



Farm Business Survey

2018/2019

Dairy Farming in England



Davina Smith, Helen McHoul
and Paul Wilson

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2018/19**

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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 Fourteenth Series

Now in its fourteenth year of production, our series of reports on the economics of agriculture and horticulture in England from *Rural Business Research (RBR)* has now arguably greater relevance to the farming and horticultural sectors in England than ever before. Following a general election in December 2019, the UK Government has now passed legislation through parliament which will result in the UK leaving the EU at the end of January 2020. A transition period will then follow, with the expectation that by the end of December 2020 the UK will have completed the transition phase of fully leaving the EU.

The new era will impact on many areas of activity in the UK; UK agriculture will witness and experience one of the largest transitions it has seen in decades. The new Agriculture Bill 2019-20 will be translated into policies and subsequently implemented, with an “Agricultural Transition” starting on the 1st January 2021 and being completed by 2028. During this agricultural transition, English agricultural and horticultural businesses will experience a phased decline in the Basic Payment Scheme support, that many businesses have received, while new opportunities for payments for public goods will be introduced and implemented, all against a backdrop of a need to reduce agriculture’s ‘carbon footprint’ and increase productivity performance. Alongside this change in emphasis, trade deals will be negotiated with the EU, the USA and other countries with which we currently, and intend to, trade with. This change in the UK’s agricultural policies and trading relationship will lead to both challenges and opportunities for business. Irrespective of the challenges and opportunities that lay ahead, most industry commentators note the need for businesses to adapt and to be fully aware of their costs and returns. We hope that RBR’s core focus on independent analysis of the economics of agricultural and horticultural sectors will continue to provide the industry with the data on enterprise and sectoral returns to aid business decision making.

For the 2018/19 year, average Farm Business Income (FBI), derived from our work on the Farm Business Survey (FBS), fell to £50,400 per business from £56,100 in 2017/18. The 2018/19 year relates to the 2018 harvest year, which witnessed an exceptionally cold spring “The Beast from the East” followed by one of the driest summers on record (almost in line with the 1976 drought). These weather impacts led to forage shortage and thus increased livestock feeds costs in the grazing sectors, and reduced cropping yields, albeit with an increase in crop prices. The dairy and grazing livestock sectors witnessed the largest percentage decreases in FBI, as they faced the higher costs of feed and lower prices for stock, particularly in the less favoured areas (LFAs).

As with our previous editions of these reports, available at www.ruralbusinessresearch.co.uk, our core aim is to inform agricultural and horticultural businesses about the economics in their sector. This series of reports, and our work on the FBS more generally, would not be possible without the cooperation of the farmers and growers who participate in the FBS to ensure that the data we provide for policy making, and in our reports and free to use online data services at www.farmbusinesssurvey.co.uk, is truly representative of the sectors. Our sincere thanks therefore go to the farmers and growers for their most valuable contribution.

Professor Paul Wilson

Chief Executive Officer, Rural Business Research

January 2020

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 2018/19, milk prices in the UK remained largely static, with a yearly average price of 29.3 pence per litre (ppl); prices peaked in November 2018 at 31.6ppl, returning to 28.9ppl by the end of the milk year.
- Average milk yield increased by 1.8% in 2018/19 to 7,968 litres per cow (lpc), the highest levels seen to date.
- The national herd size for 2018/19 decreased by 16,000 to 1,881,000 cows.
- Approximately 637 producers left the industry during 2019, the sharpest decrease seen in recent years.

Farm level results

- Farm Business Survey data from 2018/19 shows that the average Farm Business Income (FBI) from dairying was £473/ha, which at the average farm size equates to a FBI in the region of £79,700, representing a decrease in total FBI of over 33% from 2017/18.
- Average FBI on conventional dairy farms in 2018/19 was £482/ha (£81,458 per farm), whilst on organic farms average FBI was £307/ha (£47,585 per farm). In 2018/19, the gap widened between conventional and organic farms FBI/ha, to 57%, compared with 2017/18 when conventional farms were 36.5% higher than organic farms.
- Management and Investment Income (MII) across all dairy farms decreased by £243/ha to £197/ha in 2018/19. This equates to an average MII of £33,096 per farm, compared with £69,080 in 2017/18.

Dairy Enterprise Results

- Enterprise-level analysis shows that in 2018/19 the conventional herds' total dairy output rose by 6.2% to £2,373/cow, due largely to an increase in yield (+318lpc), as milk price only increased by (+0.7ppl). Organic herds' total dairy output fell by 2.5% to £2,260/cow, due to a combination of lower average yield (-46lpc) and lower calf output, together with higher herd replacement costs; milk price remained static at 38.7ppl.
- Lowland and LFA herds saw very little increase in average milk price, of 0.7ppl and 0.6ppl respectively; GM/cow fell by £18 for lowland and £58 for LFA herds, as the higher variable costs, notably feed costs, offset the higher milk price and average yields. In 2018/19, at the average herd sizes, the total farm GM for lowland herds saw a slight rise to £250,387 compared with £248,777 in 2017/18, due to higher average cow numbers per herd, whilst the total LFA herd GM fell to £183,260 compared with £190,848 in 2017/18 (Table 3.8).

