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Farm Business Survey

2021/2022

Dairy Farming in England

Davina Smith, Helen McHoul
and Paul Wilson

RBR

independent research, data and analysis

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Foreword to the First Series

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

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

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

Prof. Martin Seabrook

(Chief Executive of the Consortium)

Spring 2007

Foreword to the Seventeenth and Final Series

Welcome to this seventeenth and final series of reports on the economics of agriculture and horticulture in England produced from *Rural Business Research (RBR).* Over the last seventeen years, RBR, our leading academic consortium comprising the Universities of Cambridge, Newcastle, Nottingham and Reading, and Askham Bryan and Duchy Colleges has, as detailed in Professor Seabrook's first foreword in this series, set out through these reports to "*make a valuable and useful contribution to the farming industry*". Reflecting on these series of reports, and the research and analysis that lies behind them, I am confident that we have both achieved and surpassed these initial aims, as evidenced through their longevity in production and loyalty of readership.

This final series draws on the 2021/22 financial year for farmers and growers and covers the 2021 harvest year. Over this financial year, average Farm Business Income (FBI), derived from our work on the Defra-funded Farm Business Survey (FBS), increased to £86,100 per business, representing an increase of 66% on 2020/21. In percentage increase terms, General Cropping, Lowland Grazing Livestock and Mixed farm types saw FBI increase of 117, 85 and 84% respectively. At the top end of these average incomes per farm business, General Cropping, Dairy and Specialist Poultry received average FBIs in the order of £140,000. In contrast and borne out by the structural change we are witnessing in the pig sector, average FBI returns to Specialists Pig farms decreased by 75%, leaving an average FBI of only £11,800. The challenges and opportunities currently facing farmers and growers are many and varied, ranging from supply reductions and increased demand driving up commodity prices, to major shortages or greatly inflated prices of key inputs such as feed, fuel and fertiliser, to the ongoing challenges of attracting labour to our industry.

Of course, at the same time, for many farmers and growers the reduction, and the eventual loss, of the Basic Payment is now becoming a dawning realisation. Many businesses, on the back of strong FBI performances, will be well placed to adapt. However, for others, and in particular grazing livestock businesses, this payment reduction and eventual loss will be a hard pill to swallow. As we approach the mid-point years of the "2021-2027 Agricultural Transition" evidencing the economics of agricultural and horticultural businesses will grow in importance. Policy makers will rightly continue to draw on the FBS as the most authoritative evidence base of the changing fortunes of agriculture and horticulture. At the heart of this evidence base, across England over the last 86 years, has been the Universities and Colleges that have supported the methodological development of the FBS with Defra, working alongside colleagues in Wales and Scotland in a partnership approach, to deliver the Gold Standard of data quality upon which we have all become reliant. It is therefore with a heavy heart that, following the outcome of a recent open tender for this work, I announce that our specialist consortium will no longer be delivering this important work in the future. The FBS in England is of crucial importance to the farming industry and I wish it well in its new future under Promar International's delivery, and hope that RBR's collective 86 years of expertise and input serves as a strong basis for its continued success.

As I draw this seventeenth and final series to a close, I do so by thanking Defra for funding this vital work over the years, and to the thousands of farmers and growers who have, over nearly nine decades, freely shared their information, farm business data and time with us for the benefit of the industry. I also thank most of all both current and former colleagues from the universities and colleges who have worked on the FBS and who may continue to do so; it is their professionalism and dedication that has delivered every year, frequently against the backdrop of enormous challenge, and it has been the greatest of professional privileges to have led this team over the last 16 years.

Professor Paul Wilson
Chief Executive Officer, Rural Business Research
December 2022

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

Readers should be aware that Defra have not reviewed this report, nor have they cross-checked the figures with those from their publications. The structure and content are based on the 2021 reports which Defra have previously approved. Any errors or omissions are the responsibility of the author(s) and not of Defra.

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Summary: Key Findings

The Dairying Sector

- During 2021/22, average milk prices in the UK increased substantially, with a yearly average price of 32.7 pence per litre (ppl); increasing steadily throughout the year, they peaked at 37.5ppl by the end of the milk year.

- Average milk yield decreased by almost 0.7% in 2021/22 to 8,090 litres per cow (lpc).

- The national herd size for 2021/22 increased by 1,000 to 1,854,000 cows.

- 150 producers left the industry from October 2021 to October 2022, a decrease on the 352 producers that left the industry in the previous 12 months.

Farm level results

- Farm Business Survey data from 2021/22 shows that the average Farm Business Income (FBI) from dairying was £869/ha, which at the average farm size equates to a FBI in the region of £139,900, representing an increase in total FBI of more than 51% from 2020/21.

- Average FBI on conventional dairy farms in 2021/22 was £907/ha (£146,027 per farm), whilst on organic farms average FBI was £347/ha (£60,031 per farm). In 2021/22, the gap again widened between conventional and organic farms FBI/ha, to over 161%, compared with 2020/21 when conventional farms were over 94% higher than organic farms.

- Management and Investment Income (MII) across all dairy farms increased by £272/ha to £540/ha in 2021/22. This equates to an average MII of £86,940 per farm, compared with £42,880 in 2020/21.

Dairy Enterprise Results

- Enterprise-level analysis shows that in 2021/22 the conventional herds' total dairy output increased by £316/cow to £2,715/cow, with a small decrease in yield (-79lpc) offset by an increase in milk price of 3.6ppl, coupled with an increase in calf output. Organic herds' total dairy output rose by £37/cow taking the figure to £2,268/cow; whilst yield decreased (-266lpc) there was a rise in milk price of 1.8ppl, alongside an increase in calf output.

