



# **Review of Gross and Net Margins and Cost Centre Allocations in the Farm Business Survey**

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## **Executive Summary**

### **Background**

- In 2008/09 a methodology was adopted for the apportionment of fixed costs between the four cost-centre categories defined within the FBS; moreover the agricultural enterprise net margins have not been empirically reviewed since 2007/08.
- The aim of this report is to assess the allocation of fixed costs across each of the four cost centres, and also across enterprises within the agricultural cost centre and suggest improvements for methodological developments where appropriate and/or confirm appropriateness of current methodologies.

### **Data and Methodology**

- Enterprise level data for 15 key agricultural enterprise categories are taken from the 2008/09 to 2012/13 FBS returns for England and cost centre data were taken for all farm types (separately and in aggregate) from 2006/07 to 2012/13.
- Drawing upon statistical tests of the hypothesis of no difference in the mean value of individual variables across specific farm groupings for agricultural enterprises, and sense checking the fixed costs allocated across the four cost centres, a range of key findings were established.

### **Arable Crops**

- For cereal crops, the allocation of labour and machinery is argued to be feasible, however the labour allocation for oilseed rape is greater than would be expected; examining results by farm type groups, fixed costs allocated to combinable crops are generally greater on General Cropping farms than cereal farms, while on Mixed farms, lower fixed costs are allocated to combinable crops than on Cereal farms.
- For root crops, labour and machinery allocation for potatoes are feasible; however, for sugar beet, machinery cost allocation is substantially lower than would be expected.
- Differences are observed for land costs between Cereals and General Cropping farm types driven by land quality and land / building infrastructure specific to potato enterprises.

### **Livestock Enterprises**

- Specialist dairy farms incur greater fixed costs per cow than non-specialist dairy farms, driven by the more intensive nature of production on specialist dairy farms.
- For layer and pig enterprises there are no patterns which emerge to indicate that the cost allocations to these enterprises are incorrect.
- For LFA Grazing Livestock (Ewes and Sucklers) any differences in fixed costs of production between specialist farms and non-specialist farms are in line with the differences in the intensity of production observed.

- On Lowland Grazing Livestock farms, labour costs on Cereal and Mixed farms for sheep and beef production are significantly and substantially greater than those observed on Lowland Grazing Livestock farms.

### **Cost Centres**

- With respect to fixed cost allocation across the four centres, methodological changes introduced in 2008/09 have led to increases in the fixed costs apportioned to the non-agricultural cost centres, which are broadly argued to be appropriate.
- The allocation of land costs to SPS is lower than would be expected, at 7 to 11% of total SPS value indicating that land costs are over-allocated to agriculture and under-allocated to the SPS cost centre.

### **Recommendations**

- Revised labour coefficients for a range of crop and animal enterprises are proposed that address the issues raised above.
- A revised machinery coefficient for sugar beet is proposed.
- It is recommended that a facility for the direct allocation of land infrastructure or building costs to specific enterprises be considered for either specific key enterprises (e.g. potatoes), or for all enterprises where researchers and farmers agree that specific land infrastructure and building costs be directly allocated.
- Within the methodology for cost allocation between the four cost centres, it is recommended that the damping factor for land for the SPS cost centre be removed.

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## **1. Introduction**

### **1.1 Background**

The methodology for apportioning costs within the agricultural cost centre of the Farm Business Survey (FBS) to individual enterprise was introduced in 2004/2005. Previous analyses have empirically and methodologically reviewed the approach. Wilson and Robertson's (2006a) analysis examined FBS and Special Study (SS) data sources for cereals and oilseeds from the 2004/2005 FBS year, and Wilson and Robertson (2006b) analysed fixed costs for livestock enterprises drawing upon FBS and SS data in order to compare costs and revenues derived from these two approaches. Wilson's (2006) analysis of labour, machinery and contract costs focused upon potato and sugar beet production. These studies concluded that the methodology underlying the apportionment of fixed costs in the FBS was appropriate, but with a need to revise a number of input-output coefficients upon which the methodology relies. Wilson's (2008) analysis from 2004/05 and 2005/06 FBS data considered 24 enterprises focusing upon the impact of CAP reform decoupling on the appropriate methodology and coefficients. The most contemporary study (Wilson and Cherry, 2010) examined the 2006/07 and 2007/08 FBS data and found no compelling evidence for making any changes to the methodology for allocating agricultural costs to individual agricultural enterprises. However, since 2008/09 a methodological change in allocation and apportionment of fixed costs across agricultural and non-agricultural enterprises has been in place (Wilson *et al.*, 2009), described in Appendix 1. This methodological development introduced the allocation and apportionment of fixed costs to cost centres. Within this, various costs were allocated on the basis of the overall output of the costs centre, or the gross margin generated by the cost centre. In order to account for the lower input demands of particular activities in respect to specific costs, relative to the value of output obtained, the methodology specifically introduced "damping factors". An example of this is for the Single Payment Scheme (SPS) cost centre where the 'general farming costs' for the SPS cost centre are dampened by 90%, as these costs would not be expected to fall onto this cost centre to any large extent.

In addition to the aspects noted above, agricultural input and output prices have changed considerably since the mid-2000s, potentially leading to the relative value of enterprises and the relative fixed input costs upon which they are in part based, changing, thus potentially requiring the input-output coefficients which underlie the methodology to be updated. Hence, with five years of data available since the previous review, it is timely to revisit and review the methodology again. In addition to the reviews noted above, specific studies have also examined labour resource use at the enterprise, or enterprise group, level; most recently Wilson (2009) examined labour usage data from the 2004/05 to 2007/08 FBS for England, and produced a series of labour coefficients, or standards, per crop hectare or animal number (e.g. hours per dairy cow) which accounted for direct, overhead and contract labour inputs to production. Others have focused upon the wider range of fixed costs, specifically examining machinery, building, labour overhead and contracting costs (Tiffin, 2002), albeit on a broad farm type grouping basis rather than at the enterprise level. Given the body of evidence presented combined with the FBS methodological and market changes that have occurred since Wilson and Cherry's (2010) study, this project aims to review the results and underlying methodology for apportioning fixed costs across cost centres, and within the agricultural cost centre, to specific agricultural enterprises. This represents a sense checking exercise to examine the data in conjunction with the knowledge of the methodology and knowledge of farming practices.

## **1.2 Aims**

The analyses will concentrate primarily on FBS data collected from survey years 2008/09 to 2012/13 in England. In particular this report will:

- Assess the allocation of fixed costs across each of the cost centres and across enterprises within the agricultural cost centre across robust farm types to identify where the underlying methodology might be driving changes rather than the inherent farming conditions prevalent at that time.
- Analysis will consider specific enterprises most likely to be affected by the methodology and returning net margins that are not necessarily a true reflection of the economic performance.
- Suggest improvements for methodological developments where appropriate and/or confirm appropriateness of current methodologies.

## **1.3 Structure of Report**

Chapter 2 outlines the data sources and methodological approaches of the study. Chapter 3 presents results; Chapter 4 discusses these results in the context of the objectives of this research and proposes recommendations for the FBS research programme.



## **2. Methodology**

### **2.1 Overview**

The methodology compares two broad aspects. First, enterprise structural aspects (e.g. yield, crop area, animal numbers) output, total variable cost, gross margin, a range of fixed costs and net margin data from the FBS in 2008/09 to 2012/13 have been analysed. Comparison has been undertaken between particular 'specialised' farm groups against other farm groups in order to determine the appropriateness of the allocation and apportionment of fixed costs to these other farm groups when compared with the more specialised farm group for which the allocation and apportionment of fixed costs will be implicitly most robust. However, differences in fixed costs between more specialised farms and other farms may arise because of structural factors (e.g. crop area or animal numbers) and hence the results that are generated from this methodology must be considered in this context. Secondly, analysis across the four cost centres of Agriculture, Single Payment Scheme (SPS), Diversified Activities, and Agri-Environment Schemes (AES) have been analysed in order to inform methodological developments of cost allocation between cost centres. Data are weighted using the 'standard' FBS farm weight supplied with the farm level data.

### **2.2 Data source**

Data for the FBS accounting years 2008/09 to 2012/13 for England was used for analysis of the agricultural enterprises within the agricultural cost centre; data was taken from main agricultural enterprises from Section M of the FBS returns with appropriate other measures (e.g. livestock numbers) determined from other sections of the FBS returns as detailed in the footnote to Table 2.3. The enterprises examined are: 1) winter wheat; (2) winter barley; (3) spring barley; (4) winter oilseed rape; (6) ware potatoes; (7) sugar beet; (8) dairy; (9) layer hens; (10) pigs – breeder finishers; (11) LFA ewes; (12) LFA suckler cows; (13) Lowland ewes; (14) lowland suckler cows; (15) fat cattle from suckler bred weaned calves and stores. For analysis of the allocation of costs to the four cost centres, data was taken for 2006/07 to 2012/13 for the detailed costs and revenues by cost centre, as presented by the data delivery site [www.farmbusinesssurvey.co.uk](http://www.farmbusinesssurvey.co.uk) which presents weighted data by farm type and for all farm types. Data was taken for the main farm types of Cereals, Dairy, General Cropping, Horticulture, LFA Grazing Livestock, Lowland Grazing Livestock, Mixed, Pigs, and Poultry, for England. The results presented in this report relate to the All Farms combined, with detailed tables for each farm type available from the author on request.

### **2.3 Sampling Frame and Outliers**

In order to ensure comparability of the data series between the years of interest, domain boundaries were observed such that all agricultural enterprise returns had to record a positive output. No other data constraints were imposed prior to analysis.

### **2.4 Returns, Costs and Margin Measurements**

Tables 2.1 and 2.2 below detail the data definitions in relation to the FBS source from Section M for crop and livestock respectively.

### **2.5 Statistical Tests**

The variables derived in Tables 2.1 and 2.2 were subjected to significance tests to test the null hypothesis (expectation) that there is no difference between the mean result of the variables being examined between performance or farm type

groups within the same year, against the alternative hypothesis that there is a significant difference between the mean result for the variables (e.g. labour cost per hectare) analysed by performance or farm type group. A Wald-test was undertaken with Genstat 15, under Survey Analysis – General Survey Analysis. Data was weighted by the standard FBS weights. The Wald test for significance produces a probability value (p-value) which establishes the probability of there being no difference in the mean variables being examined. Where the p-value was equal to 0.05 or less, the null hypothesis of there being no difference between the means of the variables examined was rejected in favour of the null hypothesis. The “significance” of the test result can be observed at different levels of statistical significance; in this study significance was tested at three levels; 95% ( $p < 0.05$ ), 99% ( $p < 0.01$ ), and 99.9% ( $p < 0.001$ ). In addition, the number of occasions (e.g. number of years out of five) that the mean variable for a particular performance or farm type group exceeded the upper 95% confidence interval, or was less than the lower 95% confidence interval, of the overall mean was recorded as a further assessment of the magnitude and order of direction of the difference of individual variables across performance or farm type groups. The upper and lower 95% confidence intervals indicate the range within which it is 95% certain that the true population mean lies. Hence, within the context of this report, the analysis of the number of occasions where variables for individual performance or farm type groups was outside of this range is the result that is captured.

## **2.6 Cost Centre Analysis**

Data for the four cost centres was obtained on a per farm and per hectare basis for the seven years of interest (2006/07 to 2012/13). In addition to “sense checking” the per hectare cost centre returns, the broad fixed cost variables of labour, machinery, general, land and other (latter for Agriculture only) were calculated as percentage of the value of output associated with that cost centre. This provided a further sense check on the data. This was undertaken for all farm types as noted in section 2.2. for each of the seven years.

Table 2.1: Crop Codes and Definitions

<b>Definition</b>	<b>FBS</b> (reference codes relate to row numbers in Section M of the FBS spreadsheet)
Crop area ( <b>Ha</b> ) [hectares]	Crop area current crop (hectares) [Ref code 1]
Yield ( <b>Yield</b> ) [t/ha]	Total production of current crop (on a per ha basis) [Ref codes 2 divided by 1]
Total Grain or Crop Enterprise Output ( <b>TGrain</b> )	Grain / Crop Enterprise Output may be recorded either gross or net of marketing costs or deductions (8-7)
Total Output ( <b>TotOut</b> ) [£/ha]	TGrain <i>plus</i> Straw / by-product output (8+9)
Total Variable Cost ( <b>TVC</b> ) [£/ha]	Total Variable Costs (25)
Gross Margin ( <b>GM</b> ) [£/ha]	Gross Margin (26)
Labour ( <b>Lab</b> ) (excludes farmer and spouse labour) [£/ha]	Wages and social security (paid) <i>plus</i> Wages and social security (unpaid) (51+52)
Contract ( <b>Contract</b> ) [£/ha]	Contract work (53)
Total Machinery ( <b>TMach</b> ) [£/ha]	Machinery rental <i>plus</i> Mach and equip valuation etc <i>plus</i> Machinery and equipment repairs <i>plus</i> Machinery and vehicle fuels and oil (54+55+56+57)
Total Other FC ( <b>TOFC</b> ) [£/ha]	Glasshouse Depreciation <i>plus</i> Permanent crops depreciation <i>plus</i> Mileage <i>plus</i> Electricity <i>plus</i> Water for all purposes <i>plus</i> Insurance (excl. labour and farm buildings) <i>plus</i> Bank charges <i>plus</i> Professional fees <i>plus</i> Vehicle tax <i>plus</i> Residual heating fuel <i>plus</i> Other general farming costs (58+59+60+61+62+63+64+65+66+67+68)
Land ( <b>Land</b> ) [£/ha]	Total land expenses (77)
Total Fixed Costs ( <b>TFC</b> ) [£/ha]	Total Fixed Costs (78)
Net Farm Income for Enterprise ( <b>NFI</b> ) [£/ha]	NET FARM INCOME (ENTERPRISE) (line 26 minus line 78)
Value of Farmer and Spouse Manual Labour ( <b>FSLab</b> ) [£/ha]	Farmer (unpaid) <i>plus</i> Spouse (unpaid) minus Manager's managerial input (80+81-82)
Total Costs ( <b>TC</b> ) [£/ha]	<b>TVC <i>plus</i> TFC <i>plus</i> FSLab</b> (25+78+80+81-82)
Net Margin ( <b>NM</b> ) [£/ha]	NET MARGIN (83)
Cost per tonne ( <b>Cost/t</b> ) [£/t]	<b>TC</b> divided by <b>Yield</b>
Net Margin per tonne ( <b>NM/t</b> ) [£/t]	<b>NM</b> divided by <b>Yield</b>
Output per tonne ( <b>Output/t</b> ) [£/t]	<b>TotOut</b> divided by <b>Yield</b>

Table 2.2: Livestock Codes and Definitions

<b>Definition</b>	<b>FBS</b> (reference codes relate to row numbers in Section M of the FBS spreadsheet)
Average number ( <b>No.</b> )	Average number (10) (see also footnote)
Yield ( <b>Litres/cow</b> )	Total Litres [(Section E, Row 1, Col. 2) * 100] divided by <b>No.</b>
Output ( <b>TotOut</b> )	Livestock Output (12)
Total Variable Cost ( <b>TVC</b> )	Total Variable Costs (25)
Gross Margin ( <b>GM</b> )	Gross Margin (26)
Labour ( <b>Lab</b> ) (excludes farmer and spouse labour)	Wages and social security (paid) <i>plus</i> Wages and social security (unpaid) (51+52)
Contract ( <b>Contract</b> )	Contract work (53)
Total Machinery ( <b>TMach</b> )	Machinery rental <i>plus</i> Mach and equip valuation etc <i>plus</i> Machinery and equipment repairs <i>plus</i> Machinery and vehicle fuels and oil (54+55+56+57)
Total Other FC ( <b>TOFC</b> )	Glasshouse Depreciation <i>plus</i> Permanent crops depreciation <i>plus</i> Mileage <i>plus</i> Electricity <i>plus</i> Water for all purposes <i>plus</i> Insurance (excl. labour and farm buildings) <i>plus</i> Bank charges <i>plus</i> Professional fees <i>plus</i> Vehicle tax <i>plus</i> Residual heating fuel <i>plus</i> Other general farming costs (58+59+60+61+62+63+64+65+66+67+68)
Land ( <b>Land</b> )	Total land expenses (77)
Total Fixed Costs ( <b>TFC</b> )	Total Fixed Costs (78)
Net Farm Income for Enterprise ( <b>NFI</b> )	NET FARM INCOME (ENTERPRISE) (line 26 minus line 78)
Value of Farmer and Spouse Manual Labour ( <b>FSLab</b> )	Farmer (unpaid) <i>plus</i> Spouse (unpaid) minus Manager's managerial input (80+81-82)
Total Costs ( <b>TC</b> )	<b>TVC <i>plus</i> TFC <i>plus</i> FSLab</b> (25+78+80+81-82)
Net Margin ( <b>NM</b> )	NET MARGIN (83)
Cost per litre ( <b>Cost/litre</b> ) [£/t]	<b>TC</b> divided by <b>Yield</b>
Net Margin per litre ( <b>NM/litre</b> ) [£/t]	<b>NM</b> divided by <b>Yield</b>
Output per litre ( <b>Output/litre</b> ) [£/t]	<b>TotOut</b> divided by <b>Yield</b>

### 3. Results

#### 3.1 Overview

Table 3.1 provides results for a range of variables for the winter wheat enterprise from the 2011/12 FBS in order to demonstrate how Tables 3.2 to 3.16 presented in this chapter have been compiled. Table 3.1 provides the overall mean results for all observations in the sample (712), together with the lower and upper 95% confidence intervals for the overall mean. The mean for each variable is then presented for four farm type groups, followed by the p-value and the summary significance column. For 2011/12 there is a significant difference in the mean variable measure for 11 out of 18 variables. The significance column is highlighted to demonstrate how part of the analysis from individual years examined is then presented in the summary results (see Table 3.2; 2011/12 column). Additionally, for the purpose of explaining the format of the results presented in this Chapter, from Table 3.1, it can be seen from the green highlights, that the mean result from the Cereals farm type exceeds the overall upper 95% confidence interval for area (Ha), variable costs, farmer and spouse labour and output per tonne. However, from the pink highlights, it can be seen that the mean result from the Cereals farm type is less than the lower 95% confidence interval for gross margin, machinery, land and total fixed costs. These results, for each farm type group, are collated across the five years of data analysed and summarised, as presented in Table 3.2.

