



Farm Business Survey

2016/2017

Dairy Farming in England



**Davina Smith, Helen McHoul
and Paul Wilson**

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2016/17**

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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 Twelfth Series

This series of reports on the economics of agriculture and horticulture in England from *Rural Business Research (RBR)* represents the twelfth series of outputs that focus on providing independent data and analysis to the individual sectors of agriculture and horticulture. As farmers and growers look towards the future for their businesses, the policy landscape is beginning to emerge. The direction of policy travel for UK agriculture and horticulture will be more focused upon the market and the provision of specific environmental goods, and land-area based payments are likely to be reduced or removed in the future. The direction of policy travel has been accompanied with a guarantee that the Basic Payment will remain until at least 2022. These signals provide both an indication of policy outcomes and a time-frame within which businesses can begin to adapt to a new future. The UK's decision to leave the EU will of course have major implications for agriculture and horticulture; these impacts are likely to bring both challenges and opportunities. While many factors remain uncertain, at the level of the individual business what is required is to position the business to meet the challenges that lie ahead while maximising the outcome of the opportunities that will present themselves. For individual businesses this begins with a need to understand current performance, and to place this within the context of the wider market environment and understand the relative strengths of the business against others within the sector. Within this series of reports, RBR seeks to help businesses to identify their relative strengths and challenges through independent data presented to highlight the key findings and data as appropriate to individual sectors of agriculture and horticulture. It is not possible to manage a process or activity successfully without knowing the underlying data or performance of the process or activity. This series of reports sets out to provide this information at this crucial planning stage for agriculture and horticulture.

The headline data from the Farm Business Survey (FBS) for the 2016/17 financial year, shows that average Farm Business Income (FBI) increased by 20% to £38,000 per farm, taking farm incomes upwards again after a period of six years of falling income levels. At £38,000 per farm FBI is still the second lowest average income from the previous six years. Examining results by farm type, on average, with the exception of Poultry farms, all farm types benefited from an increase in FBI in 2016/17. One of the main drivers for the increased FBI results was a generally lower cost base, with increases in the price of beef, sheep and combinable crops also playing an important part in the increased FBI results. The contribution of increased output from agri-environment, diversification activities and the Basic Payment were also features of the increased FBI result. The exchange rate movement that weakened the value of Sterling in the aftermath of the EU referendum result in 2016, that led to increased output prices during 2016/17, has recently moderated. Should Sterling gain momentum moving forward this will place downward pressure on output prices, but offer some input price advantage, in particular for imported inputs.

As we produce this twelfth series of independent reports, agricultural and horticultural businesses need to prepare for the future if they are to prosper as the market and policy landscapes change. Businesses that understand their costs of production and their relative strengths within a sector will be best placed to compete irrespective of what the future may bring. With this series of reports we aim to help inform agricultural and horticultural businesses about the economics of the sector in which they operate, in order to aid management decision making.

It is of crucial importance to recognise that this valuable series of reports would 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 therefore go to the farmers and growers who assist us in this valuable work through their participation in the FBS.

Professor Paul Wilson

Chief Executive Officer, Rural Business Research

February 2018

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 2016/17, dairy farming in the UK witnessed a rise in milk prices with a yearly average price of 23.7 pence per litre (ppl) and at the end of the milk year prices had returned to those last seen in January 2015 and thus by March 2017 the average monthly milk price had reached 27.5ppl
- Average milk yield decreased by 5% to just over 7,500 litres per cow (lpc), bucking the trend of the previous three years and returning to levels slightly below those seen in 2011/12 (7,600lpc)
- The national herd size reduced by approximately 8,000 cows to a level of 1,898,000 cows; the first decrease in the national herd size since 2012/13
- Approximately 140 producers left the industry during 2017

Farm level results

- Farm Business Survey data from 2016/17 shows that the average Farm Business Income (FBI) from dairying was £332/ha, which at the average farm size equates to an FBI of approximately £49,800, representing an increase of 18% from 2015/16
- Average FBI on conventional dairy farms in 2016/17 was £329/ha (£49,679 per farm), whilst on organic farms average FBI was £392/ha (£58,016 per farm); FBI per hectare on organic farms is only 19% higher than conventional farms compared with 62% higher in 2015/16
- Whilst total output on organic dairy farms increased from £2,594/ha in 2015/16 to £2,649/ha in 2016/17, it was offset by higher variable costs, notably feed and livestock costs, leading to a decrease in FBI of £66/ha

Dairy Enterprise Results

- Enterprise-level analysis shows that in 2016/17 the conventional herd total dairy output fell by 6.3% to £1,749/cow, as a result of a fall in milk price (-1.4ppl). Noteworthy is the fact that yield and average number of cows had both increased on conventional farms (by 150lpc and 5 cows respectively). Organic herds total dairy output rose by just over 0.7% to £2165/cow, due to a combination of small increases in milk price (+0.6ppl), yield (+23lpc) and average number of cows per herd (+2 cows)
- Lowland and LFA dairy herds saw a decrease in average milk price of 1.5ppl and 0.6ppl respectively, with decreases in GM/cow of £105 for lowland herds and £42 for LFA herds. In 2016/17, at the average herd sizes, the total farm GM for lowland herds was £158,242 compared with approximately £175,000 in 2015/16; for LFA farms the total farm GM was £119,922 compared with approximately £117,750 in 2015/16.

