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Rural Business Research

The University of Nottingham

Farm Business Survey

2015/2016

Dairy Farming in England

Helen McHoul, Davina Smith,
Philip Robertson and
Paul Wilson

RBR

independent research, data and analysis

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Foreword to the First Series

This report is one of a series being produced based on the results of the Farm Business Survey (FBS) for England. The annual Farm Business Survey is the most comprehensive and independent survey of farm incomes and provides a definitive data source on the economic and physical performance of farm businesses in England. It is conducted by a Consortium comprising the Universities of Cambridge, Newcastle upon Tyne, Nottingham and Reading, and Askham Bryan, Duchy and Imperial Colleges. The Consortium is led by the University of Nottingham and its members work in partnership, using uniform and standard practices in reporting on their findings to ensure consistent data quality, accuracy and validity. The Survey is financed by Defra and the Consortium values greatly the input of their staff.

These detailed reports for various farm types and enterprises are in addition to the comprehensive Farm Business Survey Reports for Government Office Regions published at www.farmbusinesssurvey.co.uk. The Consortium is seeking by these additional reports to ensure that timely and relevant information is available to farmers, consultants, advisers and other organisations and individuals interested in farming and land management. The analysis and publication of these reports uses data from farm businesses across England, with an individual member of the Consortium undertaking the research analysis. In line with the ethos of the Consortium, these reports present results in such a way as to ensure a significant element of continuity and consistency from one report to the other, whilst also ensuring that each report captures the contemporary issues of relevance to the sector of agriculture in England to which it relates.

We believe these reports will make a valuable and useful contribution to the farming industry and we commend them to you.

Prof. Martin Seabrook

(Chief Executive of the Consortium)

Spring 2007

Foreword to the Eleventh Series

With this eleventh series of reports on the economics of agriculture and horticulture in England from *Rural Business Research (RBR)*, our focus of providing independent data and analysis to the individual sectors has arguably never been of such importance. The collective decision of the UK voting public on the 23 June 2016 to leave the EU will have large impacts on agricultural and horticultural sectors. Issues of policy, trade, exchange rates and labour availability are now very much front and centre in the minds of many businesses. Ensuring that the enterprises that constitute the farm business are profitable is of even greater importance given the uncertainty which now exists in the industry. Brexit will also bring opportunities, and those seeking to make the most of the opportunities that will arise will need independent data to support effective decision making. In this eleventh series, RBR seeks to provide these independent data in a revised and succinct format which places the data results at the heart of each report; we have focused our succinct comments on key results within the tables to draw to the attention of readers the central highlights. Our increasing focus on the presentation of data and results flows from internal and external feedback.

Setting the context to this series, data from the Farm Business Survey (FBS) for the 2015/16 financial year, shows that average Farm Business Income (FBI) decreased by 21% to £31,400 per farm. Examining results by farm type, on average, only General Cropping, Less Favoured Areas (LFA) Grazing Livestock and Horticulture recorded increases in FBI; by contrast Dairy and Specialist Pig farms recorded FBI decreases of around 50% on 2014/15 levels. Average FBI was at its lowest point for a number of years in 2015/16. The immediate impact of Brexit on exchange rates has however led to recent increases in commodity prices, and the overall outlook for 2016/17 is consequently more positive, though farm type variation remains and not all sectors are likely to witness improvements for 2016/17. Moving forward however, businesses will need to understand the impact of the exchange rate movement on the costs incurred, and a greater focus on budgeting and cost management will be the order of the day in order to capitalise on the exchange rate benefit. Cost comparison from the independent data produced within these reports provides valuable information in relation to costs and returns across each sector to aid managers in this respect.

With respect to the policy environment for agriculture and horticulture moving forward, the rigorous and independent FBS data presented in these reports will be of crucial importance for evidenced-based policy making. Our research work within the FBS programme could not be possible without the direct support of our farmer and grower co-operators and the wider support of agricultural and horticultural businesses and sector stakeholders; our thanks are given to them all.

Professor Paul Wilson

Chief Executive Officer, Rural Business Research

March 2017

www.ruralbusinessresearch.co.uk

Acknowledgements

Rural Business Research thanks sincerely all the farmers who have voluntarily provided records and information on which the annual Farm Business Survey, and this report, is based.

The basic information on which this report is based was collected on behalf of, and largely financed by, the Department for Environment, Food and Rural Affairs and is Crown Copyright.

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Summary: Key Findings

The Dairying Sector

- During 2015/16, dairy farming in the UK witnessed a sharp decrease in milk prices with a yearly average price of 23.87 pence per litre (ppl) compared to 29.64 ppl in 2014/15 which represents a fall of 19%.

- Average milk yield increased by 0.5% to just over 7,900 litres per cow (lpc), building on the previous year's increase (7,717 to 7,870 lpc).

- The national herd size increased by approximately 46,000 cows to a level of 1,906,000 cows and returned to a level not seen since 2008/09.

Farm level results

- Farm Business Survey data from 2015/16 shows that the average Farm Business Income (FBI) from dairying was £291/ha, which at the average farm size equates to an FBI of approximately £42,200, representing a decrease of 50% from 2014/15.

- Average FBI on all conventional dairy farms in 2015/16 was £283/ha (£41,318 per farm), whilst on organic farms average FBI was £458/ha (£61,830 per farm).

Dairy Enterprise Results

- Enterprise-level analysis shows that in 2015/16 the conventional herd total dairy output fell further below the level achieved by the organic herd compared to 2014/15 (organic herds total dairy output fell by 7% to £2,149/cow, while the conventional herd total dairy output fell by 19% to £1,866/cow). These outcomes were a result of the fall in milk price from 30.5 ppl to 25.0 ppl and drop in yield of 182 litres to 7694 lpc for the conventional herd, compared to the fall in milk price from 38.6 ppl to 35.8 ppl and reduction in yield of 112 litres to 6150 lpc for the organic herd.

- Lowland and LFA dairy herds saw a decrease in average milk price of 5.5 ppl and 5.9 ppl respectively, with decreases in GM/cow of £246 for lowland herds and £270 for LFA herds. In 2015/16, at the average herd sizes, the total farm GM for lowland herds was just under £175,000 compared to approximately £221,000 in 2014/15 and for LFA farms the total farm GM was approximately £117,750 compared to just under £149,000 in 2014/15.

Chapter 1: The Dairying Sector

1.1: Overview

- During 2015/16, dairy farming in the UK witnessed a further decrease in milk prices, with a yearly average price of 23.87 pence per litre (ppl) compared to 29.64 ppl in 2014/15 (Figure 1.1) and 32.59 ppl in 2013/14.

- In a continuation of the recent trend, the key input costs of feed, fertiliser and energy witnessed decreases on the levels of previous years, whilst the cost of vet and medicines continued to rise (Figure 1.2).