Chapter 1: The Dairying Sector

1.1: Overview

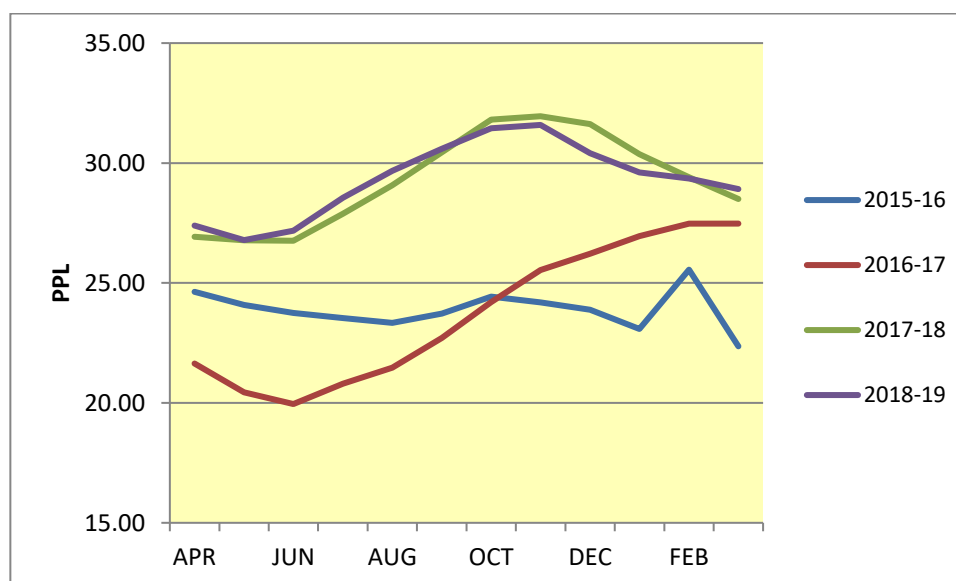
- During 2018/19, milk prices in the UK remained relatively unchanged, again peaking at an average of almost 32.0 pence per litre (ppl) in Nov 2018, followed by a decline from Dec to March 2019. This resulted in a yearly average price of 29.3 ppl, almost identical to average milk price in 2017/18 (Figure 1.1).
- For the second consecutive year, 2018/19 saw a substantial increase in the key input costs of feed, vet and medicines, fertiliser and energy (Figure 1.2).
- UK annual milk production in 2018/19 increased by 158 million litres (+1.07%) to 14,871 million litres (exceeding 2015/16 production of 14,829 million litres) (Figure 1.3).
- Average milk yield increased by 1.82% in 2018/19 to 7,968 litres per cow (lpc), the highest average yields seen to date (Figure 1.4).
- The national herd saw a decrease of 16,000 cows, to 1,881,000 cows (Figure 1.4).
- In December 2018, there were approximately 637 fewer milk producers in England and Wales than a year earlier; a fall of 6.92% and the lowest number of producers on record. Since 2011, numbers have fallen by 2,189, a decrease of over 20% (Figure 1.5).

Table 1.1: Average Annual Milk Prices

	2015/16	2016/17	2017/18	2018/19
Average annual price (ppl) (excluding bonus')	23.7	23.7	29.3	29.3

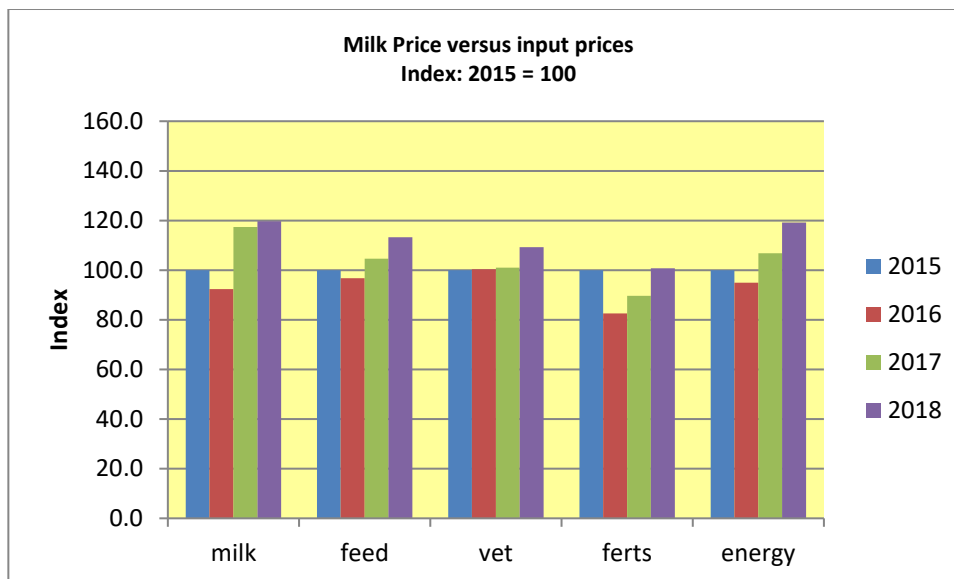
Source: Defra (2020a); Milk Price Surveys

Figure 1.1: Average Farmgate Milk Prices (UK)



