Dairying Industry, Various Issues.

Total sales of milk by the D.I.A. in 1973-74 amounted to 532,627,272 litres. Of this amount 354,152,171 litres was sold in the metropolitan area alone. The breakdown of D.I.A. sales by district for 1973-74 is given in Table 1.6. The source of the milk sold in the metropolitan area in 1973-74 is shown in Table 1.7.

(d) Quota Policy in New South Wales

Quotas are only an indication of what dairy-farmers may supply. The D.I.A. accepts only that amount of milk as required by the liquid milk and cream markets. The quotas are an extension of the quotas established under the previous Milk Board. On its creation the D.I.A. established a "Base Market Quantity" quota which was defined as the total quantity of milk sold by the Milk Board for the liquid milk market during the year ending 18th June 1970. A farmer's "Existing Quota" is the "Base Market Quantity" plus additional requirements to meet the market for liquid milk and cream.

Each year dairyfarmers receive, in advance, notification of their base quota. The base quota is adjusted according to the ability of the producer to supply during the previous year. An "equitable distribution" scheme operates whereby any increased consumption is divided between existing and new suppliers. There has to be an increase in consumption before any new suppliers are allocated quotas.

Quotas normally accompany farms as farms are transferred. At the time of the survey there was an arrangement for limited negotiability of quotas.

TABLE 1.6

SALES OF MILK ACQUIRED BY THE D.I.A. 1973-74
(INCLUDING MILK FOR SWEET CREAM)(a)

District	Amount (litres)
Metropolitan	354,152,171
Newcastle	30,685,888
Wollongong	25,114,748
Erina	14,921,034
Blue Mountains-Lithgow	9,087,123
Hunter	11,513,966
Illawarra	4,685,851
Bathurst	3,453,866
Southern Districts	3,313,431
Orange	6,974,918
Hastings	2,671,480
Central Southern	7,008,643
Manning	3,417,000
Goulburn	3,387,673
M.I.A.	3,129,438
Tumut	19,768
Kempsey	1,573,977
Batemans Bay-Moruya	1,269,042
Mid-Rivers	7,036,331
Richmond-Tweed	8,781,965
Cooma	951,669
Snowy River-Monaro	784,787
Tweed Heads	1,382,138
South Coast	2,615,184
North Western	13,837,847
Mid-western	7,382,857
Murray	1,731,300
Harden	1,743,177
TOTAL	532,627,272

(a) Fresh cream.

Source : Dairy Industry Authority of New South Wales, Liquid Milk Industry Digest, 3rd Ed.

TABLE 1.7

SOURCES OF AUTHORITY MILK SUPPLIED TO THE SYDNEY METROPOLITAN AREA 1973-74

	Litres
Dairy Farmers Co-operative Ltd., Camden	23,101,165
Camden Park Estate Ltd., Menangle	13,256,677
The Hunter Valley Co-operative Dairy Co. Ltd.,-	
Branxton	5,114,118
Muswellbrook	49,150,291
Macleay River Co-operative Dairy Co. Ltd., Kempsey	152,997
Central Dairy Co-operative Society Ltd., Raleigh	1,051,367
Grafton Ulmarra Dairy Co-operative Ltd., Grafton	226,323
Berry Rural Co-operative Society Ltd., Berry	10,576,906
Dairy Farmers Co-operative Ltd., Moss Vale	11,631,061
Nowra Dairy Co-operative Ltd., Nowra	20,755,889
Peters Creameries, Division of Petersville Ltd., Taree	22,844,101
Peters Milk, Division of Petersville Ltd., Toongabbie	6,337,823
The Wingham Rural Co-operative Society Ltd., Wingham	11,777,686
The Bega Co-operative Society Ltd., Bega	561,305
Bodalla Co-operative Cheese Society Ltd., Bodalla	185,775
Gloucester Co-operative Dairy Co. Ltd., Gloucester	19,293,859
The Manning River Co-operative Dairy Society Ltd., Taree	13,659,499
Hawkesbury Agricultural College, Richmond	272,226
Nepean Milk Co-operative Ltd., Penrith	4,164,230
Berrima Co-operative Rural Society Ltd., Bowral	11,970,693
Hawkesbury Dairy and Ice Society Pty. Ltd., Windsor	8,414,306
Casino Co-operative Dairy Society Ltd., Casino	328,174
Norco Co-operative Ltd., Lismore	3,240,382
Berriquin Dairy Co. Ltd., Finley	822,460
The Nestle Co. (Aust.) Ltd., Smithtown	400,924
United Dairies Pty. Ltd., Parramatta	23,041,566
Shoalhaven Milk Pty. Ltd., Bomaderry	6,598,656
Ilawarra Co-operative Central Dairy Society Ltd., Albion Park	3,166,026
Gerringong Co-operative Dairy Society Ltd., Gerringong	4,712,974
Dungog Co-operative Dairy Co. Ltd., Dungog	18,177,886
Singleton Co-operative Dairy Co. Ltd., Singleton	24,165,484
The Comboyne Rural Co-operative Society Ltd., Comboyne	4,595,455
Jamberoo Co-operative Dairy Society Ltd., Jamberoo	4,983,682
Hastings Co-operative Ltd., Wauchope	11,637,420
Perfection Dairies Pty. Ltd., Baulkham Hills	10,960,546
Metropolitan Milk Pty. Ltd., Sefton	2,822,239
TOTAL	354,152,171

Source : Dairy Industry Authority of New South Wales, Liquid Milk Industry Digest, 3rd Ed.

The smallest average quotas for the State are on the North Coast which are only a quarter of the average quota for the near metropolitan area. The next smallest average quotas are found on the south coast which are under half the average quota for the near metropolitan area (see Table 1.8).

TABLE 1.8

AVERAGE QUOTAS BY AREAS AS AT OCTOBER, 1973

Area	Suppliers		Average Quota in gallons		Approximate Litres
	No.	%	Per Week	Per Day	Per Day
North Coast	978	30.87	408.87	58.41	266
Hunter Valley	944	29.80	669.13	95.59	435
Wyong	64	2.02	779.31	111.33	506
South Coast	584	18.40	657.02	93.86	427
Tablelands	132	4.17	903.63	129.09	587
Near Metropolitan	238	7.51	1,735.51	247.93	1,127
Inland Areas	229	7.23	895.02	127.86	581
	3,168	100	695.03	99.29	451

Source : Dairy Industry Authority of New South Wales, Liquid Milk Industry Digest, 3rd Ed.

The proportion of small quotas has been decreasing (see Table 1.9) indicating that large numbers of people with a quota of under 100 litres per day are leaving the industry.

TABLE 1.9

INDIVIDUAL QUOTAS AS EXISTED AT OCTOBER

Base quota (litres per day)	1958-59 (5,402 dairymen)	1967-68 (3,923 dairymen)	1973-74 (3,168 dairymen)
	%	%	%
0-136	49.8	28.8	13.01
141-364	42.7	49.5	40.87
368-682	6.7	16.7	30.21
More than 682	0.8	5.0	15.91
Total	100	100	100

Source : Dairy Industry Authority of New South Wales, Liquid Milk Industry Digest, 3rd Ed.

(e) Pricing Policy

The Dairy Industry Authority Act established a Dairy Industry Prices Tribunal to determine prices and margins for market milk and sweet cream. The Tribunal, which consists of the deputy chairman of the Authority, an officer of the Department of Agriculture and a consumers' representative, makes pricing recommendations to the Minister for Agriculture. The Tribunal is bound to have regard to the information on the cost of producing milk furnished by the D.M.E. Information on the

movements in the cost of production are supplied to the Tribunal on a quarterly basis.

Except for areas near the Victorian and Queensland borders and in certain isolated areas the price for milk at the farm gate is uniform throughout the State. Farm gate price for milk is lower in areas near the borders so as to meet interstate competition. Likewise the retail price for milk is uniform throughout the State except for areas close to the borders.

(f) Equalization

At the time of the survey each State, including New South Wales, participated in a voluntary equalization scheme. The scheme was based on arrangements between the manufacturers and the Commonwealth Dairy Produce Equalisation Committee Ltd. The effect of the equalisation scheme is that local and export trade of butter, cheese, casein and skim milk powder is distributed in equitable proportions amongst the manufacturers.

The Dairy Produce Equalisation Committee Ltd. consists of members of each State Dairy Produce Board and other industry representatives from each State.

2 THE SURVEY

2.1 INTRODUCTION

As mentioned earlier the survey was based on the 1971-72 to 1972-73 B.A.E. survey.[4] The B.A.E. survey was designed to obtain the average levels of incomes, costs and production on dairyfarms on a State wide basis. In order to do this the State was divided into five regions. In addition, the population was stratified according to herd size in order to obtain in the sample a range of farm sizes. A description of the population and the sample chosen is given in section 2.2.

2.2 SURVEY PROCEDURES

(a) The Population

The B.A.E. used the Bureau of Statistics population listing to stratify the population according to herd size. The Bureau of Statistics had not published figures on the number of dairy farms by herd size up to 30th June, 1974 at the time of planning the survey. This meant the B.A.E. had to estimate the size and distribution of the population from the population as listed at 30th June, 1970 by adding new entrants (obtained by examining all dairy farm registrations from 30th June, 1970 to 30th June, 1974) and subtracting estimated number of exits.

To be eligible for inclusion in the survey farms had to have,

(i) A minimum of 30 dairy cattle as at 30th June, 1974 and 30th June, 1970;

(ii) No engagement in the direct supply of milk to local town markets; and

(iii) Returns from stud stock comprising less than 20 per cent of total returns.

The final estimates of the number of eligible dairy farms and their distribution according to dairy herd size as at 30th June, 1974 is given in Table 2.1.

(b) The Sample

The five regions into which N.S.W. was divided were based on the statistical divisions of the Bureau of Statistics. These divisions are,

(i) The statistical sub-divisions of Richmond-Tweed and Clarence of the North Coast Statistical Division;

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4. See footnote 3.

(ii) The statistical sub-division of Hastings of the North Coast Statistical Division and the Statistical Division of Hunter;

(iii) The Statistical Division of Outer Sydney and Illawarra;

(iv) The Statistical Sub-division of Lower South Coast of the South Eastern Statistical Division; and

(v) The Statistical Sub-Division of Upper Murray and Central Murray of the Murray Statistical Division and the Statistical Division of Murrumbidgee.

TABLE 2.1

ESTIMATED NUMBER AND DISTRIBUTION OF DAIRY FARMS IN N.S.W. AS AT 30TH JUNE, 1974

STRATA	HERD SIZE	REGION					NEW ENTRANTS	TOTAL
		1	2	3	4	5		
1	30 - 59	505	523	)206	25	) 45	)16	)2,353
2	60 - 79	422	562	)	49	)	)	)
3	80 - 99	411	382	)169	53	44	)11	)2,124
4	100 - 149	317	491	)	147	101	)	)
5	150 - 199	84	203	98	25	71	9	490
6	200 & Over	11	99	79	23	44	4	260
TOTAL		1,750	2,260	552	322	303	40	5,227

The B.A.E. chose a sample of 115 farms. In selecting the sample the B.A.E. endeavoured to have at least three farms from each strata in each region. Where this was not possible, due to a stratum being too small, two strata were combined.

From this sample of 115 farms the D.M.E. was able to select a sub-sample of 94 farms by excluding those farms that did not supply any market milk during the survey period. The distribution of the 94 farms according to the estimated population is shown in Table 2.2.

When the survey was carried out it was found that some farms were in a different strata group than the one in which they were selected. This occurred since the farms were stratified according to herd size at 30th June 1970. The actual number sampled from each strata is shown in Table 2.3.

As can be seen from Table 2.4 some strata groups were over represented while others were under represented in the sample. To compensate for this distorting factor in the calculation of average figures a weighting factor was applied to the data obtained from each farm. That is, the State average figures are a weighted average of the figures from each strata.