Chapter 1: The Dairying Sector

1.1: Overview

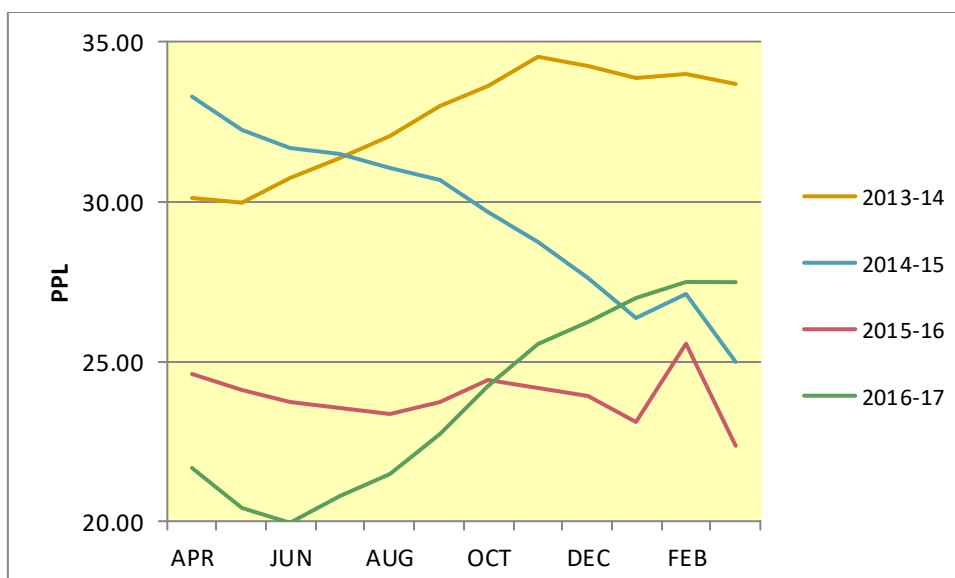
- During 2016/17, dairy farming in the UK experienced a rise in milk prices following the initial decline from April to June 2016. This resulted in a yearly average price of 23.7 pence per litre (ppl) which was the same as the average price in 2015/16 but lower than 29.6 ppl reported in 2014/15 and 32.6 ppl in 2013/14 (Figure 1.1).
- Following the trend of recent years, the key input costs of feed, fertiliser and energy continued to decrease, whilst the cost of vet and medicines continued to rise (Figure 1.2).
- Annual milk production in the UK for 2016/17 decreased by 815 million litres (-5.5%), the first decrease seen since 2012/13 (Figure 1.3).
- Average milk yield fell for the first time since 2012/13 to 7557 litres per cow (lpc) (-4.5%); slightly below the average yield of 2011/12 of 7604 lpc (Figure 1.4).
- The national herd decreased by 8000 cows to 1,898,000 cows (-4%), reversing the trend of the previous four years (Figure 1.4).
- In December 2017, there were approximately 140 fewer milk producers in England and Wales than a year earlier; a fall of 1.48%. Since 2009, numbers have fallen by 2,152, a decrease of nearly 19% (Figure 1.5).

Table 1.1: Average Annual Milk Prices

	2013/14	2014/15	2015/16	2016/17
Average annual price (ppl) (excluding bonus')	32.6	29.6	23.7	23.7

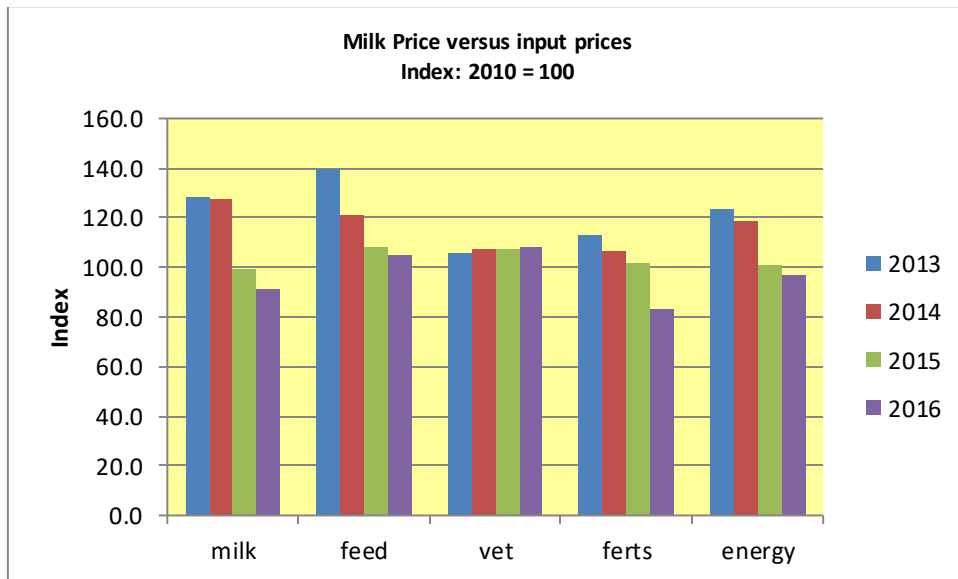
Source: Defra (2018a); Milk Price Surveys

Figure 1.1: Average Farmgate Milk Prices (UK)