- Lowland herds saw an increase in average milk price of 3.5ppl, whilst LFA herds witnessed an increase of 4.1ppl; GM/cow increased by £194 for lowland and £351 for LFA herds. Whilst lowland herd yield per cow decreased by 152 litres, the higher milk price offset this and, despite the slightly higher variable costs, resulted in the higher GM/cow. LFA herds saw an increase in yield (+225l), which coupled with an increase in milk price more than compensated for the small increase in variable costs. In 2021/22, at the average herd sizes, the total farm GM for lowland herds saw an increase to £322,930 compared with £261,600 in 2020/21, whilst the total LFA herd GM rose to £223,074 compared with £183,762 in 2020/21 (Table 3.8).

Chapter 1: The Dairying Sector

1.1: Overview

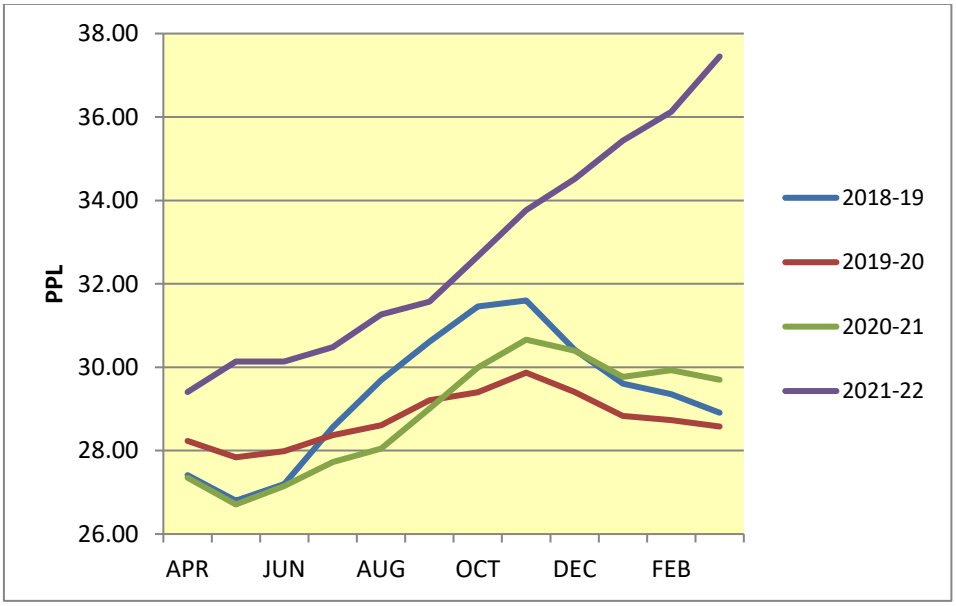
- During 2021/22, average milk price in the UK increased month on month, peaking at an average of 37.5 pence per litre (ppl) in March 2022. This resulted in a yearly average price of 32.7ppl, which was 3.8ppl higher than the average milk price in 2020/21 (Figure 1.1).
- 2021/22 saw an increase in each of the key input costs of feed, vet and medicines, fertiliser and energy costs, with fertiliser seeing the most substantial rise (Figure 1.2).
- UK annual milk production in 2021/22 decreased by 95 million litres (-0.63%) to 14,913 million litres; the first decrease seen since 2016/17 (Figure 1.3).
- Average milk yield decreased by 56 litres in 2021/22 to 8,090 litres per cow (lpc), remaining at a higher level than 2019/20 (Figure 1.4).
- The national herd remained almost static at 1,854,000 cows (+1,000 cows) (Figure 1.4).
- In October 2022 there were approximately 150 fewer milk producers in England and Wales than a year earlier, continuing the trend of the previous twenty years. Since October 2013, numbers have fallen by 2,640, a decrease of over 25% (Figure 1.5).

Table 1.1: Average Annual Milk Prices

	2018/19	2019/20	2020/21	2020/21
Average annual price (ppl) (excluding bonus')	29.3	28.8	28.9	32.7

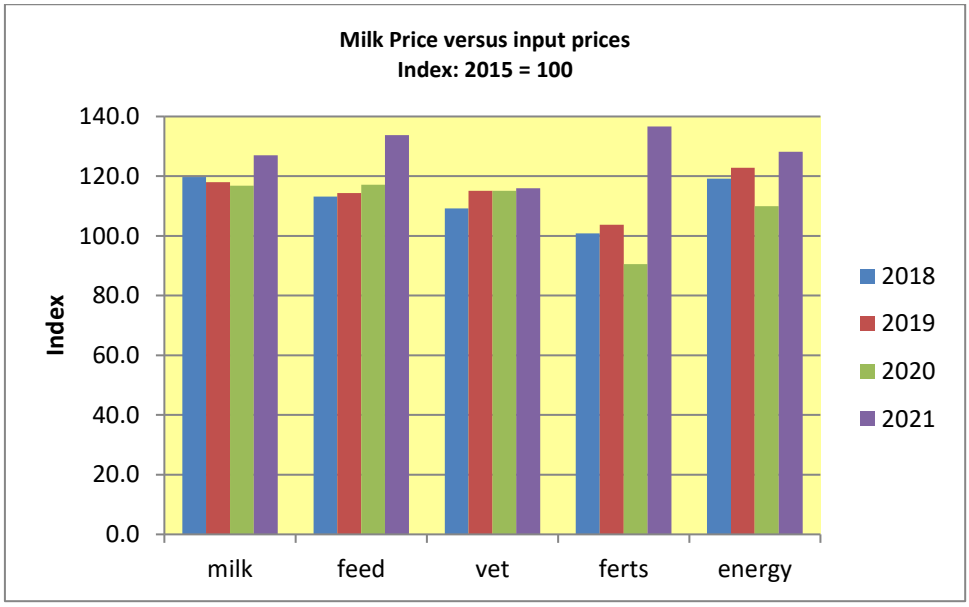
Source: Defra (2023a); Milk Price Surveys

Figure 1.1: Average Farmgate Milk Prices (UK)



