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Farm Business Survey

2020/2021

Dairy Farming in England

Davina Smith, Helen McHoul
and Paul Wilson

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independent research, data and analysis

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Farm Business Survey 2020/21

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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 Sixteenth Series

Welcome to the sixteenth series of reports on the economics of agriculture and horticulture in England from *Rural Business Research (RBR).* Our sixteenth series, covering the 2020/21 financial year largely corresponds with the start of the Covid-19 pandemic impact on farm businesses. In addition, the new Agriculture Act came into being (1 January 2021), alongside other changes to how farm, and other businesses, operate given the UK's exit from the EU. Readers may also be interested in our twice annual intelligence reports, published at www.ruralbusinessresearch.co.uk, and in addition, during the spring and summer of 2020, we produced regular "Coronavirus Impact on Farming in England" reports. The importance of providing the industry and government with independent evidence on the changing fortunes of farm and horticultural business has never been greater. Through submission of data and Coronavirus reports to Defra, our work has helped to support policies that have directly benefited farm businesses, including the Dairy Response Fund in April and May 2020.

The 2020/21 financial year for farmers and growers saw seasonal, market and supply impacts in addition to, and often aligned with, Covid-19 impacts. Reduced winter cropping in 2019, led to an increase in spring cereal cropping in 2020. While cereal and oilseed crops yields were lower, strong cereal, oilseed and straw prices helped offset fixed cost increases. However, greater output prices led to higher concentrate and straw prices affecting livestock farms. There were increases in cattle and sheep prices, following temporary market collapses at the outbreak of Covid-19, but pig prices fared less well and this sector has suffered from processing capacity shortages at abattoirs. General labour shortages, alongside input supply challenges, have had short and medium term impacts. Some diversified activities were initially severely impacted by Covid-19, with "lockdown" leading to cancelled tourist and accommodation bookings, however with a subsequent large increase in demand for UK holidays, demand outstripped supply, providing welcome business recovery.

For the 2020/21 financial year, average Farm Business Income (FBI), derived from our work on the Defra-funded Farm Business Survey (FBS), increased to £51,900 per business, representing an increase of 13% on the previous 2019/20 year, and marginally greater than in 2018/19. In percentage increase terms, Lowland Grazing Livestock saw an increase of 97% in FBI, but this was from a very low base of £9,400 in 2019/20 to £18,400 in 2020/21, resulting in this farm type recording the lowest average FBI once again. Despite the challenges in the dairy sector at the start of the Covid-19 pandemic, with some farmers not having milk collected, Dairy farm businesses returned the highest average FBI of £92,500 (9% up on 2019/20), followed by Poultry (£77,700; down 12%) and Cereals (£71,700; up 14%). Of course, in order to appreciate the full drivers of these average headline data, the costs and revenues that have led to these results need to be understood. Our series of reports provide these details, and increasingly demonstrate that in some farm types it is the non-agricultural business activities that are providing important business level income.

In addition to this series of in depth reports, our free to use interactive online tools provide a further wealth of information at www.farmbusinesssurvey.co.uk. This series of reports, along with previous versions are also all available at www.ruralbusinessresearch.co.uk. The 2020/21 financial year, and our work on the FBS to accurately and independently report on the changing fortunes of farm and horticultural businesses, has been like no other in recent memory. Our sincere thanks go to the farmers and growers for their most valuable contribution, in not only continuing to provide access to their farm business data, but also doing so in the face of changing ways in which we have had to access data and interact with participating farm businesses due to the Covid-19 pandemic. I also thank all my colleagues for the positive way in which they have professionally adapted to the changing work circumstances that we have all experienced since March 2020.

Professor Paul Wilson
Chief Executive Officer, Rural Business Research
December 2021

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.

It is important to note that all surveys are subject to sampling error as they are not measuring the whole population, the FBS is no exception. It is common practice to publish 95% confidence intervals and error bars alongside any published estimated figures to give the reader an indication of the size of the sampling error. These signify that we are 95% confident that this range contains the true value. For simplicity within these reports, the confidence intervals have not always been published. Readers should be aware that the figures calculated from the FBS data have a level of uncertainty around them and that all figures are estimates. Generally, the smaller the sample size the greater the sampling error and the less confidence we have in the estimates. For details on the FBS confidence intervals, please refer to Defra FBS publications;

https://www.gov.uk/government/collections/farm-business-survey

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Summary: Key Findings

The Dairying Sector

- During 2020/21, average milk prices in the UK remained almost static, with a yearly average price of 28.9 pence per litre (ppl); following a dip in price in May 2020 to 26.7ppl, prices peaked in November 2020 at 30.7ppl, returning to 29.7ppl by the end of the milk year.

- Average milk yield increased by only 0.01% in 2020/21 to 8,004 litres per cow (lpc).

- The national herd size for 2020/21 decreased by 14,000 to 1,853,000 cows.

- 352 producers left the industry from October 2020 to October 2021, an increase on the 258 producers that left the industry in the previous 12 months.

Farm level results

- Farm Business Survey data from 2020/21 shows that the average Farm Business Income (FBI) from dairying was £578/ha, which at the average farm size equates to a FBI in the region of £92,500, representing an increase in total FBI of almost 9.3% from 2019/20.

- Average FBI on conventional dairy farms in 2020/21 was £596/ha (£95,360 per farm), whilst on organic farms average FBI was £307/ha (£48,506 per farm). In 2020/21, the gap again widened between conventional and organic farms FBI/ha, to over 94%, compared with 2019/20 when conventional farms were 78% higher than organic farms.

- Management and Investment Income (MII) across all dairy farms increased by £48/ha to £268/ha in 2020/21. This equates to an average MII of £42,880 per farm, compared with £36,080 in 2019/20.

Dairy Enterprise Results

- Enterprise-level analysis shows that in 2020/21 the conventional herds' total dairy output increased by only £30/cow to £2,399/cow, with a small increase in yield (+165lpc) offset by a slight fall in milk price of 0.1ppl. Organic herds' total dairy output fell by £41/cow taking the figure to £2,231/cow; whilst yield remained almost static (-27lpc) there was a fall in milk price of 1.1ppl.