- Annual milk production in the UK for 2015/16 increased by 435 million litres (+3%), a smaller increase than the previous year of 700 million litres (+ 5.1%) (Figure 1.3)

- Average milk yield continued to increase, although at a lower rate of 0.5% to just over 7,900 litres per cow (lpc), compared to the previous year's increases of 2% in 2014/15 (7,717 lpc to 7,870 lpc) and 5% in 2013/14 (7,327 lpc to 7,717 lpc) (Figure 1.4)

- The national herd size continued to increase by a further 46,000 cows to a level of 1,906,000 cows and returned to a level not seen since 2008/09. (Figure 1.4)

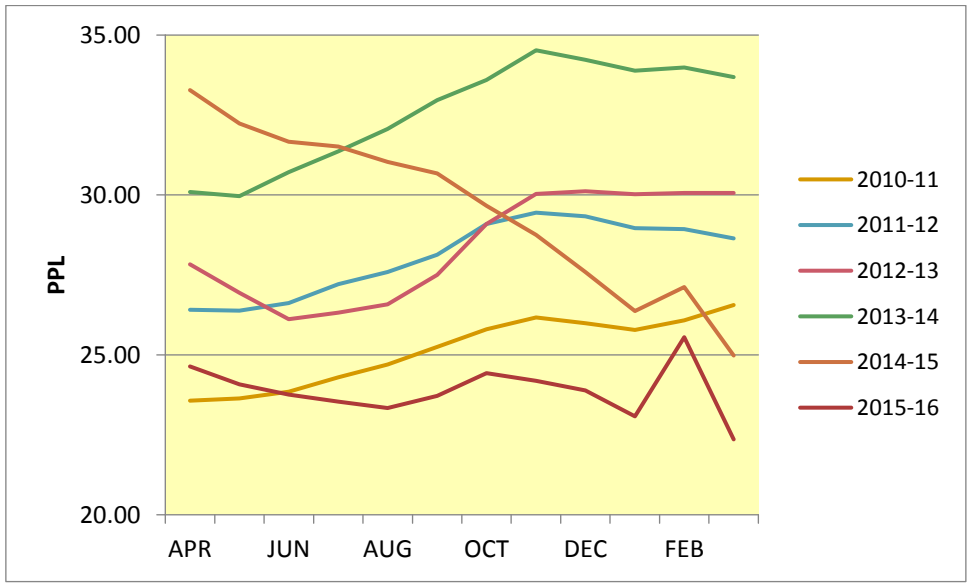
- In December 2016, there were approximately 156 fewer milk producers in England and Wales than a year earlier; a fall of 1.6%. Since 2008, numbers have fallen by 2,431, a decrease of 20% (Figure 1.5)

Table 1.1: Average Annual Milk Prices

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Average annual price (ppl)	25.11	28.03	28.35	32.59	29.64	23.87

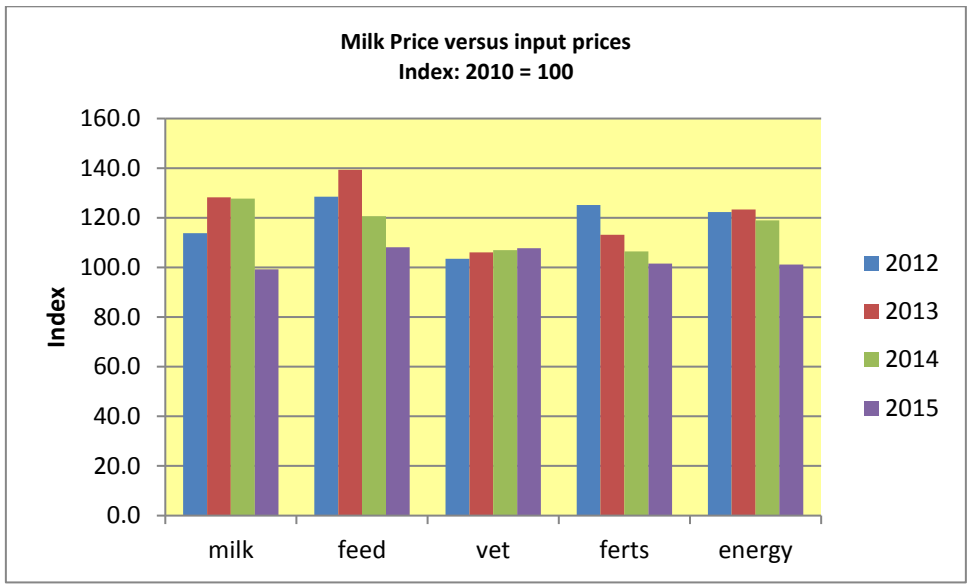
Source: Defra (2017a); Milk Price Surveys

Figure 1.1: Average Farmgate Milk Prices (UK)



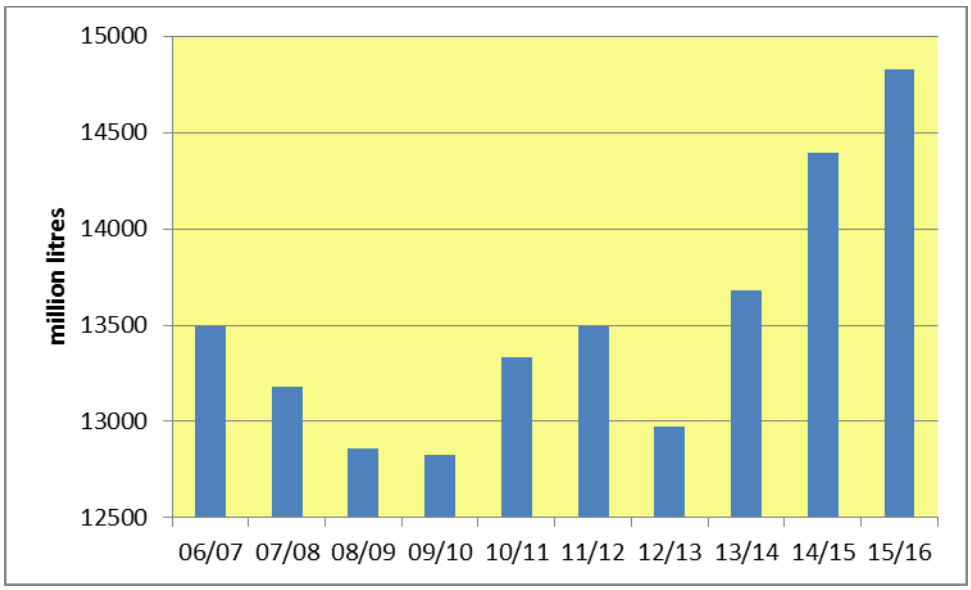
Source: Defra (2017b); Milk Price Surveys

Figure 1.2: Milk and Input Prices (UK)