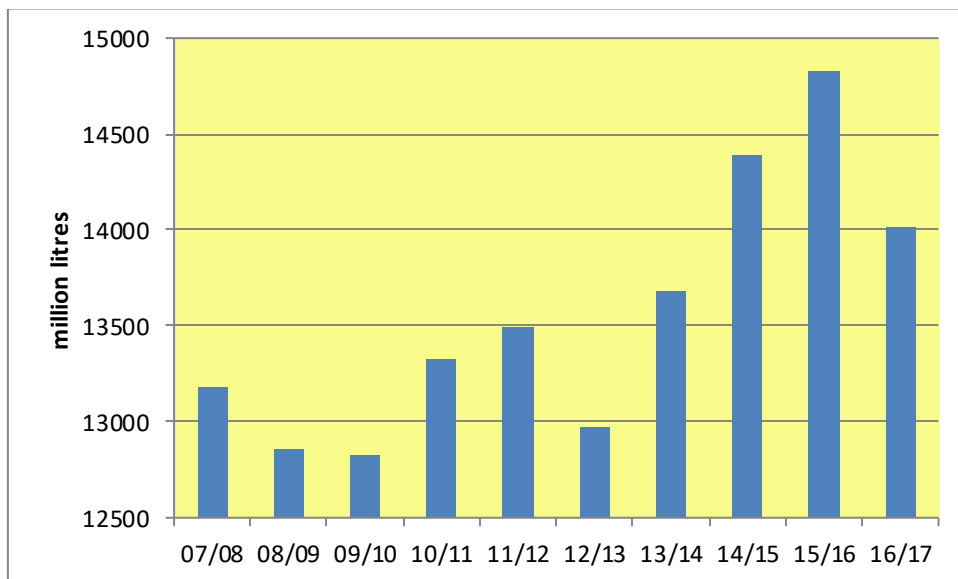
Source: Defra (2018b); Milk Price Surveys

Figure 1.2: Milk and Input Prices (UK)



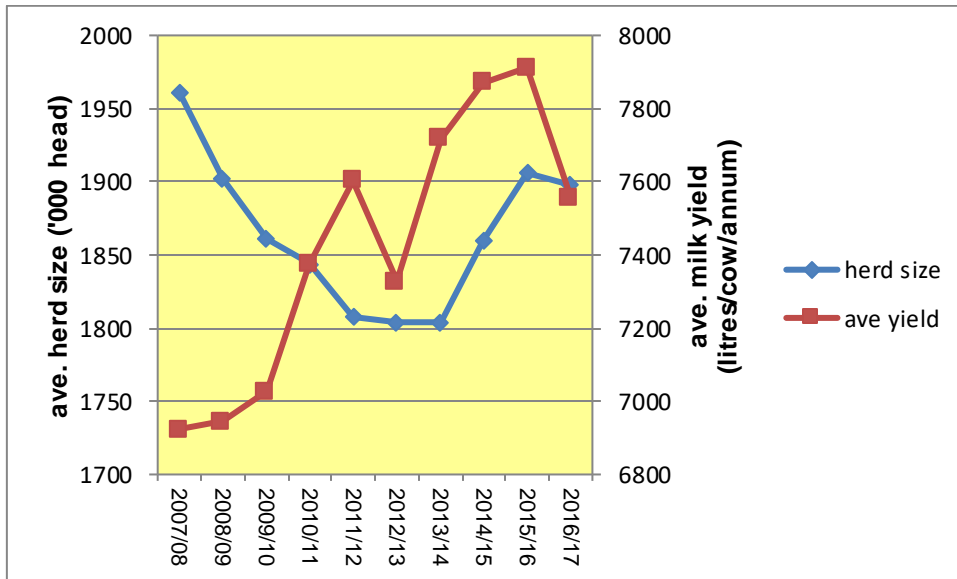
Source: Defra (2018c); Agriculture in the UK 2016

Figure 1.3: UK Annual Milk Production (UK)



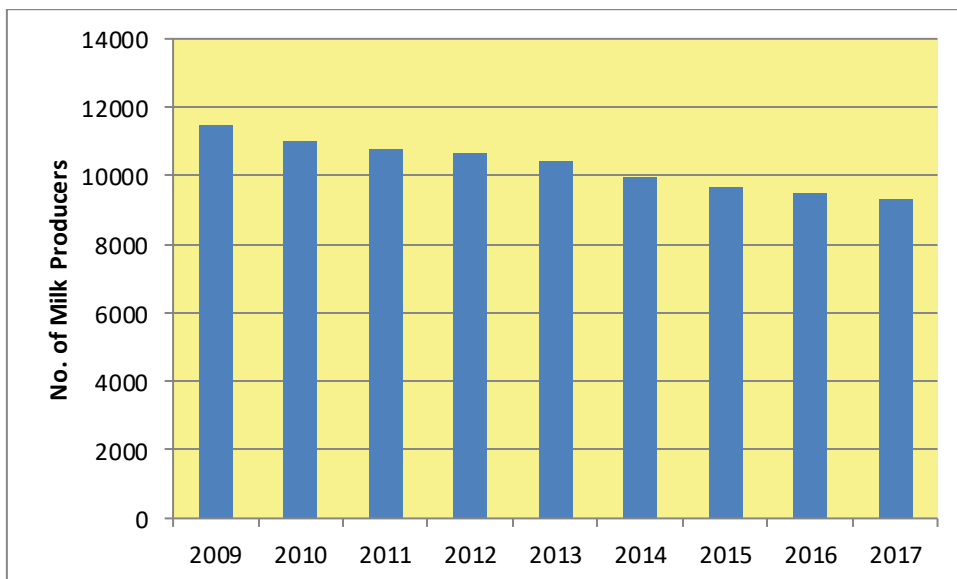
Source: AHDB Dairy (2018a)

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



Source: AHDB Dairy (2018b)

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



Source: AHDB Dairy (2018c)

1.2: Structure of Report

The above sections have described the market environment in which the dairy sector has been operating during the 2016/17 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 Farms¹ 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 2016/17 edition of this report, the farm type classification is based on 2010 Standard Outputs.