TABLE 2.2

DISTRIBUTION OF SAMPLE AS CHOSEN FROM THE ESTIMATED POPULATION DISTRIBUTION

STRATA	REGION					TOTAL
	1	2	3	4	5	
	No.	No.	No.	No.	No.	No.
1	3	9	2	2	-	16
2	5	8	3	3	2	21
3	1	5	1	-	3	10
4	2	6	3	2	2	15
5	3	5	3	2	2	15
6	-	6	5	3	3	17
TOTAL	14	39	17	12	12	94

TABLE 2.3

ACTUAL NUMBER SAMPLED FROM EACH STRATA ACCORDING TO HERD SIZE AT 30TH JUNE, 1974

STRATA	REGION					TOTAL
	1	2	3	4	5	
	No.	No.	No.	No.	No.	No.
1	-	3	-	1	-	4
2	-	7	2	2	1	12
3	5	6	5	2	5	23
4	5	13	1	2	1	22
5	3	4	4	1	2	14
6	1	6	5	4	3	19
TOTAL	14	39	17	12	12	94

TABLE 2.4

SAMPLE SIZE AS A PERCENTAGE OF ESTIMATED POPULATION AS AT 30TH JUNE, 1974

STRATA	REGION					TOTAL
	1	2	3	4	5	
	%	%	%	%	%	%
1	0.59	1.72	)2.43	8.00	)4.44	)1.57
2	1.18	1.42	)	6.12	)	)
3	0.24	1.31	)2.37	-	6.82	)1.18
4	0.63	1.22	)	8.00	0.99	)
5	3.57	2.46	3.06		2.82	3.06
6	-	6.06	6.33	13.04	6.82	6.54
TOTAL	0.80	1.73	3.08	3.73	3.96	1.79

2.3 DEFINITIONS AND TREATMENT OF DATA

(a) Dairy Farm Area

A dairy farm was taken to be the area controlled by a single farm operator. This included all holdings owned or leased by the one operator and any sharefarming undertaken by the operator on other properties.

To be included in the survey the dairy farm as defined had to meet the eligibility criteria outlined in section 2.2.

(b) Livestock Numbers

Livestock numbers were taken as those shown in the farm accounts at 1st July, 1971, 30th June, 1972, 30th June, 1973 and 30th June, 1974. Dairy cattle were classified as;

(i) Cows - Breeding stock used for milking from birth of their first calf.

(ii) Heifers - Female stock retained to replace the milkers.

(iii) Bulls - Dairy bulls used or intended for service in the dairy herd.

(iv) Male calves less than six months of age.

Any other cattle were taken to be part of the beef herd.

(c) Production

Information on deliveries of, and payments for, milk and cream were obtained from local factories.

Payments for market milk were initially on a per gallon basis while payments for manufacturing milk and cream was either on a per gallon, or per butterfat basis. Payments by the litre and kilogram butterfat were phased in by the factories during the survey period.

All production has been converted to wholemilk equivalents and categorized as,

(i) Market milk

(ii) Manufacturing Milk, and

(iii) Cream

In order to convert kilograms butterfat in litres milk equivalent a standard butterfat content of 4.086 per cent (obtained from the Australian Statistician) was assumed and a constant factor of 1.03 kg weight to one litre of milk was used.

(d) Capital Structure

The value of capital in each survey year was taken as the average of the assessed value of capital at the beginning and the end of each year. Capital was

defined as all land, livestock, structural improvements, plant and machinery used in the production of farm income.

The value of various items of capital were assessed as follows:-

(i) Land

All land was assumed to be freehold. The capital value of the land was taken as the market value of the land (at the 30th June, 1974) in its unimproved state plus all earth works (soil conservation, irrigation and drainage), clearing and pasture improvement. The market value was assessed by valuers from the Reserve Bank and the Commonwealth Development Bank.

(ii) Livestock

Values for the different types of cattle were obtained from the New South Wales Department of Agriculture. Sheep values were obtained from the B.A.E.'s Australian Sheep Industry Survey[5] and were indexed foreward using Australian Bureau of Statistics indexes. Pig values were taken as the weighted average of purchases and sales over the survey period. Table 2.5 shows the values of livestock used in the survey.

(iii) Other Capital Items

To value other capital items such as vehicles, plant, machinery, equipment, buildings, structures, fences and yards the current replacement cost of each item was used. The current replacement cost of each item was then depreciated by the diminishing value method to take account of the actual age of the capital item. The rates of depreciation used were those determined by the Commissioner of Taxation.

Where vehicles and equipment were used for non-farm purposes (for private use or used to obtain off-farm income) an estimate of their time devoted to work on the farm was made and an equivalent portion of their value assigned to the total capital value of the farm.

The operator's house was not included in the total capital of the farm but all other dwellings on the farm were included. In cases where a number of partners were operating a single farm and living in various dwellings on the farm only one dwelling was excluded from the total farm capital.

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5. Bureau of Agricultural Economics, 1973, Australian Sheep Industry Survey 1967-68 to 1970-71, Australian Government Publishing Service, Canberra.

TABLE 2.5

AVERAGE VALUES USED FOR CALCULATION OF CAPITAL VALUE OF LIVESTOCK AS AT 30TH JUNE

Type of Livestock	1971	1972	1973	1974
	$	$	$	$
Dairy Stock:				
Cows	114	114	133	97
Bulls	108	121	168	98
Heifers over 12 months	68	72	86	59
Heifers under 12 months	46	51	58	35
Calves	25	26	35	22
Beef Stock:				
Cows	101	103	128	76
Bulls	140	150	199	103
Heifers	54	63	78	46
Vealers	73	88	97	68
Calves	44	45	55	32
Pigs	29	28	29	34
Sheep	4.47	4.14	9.87	17.66

(e) Gross Farm Returns

All cash receipts in any financial year were included in Gross Farm Returns. Cash receipts came from the sale of produce, sale of livestock, sale of machinery and off-farm work. Deferred payments (under dairy equalisation, progressive pool payments for grain crops, etc.) were included in the returns for the year in which they were actually received.

Also included in Gross Farm Returns were stock killed for rations and enterprise operating gains. Stock killed for rations were valued at closing stock values. Enterprise operating gains were calculated using the formula;

Operating Gain = (Closing Stock - Opening Stock) x Closing Value

(f) Cash Operating Costs

All cash costs associated with the dairying enterprise during the three survey years were taken into account except cash payments relating to the;

(i) Purchases of capital items;

(ii) Development costs;

(iii) Cash payments to family labour; and

(iv) Interest paid on borrowed money or rent paid (it was assumed that each farmer fully owned all the farm capital).

The cost of cartage of milk from farm to factory was collected from the factories for the last year of the survey period. This figure was assumed to be the average cost of the cartage of milk over the survey period.

(g) Imputed Costs

In order to calculate the cost of producing market milk additional non cash costs were imputed from the survey results. Three groups of imputed costs were identified. These were:-

(i) Depreciation

(ii) Interest on capital

(iii) Imputed labour

The method used to impute each of these costs was:-

(i) Depreciation

Depreciation was calculated on the replacement cost of each depreciable asset as at 30th June 1974. The diminishing value method was used with rates determined by the Commissioner of Taxation.

(ii) Interest on Capital

The average bank overdraft rate was used to calculate an imputed interest rate on the assessed value of farm capital. An item interest on working capital was included in the imputed interest charge. This figure was arrived at by charging the average bank overdraft rate on half the cash costs.

(iii) Imputed Labour

The B.A.E. collected the number of weeks worked by each dairy farm operator and his family. To calculate the imputed labour cost the B.A.E. applied the appropriate weekly award rate for an ordinary working week. The D.M.E. considered that this estimate of the "economic value" of family labour underestimates the "true" imputed labour value. This method makes no allowance for overtime for hours worked in excess of the ordinary working hours for penalty rates, for work done on weekends and public holidays, for sick leave, long service leave or annual holiday pay.

Instead of using the B.A.E.'s economic valued labour measure the D.M.E calculated a synthesised labour measure. In synthesising the labour requirements an estimation was made of the amount of labour that could be regarded as fair, and reasonably needed to carry out normal operations for the average dairy farm as derived from the survey.

The imputed labour costs was calculated by valuing this synthesised labour measure at the rates laid down in the Dairy Employees Award. In calculating the imputed labour cost allowance was made for overtime payments, penalty rates, annual, sick and long service leave.

A detailed outline of the calculation of the synthesised labour measure and the imputed labour cost is given in Appendices 1 and 2 respectively.

3 THE RESULTS

3.1 PHYSICAL CHARACTERISTICS OF THE SAMPLE FARMS

Following is a summary of the physical structure of farms in N.S.W. supplying market milk. The data relates to the 94 farms in the D.M.E. sample and as such averages are on a state-wide basis. No valid comparison could be made between the different regions with regard to differences in the cost of production. Such a comparison was not possible with the sample taken due mainly to the relatively small size of the sample chosen in each region.

The results of three important variables are given below. These are farm size and land use, herd size and the level and composition of milk production.

(i) Farm Size and Land Use

Average farm size rose slightly from 152 hectares at the beginning of the survey period to 155 hectares at the end of the survey period giving an average farm size of 154 hectares. Approximately 81 per cent of this area was permanent pasture. Over half the pasture area was native pasture and only 9 per cent of the total dairy farm area was irrigated (see Table 3.1).

TABLE 3.1

LAND USE AND SIZE OF N.S.W. DAIRY FARMS

Land Use	1971-72		1972-73		1973-74		Average	
	ha	%	ha	%	ha	%	ha	%
Crops - harvested	5.34	3.5	5.49	3.5	5.83	3.8	5.55	3.6
- grazed	6.64	4.4	7.01	4.5	6.41	4.1	6.69	4.3
Pastures - sown	50.38	33.1	50.98	32.9	55.17	35.5	52.17	33.8
- native	72.12	47.4	74.35	47.9	71.43	46.0	72.63	47.1
Buildings	0.81	0.5	0.81	0.5	0.84	0.5	0.82	0.5
Wasteland	5.15	3.4	5.19	3.3	4.92	3.2	5.09	3.3
Timber (improvable)	12.07	7.9	11.56	7.6	11.18	7.2	11.71	7.6
Area Doubled Cropped	0.50	0.3	0.51	0.3	0.51	0.3	0.50	0.3
TOTAL FARM AREA	152.02	100	155.19	100	155.28	100	154.15	100
Area Irrigated	14.41	9.5	14.34	9.2	14.51	9.3	14.42	9.4

(ii) Herd Size

The average number of dairy cows per farm for the survey period was 78. Over the three years the average number of dairy cows per farm rose from 76 to 80. Average livestock numbers for the survey farms over

the three survey years are shown in Table 3.2.

TABLE 3.2

AVERAGE LIVESTOCK NUMBERS

Type of Livestock	1971-72	1972-73	1973-74	Average
Dairy Cows	75.95	77.74	80.06	77.91
Dairy Bulls	1.62	1.69	1.72	1.68
Dairy Heifers Over 12 months	17.18	18.35	19.41	18.31
Dairy Heifers Under 12 months	14.54	15.27	16.46	15.42
Dairy Calves under 6 months	1.63	1.62	2.16	1.80
Total Dairy Herd	110.92	114.68	119.81	115.11
Total Beef Herd	22.22	24.53	27.51	24.74

(iii) Production

Average total production of wholemilk per farm for the survey period was 206,655 litres milk equivalent per annum.[6] This gave an average production figure of 2,634 litres milk equivalent per cow. Of the total production 53 per cent was accepted as market milk while 45 per cent went as manufacturing milk. The remaining 2 per cent was cream.

The breakdown in total milk production for the three survey years is given in Table 3.3.