- Lowland herds saw a small decrease in average milk price of 0.1ppl, whilst LFA herds witnessed a small increase of 0.2ppl; GM/cow decreased by £11 for lowland and £79 for LFA herds. Whilst lowland herd yield per cow increased by 210 litres, the lower milk price coupled with higher variable costs, notably feed costs, resulted in the lower GM/cow. LFA herds saw a decrease in yield (49l), which coupled with an increase in variable costs offset the small increase in milk price. In 2020/21, at the average herd sizes, the total farm GM for lowland herds saw a slight drop to £261,600 compared with £269,076 in 2019/20, whilst the total LFA herd GM fell to £183,762 compared with £199,248 in 2019/20 (Table 3.8).

Chapter 1: The Dairying Sector

1.1: Overview

- During 2020/21, average milk price in the UK remained almost static, peaking at an average of 30.7 pence per litre (ppl) in Nov 2020, followed by a decline from Dec to March 2021. This resulted in a yearly average price of 28.9ppl, which was 0.1ppl higher than the average milk price in 2019/20 (Figure 1.1).

- 2020/21 saw an increase in the key input costs of feed, whilst vet and medicines costs remained static, and fertiliser and energy costs decreased (Figure 1.2).

- UK annual milk production in 2020/21 increased by 35 million litres (+0.23%) to 15,007 million litres (a smaller increase than the previous year's figure of 100 million litres) (Figure 1.3).

- Average milk yield remained almost static (+1 litre) in 2020/21 at 8,004 litres per cow (lpc), maintaining the high average yields seen last year (Figure 1.4).

- The national herd saw a decrease of 14,000 cows, to 1,853,000 cows (Figure 1.4).

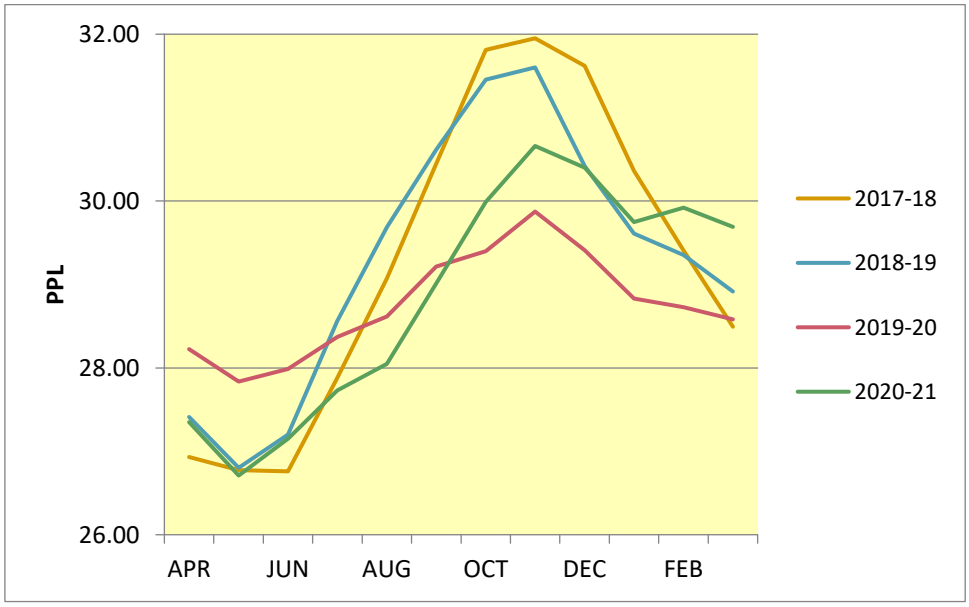
- In October 2021, there were approximately 352 fewer milk producers in England and Wales than a year earlier; a fall of over 4% and the lowest number of producers on record. Since October 2012, numbers have fallen by 2,704, a decrease of over 25% (Figure 1.5).

Table 1.1: Average Annual Milk Prices

	2017/18	2018/19	2019/20	2020/21
Average annual price (ppl) (excluding bonus')	29.3	29.3	28.8	28.9

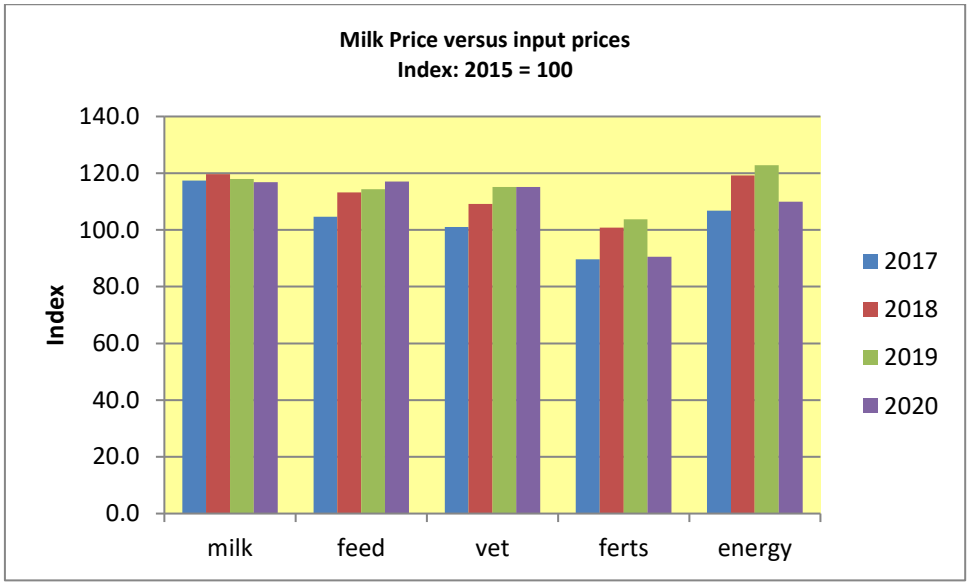
Source: Defra (2022a); Milk Price Surveys