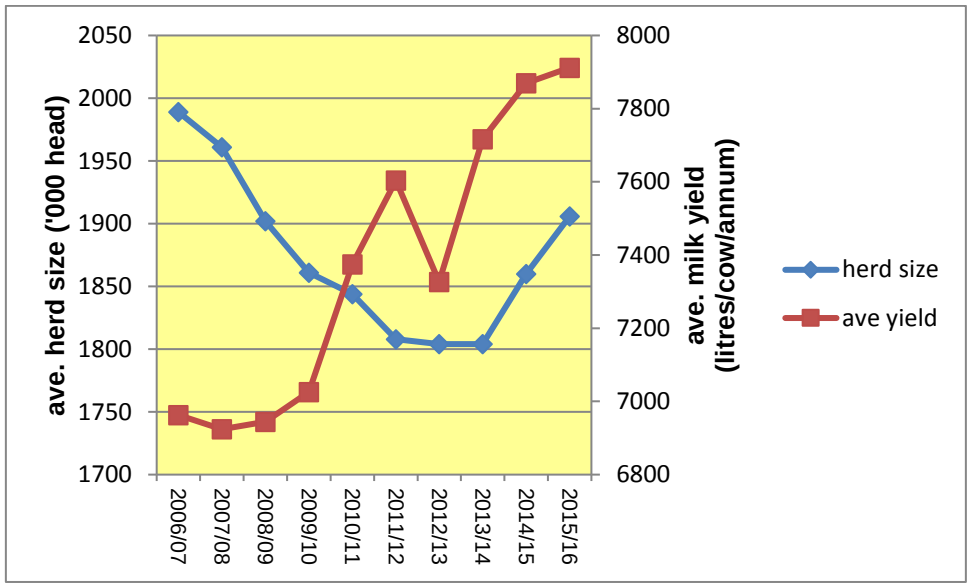
Source: Defra (2017c); Agriculture in the UK 2015

Figure 1.3: UK Annual Milk Production (UK)



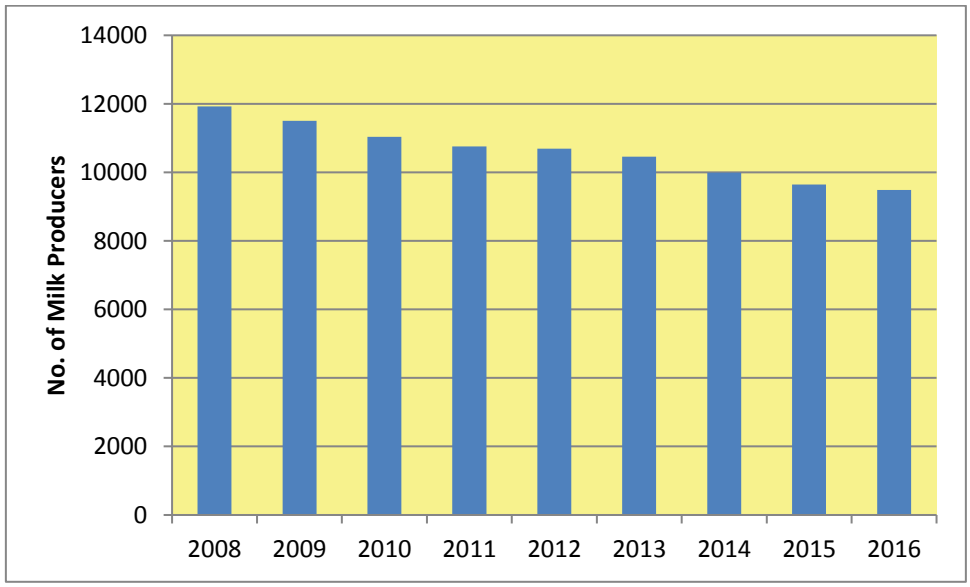
Source: AHDB Dairy (2017a)

Figure 1.4: UK Herd Size and Average Milk Yield (UK)



Source: AHDB Dairy (2017b)

Figure 1.5: Number of Milk Producers (England & Wales)



Source: AHDB Dairy (2017c)

1.2: Structure of Report

The above sections have described the market environment in which the dairy sector has been operating during the 2015/16 financial year, whilst making reference to the economic and market conditions over recent years. The remaining chapters of this report are as follows:

- Chapter 2 details the data source and data analysis undertaken
- Chapter 3 provides the results of the data analysis

Chapter 2: Data and Methodology

2.1: Data

The data used in this report are derived from the Farm Business Survey returns for England for those farms classed as Dairy Farms[1] and relate to the outputs, inputs and returns to each farm, together with total farm area and farm size data. Table 2.1 below details the number of observations for the per hectare farm results, in each category by farm type (All, Lowland Conventional, Less Favoured Area (LFA) Conventional and Organic), by farm size categories and by lower and upper performance quartiles. Table 2.2 details the number of observations for the enterprise level results, in each category by farm type (All, Lowland Conventional, LFA Conventional and Organic), by herd size categories and by lower and upper performance quartiles.

For the 2015/16 edition of this report, the farm type classification is based on 2010 Standard Outputs.

Table 2.1: Observations by Category: Farm-Level Data 2015/16

Category		All	Lowland Conventional	LFA Conventional[1]	Fully Organic [2]
Number of farms		255	168	54	33
Farm Size	<60 hectares	-	16	10	-
	60-120 hectares	-	71	21	-
	>120 hectares	-	81	23	-
Performance by ratio output:costs	Lower quartile	-	39	14	-
	Upper quartile	-	45	12	-

1. Holdings on which dairy cows account for more than two thirds of the total Standard Output for the farm. A holding is classified as a Less Favoured Area (LFA) holding if 50 percent or more of its total area is in the LFA and a lowland holding if less than 50 per cent of its total area is in the LFA.

2. In-conversion organic farms are included in the conventional groups.

Table 2.2: Observations by Category: Enterprise-Level Data 2015/16

Category		All	Lowland Conventional	LFA Conventional [1]	Fully Organic [2]
Number of farms		237	155	50	32
Farm Size	<80 cows	-	27	13	-
	80-130 cows	-	35	18	-
	>130 cows	-	93	19	-
Performance by GM/cow	Lower quartile	-	40	13	-
	Upper quartile	-	37	12	-

1. Holdings on which dairy cows account for more than two thirds of the total Standard Output for the farm. A holding is classified as a Less Favoured Area (LFA) holding if 50 percent or more of its total area is in the LFA and a lowland holding if less than 50 per cent of its total area is in the LFA.

2. In-conversion organic farms are included in the conventional groups.

2.2: Methodology

The farm and enterprise level data were weighted using the Farm Business Survey weights and the subsequent results presented per hectare (farm level analysis) or per cow (gross margin analysis) basis. Descriptive results with the mean (average) for each category are reported as detailed in Chapter 3.