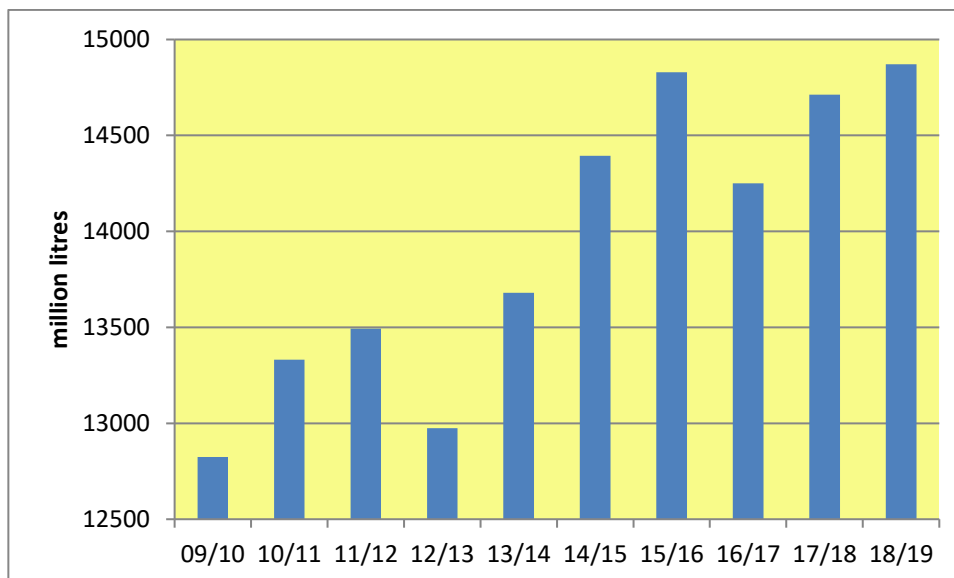
Source: Defra (2020b); Milk Price Surveys

Figure 1.2: Milk and Input Prices (UK)



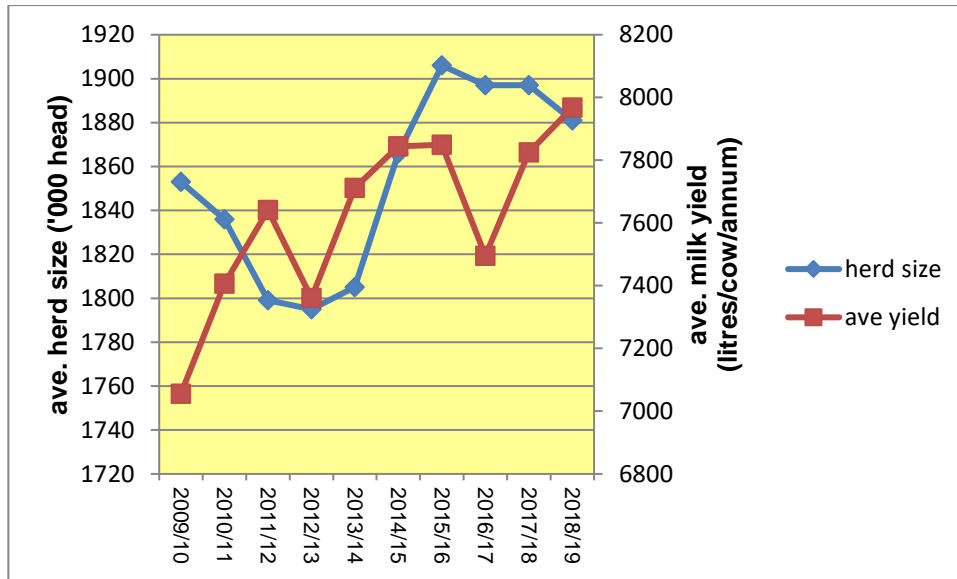
Source: Defra (2020c); Agriculture in the UK 2018

Figure 1.3: Annual Milk Production (UK)



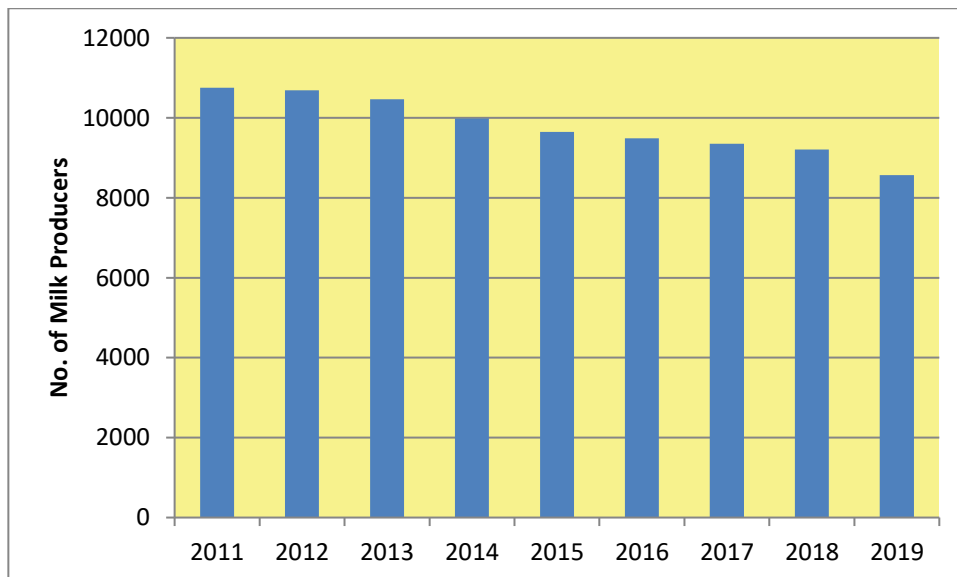
Source: AHDB Dairy (2020a)

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



Source: AHDB Dairy (2020b) *17/18 and 18/19 provisional

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



Source: AHDB Dairy (2020c)

1.2: Structure of Report

The above sections have described the market environment in which the dairy sector has been operating during the 2018/19 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.