Figure 1.1: Average Farmgate Milk Prices (UK)



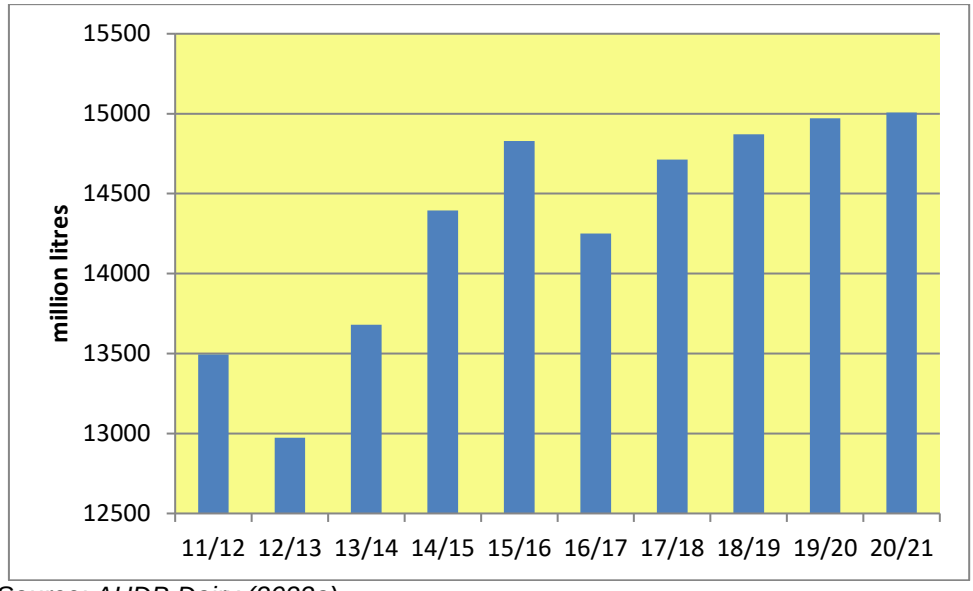
Source: Defra (2022b); Milk Price Surveys

Figure 1.2: Milk and Input Prices (UK)



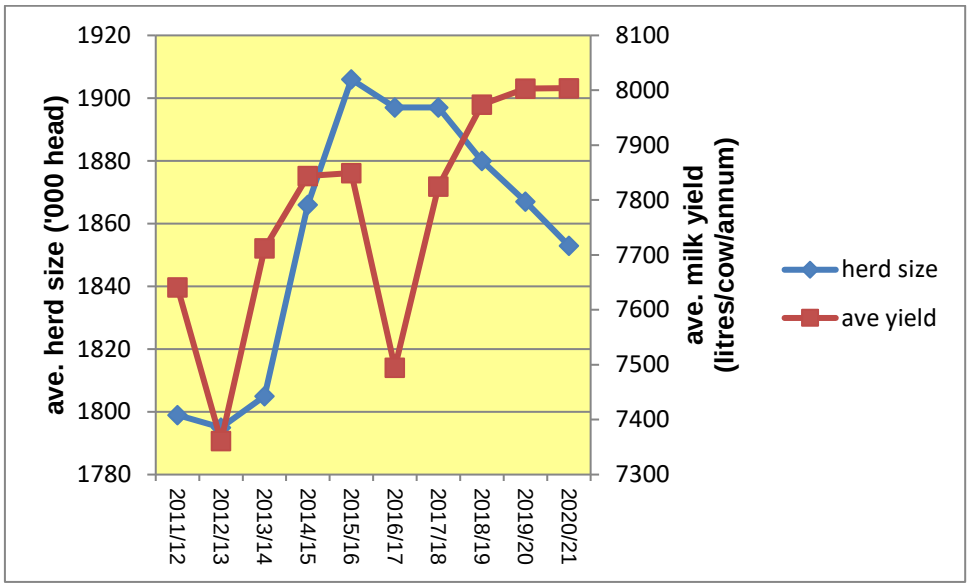
Source: Defra (2022c); Agriculture in the UK 2020

Figure 1.3: Annual Milk Production (UK)



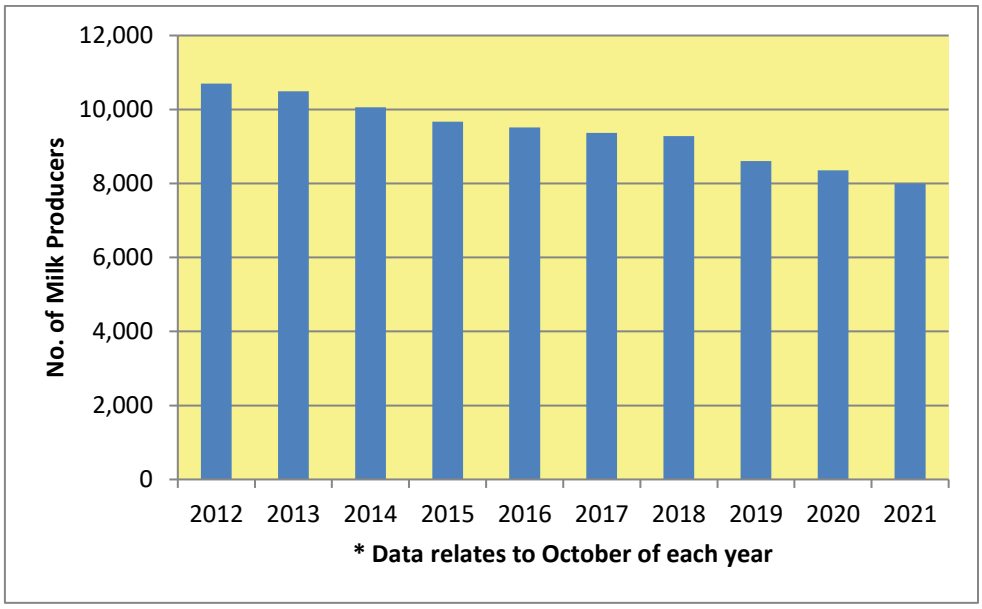
Source: AHDB Dairy (2022a)

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



Source: AHDB Dairy (2022b)

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



Source: AHDB Dairy (2022c)

1.2: Structure of Report

The above sections have described the market environment in which the dairy sector has been operating during the 2020/21 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.