Chapter 3: Results

3.1: Farm Level Results

- Farm Business Survey data from 2015/16 shows that the average Farm Business Income (FBI) from dairying was £291/ha, which at the average farm size equates to an FBI of approximately £42,200, representing a decrease of 47% from 2014/15 (Table 3.1).

- Average FBI on conventional dairy farms in 2015/16 was £283/ha (£41,318 per farm), whilst on organic farms average FBI was £458/ha (£61,830 per farm). These results represent a decrease in FBI of 49% for conventional farms and a decrease of 13% for organic farms (Table 3.1). Notably, organic FBI reported on a per ha basis, is 62% higher than conventional dairy farms average FBI in 2015/16.

- Management and Investment Income (MII) across all dairy farms decreased by £285/ha to -£31/ha in 2015/16. This equates to an average MII of -£4,495 per farm, compared to £38,600 in 2014/15 (Table 3.1).

- Average MII on conventional dairy farms fell by 116% in 2015/16 to -£41/ha (-£5,986 per farm), whilst on organic farms average FBI reduced by 27% to £179/ha (£24,165 per farm) (Table 3.1).

- Average FBI on lowland dairy farms was £264/ha (a decrease from £552/ha in 2014/15). For LFA dairy farms, average FBI was £381/ha compared to £558/ha in 2014/15 (Table 3.2). This equates to a FBI on a farm level for lowland dairy farms of £39,336 and LFA dairy farms of £49,911 in 2015/16.

- Table 3.3 illustrates the reliance on family labour typically found on the smaller lowland dairy farms, i.e. less than 60 hectares, which resulted in a familiar, lower MII than was achieved for the two larger size groups presented. The smaller size group achieved a MII of -£556/ha, compared to -£95/ha and -£12/ha for the 60 to 120 hectares and greater than 120 hectares groups, respectively.

- As reported in the previous 10 versions of this report, a regular feature of LFA income results shows that LFA dairy farms within the largest size group operated less intensive systems, achieving the lowest total farm output whilst incurring the lowest variable and fixed costs. The respective FBIs for the less than 60 hectares, the 60 to 120 hectares and the greater than 120 hectares size groups are £22,402, £33,582 and £74,907 (Table 3.4).

- Profitability analysis reveals that in 2015/16, FBI for the upper quartile of lowland dairy farms was £895/ha (£1,067/ha in 2014/15) compared to -£330/ha (-£82/ha in 2014/15) for the lower quartile. The upper quartile group has the largest average farm size at 158ha, compared to 107ha for the lower quartile (Table 3.5).

- An analysis of FBI by LFA quartile groupings reveals that the upper quartile achieved a milk output that was £863/ha greater than that achieved by the lower quartile (in comparison with £359/ha higher in 2014/15) but only incurred variable costs of £23/ha higher than the lower quartile. In 2015/16, total variable costs for the lower quartile group fell by 23% to £1,200/ha, whilst the upper quartile's total variable costs remained fairly stable, increasing by less than 1% to £1,223/ha. At the average farm sizes for these groups, the lower and upper quartiles achieved FBI returns of -£3,030 and £138,890 respectively (Table 3.6).

Table 3.1: Outputs, Inputs and Margins for All Farms, Conventional and Organic

	All		Conventional		Organic	
	14/15	15/16	*14/15*	15/16	*14/15*	15/16
Number of farms	*286*	255	*254*	222	*32*	33
Area (ha)[#]	*152*	145	*152*	146	*141*	135
Output	£/ha		£/ha		£/ha	
Milk	*2728*	2240	*2755*	2254	*2048*	1972
Calf	*122*	128	*123*	130	*84*	83
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*1*	14	*1*	15	*0*	8
Herd Replacement	*-238*	-207	*-241*	-210	*-177*	-138
Total Dairy Output	***2613***	**2175**	***2639***	**2188**	***1955***	**1925**
Other Livestock	*494*	439	*501*	447	*319*	282
Other	*517*	447	*521*	450	*430*	387
Total Farm Output	***3625***	**3061**	***3661***	**3085**	***2704***	**2594**
Variable Costs						
Home-grown Concentrates	*60*	55	*59*	54	*85*	71
Purchased Concentrates	*853*	702	*866*	713	*533*	484
Coarse Fodder	*72*	59	*74*	60	*34*	31
Other Livestock Concentrates	*10*	8	*10*	8	*1*	0
Vet and Medicine	*104*	97	*106*	100	*55*	56
Other Livestock Costs	*257*	241	*259*	242	*225*	222
Seed	*37*	33	*38*	33	*29*	25
Fertiliser	*128*	121	*133*	127	*7*	10
Crop Protection	*39*	35	*40*	36	*0*	0
Other Crop Costs	*25*	22	*26*	23	*11*	11
Total Variable Costs	***1586***	**1373**	***1609***	**1396**	***980***	**911**
Fixed Costs						
Labour	*387*	390	*389*	394	*319*	318
Contract	*183*	163	*185*	165	*133*	136
Machinery Depreciation	*195*	185	*197*	187	*142*	144
Other Machinery	*214*	179	*216*	181	*150*	142
Miscellaneous	*294*	273	*296*	274	*245*	247
Rent and Rental Equivalent	*311*	314	*313*	316	*276*	286
Total Fixed Costs	***1584***	**1504**	***1596***	**1515**	***1264***	**1274**
Net Farm Income	***455***	**185**	***455***	**173**	***459***	**409**
Farmer / Spouse Labour	*201*	215	*200*	215	*214*	230
Management and Investment Income (MII)	***254***	**-31**	***255***	**-41**	***245***	**179**
Farm Business Income FBI)	***552***	**291**	***553***	**283**	***529***	**458**

The area used is the total farm area including woodland, roads, water, area not used for agriculture

Table 3.2: Outputs, Inputs and Margins: Lowland and LFA Farms

	Lowland		LFA	
	14/15	15/16	*14/15*	15/16
Number of farms	*196*	168	*58*	54
Area (ha)#	*158*	149	*126*	131
	£/ha		£/ha	
Output				
Milk	*2803*	2313	*2480*	1948
Calf	*121*	126	*136*	149
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*2*	15	*0*	14
Herd Replacement	*-239*	-212	*-249*	-198
Total Dairy Output	***2687***	**2242**	***2368***	**1912**
Other Livestock	*499*	454	*512*	412
Other	*556*	485	*318*	268
Total Farm Output	***3742***	**3181**	***3198***	**2591**
Variable Costs				
Home-grown Concentrates	*62*	55	*45*	48
Purchased Concentrates	*875*	730	*812*	627
Coarse Fodder	*72*	62	*82*	51
Other Livestock Concentrates	*12*	10	*0*	0
Vet and Medicine	*106*	101	*104*	90
Other Livestock Costs	*259*	247	*257*	215
Seed	*42*	38	*13*	10
Fertiliser	*136*	129	*115*	115
Crop Protection	*46*	42	*9*	8
Other Crop Costs	*27*	25	*17*	13
Total Variable Costs	***1636***	**1439**	***1455***	**1177**
Fixed Costs				
Labour	*404*	409	*303*	314
Contract	*195*	174	*128*	114
Machinery Depreciation	*198*	191	*189*	164
Other Machinery	*224*	190	*175*	136
Miscellaneous	*300*	286	*271*	215
Rent and Rental Equivalent	*325*	327	*242*	256
Total Fixed Costs	***1647***	**1577**	***1308***	**1198**
Net Farm Income	***458***	**165**	***435***	**216**
Farmer / Spouse Labour	*194*	212	*235*	230
Management and Investment Income (MII)	***264***	**-47**	***199***	**-14**
Farm Business Income (FBI)	***552***	**264**	***558***	**381**