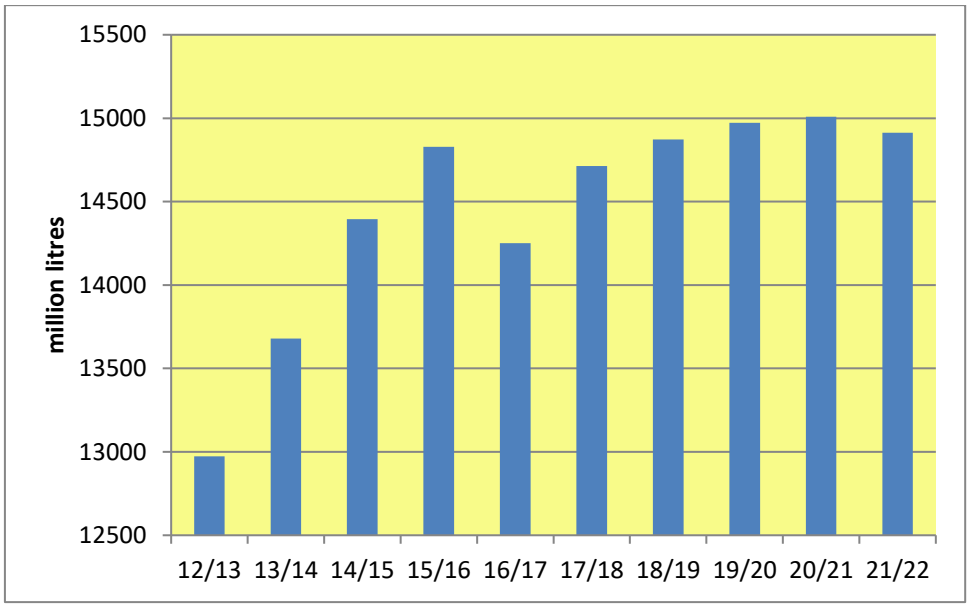
Source: Defra (2023b); Milk Price Surveys

Figure 1.2: Milk and Input Prices (UK)



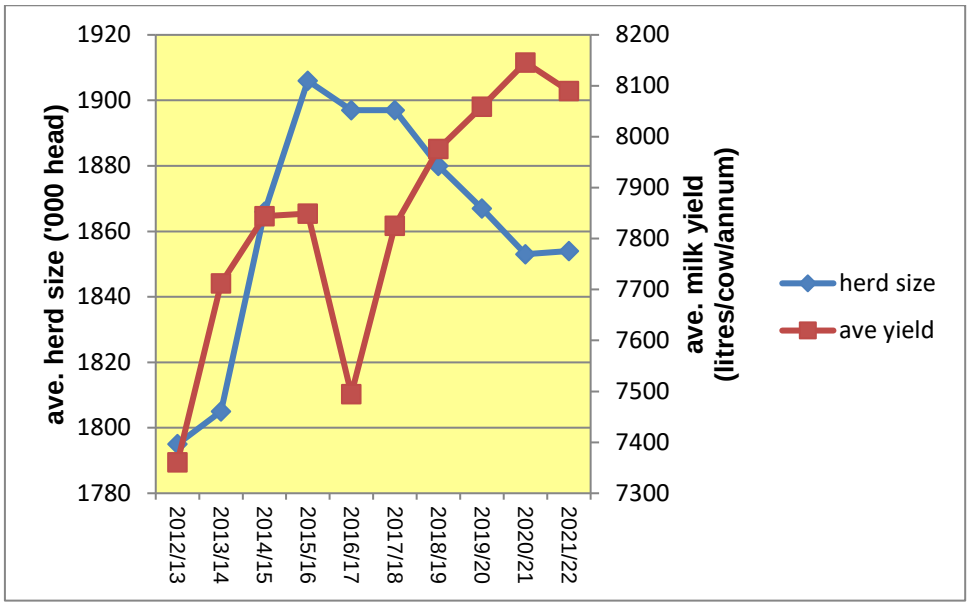
Source: Defra (2023c); Agriculture in the UK 2021

Figure 1.3: Annual Milk Production (UK)



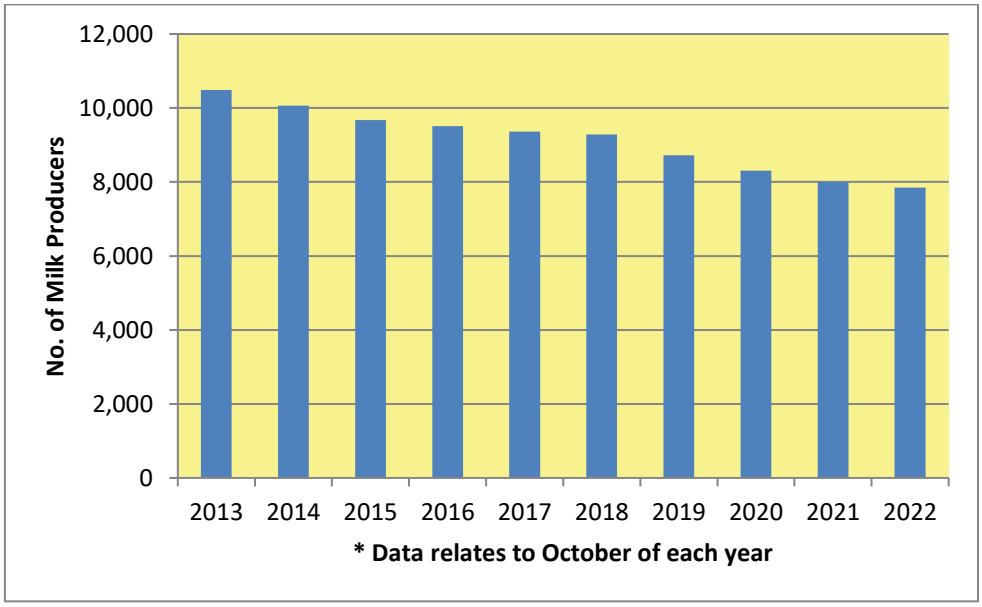
Source: AHDB Dairy (2023a)

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



Source: AHDB Dairy (2023b)