From 2018/19, the classification of farms is based on 2013 standard output coefficients. 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 2020/21

Category		All	Lowland Conventional	LFA Conventional[1]	Fully Organic [2]
Number of farms		221	125	60	36
Farm Size	<60 hectares	-	8*	6*	-
	60-120 hectares	-	53	24	-
	>120 hectares	-	64	30	-
Performance by ratio output:costs	Lower quartile	-	36	15*	-
	Upper quartile	-	32	16	-

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 2020/21

Category		All	Lowland Conventional	LFA Conventional [1]	Fully Organic [2]
Number of farms		218	123	59	36
Farm Size	<80 cows	-	20	12*	-
	80-130 cows	-	25	18	-
	>130 cows	-	78	29	-
Performance by GM/cow	Lower quartile	-	37	17	-
	Upper quartile	-	24	13*	-

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. The results published here are therefore not directly comparable with those published in reports in earlier years which are based on previous SO 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"

Chapter 3: Results

3.1: Farm Level Results

- Farm Business Survey data from 2020/21 shows that the average Farm Business Income (FBI) from dairying was £578/ha, which at the average farm size equates to a FBI in the region of £92,480, representing an increase in total FBI of more than 9% from 2019/20 (Table 3.1).

- Average FBI on conventional dairy farms in 2020/21 was £596/ha (£95,360 per farm), whilst on organic farms average FBI was £307/ha (£48,506 per farm), resulting in an increase in total FBI per farm of over 9% for conventional farms and of slightly over 8.5% for organic farms total FBI per farm (Table 3.1).

- 2020/21 saw a further increase in the gap between conventional and organic farms FBI; at £596/ha, FBI/ha on conventional farms was over 94% higher than on organic farms (£307/ha), compared with 2019/20 when FBI on conventional farms was 78% higher than organic farms (Table 3.1).

- Management and Investment Income (MII) across all dairy farms saw an increase of £48/ha, to £268/ha in 2020/21. This equates to an average MII of £42,880 per farm, compared with £36,080 in 2019/20 (Table 3.1).

- Average MII on conventional dairy farms increased from £232/ha in 2019/20 to £283/ha (£45,280 per farm) in 2020/21; on organic farms average MII increased by more than 43% to £33/ha (£5,214 per farm) (Table 3.1).

- Average FBI on lowland dairy farms was £589/ha, an increase of nearly 16% from £508/ha in 2019/20. For LFA dairy farms, average FBI decreased to £626/ha (from £639/ha in 2019/20) (Table 3.2). This equates to a FBI on a farm level for lowland dairy farms of £95,418 and LFA dairy farms of £95,152 in 2020/21.

- 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 -£500/ha, compared with £77/ha and £362/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 £46,308, £59,156 and £128,921.

- Profitability analysis for lowland farms reveals a narrowing gap for FBI between the upper and lower quartiles in 2020/21; FBI for the upper quartile of lowland dairy farms was £1194/ha (£1080/ha in 2019/20) compared with £54/ha (-£117/ha in 2019/20) for the lower quartile. The upper quartile group has a larger average farm size at 167ha, compared to 120ha for the lower quartile, with both again showing a decrease in farmed area (Table 3.5), albeit a small decrease for the lower quartile.

- An analysis of FBI by LFA quartile groupings reveals that the upper quartile achieved a milk output that was £895/ha greater than that achieved by the lower quartile (in comparison with £633/ha greater in 2019/20). Variable costs for the lower quartile increased by over 10% to £1707/ha, whilst the upper quartile increased by over 20% to £1592/ha, with higher feed and livestock costs accounting for the majority of the rise in costs. At the average farm size, the lower and upper quartiles achieved FBI returns of £3,815 and £237,328 respectively (Table 3.6), showing a wider gap in FBI compared with last year's figures of £12,420 and £210,936.