Table 2.1: Observations by Category: Farm-Level Data 2016/17

Category		All	Lowland Conventional	LFA Conventional ¹	Fully Organic ²
Number of farms		246	154	55	37
Farm Size	<60 hectares	-	15	9	-
	60-120 hectares	-	62	19	-
	>120 hectares	-	77	27	-
Performance by ratio output:costs	Lower quartile	-	42	13	-
	Upper quartile	-	36	14	-

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 low land 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 2016/17

Category		All	Lowland Conventional	LFA Conventional ¹	Fully Organic ²
Number of farms		227	141	51	35
Farm Size	<80 cows	-	20	9	-
	80-130 cows	-	34	21	-
	>130 cows	-	87	21	-
Performance by GM/cow	Lower quartile	-	40	13	-
	Upper quartile	-	30	14	-

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 low land 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 2016/17 shows that the average Farm Business Income (FBI) from dairying was £332/ha, which at the average farm size equates to an FBI of approximately £49,800, representing an increase of 18% from 2015/16 (Table 3.1).
- Average FBI on conventional dairy farms in 2016/17 was £329/ha (£49,679 per farm), whilst on organic farms average FBI was £392/ha (£58,016 per farm), representing an increase in FBI per farm of more than 20% for conventional farms and a decrease of 6.2% for organic farms (a smaller decrease than the previous year of 13%) (Table 3.1).
- The gap between organic and conventional farms average FBI per ha narrowed in 2016/17; at £392/ha, FBI on organic farms is only 19% higher than conventional farms (£329/ha), compared with 62% higher in 2015/16 (table 3.1).
- Management and Investment Income (MII) across all dairy farms increased by £46/ha to £15/ha in 2016/17. This equates to an average MII of £2,250 per farm, compared with -£4,495 in 2015/16 (Table 3.1).
- Average MII on conventional dairy farms increased from -£41/ha in 2015/16 to £8/ha (£1,208 per farm) in 2016/17, whilst on organic farms average MII reduced by 23% to £137/ha (£20,276 per farm); organic total farm output increased from £2,594/ha in 2015/16 to £2,649/ha in 2016/17 but was offset by higher variable costs, notably feed and livestock costs (Table 3.1).
- Average FBI on lowland dairy farms was £329/ha; an increase of almost 25% from £264/ha in 2015/16. For LFA dairy farms, average FBI fell to £324/ha (from £381/ha in 2015/16) (Table 3.2). This equates to a FBI on a farm level for lowland dairy farms of £50,337 and LFA dairy farms of £45,036 in 2016/17.
- Table 3.3 illustrates the reliance on Farmer / Spouse labour typically found on the smaller lowland dairy farms, i.e. less than 60 hectares, resulting in a familiar, substantially lower MII than was achieved for the two larger size groups presented. The smaller size group achieved a MII of -£537/ha, compared with -£81/ha and £62/ha for the 60 to 120 hectares and greater than 120 hectares groups respectively.
- As reported in previous 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 per hectare, whilst incurring the lowest variable and fixed costs. The respective FBIs at farm level for the less than 60 hectares, the 60 to 120 hectares and the greater than 120 hectares size groups are £15,885, £47,676 and £53,328 (Table 3.4), with the middle group (60 to 120ha) showing the only increase in FBI for 2016/17.
- Profitability analysis reveals that in 2016/17, FBI for the upper quartile of lowland dairy farms was £854/ha (£895/ha in 2015/16) compared with -£17/ha (-£330/ha in 2015/16) for the lower quartile. The upper quartile group has the largest average farm size at 175ha, compared to 116ha 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 only £235/ha greater than that achieved by the lower quartile (in comparison with £863/ha higher in 2015/16). Variable costs for the upper quartile decreased by 14% to £1,054/ha, whilst they increased by more than 5% for the lower quartile to £1,265/ha, exceeding variable costs for the upper quartile by £211/ha. At the average farm, the lower and upper quartiles achieved FBI returns of -£2,950 and £116,735 respectively (Table 3.6).