Table 3.1: Winter Wheat 2011/12

Measure	All	95% CI		Cereals	General Cropping	Mixed	Other	p-value	Significance
		Lower	Upper						
Ha	65.7	59.8	71.6	75.9	87.2	42.7	36.7	<0.001	***
Yield (t)	8.0	7.9	8.2	8.0	8.1	7.9	8.1	0.694	
TotOut	1259	1236	1282	1273	1251	1229	1255	0.565	
TVC	432	421	443	454	420	438	379	<0.001	***
GM	909	884	933	876	876	925	1014	<0.001	***
Lab	58	51	65	61	65	55	45	0.277	
Contract	116	102	130	124	118	86	117	0.061	
TMach	338	318	359	279	402	373	405	<0.001	***
TOFC	99	95	104	97	113	92	97	0.068	
Land	195	188	203	186	217	157	231	<0.001	***
TFC	807	780	833	747	915	764	896	<0.001	***
NFI	102	70	133	128	-39	161	119	<0.001	***
FSLab	90	80	101	106	114	76	36	<0.001	***
TC	1329	1297	1361	1308	1449	1278	1311	0.010	**
NM	12	-24	47	22	-153	84	82	<0.001	***
Cost/t	172	167	176	169	185	165	170	0.054	
NM/t	-4	-9	1	-3	-24	8	3	<0.001	***
Output/t	157	156	158	159	156	156	156	0.082	
<i>n</i>	712			272	120	128	192		

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Table 3.2 presents the overview of the analysis for Winter Wheat across four farm type groups. It can be seen that significant differences in the fixed costs are observed across the farm type groups in each year. The results highlighted in this chapter focus on labour (paid / unpaid and farmer and spouse labour), machinery, contract and other fixed costs. The relative allocation<sup>1</sup> of machinery

<sup>1</sup> With respect to the results presented 'allocation' refers to *allocation* of costs by the Research Officer to a particular enterprise, plus the *apportionment* of costs to that enterprise as derived from the FBS methodology.

and land costs is regularly lower for the Cereals farm type group. Paid / unpaid and farmer and spouse labour, contract, other fixed costs and land costs are generally lower for the Mixed farm type group; however, machinery cost is greater, countering the observation for labour and contract costs. Greater paid / unpaid and farmer and spouse labour, other fixed costs and land cost allocation is found for the General Cropping farm type. With respect to the Other farm group, greater contract and land costs are allocated to wheat.

Table 3.2: Overview of Winter Wheat Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	Below Lower 95% CI				Exceeds Upper 95% CI			
						Cereals	General Cropping	Mixed	Other	Cereals	General Cropping	Mixed	Other
Ha	***	***	***	***	***			5	5	5	5		
Yield	***	***	***	***	***			5	4	3	4		
TotOut	***	***	***	***	***			5	3	3	3		
TVC	***	***	***	***	***		5	3	5	5			
GM	***		*	***	*	2	1	2	1		3	1	3
Lab	***	***	*	***	***			4	5	2	4		
Contract	***	*			*		1	3					4
TMach	***	*		***	***	5			1			5	4
TOFC	**	***	***	***	*	2		3			5		3
Land	***	***	***	***	***	4		4			5		5
TFC	***	***	***	***	***	5		3			5		5
NFI	***	**	***	***	***		4	1	3	2		3	
FSLab		***	***	***	***			4	5	2	4		
TC	**	**	**	**	***			4			5		
NM	***		**	***	*		4	1	1	1		3	2
Cost/t	**		*			3		1			2	1	3
NM/t	*		***	***			4	1	3	1		3	2
Output/t	**	***					3	2	3	2	1		1

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

With respect to Winter Barley (Table 3.3) enterprise, lower allocation of machinery costs but greater contract costs are observed on Cereals farms. On General Cropping farms greater paid / unpaid labour, other fixed costs and land costs are noted. Allocation on Mixed farms leads to relatively lower paid / unpaid and farmer and spouse labour and other fixed costs being observed. For Other farms lower paid / unpaid labour costs, but greater contract, machinery and land costs are noted.

Table 3.4 presents results for Spring Barley. On Cereals farms lower machinery and other fixed costs, but greater paid / unpaid labour costs are also observed. On General Cropping farms greater paid / unpaid and farmer and spouse labour, machinery, other fixed costs and land costs are found. For Mixed farms lower paid / unpaid and farmer and spouse labour and land costs for Spring Barley are noted.

Results for Oilseed Rape are presented in Table 3.5. On Cereals farms lower machinery, but greater farmer and spouse labour costs are found. For General Cropping farms greater paid / unpaid labour, machinery, other fixed costs and land costs are noted, but with lower farmer and spouse labour costs. On Mixed farms greater paid / unpaid and farmer and spouse labour, contract and land costs are found, while for other farms greater machinery and land costs to oilseeds occur.

Table 3.3: Overview of Winter Barley Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	Below Lower 95% CI				Exceeds Upper 95% CI			
						Cereals	General Cropping	Mixed	Other	Cereals	General Cropping	Mixed	Other
Ha	***	***	***	***	***			4	5	5	5		
Yield					**		1	2	2	3	1		
TotOut	***	***	*		*		2	3	3	3			1
TVC	***	***	***	**	**		2	2	5	5			
GM		*	***	**		2	2	1			2		2
Lab	***	***			***			3	3	3	3		
Contract								2			1		3
TMach			**	**		3		1			1		3
TOFC								1	1		3		1
Land	*	***		*	*	2		3			4		4
TFC		***	***			2		3			3		3
NFI							2		2			1	
FSLab		***	*		***			3	2	2	2		1
TC		***	*					3	1	2	2		1
NM			*					3	1			2	1
Cost/t		**							1		1		3
NM/t			*			1	3	1	2			1	
Output/t	***	***	***			1	1	3	2		3		1

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Table 3.4: Overview of Spring Barley Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	Below Lower 95% CI				Exceeds Upper 95% CI			
						Cereals	General Cropping	Mixed	Other	Cereals	General Cropping	Mixed	Other
Ha	***	***	***	***	***			1	5	5	5		
Yield	***	***			**		1	4	3	2	3		
TotOut	***	***			**		1	4	3	3	3		
TVC		***	**		**			3	5	5	2	1	
GM	***		**			1	2	2	1	1	3		1
Lab	***	***	**	*	*			3	5	3	5		
Contract	*		**			2	3	1				1	3
TMach	***	*				3			1	1	4	2	1
TOFC	**	**				4					4	1	2
Land	*	***			**	2		5			4		2
TFC	***	***	***		*	4		1			4		2
NFI	***	*	**	**			4	1	2	3	1	1	
FSLab		***	*	***	***			1	4	4	4	1	1
TC		**	***	*	**			3	3		5	1	1
NM	**		***	***			4	1	1	1	1	2	1
Cost/t	**			*		2			1		2	1	2
NM/t	**		**	**			2	1	2	2	1	1	2
Output/t	***	***		***				2	3	4	2		

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Table 3.5: Overview of Oilseed Rape Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	Below Lower 95% CI				Exceeds Upper 95% CI			
						Cereals	General Cropping	Mixed	Other	Cereals	General Cropping	Mixed	Other
Ha	***	**	**	***	***								
Yield			***	***		2	5	5		1			
TotOut	*	*	**				3	1			3	1	2
TVC	*	**	**		*		1	4	2		2	1	2
GM			**		*		1	3	5	1			
Lab	***	***	**	**	**	1		2	1		4	1	2
Contract		**						4	2		3		2
TMach	**		***	***	***			3			1		2
TOFC								2	1		5	2	4
Land	***	***	**	***	***	3		3			3		
TFC	***	**	***	***	***	2		4			5	2	5
NFI				*	*	4		4	4				
FSLab	***	***		***	***			3	5	3			
TC	**	***	***	**	***			3	3		5		1
NM		**			*			3	1			3	1
Cost/t					*				1		2		2
NM/t					*			2	1			2	2
Output/t								2	4		1		

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

The results from Tables 3.2 to 3.5 inclusive, for cereals and oilseed enterprises by farm type groups, show that the fixed costs of machinery, other fixed costs and land allocated to cereals and oilseeds tend to be greater on General Copping farms than for Cereal farms. On Mixed farms, an opposite effect is observed, with typically lower labour, machinery and other fixed costs allocated to cereals and oilseeds. While we would expect to observe differences in fixed costs across farm types (e.g. greater per hectare labour and machinery costs where smaller scale enterprises are found), the results presented above demonstrate that machinery costs for combinable crops on General Cropping farms are too high, and labour costs on Mixed farms are potentially too low. Hence, adjustment to the relative methodological coefficients for labour and machinery may be required to adjust for these findings.

Table 3.6 provides the results for Main Crop Potato enterprises by General Cropping and all Other farm type groups combined. The Other farm type grouping records greater costs for paid / unpaid labour and other fixed costs. However, the Other farm type group consistently records lower total crop area than for all farms in the sample, with lower yields in three of the five years.

Results for the Sugar Beet enterprise (Table 3.7) demonstrate that there are no consistent patterns which emerge to differentiate the cost allocation across the two groupings considered. Note however, that the area of crop grown on Other farms is regularly lower than that observed for all farms in the sample.

Table 3.6: Overview of Main Crop Potato Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	General Cropping		Other	
						General Cropping	Other	General Cropping	Other
						Below Lower 95% CI		Exceeds Upper 95% CI	
Ha Yield	***	***	***	*	***		5	2	
TotOut		**			***		3	1	2
TVC		**					1		2
GM									2
Lab		**		*					3
Contract									
TMach									1
TOFC									3
Land							1		
TFC		**							3
NFI									
FSLab									1
TC									2
NM					*		1		
Cost/t		**			***	1			3
NM/t									
Output/t		**			*	1			4

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Table 3.7: Overview of Sugar Beet Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	General Cropping		Other	
						General Cropping	Other	General Cropping	Other
						Below Lower 95% CI		Exceeds Upper 95% CI	
Ha Yield		**	*	**	*		4	2	
TotOut									
TVC			*						1
GM									
Lab									
Contract									
TMach			**				1		
TOFC		***					1	1	
Land									
TFC		*					2	1	
NFI									
FSLab			*		*		2		
TC					**		1	1	
NM									
Cost/t			*				1		
NM/t									
Output/t									

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.



Table 3.8 provides sugar beet cost analysis by farm businesses as grouped as using a contractor for sugar beet harvesting (Sugar Beet Contractor) and those who do not use a contractor for sugar beet harvesting (No Sugar Beet contractor). As expected *a priori*, those farms not using a sugar beet contractor lead to lower contract costs, but greater machinery costs. The sample of observations within the Sugar Beet Contractor group typically accounts for 80% of the total observations, which in large part explains the general lack of results for this group which exceed the boundaries of the 95% confidence intervals.

Table 3.8: Overview of Sugar Beet Results by Contractor Use between 2009/10 and 2012/13

Measure	2009/10	2010/11	2011/12	2012/13	Sugar Beet Contractor	No Sugar Beet Contractor	Sugar Beet Contractor	No Sugar Beet Contractor
					Below Lower 95% CI		Exceeds Upper 95% CI	
Ha								2
Yield						1		1
TotOut						3		1
TVC						2		
GM						1		1
Lab								1
Contract	***	***	***	***		4	2	
TMach	*	***	***	***				4
TOFC						1		
Land								1
TFC				**		4		
NFI		***						1
FSLab								
TC				**		3		
NM		*						1
Cost/t						2		
NM/t		*						1
Output/t	*					2		

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Results for root crops (Tables 3.6 to 3.8 inclusive) do not demonstrate consistent patterns of significant differences in per hectare fixed costs between the specialist / farm type groups analysed. However, combining these findings with results from fixed cost allocation for combinable crops (Table 3.2 to 3.7 inclusive), indicates that the relative magnitude of the FBS methodological coefficients for machinery between root crops and combinable crops may need to be adjusted, in particular to reflect under allocation of machinery costs to sugar beet. This is explored in greater detail towards the end of this chapter.

Table 3.9 provides analysis for two farm groups for dairying: the 80% Dairy Output group consists of those farm businesses where output from the dairy enterprise accounts for at least 80% of total agricultural output, with all remaining farms included in the Other farm type grouping. The 80% Dairy Output group are characterised as having significantly larger, higher yielding herds that achieve greater output and gross margin per cow than for all farms with dairy enterprises. The 80% Dairy Output group cost allocation produces greater contract, machinery, other fixed costs and land costs than those for all farm types. Conversely allocation for the Other farm type group typically results in lower contract and machinery costs than for all observations. While specialist dairy farms incur greater costs than non-specialist dairy farms, these results flow from the higher input-output system (per cow) observed on the specialist farms.

Table 3.9: Overview of Dairy Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	80% Dairy Output	Other	80% Dairy Output	Other
						Below Lower 95% CI		Exceeds Upper 95% CI	
Cows	**		*	*	**		2	5	
Yield	***	***	***	**	*		4	4	
Output	***	***	***	***	***		5	5	
TVC								1	
GM	***	***	***	***	***		5	5	1
LAB						2			
Contract	*	***	***	**			3	5	
Tmach	***	***	***	*	***		4	5	
TOFC	***	*		*			1	4	
LAND	***	*	**		*		2	5	
TFC	***	*	**		*		3	5	
NFI.ent	***	***	***	***	***		5	5	
FSLab								1	
TC	**	*			*			3	1
NM	***	***	***	***	*		3	5	
Output/Litre	*				*			2	1
Cost/Litre									
NM/Litre	*	***	*	*	*			5	

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Results for Layer enterprises are provided in Table 3.10. The groups analysed are a specialised group (Layer enterprise output accounting for at least 95% of total agricultural output) and Other farms. The 95% Layer Output group is typified by consistently, and significantly, larger units. The 95% Layer Output group is also noted as achieving significant lower output (per hen) in four out of the five years analysed. With respect to fixed costs, the 95% Layer Output group results in lower other fixed costs and farmer and spouse labour costs per hen.

Table 3.11 provides results for 'Specialised' and 'Other' Pig breeding and finishing enterprises. The 95% Pig Output group are, on average, significantly larger units. Given the typically small sample sizes (around 20 for the 95% Pig Output group; 40-50 for the Other group) observed, it is unsurprising that no consistent pattern of significant difference in the results, across the range of fixed cost variables examined, is observed.

For the intensive livestock production of Layers and Pig breeding and finishing, any differences in fixed cost allocation observed across the groups are argued to be the result of different intensities of production, and hence there is no evidence to indicate that cost allocations to these enterprises are inappropriate.

Table 3.10: Overview of Layer Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	95% Layer Output	Other	95% Layer Output	Other
							Below Lower 95% CI		Exceeds Upper 95% CI
Hens Output	*** *	***	*** *	*** *	*** **	4	5	5	
TVC									
GM			*		*	2			
LAB					**	2			
Contract									1
Tmach	**			*	**	2			
TOFC	***	*	**	*	***	5			
LAND	***					1			
TFC	***			*	***	4			
NFI.ent									
FSLab	***	**	***	*	***	5			
TC	***	**	**	**	***	5			
NM									

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Table 3.11: Overview of Pig Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	95% Pig Output	Other	95% Pig Output	Other
							Below Lower 95% CI		Exceeds Upper 95% CI
Sows Output	**	**	*	*				5	
TVC								2	
GM					*			1	
LAB					*	1			
Contract					*	1		1	
Tmach							1		
TOFC	**				*	1	1		
LAND	*					2			
TFC	*				*	1	1		
NFI.ent		*	**		***			4	
FSLab	*		*			2			
TC						1			
NM		*	**	*	***			4	

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Table 3.12 provides the summary of analysis for LFA breeding ewe enterprises, categorised as Specialist SDA Sheep farms and Other farms. Note that the Specialist SDA Sheep Farms typically achieve lower output, incur lower total variable costs, but also achieve lower gross margin results. Contract cost allocation for the Specialist SDA Sheep group is typically lower than for all farms.

Table 3.12: Overview of LFA Ewes Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	Specialist SDA Sheep	Other	Specialist SDA Sheep	Other
						Below Lower 95% CI		Exceeds Upper 95% CI	
Ewes Output	*	***	*	**	***	5	1	2	1
TVC		*	**	**	*	4			1
GM	**	***				3			1
LAB	*					2			
Contract	*	***		***	*	4			
Tmach				*	***	2			
TOFC					**	1			
LAND		**				1	1	1	
TFC					*	4			
NFI.ent									
FSLab					*	1			
TC			*	*	**	3			
NM								1	

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Analysis of LFA Suckler enterprises (Table 3.13) follows a similar methodology to the LFA Ewe enterprises, comparing Specialist SDA Beef farms with the remaining Other farms. Allocation for Specialist SDA Beef farms leads to lower contract costs per cow to the LFA Suckler enterprise, but greater machinery and farmer and spouse labour costs.

Table 3.13: Overview of LFA Suckler Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	Specialist SDA Beef	Other	Specialist SDA Beef	Other
						Below Lower 95% CI		Exceeds Upper 95% CI	
Cows Output	*					1		1	
TVC			**	*		2	1	1	
GM			*			3		1	
LAB								2	
Contract						3			
Tmach	**	*	*				1	3	
TOFC				*				2	
LAND						1			
TFC		*	*					4	
NFI.ent		*				2			
FSLab				**				3	
TC								4	
NM		*		*		3			

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

The overview of results for Lowland Ewe enterprises is provided in Table 3.14. On Cereals farms, lower contract and machinery costs per ewe are allocated to the lowland ewes, while greater labour and land costs are nominally incurred. On Lowland Grazing Livestock farms, lower labour and land costs per ewe are

allocated. On Mixed farms, lower other fixed costs, but greater labour costs per ewe are allocated. On Other farms typically greater land costs are allocated.

Table 3.14: Overview of Lowland Ewes Results between 2008/09 and 2012/13

Measure	2008/09	2009/10	2010/11	2011/12	2012/13	Below Lower 95% CI					Exceeds Upper 95% CI				
						Cereals	Lowland Grazing L'stock	Mixed	Other		Cereals	Lowland Grazing L'stock	Mixed	Other	
Ewes		*	***	**	***	3			5			3	1		
Output				*	*	1		1	1	2		2	1		
TVC	***	***	***	***	***		5		1	5		4	1		
GM		*		***	**	4		2	1		2	2			
LAB	*	***	***	***	***		4			5		4	2		
Contract	**		*			3		2		1		1	1		
Tmach		***	***	*	***	5		1				1	1		
TOFC				*			1	4		4			1		
LAND		*					4	2		5			4		
TFC		***	*	***	*		3	1		4		2	5		
NFI.ent		***	**	***	***	5			5		5	1			
FSLab								1	1			2			
TC	*	**		***			3	1		5		2	4		
NM		**		***	***	5		1	5		4	2			

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Results of Lowland Suckler enterprises are given in Table 3.15. On Cereals farms, lower contract, machinery and farmer and spouse labour costs, while greater paid / unpaid labour and land costs, per cow are noted. On the Lowland Grazing Livestock farms, lower labour and land costs are observed. For Mixed farms, lower other fixed costs per cow are typically allocated. On Other farms greater paid / unpaid and farmer and spouse labour costs are frequently allocated.

Table 3.16 provides the analysis of Fat Cattle data, on the basis of per average animal traded. On Cereals farms, lower machinery, but greater paid / unpaid labour and land costs are typically allocated to this enterprise. On LFA Grazing Livestock Farms lower labour and contract costs are consistently allocated, and typically lower land costs are also noted. On Lowland Grazing Livestock farms, lower paid / unpaid labour costs are noted. For Mixed farms, lower other fixed costs and land costs are typically observed, while for Other farm types, all the fixed cost variables analysed are typically greater than those for the overall sample.

The results presented for grazing livestock (Tables 3.12 to 3.16 inclusive), indicate that while differences in fixed costs for LFA sheep production occur, these are the result of differences in the structure of production observed across the farm types; there are no patterns that emerge for LFA Suckler production to indicate inappropriate cost allocation. In terms of Lowland Ewe, Suckler and Fat Cattle enterprises however, the greater labour costs observed on Cereals and Mixed farms indicates that the labour coefficients for Ewe, Suckler and Fat Cattle enterprises, relative to those for combinable crops, are too high and need to be adjusted downwards.