During the survey period market milk supply was concentrated with a large number of small suppliers as can be seen from Table 3.4. Over three quarters of the farms surveyed had less than 150,000 litres per year of their milk accepted by the D.I.A. for market milk purposes during the survey period. Market milk returns were however, the major contributor to dairy farm incomes. On over half the dairy farms surveyed market milk sales represented greater than 60 per cent of gross farm returns (see Table 3.5).

3.2 CAPITAL STRUCTURE AND GROSS FARM RETURNS

The capital structure of the 94 farms surveyed is summarized in Table 3.6. One important thing to note about the capital structure in relation to calculating a cost of production figure is the overwhelming importance of the capital value of land. The average

6. Manufacturing milk is paid for on a butterfat basis hence production figures were in kilograms butterfat. To obtain the total production of milk and cream in litres kilograms butterfat were converted to the equivalent amount of milk in litres.

TABLE 3.3

AVERAGE DAIRY PRODUCTION PER FARM

Item	1971-72	1972-73	1973-74	Average
Market Milk (litres)	103,072.26	110,497.51	115,647.98	109,705.88
Manufacturing Milk (litres milk equivalent)	92,776.89	96,800.82	90,614.31	93,394.23
Cream (litres milk equivalent)	4,782.30	4,172.14	1,691.23	3,554.73
TOTAL PRODUCTION (litres milk equivalent)	200,631.43	211,470.47	207,953.51	206,654.84
TOTAL PRODUCTION (kg butterfat equivalent)	7,925.53	8,353.69	8,214.74	8,163.46
Milk Production/Cow (litres milk equivalent)	2,609.17	2,709.30	2,585.25	2,634.45

TABLE 3.4

DISTRIBUTION OF FARMS BY QUANTITY OF MARKET MILK PRODUCED PER YEAR

Market Milk Produced '000 litres	Proportion of Farms %
< 50	29.7
50 to 99	28.0
100 to 149	20.5
150 to 199	8.6
200 to 249	3.9
250 to 300	2.8
> 300	6.5
TOTAL:	100.0

TABLE 3.5

DISTRIBUTION OF SURVEY FARMS BY REVENUE FROM MARKET MILK AS A PROPORTION OF GROSS REVENUE

Revenue From Market Milk As A Proportion of Gross Revenue %	Proportion of Farms %
< 10	11.3
10 to 19	11.5
20 to 39	8.8
40 to 59	12.1
60 to 69	27.8
70 to 80	14.5
> 80	14.0
TOTAL:	100.0

total capital value of each dairy farm for the survey period was $132,931. 72 per cent or $95,959 was represented by the value of the land alone.

TABLE 3.6

CAPITAL STRUCTURE OF SURVEY FARMS

Item	1971-72	1972-73	1973-74	Average
	$	$	$	$
Plant & Machinery	9,511.22	9,783.53	9,717.18	9,669.84
Buildings and Structures	13,189.34	13,164.60	13,405.01	13,252.66
Livestock	12,988.95	14,889.66	14,286.77	14,049.79
Total Non-Land	35,689.51	37,837.79	37,408.95	36,972.30
Land	95,344.54	95,910.81	96,630.75	95,958.94
Total	131,034.05	133,748.61	134,039.71	132,931.25

Average gross farm returns for the survey farms are given in Table 3.7. For the survey farms total dairy returns represented 82 per cent of total cash receipts. Returns from the sale of market milk constituted 71 per cent of total dairy returns whereas market milk only represented 53 per cent of total milk production (see Table 3.3).

TABLE 3.7

AVERAGE GROSS FARM RETURNS ON SURVEY FARMS

Item	1971-72	1972-73	1973-74	Average
	$	$	$	$
Market Milk	10,336.64	11,969.17	13,201.31	11,828.21
Manufacturing Milk	4,085.16	4,317.43	4,182.87	4,194.60
Cream	178.77	149.94	201.38	176.71
Deferred Payments	352.27	446.15	380.90	392.90
Other Dairy	26.10	18.03	34.03	26.05
Total Dairy	14,978.94	16,900.72	18,000.49	16,618.47
Livestock Sales	2,745.20	3,380.06	3,384.04	3,167.65
Crops	238.55	301.15	343.27	294.04
Contract Work	30.94	47.65	92.56	56.92
Machinery Trading	8.52	-6.85	25.97	9.21
Other Cash Receipts	151.65	169.65	162.83	161.33
Total Cash Receipts	18,153.80	20,792.38	22,009.16	20,307.62
Non Cash Returns	903.37	711.04	1,302.17	971.85
Gross Farm Returns	18,852.10	21,236.61	22,937.67	20,998.00

3.3 COST OF PRODUCTION

The average cost structure, as revealed by the survey, is shown in Table 3.8. From Table 3.8 a cost figure of 13.34 cents per litre is obtained. When interpreting this cost figure two points must be kept in mind.

(a) Sideline Costs

No attempt was made to apportion cost between various enterprises on the farm during the survey so it was necessary to estimate that part of total costs that was attributable to enterprises other than milk production. To do this it was assumed that costs associated with enterprises other than milk production (sideline costs) equalled income from enterprise other than milk production (sideline income).

(b) Imputed Costs

The importance of imputed costs in the cost of production calculation. This importance can be seen when it is considered that 26 per cent of the total cost of production is due to the imputed labour charge, 25 per cent to imputed interest on land and 18 per cent to other imputed costs. Any variation in the estimation of these imputed costs will significantly effect the cost of production calculation.

For this reason an alternative estimate was made of both the imputed interest on the capital value of land and the imputed labour cost.

(i) Imputed Interest on Land

In the 1967-68 to 1969-70 B.A.E. survey the average capital value of land of farms producing market milk was assessed as $42,676 per farm or $240 per hectare. For the current survey the average capital value of land of farms producing market milk increased to $95,959 per farm or $623 per hectare. This large increase in the capital value of land could partly be explained by the concentration of market milk production on more productive land (indicated by the decrease in average farm size from 177 hectares to 154 hectares) but suggests that the increase in land value has far exceeded the increase in the productivity of the land.

If the capital value of land was only allowed to increase at the general rate of inflation (24.6 per cent as measured by the Consumer Price Index) then the capital value of land for this survey would be $46,046 and the imputed interest on land would reduce to $3,780. Using this adjusted capital value of land the average cost of production for the survey period becomes 11.35 cents per litre instead of 13.34 cents per litre (see Table 3.9).

(ii) Imputed Labour

If the milking efficiency assumed by the D.M.E, is in fact too low then the need to impute a

TABLE 3.8

AVERAGE COST OF PRODUCTION ON THE SURVEY FARMS

Cost Item	1971-72	1972-73	1973-74	Average
	$	$	$	$
1. Hired Labour	681	798	970	816
2. Contract Work	133	121	98	117
3. Petroleum Products	458	491	596	515
4. Electricity	442	494	534	490
5. Fertilizer	750	881	928	853
6. Seed	208	236	263	236
7. Fodder	2,208	2,506	2,793	2,502
8. Maintenance				
Plant and Machinery	486	556	587	543
Buildings, Structures and Fencing	562	642	678	627
9. Cartage	846	846	846	846
10. Rates, Taxes and Water	580	652	682	638
11. Insurance	143	159	223	175
12. Motor Registration (incl. Third Party Insurance)	81	72	82	78
13. Sprays, Pest Control, Medics	73	81	89	81
14. Miscellaneous Materials	392	455	475	441
15. Miscellaneous Services	964	1,048	1,140	1,051
Total Cash Cost:	9,007	10,038	10,984	10,009
16. Depreciation				
Fences & Water Equipment	251	251	249	250
Plant & Machinery	1,750	1,791	1,757	1,766
Buildings & Structures	344	342	347	344
17. Interest on Farm Capital				
Land	7,270	7,289	9,083	7,881
Livestock	990	1,132	1,343	1,155
Fences & Water Equipment	383	385	478	415
Plant & Machinery	725	744	913	794
Buildings & Structures	622	616	782	673
Working Capital	299	334	490	374
18. Imputed Labour	6,799	8,457	9,604	8,287
Total Imputed Cost:	19,433	21,341	25,046	21,939
Total Cost	28,440	31,379	36,030	31,948
19. Sideline Costs	3,873	4,336	4,937	4,382
Net Cost:	24,567	27,043	31,093	27,566
Cost per litre (cents)	11.89	13.09	15.05	13.34

casual labour cost might be eliminated (see Appendix 10). Assuming the casual labour component of the imputed labour cost is eliminated then the imputed labour cost becomes $7,033 instead of $8,287. Using the adjusted value of imputed labour and the original value assigned to land then the cost of production for the average of the survey period reduces to 12.73 cents per litre.

If both the adjusted capital value of land and the adjusted value of imputed labour are used then the cost of production becomes 10.75 cents per litre (see Table 3.9).

TABLE 3.9

COST OF PRODUCING MARKET MILK ON THE SURVEY FARMS USING VARIOUS VALUES OF IMPUTED COSTS

Cost Item	Cost Calculation Using			
	Market Value of Land, and		Adjusted Value of Land,(a) and	
	Synthesised Labour Measure	Adjusted Labour(b) Measure	Synthesised Labour Measure	Adjusted Labour(b) Measure
	$	$	$	$
Cash Costs	10,009	10,009	10,009	10,009
Imputed Costs	21,939	20,685	17,838	16,584
Total Costs	31,948	30,694	27,847	26,593
Sideline Costs	4,382	4,382	4,382	4,382
Net Costs	27,566	26,312	23,465	22,211
Cost per litre (cents)	13.34	12.73	11.35	10.75

(a) See Appendix 10 for calculation of Adjusted Value of Land.
(b) See Appendix 10 for calculation of Adjusted Labour Measure.

3.4 INCOME STRUCTURE OF SURVEY FARMS

The average income structure for the survey farms is given in Table 3.10. The income structure as shown in Table 3.10 is calculated using the synthesised labour measure (see Appendices 1 and 2) for the labour cost imputed to the family and to the operator.

Using these calculations it can be seen that the average return to capital and management was negligible at 0.1 per cent (using the market value of land).

TABLE 3.10

INCOME STRUCTURE OF SAMPLE FARMS

Item	1971-72	1972-73	1973-74	Average
	$	$	$	$
A. Gross Farm Returns	18,852	21,237	22,938	20,998
B. Cash Operating Costs	8,275	9,302	10,264	9,275
C. Depreciation	2,345	2,383	2,353	2,360
D. Family Labour	3,706	4,662	5,599	4,656
E. Total Costs (B + C + D)	14,326	16,347	18,216	16,291
F. Net Farm Income (A - E)	4,526	4,890	4,722	4,707
G. Operators' Labour	3,699	4,644	5,224	4,522
H. Return to Capital and Management (F-G)	827	246	-502	185
I. Total Farm Capital	131,034	133,749	134,040	132,931
	%	%	%	%
J. Rate of Return to Capital & Management (H/I x 100)	0.6	0.2	-0.4	0.1

4 INDEXING FORWARD

4.1 INTRODUCTION

In order to assess cost movements since the survey period an index method was used. The index method used measures changes in prices of inputs (goods and services) between one point of time and another.

Formally defined, the index is a weighted price index of the Laspeyres type, the weights representing the relative importance of a number of cost items in money terms, as revealed by the survey. Indexing takes no account of structural changes that have occurred since the survey period. It is assumed that the same volume of inputs (labour, plant, materials, etc.) are used to produce the same volume of outputs as during the survey period.

4.2 CALCULATION OF PRICE RELATIVES

The B.A.E. regularly collects price information for selected goods and services from merchants, government agencies and other sources. This information was used by the D.M.E. to calculate the relative movement in the various cost items.

Some cost items used in the cost of production calculation are an aggregate of individual input items (e.g. petroleum products, fertilizer, seed, fodder, etc.). Individual input items are weighted according to their relative importance in the group of items to which they belong.

Following is a list of the items and weights used to calculate the price relatives used in the indexation process.