The area used is the total farm area including woodland, roads, water, area not used for agriculture

Table 3.3: Outputs, Inputs and Margins: Lowland by Farm Size

Lowland	< 60 ha [small]		60 – 120 ha [medium]		>120 ha [large]	
	14/15	15/16	*14/15*	15/16	*14/15*	15/16
Number of farms	*22*	16	*79*	71	*95*	81
Area (ha) #	*47*	48	*89*	86	*225*	215
	£/ha		£/ha		£/ha	
Output						
Milk	*2988*	2097	*3528*	2985	*2602*	2123
Calf	*198*	195	*169*	189	*105*	105
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*27*	15	*2*	21	*1*	13
Herd Replacement	*-262*	-226	*-339*	-276	*-211*	-193
Total Dairy Output	***2950***	**2082**	***3360***	**2919**	***2496***	**2048**
Other Livestock	*630*	459	*617*	519	*462*	435
Other	*322*	251	*396*	318	*608*	544
Total Farm Output	***3902***	**2792**	***4373***	**3755**	***3566***	**3027**
Variable Costs						
Home-grown Concentrates	*51*	35	*46*	41	*66*	60
Purchased Concentrates	*974*	729	*1097*	922	*812*	673
Coarse Fodder	*114*	110	*90*	97	*66*	49
Other Livestock Concentrates	*2*	0	*0*	2	*16*	12
Vet and Medicine	*128*	98	*121*	122	*101*	95
Other Livestock Costs	*287*	246	*356*	316	*232*	227
Seed	*21*	11	*33*	25	*45*	43
Fertiliser	*155*	127	*152*	146	*131*	125
Crop Protection	*10*	6	*22*	21	*53*	49
Other Crop Costs	*39*	26	*25*	24	*27*	25
Total Variable Costs	***1782***	**1389**	***1942***	**1716**	***1549***	**1359**
Fixed Costs						
Labour	*194*	158	*392*	397	*416*	423
Contract	*154*	130	*226*	197	*188*	169
Machinery Depreciation	*251*	216	*240*	240	*185*	175
Other Machinery	*256*	164	*228*	192	*222*	190
Miscellaneous	*413*	356	*364*	345	*276*	265
Rent and Rental Equivalent	*344*	306	*357*	359	*316*	319
Total Fixed Costs	***1612***	**1329**	***1807***	**1730**	***1602***	**1542**
Net Farm Income	***508***	**74**	***623***	**309**	***415***	**126**
Farmer / Spouse Labour	*706*	630	*357*	404	*131*	138
Management and Investment Income (MII)	***-198***	**-556**	***266***	**-95**	***284***	**-12**
Farm Business Income (FBI)	***601***	**149**	***740***	**445**	***499***	**215**

The area used is the total farm area including woodland, roads, water, area not used for agriculture

Table 3.4: Outputs, Inputs and Margins: LFA by Farm Size

LFA	< 60 ha [small]		60 – 120 ha [medium]		>120 ha [large]	
	14/15	15/16	*14/15*	15/16	*14/15*	15/16
Number of farms	*14*	10	*22*	21	*22*	23
Area (ha)[#]	*45*	46	*92*	87	*201*	203
Output	£/ha		£/ha		£/ha	
Milk	*3281*	2434	*2803*	2210	*2252*	1814
Calf	*228*	167	*187*	227	*105*	122
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*0*	17	*0*	16	*0*	12
Herd Replacement	*-372*	-250	*-273*	-182	*-224*	-199
Total Dairy Output	***3136***	**2368**	***2717***	**2272**	***2133***	**1749**
Other Livestock	*503*	387	*426*	395	*548*	420
Other	*496*	504	*256*	225	*319*	258
Total Farm Output	*4135*	3259	*3398*	2891	*3000*	2426
Variable Costs						
Home-grown Concentrates	*21*	48	*35*	33	*53*	52
Purchased Concentrates	*1059*	870	*938*	812	*731*	543
Coarse Fodder	*149*	49	*109*	58	*63*	49
Other Livestock Concentrates	*0*	0	*0*	0	*0*	0
Vet and Medicine	*118*	86	*116*	106	*97*	85
Other Livestock Costs	*365*	265	*256*	253	*244*	198
Seed	*11*	6	*8*	12	*16*	10
Fertiliser	*143*	122	*117*	121	*110*	112
Crop Protection	*8*	2	*8*	10	*10*	9
Other Crop Costs	*16*	11	*21*	11	*16*	13
Total Variable Costs	***1890***	**1459**	***1607***	**1414**	***1340***	**1072**
Fixed Costs						
Labour	*254*	314	*320*	303	*303*	317
Contract	*181*	132	*124*	121	*123*	110
Machinery Depreciation	*246*	269	*239*	202	*163*	142
Other Machinery	*223*	194	*194*	156	*161*	123
Miscellaneous	*396*	349	*330*	287	*231*	178
Rent and Rental Equivalent	*249*	223	*250*	256	*238*	259
Total Fixed Costs	***1550***	**1481**	***1456***	**1324**	***1219***	**1129**
Net Farm Income	***695***	**319**	***335***	**152**	***441***	**226**
Farmer / Spouse Labour	*610*	602	*332*	355	*150*	152
Management and Investment Income (MII)	***85***	**-283**	***3***	**-203**	***291***	**74**
Farm Business Income (FBI)	***849***	**487**	***537***	**386**	***529***	**369**

The area used is the total farm area including woodland, roads, water, area not used for agriculture