Table 3.15: Overview of Lowland Suckler Results between 2008/09 and 2012/13

Measure						Below Lower 95% CI					Exceeds Upper 95% CI				
	2008/09	2009/10	2010/11	2011/12	2012/13	Cereals	Lowland Grazing L'stock	Mixed	Other	Cereals	Lowland Grazing L'stock	Mixed	Other		
Ewes Output	**	*	*		*	5		1	5	1		4	1		
TVC	**	**	***	**	***		5			4		3	4		
GM		**	**	*	**	5		4	3		4		1		
LAB	***	***		***			3	2		5		1	4		
Contract						3		2		2			1		
Tmach		**				4		1	1		1		1		
TOFC		**						3		5			2		
LAND	**	*			*		3	2		5		1	2		
TFC	*	*			*		3	3		5			4		
NFI.ent	*	***		**	*	5			3		3		1		
FSLab						5			1				3		
TC	*	*		*	*		3	1		4			4		
NM	*	***		*	*	4			4		3	2			

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Table 3.16: Overview of Fat Cattle (Suckler) Results between 2008/09 and 2012/13

Measure						Below Lower 95% CI					Exceeds Upper 95% CI				
	2008/09	2009/10	2010/11	2011/12	2012/13	Cereals	LFA Grazing Livestock	Lowland Grazing L'stock	Mixed	Other	Cereals	LFA Grazing Livestock	Lowland Grazing L'stock	Mixed	Other
Cattle Output	*	**	***	**	***	5	5			5			3	4	
TVC	**	***	***	**	*	1		2			2				4
GM		*		*		3	1	5		2	4	2	1	5	
LAB	***	***	***	***	***		5	5	2		5		2	5	
Contract	***			***		1	5		1			1		3	
Tmach						3			2			1		3	
TOFC	*	*			*	1	1		5		2			4	
LAND	***	**	*	*	*		3	2	4		4			4	
TFC	***	***	**	***	***		5	1	3		3			5	
NFI.ent	***	***	*	***	***	4				5	5	4	3		
FSLab		*				2		2	2		1			4	
TC	***	***	**	**	***		1	4	3		4			5	
NM	***	***	*	***	**	5				5	4	5	3		

\* significant 95%; \*\* significant 99%; \*\*\* significant 99.9%.

Table 3.17 combines the overall results for Winter Wheat, Winter Barley, Spring Barley and Oilseed Rape for Cereals farms. Relative labour costs are noted to be in line with expectations for Winter Wheat, Winter Barley and Spring Barley. However, labour costs (paid / unpaid and value of Farmer and Spouse Labour) for Oilseed Rape are substantially greater than expected. Land costs are broadly similar across enterprises. Relative machinery costs are in line with expectations, with the notable exceptions of higher machinery costs for Oilseed Rape in 2011/12 and for Winter Barley in 2012/13; these two results flow from the atypical relative outputs for these crops in the specific years noted.

Table 3.17: Cereals Farm Type: Combinable Cropping Summary Results 2008/09 to 2012/13

	2008/09				2009/10				2010/11			
	WW	WB	Sbar	OSR	WW	WB	Sbar	OSR	WW	WB	Sbar	OSR
Ha	80.6	29.8	33.0	44.9	75.5	27.0	35.0	46.1	80.3	29.3	24.9	46.2
Yield (t/ha)	8.5	6.9	6.0	3.2	8.3	6.8	5.9	3.5	8.2	6.8	5.3	3.6
TotOut	953	748	724	953	863	631	553	884	1257	885	800	1121
TVC	380	324	256	349	481	412	328	450	424	370	286	400
GM	620	489	510	604	430	298	283	437	895	622	598	726
LAB	58	57	48	94	60	49	45	106	64	63	43	99
Contract	85	66	59	71	87	79	66	80	98	81	85	101
Tmach	238	235	210	234	252	226	199	252	285	251	259	245
TOFC	75	76	68	71	74	76	72	76	86	89	91	90
LAND	134	136	133	137	145	143	137	149	174	171	165	178
TFC	590	569	518	607	619	572	520	663	707	654	643	713
NFI.ent	30	-80	-8	-3	-189	-275	-237	-226	188	-32	-46	13
FSLab	87	82	97	112	86	72	62	100	121	106	105	124
TC	1057	976	871	1068	1186	1057	909	1213	1252	1129	1034	1237
NM	-57	-163	-105	-115	-275	-347	-299	-326	66	-137	-151	-112
Cost/t	130	148	154	339	147	165	163	361	155	174	206	357
NM/t	-12	-30	-26	-45	-36	-58	-58	-109	5	-137	-38	-45
Out/t	112	108	121	294	105	94	94	251	153	132	151	312
<i>n</i>	313	140	85	202	312	127	123	186	268	104	71	203

  

	2011/12				2012/13			
	WW	WB	Sbar	OSR	WW	WB	Sbar	OSR
Ha	75.9	30.5	29.8	48.0	82.1	30.8	31.3	52.4
Yield (t/ha)	8.0	6.4	5.3	3.9	6.7	6.5	4.8	3.3
TotOut	1273	971	924	1463	1235	1122	882	1294
TVC	454	406	318	439	544	458	355	527
GM	876	652	665	1029	754	784	611	771
LAB	61	69	48	97	65	77	50	106
Contract	124	108	119	126	123	100	105	121
Tmach	279	236	254	309	292	350	267	295
TOFC	97	96	81	94	99	96	88	96
LAND	186	184	177	190	193	186	181	191
TFC	747	693	679	816	772	809	691	808
NFI.ent	128	-42	-14	212	-18	-26	-80	-37
FSLab	106	76	89	162	99	113	75	140
TC	1308	1175	1086	1416	1414	1380	1120	1475
NM	22	-118	-103	51	-116	-139	-155	-177
Cost/t	169	191	213	384	219	222	255	456
NM/t	-3	-26	-29	-8	-25	-30	-49	-67
Out/t	159	151	173	375	184	173	186	388
<i>n</i>	272	84	75	205	294	105	83	223

WW=Winter Wheat  
 WB=Winter Barley  
 SBar=Spring Barley  
 OSR=Oilseed Rape

Table 3.18 presents results for General Cropping farms. Machinery costs for combinable crops are substantially greater on General Cropping farms than Cereals farms, noting that crop area grown and yield per hectare are similar across these farm groups. Labour costs for Oilseed Rape are noted to be considerably greater than for other combinable crops. Other fixed costs for combinable crops are greater on General Cropping farms than on Cereals farms. Land costs for combinable crop enterprises on General Cropping Farms are greater than those found on Cereals farms, in part reflecting differences in land quality between these two farm type groups. Machinery and labour costs for Sugar Beet are considerably lower than anticipated. While the relative value of farmer and spouse labour is more in line with expectations, the cost of paid / unpaid labour is arguably lower than expected. Considering the costs of paid / unpaid and farmer and spouse labour, contract and machinery together, this cost bundle for Sugar Beet is noted to be substantially lower than anticipated relative to the cost bundle for combinable crops.

Table 3.19 shows the cost centre allocation for all farms (£/ha) and fixed costs as a percentage of total output for the respective centre for 2006/07 to 2012/13. Within the data it is important to note that not all farms undertake AES or diversification activities; hence, on average across the total sample, low and zero cost allocations for a particular cost heading in these cost centres occur. Prior to the implementation of the methodology for allocation and apportionment of fixed costs in 2008/09 (detailed in Appendix 1) it can be seen in Table 3.19 that the costs allocated to Agri-Environment Scheme (AES), Diversification and Single Payment Scheme (SPS) cost centres were substantially lower in 2006/07 and 2007/08 than in 2008/09 onwards. With respect to the allocation of fixed costs to AES and Diversification cost centres, it is difficult to draw firm conclusions from the data reported due to the wide variation in activities that are undertaken in these cost centres on individual farm businesses. However, given the magnitude of the average costs per farm, taking into account that not all farm businesses undertake these activities, the cost data presented represent appropriate cost allocations. It is however informative to note that across all years the land cost is predominantly allocated to the agriculture cost centre. Land allocation from 2008/09 onwards to SPS ranges from £12 to £21/ha for all farms (7% to 11% of SPS output value), though this range is larger when considered across all farm types. The land cost allocated to SPS also falls as the relative value of the SPS payment to Agricultural output decreases, as observed across the years 2008/09 to 2011/12. The allocation of costs to SPS is arguably out of line with current market prices for rents, where rent values of land with SPS entitlements would be substantially greater than for land without SPS entitlements.



Table 3.18: General Cropping Summary Results 2008/09 to 2012/13

	2008/09						2009/10					
	WW	WB	Sbar	OSR	SB	Pots	WW	WB	Sbar	OSR	SB	Pots
Ha	90.5	33.5	24.9	45.7	36.1	13.5	75.1	34.1	31.4	37.1	35.6	10.0
Yield (t/ha)	8.7	6.6	6.0	3.4	62.7	37.0	8.3	6.4	5.9	3.7	63.1	39.9
TotOut	1007	797	757	993	1758	4397	866	690	581	648	1982	3862
TVC	348	281	256	338	696	1729	426	345	278	437	795	2087
GM	696	568	542	655	1062	2668	476	393	342	513	1187	1775
LAB	73	57	71	103	88	412	65	63	49	111	95	331
Contract	85	85	52	85	157	71	97	100	80	101	202	71
Tmach	308	263	278	291	68	466	304	295	257	323	185	545
TOFC	95	87	87	74	87	108	99	87	99	80	93	117
LAND	167	155	158	180	166	174	177	166	171	175	179	172
TFC	707	647	645	733	565	1232	742	711	657	791	754	1235
NFI.ent	-11	-79	-103	-78	497	1436	-265	-319	-315	-277	433	540
FSLab	104	75	72	65	174	1030	85	64	68	100	185	1274
TC	1159	1003	973	1135	1435	3991	1253	1121	1002	1327	1734	4596
NM	-115	-154	-174	-143	324	406	-350	-383	-382	-377	248	-734
Cost/t	137	156	190	342	24	115	154	184	174	372	29	120
NM/t	-16	-27	-53	-49	5	13	-45	-66	-69	-115	3	-21
Out/t	116	121	127	292	28	129	104	110	98	257	32	98
<i>n</i>	138	58	60	74	69	67	157	68	74	79	82	71

  

	2010/11						2011/12					
	WW	WB	Sbar	OSR	SB	Pots	WW	WB	Sbar	OSR	SB	Pots
Ha	90.6	31.3	31.3	46.9	38.9	13.5	87.2	32.3	31.9	45.2	40.8	14.2
Yield (t/ha)	8.4	6.5	5.4	3.9	55.7	39.5	8.1	5.8	4.9	4.0	68.4	40.8
TotOut	1253	863	782	1227	1706	5560	1251	898	806	1526	2101	4447
TVC	381	326	263	370	773	1862	420	352	302	438	822	1988
GM	911	610	549	863	933	3699	876	625	537	1096	1279	2460
LAB	92	61	53	135	73	370	65	64	52	162	82	305
Contract	90	107	63	109	179	108	118	93	96	152	204	88
Tmach	397	316	335	354	95	644	402	316	276	419	115	691
TOFC	103	98	96	90	97	115	113	100	105	102	107	122
LAND	212	187	182	214	207	234	217	195	199	212	223	213
TFC	894	768	730	901	651	1470	915	767	726	1048	730	1420
NFI.ent	17	-158	-181	-38	282	2229	-39	-142	-188	49	549	1039
FSLab	145	95	137	94	235	1012	114	89	112	116	238	1409
TC	1420	1189	1129	1365	1658	4334	1449	1208	1140	1602	1790	4817
NM	-128	-253	-318	-132	47	1217	-153	-232	-301	-68	312	370
Cost/t	170	186	223	350	31	117	185	219	244	410	27	126
NM/t	-17	-253	-71	-38	0	24	-24	-54	-74	-31	4	-15
Out/t	149	131	147	310	31	141	156	153	163	377	31	111
<i>n</i>	111	48	41	61	76	58	120	47	56	75	68	56

  

	2012/13					
	WW	WB	Sbar	OSR	SB	Pots
Ha	75.7	30.1	31.2	39.5	35.4	16.4
Yield (t/ha)	7.0	6.4	5.4	3.4	61.0	34.7
TotOut	1266	1124	981	1330	1981	7823
TVC	499	420	343	516	932	2148
GM	826	782	694	821	1049	5675
LAB	78	76	74	139	90	534
Contract	101	109	87	115	202	148
Tmach	402	377	360	430	90	984
TOFC	114	109	118	104	111	134
LAND	224	199	220	223	224	229
TFC	919	869	859	1010	720	2029
NFI.ent	-94	-87	-165	-188	329	3646
FSLab	130	95	107	114	213	1137
TC	1548	1384	1309	1639	1865	5313
NM	-224	-182	-272	-302	116	2509
Cost/t	229	225	257	493	31	161
NM/t	-38	-36	-62	-100	1	59
Out/t	181	177	183	391	33	221
<i>n</i>	124	56	50	77	65	53

WW=Winter Wheat  
WB=Winter Barley  
SBar=Spring Barley  
OSR=Oilseed Rape  
SB=Sugar beet  
Pots=MainCrop Potatoes

Table 3.19: Cost centre allocation of costs £/farm and £/ha for All Farms  
2008/2009 to 2012/13 and costs as a percentage of cost centre output

		£/farm				£/ha				of output			
		Agriculture	AES	Diversification	SPS	Agriculture	AES	Diversification	SPS	Agriculture	AES	Diversification	SPS
2006/07	Output	154245	5005	12661	24080	1137	37	93	177				
	TVC	75469	31	1228	0	556	0	9	0				
	GM	78776	4974	11433	24080	581	37	84	177	51%	100%	90%	100%
	Labour	16338	43	1730	0	120	0	13	0	11%	0%	14%	0%
	Machinery	12430	74	573	0	91	1	4	0	8%	3%	4%	0%
	General	18750	35	1200	0	138	0	9	0	12%	0%	10%	0%
	Land	16394	113	625	0	121	1	5	0	11%	3%	5%	0%
	Other	4215	0	0	0	31	0	0	0	3%	0%	0%	0%
2007/08	Output	182634	6122	12185	23948	1309	44	87	172				
	TVC	84734	29	1009	0	607	0	7	0				
	GM	97900	6093	11176	23948	702	44	80	172	54%	100%	92%	100%
	Labour	17252	38	1663	0	124	0	12	0	9%	1%	14%	0%
	Machinery	13416	55	639	0	96	0	5	0	7%	1%	5%	0%
	General	20345	8	1212	0	146	0	9	0	11%	0%	10%	0%
	Land	18301	132	664	0	131	1	5	0	10%	2%	5%	0%
	Other	3899	0	0	0	28	0	0	0	2%	0%	0%	0%
2008/09	Output	204758	6406	13607	26440	1453	45	97	188				
	TVC	99037	116	1472	0	703	1	10	0				
	GM	105721	6290	12135	26440	750	44	87	188	52%	98%	90%	100%
	Labour	18938	134	2011	7	134	1	14	0	9%	2%	14%	0%
	Machinery	30673	86	844	59	218	1	6	0	15%	2%	6%	0%
	General	19406	344	1777	383	138	2	13	3	9%	4%	13%	2%
	Land	14240	835	2207	2956	101	6	16	21	7%	13%	16%	11%
	Other	5446	0	0	0	39	0	0	0	3%	0%	0%	0%
2009/10	Output	197958	6827	12983	30028	1364	47	89	207				
	TVC	105044	96	782	0	724	1	5	0				
	GM	92914	6731	12201	30028	640	46	84	207	47%	98%	94%	100%
	Labour	18202	209	1336	14	125	1	9	0	9%	2%	10%	0%
	Machinery	31497	83	589	71	217	1	4	0	16%	2%	4%	0%
	General	18598	241	1554	383	128	2	11	3	9%	4%	12%	1%
	Land	15278	773	2288	2483	105	5	16	17	8%	11%	18%	8%
	Other	5511	0	0	0	38	0	0	0	3%	0%	0%	0%
2010/11	Output	223341	6751	14159	29507	1530	46	97	202				
	TVC	110570	136	611	0	757	1	4	0				
	GM	112771	6615	13548	29507	773	45	93	202	51%	98%	96%	100%
	Labour	18906	86	1424	2	130	1	10	0	8%	2%	10%	0%
	Machinery	34703	106	1003	65	239	1	7	0	16%	2%	7%	0%
	General	19748	244	1586	365	135	2	11	3	9%	4%	11%	1%
	Land	16929	826	2582	2260	116	6	18	15	8%	13%	19%	7%
	Other	5429	0	0	0	37	0	0	0	2%	0%	0%	0%
2011/12	Output	250766	6582	12953	29430	1695	44	88	199				
	TVC	120830	142	634	0	817	1	4	0				
	GM	129936	6440	12319	29430	878	43	84	199	52%	98%	95%	100%
	Labour	19504	128	933	3	132	1	6	0	8%	2%	7%	0%
	Machinery	37183	89	712	62	251	1	5	0	15%	2%	6%	0%
	General	21338	238	1507	336	144	2	10	2	8%	5%	11%	1%
	Land	19080	647	2409	2087	129	4	16	14	8%	9%	18%	7%
	Other	6729	0	0	0	45	0	0	0	3%	0%	0%	0%
2012/13	Output	243403	6285	14303	25889	1656	43	97	176				
	TVC	128919	95	520	0	877	1	4	0				
	GM	114484	6190	13783	25889	779	42	93	176	47%	98%	96%	100%
	Labour	19528	56	846	3	133	0	6	0	8%	0%	6%	0%
	Machinery	38098	73	933	63	259	0	6	0	16%	0%	6%	0%
	General	21709	237	1699	334	148	2	12	2	9%	5%	12%	1%
	Land	19573	621	2471	1778	133	4	17	12	8%	9%	18%	7%
	Other	6574	0	0	0	45	0	0	0	3%	0%	0%	0%

## 4. Discussion

### 4.1 Key Findings

#### 4.1.1 Arable Crops

With respect to combinable arable crops, the allocation of labour and machinery is argued to be feasible for winter wheat, winter barley and spring barley enterprises, in so far as can be determined from the data derived from the FBS. However, the labour allocation for oilseed rape is out of line with the labour costs for similar combinable crops and would therefore appear to be incorrect. Hence, there is evidence to indicate that the **coefficient for labour, with respect to oilseed rape, needs to adjusted downwards**. Examining the results by farm type groups, the costs allocated to cereals and oilseeds for machinery, other fixed costs and land are generally greater on General Cropping farms than for cereal farms. Conversely on Mixed farms, typically lower labour, machinery and other fixed costs are allocated for cereal and oilseeds, than observed on Cereal farms.

For root crops, the labour and machinery allocation for potatoes appears feasible given the intensive nature of production of this crop; moreover, given that the majority of potatoes are grown on General Cropping farms, where greater machinery costs, other fixed costs and land costs are observed for cereals and oilseeds, there is no evidence to indicate that costs allocated to potato production are over represented. With respect to sugar beet production however, there is evidence that the allocation of machinery costs to this enterprise is not appropriate. Specifically, the results suggest that machinery cost allocation to sugar beet is substantially lower than would be expected. Hence, the **coefficient for machinery for sugar beet needs to be adjusted upwards**.

The differences observed for cost allocation to cereals and oilseeds for land, between Cereals and General Cropping farm types is likely to be the result of two factors: i) the differences in land quality (and hence rent / land costs) between these two farm types; ii) the specialised nature of production on some General Cropping farms for land (irrigation infrastructure) or building (potato storage) costs that are enterprise specific (e.g. potatoes). Given that the latter influences the land cost allocated to combinable crops, there is arguably a need to provide for **specific allocation of enterprise specific land and building costs to that enterprise**.