From 2018/19, the classification of farms is based on 2013 standard output coefficients. 2017/18 results have been recalculated and presented in this release to allow comparability between 2017/18 and 2018/19. The results published here are therefore not directly comparable with those published in earlier years which are based on previous standard output coefficients. For more information please see

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/365564/fbs-uk-farmclassification-2014-21oct14.pdf

Table 2.1: Observations by Category: Farm-Level Data 2018/19

Category		All	Lowland Conventional	LFA Conventional ¹	Fully Organic ²
Number of farms		238	140	58	40
Farm Size	<60 hectares	-	13*	6*	-
	60-120 hectares	-	52	26	-
	>120 hectares	-	75	26	-
Performance by ratio output:costs	Lower quartile	-	41	14*	-
	Upper quartile	-	34	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 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.

*Data are derived from a modest sample size and thus there is a lower degree of confidence in the figures

Table 2.2: Observations by Category: Enterprise-Level Data 2018/19

Category		All	Lowland Conventional	LFA Conventional ¹	Fully Organic ²
Number of farms		214	122	54	38
Farm Size	<80 cows	-	17	9*	-
	80-130 cows	-	30	18	-
	>130 cows	-	75	27	-
Performance by GM/cow	Lower quartile	-	35	14*	-
	Upper quartile	-	25	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.

*Data are derived from a modest sample size and thus there is a lower degree of confidence in the figures

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.

From 2018/19, the classification of farms is based on 2013 standard output (SO) coefficients. 2017/18 results have been recalculated and presented in this report on 2013 SO coefficients to allow comparability between 2017/18 and 2018/19. The results published here are therefore not directly comparable with those published in reports in earlier years which are based on previous SO coefficients. Results for 2017/18 based on the previous SO coefficients can be found at: <https://www.ruralbusinessresearch.co.uk/archive-publications/>

Chapter 3: Results

3.1: Farm Level Results

- Farm Business Survey data from 2018/19 shows that the average Farm Business Income (FBI) from dairying was £473/ha, which at the average farm size equates to a FBI of £79,464, representing a decrease of over 33% for total FBI from 2017/18 (Table 3.1).
- Average FBI on conventional dairy farms in 2018/19 was £482/ha (£81,458 per farm), whilst on organic farms average FBI was £307/ha (£47,585 per farm), resulting in a decrease in total FBI per farm of 32% for conventional farms and of more than 46% for organic farms total FBI per farm (in comparison to a substantial increase for both in the previous year) (Table 3.1).
- 2018/19 saw a further increase in the gap between conventional and organic farms FBI; at £482/ha, FBI/ha on conventional farms was 57% higher than on organic farms (£307/ha), compared with 2017/18 when conventional farms were 36.5% higher than organic farms (Table 3.1).
- Management and Investment Income (MII) across all dairy farms decreased by £243/ha to £197/ha in 2018/19. This equates to an average MII of £33,096 per farm, compared with £69,080 in 2017/18 (Table 3.1).
- Average MII on conventional dairy farms decreased from £448/ha in 2017/18 to £205/ha (£34,645 per farm) in 2018/19, whilst on organic farms average MII decreased by more than 86% to £41/ha (£6,355 per farm) (Table 3.1).
- Average FBI on lowland dairy farms was £476/ha, a decrease of nearly 38% from £764/ha in 2017/18. For LFA dairy farms, average FBI decreased to £513/ha (from £758/ha in 2017/18) (Table 3.2). This equates to a FBI on a farm level for lowland dairy farms of £83,300 and LFA dairy farms of £73,359 in 2018/19.
- 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 -£417/ha, compared with £64/ha and £263/ha for the 60 to 120 hectares and greater than 120 hectares groups respectively.
- As previously reported, 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 £38,168, £57,239 and £93,890, with each group showing a substantial decrease in FBI for 2018/19 (Table 3.4).
- Profitability analysis reveals that in 2018/19, FBI for the upper quartile of lowland dairy farms was £916/ha (£1459/ha in 2017/18) compared with -£29/ha (£176/ha in 2017/18) for the lower quartile. The upper quartile group has a larger average farm size at 205ha, compared to 126ha for the lower quartile, with both showing an increase in farmed area (Table 3.5).
- An analysis of FBI by LFA quartile groupings reveals that the upper quartile achieved a milk output that was £1015/ha greater than that achieved by the lower quartile (in comparison with £1079/ha greater in 2017/18). Variable costs for the lower quartile increased by almost 62% to £1741/ha, whilst the upper quartile increased by nearly 54% to £1573/ha, with higher feed costs accounting for the majority of the increases. At the average farm size, the lower and upper quartiles achieved FBI returns of £4,104 and £180,796 respectively (Table 3.6).