Table 3.5: Outputs, Inputs and Margins: Lowland by Profitability Quartiles

Lowland	Lower quartile		Upper quartile	
	14/15	15/16	*14/15*	15/16
Number of farms	*54*	45	*45*	39
Area (ha)[#]	*109*	107	*183*	158
Output	£/ha		£/ha	
Milk	*2309*	1851	*3185*	3047
Calf	*125*	133	*136*	158
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*5*	14	*1*	17
Herd Replacement	*-230*	-245	*-236*	-258
Total Dairy Output	***2209***	**1751**	***3086***	**2964**
Other Livestock	*473*	412	*508*	566
Other	*499*	365	*608*	444
Total Farm Output	***3181***	**2528**	***4202***	**3975**
Variable Costs				
Home-grown Concentrates		61	*55*	59
Purchased Concentrates	*843*	725	*867*	769
Coarse Fodder	*60*	65	*97*	81
Other Livestock Concentrates	*12*	12	*0*	5
Vet and Medicine	*102*	99	*100*	111
Other Livestock Costs	*289*	247	*254*	271
Seed	*43*	34	*41*	38
Fertiliser	*131*	114	*139*	154
Crop Protection	*32*	25	*51*	38
Other Crop Costs	*36*	18	*25*	22
Total Variable Costs	***1622***	**1400**	***1627***	**1546**
Fixed Costs				
Labour	*409*	364	*380*	441
Contract	*180*	158	*248*	217
Machinery Depreciation	*219*	206	*175*	182
Other Machinery	*246*	195	*202*	171
Miscellaneous	*323*	296	*287*	280
Rent and Rental Equivalent	*305*	309	*337*	343
Total Fixed Costs	***1683***	**1528**	***1629***	**1633**
Net Farm Income	***-124***	**-401**	***946***	**796**
Farmer / Spouse Labour	*273*	315	*161*	189
Management and Investment Income (MII)	***-397***	**-716**	***785***	**607**
Farm Business Income (FBI)	***-82***	**-330**	***1067***	**895**

The area used is the total farm area including woodland, roads, water, area not used for agriculture. The upper and lower quartiles represent the top and bottom 25% of the total population, which can produce sample numbers per quartile that are not equal.

Table 3.6: Outputs, Inputs and Margins: LFA by Profitability Quartiles

LFA	Lower quartile		Upper quartile	
	14/15	15/16	*14/15*	15/16
Number of farms	*15*	12	*15*	14
Area (ha)[#]	*99*	101	*143*	170
Output	£/ha		£/ha	
Milk	*2147*	1526	*2506*	2389
Calf	*137*	140	*165*	188
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*0*	13	*0*	16
Herd Replacement	*-281*	-188	*-247*	-222
Total Dairy Output	***2003***	**1491**	***2425***	**2371**
Other Livestock	*508*	458	*503*	475
Other	*264*	202	*351*	294
Total Farm Output	***2776***	**2151**	***3279***	**3140**
Variable Costs				
Home-grown Concentrates	*25*	14	*48*	56
Purchased Concentrates	*866*	643	*654*	658
Coarse Fodder	*151*	81	*67*	38
Other Livestock Concentrates	*0*	0	*0*	0
Vet and Medicine	*118*	87	*94*	97
Other Livestock Costs	*250*	220	*197*	210
Seed	*11*	6	*13*	13
Fertiliser	*111*	135	*123*	122
Crop Protection	*5*	3	*10*	14
Other Crop Costs	*16*	10	*12*	15
Total Variable Costs	***1551***	**1200**	***1218***	**1223**
Fixed Costs				
Labour	*252*	385	*324*	362
Contract	*146*	86	*96*	128
Machinery Depreciation	*208*	208	*150*	162
Other Machinery	*176*	156	*142*	147
Miscellaneous	*281*	229	*268*	202
Rent and Rental Equivalent	*225*	216	*255*	295
Total Fixed Costs	***1288***	**1278**	***1234***	**1296**
Net Farm Income	***-63***	**-327**	***827***	**621**
Farmer / Spouse Labour	*331*	278	*175*	174
Management and Investment Income (MII)	***-395***	**-605**	***652***	**448**
Farm Business Income (FBI)	***105***	**-30**	***1008***	**817**

The area used is the total farm area including woodland, roads, water, area not used for agriculture. The upper and lower quartiles represent the top and bottom 25% of the total population, which can produce sample numbers per quartile that are not equal.

3.2: Dairy Enterprise Results: Gross Margins

- Enterprise-level analysis shows that in 2015/16, the conventional herd total dairy output remained below the level achieved by the organic herd as was reported in 2014/15. Organic herds total dairy output fell by 7% to £2,149/cow, whilst the conventional herd total dairy output fell by 19% to £1,866/cow. These outcomes were driven by the fall in milk price and drop in yield for the conventional herd (from 30.5ppl to 25.0ppl, with a drop in yield of 182 litres to 7694 lpc), compared to a smaller reduction in milk price and yield for the organic herd (from 38.6ppl to 35.8ppl with a drop in yield of 112 litres to 6150 lpc) (Table 3.7).

- The higher milk price achieved by organic herds, coupled with notably lower concentrate feed costs, resulted in organic herds achieving a gross margin of £1,335/cow compared to £964/cow for the conventional dairy herds. The difference between the organic and dairy herd gross margins was wider than in 2014/15 whereby conventional herds produced a gross margin of £1,215/cow compared to the organic herd gross margin of £1,379/cow (Table 3.7).

- The higher milk price achieved by organic herds, coupled with their lower concentrate feed costs, resulted in organic herds achieving a margin over concentrate performance that exceeded that of conventional herds by 9.61ppl, compared to the previous year's excess of 7.22ppl (Figure 3.1).

- Lowland and LFA dairy herds saw a decrease in average milk price of 5.5ppl and 5.9ppl respectively, with decreases in GM/cow of £246 for lowland herds and £270 for LFA herds. In 2015/16, at the average herd sizes, the total farm GM for lowland herds was £174,944 compared to £220,720 in 2014/15; for LFA farms total farm GM was £117,747 compared to £148,869 in 2014/15 (Table 3.8).

- For lowland herds, as noted in previous reports, as herd size increases, so do milk price, milk output/cow, total dairy output/cow and total gross margin/cow. Gross margins per cow for the less than 80 cows, the 80 to 130 cows and the greater than 130 cows groups were £765, £911 and £1,023 respectively. These margins per cow equate to gross margins per litre of 11.33ppl, 12.60ppl and 12.70ppl respectively, i.e. the smallest sized group achieved the lowest gross margin per litre (Table 3.9).

- The LFA dairy herds show a slightly different pattern compared to the lowland herds when considering impact of herd size. Although the small, medium and large herd sizes show milk price increases as herd size increases, the highest dairy output and gross margin per cow was achieved by the 80-130 cows group. In 2015/16, all herd sizes received lower milk prices than in the previous year, equating to a 6.9ppl decrease for the small size group, a 6.3 ppl decrease for the medium size group and 5.5 ppl fall for the large size group.
  The fall in GM between the two years is -£251 to £710/cow, -£190 to £890/cow and -£298 to £786/cow for the small, medium and large size groups respectively (Table 3.10). Also, the GMs for the LFA herds are lower than that of the lowland herds across all three size groups.