#### 4.1.2 Livestock Enterprises

With respect to livestock enterprises, the results for dairy production indicate that the specialist dairy farms (as defined within this report) incur greater costs than non-specialist dairy farms. This finding is argued to be the result of the more intensive nature of production (per cow) found on these specialist dairy farms. With respect to the results for layer and pig enterprises there are no patterns which emerge to indicate that the cost allocations to these enterprises are incorrect.

With respect to LFA ewes, the data indicates that Specialist SDA Sheep farms incur lower (per ewe) production costs than non-Specialist SDA farms. However, this finding arguably reflects the lower intensity of production observed on these units, as evidenced by the consistently lower output per ewe achieved on these farms. For LFA Suckler production, cost allocation to the SDA Specialist Beef farms is in general not consistently greater or lower than for other farms, albeit that some weaker data patterns exist. For Lowland ewe production, labour costs on Cereal and Mixed farm types are greater than for Lowland Grazing livestock, indicating that relative to the cereal crops dominating crop production on these

two farm types, **the labour coefficient for Ewes should be adjusted downwards.** With respect to Lowland Suckler production, Cereals farms allocation of labour, other fixed costs and land are consistently greater than the average, once again indicating that relative to cereal crops, the **labour coefficient for Beef Cows should be adjusted downwards.** The main finding observed with respect to Fat Cattle production is that the labour cost allocated to this enterprise on Cereal farms is consistently greater than the average, while the labour cost allocated to LFA and Lowland Grazing farm types are consistently below the average; this indicates that the **labour coefficient for Other Cattle should be adjusted downwards.**

#### 4.1.3 Cost Centres

With respect to the allocation of fixed costs to the four centres, the empirical results indicate that the methodology introduced in 2008/09 has led to substantial differences in the costs allocated to the four cost centres. In the absence of undertaking reviews of individual farm business returns, it is difficult to draw firm conclusions with respect to the allocation of fixed costs to AES and Diversification cost centres. However, the data presented indicates that the allocation of land costs to SPS is lower than would be expected, at 7 to 11% of total output value for this cost centre for all farms; this indicates that **land costs are over-allocated to agriculture and under-allocated to the SPS cost centre.**

### 4.2 Recommendations

#### 4.2.1 Labour and Machinery Coefficients

On the basis of the results in Chapter 3 and the summary presented in section 4.1, there is strong evidence to suggest that changes to a number of labour coefficients are required, in combination to changes to the machinery coefficient for oilseed rape. With respect to labour costs, evidence from previous research (Wilson, 2009) provides standard coefficients for crops and livestock enterprises. These (Labour hours) are presented in Table 4.1 alongside the *empirical* (i.e. as calculated from the results generated from the FBS allocation of costs relative to the output for that enterprise) coefficients calculated for the most relevant farm type or specialist type as appropriate. In addition, using the labour hours from Wilson (2009), a standard cost based on the mid-year of the five years of interest (2010 harvest) has been calculated using standard wage rates (as detailed in Table 4.1). From these data a Labour Correction Factor (LCF) has been calculated by dividing the Standard Labour Cost by the Empirical Labour Cost for each enterprise. From the above summary, there was no evidence to indicate that labour costs for potato production were overestimated, and hence no LCF has been calculated for this enterprise. Potatoes represent a potentially more variable crop with respect to both labour needs and more specifically output value and hence no recommendation to change the labour coefficient for potatoes is proposed.

Table 4.2 presents a table of current FBS *methodological* coefficients for labour and machinery alongside the *empirical* coefficients from Table 4.1. Applying the LCF to the current FBS methodological coefficients provides **the proposed FBS methodological labour coefficients for 2013/14 onwards.** It is instructive to note that these revised labour coefficients address all the key findings raised in the above summary with respect to the relative magnitude of the coefficients for labour. With respect to machinery coefficients the results demonstrated a need to adjust the machinery coefficient for sugar beet upwards. In order to adjust the machinery coefficient for sugar beet it is necessary to 'over-correct' the current methodological coefficient when compared to the empirical coefficient that has been derived from the low methodological coefficient. This has been undertaken

by basing the new FBS methodology coefficient on the empirical coefficient, plus the difference between the empirical and methodological coefficient. It is recognised that this leads to a considerable increase in the methodological coefficient; however, it is argued that the relative magnitude of this coefficient in comparison to those for cereal, oilseed and potato enterprises is appropriate. Hence **the proposed FBS methodological coefficient for sugar beet for 2013/14 onwards** is also presented in Table 4.2.

#### 4.2.2 Land and Buildings

Given the increased land cost for cereals observed on General Cropping farms when compared with Cereal farms, it is recommended that a **facility for the direct allocation of land infrastructure or building costs to specific enterprises be considered** for either specific key enterprises (e.g. potatoes), or for all enterprises where researchers and farmers agree that specific land infrastructure and building costs be directly allocated.

#### 4.2.3 Cost Centre Recommendations

The current FBS methodology embedded a “damping” factor for particular cost centres (see Appendix 1). This included a damping coefficient for land cost of 0.25 (i.e. a reduction of 75%) for the SPS cost centre based upon relative gross margin return for the enterprise. The data presented above indicates that at 7-11% of total output value, land costs to SPS are lower than anticipated. It is therefore **recommended that the damping factor for land for the SPS cost centre be removed**.

Table 4.1: Empirical results from FBS 2008/09 to 2012/13 against calculated labour costs derived from previous literature and standard wage costs

Enterprise	FBS Empirical Labour Input: Output Coefficients* and Value based on average output		Labour hours and costs (per ha or animal) from Wilson (2009) and based on Grade 4 (5 for dairy) Standard Worker Rate (80% normal; 20% OT; 2010 Harvest)		Labour Correction Factor [LCF] (SLC/ELC)
	Labour	Empirical Labour Cost (ELC)	Labour hours	Standard Labour Cost (SLC)	
Winter Wheat	0.1463	126.51	18	139.68	1.2145
Winter Barley	0.1772	154.41	18	139.68	0.9951
Spring Barley	0.1743	135.33	18	139.68	1.1354
Oilseed Rape	0.2030	232.06	16	124.16	0.5886
Main Crop Potatoes	0.3182	1660.50	110	853.60	n/a
Sugar Beet	0.1551	295.61	33	256.08	0.9529
Dairy Sucklers	0.2067	401.00	42	325.92	0.9483
Other Cattle	0.6745	252.17	26	201.76	0.8801
Ewes	0.4790	220.18	12	93.12	0.4652
Pigs	0.6621	52.41	5.2	40.35	0.8470
Layers	0.1332	257.83	28	217.28	0.9270
	0.1760	3.07	0.36	2.79	1.0000

\*Input:Output (I:O) Coefficients calculated from FBS section M2 results (2008/09-2012/13 simple average of I:O results per year) and relate to the following farm types or specialist groups: Winter Wheat, Winter Barley, Spring Barley, Oilseed Rape [Cereals]; Main Crop Potatoes, Sugar Beet [General Cropping]; Dairy [Specialist Dairy {as defined in this report}]; Sucklers [Lowland Grazing Livestock]; Other Cattle [Lowland Grazing Livestock]; Ewes [Lowland Grazing Livestock]; Pigs [Specialist Pigs {as defined in this report}]; Layers [Specialist Layers {as defined in this report}]. Labour value based upon average output 2008/09-2012/13 (simple average). n/a Not applicable.

Table 4.2: Recommended Input-Output Coefficients

Enterprise	Current FBS Coefficients		FBS Empirical Input: Output Coefficients*		Recommended Revised Coefficients	
	Labour	Machinery	Labour	Machinery	Labour#	Machinery~
Winter Wheat	0.069872	0.352718	0.1463	0.3379	0.0849	
Winter Barley	0.07545	0.39455	0.1772	0.4030	0.0751	
Spring Barley	0.07695	0.40276	0.1743	0.4213	0.0874	
Oilseed Rape	0.115344	0.395716	0.2030	0.3246	0.0679	
Main Crop	0.1122	0.1279	0.3182	0.1474		
Potatoes						
Sugar Beet	0.0648	0.0955	0.1551	0.1565	0.0617	0.2175
Dairy	0.2608	0.1041	0.2067	0.1379	0.2473	
Sucklers	0.4989	0.2747	0.6745	0.4370	0.4391	
Other Cattle	0.4174	0.2676	0.4790	0.3599	0.1942	
Ewes	0.4989	0.2747	0.6621	0.3356	0.4226	
Pigs	0.1735	0.0556	0.1332	0.0473	0.1608	
Layers	0.1862	0.0602	0.1760	0.0798	0.1862	

\*Input:Output (I:O) Coefficients calculated from FBS section M2 results (2008/09-2012/13 simple average of I:O results per year) and relate to the following farm types or specialist groups: Winter Wheat, Winter Barley, Spring Barley, Oilseed Rape [Cereals]; Main Crop Potatoes, Sugar Beet [General Cropping]; Dairy [Specialist Dairy {as defined in this report}]; Sucklers [Lowland Grazing Livestock]; Other Cattle [Lowland Grazing Livestock]; Ewes [Lowland Grazing Livestock]; Pigs [Specialist Pigs {as defined in this report}]; Layers [Specialist Layers {as defined in this report}].# Revised labour coefficients (where presented) calculated from Current FBS Coefficients, adjusted by LCF from Table 4.1. ~ calculated from [(Empirical machinery coefficient - Current FBS coefficient) + Empirical coefficient].

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## **Appendix 1: Methodology for the Allocation and Apportionment of Costs in Section I (Diversified Activities, Single Payment Scheme, Agri-Environment Schemes) in the Farm Business Survey in England and Wales**

### **Background**

A working party was set up to investigate the apportionment / allocation of costs in Section I. This working party proposed a methodology for the apportionment / allocation to FBSTG on 15 October 2008.

In response to QA recommendations, RBR had made considerable advances, via RO discussion with co-operators and through professional judgement, in terms of ensuring an enhanced coverage of allocating costs in Section I in 2007/08 than had previously been achieved.

At FBSTG concerns were raised with respect to the mechanism proposed and the philosophical principle of the cost allocation / apportionment approach proposed. The issue was referred to FBSPB.

FBSPB agreed that an enhanced mechanism for allocation of costs in Section I was required and that this should be based upon a combination of RO professional judgement and discussion with co-operators and via a mechanistic approach for other costs. It was recognised that it would be unlikely that any methodology that was proposed would achieve definitively accurate results and that any methodology introduced would be subject to review, post analysis of results.

FBSPB tasked RBR with proposing a revised mechanism for the apportionment and allocation of costs in Section I. In conjunction with Defra and FBSTG members, a draft proposal was developed, circulated and tested. The methodology to be implemented for 2008/09 is set out below.

First the methodology centres upon RO allocation / apportionment for labour (direct and overhead) across Section I activities. This relies upon ROs discussing labour usage with the co-operator and following the approach in Section P.

Second, machinery costs within Section I continue to be allocated by ROs where these are known (as currently), with a mechanistic approach for the allocation of "overhead" machinery costs.

Thirdly, the methodology details a mechanism for direct allocation of known General Farming Costs within Section I by ROs (as currently undertaken), *plus* a mechanistic approach to the allocation of "overhead" general farming costs across Agriculture, Diversification, Agri-Environment Schemes, and the Single Payment Scheme, based upon output levels, with a 'dampened down' cost apportionment to Rental Income, Agri-Environment Schemes and the Single Payment Scheme cost centres, reflecting their lower resource use of these costs.

Fourth, the methodology sets out an approach which relies upon a straightforward mechanism, based upon Gross Margins, for the allocation of land and property costs (including rent/rental value) across Agriculture, Agri-Environment (AE) Schemes and the Single Payment Scheme (SPS) (all of which are users of land, generally simultaneously) whilst land and property costs to other diversified activities will draw upon ROs applying the rental allocation to income bearing assets approach currently in use within the FBS. Other property costs to all diversified activities will use the Gross Margin mechanism.



Fifth, the methodology details that occupier expenses be allocated on the same basis as land and property costs.

Sixth, whilst excluded from NFI, interest received and charged is required in calculations for FBI measures. The methodology details that the apportionment of interest as currently calculated should be included in the individual farm returns post data completion, utilising imputed Section J costs and revenues.

Seven, it is recommended that a footnote accompanies the presentation of cost and FBI data across the four cost centres to ensure that stakeholders are aware of the methodology used to apportion costs.

## Methodology

The following recommendations for allocation and apportionment of costs in Section I are proposed below.

### 1) Labour Costs

For Section I activities, ROs should allocate **direct labour costs** and add an element of **overhead labour costs** for each activity (including SPS and AE) in Section I. Labour hours for Section I activities should be allocated in Section B, which then feeds into Section I and Section P. This labour allocation should include an overhead allocation for labour hours, as Section P splits labour between direct labour and overheads. With respect to guidance to ROs in determining an "overhead" amount, ROs should seek to determine in discussion with the farmer what proportion of their time they spend on overheads, either specific to an enterprise or more generally across their farm business. Where a proportion of labour is allocated as overheads for the Farm Business overall (e.g. 10%) this would then be split pro-rata (on the basis of labour hours) across all enterprises, including Section I activities. The link between Section B, Section P and Section I is thus important in this context. Where direct labour hours are incurred, ROs should allocate an overhead amount of labour to the activity as noted above; for pragmatic purposes, where no direct labour is incurred (e.g. wayleave payments or other non-labour requiring revenue streams) there would be no requirement to specify an overhead labour element.

### 2) Machinery Costs

**Machinery Cost** Allocation / apportionment. ROs should allocate direct machinery cost to activities within Section I, **where known**, following the current methodological approach. In addition, an "**overhead Machinery Cost**" will be allocated (for each of the following costs - Contract, Machinery Rental, Machinery equipment valuation etc, repairs and small tools, vehicle fuels and oils, car mileage expenses) on the basis outlined below, taking into account the output of the activity, with AE, SPS, and Rental Income allocation 'dampened down' to reflect their lower requirement of these activities for overhead machinery costs. Overhead machinery costs to all other activities will be allocated on the basis of their full output. The proportion of total machinery costs defined as "overhead" will draw upon previous research. The following activities will be excluded from the apportionment of **overhead** machinery costs and the value of their output will be excluded from the apportionment methodology within Section I: [Imputed farmhouse and imputed farm cottage rental income {320, 321, 340}, capital credits {940}, appropriate share of machinery grants {276}, appropriate share of glasshouse grants {277}, permanent crop establishment grants {274}, disaster aid {272}, FMD Distress donations {990}, Co-op trading bonuses {930}, Miscellaneous insurance receipts {950}]. The apportionment of machinery general farming costs to other Section I activities will be as set as below.

Total of the following Machinery Costs for the Farm Business (Contract, Machinery Rental, Machinery equipment valuation etc, repairs and small tools, vehicle fuels and oils, car mileage expenses) ( $Z_m$ ). Take the cost already allocated to the Section I activity ( $Y_m$ ).  $Z_m - Y_m = V_m =$  Total machinery cost net of direct costs allocated in Section I (e.g "Machinery Rental to Agriculture and overheads for Section I". Assume that the overhead element of this is 11.3% (based upon report by Abigail Tiffin). Calculate the overhead machinery cost (e.g. Machinery Rental) to the business, after direct allocation to Section I, as  $0.113 * V_m = X_m$ .

Obtain total output for Agriculture (OutputAg), Entry Level Scheme (OutputELS), Other agri-environmental schemes (OutputOAE), SPS (OutputSPS), Rental Income (OutputRental), Other section I Output (excluding those listed above) (OutputOtherSection I) and calculate the following

$$\text{OutputAg} = \mathbf{G}$$

$$\text{OutputELS} * 0.1 = \mathbf{H}$$

$$\text{OutputOAE} * 0.25 = \mathbf{I}$$

$$\text{OutputSPS} * 0.1 = \mathbf{K}$$

$$\text{OutputRental} * 0.1 = \mathbf{L}$$

$$\text{OutputOtherSection I} = \mathbf{M}$$

$$\mathbf{G} + \mathbf{H} + \mathbf{I} + \mathbf{K} + \mathbf{L} + \mathbf{M} = \mathbf{J}$$

Overhead machinery cost ( $X_m$ ) is then allocated to each activity by

$$\text{Overhead machinery cost to Agriculture} = X_m * \frac{G}{J}$$

$$\text{Overhead machinery cost to ELS} = X_m * \frac{H}{J}$$

$$\text{Overhead machinery cost to OAE} = X_m * \frac{I}{J}$$

$$\text{Overhead machinery cost to SPS} = X_m * \frac{K}{J}$$

$$\text{Overhead machinery cost to Rental} = X_m * \frac{L}{J}$$

$$\text{Overhead machinery cost to Other Section I activities} = X_m * \frac{M}{J}$$

The cost allocated within Section I is then the direct machinery cost allocation **plus** the overhead machinery cost from the above formulaic approach. Note that this approach will allocate an overhead machinery cost for each type of cost where there is a positive output for the activity in Section I, for the listed machinery cost categories (assuming that the individual machinery cost for the business is greater than the cost already allocated to Section I, as will occur in most cases; where the machinery cost for the business is all allocated

by the RO directly to activities in Section I, there will not be an “overhead” element to allocate via the mechanistic approach). Note that the machinery cost allocated to Agriculture will be the total machinery cost for the farm business minus the sum of machinery costs directly allocated in Section I and the overhead machinery costs apportioned to Section I.

### 3) General Farming Costs

For Section I activities **general farming costs** continue to be allocated directly by an RO **where these are known** for activities in Section I. In addition, an “**overhead General Farming Cost**” will be allocated (for each cost, e.g. electricity, professional fees) on the basis outlined below, taking into account the output of the activity, with AE, SPS, and Rental Income allocation ‘dampened down’ to reflect their lower requirement of these activities for general farming costs. General farming costs to other activities will be allocated on the basis of their full output. The following activities will be excluded from the apportionment of **overhead** general farming costs and the value of their output will be excluded from the apportionment methodology within Section I: [Imputed farmhouse and imputed farm cottage rental income {320, 321, 340}, capital credits {940}, appropriate share of machinery grants {276}, appropriate share of glasshouse grants {277}, permanent crop establishment grants {274}, disaster aid {272}, FMD Distress donations {990}, Co-op trading bonuses {930}, Miscellaneous insurance receipts {950}]. The apportionment of overhead general farming costs to other Section I activities will be as set as below.

Total of each general farming costs (GFC) for the Farm Business (e.g. Electricity) ( $Z_g$ ). Take the Electricity already allocated to the Section I activity ( $Y_g$ ).  $Z_g - Y_g = X_g$  = Agriculture and Overhead GFC (e.g. “Electricity to Agriculture and overheads for Section I”).