(a) Labour

Both imputed labour and the cost of hired labour have been assumed to move according to the relative change in the sum of the "Operator" and "F.L.U." components of the synthesised labour measure (see Appendices 1 and 2 for an outline of the synthesised labour measure).

Appendices 3 to 9 outline the calculation of changes in the "Operator" and "F.L.U." components from 1st April, 1974 to 1st April, 1977.

(b) Contract Work

Calculated from B.A.E. Indexes of Prices Paid by Farmers. The base for the B.A.E. Indexes is 1960-61 to 1962-63.

(c) Petroleum Products

The price relative used for "Petroleum Products" is calculated from the changes in the weighted average of the cost of various petroleum products used on N.S.W. Dairy Farms. The items used and the weights assigned to each item is shown in Table 4.1.

TABLE 4.1

WEIGHTS USED IN THE CALCULATION OF THE PRICE RELATIVES FOR PETROLEUM PRODUCTS

Item	Unit	Quantity Weights
Power Kerosene	litres	77
Distilate	litres	1,523
Motor Spirit	litres	2,800
Engine Oil	litres	105
Grease	kilograms	7

(d) Electricity

Index figures are supplied by the Electricity Authority of N.S.W. and apply to changes in electricity charges to dairy farms. These index figures are used in the calculation of the price relative for electricity costs.

(e) Fertilizers

The various fertilizers used in the calculation of the price relative for fertilizers and the weights assigned to each are shown in Table 4.2.

TABLE 4.2

WEIGHTS USED IN THE CALCULATION OF FERTILIZER PRICE RELATIVES

Item	Quantity Weight
Superphosphate	7.2
Sulphate of Ammonia	0.2
Nitram	0.3
Muriate of Potash	0.1
Lime (ex works)	0.1
Mixtures	1.3

(f) Seed

The price relative for seed costs have been calculated as a simple average of the relative changes in the price of the principle seeds used on dairy farms.

The seeds used for the calculation are:-

Clover (white, red and subterranean),
Perennial Rye Grass,
Phalaris tuberosa,
Lucerne, and
Oats

(g) Fodder

The price relative for fodder is a weighted average of the change in the price of various fodder items. The weights used are given in Table 4.3.

TABLE 4.3

WEIGHTS USED IN THE CALCULATION OF THE PRICE RELATIVES FOR FODDER

Item	Weight
Maize	19
Hay	9
Rations	15
Pig Feed	42
Other	15
Total	100

(h) Maintenance

Two indexes constructed by the B.A.E. are used to calculate relative movements in maintenance costs. The price relative for maintenance to plant and machinery is a weighted average of the relative movements in several items of plant and machinery (see Table 4.4). The price relative for maintenance to buildings and structures is a weighted average of the two components, "Building Materials" and "Fencing Materials" of the B.A.E. Index of Prices Paid by Farmers. The weights used are:-

Building Materials	180
Fencing Materials	78
Total	258

TABLE 4.4

WEIGHTS USED IN THE CALCULATION OF THE PRICE RELATIVE FOR MAINTENANCE TO PLANT AND MACHINERY

Item	Weight
Tractors	25
Motor Vehicles	34
Ploughs and Planters	11
Hay Machinery	10
Dairy Machinery	20
Total	100

(i) Cartage

Changes in cartage rates are supplied by the Master Carrier Association of New South Wales.

(j) Rates, Taxes and Water Charges

The B.A.E. Indexes of Prices Paid by Farmers is used to calculate price variations in the level of this cost item.

(k) Insurance

Changes in the cost of insurance have been calculated by taking a weighted average of the price relatives assessed for each type of insurance. The weights used are shown in Table 4.5.

TABLE 4.5

WEIGHTS USED TO COMBINE THE PRICE RELATIVES FOR VARIOUS TYPES OF INSURANCE

Type of Insurance	Weight Used
Workers' Compensation	7
Motor Vehicle Insurance	66
Fire Insurance	20
Crop/Livestock Insurance	7
	100

The price relative for each type of insurance has been arrived at after taking account of changes in the level of the premiums and the value to be insured.

(l) Motor Registration

Motor registration includes the cost of registration and third party insurance. The price relative for Motor Registration has been taken as the change in the cost of registering a Holden Utility at Primary Producer rates.

(m) Sprays, Pest Control and Medicines

Relative price changes for this item have been calculated from the sub-index for chemicals of the B.A.E. Index of Prices Paid by Farmers.

(n) Miscellaneous Materials and Services

The "Other Supplies" section of the B.A.E. Index of Prices Paid by Farmers has been used to calculate the relative price changes of the miscellaneous materials used on a dairy farm.

The miscellaneous group of the Consumer Price Index is used to calculate changes in the miscellaneous service charges encountered on the dairy farm.

(o) Depreciation

Depreciation has been calculated for three groups of farm capital, namely:-

(i) Fences and Water Equipment
(ii) Plant and Machinery and
(iii) Buildings and Structures

Changes in the depreciation charges of these items is assumed to vary at the same rate as the changes in their replacement cost. Changes in the replacement cost of these items have been calculated as the weighted average of the relative price changes of the relevant components of the B.A.E. Index of Prices Paid by Farmers and the B.A.E. Index of Farm Machinery Prices.

The weights used to assess changes in the depreciation charges on fencing and water equipment was:-

Fencing Materials	82
Water Equipment	18

The weights used to assess changes in the depreciation charges on plant and machinery are shown in Table 4.6.

TABLE 4.6

WEIGHTS USED IN CALCULATING THE RELATIVE CHANGE IN THE DEPRECIATION CHARGE ON PLANT AND MACHINERY

Item	Weight Used
Tractors	25
Ploughs and Planters	11
Hay Machinery	8
Dairy Machinery	21
Motor Vehicles	35
Total	100

(p) Interest on Farm Capital

Variations in the imputed interest charge are a combination of changes in the rate of interest and the value of the capital item. The rate of interest has been taken as the average bank overdraft interest rate.

Six groups of farm capital items have been identified, namely:-

(i) Land
(ii) Livestock
(iii) Fences and Water Equipment
(iv) Plant and Machinery
(v) Buildings and Structures
(vi) Working Capital

The value of land is assumed to remain constant while the B.A.E. Index of Prices Received by Farmers is taken to be a measure of the changes in livestock value. Changes in the value of fences, water equipment, plant, machinery, buildings and structures have been treated as they were for the calculation of movements in depreciation changes. The relative changes in the value

of working capital has been taken to be equal to the relative change in total cash costs.

(q) Sideline Costs

Sideline costs were assumed to move at the same rate as total costs.

4.3 INTERPRETING INDEXED RESULTS

The weights used in the indexing process outlined above is the relative value of each input used as revealed by the survey. Thus the index only assesses the aggregate movement in the prices of inputs assuming;

(i) there has been no change in the level or type of production.

(ii) there has been no change in the level or type of inputs, and

(iii) the total value of farm capital has remained unchanged.

Thus for the price index to accurately measure the increase in the cost of production industry structural change must not occur.

It would be reasonable to expect that farmers have achieved some increase in efficiency since the survey period. Any increase in efficiency (greater output per volume of input) would cause the cost of production to rise more slowly than indicated by the indexing method.

Over recent years the value of land in dairy areas has been forced up through recreational and urban demand. If imputed interest on the market value of land is included as a component of the cost of producing wholemilk (as has been done in the above calculation) then increases in the market value of land will cause an increase in the calculated cost of production. The index used to assess movements in the cost of producing wholemilk does not take into account any increases in the market value of land since the survey period.

The magnitude of increases in efficiency and the market value of dairy land and hence the effect on the cost of producing wholemilk can only be assessed by a re-survey of the dairy industry.

5 THE RESULTS OF INDEXING FORWARD

Using the assumption outlined in the preceding chapters, the cost structure, as revealed by the survey, was indexed foreward to 1st April 1977. Tables 5.1, 5.2 and 5.3 show the cost movements from the average for the survey to 1st April 1974, from the 1st April 1974 to 1st April 1975 and from the 1st April 1975 to the 1st April 1976 respectively. Quarterly cost movements from the 1st April 1976 to 1st April 1977 are shown in Tables 5.4 to 5.7 respectively.

There has been between an 80 per cent and a 90 per cent increase in the cost of producing market milk since 1972-73. A large part of the movement occurred between the 1st April 1974 to the 1st April 1975. During this twelve month period the cost of producing market milk, as calculated in this report, rose by 34 per cent. For the next two twelve month periods (1st April 1975 to 1st April 1976 and 1st April 1976 to 1st April 1977) the cost of producing market milk rose at a much slower rate of 10 per cent per annum.

The main factor in causing the large increase in costs from 1st April 1974 to the 1st April 1975 was the large increase in wage rates that occurred during this period. The increase in wage rates had a direct influence through the effect on the movement in the cost of hired and imputed labour. Increases in labour costs during this period had a further indirect effect on increases in the cost of production through its effect on the increases in the other cost items.

Tables 5.1 to 5.7 respectively, show the cost of production and cost movements assuming the full synthesised labour measure (see Appendix 2) and taking the market value of land for the average of the survey as the capital value of land. Tables 5.8 to 5.10 respectively, give a comparison on the cost of production and cost movements using revised levels of imputed costs (see Appendix 10). The most important difference to note between the different calculations is the absolute difference in the cost of production figure rather than the relative move in the cost of production.

Reducing the estimate on imputed costs has the effect of reducing the magnitude of the cost of production as calculated but has the effect of increasing the rate of cost increases. This is due to the fact that since 1st April 1975 the rate of movement of imputed costs have been less than the rate of movement in cash costs. At the 1st April 1975 the highest cost calculation is 24.40 cents per litre using the initial value of imputed interest on land and imputed labour while the lowest cost calculation is 20.21 cents per litre using the reduced estimates of the value of imputed interest on land and imputed labour. The smallest estimates of the movement in the cost of production since the survey however, are obtained when the initial value of imputed interest on land is used (83 per cent with the initial estimate of imputed labour and 81 per cent with

the adjusted value of imputed labour). The largest estimates of the movement in costs since the cost of production since the survey period are obtained when the adjusted value of imputed interest on land is used (88 per cent with the adjusted value of imputed labour and 90 per cent with the initial estimate of imputed labour).

TABLE 5.1

ESTIMATED COST MOVEMENTS IN MARKET MILK PRODUCTION ASSUMING THE FULL SYNTHESISED LABOUR MEASURE AND THE MARKET VALUE OF LAND AS FOR THE AVERAGE OF THE SURVEY PERIOD

(Mid Survey to 1.4.74)

Item	Average Cost Structure of Survey	Price Relatives	Cost Structure 1.4.1974
	$	%	$
1. Hired Labour	816	119.20	973
2. Contract Work	117	101.36	119
3. Petroleum Products	515	103.50	533
4. Electricity	490	99.91	490
5. Fertilizer	853	99.42	848
6. Seed	236	80.54	190
7. Fodder	2,502	109.44	2,738
8. Maintenance			
Plant and Machinery	543	97.22	528
Buildings, Structures and Fencing	627	103.34	648
9. Cartage	846	106.94	905
10. Rates, Taxes and Water	638	113.46	724
11. Insurance	175	104.30	183
12. Motor Registration (incl. Third Party Insurance)	78	71.38	56
13. Sprays, Pest Control and Medics	81	100.47	81
14. Miscellaneous Materials	441	102.85	454
15. Miscellaneous Services	1,051	100.36	1,055
Total Cash Costs:	10,009	(105.16)	10,525
16. Depreciation			
Fences and Water Equipment	250	101.74	254
Plant & Machinery	1,766	101.52	1,793
Buildings and Structures	344	104.78	360
17. Interest on Farm Capital			
Land	7,881	115.21	9,080
Livestock	1,155	119.13	1,376
Fences and Water Equipment	415	117.30	487
Plant and Machinery	794	116.79	927
Buildings and Structures	673	120.24	809
Working Capital	374	124.25	465
18. Imputed Labour	8,287	119.20	9,878
Total Imputed Costs:	21,939	(115.91)	25,429
Total Costs:	31,948	(112.54)	35,954
19. Sideline Costs	4,382	112.54	4,932
Net Cost:	27,566		31,022
Cost per litre (cents)	13.34		15.01

Note : The relatives in brackets are weighted average of the relatives listed above them.