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



Source: AHDB Dairy (2023c)

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 2021/22

Category		All	Lowland Conventional	LFA Conventional[1]	Fully Organic [2]
Number of farms		205	119	55	31
Farm Size	<60 hectares	-	9*	6*	-
	60-120 hectares	-	51	25	-
	>120 hectares	-	59	24	-
Performance by ratio output:costs	Lower quartile	-	25	13*	-
	Upper quartile	-	35	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 2021/22

Category		All	Lowland Conventional	LFA Conventional [1]	Fully Organic [2]
Number of farms		197	115	51	31
Farm Size	<80 cows	-	17	9*	-
	80-130 cows	-	24	19	-
	>130 cows	-	74	23	-
Performance by GM/cow	Lower quartile	-	36	12	-
	Upper quartile	-	23	11*	-

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 2021/22 shows that the average Farm Business Income (FBI) from dairying was £869/ha, which at the average farm size equates to a FBI in the region of £139,909, representing an increase in total FBI of more than 51% from 2020/21 (Table 3.1).

- Average FBI on conventional dairy farms in 2021/22 was £907/ha (£146,027 per farm), whilst on organic farms average FBI was £347/ha (£60,031 per farm), resulting in an increase in total FBI per farm of over 53% for conventional farms and of slightly less than 24% for organic farms total FBI per farm (Table 3.1).

- 2021/22 saw a further increase in the gap between conventional and organic farms FBI; at £907/ha, FBI/ha on conventional farms was over 161% higher than on organic farms (£347/ha), compared with 2020/21 when FBI on conventional farms was 94% higher than organic farms (Table 3.1).

- Management and Investment Income (MII) across all dairy farms saw an increase of £272/ha, to £540/ha in 2021/22. This equates to an average MII of £86,940 per farm, compared with £42,880 in 2020/21 (Table 3.1).

- Average MII on conventional dairy farms increased from £283/ha in 2020/21 to £572/ha (£92,092 per farm) in 2021/22; on organic farms average MII increased by more than 209% to £102/ha (£17,646 per farm) (Table 3.1).

- Average FBI on lowland dairy farms was £912/ha, an increase of nearly 55% from £589/ha in 2020/21. For LFA dairy farms, average FBI increased by over 41% to £884/ha (from £626/ha in 2020/21) (Table 3.2). At average size, this equates to a FBI on a farm level for lowland dairy farms of £148,656 and LFA dairy farms of £134,368 in 2021/22.

- 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 -£429/ha, compared with £219/ha and £701/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 £42,983, £89,332 and £181,038.

- Profitability analysis for lowland farms reveals an increase in the gap for FBI between the upper and lower quartiles in 2021/22; FBI for the upper quartile of lowland dairy farms was £1596/ha (£1194/ha in 2020/21) compared with £107/ha (£54/ha in 2020/21) for the lower quartile. The upper quartile group has a larger average farm size at 185ha, compared to 116ha for the lower quartile, with the upper quartile showing a large increase in farmed area this year, whilst there was a further small decrease for the lower quartile (Table 3.5).

- An analysis of FBI by LFA quartile groupings reveals a widening gap in milk output; with the upper quartile achieving a milk output greater than the lower quartile by £1956/ha (in comparison with £895/ha greater in 2020/21). Variable costs for the lower quartile decreased by over 33% to £1142/ha, whilst the upper quartile decreased by only 0.69% to £1581/ha. At the average farm size, the lower and upper quartiles achieved FBI returns of £29,601 and £295,682 respectively (Table 3.6), furthering the gap in FBI compared with last year's figures of £3,815 and £237,328.

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

	All		Conventional		Organic	
	20/21	21/22	*20/21*	21/22	*20/21*	21/22
Number of farms	*221*	205	*185*	174	*36*	31
Area (ha)[#]	*160*	161	*160*	161	*158*	173
	£/ha		£/ha		£/ha	
Output						
Milk	*2941*	3363	*3008*	3460	*1903*	2036
Calf	*163*	202	*167*	206	*104*	137
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*4*	5	*4*	5	*5*	2
Herd Replacement	*-282*	-277	*-291*	-285	*-149*	-161
Total Dairy Output	***2826***	**3293**	***2888***	**3386**	***1863***	**2015**
Other Livestock	*594*	661	*606*	681	*405*	394
Other	*575*	638	*584*	651	*439*	456
Total Farm Output	***3995***	**4592**	***4078***	**4718**	***2707***	**2864**
Variable Costs						
Home-grown Concentrates	*84*	98	*84*	98	*89*	100
Purchased Concentrates	*902*	1076	*923*	1109	*576*	631
Coarse Fodder	*87*	91	*88*	94	*76*	54
Other Livestock Concentrates	*1*	2	*1*	3	*0*	0
Vet and Medicine	*111*	118	*115*	122	*56*	56
Other Livestock Costs	*290*	311	*293*	316	*241*	241
Seed	*41*	38	*42*	38	*30*	32
Fertiliser	*112*	107	*119*	114	*8*	10
Crop Protection	*35*	34	*37*	36	*0*	0
Other Crop Costs	*23*	23	*23*	24	*11*	11
Total Variable Costs	***1687***	**1899**	***1726***	**1955**	***1087***	**1134**
Fixed Costs						
Labour	*466*	512	*475*	525	*324*	339
Contract	*209*	215	*214*	221	*130*	142
Machinery Depreciation	*220*	191	*225*	196	*155*	119
Other Machinery	*223*	272	*227*	278	*160*	185
Miscellaneous	*364*	380	*369*	386	*290*	303
Rent and Rental Equivalent	*353*	364	*357*	368	*298*	316
Total Fixed Costs	***1834***	**1934**	***1865***	**1973**	***1358***	**1404**
Net Farm Income	***473***	**759**	***487***	**790**	***262***	**326**
Farmer / Spouse Labour	*207*	216	*205*	216	*229*	224
Management and Investment Income (MII)	***268***	**540**	***283***	**572**	***33***	**102**
Farm Business Income (FBI)	***578***	**869**	***596***	**907**	***307***	**347**