Obtain total output for Agriculture (OutputAg), Entry Level Scheme (OutputELS), Other agri-environmental schemes (OutputOAE), SPS (OutputSPS), Rental Income (OutputRental), Other section I Output (excluding those listed above) (OutputOtherSection I) and calculate the following

$$\text{OutputAg} = \mathbf{G}$$

$$\text{OutputELS} * 0.1 = \mathbf{H}$$

$$\text{OutputOAE} * 0.25 = \mathbf{I}$$

$$\text{OutputSPS} * 0.1 = \mathbf{K}$$

$$\text{OutputRental} * 0.1 = \mathbf{L}$$

$$\text{OutputOtherSection I} = \mathbf{M}$$

$$\mathbf{G} + \mathbf{H} + \mathbf{I} + \mathbf{K} + \mathbf{L} + \mathbf{M} = \mathbf{J}$$

Agriculture and Overhead GFC ( $X_g$ ) is then allocated to each activity by

$$\text{Agriculture and Overhead GFC to Agriculture} = X_g * \frac{G}{J}$$

$$\text{Agriculture and Overhead GFC to ELS} = X_g * \frac{H}{J}$$

$$\text{Agriculture and Overhead GFC to OAE} = X_g * \frac{I}{J}$$

$$\text{Agriculture and Overhead GFC to SPS} = X_g * \frac{K}{J}$$

$$\text{Agriculture and Overhead GFC to Rental} = X_g * \frac{L}{J}$$

$$\text{Agriculture and Overhead GFC to Other Section I activities} = X_g * \frac{M}{J}$$

The cost allocated and apportioned within Section I is then the direct cost allocation **plus** the overhead general farming cost from the above formulaic approach. Note that this approach will allocate an overhead general farming cost for each type of cost where there is a positive output for the activity in Section I, for each general farming cost category (assuming that the individual general farming cost for the business is greater than the cost already allocated to Section I, as will occur in most cases; where the general farming cost for the business is all allocated by the RO directly to activities in Section I, there will not be an "overhead" element to allocate via the mechanistic approach).

#### 4) Land and Property Costs

For AE and SPS (and Agriculture) activities, **land and property costs** (including rent/rental value) be allocated on the basis outlined below; this aspect being based upon cost allocation that takes into account the Gross Margin (GM) derived to the farm business from each of Agriculture, AE and SPS, and allocates land and property costs on this basis. The GM basis is proposed for Agriculture, AE and SPS, because it is at GM level that a farmer makes a decision about which, and whether, to grow crops or produce livestock products, or not undertake any Agriculture activity. As the level of Agriculture activity falls on a farm, the allocation of land and property costs would increasingly fall on the SPS cost centre if the farm business only undertook Agriculture and SPS activities. The logical conclusion being that if a farmer ceased Agriculture production, all land and property costs would be apportioned to the SPS cost centre; if a farmer used only a small area of a farm for Agriculture and the majority under SPS without production, the majority of land and property costs would be apportioned to SPS. In typical examples, where all land is used for Agriculture, SPS (and AE), the majority of land and property costs would be apportioned to Agriculture unless the GM derived from Agriculture was particularly low. Land and property costs that are directly allocated to / for specific AE schemes (e.g. repair and maintenance of stiles) will be deducted from the total land and property costs to be apportioned across Agriculture, SPS and AE to ensure no double counting of costs occurs. Rent/rental value to diversified activities with income bearing assets will draw upon ROs applying the rental allocation to income bearing assets approach currently in use within the FBS. For those diversified activities with no income bearing assets, no overhead rent is applied. The remaining property costs will be allocated to all diversified enterprises on the basis of gross margins.

The proposed apportionment of rent / land and property costs for Agriculture, AE and SPS is set out below:

- i) Total rent / land and property costs for the Farm Business (**A**)

- ii) Total rent / land and property costs from diversified "market" activities plus any directly allocated costs to AE (**B**)
- iii) Net rent / land property costs for Agriculture, AE and SPS to be apportioned given by A-B = (**C**)
- iv) Sum GM for Agriculture, AE and SPS (**D**)
- v) Calculate percentage of **D** attributed to Agriculture (**Ag%**), AE (**AE%**), and SPS (**SPS%**)
- vi) Net rent / land and property cost apportioned to each activity is then given by

Rent / land and property cost to Agriculture = **Ag%** \* **C**

Rent / land and property cost to AE = **AE%** \* **C**

Rent / land and property cost to SPS = **SPS%** \* **C**

Where the GM for Agriculture is negative, a zero cut off would be imposed to reflect a similar situation to whereby no agriculture activity took place (and hence no positive agricultural GM was generated). Where property costs have been directly allocated to AE, the total rent / land and property costs for AE will be the sum of the costs directly allocated, plus the apportionment (**AE%** \* **C**) above.

## 5) Occupiers Expenses

Occupiers expenses (buildings works & net depreciation, insurance of farm buildings, landlord type repairs) will be applied and apportioned using the same methodology as land and property costs (tenants repairs & rates) noted above in Section 4.

## 6) Interest Charged and Received

Whilst excluded from NFI, interest is included within the calculation of FBI. The current apportionment of interest in the FBS as detailed in Table 9 of the GOR reports is "Interest payments have been allocated between cost centres in proportion to costs, and interest received in proportion to output". The above calculation will be incorporated in the individual farm returns post data completion by RBR at Duchy with inclusion of imputed Section J costs and revenues from Defra.

## 7) Presentation of data

It is recommended that the results of the cost apportionment and resulting FBS figures are reported with appropriate footnotes to provide a brief explanation of the methodology applied. It is recommended that the following text, or similar, be noted when the four cost centres' results are reported.

"The apportionment of land and property costs across the cost centres presented is based upon directly allocatable costs for diversified enterprises, with costs across agriculture, agri-environmental schemes and the single payment scheme apportioned on the basis of their respective gross margin contribution across these three cost centres. Apportionment of general farming costs and overhead machinery costs are based upon the respective output generated by each cost centre, weighted to reflect the degree to which each activity draws upon these costs."

For tabular results, a presentation of data as below would aid interpretation

Farm Business Income (FBI)	£20,000
<i>Of which, by cost apportionment</i>	
FBI Agriculture	£ 5,000
FBI Agri-environment	£ 2,000
FBI Diversification	£10,000
FBS Single Payment Scheme	£ 3,000

A further note will be required to alert users to the methodological change implemented in 2008/09, and that consequently 2008/09 cost and FBI data are not directly comparable with results from previous years.

### **Conclusion and Recommendation**

The above methodology provides a mechanism for enhanced allocation of costs to Section I activity. Given the philosophical arguments surrounding the principle of cost apportionment / allocation within Section I, it is argued that any approach should be as transparent as possible, easily understandable by ROs in terms of its implementation, and as interpretable to farmer co-operators and stakeholders who make use of the FBS data as possible.

The above methodology be implemented for 2008/09 FBS season. A brief review of a sample of accounts will be undertaken early in the 08/09 campaign, with a fuller review of the data returns after the 2008/09 to identify if further methodological changes are required.

Paul Wilson, Richard Crane and Keith Robbins

22.12.2008

(Amended 7.1.09 and 4.2.09) – final version 4.2.09

## Appendix 2: Detailed Results by Enterprise 2008/09 to 2012/13

Table A1: Winter Wheat Results 2008/09 to 2012/13

	2008/09								2009/10							
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value
Ha	68.0	62.0	74.1	80.6	90.5	35.2	25.1	<0.001	64.9	59.8	70.1	75.5	75.1	35.8	28.6	<0.001
Yield (t/ha)	8.3	8.1	8.4	8.5	8.7	7.6	7.4	<0.001	8.1	8.0	8.3	8.3	8.3	7.6	7.8	<0.001
	£/ha								£/ha							
Output	921	901	941	953	1007	830	776	<0.001	836	822	850	863	866	752	748	<0.001
TVC	364	356	372	380	348	351	339	<0.001	452	441	463	481	426	404	419	<0.001
GM	615	594	635	620	696	569	530	<0.001	447	431	464	430	476	474	437	0.077
LAB	52	47	57	58	73	32	25	<0.001	50	44	57	60	65	19	12	<0.001
Contract	89	79	99	85	85	64	108	<0.001	95	84	106	87	97	98	132	0.020
Tmach	258	244	271	238	308	276	239	<0.001	276	255	297	252	304	328	268	0.011
TOFC	81	77	85	75	95	79	87	0.008	81	77	85	74	99	70	95	<0.001
LAND	152	146	158	134	167	150	208	<0.001	160	155	165	145	177	147	234	<0.001
TFC	631	614	649	590	707	644	676	<0.001	662	636	689	619	742	662	742	<0.001
NFI.ent	-17	-40	7	30	-11	-75	-146	<0.001	-215	-243	-188	-189	-265	-188	-306	0.002
FSLab	86	71	101	87	104	82	61	0.404	79	60	98	86	85	9	19	<0.001
TC	1082	1056	1108	1057	1159	1077	1076	0.005	1194	1152	1235	1186	1253	1150	1181	0.087
NM	-103	-132	-74	-57	-115	-157	-207	<0.001	-294	-335	-253	-275	-350	-272	-325	0.084
	£/tonne								£/tonne							
Cost	138	133	142	130	137	149	156	0.006	151	145	157	147	154	155	158	0.196
NM	-18	-22	-13	-12	-16	-25	-36	0.015	-39	-45	-34	-36	-45	-38	-46	0.116
Output	112	110	114	112	116	111	106	0.002	103	102	105	105	104	100	97	<0.001
n	720			313	138	147	122		676			312	157	117	90	

	2010/11								2011/12							
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value
Ha	68.4	62.1	74.7	80.3	90.6	47.4	36.9	<0.001	65.7	59.8	71.6	75.9	87.2	42.7	36.7	<0.001
Yield (t/ha)	8.1	8.0	8.2	8.2	8.4	7.7	7.8	<0.001	8.0	7.9	8.2	8.0	8.1	7.9	8.1	0.694
	£/ha								£/ha							
Output	1235	1209	1262	1257	1253	1174	1216	0.063	1259	1236	1282	1273	1251	1229	1255	0.565
TVC	393	383	402	424	381	366	345	<0.001	432	421	443	454	420	438	379	<0.001
GM	920	891	949	895	911	922	992	0.025	909	884	933	876	876	925	1014	<0.001
LAB	63	55	72	64	92	51	49	0.022	58	51	65	61	65	55	45	0.277
Contract	101	89	113	98	90	92	124	0.105	116	102	130	124	118	86	117	0.061
Tmach	334	315	353	285	397	351	391	<0.001	338	318	359	279	402	373	405	<0.001
TOFC	89	85	93	86	103	89	86	0.034	99	95	104	97	113	92	97	0.068
LAND	184	178	191	174	212	159	211	<0.001	195	188	203	186	217	157	231	<0.001
TFC	772	746	797	707	894	742	861	<0.001	807	780	833	747	915	764	896	<0.001
NFI.ent	148	119	177	188	17	180	131	0.001	102	70	133	128	-39	161	119	<0.001
FSLab	102	88	117	121	145	79	36	<0.001	90	80	101	106	114	76	36	<0.001
TC	1267	1235	1298	1252	1420	1187	1242	0.004	1329	1297	1361	1308	1449	1278	1311	0.010
NM	46	13	78	66	-128	100	95	0.003	12	-24	47	22	-153	84	82	<0.001
	£/tonne								£/tonne							
Cost	160	156	163	155	170	159	163	0.035	172	167	176	169	185	165	170	0.054
NM	3	0	7	5	-17	11	10	<0.001	-4	-9	1	-3	-24	8	3	<0.001
Output	153	151	155	153	149	155	156	0.091	157	156	158	159	156	156	156	0.082
n	698			268	111	136	183		712			272	120	128	192	

Table A1 continued: Winter Wheat Results 2008/09 to 2012/13

	2012/13							
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value
Ha	67.1	61.8	72.3	82.1	75.7	45.6	31.4	<0.001
Yield (t/ha)	6.6	6.5	6.7	6.7	7.0	6.0	6.1	<0.001
	£/ha							
Output	1204	1180	1228	1235	1266	1115	1122	<0.001
TVC	514	503	524	544	499	504	446	<0.001
GM	774	749	799	754	826	735	810	0.049
LAB	61	55	68	65	78	43	49	<0.001
Contract	115	102	129	123	101	86	133	0.037
Tmach	338	319	357	292	402	361	387	<0.001
TOFC	102	97	107	99	114	92	106	0.028
LAND	198	192	204	193	224	166	214	<0.001
TFC	814	792	837	772	919	748	888	<0.001
NFI.ent	-41	-68	-13	-18	-94	-12	-78	0.097
FSLab	93	82	104	99	130	69	60	0.001
TC	1421	1393	1449	1414	1548	1320	1393	<0.001
NM	-134	-164	-103	-116	-224	-81	-138	0.037
	£/tonne							
Cost	226	220	233	219	229	227	244	0.123
NM	-29	-35	-22	-25	-38	-21	-37	0.148
Output	184	182	185	184	181	183	184	0.533
n	719			294	124	120	181	

Table A2: Winter Barley Results 2008/09 to 2012/13

	2008/09								2009/10							
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value
Ha	24.9	22.0	27.8	29.8	33.5	17.0	11.2	<0.001	23.6	21.3	25.8	27.0	34.1	16.1	12.5	<0.001
Yield (t/ha)	6.7	6.5	6.9	6.9	6.6	6.5	6.4	0.076	6.5	6.4	6.7	6.8	6.4	6.2	6.5	0.151
	£/ha								£/ha							
Output	719	695	743	748	797	665	620	<0.001	602	579	624	631	690	513	537	<0.001
TVC	301	291	311	324	281	298	260	<0.001	371	356	385	412	345	346	317	<0.001
GM	497	472	523	489	568	475	475	0.076	319	295	343	298	393	283	340	0.016
LAB	47	40	54	57	57	29	28	<0.001	38	32	45	49	63	19	10	<0.001
Contract	75	62	87	66	85	74	89	0.493	87	73	100	79	100	92	88	0.759
Tmach	249	231	267	235	263	256	267	0.461	243	227	258	226	295	237	240	0.074
TOFC	78	73	83	76	87	83	72	0.326	79	74	83	76	87	72	84	0.183
LAND	145	138	152	136	155	141	165	0.049	158	150	165	143	166	153	192	<0.001
TFC	594	568	619	569	647	582	620	0.088	604	581	627	572	711	571	614	<0.001
NFI.ent	-96	-124	-69	-80	-79	-108	-145	0.417	-285	-312	-258	-275	-319	-288	-273	0.713
FSLab	95	65	125	82	75	98	144	0.735	51	41	61	72	64	22	15	<0.001
TC	989	947	1032	976	1003	978	1024	0.842	1025	995	1056	1057	1121	939	946	<0.001
NM	-191	-232	-151	-163	-154	-206	-289	0.309	-336	-364	-307	-347	-383	-310	-288	0.125
	£/tonne								£/tonne							
Cost	154	146	163	148	156	157	167	0.528	165	157	172	165	184	161	150	0.003
NM	-34	-43	-26	-30	-27	-37	-50	0.350	-57	63	51	-58	-66	-55	-48	0.174
Output	107	105	110	108	121	103	98	<0.001	93	90	96	94	110	83	83	<0.001
n	356			140	58	80	78		352			127	68	75	82	



Table A2 continued: Winter Barley Results 2008/09 to 2012/13

	2010/11								2011/12														
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value							
Ha	23.6	21.0	26.2	29.3	31.3	23.0	14.5	<0.001	22.0	19.6	24.3	30.5	32.3	17.8	13.5	<0.001							
Yield (t/ha)	6.7	6.5	6.9	6.8	6.5	6.7	6.7	0.850	6.4	6.1	6.6	6.4	5.8	6.4	6.5	0.165							
	£/ha								£/ha														
Output	909	876	943	885	863	872	980	0.014	955	920	991	971	898	949	971	0.526							
TVC	333	319	346	370	326	317	305	<0.001	366	349	383	406	352	369	339	0.034							
GM	693	651	734	622	610	674	817	<0.001	716	674	758	652	625	705	812	0.006							
LAB	55	39	72	63	61	43	53	0.331	61	38	85	69	64	48	63	0.468							
Contract	97	79	115	81	107	82	120	0.304	92	76	108	108	93	72	92	0.324							
Tmach	328	291	366	251	316	290	443	0.002	361	277	446	236	316	390	461	0.002							
TOFC	90	84	96	89	98	90	88	0.851	95	90	100	96	100	95	92	0.748							
LAND	176	167	184	171	187	160	186	0.094	190	179	200	184	195	164	207	0.039							
TFC	746	693	800	654	768	664	890	<0.001	800	692	907	693	767	768	916	0.161							
NFI.ent	-54	-116	9	-32	-158	9	-73	0.057	-84	-184	16	-42	-142	-64	-105	0.361							
FSLab	87	67	107	106	95	63	78	0.039	77	48	106	76	89	65	81	0.682							
TC	1165	1096	1235	1129	1189	1044	1273	0.017	1243	1100	1385	1175	1208	1202	1336	0.813							
NM	-140	-215	-65	-137	-253	-54	-151	0.046	-161	-287	-35	-118	-232	-129	-185	0.275							
	£/tonne								£/tonne														
Cost	185	167	203	174	186	164	209	0.088	203	183	222	191	219	200	207	0.103							
NM	-21	-33	-10	-20	-39	-8	-23	0.046	-33	-51	-15	-26	-54	-32	-31	0.164							
Output	136	133	140	132	131	121	147	<0.001	150	148	152	151	153	148	149	0.243							
n	369			104			48		82		135		131			84		47		82		132	

	2012/13										
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value			
Ha	23.1	20.7	25.5	30.8	30.1	19.0	13.2	<0.001			
Yield (t/ha)	6.2	6.0	6.4	6.5	6.4	6.2	5.7	0.003			
	£/ha										
Output	1071	1038	1104	1122	1124	1053	996	0.014			
TVC	428	414	442	458	420	432	393	0.003			
GM	772	735	809	784	782	767	758	0.950			
LAB	58	50	67	77	76	42	39	<0.001			
Contract	110	93	128	100	109	90	137	0.139			
Tmach	372	345	399	350	377	391	382	0.735			
TOFC	102	94	109	96	109	97	108	0.485			
LAND	186	177	194	186	199	165	194	0.015			
TFC	828	792	864	809	869	785	860	0.212			
NFI.ent	-56	-96	-15	-26	-87	-19	-103	0.327			
FSLab	78	66	90	113	95	66	36	<0.001			
TC	1334	1290	1378	1380	1384	1283	1290	0.146			
NM	-134	-175	-93	-139	-182	-85	-139	0.476			
	£/tonne										
Cost	227	219	236	222	225	220	240	0.427			
NM	-31	-39	-22	-30	-36	-23	-34	0.784			
Output	174	172	177	173	177	173	176	0.564			
n	385			105		56		84		140	

Table A3: Spring Barley Results 2008/09 to 2012/13

	2008/09								2009/10							
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value
Ha	22.2	17.9	26.4	33.0	24.9	15.6	10.0	<0.001	26.6	22.8	30.4	35.0	31.4	27.7	10.4	<0.001
Yield (t/ha)	5.4	5.2	5.7	6.0	6.0	4.6	4.8	<0.001	5.6	5.5	5.8	5.9	5.9	5.1	5.1	<0.001
	£/ha								£/ha							
Output	626	590	662	724	757	500	476	<0.001	512	494	530	553	581	442	427	<0.001
TVC	246	234	258	256	256	247	225	0.222	289	276	301	328	278	270	239	<0.001
GM	446	413	479	510	542	340	356	<0.001	296	276	316	283	342	274	296	0.118
LAB	45	38	52	48	71	25	33	<0.001	33	28	38	45	49	12	11	<0.001
Contract	75	61	89	59	52	67	119	0.012	83	71	95	66	80	97	105	0.051
Tmach	210	193	227	210	278	231	145	<0.001	219	204	234	199	257	224	221	0.012
TOFC	81	75	87	68	87	89	90	0.002	84	78	90	72	99	78	96	0.003
LAND	146	137	155	133	158	134	163	0.019	154	146	162	137	171	141	179	<0.001
NFI.ent	557	535	579	518	645	546	550	<0.001	572	551	594	520	657	552	613	<0.001
FSLab	115	74	156	97	72	147	151	0.296	45	36	53	62	68	15	13	<0.001
TC	918	867	970	871	973	940	926	0.134	906	878	933	909	1002	837	865	0.002
NM	-226	-284	-168	-105	-174	-353	-345	0.003	-321	-348	-294	-299	-382	-292	-330	0.080
	£/tonne								£/tonne							
Cost	190	171	209	154	190	240	207	0.002	173	165	182	163	174	180	189	0.115
NM	-61	-78	-43	-26	-53	-109	-82	0.002	-67	-75	-60	-58	-69	-70	-82	0.169
Output	114	110	118	121	127	106	100	<0.001	92	89	94	94	98	89	84	<0.001
n	291			85	60	58	88		362			123	74	63	102	