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

	All		Conventional		Organic	
	19/20	20/21	*19/20*	20/21	*19/20*	20/21
Number of farms	*228*	221	*190*	185	*38*	36
Area (ha)[#]	*164*	160	*165*	160	*150*	158
	£/ha		£/ha		£/ha	
Output						
Milk	*2848*	2941	*2904*	3008	*1947*	1903
Calf	*141*	163	*144*	167	*83*	104
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*5*	4	*5*	4	*1*	5
Herd Replacement	*-245*	-282	*-251*	-291	*-153*	-149
Total Dairy Output	***2749***	**2826**	***2803***	**2888**	***1878***	**1863**
Other Livestock	*504*	594	*513*	606	*360*	405
Other	*544*	575	*550*	584	*436*	439
Total Farm Output	***3797***	**3995**	***3866***	**4078**	***2674***	**2707**
Variable Costs						
Home-grown Concentrates	*67*	84	*65*	84	*93*	89
Purchased Concentrates	*874*	902	*891*	923	*593*	576
Coarse Fodder	*78*	87	*80*	88	*48*	76
Other Livestock Concentrates	*1*	1	*1*	1	*0*	0
Vet and Medicine	*105*	111	*109*	115	*51*	56
Other Livestock Costs	*273*	290	*276*	293	*223*	241
Seed	*36*	41	*37*	42	*27*	30
Fertiliser	*123*	112	*130*	119	*8*	8
Crop Protection	*35*	35	*37*	37	*1*	0
Other Crop Costs	*22*	23	*23*	23	*11*	11
Total Variable Costs	***1613***	**1687**	***1648***	**1726**	***1053***	**1087**
Fixed Costs						
Labour	*448*	466	*456*	475	*318*	324
Contract	*194*	209	*197*	214	*142*	130
Machinery Depreciation	*215*	220	*219*	225	*152*	155
Other Machinery	*226*	223	*231*	227	*150*	160
Miscellaneous	*342*	364	*344*	369	*300*	290
Rent and Rental Equivalent	*339*	353	*341*	357	*304*	298
Total Fixed Costs	***1764***	**1834**	***1789***	**1865**	***1366***	**1358**
Net Farm Income	***420***	**473**	***430***	**487**	***254***	**262**
Farmer / Spouse Labour	*199*	207	*197*	205	*231*	229
Management and Investment Income (MII)	***220***	**268**	***232***	**283**	***23***	**33**
Farm Business Income (FBI)	***516***	**578**	***530***	**596**	***298***	**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	
	19/20	20/21	*19/20*	20/21
Number of farms	*131*	125	59	60
Area (ha)#	*169*	162	150	152
	£/ha		£/ha	
Output				
Milk	*2977*	3122	*2551*	2493
Calf	*143*	165	*150*	175
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*6*	5	*1*	0
Herd Replacement	*-252*	-294	*-246*	-273
Total Dairy Output	***2874***	**2997**	***2455***	**2395**
Other Livestock	*507*	603	*542*	620
Other	*596*	644	*326*	314
Total Farm Output	***3978***	**4244**	***3323***	**3328**
Variable Costs				
Home-grown Concentrates	*71*	95	*34*	34
Purchased Concentrates	*906*	941	*818*	841
Coarse Fodder	*82*	90	*67*	80
Other Livestock Concentrates	*1*	2	*0*	0
Vet and Medicine	*112*	118	*93*	99
Other Livestock Costs	*282*	301	*247*	260
Seed	*42*	48	*11*	12
Fertiliser	*133*	122	*113*	102
Crop Protection	*43*	43	*10*	10
Other Crop Costs	*24*	25	*18*	15
Total Variable Costs	***1697***	**1786**	***1411***	**1453**
Fixed Costs				
Labour	*475*	500	*365*	360
Contract	*213*	235	*118*	120
Machinery Depreciation	*226*	233	*186*	185
Other Machinery	*239*	238	*191*	174
Miscellaneous	*358*	387	*278*	284
Rent and Rental Equivalent	*357*	376	*266*	271
Total Fixed Costs	***1867***	**1970**	***1405***	**1393**
Net Farm Income	***414***	**488**	***508***	**483**
Farmer / Spouse Labour	*191*	201	*229*	224
Management and Investment Income (MII)	***223***	**289**	***278***	**259**
Farm Business Income (FBI)	***508***	**589**	***639***	**626**

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]	
	*19/20**	20/21*	*19/20*	20/21	*19/20*	20/21
Number of farms	*13*	8	*50*	53	*68*	64
Area (ha) #	*47*	42	*88*	89	*227*	224
	£/ha		£/ha		£/ha	
Output						
Milk	*2700*	2150	*3416*	3539	*2885*	3018
Calf	*194*	176	*174*	212	*135*	151
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*3*	9	*3*	3	*7*	6
Herd Replacement	*-188*	-246	*-312*	-326	*-240*	-286
Total Dairy Output	***2708***	**2088**	***3281***	**3429**	***2788***	**2889**
Other Livestock	*475*	469	*588*	663	*490*	588
Other	*340*	254	*434*	468	*638*	700
Total Farm Output	***3524***	**2811**	***4302***	**4560**	***3916***	**4177**
Variable Costs						
Home-grown Concentrates	*53*	42	*62*	64	*74*	104
Purchased Concentrates	*825*	618	*1033*	1126	*880*	894
Coarse Fodder	*134*	87	*87*	106	*80*	85
Other Livestock Concentrates	*2*	0	*0*	1	*2*	2
Vet and Medicine	*111*	118	*120*	121	*110*	118
Other Livestock Costs	*311*	264	*351*	358	*266*	285
Seed	*9*	3	*35*	34	*44*	53
Fertiliser	*101*	102	*142*	131	*132*	120
Crop Protection	*3*	2	*25*	20	*47*	51
Other Crop Costs	*21*	7	*29*	27	*22*	25
Total Variable Costs	***1570***	**1243**	***1884***	**1988**	***1658***	**1737**
Fixed Costs						
Labour	*215*	64	*489*	469	*477*	516
Contract	*186*	188	*228*	255	*210*	230
Machinery Depreciation	*196*	162	*278*	284	*215*	220
Other Machinery	*189*	146	*251*	239	*237*	240
Miscellaneous	*401*	354	*420*	446	*343*	371
Rent and Rental Equivalent	*382*	289	*381*	390	*351*	373
Total Fixed Costs	***1569***	**1202**	***2048***	**2083**	***1834***	**1950**
Net Farm Income	***385***	**366**	***370***	**489**	***424***	**489**
Farmer / Spouse Labour	*780*	866	*413*	412	*129*	131
Management and Investment Income (MII)	***-396***	**-500**	***-44***	**77**	***295***	**362**
Farm Business Income (FBI)	***554***	**468**	***548***	**654**	***498***	**572**