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	
	20/21	21/22	*20/21*	21/22
Number of farms	*125*	119	*60*	55
Area (ha)#	*162*	163	*152*	152
	£/ha		£/ha	
Output				
Milk	*3122*	3645	*2493*	2647
Calf	*165*	213	*175*	178
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*5*	6	*0*	0
Herd Replacement	*-294*	-299	*-273*	-224
Total Dairy Output	***2997***	3565	***2395***	2602
Other Livestock	*603*	693	*620*	630
Other	*644*	721	*314*	344
Total Farm Output	***4244***	**4978**	***3328***	**3576**
Variable Costs				
Home-grown Concentrates	*95*	112	*34*	35
Purchased Concentrates	*941*	1160	*841*	885
Coarse Fodder	*90*	100	*80*	70
Other Livestock Concentrates	*2*	3	*0*	0
Vet and Medicine	*118*	128	*99*	97
Other Livestock Costs	*301*	332	*260*	246
Seed	*48*	45	*12*	10
Fertiliser	*122*	119	*102*	93
Crop Protection	*43*	42	*10*	10
Other Crop Costs	*25*	25	*15*	17
Total Variable Costs	***1786***	**2067**	***1453***	**1462**
Fixed Costs				
Labour	*500*	565	*360*	350
Contract	*235*	244	*120*	116
Machinery Depreciation	*233*	204	*185*	163
Other Machinery	*238*	297	*174*	193
Miscellaneous	*387*	404	*284*	305
Rent and Rental Equivalent	*376*	390	*271*	272
Total Fixed Costs	***1970***	**2104**	***1393***	**1398**
Net Farm Income	***488***	**807**	***483***	**716**
Farmer / Spouse Labour	*201*	211	*224*	236
Management and Investment Income (MII)	***289***	**593**	***259***	**480**
Farm Business Income (FBI)	***589***	**912**	***626***	**884**

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]	
	*20/21**	21/22*	*20/21**	21/22*	*20/21**	21/22*
Number of farms	*8*	9	*53*	51	*64*	59
Area (ha) #	*42*	46	*89*	89	*224*	215
	£/ha		£/ha		£/ha	
Output						
Milk	*2150*	2617	*3539*	3570	*3018*	3682
Calf	*176*	214	*212*	229	*151*	209
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*9*	7	*3*	2	*6*	7
Herd Replacement	*-246*	-287	*-326*	-303	*-286*	-298
Total Dairy Output	***2088***	2550	***3429***	**3498**	***2889***	3599
Other Livestock	*469*	595	*663*	640	*588*	707
Other	*254*	452	*468*	531	*700*	770
Total Farm Output	***2811***	**3597**	***4560***	**4669**	***4177***	**5077**
Variable Costs						
Home-grown Concentrates	*42*	36	*64*	60	*104*	126
Purchased Concentrates	*618*	824	*1126*	1177	*894*	1162
Coarse Fodder	*87*	55	*106*	76	*85*	106
Other Livestock Concentrates	*0*	0	*1*	0	*2*	4
Vet and Medicine	*118*	114	*121*	116	*118*	132
Other Livestock Costs	*264*	312	*358*	338	*285*	331
Seed	*3*	6	*34*	33	*53*	48
Fertiliser	*102*	99	*131*	112	*120*	121
Crop Protection	*2*	7	*20*	27	*51*	47
Other Crop Costs	*7*	24	*27*	30	*25*	24
Total Variable Costs	***1243***	**1477**	***1988***	**1969**	***1737***	**2101**
Fixed Costs						
Labour	*64*	251	*469*	468	*516*	594
Contract	*188*	156	*255*	234	*230*	248
Machinery Depreciation	*162*	161	*284*	236	*220*	197
Other Machinery	*146*	233	*239*	271	*240*	305
Miscellaneous	*354*	545	*446*	489	*371*	381
Rent and Rental Equivalent	*289*	300	*390*	362	*373*	398
Total Fixed Costs	***1202***	**1646**	***2083***	**2060**	***1950***	**2123**
Net Farm Income	***366***	**474**	***489***	**639**	***489***	**853**
Farmer / Spouse Labour	*866*	903	*412*	420	*131*	149
Management and Investment Income (MII)	***-500***	**-429**	***77***	**219**	***362***	**701**
Farm Business Income (FBI)	***468***	**754**	***654***	**835**	***572***	**934**

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]	
	*20/21**	21/22*	*20/21*	21/22	*20/21*	21/22
Number of farms	*6*	6	*24*	25	*30*	24
Area (ha)[#]	*51*	53	*92*	92	*211*	211
	£/ha		£/ha		£/ha	
Output						
Milk	*3449*	3461	*2531*	2900	*2445*	2534
Calf	*264*	307	*205*	225	*163*	159
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*0*	0	*0*	1	*0*	0
Herd Replacement	*-474*	-375	*-242*	-239	*-275*	-213
Total Dairy Output	***3239***	**3392**	***2494***	**2887**	***2333***	**2480**
Other Livestock	*597*	452	*538*	687	*646*	618
Other	*390*	403	*350*	352	*300*	339
Total Farm Output	***4227***	**4248**	***3382***	**3925**	***3278***	**3437**
Variable Costs						
Home-grown Concentrates	*73*	74	*34*	37	*33*	33
Purchased Concentrates	*1197*	1284	*901*	1014	*809*	827
Coarse Fodder	*123*	163	*90*	85	*76*	61
Other Livestock Concentrates	*0*	0	*0*	0	*0*	0
Vet and Medicine	*104*	108	*112*	114	*95*	91
Other Livestock Costs	*344*	352	*287*	280	*248*	231
Seed	*7*	1	*9*	9	*13*	11
Fertiliser	*118*	132	*97*	96	*104*	90
Crop Protection	*6*	10	*11*	9	*10*	10
Other Crop Costs	*15*	13	*12*	12	*16*	19
Total Variable Costs	***1987***	**2136**	***1550***	**1656**	***1402***	**1373**
Fixed Costs						
Labour	*269*	296	*392*	391	*353*	339
Contract	*142*	185	*128*	140	*117*	105
Machinery Depreciation	*254*	198	*237*	213	*167*	146
Other Machinery	*254*	264	*189*	231	*166*	177
Miscellaneous	*430*	443	*309*	351	*270*	285
Rent and Rental Equivalent	*228*	220	*264*	304	*274*	263
Total Fixed Costs	***1576***	**1606**	***1518***	**1631**	***1347***	**1315**
Net Farm Income	***663***	**506**	***314***	**638**	***529***	**750**
Farmer / Spouse Labour	*640*	648	*362*	376	*166*	175
Management and Investment Income (MII)	***23***	**-142**	***-49***	**262**	***363***	**575**
Farm Business Income (FBI)	***908***	**811**	***643***	**971**	***611***	**858**