	2010/11								2011/12							
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value
Ha	21.0	18.0	23.9	24.9	31.3	23.4	13.6	<0.001	23.3	20.3	26.3	29.8	31.9	21.6	13.6	<0.001
Yield (t/ha)	5.3	5.2	5.5	5.3	5.4	5.1	5.5	0.432	5.3	5.1	5.5	5.3	4.9	5.4	5.4	0.181
	£/ha								£/ha							
Output	796	766	827	800	782	752	815	0.482	852	817	887	924	806	851	820	0.153
TVC	251	238	264	286	263	229	229	0.002	299	286	312	318	302	290	285	0.285
GM	638	605	672	598	549	638	700	0.006	642	605	680	665	537	663	675	0.072
LAB	37	31	43	43	53	40	26	0.007	38	31	45	48	52	38	22	0.015
Contract	90	76	104	85	63	62	113	0.009	111	94	128	119	96	95	123	0.392
Tmach	303	279	328	259	335	293	328	0.116	279	253	304	254	276	326	272	0.487
TOFC	90	83	96	91	96	86	87	0.690	90	84	96	81	105	93	87	0.067
LAND	174	162	185	165	182	152	185	0.081	185	174	196	177	199	168	193	0.126
TFC	694	666	722	643	730	632	740	0.001	702	672	733	679	726	719	697	0.67
NFI.ent	-56	-93	-19	-46	-181	6	-40	0.003	-60	-98	-21	-14	-188	-55	-22	0.008
FSLab	77	56	99	105	137	45	47	0.018	65	50	80	89	112	49	26	<0.001
TC	1022	979	1065	1034	1129	906	1016	<0.001	1066	1028	1104	1086	1140	1058	1008	0.045
NM	-133	-180	-86	-151	-318	-40	-87	0.001	-125	-165	-85	-103	-301	-104	-48	<0.001
	£/tonne								£/tonne							
Cost	202	-192	213	206	223	186	198	0.124	215	206	224	213	244	213	201	0.017
NM	-35	-45	-24	-38	-71	-14	-26	0.010	-37	-47	-27	-29	-74	-34	-22	0.005
Output	150	146	153	151	147	148	150	0.868	161	158	164	173	163	159	152	<0.001
n	300			71	41	58	130		338			75	56	73	134	

Table A3 continued: Spring Barley Results 2008/09 to 2012/13

	2012/13							
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value
Ha	23.6	20.0	27.2	31.3	31.2	20.9	14.2	<0.001
Yield (t/ha)	4.7	4.6	5.0	4.8	5.4	4.5	4.5	0.003
	£/ha							
Output	863	831	896	882	981	813	813	0.002
TVC	324	310	339	355	343	309	296	0.003
GM	643	609	676	611	694	627	654	0.376
LAB	47	38	55	50	74	33	36	0.026
Contract	109	92	125	105	87	108	124	0.353
Tmach	310	286	335	267	360	324	315	0.126
TOFC	99	92	107	88	118	100	99	0.230
LAND	188	179	197	181	220	171	188	0.004
TFC	753	720	785	691	859	736	762	0.013
NFI.ent	-110	-147	-73	-80	-165	-110	-108	0.493
FSLab	63	52	74	75	107	51	35	<0.001
TC	1140	1102	1178	1120	1309	1097	1093	0.002
NM	-173	-212	-134	-155	-272	-161	-143	0.151
	£/tonne							
Cost	260	248	272	255	257	267	261	0.921
NM	-52	-63	-41	-49	-62	-56	47	0.771
Output	183	181	186	186	183	182	182	0.648
n	332			83	50	64	135	

Table A4: Oilseed Rape Results 2008/09 to 2012/13

	2008/09								2009/10							
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value
Ha	42.2	37.3	47.1	44.9	45.7	24.9	17.7	<0.001	42.3	37.9	46.7	46.1	37.1	30.8	23.0	0.002
Yield (t/ha)	3.2	3.2	3.3	3.2	3.4	3.0	3.2	0.092	3.5	3.4	3.6	3.5	3.7	3.3	3.0	0.062
	£/ha								£/ha							
Output	949	923	976	953	993	864	909	0.026	891	864	918	884	648	839	743	0.037
TVC	343	333	353	349	338	325	290	0.028	442	429	455	450	437	414	347	0.010
GM	607	581	633	604	655	540	619	0.079	452	426	478	437	513	430	412	0.084
LAB	94	81	106	94	103	55	169	<0.001	101	88	114	106	111	52	8	<0.001
Contract	75	61	90	71	85	69	143	0.315	87	73	102	80	101	83	201	0.006
Tmach	249	231	267	234	291	235	396	0.023	268	249	287	252	323	258	277	0.099
TOFC	71	68	74	71	74	68	69	0.668	75	71	80	76	80	65	71	0.223
LAND	149	143	155	137	180	157	197	<0.001	157	151	163	149	175	172	190	0.001
TFC	637	611	663	607	733	583	975	<0.001	689	661	716	663	791	630	748	0.002
NFI.ent	-30	-61	1	-3	-78	-42	-355	0.067	-237	-266	-207	-226	-277	-301	-336	0.076
FSLab	95	81	109	112	65	57	31	<0.001	92	79	105	100	100	28	13	<0.001
TC	1075	1043	1108	1068	1135	964	1297	0.007	1222	1187	1258	1213	1327	1072	1108	<0.001
NM	-125	-157	-93	-115	-143	-99	-387	0.508	-329	-360	-297	-326	-377	-228	-348	0.010
	£/tonne								£/tonne							
Cost	341	330	352	339	342	337	411	0.778	363	350	375	361	372	339	454	0.223
NM	-48	-59	-37	-45	-49	-48	-127	0.694	-110	-122	-97	-109	-115	-85	-205	0.267
Output	293	288	298	294	292	288	284	0.592	252	249	257	251	257	253	244	0.458
n	342			202	74	51	15		311			186	79	37	9	

Table A4 continued: Oilseed Rape Results 2008/09 to 2012/13

	2010/111								2011/12														
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value							
Ha	43.6	39.0	48.2	46.2	46.9	34.9	29.4	0.002	44.4	39.7	49.1	48.0	45.2	30.1	29.8	44.4							
Yield (t/ha)	3.6	3.5	3.7	3.6	3.9	3.4	3.6	<0.001	3.9	3.8	4.1	3.9	4.0	4.1	4.1	3.9							
	£/ha								£/ha														
Output	1122	1085	1159	1121	1227	1026	1088	0.005	1487	1442	1532	1463	1526	1536	1542	0.444							
TVC	387	376	398	400	370	364	346	0.002	436	421	450	439	438	427	408	0.595							
GM	742	704	780	726	863	674	764	0.005	1058	1014	1102	1029	1096	1119	1151	0.214							
LAB	99	87	112	99	135	77	77	0.002	112	99	126	97	162	109	132	0.005							
Contract	99	81	117	101	109	78	97	0.606	127	106	148	126	152	98	114	0.490							
Tmach	272	253	291	245	354	266	354	<0.001	353	329	377	309	419	447	459	<0.001							
TOFC	88	79	97	90	90	80	82	0.504	96	90	101	94	102	94	94	0.741							
LAND	186	177	194	178	214	177	213	0.002	192	185	200	190	212	158	227	<0.001							
TFC	744	720	768	713	901	678	823	<0.001	880	847	912	816	1048	904	1026	<0.001							
NFI.ent	-2	-41	37	13	-38	-4	-59	0.415	178	132	224	212	49	215	125	0.049							
FSLab	110	94	126	124	94	85	62	0.052	140	122	158	162	116	104	44	<0.001							
TC	1241	1210	1272	1237	1365	1231	1241	<0.001	1455	1415	1496	1416	1602	1435	1477	0.003							
NM	-112	-152	-73	-112	-132	-89	-121	0.909	38	-12	88	51	-68	111	81	0.111							
	£/tonne								£/tonne														
Cost	356	343	370	357	350	364	341	0.608	387	372	402	384	410	379	371	0.205							
NM	-45	-60	-31	-45	-38	-61	-37	0.807	-10	-26	6	-8	-31	2	10	0.195							
Output	309	303	315	312	310	300	298	0.180	376	371	380	375	377	378	376	0.955							
n	360			203			61		53		43		367			205		75		54		33	

	2012/13											
	ALL	Low95%	Upp95%	Cereals	General Cropping	Mixed	Other	P value				
Ha	45.9	40.9	50.9	52.4	39.5	30.3	23.1	<0.001				
Yield (t/ha)	3.3	3.3	3.4	3.3	3.4	3.3	3.6	0.280				
	£/ha											
Output	1301	1271	1331	1294	1330	1269	1362	0.332				
TVC	522	508	535	527	516	520	475	0.016				
GM	787	755	818	771	821	767	902	0.026				
LAB	109	97	121	106	139	86	103	0.008				
Contract	115	97	133	121	115	95	98	0.656				
Tmach	338	315	361	295	430	372	460	<0.001				
TOFC	96	90	102	96	104	91	83	0.092				
LAND	196	189	203	191	223	171	218	<0.001				
TFC	584	829	878	808	1010	815	961	<0.001				
NFI.ent	-67	-103	-31	-37	-188	-48	-59	0.020				
FSLab	124	109	138	140	114	81	57	<0.001				
TC	1499	1466	1532	1475	1639	1416	1493	<0.001				
NM	-191	-228	-153	-177	-302	-129	-116	0.018				
	£/tonne											
Cost	460	447	474	456	493	447	425	0.012				
NM	-70	-83	-56	-67	-100	-56	-35	0.025				
Output	388	385	391	388	391	385	384	0.538				
n	396			223			77		58		38	

Table A5: Main Crop Potato Results 2008/09 to 2012/13

	2008/09						2009/10					
	ALL	Low95%	Upp95%	General Cropping	Other	P value	ALL	Low95%	Upp95%	General Cropping	Other	P value
Ha	10.9	7.8	14.0	13.5	4.4	<0.001	8.1	5.4	10.7	10.0	2.6	<0.001
Yield (t/ha)	35.8	32.3	39.2	37.0	32.7	0.307	37.0	33.5	40.5	39.9	29.0	0.002
			£/ha						£/ha			
Output	5092	3862	6322	4397	6815	0.126	4737	3674	5801	3862	7198	0.004
TVC	1887	1600	2175	1729	2280	0.179	2644	1546	3742	2087	4210	0.245
GM	3205	1989	4421	2668	4535	0.268	2094	845	3442	1775	2989	0.585
LAB	679	153	1206	412	1341	0.182	635	240	1030	331	1489	0.007
Contract	62	15	109	71	39	0.612	84	25	143	71	119	0.623
Tmach	544	415	672	466	736	0.068	593	448	738	545	728	0.381
TOFC	135	85	184	108	200	0.161	135	85	184	117	186	0.373
LAND	176	154	197	174	179	0.851	177	155	199	172	192	0.351
TFC	1595	918	2272	1232	2495	0.148	1623	1155	2091	1235	2713	0.002
NFl.ent	1609	938	2281	1436	2040	0.532	471	-769	1710	540	276	0.907
FSLab	1257	691	1823	1030	1821	0.312	1483	1063	1902	1274	2072	0.128
TC	4740	3452	6028	3991	6595	0.121	5750	4047	7452	4596	8994	0.068
NM	352	-127	831	406	219	0.782	-1012	-2331	306	-734	-1796	0.654
			£/tonne						£/tonne			
Cost	154	92	215	115	248	0.087	180	113	247	120	350	0.003
NM	7	-12	26	13	-10	0.433	-27	-74	20	-21	-42	0.807
Output	160	101	220	129	239	0.152	153	95	211	98	307	0.006
n	88			67			86			71		

	2010/11						2011/12					
	ALL	Low95%	Upp95%	General Cropping	Other	P value	ALL	Low95%	Upp95%	General Cropping	Other	P value
Ha	9.7	7.0	12.4	13.5	4.6	<0.001	11.5	7.1	16.0	14.2	5.3	0.016
Yield (t/ha)	39.0	35.9	42.1	39.5	38.3	0.726	38.9	35.6	42.4	40.8	34.3	0.139
			£/ha						£/ha			
Output	5923	5207	6638	5560	6409	0.257	4557	4118	4996	4447	4819	0.466
TVC	1867	1722	2013	1862	1876	0.927	1877	1685	2069	1988	1614	0.092
GM	4055	3359	4752	3699	4533	0.256	2680	2189	3170	2460	3205	0.146
LAB	556	254	858	370	806	0.184	510	261	759	305	1000	0.013
Contract	86	36	137	108	57	0.306	73	4	143	88	38	0.408
Tmach	699	576	822	644	774	0.339	663	438	888	691	594	0.582
TOFC	131	100	162	115	154	0.239	140	101	179	122	183	0.191
LAND	217	194	239	234	193	0.057	212	180	243	213	207	0.846
TFC	1689	1261	2117	1470	1983	0.278	1598	1267	1928	1420	2022	0.157
NFl.ent	2366	1887	2846	2229	2551	0.516	1082	765	1399	1039	1184	0.638
FSLab	1173	933	1414	1012	1390	0.119	1239	365	2113	1409	831	0.357
TC	4730	4125	5335	4334	5248	0.166	4717	3791	5636	4817	4467	0.667
NM	1193	634	1751	1217	1161	0.925	-157	-860	546	370	352	0.216
			£/tonne						£/tonne			
Cost	130	105	155	117	147	0.272	137	98	175	126	162	0.482
NM	28	14	42	24	32	0.588	-7	-26	12	-15	11	0.108
Output	157	131	183	141	180	0.184	130	100	160	111	173	0.166
n	92			58			83			56		

Table A5 continued: Main Crop Potato Results 2008/09 to 2012/13

	2012/13					
	ALL	Low95%	Upp95%	General Cropping	Other	P value
Ha	11.0	8.0	14.0	16.4	5.2	<0.001
Yield (t/ha)	29.8	26.8	32.7	34.7	24.4	<0.001
	£/ha					
Output	7206	6284	8128	7823	6540	0.144
TVC	1967	1768	2167	2148	1773	0.056
GM	5239	4357	6120	5675	4768	0.287
LAB	682	406	959	534	842	0.268
Contract	102	40	163	148	52	0.107
Tmach	97	782	1145	984	941	0.809
TOFC	148	115	182	134	164	0.360
LAND	226	206	245	229	222	0.749
TFC	2121	1766	2476	2029	2221	0.591
NFl.ent	3118	2372	3863	3646	2547	0.115
FSLab	1322	1077	1568	1137	1523	0.107
TC	5411	4935	5886	5313	5516	0.671
NM	1795	1057	2534	2509	1024	0.027
	£/tonne					
Cost	203	173	232	161	247	<0.001
NM	50	28	73	59	40	0.393
Output	253	222	284	221	288	0.027
n	88			53	35	

Table A6: Sugar Beet Results 2008/09 to 2012/13

	2008/09						2009/10					
	ALL	Low95%	Upp95%	General Cropping	Other	P value	ALL	Low95%	Upp95%	General Cropping	Other	P value
Ha	30.6	22.5	38.8	36.1	23.6	0.137	29.1	23.4	34.9	35.6	19.9	0.003
Yield (t/ha)	61.6	59.1	64.2	62.7	60.3	0.371	63.8	61.4	66.2	63.1	64.8	0.465
	£/ha						£/ha					
Output	1744	1669	1819	1758	1726	0.687	1993	1918	2069	1982	2010	0.723
TVC	719	681	756	696	747	0.184	821	776	866	795	858	0.203
GM	1026	964	1087	1062	979	0.192	1172	1109	1236	1187	1151	0.576
LAB	88	65	111	88	89	0.979	89	67	111	95	81	0.541
Contract	153	125	181	157	147	0.750	193	164	222	202	180	0.476
Tmach	75	61	88	68	83	0.284	174	157	192	185	159	0.121
TOFC	82	74	90	87	76	0.182	83	76	91	93	70	<0.001
LAND	158	147	169	166	148	0.115	171	161	182	179	161	0.089
TFC	556	517	594	565	544	0.598	711	671	751	754	650	0.011
NFl.ent	470	410	531	497	435	0.325	461	401	522	433	501	0.265
FSLab	163	128	197	174	148	0.475	186	143	230	185	188	0.965
TC	1437	1368	1506	1435	1439	0.953	1718	1638	1799	1734	1696	0.655
NM	308	248	367	324	287	0.544	275	202	348	248	314	0.371
	£/tonne						£/tonne					
Cost	24	23	25	24	24	0.500	28	26	29	29	26	0.111
NM	5	4	5	5	4	0.670	4	3	5	3	5	0.171
Output	28	28	29	28	29	0.574	32	31	32	32	31	0.569
n	121			69	52		130			82	48	

Table A6 continued: Sugar Beet Results 2008/09 to 2012/13

	2010/11						2011/12					
	ALL	Low95%	Upp95%	General Cropping	Other	P value	ALL	Low95%	Upp95%	General Cropping	Other	P value
Ha	33.4	25.6	41.1	38.9	23.7	0.025	31.4	23.7	39.1	40.8	20.0	0.004
Yield (t/ha)	56.8	54.6	58.9	55.7	58.6	0.161	69.2	66.4	72.0	68.4	70.2	0.535
	£/ha						£/ha					
Output	1730	1661	1799	1706	1772	0.341	2110	2016	2205	2101	2122	0.829
TVC	805	762	849	773	863	0.038	831	783	880	822	842	0.686
GM	925	859	990	933	909	0.727	1280	1194	1365	1279	1280	0.998
LAB	75	55	94	73	77	0.833	92	57	126	82	104	0.552
Contract	183	157	208	179	190	0.713	228	165	291	204	258	0.423
Tmach	79	58	101	95	53	0.024	97	73	121	115	75	0.079
TOFC	94	84	104	97	88	0.316	103	95	112	107	99	0.344
LAND	202	190	213	207	192	0.170	214	202	227	223	204	0.138
TFC	632	594	671	651	600	0.177	735	645	824	730	740	0.920
NFl.ent	292	229	356	282	310	0.674	545	458	633	549	540	0.915
FSLab	191	123	260	235	115	0.031	219	160	278	238	196	0.479
TC	1629	1521	1737	1658	1578	0.395	1785	1634	1936	1790	1779	0.942
NM	101	4	198	47	195	0.103	326	222	430	312	344	0.773
	£/tonne						£/tonne					
Cost	30	28	32	31	27	0.005	27	25	29	27	26	0.445
NM	1	-1	3	0	3	0.078	4	3	6	4	5	0.458
Output	31	30	31	31	30	0.323	31	30	32	31	30	0.683
n	127			76	51		131			68	63	