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]	
	*19/20**	20/21*	*19/20*	20/21	*19/20*	20/21
Number of farms	*6*	6	*24*	24	*29*	30
Area (ha)[#]	*53*	51	*90*	92	*207*	211
	£/ha		£/ha		£/ha	
Output						
Milk	*3331*	3449	*2521*	2531	*2527*	2445
Calf	*191*	264	*165*	205	*144*	163
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*0*	0	*0*	0	*2*	0
Herd Replacement	*-416*	-474	*-207*	-242	*-251*	-275
Total Dairy Output	***3106***	**3239**	***2479***	**2494**	***2421***	**2333**
Other Livestock	*423*	597	*475*	538	*567*	646
Other	*420*	390	*386*	350	*305*	300
Total Farm Output	***3949***	**4227**	***3339***	**3382**	***3292***	**3278**
Variable Costs						
Home-grown Concentrates	*47*	73	*34*	34	*34*	33
Purchased Concentrates	*1226*	1197	*881*	901	*782*	809
Coarse Fodder	*137*	123	*54*	90	*69*	76
Other Livestock Concentrates	*0*	0	*0*	0	*0*	0
Vet and Medicine	*111*	104	*101*	112	*90*	95
Other Livestock Costs	*327*	344	*268*	287	*238*	248
Seed	*2*	7	*7*	9	*12*	13
Fertiliser	*144*	118	*112*	97	*111*	104
Crop Protection	*8*	6	*9*	11	*10*	10
Other Crop Costs	*13*	15	*23*	12	*16*	16
Total Variable Costs	***2016***	**1987**	***1489***	**1550**	***1363***	**1402**
Fixed Costs						
Labour	*324*	269	*328*	392	*378*	353
Contract	*147*	142	*129*	128	*114*	117
Machinery Depreciation	*281*	254	*218*	237	*172*	167
Other Machinery	*293*	254	*209*	189	*181*	166
Miscellaneous	*443*	430	*336*	309	*254*	270
Rent and Rental Equivalent	*220*	228	*250*	264	*273*	274
Total Fixed Costs	***1709***	**1576**	***1471***	**1518**	***1372***	**1347**
Net Farm Income	***224***	**663**	***379***	**314**	***557***	**529**
Farmer / Spouse Labour	*632*	640	*387*	362	*166*	166
Management and Investment Income (MII)	***-408***	**23**	***-9***	**-49**	***392***	**363**
Farm Business Income (FBI)	***452***	**908**	***639***	**643**	***646***	**611**

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	
	19/20	20/21	*19/20*	20/21
Number of farms	*38*	36	*32*	32
Area (ha)[#]	*123*	120	*183*	167
	£/ha		£/ha	
Output				
Milk	*2460*	2287	*2889*	3044
Calf	*164*	131	*135*	176
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*0*	6	*8*	2
Herd Replacement	*-247*	-210	*-239*	-283
Total Dairy Output	***2378***	**2215**	***2792***	**2938**
Other Livestock	*370*	506	*469*	640
Other	*496*	604	*798*	658
Total Farm Output	***3244***	**3325**	***4060***	**4236**
Variable Costs				
Home-grown Concentrates	*51*	91	*94*	120
Purchased Concentrates	*862*	774	*680*	740
Coarse Fodder	*66*	69	*71*	52
Other Livestock Concentrates	*1*	0	*4*	6
Vet and Medicine	*88*	111	*87*	96
Other Livestock Costs	*295*	283	*239*	260
Seed	*42*	41	*42*	39
Fertiliser	*106*	124	*140*	120
Crop Protection	*43*	48	*56*	40
Other Crop Costs	*20*	26	*19*	15
Total Variable Costs	***1573***	**1568**	***1435***	**1489**
Fixed Costs				
Labour	*426*	416	*416*	405
Contract	*205*	184	*229*	170
Machinery Depreciation	*229*	240	*209*	230
Other Machinery	*278*	274	*185*	181
Miscellaneous	*424*	393	*317*	291
Rent and Rental Equivalent	*311*	316	*353*	382
Total Fixed Costs	***1873***	**1824**	***1709***	**1659**
Net Farm Income	***-202***	**-67**	***917***	**1088**
Farmer / Spouse Labour	*285*	293	*155*	185
Management and Investment Income (MII)	***-488***	**-360**	***761***	**903**
Farm Business Income (FBI)	***-117***	**54**	***1080***	**1194**

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	
	*19/20**	20/21*	*19/20**	20/21*
Number of farms	*16*	15	*15*	16
Area (ha)[#]	*90*	109	*187*	182
	£/ha		£/ha	
Output				
Milk	*2279*	2447	*2912*	3342
Calf	*139*	166	*157*	212
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*0*	0	*3*	0
Herd Replacement	*-269*	-341	*-253*	-296
Total Dairy Output	***2149***	**2272**	***2818***	**3259**
Other Livestock	*502*	517	*584*	734
Other	*285*	300	*304*	368
Total Farm Output	***2935***	**3089**	***3706***	**4360**
Variable Costs				
Home-grown Concentrates	*45*	45	*32*	48
Purchased Concentrates	*929*	957	*755*	907
Coarse Fodder	*86*	140	*53*	66
Other Livestock Concentrates	*0*	0	*0*	0
Vet and Medicine	*94*	119	*84*	103
Other Livestock Costs	*238*	317	*233*	282
Seed	*7*	10	*13*	17
Fertiliser	*123*	96	*130*	136
Crop Protection	*9*	6	*10*	16
Other Crop Costs	*21*	17	*14*	17
Total Variable Costs	***1551***	**1707**	***1324***	**1592**
Fixed Costs				
Labour	*341*	377	*388*	452
Contract	*110*	148	*136*	163
Machinery Depreciation	*204*	225	*177*	186
Other Machinery	*233*	224	*165*	169
Miscellaneous	*322*	344	*231*	276
Rent and Rental Equivalent	*257*	230	*295*	347
Total Fixed Costs	***1467***	**1548**	***1390***	**1591**
Net Farm Income	***-83***	**-166**	***992***	**1177**
Farmer / Spouse Labour	*414*	317	*166*	181
Management and Investment Income (MII)	***-498***	**-483**	***826***	**996**
Farm Business Income (FBI)	***138***	**35**	***1128***	**1304**

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 2020/21 shows that the conventional herd total dairy output exceeded organic total dairy output by £168/cow. Conventional herd dairy output increased by £30/cow, with an increase in yield (+165lpc) only slightly offset by a lower milk price (-0.1ppl). Organic herds' total dairy output decreased by £41/cow, as a result of a decrease in milk yield (-27lpc) coupled with a reduction in milk price of 1.1ppl. The average number of cows per herd decreased by 5 cows for the conventional herd and increased by 8 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 £1,214/cow compared with £1,275/cow for the conventional dairy herds. The difference between the organic and conventional dairy herd gross margins is slightly wider than in 2019/20, whereby conventional herds produced a gross margin of £1,298/cow compared with the organic herd gross margin of £1,271/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 4.93ppl, which was somewhat lower than the previous year's excess of 6.05ppl (Figure 3.1).