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	
	20/21	21/22	*20/21*	21/22
Number of farms	*36*	35	*32*	25
Area (ha)[#]	*120*	116	*167*	185
	£/ha		£/ha	
Output				
Milk	*2287*	2990	*3044*	3508
Calf	*131*	213	*176*	195
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*6*	1	*2*	12
Herd Replacement	*-210*	-262	*-283*	-298
Total Dairy Output	***2215***	**2943**	***2938***	**3417**
Other Livestock	*506*	506	*640*	785
Other	*604*	502	*658*	848
Total Farm Output	***3325***	**3951**	***4236***	**5049**
Variable Costs				
Home-grown Concentrates	*91*	58	*120*	130
Purchased Concentrates	*774*	1047	*740*	946
Coarse Fodder	*69*	74	*52*	66
Other Livestock Concentrates	*0*	5	*6*	0
Vet and Medicine	*111*	130	*96*	112
Other Livestock Costs	*283*	344	*260*	294
Seed	*41*	39	*39*	40
Fertiliser	*124*	120	*120*	133
Crop Protection	*48*	33	*40*	44
Other Crop Costs	*26*	18	*15*	20
Total Variable Costs	***1568***	**1869**	***1489***	**1785**
Fixed Costs				
Labour	*416*	530	*405*	517
Contract	*184*	228	*170*	168
Machinery Depreciation	*240*	166	*230*	174
Other Machinery	*274*	298	*181*	237
Miscellaneous	*393*	491	*291*	320
Rent and Rental Equivalent	*316*	364	*382*	393
Total Fixed Costs	***1824***	**2076**	***1659***	**1809**
Net Farm Income	***-67***	**6**	***1088***	**1455**
Farmer / Spouse Labour	*293*	315	*185*	171
Management and Investment Income (MII)	***-360***	**-310**	***903***	**1283**
Farm Business Income (FBI)	***54***	**107**	***1194***	**1596**

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	
	*20/21**	21/22*	*20/21**	21/21*
Number of farms	*15*	14	*16*	13
Area (ha)[#]	*109*	117	*182*	163
	£/ha		£/ha	
Output				
Milk	*2447*	1643	*3342*	3599
Calf	*166*	145	*212*	234
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*0*	0	*0*	0
Herd Replacement	*-341*	-198	*-296*	-246
Total Dairy Output	***2272***	**1590**	***3259***	**3587**
Other Livestock	*517*	437	*734*	710
Other	*300*	334	*368*	395
Total Farm Output	***3089***	**2362**	***4360***	**4692**
Variable Costs				
Home-grown Concentrates	*45*	22	*48*	52
Purchased Concentrates	*957*	678	*907*	946
Coarse Fodder	*140*	64	*66*	36
Other Livestock Concentrates	*0*	0	*0*	0
Vet and Medicine	*119*	78	*103*	97
Other Livestock Costs	*317*	214	*282*	266
Seed	*10*	6	*17*	15
Fertiliser	*96*	68	*136*	135
Crop Protection	*6*	3	*16*	15
Other Crop Costs	*17*	9	*17*	20
Total Variable Costs	***1707***	**1142**	***1592***	**1581**
Fixed Costs				
Labour	*377*	251	*452*	429
Contract	*148*	116	*163*	148
Machinery Depreciation	*225*	120	*186*	149
Other Machinery	*224*	185	*169*	184
Miscellaneous	*344*	272	*276*	290
Rent and Rental Equivalent	*230*	181	*347*	328
Total Fixed Costs	***1548***	**1125**	***1591***	**1528**
Net Farm Income	***-166***	**95**	***1177***	**1582**
Farmer / Spouse Labour	*317*	293	*181*	216
Management and Investment Income (MII)	***-483***	**-198**	***996***	**1367**
Farm Business Income (FBI)	***35***	**253**	***1304***	**1814**

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 2021/22 shows that the conventional herd total dairy output exceeded organic total dairy output by £447/cow. Conventional herd dairy output increased by £316/cow, with a slight decrease in yield (-79lpc) offset by a higher milk price (+3.6ppl). Organic herds' total dairy output increased by £37/cow, with the decrease in milk yield (-266lpc) also being offset by a higher milk price (+1.8ppl), coupled with a higher calf output. The average number of cows per herd increased by 10 cows for the conventional herd and by 22 cows for the organic herd (Table 3.7).

- The lower organic dairy output was somewhat offset by lower variable costs, resulting in a gross margin of £1,252/cow compared with £1,496/cow for the conventional dairy herds. The difference between the organic and conventional dairy herd gross margins is wider than in 2020/21, whereby conventional herds produced a gross margin of £1,275/cow compared with the organic herd gross margin of £1,214/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 3.42ppl, which was again somewhat lower than the previous year's excess of 4.93ppl (Figure 3.1).