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

	All		Conventional		Organic	
	17/18	18/19	17/18	18/19	17/18	18/19
Number of farms	238	238	203	198	35	40
Area (ha) [#]	157	168	157	169	158	155
	£/ha		£/ha		£/ha	
Output						
Milk	2726	2734	2759	2772	2078	2012
Calf	143	133	146	135	103	93
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	10	1	10	1	14	0
Herd Replacement	-241	-227	-245	-230	-160	-164
Total Dairy Output	2639	2641	2670	2678	2035	1941
Other Livestock	536	478	543	484	382	365
Other	533	550	537	558	442	406
Total Farm Output	3707	3669	3751	3720	2859	2712
Variable Costs						
Home-grown Concentrates	68	73	67	72	102	89
Purchased Concentrates	786	872	796	885	578	622
Coarse Fodder	66	101	68	103	35	63
Other Livestock Concentrates	3	4	3	4	0	0
Vet and Medicine	102	104	105	106	52	55
Other Livestock Costs	258	268	259	268	248	257
Seed	32	37	33	38	21	21
Fertiliser	98	103	102	108	12	9
Crop Protection	38	40	40	42	0	0
Other Crop Costs	24	20	24	20	11	9
Total Variable Costs	1476	1621	1498	1647	1058	1126
Fixed Costs						
Labour	411	427	416	432	326	325
Contract	182	177	184	179	129	130
Machinery Depreciation	186	200	188	203	139	148
Other Machinery	208	226	211	229	146	163
Miscellaneous	283	309	284	312	266	267
Rent and Rental Equivalent	320	326	322	327	294	301
Total Fixed Costs	1589	1665	1604	1682	1301	1334
Net Farm Income	642	383	649	390	500	252
Farmer / Spouse Labour	201	190	201	189	200	211
Management and Investment Income (MII)	440	197	448	205	300	41
Farm Business Income (FBI)	753	473	763	482	559	307

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	
	17/18	18/19	17/18	18/19
Number of farms	147	140	56	58
Area (ha)#	161	175	141	143
Output	£/ha		£/ha	
Milk	2832	2788	2393	2686
Calf	141	130	167	167
Lease Quota (net)	0	0	0	0
Other Dairy	9	1	17	0
Herd Replacement	-243	-226	-253	-250
Total Dairy Output	2739	2692	2324	2602
Other Livestock	545	484	536	487
Other	584	599	301	334
Total Farm Output	3868	3774	3161	3423
Variable Costs				
Home-grown Concentrates	72	79	38	38
Purchased Concentrates	817	873	692	950
Coarse Fodder	70	101	58	115
Other Livestock Concentrates	4	5	0	0
Vet and Medicine	107	107	95	103
Other Livestock Costs	264	272	232	250
Seed	37	43	10	13
Fertiliser	104	107	93	113
Crop Protection	46	48	8	12
Other Crop Costs	26	21	14	18
Total Variable Costs	1549	1654	1239	1610
Fixed Costs				
Labour	429	445	347	363
Contract	193	188	141	132
Machinery Depreciation	194	203	159	199
Other Machinery	222	236	157	194
Miscellaneous	291	315	248	294
Rent and Rental Equivalent	335	340	252	261
Total Fixed Costs	1664	1726	1305	1443
Net Farm Income	655	394	617	370
Farmer / Spouse Labour	193	180	242	236
Management and Investment Income (MII)	462	218	375	134
Farm Business Income (FBI)	764	476	758	513

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]	
	17/18*	18/19*	17/18	18/19	17/18	18/19
Number of farms	12	13	58	52	77	75
Area (ha) #	46	45	86	86	225	241
	£/ha		£/ha		£/ha	
Output						
Milk	2438	2537	3398	3600	2704	2630
Calf	188	167	194	194	127	116
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	53	13	32	3	2	0
Herd Replacement	-263	-220	-297	-309	-230	-210
Total Dairy Output	2416	2497	3328	3487	2603	2536
Other Livestock	532	434	662	591	516	463
Other	340	315	405	385	635	648
Total Farm Output	3289	3246	4396	4463	3754	3647
Variable Costs						
Home-grown Concentrates	58	57	51	64	78	82
Purchased Concentrates	662	827	961	1119	786	825
Coarse Fodder	89	116	94	153	64	90
Other Livestock Concentrates	0	3	0	0	5	6
Vet and Medicine	98	105	117	119	104	104
Other Livestock Costs	257	283	323	351	250	256
Seed	3	7	28	32	41	46
Fertiliser	98	101	130	124	98	103
Crop Protection	5	6	23	21	53	54
Other Crop Costs	25	20	25	22	27	21
Total Variable Costs	1295	1524	1752	2004	1506	1587
Fixed Costs						
Labour	156	202	467	479	428	443
Contract	135	157	200	202	193	186
Machinery Depreciation	162	223	231	268	185	190
Other Machinery	165	183	230	242	221	236
Miscellaneous	322	331	393	411	265	295
Rent and Rental Equivalent	317	346	359	382	330	331
Total Fixed Costs	1257	1441	1880	1983	1622	1680
Net Farm Income	737	281	765	476	626	380
Farmer / Spouse Labour	687	697	400	412	128	122
Management and Investment Income (MII)	50	-417	365	64	497	263
Farm Business Income (FBI)	826	418	941	658	718	441

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

* Data are derived from a modest sample size and thus there is a lower degree of confidence in the figures