TABLE 5.2

ESTIMATED COST MOVEMENTS IN MARKET MILK PRODUCTION ASSUMING THE FULL SYNTHESISED LABOUR MEASURE AND THE MARKET VALUE OF LAND AS FOR THE AVERAGE OF THE SURVEY PERIOD
(1.4.74 to 1.4.75)

Item	Cost Structure 1.4.1974	Price Relatives	Cost Structure 1.4.1975
	$	%	$
1. Hired Labour	973	154.86	1,507
2. Contract Work	119	122.69	146
3. Petroleum Products	533	131.33	700
4. Electricity	490	109.80	538
5. Fertilizer	848	235.77	1,997
6. Seed	190	57.37	109
7. Fodder	2,738	110.52	3,026
8. Maintenance			
Plant and Machinery	528	119.70	632
Buildings, Structures and Fencing	648	124.69	808
9. Cartage	905	124.09	1,123
10. Rates, Taxes and Water	724	120.03	869
11. Insurance	183	161.20	295
12. Motor Registration (incl. Third Party Insurance)	56	121.43	68
13. Sprays, Pest Control, Medics	81	120.99	98
14. Miscellaneous Materials	454	139.96	635
15. Miscellaneous Services	1,055	122.84	1,296
Total Cash Cost:	10,525	(131.56)	13,847
16. Depreciation			
Fences and Water Equipment	254	125.90	319
Plant and Machinery	1,793	122.92	2,204
Buildings & Structures	360	124.44	448
17. Interest on Farm Capital			
Land	9,080	123.35	11,200
Livestock	1,376	48.72	670
Fences and Water Equipment	487	155.24	756
Plant and Machinery	927	151.67	1,406
Buildings and Structures	809	153.52	1,242
Working Capital	465	164.50	765
18. Imputed Labour	9,878	154.86	15,297
Total Imputed Cost:	25,429	(134.91)	34,307
Total Cost	35,954	(133.93)	48,154
19. Sideline Costs	4,932	133.93	6,605
Net Cost:	31,022		41,549
Cost per litre (cents)	15.01		20.11

Note : The relatives in brackets are weighted averages of the relatives listed above them.

TABLE 5.3

ESTIMATED COST MOVEMENTS IN MARKET MILK PRODUCTION ASSUMING THE FULL SYNTHESISED LABOUR MEASURE AND THE MARKET VALUE OF LAND AS FOR THE AVERAGE OF THE SURVEY PERIOD
(1.4.75 to 1.4.76)

Item	Cost Structure 1.4.1975	Price Relatives	Cost Structure 1.4.1976
	$	%	$
1. Hired Labour	1,507	114.00	1,718
2. Contract Work	146	112.13	164
3. Petroleum Products	700	110.63	774
4. Electricity	538	107.85	580
5. Fertilizer	1,997	94.78	1,893
6. Seed	109	102.52	112
7. Fodder	3,026	114.24	3,457
8. Maintenance			
Plant and Machinery	632	121.32	767
Buildings, Structures and Fencing	808	117.42	949
9. Cartage	1,123	116.57	1,309
10. Rates, Taxes and Water	869	124.10	1,078
11. Insurance	295	115.27	340
12. Motor Registration (incl. Third Party Insurance)	68	111.59	76
13. Sprays, Pest Control, Medics	98	108.81	107
14. Miscellaneous Materials	635	108.84	691
15. Miscellaneous Services	1,296	112.18	1,454
Total Cash Cost:	13,847	(111.71)	15,469
16. Depreciation			
Fences and Water Equipment	319	123.72	395
Plant and Machinery	2,204	120.82	2,663
Buildings and Structures	448	113.81	510
17. Interest on Farm Capital			
Land	11,200	96.98	10,862
Livestock	670	126.47	847
Fences and Water Equipment	756	119.98	907
Plant and Machinery	1,406	117.17	1,647
Buildings and Structures	1,242	110.37	1,371
Working Capital	765	111.89	856
18. Imputed Labour	15,297	114.00	17,439
Total Imputed Cost:	34,307	(109.30)	37,497
Total Cost:	48,154	(109.99)	52,966
19. Sideline Cost	6,605	109.99	7,265
Net Cost:	41,549		45,701
Cost per litre (cents)	20.11		22.11

Note : The relatives in brackets are weighted averages of the relatives listed above them.

TABLE 5.4

ESTIMATED COST MOVEMENTS IN MARKET MILK PRODUCTION ASSUMING THE FULL SYNTHESISED LABOUR MEASURE AND THE MARKET VALUE OF LAND AS FOR THE AVERAGE OF THE SURVEY PERIOD
(1.4.76 to 1.7.76)

Item	Cost Structure 1.4.76	Price Relatives	Cost Structure 1.7.76
	$	%	$
1. Hired Labour	1,718	102.65	1,764
2. Contract Work	164	115.76	190
3. Petroleum Products	774	102.38	792
4. Electricity	580	100.00	580
5. Fertilizer	1,893	100.00	1,893
6. Seed	112	110.97	124
7. Fodder	3,457	101.60	3,512
8. Maintenance			
Plant and Machinery	767	101.78	781
Buildings, Structures and Fencing	949	104.01	987
9. Cartage	1,309	101.59	1,330
10. Rates and Taxes and Water	1,078	100.00	1,078
11. Insurance	340	101.16	344
12. Motor Registration (incl. Third Party Insurance)	76	100.00	76
13. Sprays, Pest Control, Medics	107	98.78	106
14. Miscellaneous Materials	691	105.37	728
15. Miscellaneous Services	1,454	101.89	1,481
Total Cash Costs	15,469	(101.92)	15,766
16. Depreciation			
Fences and Water Equipment	395	100.70	398
Plant and Machinery	2,663	102.89	2,740
Buildings and Structures	510	105.75	539
17. Interest on Farm Capital			
Land	10,862	98.93	10,746
Livestock	847	79.05	670
Fences and Water Equipment	907	99.62	904
Plant and Machinery	1,647	101.79	1,676
Buildings and Structures	1,371	104.62	1,434
Working Capital	856	101.00	865
18. Imputed Labour	17,439	102.65	17,901
Total Imputed Costs	37,497	(101.00)	37,873
Total Cost	52,966	(101.27)	53,639
19. Sideline Costs	7,265	101.27	7,357
Net Cost:	45,701		46,282
Cost per litre (cents)	22.11		22.40

Note : The relatives in brackets are weighted averages of the relatives listed above them.

TABLE 5.5

ESTIMATED COST MOVEMENTS IN MARKET MILK PRODUCTION ASSUMING THE FULL SYNTHESISED LABOUR MEASURE AND THE MARKET VALUE OF LAND AS FOR THE AVERAGE OF THE SURVEY PERIOD
(1.7.76 to 1.10.76)

Item	Cost Structure 1.7.76	Price Relatives	Cost Structure 1.10.76
	$	%	$
1. Hired Labour	1,764	103.31	1,822
2. Contract Work	190	100.00	190
3. Petroleum Products	792	100.00	792
4. Electricity	580	100.00	580
5. Fertilizer	1,893	101.82	1,927
6. Seed	124	118.91	147
7. Fodder	3,512	106.48	3,740
8. Maintenance			
Plant and Machinery	781	100.48	785
Buildings, Structures and Fencing	987	100.92	996
9. Cartage	1,330	100.93	1,342
10. Rates and Taxes and Water	1,078	100.00	1,078
11. Insurance	344	100.42	345
12. Motor Registration (incl. Third Party Insurance)	76	100.00	76
13. Sprays, Pest Control, Medics	106	101.14	107
14. Miscellaneous Materials	728	100.58	732
15. Miscellaneous Services	1,481	101.41	1,502
Total Cash Costs	15,766	(102.51)	16,161
16. Depreciation			
Fences and Water Equipment	398	100.16	399
Plant and Machinery	2,740	102.53	2,809
Buildings and Structures	539	101.32	546
17. Interest on Farm Capital			
Land	10,746	98.83	10,620
Livestock	670	136.54	915
Fences and Water Equipment	904	98.99	895
Plant and Machinery	1,676	101.33	1,698
Buildings and Structures	1,434	100.13	1,436
Working Capital	865	100.94	873
18. Imputed Labour	17,901	103.31	18,494
Total Imputed Costs	37,873	(102.14)	38,685
Total Costs	53,639	(102.25)	54,846
19. Sideline Costs	7,357	102.25	7,523
Net Cost:	46,282		47,323
Cost per litre (cents)	22.40		22.90

Note : The relatives in brackets are weighted averages of the relatives listed above them.

TABLE 5.6

ESTIMATED COST MOVEMENTS IN MARKET MILK PRODUCTION ASSUMING THE FULL SYNTHESISED LABOUR MEASURE AND THE MARKET VALUE OF LAND AS FOR THE AVERAGE OF THE SURVEY PERIOD
(1.10.76 to 1.1.77)

Item	Cost Structure 1.10.76	Price Relatives	Cost Structure 1.1.77
	$	%	$
1. Hired Labour	1,822	100.91	1,839
2. Contract Work	190	100.00	190
3. Petroleum Products	792	105.17	833
4. Electricity	580	108.45	629
5. Fertilizer	1,927	105.82	2,039
6. Seed	147	96.74	142
7. Fodder	3,740	121.65	4,550
8. Maintenance			
Plant and Machinery	785	100.94	792
Buildings, Structures and Fencing	996	102.78	1,024
9. Cartage	1,342	101.46	1,362
10. Rates and Taxes and Water	1,078	106.63	1,149
11. Insurance	345	100.55	347
12. Motor Registration (incl. Third Party Insurance)	76	121.12	92
13. Sprays, Pest Control, Medics	107	104.14	111
14. Miscellaneous Materials	732	100.00	732
15. Miscellaneous Services	1,502	108.99	1,637
Total Cash Costs	16,161	(108.09)	17,468
16. Depreciation			
Fences and Water Equipment	399	104.28	416
Plant and Machinery	2,809	103.93	2,919
Buildings and Structures	546	101.96	557
17. Interest on Farm Capital			
Land	10,620	100.00	10,620
Livestock	915	108.79	995
Fences and Water Equipment	895	104.28	933
Plant and Machinery	1,698	103.93	1,765
Buildings and Structures	1,436	101.96	1,464
Working Capital	873	105.80	924
18. Imputed Labour	18,494	100.91	18,662
Total Imputed Costs	38,685	(101.47)	39,255
Total Costs	54,846	(103.42)	56,723
19. Sideline Costs	7,523	103.42	7,780
Net Cost:	47,323		48,943
Cost per litre (cents)	22.90		23.68

Note : The relatives in brackets are weighted averages of the relatives listed above them.