- Lowland herds saw an increase in milk price of 3.5ppl, whilst LFA herds saw an increase in average milk price of 4.1ppl; together with an increase in calf output, this offset the increases in variable costs and resulted in increases in GM/cow of £194 for lowland and £351 for LFA herds. In 2021/22, at the average herd sizes, the total farm GM for lowland herds was £322,930 compared with £261,600 in 2020/21, whilst the total LFA herd GM increased to £223,074 compared with £183,762 in 2020/21 (Table 3.8).

- For lowland herds in 2021/22, as herd size increases so does 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 £949, £1,201 and £1,546 respectively. These margins per cow equate to gross margins per litre of 15.03ppl, 15.76ppl and 17.84ppl respectively, i.e. the smallest sized group achieved the lowest gross margin per litre (Table 3.9).

- For LFA dairy herds in 2021/22, 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. 2021/22 saw an increase in average milk price of 3.6ppl, 3.7ppl and 4.3ppl for the less than 80 cows, 80 – 130 cows and the more than 130 cows groups respectively. Each group saw an increase in GM/cow, albeit small for the less than 80 cow group (£21/cow); the other two groups saw a more substantial increase of £312/cow (80 – 130 cows) and £414/cow (more than 130 cows). The GMs for the LFA herds exceeded that of the lowland herd for the same group size and was greater by £147/cow, £50/cow and £41/cow for the less than 80 cows, 80 – 130 cows and the more than 130 cows groups respectively (Table 3.10).

- In 2021/22, lowland dairy farms in the upper quartile (based on GM/cow) produced on average 3,728lpc more than those in the lower quartile, with average milk prices for the upper quartile exceeding those of the lower quartile by 3.8ppl (Table 3.11).

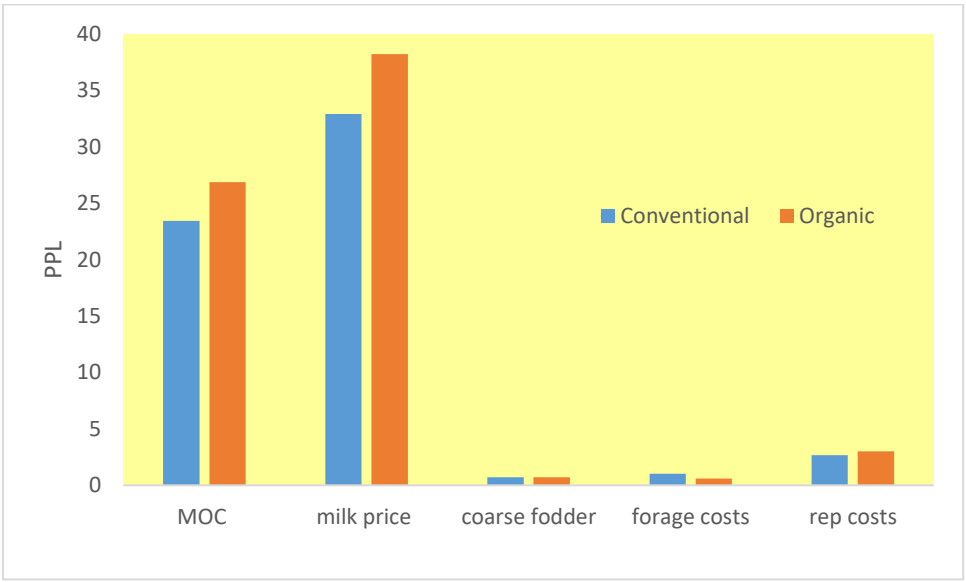
- Feed concentrate to milk conversion rates rose to 9.3ppl for the GM lowland upper quartile and to 9.2ppl for the lower quartile farms (from 8.0ppl for the upper quartile and 8.7ppl for the lower quartile in 2020/21); the upper quartile increase was due to an increase in concentrate cost coupled with lower yields, whilst for the lower quartile the lower concentrate cost was offset by a larger decrease in yield. Gross margin per litre results increased to 19.7ppl (upper quartile) and to 14.4ppl (lower quartile) compared to 17.0ppl (upper quartile) and 10.7ppl (lower quartile) in 2020/21 (Table 3.11), in part due to higher average milk prices.

- Gross margin performance quartile analysis of LFA dairy farms reveals that the better performers have larger herds and achieve considerably higher yields (+2,049lpc) as well as receiving higher milk prices (+5.7 ppl) than the lowest quartile, leading to a disparity of £1,039 between the two quartile's relative gross margin per cow performances (compared with £1,012 in 2020/21) (Table 3.12).

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

	All		Conventional		Organic	
	20/21	21/22	*20/21*	21/22	*20/21*	21/22
Number of farms	*218*	197	*182*	166	*36*	31
Average number cows	*190*	200	*193*	203	*132*	154
Average yield (litres)	*8416*	8309	*8513*	8434	*6263*	5997
Milk price (ppl)	*29.6*	33.1	*29.3*	32.9	*36.4*	38.2
	£/cow		£/cow		£/cow	
Output						
Milk	*2488*	2748	*2498*	2772	*2279*	2292
Calf	*138*	164	*138*	164	*125*	155
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*4*	4	*4*	4	*6*	3
Herd Replacement	*-238*	-223	*-241*	-225	*-178*	-181
Total Dairy Output	***2391***	**2692**	***2399***	**2715**	***2231***	**2268**
Variable costs						
Concentrates	*697*	792	*699*	798	*650*	680
Coarse Fodder	*59*	58	*59*	59	*63*	42
Vet and Medicine	*78*	78	*79*	79	*54*	51
Other Livestock Costs	*195*	198	*194*	197	*216*	207
Forage Costs	*89*	83	*91*	86	*33*	36
Total Variable Costs	***1119***	**1209**	***1123***	**1219**	***1017***	**1016**
Total Gross Margin	***1273***	**1483**	***1275***	**1496**	***1214***	**1252**