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

LFA	< 60 ha [small]		60 – 120 ha [medium]		>120 ha [large]	
	17/18*	18/19*	17/18	18/19	17/18	18/19
Number of farms	7	6	24	26	25	26
Area (ha) [#]	48	52	87	91	211	205
	£/ha		£/ha		£/ha	
Output						
Milk	3271	3366	2722	2828	2229	2598
Calf	210	220	223	190	144	155
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	86	0	31	0	8	0
Herd Replacement	-457	-406	-229	-259	-250	-239
Total Dairy Output	3110	3180	2747	2759	2132	2514
Other Livestock	515	344	503	514	549	485
Other	595	716	334	355	273	306
Total Farm Output	4220	4239	3583	3629	2953	3305
Variable Costs						
Home-grown Concentrates	67	65	33	49	38	33
Purchased Concentrates	1111	1290	904	1064	595	890
Coarse Fodder	82	123	54	99	58	120
Other Livestock Concentrates	0	0	0	0	0	0
Vet and Medicine	99	97	111	106	89	101
Other Livestock Costs	335	313	265	294	215	230
Seed	6	11	5	11	11	14
Fertiliser	117	126	90	105	93	116
Crop Protection	4	3	8	6	8	14
Other Crop Costs	13	6	16	24	13	16
Total Variable Costs	1835	2034	1487	1758	1119	1533
Fixed Costs						
Labour	274	314	329	339	357	375
Contract	165	152	137	128	142	133
Machinery Depreciation	304	270	219	234	130	182
Other Machinery	245	221	207	218	135	183
Miscellaneous	440	528	298	327	220	270
Rent and Rental Equivalent	207	208	245	247	257	268
Total Fixed Costs	1636	1693	1435	1494	1241	1411
Net Farm Income	749	513	661	376	594	361
Farmer / Spouse Labour	688	630	401	384	161	160
Management and Investment Income (MII)	61	-117	260	-8	432	200
Farm Business Income (FBI)	908	734	903	629	699	458

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

*Data are derived from a modest sample size and thus there is a lower degree of confidence in the figures

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

Lowland	Lower quartile		Upper quartile	
	17/18	18/19	17/18	18/19
Number of farms	41	41	36	34
Area (ha)#	115	126	150	205
Output	£/ha		£/ha	
Milk	2237	2170	3175	2564
Calf	138	111	168	114
Lease Quota (net)	0	0	0	0
Other Dairy	20	2	10	1
Herd Replacement	-213	-217	-262	-195
Total Dairy Output	2182	2066	3091	2484
Other Livestock	506	455	687	433
Other	493	572	686	803
Total Farm Output	3182	3093	4464	3720
Variable Costs				
Home-grown Concentrates	78	107	102	88
Purchased Concentrates	733	790	771	681
Coarse Fodder	64	66	58	89
Other Livestock Concentrates	15	21	5	0
Vet and Medicine	94	93	103	79
Other Livestock Costs	282	255	271	231
Seed	31	38	34	44
Fertiliser	97	100	117	122
Crop Protection	41	54	37	67
Other Crop Costs	31	21	23	19
Total Variable Costs	1464	1547	1522	1420
Fixed Costs				
Labour	402	391	422	376
Contract	195	160	169	216
Machinery Depreciation	176	221	210	170
Other Machinery	229	243	211	186
Miscellaneous	314	308	269	241
Rent and Rental Equivalent	308	299	343	319
Total Fixed Costs	1623	1622	1622	1507
Net Farm Income	94	-76	1320	792
Farmer / Spouse Labour	295	289	210	138
Management and Investment Income (MII)	-203	-365	1110	668
Farm Business Income (FBI)	176	-29	1459	916

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	
	17/18*	18/19*	17/18*	18/19*
Number of farms	14	14	14	14
Area (ha)#	102	108	177	154
Output	£/ha		£/ha	
Milk	1587	2350	2666	3365
Calf	137	162	173	177
Lease Quota (net)	0	0	0	0
Other Dairy	30	0	11	0
Herd Replacement	-215	-239	-255	-245
Total Dairy Output	1539	2274	2595	3297
Other Livestock	438	477	495	490
Other	372	324	290	379
Total Farm Output	2348	3075	3380	4166
Variable Costs				
Home-grown Concentrates	28	40	36	38
Purchased Concentrates	632	1035	525	965
Coarse Fodder	76	184	37	72
Other Livestock Concentrates	0	0	0	0
Vet and Medicine	86	99	80	98
Other Livestock Costs	175	241	196	213
Seed	6	9	13	19
Fertiliser	53	104	114	130
Crop Protection	3	9	11	18
Other Crop Costs	17	20	10	20
Total Variable Costs	1075	1741	1022	1573
Fixed Costs				
Labour	262	397	359	397
Contract	107	97	160	154
Machinery Depreciation	163	214	124	199
Other Machinery	155	241	119	183
Miscellaneous	207	326	254	328
Rent and Rental Equivalent	212	228	320	317
Total Fixed Costs	1106	1503	1335	1578
Net Farm Income	166	-169	1024	1015
Farmer / Spouse Labour	341	329	180	215
Management and Investment Income (MII)	-175	-499	843	800
Farm Business Income (FBI)	360	38	1131	1174

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.

*Data are derived from a modest sample size and thus there is a lower degree of confidence in the figures

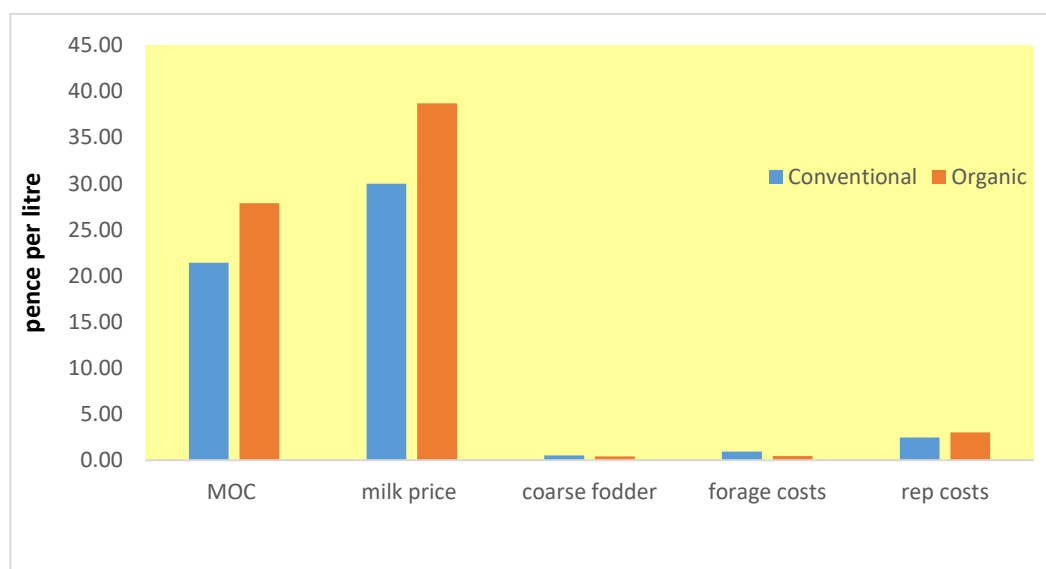
3.2: Dairy Enterprise Results: Gross Margins