- Lowland dairy farms in the upper quartile (based on GM/cow) produced on average around 2,133lpc more than those in the lower quartile, with average milk prices for the upper quartile exceeding those of the lower quartile by 4.4ppl (Table 3.11). In 2014/15, the difference in milk price was 1.6ppl between the upper and lower quartile for lowland dairy farms.

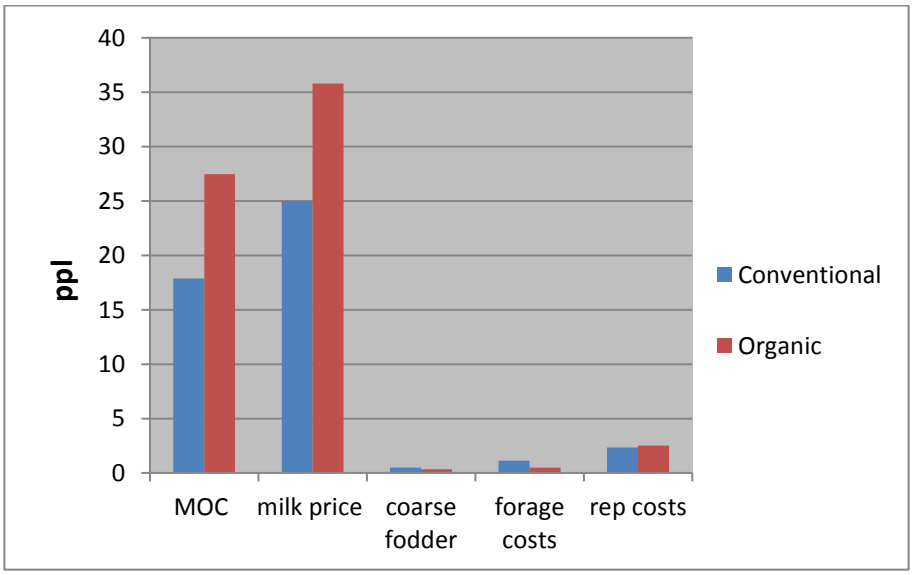
- In 2014/15, feed concentrate to milk conversion rates of 7.9ppl and 9.4ppl were recorded for the gross margin upper and lower quartile lowland farms respectively and as a consequence of the fall in feed costs, this milk conversion rate has fallen to 6.9ppl and 7.8ppl for the gross margin upper and lower quartiles respectively. Furthermore, gross margin per litre results were 15.5ppl (upper quartile) and 8.1ppl (lower quartile) compared to 18.2ppl (upper quartile) and 12.4ppl (lower quartile) in 2014/15 (Table 3.11).

- Gross margin performance quartile analysis of LFA dairy farms reveals that the better performers have larger herds and achieve substantially higher yields (+2,746 lpc) and receive higher milk prices (+2.7ppl) than the lowest quartile; leading to a disparity of £675 between the two quartile's relative gross margin per cow performances (Table 3.12).

Table 3.7: Gross Margin Results for All Farms, Conventional and Organic

	All		Conventional		Organic	
	14/15	15/16	*14/15*	15/16	*14/15*	15/16
Number of farms	*268*	237	*236*	205	*32*	32
Average number cows	*169*	168	*171*	170	*119*	121
Average yield (litres)	*7826*	7632	*7876*	7694	*6262*	6150
Milk price (ppl)	*30.7*	25.3	*30.5*	25.0	*38.6*	35.8
	£/cow		£/cow		£/cow	
Output						
Milk	*2405*	1933	*2404*	1922	*2420*	2200
Calf	*107*	110	*107*	111	*99*	94
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*1*	12	*1*	12	*0*	9
Herd Replacement	*-209*	-178	*-209*	-179	*-209*	-155
Total Dairy Output	***2304***	**1877**	***2303***	**1866**	***2310***	**2149**
Variable costs						
Concentrates	*678*	546	*680*	547	*597*	510
Coarse Fodder	*50*	37	*50*	38	*28*	20
Vet and Medicine	*78*	69	*78*	69	*56*	53
Other Livestock Costs	*177*	162	*175*	160	*218*	199
Forage Costs	*101*	85	*103*	87	*32*	31
Total Variable Costs	***1083***	**898**	***1088***	**901**	***931***	**814**
Total Gross Margin	***1221***	**979**	***1215***	**964**	***1379***	**1335**

Figure 3.1: Key Gross Margin Components by Conventional and Organic Herds



MOC = margin over concentrates; rep costs = replacement costs

Table 3.8: Gross Margin Results: Conventional Lowland and LFA Farms

	Lowland		LFA	
	14/15	15/16	*14/15*	15/16
Number of farms	*183*	155	*53*	50
Average number cows	*178*	176	*139*	147
Average yield (litres)	*7970*	7880	*7313*	6678
Milk price (ppl)	*30.6*	25.1	*29.9*	24.0
	£/cow		£/cow	
Output				
Milk	*2441*	1980	*2183*	1603
Calf	*105*	108	*118*	126
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*1*	13	*0*	11
Herd Replacement	*-208*	-181	*-216*	-168
Total Dairy Output	***2340***	**1919**	***2085***	**1572**
Variable costs				
Concentrates	*690*	563	*624*	460
Coarse Fodder	*48*	39	*64*	33
Vet and Medicine	*79*	71	*75*	61
Other Livestock Costs	*177*	164	*165*	142
Forage Costs	*106*	89	*86*	76
Total Variable Costs	***1100***	**925**	***1015***	**771**
Total Gross Margin	***1240***	**994**	***1071***	**801**

Table 3.9: Gross Margin Results: Conventional Lowland by Herd Size

Lowland	< 80 cows [small]		80 – 130 cows [medium]		>130 cows [large]	
	14/15	15/16	*14/15*	15/16	*14/15*	15/16
Number of farms	*34*	27	*41*	35	*108*	93
Average number cows	*58*	64	*106*	105	*228*	225
Average yield (litres)	*6897*	6751	*7431*	7229	*8109*	8053
Milk price (ppl)	*29.8*	23.0	*30.3*	24.5	*30.7*	25.3
Output	£/cow		£/cow		£/cow	
Milk	*2056*	1555	*2249*	1774	*2491*	2040
Calf	*131*	133	*120*	119	*101*	104
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*16*	12	*1*	10	*1*	13
Herd Replacement	*-185*	-159	*-216*	-169	*-208*	-184
Total Dairy Output	***2019***	**1541**	***2154***	**1734**	***2385***	**1973**
Variable costs						
Concentrates	*539*	436	*616*	481	*709*	584
Coarse Fodder	*37*	35	*31*	25	*51*	41
Vet and Medicine	*74*	63	*70*	66	*80*	72
Other Livestock Costs	*174*	146	*177*	160	*177*	165
Forage Costs	*109*	96	*106*	92	*106*	88
Total Variable Costs	*933*	777	*999*	823	*1124*	950
Total Gross Margin	***1086***	**765**	***1154***	**911**	***1261***	**1023**