TABLE 5.7

ESTIMATED COST MOVEMENTS IN MARKET MILK PRODUCTION ASSUMING THE FULL SYNTHESISED LABOUR MEASURE AND THE MARKET VALUE OF LAND AS FOR THE AVERAGE OF THE SURVEY PERIOD
(1.1.77 to 1.4.77)

Item	Cost Structure 1.1.77	Price Relatives (p)	Cost Structure 1.4.77
	$	%	$
1. Hired Labour	1,839	104.23	1,917
2. Contract Work	190	105.00	200
3. Petroleum Products	833	102.50	854
4. Electricity	629	102.80	647
5. Fertilizer	2,039	102.50	2,090
6. Seed	142	108.50	154
7. Fodder	4,550	109.60	4,987
8. Maintenance			
Plant and Machinery	792	101.00	736
Buildings, Structures and Fencing	1,024	102.60	1,051
9. Cartage	1,362	101.40	1,381
10. Rates and Taxes and Water	1,149	102.20	1,174
11. Insurance	347	102.30	355
12. Motor Registration (incl. Third Party Insurance)	92	106.60	98
13. Sprays, Pest Control, Medics	111	101.70	113
14. Miscellaneous Materials	732	102.00	747
15. Miscellaneous Services	1,637	104.00	1,702
Total Cash Costs	17,468	(104.22)	18,206
16. Depreciation			
Fences and Water Equipment	416	101.70	423
Plant and Machinery	2,919	103.10	3,009
Buildings and Structures	557	103.00	574
17. Interest on Farm Capital			
Land	10,620	99.22	10,537
Livestock	995	105.50	1,050
Fences and Water Equipment	933	100.60	939
Plant and Machinery	1,765	102.30	1,806
Buildings and Structures	1,464	102.20	1,496
Working Capital	924	102.60	948
18. Imputed Labour	18,662	104.23	19,451
Total Imputed Costs	39,255	(102.49)	40,233
Total Costs	56,723	(103.03)	58,439
19. Sideline Costs	7,780	103.03	8,016
Net Cost	48,943		50,423
Cost per litre (cents)	23.68		24.40

Note : The relatives in brackets are weighted averages of the relatives listed above them.

(p) Preliminary

TABLE 5.8

SUMMARY OF COST MOVEMENTS USING ADJUSTED VALUE OF IMPUTED LABOUR

Item	Average for Survey	At 1.4.74	At 1.4.75	At 1.4.76
	$	$	$	$
Total Cash Costs	10,009	10,525	13,847	15,469
Total Imputed Costs	20,685	23,934	31,992	34,857
Total Costs	30,694	34,459	45,839	50,326
Sideline Costs	4,382	4,920	6,545	7,186
Net Costs	26,312	29,539	39,294	43,140
Cost per litre (cents)	12.73	14.29	19.01	20.88

Item	At 1.1.76	At 1.10.76	At 1.1.77	At 1.4.77
	$	$	$	$
Total Cash Costs	15,766	16,161	17,468	18,206
Total Imputed Costs	35,163	35,885	36,430	37,289
Total Costs	50,929	52,046	53,898	55,495
Sideline Costs	7,272	7,431	7,696	7,924
Net Costs	43,657	44,615	46,202	47,571
Cost per litre (cents)	21.13	21.59	22.36	23.02

TABLE 5.9

SUMMARY OF COST MOVEMENTS USING ADJUSTED VALUE OF IMPUTED INTEREST ON LAND

Item	Average for Survey	At 1.4.74	At 1.4.75	At 1.4.76
	$	$	$	$
Total Cash Costs	10,009	10,525	13,847	15,469
Total Imputed Costs	17,838	20,704	28,479	31,845
Total Costs	27,847	31,229	42,326	47,314
Sideline Costs	4,382	4,914	6,660	7,445
Net Costs	23,465	26,315	35,666	39,869
Cost per litre (cents)	11.35	12.73	17.26	19.29

TABLE 5.9 (Continued)

SUMMARY OF COST MOVEMENTS USING ADJUSTED VALUE OF IMPUTED INTEREST ON LAND

Item	At 1.7.76	At 1.10.76	At 1.1.77	At 1.4.77
	$	$	$	$
Total Cash Costs	15,766	16,161	17,468	18,206
Total Imputed Costs	32,281	33,139	33,729	37,750
Total Costs	48,047	49,300	51,197	52,956
Sideline Costs	7,560	7,757	8,056	8,333
Net Costs	40,487	41,543	43,141	44,623
Cost per litre (cents)	19.59	20.10	20.88	21.59

TABLE 5.10

SUMMARY OF COST MOVEMENTS USING BOTH THE ADJUSTED VALUE OF IMPUTED LABOUR AND THE ADJUSTED VALUE OF IMPUTED INTEREST ON LAND

Item	Average for Survey	At 1.4.74	At 1.4.75	At 1.4.76
	$	$	$	$
Total Cash Costs	10,009	10,525	13,847	15,469
Total Imputed Costs	16,584	19,209	26,164	29,205
Total Costs	26,593	29,734	40,011	44,674
Sideline Costs	4,382	4,900	6,593	7,361
Net Costs	22,211	24,834	33,418	37,313
Cost per litre (cents)	10.75	12.02	16.17	18.06

Item	At 1.7.76	At 1.10.76	At 1.1.77	At 1.4.77
	$	$	$	$
Total Cash Costs	15,766	16,161	17,468	18,206
Total Imputed Costs	29,571	30,359	30,904	31,806
Total Costs	45,337	46,520	48,372	50,012
Sideline Costs	7,470	7,665	7,970	8,240
Net Costs	37,867	38,855	40,402	41,772
Cost per litre (cents)	18.32	18.80	19.55	20.21

6 CONCLUSION

The survey and subsequent indexation of costs was undertaken to supply information which would be a guide to the Dairy Industry Prices Tribunal on movements in the cost of producing market milk in New South Wales. The survey was based on a B.A.E. survey the design of which does not permit valid inter-regional comparisons.

The cash outlays were readily obtainable from the individual farm accounts. In order to determine the "true" cost of production however, some estimate of non cash or imputed costs have to be made. It was found that imputed costs formed up to 69 per cent of the total cost of production on the survey farms. It is therefore unsatisfactory to consider one figure as the cost of production since variation in estimating the level of imputed costs will have a marked bearing on this cost of production figure. The relative movement in imputed costs has become less than the relative move in total cash costs. If this trend continues then the importance of imputed costs will slightly decrease but still be a dominating factor in the cost calculation.

The two most important imputed costs were the imputed interest on the capital value of land and the imputed labour charge. Not only are these the two most important imputed costs but they are also the imputed costs for which it is most difficult to estimate what is a fair and reasonable level. For this reason two levels of imputed interest on the capital value of land and imputed labour were compared giving four levels of imputed costs. The two levels used for imputed interest on the capital value of land and imputed labour are discussed in the report and the Appendices to the report.

An estimated increase of between 80 per cent and 90 per cent in the on-farm cost of producing market milk in N.S.W. has occurred since the survey covering the years 1971-72 to 1972-73. This estimate is made assuming no increase in efficiency has occurred over this time. It is reasonable to expect that increases in efficiency have occurred since the survey. An increase in efficiency would have the effect of reducing the actual increase in the on-farm cost of production below the estimated increase. Even allowing for an increase in efficiency it is clear that a considerable erosion to the real returns to market milk production has and is continuing to occur.

As discussed in the report the actual cost of production calculation will vary with the method of estimating imputed costs. This report has calculated the on-farm cost of producing market milk using four different values for total imputed costs. Using the four values the estimated cost of production at the 1st April 1977 varies from 20.21 cents per litre to 24.40 cents per litre.

The cost of production figures calculated at various dates and for the various values of imputed costs are summarized in Table 6.1.

TABLE 6.1

COST OF PRODUCING MARKET MILK AT VARIOUS DATES AND USING VARIOUS VALUES OF IMPUTED COSTS

Cost Calculation Using	Estimated Cost of Production as at			
	Average for Survey	1.4.74	1.4.75	1.4.76
	cents/litre	cents/litre	cents/litre	cents/litre
Synthesised Labour measure and the market value of land	13.34	15.01	20.11	22.11
Adjusted labour measure and the market value of land	12.73	14.29	19.01	20.88
Synthesised labour measure and adjusted value of land	11.35	12.73	17.26	19.29
Both the adjusted labour measure and the adjusted value of land	10.75	12.02	16.17	18.06

Cost Calculation Using	Estimated Cost of Production as at			
	1.7.76	1.10.76	1.1.77	1.4.77
	cents/litre	cents/litre	cents/litre	cents/litre
Synthesised Labour measure and the market value of land	22.40	22.90	23.68	24.40
Adjusted labour measure and the market value of land	21.13	21.59	22.36	23.02
Synthesised labour measure and the adjusted value of land	19.59	20.10	20.88	21.59
Both the adjusted labour measure and the adjusted value of land	18.32	18.80	19.55	20.21

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APPENDIX I

CALCULATION OF A SYNTHESISED LABOUR MEASURE

The operations on a dairy farm along with the estimated labour requirements used to calculate a synthesised labour measure are as follows:-

1. Dairy Herd Management

(a) Milking

A throughput figure of 25 cows per man hour was assumed. This means a yearly labour commitment of 22.4 man hours per cow.

(b) Cleaning

An allowance of 30 minutes twice a day for cleaning of yards was made. In addition, one hour per day was allowed for the cleaning of equipment. This meant a total daily commitment of 2 man hours and a yearly allowance of 730 man hours.

(c) Feeding

A base figure of 2 man hours per head per year was used. To this figure was added an allowance of 2 man hours per year for each heifer under 12 months old and 10 man hours per year for each calf.

(d) Breeding and Calving

An allowance of 2 man hours per year per cow and heifer over 12 months old was made.

(e) General Husbandry

All stock were allowed 4 man hours per year per head.

2. Beef Herd Management

The beef herd was allowed 15 man hours per head per year.

3. Crop and Pasture Activities

An allowance was made on a per hectare basis in the following way:

crops harvested	22.0 man hours/year
crops grazed	8.0 " " "
improved pasture	3.5 " " "
native pasture	1.0 " " "
area double cropped	2.0 " " "
area irrigated	10.0 " " "

Using this time allocation total time needed for cropping and pasture activities for the average 154 hectare farm is 578 man hours per year.

4. General Farm Activities

In addition to the above labour allowance an allowance for the following activities was made:-

(a) General Farm Maintenance

- fencing	60	
- water supply	24	
- road access	18	
- weed control	24	
		126 man hours/year

(b) Building Repairs and Maintenance (1 week/year) — 40 man hours/year

(c) Machinery Repairs and Maintenance

dairy 1 hour/week
other 2 hour/week — 156 " "

(d) Farm Management Accounts and Planning -

2 hours/week — 104 " "

(e) Marketing - 4 hours/week — 208 " "

TOTAL — 634 man hours/year

5. Summary

For the average dairy farm of 154 hectares, with 78 head of dairy cattle, and 25 head of beef cattle, supplying market milk in N.S.W. during the survey period the synthesised labour commitment based on the above assumption is as follows:-

	Man Hours
Dairy Herd (78 head)	
- milking	1,745
- cleaning	730
- feeding	279
- breeding/calving	192
- general husbandry	460
Beef Herd (25 head)	375
Crop and Pasture Activities (154 hectare farm)	578
General Farm Activities	634
TOTAL	4,993

AVERAGE HOURS PER WEEK 96 man hours

APPENDIX 2

CALCULATION OF IMPUTED LABOUR COST

To calculate the imputed labour cost the synthesised labour measure was valued at the wage rates laid down in the Dairying Employees (State) Award. The amount actually paid for hired labour was deducted from the value of synthesised labour. The balance has been used as the imputed labour cost.

In valuing the synthesised labour measure it was assumed the total hours worked according to the synthesised labour measure was broken up as follows:-

(1) the first 40 hours was assumed to be worked by the operator and valued at farm control hand rates.

(2) the second and subsequent 40 hour units was assumed to be undertaken by the family hence the term Family Labour Unit (F.L.U.). The F.L.U. was valued at general hand class I rates.

(3) the balance costed at the casual hourly rate.

Under the conditions of the Award, ordinary working hours could not exceed 40 hours per week. The time in which ordinary working hours applied varied during the survey period. In the first year, 1971-72, ordinary working hours applied from Monday to Saturday and any time worked outside this period or any time worked over and above 40 hours within this period attracted overtime rates. In the latter two years of the survey period ordinary working hour rates applied from Monday to Friday (except Public Holidays) with Saturday attracting an overtime rate of time and a quarter. The milking and attending of livestock on Sundays was paid at time and a half through the survey period.