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

	All		Conventional		Organic	
	15/16	16/17	15/16	16/17	15/16	16/17
Number of farms	255	246	222	209	33	37
Area (ha) [#]	145	150	146	151	135	148
	£/ha		£/ha		£/ha	
Output						
Milk	2240	2170	2254	2182	1972	1980
Calf	128	139	130	141	83	107
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	14	4	15	4	8	1
Herd Replacement	-207	-261	-210	-266	-138	-179
Total Dairy Output	2175	2052	2188	2061	1925	1909
Other Livestock	439	536	447	547	282	363
Other	447	500	450	507	387	377
Total Farm Output	3061	3088	3085	3115	2594	2649
Variable Costs						
Home-grown Concentrates	55	58	54	58	71	64
Purchased Concentrates	702	706	713	716	484	544
Coarse Fodder	59	57	60	59	31	35
Other Livestock Concentrates	8	4	8	4	0	0
Vet and Medicine	97	97	100	99	56	61
Other Livestock Costs	241	243	242	243	222	243
Seed	33	32	33	33	25	24
Fertiliser	121	99	127	103	10	19
Crop Protection	35	37	36	39	0	1
Other Crop Costs	22	20	23	21	11	14
Total Variable Costs	1373	1353	1396	1374	911	1006
Fixed Costs						
Labour	390	389	394	393	318	320
Contract	163	170	165	172	136	135
Machinery Depreciation	185	184	187	187	144	135
Other Machinery	179	187	181	190	142	152
Miscellaneous	273	270	274	269	247	280
Rent and Rental Equivalent	314	310	316	312	286	280
Total Fixed Costs	1504	1510	1515	1523	1274	1302
Net Farm Income	185	224	173	217	409	341
Farmer / Spouse Labour	215	209	215	210	230	204
Management and Investment Income (MII)	-31	15	-41	8	179	137
Farm Business Income (FBI)	291	332	283	329	458	392

[#] 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	
	15/16	16/17	15/16	16/17
Number of farms	168	154	54	55
Area (ha)#	149	153	131	139
	£/ha		£/ha	
Output				
Milk	2313	2225	1948	1963
Calf	126	137	149	161
Lease Quota (net)	0	0	0	0
Other Dairy	15	4	14	4
Herd Replacement	-212	-264	-198	-272
Total Dairy Output	2242	2101	1912	1855
Other Livestock	454	560	412	480
Other	485	547	268	304
Total Farm Output	3181	3208	2591	2639
Variable Costs				
Home-grown Concentrates	55	59	48	49
Purchased Concentrates	730	725	627	669
Coarse Fodder	62	58	51	62
Other Livestock Concentrates	10	5	0	0
Vet and Medicine	101	100	90	92
Other Livestock Costs	247	247	215	225
Seed	38	37	10	11
Fertiliser	129	107	115	84
Crop Protection	42	45	8	10
Other Crop Costs	25	22	13	11
Total Variable Costs	1439	1406	1177	1212
Fixed Costs				
Labour	409	409	314	313
Contract	174	181	114	128
Machinery Depreciation	191	193	164	158
Other Machinery	190	199	136	144
Miscellaneous	286	278	215	222
Rent and Rental Equivalent	327	323	256	253
Total Fixed Costs	1577	1583	1198	1219
Net Farm Income	165	219	216	207
Farmer / Spouse Labour	212	205	230	233
Management and Investment Income (MII)	-47	14	-14	-25
Farm Business Income (FBI)	264	329	381	324

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]	
	15/16	16/17	15/16	16/17	15/16	16/17
Number of farms	16	15	71	62	81	77
Area (ha) #	48	47	86	87	215	218
	£/ha		£/ha		£/ha	
Output						
Milk	2097	2011	2985	2774	2123	2079
Calf	195	186	189	189	105	120
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	15	11	21	5	13	3
Herd Replacement	-226	-264	-276	-343	-193	-242
Total Dairy Output	2082	1943	2919	2625	2048	1960
Other Livestock	459	515	519	680	435	528
Other	251	306	318	390	544	600
Total Farm Output	2792	2765	3755	3694	3027	3088
Variable Costs						
Home-grown Concentrates	35	33	41	45	60	64
Purchased Concentrates	729	718	922	865	673	687
Coarse Fodder	110	85	97	76	49	52
Other Livestock Concentrates	0	0	2	1	12	6
Vet and Medicine	98	113	122	116	95	96
Other Livestock Costs	246	255	316	312	227	228
Seed	11	6	25	27	43	41
Fertiliser	127	99	146	121	125	103
Crop Protection	6	8	21	22	49	53
Other Crop Costs	26	25	24	24	25	22
Total Variable Costs	1389	1342	1716	1609	1359	1351
Fixed Costs						
Labour	158	147	397	411	423	419
Contract	130	199	197	195	169	177
Machinery Depreciation	216	158	240	234	175	182
Other Machinery	164	160	192	211	190	197
Miscellaneous	356	336	345	361	265	252
Rent and Rental Equivalent	306	311	359	355	319	315
Total Fixed Costs	1329	1312	1730	1768	1542	1541
Net Farm Income	74	111	309	318	126	196
Farmer / Spouse Labour	630	647	404	399	138	134
Management and Investment Income (MII)	-556	-537	-95	-81	-12	62
Farm Business Income (FBI)	149	163	445	482	215	293