Table 3.10: Gross Margin Results: Conventional LFA by Herd Size

LFA	< 80 cows [small]		80 – 130 cows [medium]		>130 cows [large]	
	14/15	15/16	*14/15*	15/16	*14/15*	15/16
Number of farms	*14*	13	*23*	18	*16*	19
Average number cows	*58*	58	*109*	108	*232*	242
Average yield (litres)	*6755*	7154	*7637*	7551	*7224*	6295
Milk price (ppl)	*29.2*	22.3	*29.7*	23.4	*30.1*	24.6
Output	£/cow		£/cow		£/cow	
Milk	*1973*	1599	*2269*	1770	*2171*	1546
Calf	*154*	123	*133*	163	*103*	114
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*0*	11	*0*	13	*0*	11
Herd Replacement	*-193*	-114	*-218*	-184	*-219*	-172
Total Dairy Output	***1934***	**1620**	***2184***	**1762**	***2055***	**1499**
Variable costs						
Concentrates	*623*	568	*683*	527	*591*	419
Coarse Fodder	*28*	20	*100*	53	*51*	28
Vet and Medicine	*69*	59	*75*	70	*77*	58
Other Livestock Costs	*179*	193	*161*	145	*165*	132
Forage Costs	*74*	69	*86*	76	*87*	76
Total Variable Costs	***973***	**909**	***1104***	**872**	***971***	**713**
Total Gross Margin	***961***	**710**	***1080***	**890**	***1084***	**786**

Table 3.11: Gross Margin Results: Conventional Lowland by Profitability Quartiles

Lowland	Lower Quartile		Upper Quartile	
	14/15	15/16	*14/15*	15/16
Number of farms	*51*	40	*41*	37
Average number cows	*153*	159	*206*	230
Average yield (litres)	*6436*	6688	*8997*	8821
Milk price (ppl)	*30.0*	22.8	*31.6*	27.2
	£/cow		£/cow	
Output				
Milk	*1929*	1528	*2840*	2403
Calf	*92*	94	*106*	110
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*1*	9	*0*	14
Herd Replacement	*-223*	-208	*-185*	-171
Total Dairy Output	***1799***	**1423**	***2760***	**2356**
Variable costs				
Concentrates	*602*	522	*707*	606
Coarse Fodder	*42*	46	*35*	37
Vet and Medicine	*68*	64	*82*	77
Other Livestock Costs	*179*	168	*196*	172
Forage Costs	*109*	83	*107*	93
Total Variable Costs	***1000***	**883**	***1127***	**984**
Total Gross Margin	***799***	**540**	***1633***	**1371**

Table 3.12: Gross Margin Results: Conventional LFA by Profitability Quartiles

LFA	Lower Quartile		Upper Quartile	
	14/15	15/16	*14/15*	15/16
Number of farms	*14*	12	*12*	13
Average number cows	*127*	156	*203*	169
Average yield (litres)	*6052*	5166	*7823*	7912
Milk price (ppl)	*29.2*	22.2	*30.3*	24.9
	£/cow		£/cow	
Output				
Milk	*1765*	1146	*2373*	1967
Calf	*122*	91	*113*	159
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*0*	9	*0*	13
Herd Replacement	*-233*	-172	*-208*	-172
Total Dairy Output	***1655***	**1073**	***2278***	**1966**
Variable costs				
Concentrates	*629*	372	*602*	567
Coarse Fodder	*58*	41	*30*	16
Vet and Medicine	*71*	52	*82*	71
Other Livestock Costs	*169*	122	*169*	147
Forage Costs	*75*	71	*90*	74
Total Variable Costs	***1001***	**657**	***973***	**874**
Total Gross Margin	***654***	**416**	***1305***	**1091**

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Glossary

Output: Other Livestock is comprised of sales of non-dairy livestock and livestock products adjusted for valuation changes plus the value of produce used on the farm and consumed in the farmhouse or by the workers, less livestock purchases. Miscellaneous livestock receipts are also included.

Output: Other is the sales of crops adjusted for valuation changes, plus the value of produce used on the farm (other than forage crops and straw) and produce consumed in the farmhouse or by the workers. Income from land let and buildings let, hirework, non-allocated grants e.g. for environmental schemes, single farm payment, profit on resale of purchased agricultural produce and other miscellaneous farm income including the change in valuation of cultivations is also included.

Other livestock costs include livestock haulage, marketing charges, AI charges, straw and woodshavings for bedding and dairy sundries.

Other crop costs include silage bags, twine, all marketing costs including crop haulage, purchase of standing crops, soil analysis and potato sacks.

Labour is comprised of the gross cost of regular paid employees including an allowance for perquisites together with unpaid family labour (other than the farmer and spouse) manual labour.

Machinery depreciation is calculated using the current cost accounting method whereby each item of equipment is revalued by an index prior to the depreciation calculation.

Rent and Rental Equivalent consist of gross rent, imputed rent on the net cost of the tenant's own improvements, drainage rates and for owner-occupied land a rental value based on what a tenant would be paying for similar land with an equal length of occupancy.

Miscellaneous costs include water charges, vehicle tax, insurance, professional fees, bank commission, telephone charges, subscriptions, office expenses and pest control, general repairs.

Net Farm Income (NFI) is total output less total inputs as defined above. It represents the reward to the farmer and spouse for their own manual labour, management and a return on tenant's capital.

Farmer's and spouse's manual labour is the estimated value of their manual labour.

Management and Investment Income (MII) is Net Farm Income less the allowance made for the farmer's and spouse's manual labour. It represents the reward for management and a return on tenant's capital. MII therefore represents the return to management after all costs have been deducted, including the imputed cost of all unpaid manual labour and a notional rent on owner occupied land and buildings.

Farm Business Income (FBI) represents the return to all unpaid labour (farmers, spouses and others with an entrepreneurial interest in the farm business) and to all their capital invested in the farm business including land and farm buildings. It is defined as Total Farm Output (TFO) minus cost (C): where TFO is defined as the sum of output from: crop enterprises, adjustment for disposal of previous crops, livestock enterprises, separable non-agricultural diversification, single farm payment, agri-environmental payments, other grants and subsidies, miscellaneous receipts; C is defined as variable costs plus fixed costs. [*For 2006/07 the definition of FBI included the profit / loss on sale of assets as part of the total farm output*]

Total Gross Margin, presented for the dairy enterprise results, is total dairy output minus total variable costs.

Appendix 1: Reports in Series

Reports in this series:

Crop Production in England

Dairying Farming in England

Hill Farming in England

Horticulture Production in England (Horticultural Business Data)

Lowland Grazing Livestock Production in England

Pig Production in England

Poultry Production in England

Organic Farming in England

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