In valuing the labour on the dairy farm it was assumed that the operator would keep overtime payments to a minimum so only the milking and attending of stock was allowed for on Saturdays, Sundays and Public Holidays. The time needed for milking and tending to stock is approximately 7 hours per day. It has been assumed that this will be divided equally between the operator and the F.L.U., for each Saturday, Sunday and Public Holiday. This meant that 33 hours each was worked by the operator and the F.L.U. from Monday to Friday on the average dairy farm during the survey period.

According to the synthesised labour measure and the above assumption on Saturday and Sunday work the pattern of hours worked by each category of labour on the average farm would be:-

	Operator hours	F.L.U. hours	Casual hours	Total hours
Sundays	3.5	3.5	-	7.0
Monday-Friday	33.0	33.0	16.0	82.0
Saturday	3.5	3.5	-	7.0
	40.0	40.0	16.0	96.0

In calculating the labour cost, the average wage component was calculated and then converted to a yearly wage equivalent. Annual, sick, long service, and bereavement leave were then calculated in accordance with award provisions. Penalty rates for time worked on public holidays were also taken into account.

During the survey period the penalty rates for public holidays changed. For the first year, 1971-72, work done on public holidays was at the rate of double time except for milking and tending to stock which was at the rate of time and a half. For the latter two years all work done on public holidays was at the rate of double time and a half.

Nine public holidays were assumed to fall during the year, namely New Year's Day, Australia Day, Good Friday, Easter Monday, Anzac Day, Queen's Birthday, Eight Hour Day, Christmas Day and Boxing Day. The leave loading on labour cost for these nine public holidays were calculated as follows:-

Survey Year 1, 1971-72

- 36.5 hours per week of ordinary working hours each for the operator and the F.L.U. (40 hours per week less 3.5 hours at time and a half on Sunday).

- 6.08 hours per day of ordinary working hours each for the operator and the F.L.U. (36.5 ÷ 6).

- 54.72 hours normally worked on days corresponding to public holidays (9 x 6.08).

- only milking and tending to stock done on public holidays at time and a half.

- remaining work done as overtime on days that are not public holidays.

- work done on public holidays has already been costed at ordinary time hence the loading for public holidays becomes 54.72 hours each for the operator and the F.L.U. at half time.

Survey Year 2 and 3, 1972-73 and 1973-74

- 33 hours per week of ordinary working hours each for the operator and the F.L.U. (40 hours less 3.5 hours at time and a half on Sunday and 3.5 hours at time and a quarter on Saturday).

- 6.6 hours per day of ordinary working hours each for the operator and the F.L.U. (33 ÷ 5).

- 59.4 hours normally worked on days corresponding to public holidays (9 x 6.6).

- only milking and tending to stock done on public holidays at double time and a half, i.e. 31.5 hours each by the operator and the F.L.U. (9 x 3.5).

- remaining 27.9 hours (59.4 - 31.5) done as overtime on days that are not public holidays at time and a half.

- work done on public holidays has already been costed at ordinary time hence the loading for public holidays becomes 31.5 hours at time and a half and 27.9 hours at half time.

Tables A2.1 to A2.3 outline the calculation of the value of the operator and F.L.U. components of the synthesised labour measure during the three survey years.

TABLE A2.1

CALCULATION OF THE OPERATOR AND F.L.U. LABOUR COST FOR 1971-72

Operator ($61.64 Basic Weekly Rate)

					$
Mon-Sat.	36.5 hrs	@	$1.54		56.25
Sunday	3.5 hrs	@	$2.31	(1½T)	8.09
	40.0 hrs				$64.34
Annually	52.14 wks	@	$64.34		3,355
Public Holidays	54.72 hrs	@	$ 0.77	(½T)	42
Annual Leave	3 wks	@	$64.34		193
Sick Leave	1 wk	@	$64.34		64
Long Service Leave	0.867 wks	@	$64.34		56
					$3,710

F.L.U. ($45.03 Basic Weekly Rate)

					$
Mon-Sat.	36.5 hrs	@	$1.13		41.09
Sunday	3.5 hrs	@	$1.69	(1½T)	5.91
	40.0 hrs				$47.00
Annually	52.14 wks	@	$47.00		2,451
Public Holidays	54.72 hrs	@	$ 0.56	(½T)	31
Annual Leave	3 wks	@	$47.00		141
Sick Leave	1 wk	@	$47.00		47
Long Service Leave	0.867 wks	@	$47.00		41
					$2,711

TABLE A2.2

CALCULATION OF THE OPERATOR AND F.L.U. LABOUR COST FOR 1972-73

Operator ($74.87 Basic Weekly Rate)

					$
Mon-Fri	33.0 hrs	@	$1.87		61.77
Saturday	3.5 hrs	@	$2.34	(1¼T)	8.19
Sunday	3.5 hrs	@	$2.81	(1½T)	9.83
	40.0 hrs				$79.79
Annually	52.14 wks	@	$79.79		4,160
Public Holidays	31.5 hrs	@	$ 2.81	(1½T)	88
	27.9 hrs	@	$ 0.94	(½T)	26
Annual Leave	3 wks	@	$79.79		239
Sick Leave	1 wk	@	$79.79		80
Long Service Leave	0.867 wks	@	$79.79		69
					$4,662

F.L.U. ($53.53 Basic Weekly Rate)

					$
Mon-Fri	33.0 hrs	@	$1.34		44.16
Saturday	3.5 hrs	@	$1.67	(1¼T)	5.85
Sunday	3.5 hrs	@	$2.01	(1½T)	7.03
	40.0 hrs				$57.04
Annually	52.14 wks	@	$57.04		2,974
Public Holidays	31.5 hrs	@	$ 2.81	(1½T)	63
	27.9 hrs	@	$ 0.67	(½T)	19
Annual Leave	3 wks	@	$57.04		171
Sick Leave	1 wk	@	$57.04		57
Long Service Leave	0.867 wks	@	$57.04		49
					$3,333

TABLE A2.3

CALCULATION OF THE OPERATOR AND F.L.U. LABOUR COST FOR 1973-74

Operator ($83.53 Basic Weekly Rate)

					$
Mon-Fri	33.0 hrs	@	$2.09		68.91
Saturday	3.5 hrs	@	$2.61 (1¼T)		9.14
Sunday	3.5 hrs	@	$3.13 (1½T)		10.96
	40.0 hrs				$89.01
Annually	52.14 wks	@	$89.01		4,641
Public Holidays	31.5 hrs	@	$ 3.13 (1½T)		99
	27.9 hrs	@	$ 1.04 (½T)		29
Annual Leave	3 wks	@	$104.59	(+17½%)	314
Sick Leave	1 wk	@	$89.01		89
Long Service Leave	0.867 wks	@	$89.01		77
					$5,249

F.L.U. ($61.68 Basic Weekly Rate)

					$
Mon-Fri	33.0 hrs	@	$1.54		50.97
Saturday	3.5 hrs	@	$1.93 (1¼T)		6.76
Sunday	3.5 hrs	@	$2.32 (1½T)		8.11
	40.0				$65.84
Annually	52.14 wks	@	$65.84		3,433
Public Holidays	31.5 hrs	@	$ 2.32 (1½T)		73
	27.9 hrs	@	$ 0.77 (½T)		21
Annual Leave	3 wks	@	$77.36	(+17½%)	232
Sick Leave	1 wk	@	$65.84		66
Long Service Leave	0.867 wks	@	$65.84		57
					$3,882

During the survey period the award allowed for a 12.5 per cent loading on ordinary wage rates for casual labour. This loading was used to calculate the value of the remaining 16 hours allowed by the synthesised labour measure for the average farm.

Table A2.4 summarizes the calculation of the imputed labour cost for the survey years.

TABLE A2.4

CALCULATION OF THE AVERAGE IMPUTED LABOUR COST FOR THE SURVEY PERIOD

Item	Year			
	1971-72	1972-73	1973-74	Average
	$	$	$	$
Operator (40 hrs/week)	3,710	4,662	5,249	4,540
F.L.U. (40 hrs/week)	2,711	3,333	3,882	3,309
Casual (16 hrs/week @ general hand class I plus 12½%)	1,059	1,260	1,443	1,254
Total Synthesised Labour	7,480	9,255	10,574	9,103
Less Hired Labour	681	798	970	816
Imputed Labour	6,799	8,457	9,604	8,287

APPENDIX 3

COST OF OPERATOR AND FAMILY LABOUR UNIT; 1.4.74

Operator ($85.10 per week)

					$
Mon-Fri	33.0 hrs	@	$2.13		70.29
Saturday	3.5 hrs	@	$2.66	(1¼T)	9.31
Sunday	3.5 hrs	@	$3.20	(1½T)	11.20
	40.0 hrs				$90.80
Annually	52.14 wks	@	$90.80		4,734
Public Holiday	31.5 hrs	@	$ 3.20	(1½T)	101
	27.9 hrs	@	$ 1.07	(½T)	30
Annual Leave	3 wks	@	$106.69	(+17½%)	320
Sick Leave	1 wk	@	$90.80		91
Long Service Leave	0.867 wk	@	$90.80		81
					5,357

F.L.U. ($63.40 per week)

					$
Mon-Fri	33.0 hrs	@	$1.59		52.47
Saturday	3.5 hrs	@	$1.99	(1¼T)	6.97
Sunday	3.5 hrs	@	$2.39	(1½T)	8.37
	40.0 hrs				67.81
Annually	52.14 wks	@	$67.81		3,536
Public Holidays	31.5 hrs	@	$ 2.39	(1½T)	75
	27.9 hrs	@	$ 0.80	(½T)	22
Annual Leave	3 wks	@	$79.68	(+17½%)	239
Sick Leave	1 wk	@	$67.81		68
Long Service Leave	0.867 wks	@	$67.81		59
					3,999

Operator + F.L.U. $9,356

APPENDIX 4

COST OF OPERATOR AND FAMILY LABOUR UNIT; 1.4.75

Operator ($132 per week)

				$
Mon-Fri	33.0 hrs	@ $3.30		108.90
Saturday	3.5 hrs	@ $4.13	(1¼T)	14.46
Sunday	3.5 hrs	@ $4.95	(1½T)	17.33
	40.0 hrs			140.69
Annually	52.14 wks	@ $140.69		7,336
Public Holidays	31.5 hrs	@ $ 4.95	(1½T)	156
	27.9 hrs	@ $ 1.65	(½T)	46
Annual Leave	4 wks	@ $165.31	(+17½%)	661
Sick Leave	8 days	@ $ 20.10		161
Long Service Leave	0.867 wks	@ $140.69		122
Bereavement Leave	0.5 days	@ $ 20.10		10
				8,492

F.L.U. ($93 per week)

Mon-Fri	33.0 hrs	@ $2.33		76.89
Saturday	3.5 hrs	@ $2.91	(1¼T)	10.19
Sunday	3.5 hrs	@ $3.50	(1½T)	12.25
	40.0 hrs			99.33
Annually	52.14 wks	@ $99.33		5,179
Public Holidays	31.6 hrs	@ $ 3.50	(1½T)	111
	27.9 hrs	@ $ 1.17	(½T)	33
Annual Leave	4 wks	@ $116.71	(+17½%)	467
Sick Leave	8 days	@ $14.19		114
Long Service Leave	0.86% wks	@ $99.33		86
Bereavement Leave	0.5 days	@ $1,419		7
				5,997

Operator + F.L.U. $14,489

APPENDIX 5

COST OF OPERATOR AND FAMILY LABOUR UNIT; 1.4.76

Operator ($150.70 per week)