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]	
	15/16	16/17*	15/16	16/17	15/16	16/17
Number of farms	10	9	21	19	23	27
Area (ha)#	46	45	87	87	203	202
	£/ha		£/ha		£/ha	
Output						
Milk	2434	2293	2210	2340	1814	1839
Calf	167	181	227	228	122	142
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	17	8	16	1	12	4
Herd Replacement	-250	-409	-182	-286	-199	-258
Total Dairy Output	2368	2073	2272	2283	1749	1727
Other Livestock	387	457	395	459	420	487
Other	504	555	225	270	258	294
Total Farm Output	3259	3085	2891	3012	2426	2508
Variable Costs						
Home-grown Concentrates	48	49	33	35	52	53
Purchased Concentrates	870	894	812	845	543	606
Coarse Fodder	49	67	58	58	49	63
Other Livestock Concentrates	0	0	0	0	0	0
Vet and Medicine	86	85	106	114	85	86
Other Livestock Costs	265	247	253	247	198	217
Seed	6	3	12	5	10	13
Fertiliser	122	84	121	86	112	84
Crop Protection	2	2	10	8	9	12
Other Crop Costs	11	15	11	9	13	11
Total Variable Costs	1459	1445	1414	1407	1072	1144
Fixed Costs						
Labour	314	291	303	280	317	324
Contract	132	125	121	130	110	128
Machinery Depreciation	269	263	202	200	142	140
Other Machinery	194	196	156	160	123	136
Miscellaneous	349	365	287	268	178	199
Rent and Rental Equivalent	223	194	256	264	259	254
Total Fixed Costs	1481	1434	1324	1303	1129	1181
Net Farm Income	319	205	152	303	226	183
Farmer / Spouse Labour	602	646	355	411	152	155
Management and Investment Income (MII)	-283	-441	-203	-108	74	27
Farm Business Income (FBI)	487	353	386	548	369	264

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

*Data is derived from a modest sample size

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

Lowland	Lower quartile		Upper quartile	
	15/16	16/17	15/16	16/17
Number of farms	45	42	39	36
Area (ha) [#]	107	116	158	175
Output	£/ha		£/ha	
Milk	1851	1590	3047	2826
Calf	133	111	158	154
Lease Quota (net)	0	0	0	0
Other Dairy	14	4	17	8
Herd Replacement	-245	-236	-258	-297
Total Dairy Output	1751	1469	2964	2691
Other Livestock	412	438	566	667
Other	365	444	444	658
Total Farm Output	2528	2351	3975	4016
Variable Costs				
Home-grown Concentrates	61	49	59	62
Purchased Concentrates	725	577	769	808
Coarse Fodder	65	55	81	78
Other Livestock Concentrates	12	0	5	5
Vet and Medicine	99	76	111	119
Other Livestock Costs	247	226	271	268
Seed	34	43	38	36
Fertiliser	114	108	154	113
Crop Protection	25	45	38	47
Other Crop Costs	18	21	22	20
Total Variable Costs	1400	1199	1546	1557
Fixed Costs				
Labour	364	341	441	466
Contract	158	177	217	201
Machinery Depreciation	206	171	182	206
Other Machinery	195	183	171	207
Miscellaneous	296	260	280	313
Rent and Rental Equivalent	309	300	343	361
Total Fixed Costs	1528	1432	1633	1754
Net Farm Income	-401	-280	796	706
Farmer / Spouse Labour	315	279	189	171
Management and Investment Income (MII)	-716	-559	607	535
Farm Business Income (FBI)	-330	-17	895	854

[#] 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	
	15/16	16/17	15/16	16/17
Number of farms	12	13	14	14
Area (ha) [#]	101	118	170	185
	£/ha		£/ha	
Output				
Milk	1526	1770	2389	2005
Calf	140	123	188	175
Lease Quota (net)	0	0	0	0
Other Dairy	13	7	16	1
Herd Replacement	-188	-254	-222	-262
Total Dairy Output	1491	1645	2371	1920
Other Livestock	458	338	475	518
Other	202	371	294	287
Total Farm Output	2151	2354	3140	2725
Variable Costs				
Home-grown Concentrates	14	69	56	34
Purchased Concentrates	643	767	658	567
Coarse Fodder	81	48	38	70
Other Livestock Concentrates	0	0	0	0
Vet and Medicine	87	79	97	86
Other Livestock Costs	220	208	210	159
Seed	6	10	13	11
Fertiliser	135	65	122	102
Crop Protection	3	5	14	13
Other Crop Costs	10	12	15	12
Total Variable Costs	1200	1265	1223	1054
Fixed Costs				
Labour	385	315	362	304
Contract	86	125	128	116
Machinery Depreciation	208	189	162	123
Other Machinery	156	142	147	130
Miscellaneous	229	242	202	205
Rent and Rental Equivalent	216	234	295	277
Total Fixed Costs	1278	1248	1296	1155
Net Farm Income	-327	-158	621	516
Farmer / Spouse Labour	278	308	174	152
Management and Investment Income (MII)	-605	-467	448	365
Farm Business Income (FBI)	-30	-25	817	631

[#] 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.