- Lowland herds saw a slight decrease in milk price of 0.1ppl, whilst LFA herds saw an increase in average milk price of 0.2ppl; together with large increases in variable costs, notably concentrate and livestock costs, this resulted in decreases in GM/cow of £11 for lowland and £79 for LFA herds. In 2020/21, at the average herd sizes, the total farm GM for lowland herds was £261,600 compared with £269,076 in 2019/20, whilst the total LFA herd GM decreased to £183,762 compared with £199,248 in 2019/20 (Table 3.8).

- For lowland herds in 2020/21, as herd size increases so do milk price, 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 £889, £1,100 and £1,347 respectively. These margins per cow equate to gross margins per litre of 13.19ppl, 14.21ppl and 15.23ppl respectively, i.e. the smallest sized group achieved the lowest gross margin per litre (Table 3.9).

- For LFA dairy herds in 2020/21, milk price is lowest in the 80 – 130 cows group, with the highest dairy output and gross margin per cow being achieved by the more than 130 cows group. 2020/21 saw a decrease in average milk price for the less than 80 cows and 80 – 130 cows of 0.3ppl and 0.1ppl, whilst for the more than 130 cows there was an increase of 0.3ppl. Only the less than 80 cow group saw a GM increase (of £32/cow); the 80 – 130 cows and more than 130 cows groups both saw a decrease in GM of £124 and £81 per cow respectively. The GM for the LFA less than 80 cows and 80 – 130 cows both exceeded that of the lowland herd for the same group size and was greater by £186/cow and £261/cow (Table 3.10).

- In 2020/21, lowland dairy farms in the upper quartile (based on GM/cow) produced on average 3,144lpc more than those in the lower quartile, with average milk prices for the upper quartile exceeding those of the lower quartile by 3.2ppl (Table 3.11).

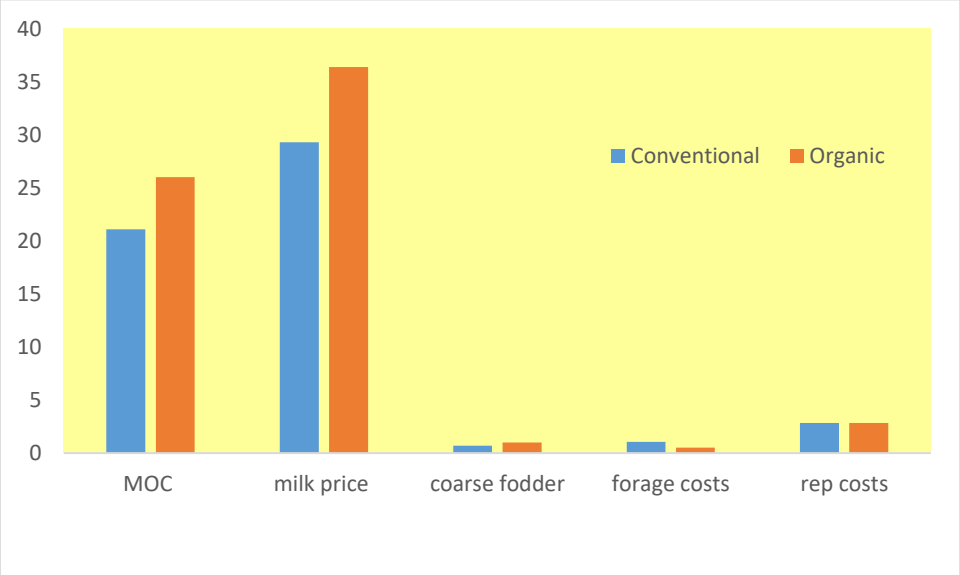
- Feed concentrate to milk conversion rates fell to 8.0ppl for the GM lowland upper quartile and rose to 8.7ppl for the lower quartile farms (from 8.1ppl for both groups in 2019/20); the upper quartile slight decrease was due to a decrease in concentrate cost, although this was partially offset by lower yields, whilst for the lower quartile the higher concentrate cost coupled with a decrease in yield led to the higher figure. Gross margin per litre results increased slightly to 17.0ppl (upper quartile) and decreased to 10.7ppl (lower quartile) compared to 16.4ppl (upper quartile) and 11.6ppl (lower quartile) in 2019/20 (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 (+1,925lpc) as well as receiving higher milk prices (+5.5 ppl) than the lowest quartile, leading to a disparity of £1012 between the two quartile's relative gross margin per cow performances (compared with £1028 in 2019/20) (Table 3.12).

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

	All		Conventional		Organic	
	19/20	20/21	*19/20*	20/21	*19/20*	20/21
Number of farms	*223*	218	*185*	182	*38*	36
Average number cows	*193*	190	*198*	193	*124*	132
Average yield (litres)	*8262*	8416	*8348*	8513	*6290*	6263
Milk price (ppl)	*29.7*	29.6	*29.4*	29.3	*37.5*	36.4
	£/cow		£/cow		£/cow	
Output						
Milk	*2450*	2488	*2454*	2498	*2356*	2279
Calf	*121*	138	*122*	138	*100*	125
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*4*	4	*5*	4	*1*	6
Herd Replacement	*-210*	-238	*-211*	-241	*-185*	-178
Total Dairy Output	***2365***	**2391**	***2369***	**2399**	***2272***	**2231**
Variable costs						
Concentrates	*660*	697	*660*	699	*673*	650
Coarse Fodder	*54*	59	*55*	59	*40*	63
Vet and Medicine	*76*	78	*77*	79	*51*	54
Other Livestock Costs	*188*	195	*188*	194	*206*	216
Forage Costs	*89*	89	*91*	91	*31*	33
Total Variable Costs	***1068***	**1119**	***1071***	**1123**	***1001***	**1017**
Total Gross Margin	***1297***	**1273**	***1298***	**1275**	***1271***	**1214**