					$
Mon-Fri	33.0 hrs	@	$3.77		124.41
Saturday	3.5 hrs	@	$4.71	(1¼T)	16.49
Sunday	3.5 hrs	@	$5.66	(1½T)	19.81
	40.0 hrs				160.71
Annually	52.14 wks	@	$160.71		8,379
Public Holidays	31.5 hrs	@	$ 5.66	(1½T)	178
	27.9 hrs	@	$ 2.89	(½T)	53
Annual Leave	4 wks	@	$188.83	(+17½%)	755
Sick Leave	8 days	@	$ 22.96		184
Long Service Leave	0,867 wks	@	$160.71		139
Bereavement Leave	0.5 days	@	$ 22.96		11
					9,699

F.L.U. ($106.10 per week)

Mon-Fri	33.0 hrs	@	$2.65		87.45
Saturday	3.5 hrs	@	$3.31	(1¼T)	11.59
Sunday	3.5 hrs	@	$3.89	(1½T)	13.93
	40.0 hrs				112.97
Annually	52.14 wks	@	$112.97		5,890
Public Holidays	31.5 hrs	@	$ 3.98	(1½T)	125
	27.9 hrs	@	$ 1.33	(½T)	37
Annual Leave	4 wks	@	$132.74	(+17½%)	531
Sick Leave	8 days	@	$ 16.14		129
Long Service Leave	0.867 wks	@	$112.97		98
Bereavement Leave	0.5 days	@	$ 16.14		8
					6,818

Operator + F.L.U. $16,517

APPENDIX 6

COST OF OPERATOR AND FAMILY LABOUR UNIT; 1.7.76

Operator ($154.50 per week)

					$
Mon-Fri	33.0 hrs	@	$3.86		127.38
	3.5 hrs	@	$4.83	(1¼T)	16.91
	3.5 hrs	@	$5.79	(1½T)	20.27
	40.0 hrs				164.56
Annually	52.14 wks	@	$164.56		8,580
Public Holidays	31.5 hrs	@	$ 5.79	(1½T)	182
	27.9 hrs	@	$ 1.93	(½T)	54
Annual Leave	4 wks	@	$193.36	(+17½%)	773
Sick Leave	8 days	@	$ 23.51		188
Long Service Leave	0.867 wks	@	$164.56		142
Bereavement Leave	0.5 days	@	$ 23.51		12
					9,931

F.L.U. ($109.30 per week)

Mon-Fri	33.0 hrs	@	$2.73		90.09
Saturday	3.5 hrs	@	$3.41	(1¼T)	11.94
Sunday	3.5 hrs	@	$4.10	(1½T)	14.35
	40.0 hrs				116.38
Annually	42.14 wks	@	$116.38		6,068
Public Holidays	31.5 hrs	@	$ 4.10	(1½T)	129
	27.9 hrs	@	$ 1.37	(½T)	38
Annual Leave	4 wks	@	$136.75	(+17½%)	547
Sick Leave	8 days	@	$ 16.63		133
Long Service Leave	0.867 wks	@	$116.38		101
Bereavement Leave	0.5 days	@	$ 16.63		8
					7,024

Operator + F.L.U. $16,955

APPENDIX 7

COST OF OPERATOR AND FAMILY LABOUR UNIT; 1.10.76

Operator ($157.00 per week)

					$
Mon-Fri	33.5 hrs	@	$3.93		131.66
Saturday	3.5 hrs	@	$4.91	(1¼T)	17.19
Sunday	3.5 hrs	@	$5.90	(1½T)	20.65
	40.0 hrs				169.50
Annually	52.14 wks	@	$169.50		8,838
Public Holidays	31.5 hrs	@	$ 5.90	(1½T)	186
	27.9 hrs	@	$ 1.97	(½T)	55
Annual Leave	4 wks	@	$199.16	(+17½%)	797
Sick Leave	8 days	@	$ 24.21		194
Long Service Leave	0.867 wks	@	$169.50		147
Bereavement Leave	0.5 days	@	$ 24.21		12
					10,229

F.L.U. ($111.80 per week)

Mon-Fri	33.5 hrs	@	$2.80		93.80
Saturday	3.5 hrs	@	$3.50	(1¼T)	12.25
Sunday	3.5 hrs	@	$4.20	(1½T)	14.70
	40.0 hrs				120.75
Annually	52.14 wks	@	$120.75		6,296
Public Holidays	31.5 hrs	@	$ 4.20	(1½T)	132
	27.9 hrs	@	$ 1.40	(½T)	39
Annual Leave	4 wks	@	$142.00	(+17½%)	568
Sick Leave	8 days	@	$ 17.25		138
Long Service Leave	0.867 wks	@	$120.75		105
Bereavement Leave	0.5 days	@	$ 17.25		9
					7,287

Operator + F.L.U. $17,516.

APPENDIX 8

COST OF OPERATOR AND FAMILY LABOUR UNIT; 1.1.77

Operator ($160.50 per week)

					$
Mon-Fri	33.0 hrs	@	$4.01		132.33
Saturday	3.5 hrs	@	$5.01	(1¼T)	17.54
Sunday	3.5 hrs	@	$6.02	(1½T)	21.07
	40.0 hrs				170.94
Annually	52.14 wks	@	$170.94		8,913
Public Holidays	31.5 hrs	@	$ 6.02	(1½T)	190
	27.9 hrs	@	$ 2.00	(½T)	56
Annual Leave	4 wks	@	$200.85	(+17½%)	803
Sick Leave	8 days	@	$ 24.42		195
Long Service Leave	0.867 wks	@	$170.94		148
Bereavement Leave	0.5 days	@	$ 24.42		12
					10,317

F.L.U. ($114.30 per week)

Mon-Fri	33.0 hrs	@	$2.86		94.38
Saturday	3.5 hrs	@	$3.58	(1¼T)	12.53
Sunday	3.5 hrs	@	$4.29	(1½T)	15.02
	40.0 hrs				121.93
Annually	52.14 wks	@	$121.93		6,357
Public Holidays	31.5 hrs	@	$ 4.29	(1½T)	135
	27.9 hrs	@	$ 1.43	(½T)	40
Annual Leave	4 wks	@	$143.27	(+17½%)	573
Sick Leave	8 days	@	$ 17.42		139
Long Service Leave	0.867 wks	@	$121.93		106
Bereavement Leave	0.5 days	@	$ 17.42		9
					7,359

Operator + F.L.U. $17,676

APPENDIX 9

COST OF OPERATOR AND FAMILY LABOUR UNIT; 1.4.77

Operator ($166.20 per week)

					$
Mon-Fri	33.0 hrs	@	$4.16		137.28
Saturday	3.5 hrs	@	$5.20	(1¼T)	18.20
Sunday	3.5 hrs	@	$6.24	(1½T)	21.84
	40.0 hrs				177.32
Annually	52.14 wks	@	$177.32		9,245
Public Holidays	31.5 hrs	@	$ 6.24	(1½T)	197
	27.9 hrs	@	$ 2.08	(½T)	58
Annual Leave	4 wks	@	$208.35	(+17½%)	833
Sick Leave	8 days	@	$ 25.33		203
Long Service Leave	0.867 wks	@	$177.3		154
Bereavement Leave	0.5 days	@	$ 25.33		13
					10,703

F.L.U. ($120.00 per week)

					$
Mon-Fri	33.0 hrs	@	$3.00		99.00
Saturday	3.5 hrs	@	$3.75	(1¼T)	13.13
Sunday	3.5 hrs	@	$4.50	(1½T)	15.75
	40.0 hrs				127.88
Annually	52.14 wks	@	$127.88		6,668
Public Holidays	31.5 hrs	@	$ 4.50	(1½T)	142
	27.9 hrs	@	$ 1.50	(½T)	42
Annual Leave	4 wks	@	$150.26	(+17½%)	601
Sick Leave	8 days	@	$ 18.27		146
Long Service Leave	0.867 wks	@	$127.88		111
Bereavement Leave	0.5 days	@	$ 18.27		9
					7,719

Operator + F.L.U. $18,422

APPENDIX 10

EFFECT OF IMPUTED INTEREST ON LAND AND IMPUTED LABOUR ON THE COST OF PRODUCTION CALCULATION

(i) Imputed Interest on Land

An example of the magnitude of the effect of the increase in capital value of land is given by allowing the capital value to only increase by the level of inflation (assumed to be 24.6 per cent as measured by the Consumer Price Index) from the 1967-68 to 1969-70 survey period to the 1971-72 to 1973-74 survey period. Applying an inflation rate of 24.6 per cent the capital value of land for the 1971-72 to 1973-74 survey period becomes $299 per hectare or $46,046 per farm instead of $95,959. The adjusted value of imputed interest on land will thus be $3,780 per farm instead of $7,881. Using this adjusted value of imputed interest on land the cost of producing market milk as given for the average of the survey period becomes 11.35 cents per litre instead of 13.34 cents (see Table A6.1).

TABLE A6.1

COST STRUCTURE FOR AVERAGE OF SURVEY 1971/72 TO 1973-74 USING ADJUSTED CAPITAL VALUE OF LAND

Item	$	$
Total Cash Costs		10,009
Depreciation	2,360	
Interest on Land	3,780	
Interest on Other Farm Capital	3,411	
Imputed Labour Costs	8,287	
Total Imputed Costs		17,838
Total Costs		27,847
Sideline Costs		4,382
Net Costs		23,465
Cost per litre (cents)		11.35

(ii) Imputed Labour

The estimated labour requirement for milking comprises 35 per cent of total estimated labour requirement on the dairy farm. The estimated labour requirement for milking was based on a throughput figure of 25 cows per man hour (see Appendix 1). If in fact the throughput figure was 27 cows per man hour instead of 25 then the yearly labour commitment for milking would be 20.7 man hours per cow, or 1,613 man hours per year for the average herd. Similarly labour allowance for other activities on the dairy farm may have been over estimated.

If the following labour allowance is assumed then the total labour commitment becomes 80 man hours per week instead of 96 man hours per week.

	Man Hours
Dairy Herd (78 head)	
- milking	1,613
- cleaning	569
- feeding	218
- breeding/calving	150
- general husbandry	359
Beef Herd (25 head)	293
Crop and Pasture Activities (154 hectare farm)	451
General Farm Activities	495
TOTAL	4,148

AVERAGE HOURS PER WEEK 80 man hours

Using the original assumption of the first forty hours being worked by the operator, the second forty hours by the family labour unit (See Appendix 2), the need for a casual labour component is thus eliminated. The imputed labour cost for the average of the survey years thus becomes $7,033 instead of $8,287 and the cost of producing market milk as given for the average of the survey period becomes 12.73 cents per litre instead of 13.34 cents (see Table A6.2).

TABLE A6.2

COST STRUCTURE FOR AVERAGE OF SURVEY 1971-72 TO 1972-73 USING ADJUSTED VALUE OF IMPUTED LABOUR

Item	$	$
Total Cash Costs		10,009
Depreciation	2,360	
Interest on Farm Capital	11,292	
Imputed Labour Cost	7,033	
Total Imputed Cost		20,685
Total Costs		30,694
Sideline Costs		4,382
Net Cost		26,312
Cost per litre (cents)		12.73

If both the adjusted capital value of land and the adjusted value of imputed labour is used then the cost of producing market milk for the average of the survey years becomes 10.75 cents per litre instead of 13.34 cents per litre (see Table A6.3).

TABLE A6.3

COST STRUCTURE FOR AVERAGE OF SURVEY 1971-72 TO 1972-73 USING ADJUSTED CAPITAL VALUE OF LAND AND ADJUSTED VALUE OF IMPUTED LABOUR

Item	$	$
Total Cash Costs		10,009
Depreciation	2,360	
Interest on Farm Capital	7,191	
Imputed Labour Cost	7,033	
Total Imputed Cost		16,584
Total Cost		26,593
Sideline Costs		4,382
Net Cost		22,211
Cost per litre (cents)		10.75

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