	2012/13					
	ALL	Low95%	Upp95%	General Cropping	Other	P value
Ha	29.7	23.9	35.4	35.4	22.0	0.014
Yield (t/ha)	59.8	57.2	62.3	61.0	58.2	0.294
	£/ha					
Output	1926	1841	2010	1981	1851	0.129
TVC	915	873	957	932	891	0.327
GM	1011	938	1084	1049	960	0.236
LAB	79	59	98	90	63	0.147
Contract	204	171	237	202	208	0.867
Tmach	78	60	96	90	62	0.101
TOFC	106	94	117	111	99	0.275
LAND	223	210	236	224	216	0.308
TFC	689	652	726	720	648	0.061
NFl.ent	322	258	386	329	312	0.805
FSLab	169	124	214	213	110	0.013
TC	1773	1694	1852	1865	1650	0.003
NM	152	75	230	116	202	0.277
	£/tonne					
Cost	31	29	32	31	30	0.423
NM	2	0	3	1	2	0.474
Output	32	32	33	33	32	0.575
n	124			65	59	

Table A7: Sugar Beet Results by Sugar Beet Contractor Use 2009/10 to 2012/13

	2009/10						2010/11					
	ALL	Low95%	Upp95%	Sugar Beet Contractor	No Sugar Beet Contractor	P value	ALL	Low95%	Upp95%	Sugar Beet Contractor	No Sugar Beet Contractor	P value
Ha	29.1	23.4	34.8	27.9	35.4	0.368	33.4	25.6	41.1	33.4	33.2	0.981
Yield (t/ha)	63.8	61.4	66.2	63.7	64.1	0.906	56.8	54.6	58.9	56.2	59.5	0.246
	£/ha						£/ha					
Output	1993	1918	2069	2011	1907	0.356	1730	1661	1799	1709	1843	0.122
TVC	821	776	866	832	768	0.401	805	762	849	807	796	0.794
GM	1172	1109	1236	1179	1138	0.550	925	859	990	901	1047	0.052
LAB	89	67	111	79	141	0.068	75	55	94	72	88	0.537
Contract	193	164	222	226	26	<0.001	183	157	208	212	32	<0.001
Tmach	174	157	192	165	221	0.050	79	58	101	67	145	<0.001
TOFC	83	76	91	84	80	0.623	94	84	104	95	85	0.333
LAND	171	161	182	169	181	0.342	202	190	213	199	216	0.267
TFC	711	671	751	724	649	0.249	632	594	671	645	566	0.141
NFI.ent	461	401	522	456	489	0.669	292	229	356	257	481	<0.001
FSLab	186	143	230	189	175	0.750	191	123	260	189	201	0.848
TC	1718	1638	1799	1744	1593	0.258	1629	1521	1737	1641	1563	0.349
NM	275	202	348	267	314	0.592	101	4	198	67	280	0.024
	£/tonne						£/tonne					
Cost	28	26	29	28	25	0.060	30	28	32	30	27	0.100
NM	4	3	5	4	5	0.463	1	-1	3	0	4	0.019
Output	32	31	32	32	30	0.015	31	30	31	31	31	0.605
n	130			108		22	127			104		23

	2011/12						2012/13					
	ALL	Low95%	Upp95%	Sugar Beet Contractor	No Sugar Beet Contractor	P value	ALL	Low95%	Upp95%	Sugar Beet Contractor	No Sugar Beet Contractor	P value
Ha	31.2	23.3	39.1	30.2	36.5	0.508	29.3	23.4	35.2	25.8	49.5	0.085
Yield (t/ha)	69.2	66.3	72.0	69.1	69.3	0.976	59.8	57.1	62.4	60.9	53.1	0.073
	£/ha						£/ha					
Output	2120	2024	2217	2141	2004	0.303	1937	1850	2024	1971	1737	0.093
TVC	839	790	888	851	770	0.241	927	885	968	933	890	0.466
GM	1282	1194	1369	1290	1233	0.678	1010	935	1085	1038	847	0.083
LAB	91	56	127	86	118	0.428	79	59	98	78	83	0.815
Contract	230	166	295	270	6	<0.001	206	172	240	239	14	<0.001
Tmach	98	73	123	81	193	<0.001	79	61	97	68	141	<0.001
TOFC	104	95	112	106	91	0.057	107	95	118	108	99	0.447
LAND	215	202	228	213	226	0.542	222	210	235	221	231	0.528
TFC	738	646	830	756	635	0.158	693	655	730	714	567	0.003
NFI.ent	544	455	633	534	599	0.577	318	253	382	324	279	0.641
FSLab	224	164	284	225	215	0.854	174	128	220	180	138	0.344
TC	1801	1647	1954	1833	1620	0.095	1793	1715	1872	1828	1595	0.007
NM	320	214	426	309	384	0.527	144	65	222	144	142	0.987
	£/tonne						£/tonne					
Cost	27	25	29	27	26	0.688	31	29	33	31	32	0.685
NM	4	2	6	4	3	0.714	2	0	3	2	1	0.699
Output	31	30	32	31	29	0.100	33	32	33	32	33	0.770
n	125			103		22	119			97		22



Table A8: Dairy Results 2008/09 to 2012/13

	2008/09						2009/10					
	ALL	Low95%	Upp95%	Sp.Dairy	Other	P value	ALL	Low95%	Upp95%	Sp.Dairy	Other	P value
Cows	118.8	109.5	128.1	136.7	105.9	0.002	128.1	117.7	138.6	141.3	120.8	0.058
Yield (l/cow)	6693	6488	6898	7275	6276	<0.001	2678	6673	7082	7485	6539	<0.00
	£/cow						£/cow					
Output	1701	1648	1755	1904	1556	<0.001	1615	1563	1666	1823	1499	<0.001
TVC	807.2	773.7	840.7	819.8	798.2	0.501	815	785	846	848	797	0.093
GM	894	839.1	494	1083.9	757.9	<0.001	800	763	837	975	702	<0.001
LAB	172.4	158.3	186.6	173.4	171.7	0.908	195	172	219	185	201	0.447
Contract	68.42	61.52	75.33	77.11	62.19	0.026	70	64	76	88	60	<0.001
Tmach	142	133.4	150.6	167.2	123.9	<0.001	156	149	164	174	147	<0.001
TOFC	123.1	118.1	128.1	135	114.5	<0.001	128	121	135	138	123	0.024
LAND	135.2	127.5	143	144.3	128.7	<0.001	149	141	157	159	144	0.045
TFC	641.1	616	666.3	697.1	601	<0.001	699	664	733	744	674	0.022
NFI.ent	252.9	191.7	314.1	386.8	156.9	<0.001	101	56	146	231	29	<0.001
FSLab	201.4	184	218.8	216.4	190.7	0.171	201	177	225	216	193	0.313
TC	1650	1597	1702	1733	1950	0.005	1715	1653	1777	1808	1663	0.011
NM	51	-14	117	170	-34	<0.001	-100	-152	-48	15	-164	<0.001
	£/litre						£/litre					
Output	0.256	0.251	0.261	0.263	0.251	0.021	0.238	0.226	0.249	0.244	0.234	0.298
Total Cost	0.267	0.236	0.298	0.242	0.284	0.123	0.266	0.241	0.291	0.245	0.278	0.107
NM	-0.011	-0.039	0.017	0.020	-0.033	0.028	-0.028	-0.045	-0.012	-0.001	-0.044	0.001
n	340			142	198		343			123	220	

	2010/11						2011/12					
	ALL	Low95%	Upp95%	Sp.Dairy	Other	P value	ALL	Low95%	Upp95%	Sp.Dairy	Other	P value
Cows	133.3	121.8	144.7	147.1	123.8	0.035	139.1	127.1	151.1	156.4	129.2	0.033
Yield (l/cow)	7176	6914	7439	7626	6869	0.001	7482	7317	7648	7590	6916	0.005
	£/cow						£/cow					
Output	1703	1630	1776	1870	1589	<0.001	1889	1815	1964	2043	1802	<.001
TVC	862	829	895	838	878	0.208	933	899	968	913	945	0.349
GM	841	776	906	1031	711	<0.001	956	896	1016	1130	857	<0.001
LAB	203	186	220	186	215	0.064	203	187	219	186	213	0.077
Contract	66	61	71	79	57	<0.001	72	66	78	84	66	0.003
Tmach	163	153	173	189	146	<.001	164	153	175	180	155	0.021
TOFC	130	122	137	138	124	0.052	135	129	141	144	130	0.02
LAND	154	145	162	169	143	0.002	163	154	172	173	157	0.063
TFC	716	687	745	761	685	0.006	737	709	765	766	720	0.102
NFI.ent	125	63	187	271	26	<0.001	219	164	274	364	137	<.001
FSLab	201	179	222	213	192	0.316	186	164	207	208	173	0.121
TC	1778	1729	1828	1812	1756	0.233	1856	1804	1908	1888	1838	0.306
NM	-75	-149	-2	58	-167	<0.001	33	-28	95	155	36	<.001
	£/litre						£/litre					
Output	0.239	0.228	0.249	0.246	0.234	0.202	0.265	0.260	0.270	0.269	0.261	0.237
Total Cost	0.280	0.240	0.321	0.242	0.307	0.058	0.282	0.247	0.317	0.253	0.299	0.095
NM	-0.042	-0.080	-0.003	0.004	-0.073	0.018	-0.017	-0.048	0.014	0.016	-0.036	0.038
n	336			142	194		326			117	209	

Table A8 continued: Dairy Results 2008/09 to 2012/13

	2012/13					
	ALL	Low95%	Upp95%	Sp.Dairy	Other	P value
Cows	141.7	129.1	154.3	162.3	129.0	0.01
Yield (l/cow)	7052	6785	7319	7358	6864	0.037
	£/cow					
Output	1911	1835	1988	2066	1816	<.001
TVC	1045	1006	1085	1047	1044	0.939
GM	866	808	923	1018	772	<.001
LAB	221	199	243	212	227	0.446
Contract	75	69	81	82	71	0.065
Tmach	182	170	194	217	160	<.001
TOFC	144	136	151	149	140	0.221
LAND	170	161	179	187	159	0.004
TFC	791	758	824	846	758	0.005
NFl.ent	75	19	131	172	15	0.001
FSLab	189	171	208	207	178	0.171
TC	2026	1967	2085	2100	1980	0.034
NM	-115	-177	-52	-35	-164	0.022
	£/litre					
Output	0.268	0.257	0.280	0.281	0.261	0.034
Total Cost	0.306	0.279	0.333	0.289	0.317	0.223
NM	-0.038	-0.062	-0.013	-0.008	-0.056	0.019
n	314			122	192	

Table A9: Layer Results 2008/09 to 2012/13

	2008/09						2009/10					
	ALL	Low95%	Upp95%	Sp.Layers	Other	P value	ALL	Low95%	Upp95%	Sp.Layers	Other	P value
Hens	15090	8143	22037	43071	5035	<0.001	8485	5019	11952	26083	2638	<0.001
	£/hen						£/hen					
Output	19.6	16.5	22.8	15.9	21.0	0.024	20.9	18.0	23.9	18.1	21.9	0.067
TVC	10.6	8.5	12.8	9.4	11.1	0.25	11.1	9.4	12.9	10.2	11.4	0.327
GM	9.0	5.4	12.6	6.5	9.8	0.181	9.8	6.4	13.2	7.9	10.5	0.269
LAB	2.1	1.3	2.8	1.7	2.2	0.348	2.0	1.4	2.7	1.9	2.1	0.82
Contract	0.1	0.0	0.2	0.1	0.1	0.724	0.2	0.0	0.4	0.1	0.3	0.22
Tmach	2.0	1.4	2.6	1.1	2.3	0.003	1.6	1.1	2.1	1.5	1.7	0.692
TOFC	1.9	1.3	2.4	1.0	2.2	0.001	2.1	1.2	3.1	1.1	2.5	0.032
LAND	0.4	0.2	0.5	0.1	0.4	<0.001	1.2	1.0	1.5	1.5	1.2	0.241
TFC	6.4	5.0	7.7	3.9	7.3	0.001	7.3	5.9	8.7	6.2	7.3	0.205
NFI.ent	2.6	-0.3	5.5	2.6	2.6	0.997	2.5	-0.3	5.4	1.7	2.8	0.569
FSLab	3.6	2.3	4.9	1.1	4.5	<0.001	4.6	2.4	6.8	1.5	5.7	0.004
TC	20.6	17.6	23.6	14.4	22.8	<0.001	23.0	19.9	26.2	17.9	24.7	0.003
NM	-1.0	-3.7	1.7	1.4	-1.9	0.086	-2.1	-5.3	1.2	0.2	-2.9	0.171
n	68			28	40		70			29	41	

	2010/11						2011/12					
	ALL	Low95%	Upp95%	Sp.Layers	Other	P value	ALL	Low95%	Upp95%	Sp.Layers	Other	P value
Hens	13779	6799	20758	38667	4358	<0.001	8008	5031	10985	18547	3403	<0.001
	£/hen						£/hen					
Output	22.8	17.1	28.6	16.4	25.3	0.029	21.9	17.6	26.2	17.4	23.9	0.033
TVC	10.1	8.2	12.0	10.2	10.1	0.925	12.0	9.6	14.5	12.1	12.0	0.946
GM	12.7	6.2	19.2	6.2	15.2	0.042	9.9	4.3	15.5	5.3	11.9	0.094
LAB	2.1	1.4	2.8	1.9	2.1	0.768	1.9	1.3	2.5	1.2	2.0	0.64
Contract	0.1	0.0	0.1	0.1	1.0	0.758	0.1	0.1	0.2	0.1	0.1	0.999
Tmach	1.8	1.2	2.3	1.2	2.0	0.057	4.0	1.3	6.7	1.4	5.2	0.043
TOFC	2.1	1.5	2.6	1.1	2.4	0.003	2.1	1.3	2.9	1.1	2.5	0.016
LAND	1.2	0.8	1.7	1.3	1.2	0.844	1.5	1.0	2.1	1.7	1.4	0.603
TFC	7.3	5.9	8.6	5.7	7.8	0.06	9.6	6.7	12.6	6.0	11.2	0.016
NFI.ent	5.5	-0.4	11.3	0.5	7.3	0.085	0.2	-3.5	4.0	-0.7	0.6	0.619
FSLab	4.8	2.7	6.9	1.3	6.2	<.001	6.6	2.4	10.8	1.7	8.7	0.021
TC	22.2	19.0	25.4	17.2	24.1	0.006	28.3	21.9	34.6	19.8	31.9	0.009
NM	0.6	-3.6	4.9	-0.8	1.2	0.505	-6.3	-12.3	-0.4	-2.4	-8.1	0.204
n	77			31	46		73			33	40	

	2012/13					
	ALL	Low95%	Upp95%	Sp.Layers	Other	P value
Hens	8254	4406	12101	23823	3768	<0.001
	£/hen					
Output	26.7	21.9	31.5	19.3	28.8	0.003
TVC	12.7	10.4	14.9	12.8	12.7	0.922
GM	14.0	8.0	20.1	6.5	16.2	0.013
LAB	2.5	1.8	3.2	1.3	2.8	0.006
Contract	0.2	0.1	0.2	0.1	0.2	0.818
Tmach	2.7	1.7	3.7	1.2	3.1	0.005
TOFC	2.6	1.8	3.5	0.9	3.1	<0.001
LAND	1.2	0.7	1.6	1.4	1.1	0.567
TFC	9.2	7.4	11.0	5.0	10.4	<0.001
NFI.ent	4.8	-0.6	10.2	1.5	5.8	0.223
FSLab	6.8	4.1	9.4	1.5	8.3	<0.001
TC	28.6	24.9	32.3	19.4	31.3	<0.001
NM	-1.9	-7.7	3.9	0.0	-2.5	0.524
n	75		29	46		

Table A10: Breeding Sow Results 2008/09 to 2012/13

	2008/09						2009/10					
	ALL	Low95%	Upp95%	Sp.Pigs	Other	P value	ALL	Low95%	Upp95%	Sp.Pigs	Other	P value
Sows	118.5	72.2	164.8	250.8	74.5	0.010	120.1	76.6	163.6	240.5	80.2	0.010
	£/sow											
Output	1814	1471	2158	1733	1841	0.674	1811	1600	2022	2057	1730	0.076
TVC	1246	1062	1430	1207	1259	0.701	1144	991	1297	1284	1098	0.114
GM	568	361	775	526	582	0.716	667	564	773	632	773	0.145
LAB	178	103	254	136	193	0.329	230	135	326	162	253	0.199
Contract	14	0	27	13	14	0.965	12	7	16	17	10	0.263
Tmach	113	90	137	123	84	0.053	94	80	108	94	94	0.987
TOFC	164	118	210	186	97	0.005	156	109	203	120	168	0.137
LAND	28	15	42	12	34	0.026	72	55	90	78	70	0.671
TFC	497	378	617	549	342	0.021	564	421	707	471	595	0.233
NFI.ent	71	-157	298	184	33	0.366	103	-60	265	302	37	0.027
FSLab	274	189	359	170	308	0.029	221	163	278	178	235	0.259
TC	2017	1720	2314	1718	2117	0.062	1929	1656	2203	1933	1928	0.979
NM	-203	-429	23	15	-275	0.076	-118	-303	67	124	-198	0.021
n	62			22	40		63			24	39	

	2010/11						2011/12					
	ALL	Low95%	Upp95%	Sp.Pigs	Other	P value	ALL	Low95%	Upp95%	Sp.Pigs	Other	P value
Sows	120.9	69.9	171.8	275.6	78.0	0.013	136.1	67.69	204.6	340.3	73.6	0.0440
	£/sow											
Output	1693	1373	2012	1954	1620	0.143	1727	1496	1957	1902	1673	0.2440
TVC	1270	1112	1428	1354	1247	0.386	1392	1237	1548	1500	1360	0.2580
GM	423	218	627	600	373	0.110	334	188	480	402	313	0.4650
LAB	217	144	290	159	232	0.194	183	133	234	144	195	0.2370
Contract	13	5	20	12	13	0.772	12	4	21	9	13	0.5540
Tmach	98	77	120	98	98	0.990	106	72	139	97	108	0.6630
TOFC	125	103	147	111	129	0.258	116	98	134	103	120	0.2680
LAND	72	47	97	79	70	0.689	55	39	72	59	54	0.7800
TFC	525	409	640	458	543	0.344	473	389	556	413	491	0.2800
NFI.ent	-102	-239	35	142	-170	0.004	-138	-254	-22	-11	-177	0.1050
FSLab	249	168	330	161	274	0.050	220	167	274	174	234	0.1580
TC	2044	1807	2280	1973	2063	0.621	2085	1864	2306	2087	2084	0.9870
NM	-351	-545	-158	-19	-443	0.002	-359	-473	-244	-185	-412	0.0270
n	65			20	45		69			21	48	