- Enterprise-level analysis in 2018/19 shows that the conventional herd total dairy output exceeded organic total dairy output by £113/cow. Conventional herd dairy output increased by £139/cow, as a result of an increase in both yield (318lpc) and milk price (+0.7ppl), whilst organic herds total dairy output decreased by £59/cow, due solely to a reduction in milk yield (-46lpc), as milk price remained static at 38.7ppl. The average number of cows per herd increased by 4 cows for the conventional herd, and decreased by 5 cows for the organic herd (Table 3.7).
- The lower organic dairy output was offset by lower variable costs, resulting in a gross margin of £1,241/cow compared with £1,238/cow for the conventional dairy herds. The difference between the organic and conventional dairy herd gross margins was much wider in 2017/18, whereby conventional herds produced a gross margin of £1264/cow compared with the organic herd gross margin of £1,402/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 6.43ppl, which was lower than the previous year's excess of 7.38ppl (Figure 3.1).
- Lowland and LFA herds saw only a small increase in average milk price, of 0.7ppl and 0.6ppl respectively; with increases in variable costs, notably concentrate and coarse fodder costs relating to the very hot, dry summer, this resulted in decreases in GM/cow of £18 for lowland and £58 for LFA herds. In 2018/19, at the average herd sizes, the total farm GM for lowland herds was £250,387 compared with £248,777 in 2017/18, whilst the total LFA herd GM decreased to £183,260 compared with £190,848 in 2017/18 (Table 3.8).
- For lowland herds in 2018/19, as herd size increases so do milk output/cow, total dairy output/cow and total gross margin/cow, although milk price was lowest for the 80 – 130 cows group at 29.2ppl. Gross margins per cow for the less than 80 cows, the 80 to 130 cows and the greater than 130 cows groups were £921, £1,098 and £1,305 respectively. These margins per cow equate to gross margins per litre of 14.76ppl, 14.92ppl and 15.35ppl respectively, i.e. the smallest sized group achieved the lowest gross margin per litre (Table 3.9).
- For LFA dairy herds in 2018/19, milk price increases as herd size increases, with the highest dairy output and gross margin per cow being achieved by the more than 130 cows group. 2018/19 saw a small increase in average milk price; for the less than 80 cows, 80 – 130 cows and more than 130 cows this was 1.8ppl, 0.5ppl and 0.6ppl. Only the less than 80 cow group saw a GM increase (of £166/cow); the 80 to 130 cows and more than 130 cows groups both saw a decrease in GM of £130 and £57 per cow respectively. In a change from recent years, the GM for the LFA less than 80 cows was the only group which exceeded that of the lowland herd for the same group size and was greater by £63/cow (Table 3.10).
- In 2018/19, lowland dairy farms in the upper quartile (based on GM/cow) produced on average 2,968lpc more than those in the lower quartile, with average milk prices for the upper quartile exceeding those of the lower quartile by 1.3ppl (Table 3.11).
- Feed concentrate to milk conversion rates rose to 9.2ppl and 7.8ppl for the GM lowland upper and lower quartile farms respectively (from 7.3ppl and 7.7ppl for 2017/18); both increases were due to an increase in concentrate cost, although this was partially offset by higher yields in both groups. Gross margin per litre results increased slightly to 17.2ppl (upper quartile) and decreased to 11.9ppl (lower quartile) compared to 17.1ppl (upper quartile) and 13.9ppl (lower quartile) in 2017/18 (Table 3.11).
- Gross margin performance quartile analysis of LFA dairy farms reveals that the better performers have larger herds and achieve considerably higher yields (+1,662 lpc) as well as receiving higher milk prices (+3.8 ppl) than the lowest quartile, leading to a disparity of £921 between the two quartile's relative gross margin per cow performances (compared with £809 in 2017/18) (Table 3.12).