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	
	19/20	20/21	*19/20*	20/21
Number of farms	*127*	123	*58*	59
Average number cows	*204*	200	*168*	166
Average yield (litres)	*8459*	8669	*7756*	7707
Milk price (ppl)	*29.4*	29.3	*29.3*	29.5
	£/cow		£/cow	
Output				
Milk	*2488*	2541	*2272*	2273
Calf	*120*	134	*132*	162
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*5*	4	*1*	0
Herd Replacement	*-210*	-239	*-219*	-249
Total Dairy Output	***2403***	**2440**	***2186***	**2186**
Variable costs				
Concentrates	*666*	705	*629*	671
Coarse Fodder	*56*	59	*47*	62
Vet and Medicine	*79*	80	*68*	73
Other Livestock Costs	*191*	194	*172*	194
Forage Costs	*93*	94	*84*	79
Total Variable Costs	***1084***	**1132**	***1000***	**1079**
Total Gross Margin	***1319***	**1308**	***1186***	**1107**

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

Lowland	< 80 cows [small]		80 – 130 cows [medium]		>130 cows [large]	
	19/20	20/21	*19/20*	20/21	*19/20*	20/21
Number of farms	*20*	20	*30*	25	*77*	78
Average number cows	*64*	64	*110*	108	*251*	243
Average yield (litres)	*6597*	6742	*7563*	7741	*8635*	8844
Milk price (ppl)	*28.6*	28.0	*29.0*	28.6	*29.5*	29.4
Output	£/cow		£/cow		£/cow	
Milk	*1889*	1889	*2196*	2214	*2545*	2601
Calf	*132*	125	*115*	144	*120*	133
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*1*	3	*1*	4	*6*	4
Herd Replacement	*-184*	-187	*-201*	-242	*-212*	-241
Total Dairy Output	***1840***	**1831**	***2110***	**2119**	***2459***	**2498**
Variable costs						
Concentrates	*517*	554	*557*	611	*684*	721
Coarse Fodder	*30*	31	*43*	34	*59*	62
Vet and Medicine	*64*	72	*74*	76	*80*	81
Other Livestock Costs	*181*	202	*191*	199	*191*	193
Forage Costs	*76*	83	*93*	98	*93*	94
Total Variable Costs	***869***	**942**	***959***	**1019**	***1107***	**1151**
Total Gross Margin	***971***	**889**	***1151***	**1100**	***1352***	**1347**

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

LFA	< 80 cows [small]		80 – 130 cows [medium]		>130 cows [large]	
	*19/20**	20/21*	*19/20*	20/21	*19/20*	20/21
Number of farms	*12*	12	*18*	18	*28*	29
Average number cows	*59*	57	*108*	108	*243*	233
Average yield (litres)	*6838*	6854	*7850*	7582	*7820*	7806
Milk price (ppl)	*28.3*	28.0	*27.6*	27.5	*29.8*	30.1
Output	£/cow		£/cow		£/cow	
Milk	*1937*	1919	*2167*	2083	*2330*	2348
Calf	*136*	173	*156*	189	*126*	154
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*0*	0	*2*	0	*1*	0
Herd Replacement	*-177*	-126	*-210*	-278	*-226*	-252
Total Dairy Output	***1896***	**1966**	***2114***	**1993**	***2231***	**2250**
Variable costs						
Concentrates	*534*	516	*785*	769	*600*	660
Coarse Fodder	*21*	26	*37*	38	*53*	70
Vet and Medicine	*60*	68	*80*	73	*66*	74
Other Livestock Costs	*154*	208	*179*	204	*171*	191
Forage Costs	*83*	74	*70*	71	*88*	82
Total Variable Costs	***853***	**891**	***1151***	**1154**	***978***	**1077**
Total Gross Margin	***1043***	**1075**	***963***	**839**	***1254***	**1173**

*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	
	19/20	20/21	*19/20*	20/21
Number of farms	*38*	37	*24*	24
Average number cows	*164*	147	*266*	248
Average yield (litres)	*6997*	6771	*10358*	9915
Milk price (ppl)	*27.3*	27.3	*30.2*	30.5
Output	£/cow		£/cow	
Milk	*1909*	1849	*3133*	3022
Calf	*91*	96	*115*	145
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*0*	2	*15*	12
Herd Replacement	*-244*	-251	*-215*	-214
Total Dairy Output	***1757***	**1696**	***3048***	**2965**
Variable costs				
Concentrates	*568*	592	*839*	795
Coarse Fodder	*48*	40	*82*	87
Vet and Medicine	*65*	74	*100*	85
Other Livestock Costs	*176*	183	*230*	216
Forage Costs	*91*	82	*96*	94
Total Variable Costs	***948***	**971**	***1347***	**1276**
Total Gross Margin	***809***	**725**	***1700***	**1689**

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

LFA	Lower Quartile		Upper Quartile	
	19/20	20/21	*19/20**	20/21*
Number of farms	*16*	17	*13*	13
Average number cows	*129*	123	*188*	221
Average yield (litres)	*6150*	6623	*8781*	8548
Milk price (ppl)	*25.7*	25.6	*30.4*	31.1
	£/cow		£/cow	
Output				
Milk	*1580*	1695	*2673*	2659
Calf	*134*	162	*132*	162
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*0*	0	*4*	0
Herd Replacement	*-252*	-311	*-175*	-212
Total Dairy Output	***1462***	**1547**	***2634***	**2609**
Variable costs				
Concentrates	*581*	667	*690*	673
Coarse Fodder	*43*	62	*14*	36
Vet and Medicine	*58*	66	*65*	85
Other Livestock Costs	*136*	171	*165*	193
Forage Costs	*66*	66	*92*	95
Total Variable Costs	***883***	**1032**	***1027***	**1081**
Total Gross Margin	***579***	**515**	***1607***	**1527**

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

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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 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