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	
	20/21	21/22	*20/21*	21/22
Number of farms	*123*	115	*59*	51
Average number cows	*200*	215	*166*	153
Average yield (litres)	*8669*	8517	*7707*	7932
Milk price (ppl)	*29.3*	32.8	*29.5*	33.6
	£/cow		£/cow	
Output				
Milk	*2541*	2790	*2273*	2663
Calf	*134*	161	*162*	181
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*4*	5	*0*	0
Herd Replacement	*-239*	-226	*-249*	-217
Total Dairy Output	***2440***	**2730**	***2186***	**2628**
Variable costs				
Concentrates	*705*	803	*671*	766
Coarse Fodder	*59*	59	*62*	58
Vet and Medicine	*80*	80	*73*	76
Other Livestock Costs	*194*	199	*194*	191
Forage Costs	*94*	87	*79*	79
Total Variable Costs	***1132***	**1227**	***1079***	**1170**
Total Gross Margin	***1308***	**1503**	***1107***	**1458**

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

Lowland	< 80 cows [small]		80 – 130 cows [medium]		>130 cows [large]	
	20/21	21/22	*20/21*	21/22	*20/21*	21/22
Number of farms	*20*	17	*25*	24	*78*	74
Average number cows	*64*	62	*108*	105	*243*	259
Average yield (litres)	*6742*	6313	*7741*	7620	*8844*	8667
Milk price (ppl)	*28.0*	30.7	*28.6*	31.8	*29.4*	32.9
Output	£/cow		£/cow		£/cow	
Milk	*1889*	1937	*2214*	2420	*2601*	2850
Calf	*125*	146	*144*	172	*133*	161
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*3*	3	*4*	4	*4*	5
Herd Replacement	*-187*	-211	*-242*	-228	*-241*	-227
Total Dairy Output	***1831***	**1875**	***2119***	**2368**	***2498***	**2789**
Variable costs						
Concentrates	*554*	553	*611*	767	*721*	814
Coarse Fodder	*31*	29	*34*	31	*62*	63
Vet and Medicine	*72*	66	*76*	82	*81*	80
Other Livestock Costs	*202*	195	*199*	209	*193*	198
Forage Costs	*83*	84	*98*	79	*94*	87
Total Variable Costs	***942***	**926**	***1019***	**1168**	***1151***	**1243**
Total Gross Margin	***889***	**949**	***1100***	**1200**	***1347***	**1546**

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

LFA	< 80 cows [small]		80 – 130 cows [medium]		>130 cows [large]	
	*20/21**	21/22*	*20/21*	21/22	*20/21*	21/22
Number of farms	*12*	9	*18*	19	*29*	23
Average number cows	*57*	54	*108*	107	*233*	215
Average yield (litres)	*6854*	6051	*7582*	7587	*7806*	8193
Milk price (ppl)	*28.0*	31.6	*27.5*	31.2	*30.1*	34.4
	£/cow		£/cow		£/cow	
Output						
Milk	*1919*	1912	*2083*	2366	*2348*	2820
Calf	*173*	187	*189*	192	*154*	177
Lease Quota (net)	*0*	0	*0*	0	*0*	0
Other Dairy	*0*	0	*0*	0	*0*	0
Herd Replacement	*-126*	-120	*-278*	-214	*-252*	-225
Total Dairy Output	***1966***	**1978**	***1993***	**2344**	***2250***	**2772**
Variable costs						
Concentrates	*516*	480	*769*	827	*660*	768
Coarse Fodder	*26*	61	*38*	46	*70*	62
Vet and Medicine	*68*	67	*73*	69	*74*	78
Other Livestock Costs	*208*	187	*204*	190	*191*	191
Forage Costs	*74*	87	*71*	59	*82*	86
Total Variable Costs	***891***	**883**	***1154***	**1193**	***1077***	**1185**
Total Gross Margin	***1075***	**1095**	***839***	**1151**	***1173***	**1587**

*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	
	20/21	21/22	*20/21*	21/22
Number of farms	*37*	36	*24*	23
Average number cows	*147*	146	*248*	287
Average yield (litres)	*6771*	6007	*9915*	9735
Milk price (ppl)	*27.3*	31.1	*30.5*	34.9
Output	£/cow		£/cow	
Milk	*1849*	1869	*3022*	3395
Calf	*96*	136	*145*	168
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*2*	2	*12*	8
Herd Replacement	*-251*	-247	*-214*	-229
Total Dairy Output	***1696***	**1759**	***2965***	**3343**
Variable costs				
Concentrates	*592*	554	*795*	907
Coarse Fodder	*40*	53	*87*	103
Vet and Medicine	*74*	58	*85*	88
Other Livestock Costs	*183*	163	*216*	220
Forage Costs	*82*	67	*94*	103
Total Variable Costs	***971***	**896**	***1276***	**1421**
Total Gross Margin	***725***	**863**	***1689***	**1922**

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

LFA	Lower Quartile		Upper Quartile	
	20/21	21/22	*20/21**	21/22*
Number of farms	*17*	12	*13*	11
Average number cows	*123*	110	*221*	242
Average yield (litres)	*6623*	6528	*8548*	8577
Milk price (ppl)	*25.6*	30.1	*31.1*	35.8
	£/cow		£/cow	
Output				
Milk	*1695*	1963	*2659*	3072
Calf	*162*	174	*162*	171
Lease Quota (net)	*0*	0	*0*	0
Other Dairy	*0*	0	*0*	0
Herd Replacement	*-311*	-228	*-212*	-217
Total Dairy Output	***1547***	**1908**	***2609***	**3026**
Variable costs				
Concentrates	*667*	746	*673*	788
Coarse Fodder	*62*	49	*36*	26
Vet and Medicine	*66*	73	*85*	78
Other Livestock Costs	*171*	171	*193*	201
Forage Costs	*66*	66	*95*	92
Total Variable Costs	***1032***	**1106**	***1081***	**1186**
Total Gross Margin	***515***	**802**	***1527***	**1840**

*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

Poultry Production in England

Details available at www.ruralbusinessresearch.co.uk