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

	All		Conventional		Organic	
	17/18	18/19	17/18	18/19	17/18	18/19
Number of farms	227	214	192	176	35	38
Average number cows	186	188	188	192	139	134
Average yield (litres)	7794	8090	7861	8179	6113	6067
Milk price (ppl)	29.6	30.3	29.3	30.0	38.7	38.7
	£/cow		£/cow		£/cow	
Output						
Milk	2309	2451	2306	2456	2368	2345
Calf	122	119	122	120	118	107
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	9	1	9	1	16	0
Herd Replacement	-202	-203	-203	-203	-183	-193
Total Dairy Output	2237	2368	2234	2373	2319	2260
Variable costs						
Concentrates	608	700	609	702	597	658
Coarse Fodder	42	77	43	78	27	56
Vet and Medicine	73	80	74	81	50	53
Other Livestock Costs	170	191	168	190	215	227
Forage Costs	75	81	77	84	27	24
Total Variable Costs	968	1130	971	1135	917	1018
Total Gross Margin	1269	1238	1264	1238	1402	1241

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	
	17/18	18/19	17/18	18/19
Number of farms	139	122	53	54
Average number cows	193	197	168	170
Average yield (litres)	8043	8310	6939	7547
Milk price (ppl)	29.3	30.0	29.4	30.0
	£/cow		£/cow	
Output				
Milk	2359	2495	2040	2267
Calf	118	116	142	139
Lease Quota (net)	0	0	0	0
Other Dairy	8	1	14	0
Herd Replacement	-200	-202	-215	-209
Total Dairy Output	2284	2409	1981	2197
Variable costs				
Concentrates	626	698	524	720
Coarse Fodder	45	78	34	79
Vet and Medicine	75	83	67	72
Other Livestock Costs	171	195	154	164
Forage Costs	79	84	66	84
Total Variable Costs	995	1138	844	1119
Total Gross Margin	1289	1271	1136	1078

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

Lowland	< 80 cows [small]		80 – 130 cows [medium]		>130 cows [large]	
	17/18	18/19	17/18	18/19	17/18	18/19
Number of farms	20	17	33	30	86	75
Average number cows	61	60	102	103	245	245
Average yield (litres)	6818	6239	7110	7361	8214	8500
Milk price (ppl)	28.3	29.5	28.4	29.2	29.5	30.1
	£/cow		£/cow		£/cow	
Output						
Milk	1928	1842	2021	2148	2420	2560
Calf	133	119	135	133	116	114
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	39	8	39	2	2	0
Herd Replacement	-163	-163	-200	-227	-202	-200
Total Dairy Output	1938	1806	1994	2055	2336	2474
Variable costs						
Concentrates	481	496	510	571	647	721
Coarse Fodder	35	27	36	43	46	84
Vet and Medicine	65	66	63	72	77	85
Other Livestock Costs	192	212	169	183	170	196
Forage Costs	75	84	81	88	79	83
Total Variable Costs	848	885	859	957	1019	1169
Total Gross Margin	1089	921	1135	1098	1317	1305

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

LFA	< 80 cows [small]		80 – 130 cows [medium]		>130 cows [large]	
	17/18*	18/19*	17/18	18/19	17/18	18/19
Number of farms	10	9	19	18	24	27
Average number cows	57	61	107	108	249	238
Average yield (litres)	5518	6337	7449	7836	6900	7561
Milk price (ppl)	27.1	28.9	28.6	29.1	29.8	30.4
	£/cow		£/cow		£/cow	
Output						
Milk	1494	1829	2128	2277	2056	2298
Calf	128	136	171	139	135	139
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	48	0	38	0	4	0
Herd Replacement	-205	-135	-207	-242	-218	-206
Total Dairy Output	1465	1829	2129	2175	1977	2230
Variable costs						
Concentrates	412	565	650	760	495	721
Coarse Fodder	22	43	33	60	35	87
Vet and Medicine	41	53	62	68	70	74
Other Livestock Costs	119	119	154	173	157	166
Forage Costs	54	65	58	72	69	88
Total Variable Costs	647	846	957	1133	827	1136
Total Gross Margin	818	984	1172	1042	1151	1094

*Data are derived from a modest sample size and thus there is a lower degree of confidence in the figures

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

Lowland	Lower Quartile		Upper Quartile	
	17/18	18/19	17/18	18/19
Number of farms	39	35	32	25
Average number cows	142	172	243	238
Average yield (litres)	6173	6827	9366	9795
Milk price (ppl)	29.1	29.2	29.4	30.5
	£/cow		£/cow	
Output				
Milk	1795	1990	2754	2986
Calf	100	86	134	127
Lease Quota (net)	0	0	0	0
Other Dairy	14	1	5	1
Herd Replacement	-232	-249	-177	-182
Total Dairy Output	1677	1829	2716	2933
Variable costs				
Concentrates	476	630	686	762
Coarse Fodder	51	51	81	108
Vet and Medicine	65	78	80	79
Other Livestock Costs	158	180	189	220
Forage Costs	71	79	83	84
Total Variable Costs	821	1017	1118	1253
Total Gross Margin	856	812	1598	1680

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

LFA	Lower Quartile		Upper Quartile	
	17/18*	18/19*	17/18*	18/19*
Number of farms	13	14	14	12
Average number cows	133	136	181	187
Average yield (litres)	5401	6648	7895	8310
Milk price (ppl)	27.9	27.9	29.9	31.7
	£/cow		£/cow	
Output				
Milk	1508	1858	2362	2631
Calf	102	140	157	121
Lease Quota (net)	0	0	0	0
Other Dairy	25	0	8	0
Herd Replacement	-271	-241	-197	-164
Total Dairy Output	1364	1757	2330	2589
Variable costs				
Concentrates	434	701	543	748
Coarse Fodder	37	173	22	29
Vet and Medicine	57	62	70	65
Other Livestock Costs	115	145	143	131
Forage Costs	50	68	72	87
Total Variable Costs	693	1149	851	1060
Total Gross Margin	671	607	1480	1528

*Data are derived from a modest sample size and thus there is a lower degree of confidence in the figures

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(as at 05/12/2019)

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

Details available at www.ruralbusinessresearch.co.uk