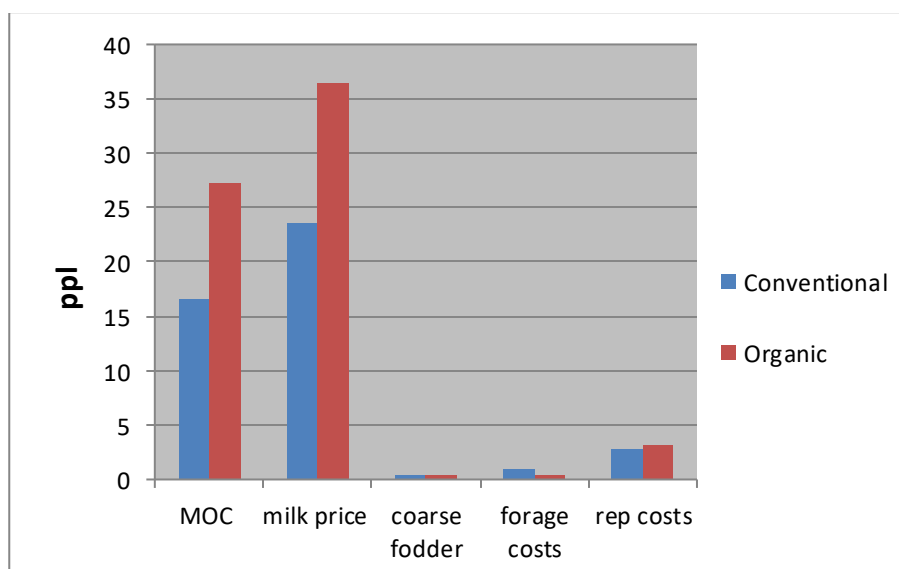
3.2: Dairy Enterprise Results: Gross Margins

- In a continuing trend, enterprise-level analysis shows that in 2016/17, the conventional herd total dairy output remained below the level achieved by the organic herd. Organic herds total dairy output rose by just over 0.7% to £2165/cow due to increases in milk price (+0.6ppl), yield (+23lpc) and average number of cows. The conventional herd total dairy output fell by 6.3% to £1,749/cow, as a result of a fall in milk price (-1.4ppl); yield and average number of cows had both increased on conventional farms, by 150lpc and 5 cows respectively (Table 3.7).
- The higher milk price achieved by organic herds resulted in a gross margin of £1,264/cow compared with £869/cow for the conventional dairy herds, despite a combined increase in concentrates and livestock costs of £86/cow on organic farms. The difference between the organic and conventional dairy herd gross margins was wider than in 2015/16 whereby conventional herds produced a gross margin of £964/cow compared with the organic herd gross margin of £1,335/cow (Table 3.7).
- Despite concentrate feed costs for organic herds rising above the cost for conventional herds, the higher milk price achieved by organic herds, has resulted in organic herds achieving a margin over concentrate performance that exceeded that of conventional herds by 10.54ppl, compared to the previous year's excess of 9.61 (Figure 3.1).
- Lowland and LFA herds saw a fall in average milk price of 1.5ppl and 0.6ppl respectively, with decreases in GM/cow of £105 for lowland and £42 for LFA herds. In 2016/17, at the average herd sizes, the total farm GM for lowland herds fell to £158,242 compared with £174,944 in 2015/16. In contrast, the total LFA herd GM rose to £119,922 compared with £117,747 in 2015/16, due in part to higher average number of cows (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 £677, £754 and £918 respectively. These margins per cow equate to gross margins per litre of 10.47ppl, 10.70ppl and 11.13ppl 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 in comparison with the lowland herds when considering impact of herd size. Whilst milk price increases as herd size increases, the highest dairy output and gross margin per cow was achieved by the 80 – 130 cows group. Only the less than 80 cow herds saw an increase in average milk price in 2016/17 (+0.2ppl); there was a 0.4ppl decrease for the medium size group and 1ppl fall for the large size group. GM decreased for each group by £204, £109 and £13 per cow for the small, medium and large size groups respectively (Table 3.10). Although in previous years GM in lowland herds exceeded that of LFA dairy herds, in 2016/17 the GM for the LFA 80 – 130 cows group was greater than that of the conventional herd for the same group size by £27/cow.
- In 2016/17 lowland dairy farms in the upper quartile (based on GM/cow) produced on average 2,374 lpc more than those in the lower quartile, with average milk prices for the upper quartile exceeding those of the lower quartile by 3.5ppl (Table 3.11). In 2015/16, the difference in milk price was 4.4ppl between the upper and lower quartile for lowland dairy farms.
- Feed concentrate to milk conversion rates fell to 6.6ppl and 7.2ppl for the GM lowland upper and lower quartile farms respectively (from 6.9ppl and 7.8ppl for 2015/16); the upper quartile decrease was due to an increase in yield per cow, whilst the lower quartile was due to a combination of lower feed price and higher yield. Furthermore, gross margin per litre results fell to 13.3ppl (upper quartile) and 6.8ppl (lower quartile) compared to 15.5ppl (upper quartile) and 8.1ppl (lower quartile) in 2015/16 (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 (+2,619 lpc) as well as receiving higher milk prices (+2.8ppl) than the lowest quartile, leading to a disparity of £689 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	
	15/16	16/17	15/16	16/17	15/16	16/17
Number of farms	237	227	205	192	32	35
Average number cows	168	172	170	175	121	123
Average yield (litres)	7632	7776	7694	7844	6150	6173
Milk price (ppl)	25.3	24.0	25.0	23.6	35.8	36.4
	£/cow		£/cow		£/cow	
Output						
Milk	1933	1865	1922	1849	2200	2245
Calf	110	120	111	121	94	114
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	12	3	12	3	9	2
Herd Replacement	-178	-222	-179	-223	-155	-196
Total Dairy Output	1877	1766	1866	1749	2149	2165
Variable costs						
Concentrates	546	542	547	541	510	565
Coarse Fodder	37	37	38	38	20	21
Vet and Medicine	69	70	69	70	53	54
Other Livestock Costs	162	160	160	157	199	230
Forage Costs	85	72	87	74	31	31
Total Variable Costs	898	881	901	881	814	901
Total Gross Margin	979	885	964	869	1335	1264

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	
	15/16	16/17	15/16	16/17
Number of farms	155	141	50	51
Average number cows	176	178	147	158
Average yield (litres)	7880	8039	6678	6823
Milk price (ppl)	25.1	23.6	24.0	23.4
	£/cow		£/cow	
Output				
Milk	1980	1897	1603	1596
Calf	108	117	126	141
Lease Quota (net)	0	0	0	0
Other Dairy	13	4	11	2
Herd Replacement	-181	-222	-168	-230
Total Dairy Output	1919	1795	1572	1510
Variable costs				
Concentrates	563	555	460	467
Coarse Fodder	39	39	33	34
Vet and Medicine	71	72	61	62
Other Livestock Costs	164	163	142	127
Forage Costs	89	77	76	61
Total Variable Costs	925	905	771	750
Total Gross Margin	994	889	801	759

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

Lowland	< 80 cows [small]		80 – 130 cows [medium]		>130 cows [large]	
	15/16	16/17	15/16	16/17	15/16	16/17
Number of farms	27	20	35	34	93	87
Average number cows	64	58	105	102	225	224
Average yield (litres)	6751	6465	7229	7045	8053	8251
Milk price (ppl)	23.0	21.5	24.5	22.5	25.3	23.8
	£/cow		£/cow		£/cow	
Output						
Milk	1555	1393	1774	1589	2040	1963
Calf	133	136	119	124	104	115
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	12	10	10	2	13	4
Herd Replacement	-159	-147	-169	-211	-184	-227
Total Dairy Output	1541	1392	1734	1503	1973	1854
Variable costs						
Concentrates	436	397	481	434	584	579
Coarse Fodder	35	27	25	16	41	42
Vet and Medicine	63	66	66	62	72	74
Other Livestock Costs	146	152	160	155	165	165
Forage Costs	96	73	92	82	88	76
Total Variable Costs	777	715	823	749	950	936
Total Gross Margin	765	677	911	754	1023	918

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

LFA	< 80 cows [small]		80 – 130 cows [medium]		>130 cows [large]	
	15/16	16/17*	15/16	16/17	15/16	16/17
Number of farms	13	9	18	21	19	21
Average number cows	58	49	108	105	242	249
Average yield (litres)	7154	6200	7551	7578	6295	6607
Milk price (ppl)	22.3	22.5	23.4	23.0	24.6	23.6
Output	£/cow		£/cow		£/cow	
Milk	1599	1395	1770	1745	1546	1560
Calf	123	114	163	162	114	136
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	11	11	13	0	11	2
Herd Replacement	-114	-276	-184	-246	-172	-220
Total Dairy Output	1620	1244	1762	1661	1499	1478
Variable costs						
Concentrates	568	509	527	568	419	427
Coarse Fodder	20	18	53	32	28	36
Vet and Medicine	59	43	70	73	58	59
Other Livestock Costs	193	121	145	152	132	118
Forage Costs	69	47	76	55	76	64
Total Variable Costs	909	738	872	881	713	705
Total Gross Margin	710	506	890	781	786	773

*Data is derived from a modest sample size

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

Lowland	Lower Quartile		Upper Quartile	
	15/16	16/17	15/16	16/17
Number of farms	40	40	37	30
Average number cows	159	143	230	220
Average yield (litres)	6688	6931	8821	9305
Milk price (ppl)	22.8	21.5	27.2	25.0
	£/cow		£/cow	
Output				
Milk	1528	1487	2403	2323
Calf	94	97	110	122
Lease Quota (net)	0	0	0	0
Other Dairy	9	3	14	6
Herd Replacement	-208	-283	-171	-203
Total Dairy Output	1423	1303	2356	2249
Variable costs				
Concentrates	522	502	606	613
Coarse Fodder	46	39	37	61
Vet and Medicine	64	68	77	84
Other Livestock Costs	168	157	172	180
Forage Costs	83	69	93	75
Total Variable Costs	883	835	984	1013
Total Gross Margin	540	469	1371	1236

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

LFA	Lower Quartile		Upper Quartile	
	15/16	16/17	15/16	16/17
Number of farms	12	13	13	14
Average number cows	156	103	169	206
Average yield (litres)	5166	4962	7912	7581
Milk price (ppl)	22.2	21.3	24.9	24.1
	£/cow		£/cow	
Output				
Milk	1146	1058	1967	1828
Calf	91	135	159	164
Lease Quota (net)	0	0	0	0
Other Dairy	9	0	13	2
Herd Replacement	-172	-274	-172	-186
Total Dairy Output	1073	919	1966	1808
Variable costs				
Concentrates	372	402	567	502
Coarse Fodder	41	23	16	31
Vet and Medicine	52	38	71	70
Other Livestock Costs	122	95	147	140
Forage Costs	71	53	74	68
Total Variable Costs	657	611	874	811
Total Gross Margin	416	308	1091	997

References

Defra (2018a). Milk Price Surveys

<https://www.gov.uk/government/statistics/uk-milk-prices-and-composition-of-milk>

(as at 28/02/2018)

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AHDB Dairy (2018c)

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(as at 18/12/2017)

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 wood shavings 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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