	2012/13					
	ALL	Low95%	Upp95%	Sp.Pigs	Other	P value
Sows	135.9	23.74	248.1	394.6	66.2	0.191
	£/sow					
Output	1726.0	1497.0	1955.0	2036.0	1643.0	0.087
TVC	1547.0	1413.0	1682.0	1574.0	1540.0	0.802
GM	178.8	-25.5	383.0	461.3	102.6	0.021
LAB	187.0	134.0	240.0	115.4	206.3	0.044
Contract	20.4	9.5	31.2	8.3	23.6	0.033
Tmach	97.9	78.6	117.2	84.6	101.5	0.352
TOFC	131.2	109.7	152.7	98.3	140.1	0.016
LAND	65.2	37.5	92.9	35.9	73.1	0.061
TFC	501.7	412.8	590.6	342.5	544.6	0.008
NFI.ent	-322.9	-543.5	-102.3	118.8	-442.0	<0.001
FSLab	243.7	183.0	304.5	208.1	253.3	0.339
TC	2293.0	2101.0	2485.0	2125.0	2338.0	0.249
NM	-566.6	-787.6	-345.6	-89.4	-695.3	<0.001
n	67		18		49	

Table A11: LFA Ewes Results 2008/09 to 2012/13

	2008/09						2009/10					
	ALL	Low95%	Upp95%	SDA Sheep	Other	P value	ALL	Low95%	Upp95%	SDA Sheep	Other	P value
Ewes	335.8	271.1	400.5	389.8	312.5	335.8	377.8	309.0	446.7	443.0	339.7	0.181
	£/ewe						£/ewe					
Output	62	51	73	46	69	0.022	66	58	73	50	75	<0.001
TVC	29	26	33	27	30	0.457	30	27	33	26	32	0.033
GM	33	23	42	18	39	0.010	36	29	42	24	43	<0.001
LAB	7	5	9	4	8	0.028	10	7	14	6	12	0.069
Contract	2	2	3	1	3	0.016	3	2	3	1	3	0.001
Tmach	25	18	32	22	27	0.369	28	19	38	20	33	0.126
TOFC	8	6	11	7	9	0.320	10	7	13	13	8	0.17
LAND	10	8	13	9	11	0.514	13	11	16	18	11	0.003
TFC	53	43	63	43	57	0.068	64	53	75	58	68	0.422
NFI.ent	-20	-27	-14	-24	-18	0.367	-29	-39	-18	-35	-25	0.382
FSLab	56	32	79	55	56	0.967	46	33	58	42	48	0.667
TC	138	104	172	125	143	0.523	140	116	163	126	148	0.388
NM	-76	-102	-50	-79	-74	0.814	-74	-97	-52	-76	-73	0.881
n	76			19	57	76	69			20	49	69

	2010/11						2011/12					
	ALL	Low95%	Upp95%	SDA Sheep	Other	P value	ALL	Low95%	Upp95%	SDA Sheep	Other	P value
Ewes	506.9	406.7	607.2	683.3	408.9	0.013	449.9	367.1	532.7	378.8	645.7	0.002
	£/ewe						£/ewe					
Output	72	63	80	58	79	0.009	86	70	102	68	92	0.069
TVC	36	31	41	28	40	0.008	38	34	42	30	41	0.008
GM	36	30	42	30	40	0.103	48	33	63	38	52	0.251
LAB	15	9	21	11	17	0.245	15	10	20	12	17	0.266
Contract	2	2	3	2	2	0.125	2	2	3	1	3	<0.001
Tmach	25	18	32	18	29	0.067	24	19	30	16	27	0.018
TOFC	8	6	9	8	8	0.958	8	7	9	8	9	0.644
LAND	12	10	14	12	12	0.993	15	12	17	14	15	0.748
TFC	62	51	73	51	68	0.097	64	54	76	50	70	0.068
NFI.ent	-26	-36	-15	-21	-29	0.463	-17	-26	-7	-12	-18	0.581
FSLab	33	25	41	28	35	0.406	30	23	36	27	31	0.581
TC	130	112	149	107	143	0.047	132	116	148	107	141	0.039
NM	-59	-74	-43	-49	-64	0.355	-47	-58	-35	-39	-49	0.462
n	66			23	43	66	66			17	49	

	2012/13					
	ALL	Low95%	Upp95%	SDA Sheep	Other	P value
Ewes	464.8	380.1	549.4	725.8	366.7	<0.001
	£/ewe					
Output	76	66	86	59	83	0.028
TVC	41	37	46	34	44	0.028
GM	35	26	44	25	38	0.115
LAB	13	9	17	15	12	0.522
Contract	3	2	4	1	4	0.018
Tmach	22	18	26	15	25	<0.001
TOFC	9	8	10	7	10	0.002
LAND	14	12	17	11	15	0.184
TFC	61	53	70	49	66	0.029
NFI.ent	-27	-34	-20	-24	-28	0.603
FSLab	29	22	36	20	32	0.043
TC	132	117	147	103	143	0.008
NM	-56	-66	-45	-44	-60	0.071
n	65			18	47	

Table A12: LFA Suckler Results 2008/09 to 2012/13

	2008/09						2009/10					
	ALL	Low95%	Upp95%	SDA Sheep	Other	P value	ALL	Low95%	Upp95%	SDA Sheep	Other	P value
Cows	43.8	39.2	48.3	38.1	47.3	0.038	43.7	39.4	48.0	50.7	42.0	0.126
	£/cow						£/cow					
Output	298	269	326	319	285	0.310	324	296	351	296	330	0.139
TVC	167	150	184	160	171	0.548	177	162	192	179	167	0.540
GM	131	101	161	159	113	0.172	147	118	176	129	151	0.449
LAB	39	27	51	51	31	0.156	36	28	45	37	36	0.949
Contract	22	18	25	19	23	0.343	25	21	29	27	24	0.705
Tmach	97	84	111	124	80	0.003	110	96	124	152	100	0.014
TOFC	64	56	71	64	64	0.901	65	30	70	68	64	0.600
LAND	91	79	103	82	96	0.237	95	86	103	88	96	0.389
TFC	312	285	340	342	294	0.128	331	313	349	372	321	0.016
NFI.ent	-182	-209	-154	-183	-181	0.928	-184	-211	-157	-243	-170	0.023
FSLab	171	147	195	189	159	0.224	143	118	167	182	134	0.159
TC	650	613	688	691	624	0.107	650	610	691	720	634	0.089
NM	-352	-389	-315	-372	-340	0.382	-327	-361	-292	-424	-304	0.031
n	198			68	130		192			28	164	

	2010/11						2011/12					
	ALL	Low95%	Upp95%	SDA Sheep	Other	P value	ALL	Low95%	Upp95%	SDA Sheep	Other	P value
Cows	45.0	37.8	52.2	51.8	43.6	0.501	45.4	39.8	51.0	49.5	44.5	0.498
	£/cow						£/cow					
Output	298	270	326	314	295	0.424	366	340	393	659	368	0.773
TVC	186	172	199	160	191	0.006	190	175	205	161	170	0.017
GM	113	88	138	154	104	0.025	176	147	206	198	171	0.434
LAB	33	24	42	27	34	0.569	41	30	52	61	36	0.267
Contract	22	18	27	16	24	0.265	22	18	25	18	23	0.315
Tmach	88	72	105	134	79	0.040	106	72	140	114	104	0.672
TOFC	68	58	77	95	62	0.055	73	67	79	88	69	0.028
LAND	95	86	104	102	94	0.407	109	98	120	112	108	0.832
TFC	307	283	330	374	293	0.024	351	311	390	393	341	0.147
NFI.ent	-194	-217	-171	-221	-189	0.343	-174	-204	-145	-195	-170	0.491
FSLab	140	100	179	237	120	0.109	140	119	161	194	128	0.008
TC	632	576	687	771	604	0.106	681	635	727	748	666	0.052
NM	-334	-387	-280	-457	-309	0.140	-314	-351	-278	-389	-297	0.041
n	184			24	160		191			27	164	

	2012/13					
	ALL	Low95%	Upp95%	SDA Sheep	Other	P value
Cows	44.8	39.6	49.9	48.1	44.1	0.456
	£/cow					
Output	398	360	436	331	411	0.053
TVC	209	189	229	179	214	0.086
GM	189	148	230	151	196	0.307
LAB	45	35	54	44	45	0.986
Contract	27	21	32	19	28	0.102
Tmach	121	102	140	118	122	0.858
TOFC	74	68	81	77	74	0.699
LAND	104	96	113	91	107	0.239
TFC	371	343	399	350	375	0.412
NFI.ent	-182	-217	-147	-199	-179	0.613
FSLab	176	138	214	171	177	0.837
TC	756	693	819	700	767	0.214
NM	-358	-400	-317	-369	-356	0.749
n	184			25	159	

Table A13: Lowland Ewes Results 2008/09 to 2012/13

	2008/09								2009/10							
	ALL	Low95%	Upp95%	Cereals	Low.GL	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	Low.GL	Mixed	Other	P value
Ewes	250.8	216.3	285.2	249.7	269.8	279.3	169.0	0.056	246.3	212.9	279.7	218.0	283.6	268.7	164.2	0.022
	£/ewe															
Output	78	74	82	86	75	73	84	0.061	105	85	124	96	92	147	102	0.311
TVC	41	39	44	51	37	40	46	<0.001	47	43	52	61	38	54	50	<0.001
GM	37	33	40	36	38	33	38	0.713	57	41	74	35	53	93	52	0.042
LAB	18	13	22	28	14	16	20	0.020	27	19	34	39	12	47	30	<0.001
Contract	5	4	5	3	5	4	5	0.003	5	5	6	5	5	6	6	0.662
Tmach	21	19	23	18	22	19	22	0.107	25	23	27	18	25	25	29	<0.001
TOFC	13	11	16	17	13	10	13	0.065	15	13	17	14	14	16	17	0.667
LAND	23	16	30	34	15	17	42	0.150	22	20	24	25	20	22	25	0.036
TFC	79	69	89	100	69	65	102	0.085	94	84	104	100	76	116	107	0.001
NFI.ent	-42	-53	-32	-64	-32	-33	-64	0.159	-36	-48	-24	-65	-23	-22	-55	<0.001
FSLab	40	35	44	38	43	32	36	0.051	56	47	66	63	49	89	13	0.465
TC	160	147	172	189	150	138	184	0.036	198	176	219	224	164	226	221	0.003
NM	-82	-94	-70	-102	-75	-65	-100	0.114	-93	-106	-80	-129	-72	-79	-122	0.003
n	337			55	144	69	69		347			59	136	72	80	

	2010/11								2011/12							
	ALL	Low95%	Upp95%	Cereals	Low.GL	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	Low.GL	Mixed	Other	P value
Ewes	273.2	237.8	308.7	171.7	338.1	239.5	165.5	<0.001	270.0	237.3	302.8	179.8	321.8	245.0	202.1	0.002
	£/ewe															
Output	99	94	104	108	98	98	98	0.52	115	110	121	101	116	130	110	0.019
TVC	47	44	51	64	41	56	48	<0.001	50	46	53	73	42	56	49	<0.001
GM	52	47	56	44	57	42	51	0.103	66	60	71	27	73	74	61	<0.001
LAB	24	20	28	45	17	28	31	<0.001	26	22	30	41	15	38	37	<0.001
Contract	5	4	7	3	6	4	7	0.021	6	5	7	4	6	8	7	0.200
Tmach	27	22	32	17	30	24	28	<0.001	27	25	29	19	27	34	27	0.024
TOFC	13	12	15	18	13	12	15	0.164	16	14	18	30	13	13	16	0.042
LAND	26	21	31	37	20	21	44	0.055	30	25	35	66	23	24	28	0.058
TFC	96	83	109	120	84	89	125	0.033	104	95	114	159	84	116	115	<0.001
NFI.ent	-44	-55	-33	-76	-28	-47	-75	0.009	-39	-49	-28	-132	-10	-42	-53	<0.001
FSLab	52	43	61	54	49	60	53	0.862	49	44	54	50	46	60	48	0.355
TC	196	175	216	238	175	205	226	0.069	203	190	216	282	172	233	211	<0.001
NM	-97	-114	-79	-130	-77	-107	-128	0.055	-88	-100	-75	-181	-56	-102	-101	<0.001
n	322			31	143	70	78		331			37	155	68	71	

	2012/13							
	ALL	Low95%	Upp95%	Cereals	Low.GL	Mixed	Other	P value
Ewes	289.2	249.2	329.2	179.7	326.3	332.0	187.9	<0.001
	£/ewe							
Output	103	88	118	101	108	106	84	0.017
TVC	51	48	55	76	45	60	47	<0.001
GM	52	39	64	25	63	46	37	0.008
LAB	27	22	32	48	18	36	31	<0.001
Contract	6	5	8	9	7	5	7	0.262
Tmach	27	24	31	16	30	30	25	<0.001
TOFC	18	15	21	25	16	14	17	0.102
LAND	35	23	47	50	24	25	72	0.137
TFC	114	97	130	146	95	110	162	0.049
NFI.ent	-62	-82	-43	-120	-32	-64	-125	<0.001
FSLab	52	40	64	50	55	48	50	0.954
TC	218	194	241	272	195	218	259	0.052
NM	-115	-133	-96	-171	-87	-112	-175	<0.001
n	317			32	150	70	65	

Table A14: Lowland Suckler Results 2008/09 to 2012/13

	2008/09								2009/10							
	ALL	Low95%	Upp95%	Cereals	Low.GL	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	Low.GL	Mixed	Other	P value
Cows	34.6	30.9	38.3	27.4	37.2	40.2	26.2	0.008	34.6	30.9	38.4	28.9	36.5	40.9	26.3	0.025
	£/cow															
Output	351	301	401	325	308	322	592	0.391	371	336	405	340	397	355	335	0.448
TVC	166	150	182	212	137	188	195	0.002	178	159	196	247	144	189	201	0.002
GM	185	134	235	113	171	133	397	0.096	193	161	226	93	252	166	134	0.002
LAB	91	64	118	162	44	58	229	<0.001	83	66	100	181	47	63	120	<0.001
Contract	38	33	43	30	39	33	45	0.274	40	34	46	33	42	35	44	0.492
Tmach	92	74	111	69	89	77	157	0.231	101	90	112	71	116	98	86	0.002
TOFC	77	70	85	92	78	63	77	0.055	88	78	99	115	86	65	95	0.002
LAND	108	98	118	144	92	95	145	0.004	143	126	161	209	123	131	158	0.046
TFC	406	358	455	496	342	326	653	0.011	455	418	492	609	413	392	503	0.011
NFI.ent	-222	-255	-189	-382	-171	-192	-157	0.010	-262	-308	-216	-516	-161	-226	-369	<0.001
FSLab	184	159	208	148	185	176	237	0.445	182	159	204	145	199	160	189	0.188
TC	756	689	824	855	664	691	1085	0.025	814	762	867	1002	757	741	893	0.020
NM	-406	-440	-372	-530	-356	-369	-493	0.011	-443	-488	-399	-662	-360	-386	-558	<0.001
n	325			57	143	69	56		339			58	142	76	63	

	2010/11								2011/12							
	ALL	Low95%	Upp95%	Cereals	Low.GL	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	Low.GL	Mixed	Other	P value
Cows	41.1	34.2	48.0	30.3	45.0	41.2	29.0	0.045	37.1	33.3	40.9	28.3	38.3	43.1	30.9	0.055
	£/cow															
Output	312	282	342	287	316	308	322	0.916	410	382	437	391	416	394	411	0.850
TVC	191	174	207	194	163	230	275	<0.001	216	201	231	303	194	235	233	0.002
GM	122	97	147	92	153	77	48	0.004	194	166	221	88	222	159	177	0.020
LAB	78	53	102	115	63	95	97	0.390	76	63	89	132	47	113	120	<0.001
Contract	38	31	45	25	42	32	35	0.138	44	38	51	57	47	35	39	0.237
Tmach	106	71	141	95	122	65	93	0.106	101	88	113	88	102	102	99	0.948
TOFC	85	73	98	104	78	76	120	0.597	99	86	112	154	91	88	113	0.331
LAND	135	117	153	194	114	124	216	0.065	163	146	179	266	147	183	163	0.099
TFC	441	368	514	533	419	391	562	0.277	483	437	528	697	433	485	555	0.105
NFI.ent	-320	-392	-247	-441	-266	-314	-514	0.181	-289	-336	-242	-609	-211	-326	-377	0.002
FSLab	179	146	211	127	179	169	235	0.326	194	152	236	133	173	191	322	0.268
TC	810	714	906	854	761	791	1072	0.474	892	815	969	1133	800	911	1110	0.042
NM	-498	-588	-408	-567	-445	-483	-749	0.433	-483	-551	-415	-742	-384	-517	-700	0.007
n	346			36	167	81	62		359			36	182	71	70	

	2012/13							
	ALL	Low95%	Upp95%	Cereals	Low.GL	Mixed	Other	P value
Cows	35.4	32.0	38.7	25.9	35.9	43.4	31.4	0.015
	£/cow							
Output	420	390	450	461	431	384	383	0.320
TVC	233	215	251	343	207	244	243	<0.001
GM	187	158	216	119	224	140	139	0.006
LAB	105	75	136	193	83	97	140	0.086
Contract	44	39	50	54	45	39	39	0.471
Tmach	138	88	189	84	168	101	102	0.360
TOFC	95	87	104	126	93	80	99	0.074
LAND	157	145	170	234	151	135	150	0.029
TFC	540	455	625	690	539	450	530	0.036
NFI.ent	-353	-437	-269	-572	-315	-310	-390	0.016
FSLab	204	179	230	165	226	200	154	0.069
TC	977	872	1083	1198	972	894	927	0.030
NM	-558	-654	-461	-737	-541	-510	-544	0.042
n	359			42	172	71	74	



Table A15: Fat Cattle Results 2008/09 to 2012/13

	2008/09									2009/10								
	ALL	Low95%	Upp95%	Cereals	LFA.GL	Low.GL	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	LFA.GL	Low.GL	Mixed	Other	P value
Cattle	72.7	64.3	81.2	57.9	59.1	83.2	88.3	59.2	0.031	80.9	71.2	90.7	64.1	57.6	90.0	108.5	60.4	0.003
	£/animal																	
Output	494	400	588	490	475	536	455	451	0.882	417	387	446	399	417	380	408	563	0.312
TVC	249	221	276	327	261	185	237	281	0.004	232	212	252	274	267	173	221	294	<0.001
GM	245	157	333	163	214	352	218	171	0.331	185	162	208	125	150	207	186	269	0.013
LAB	92	75	109	166	34	50	59	202	<0.001	88	73	103	128	28	52	62	217	<0.001
Contract	26	21	30	27	15	33	15	33	<0.001	25	21	28	26	18	27	22	28	0.163
Tmach	130	99	161	94	136	165	109	134	0.054	109	97	120	85	106	103	111	163	0.051
TOFC	49	40	58	39	35	55	36	48	0.043	46	41	51	44	42	50	36	65	0.019
LAND	71	61	80	93	48	62	59	99	<0.001	78	71	108	90	63	73	67	108	0.010
TFC	367	318	415	437	268	366	278	516	<0.001	346	318	374	374	257	305	298	581	<0.001
NFI.ent	-122	-183	-61	-274	-54	-14	-61	-346	<0.001	-161	-187	-135	-248	-107	-98	-112	-312	<0.001
FSLab	181	129	232	185	162	222	119	171	0.098	155	131	179	165	167	123	115	286	0.014
TC	796	690	901	950	691	772	634	968	<0.001	732	677	788	812	691	601	634	1161	<0.001
NM	-302	-346	-258	-459	-216	-236	-179	-517	<0.001	-316	-351	-281	-413	-274	-221	-227	-598	<0.001
n	300			61	57	82	65	35		293			56	49	78	63	47	

	2010/11									2011/12								
	ALL	Low95%	Upp95%	Cereals	LFA.GL	Low.GL	Mixed	Other	P value	ALL	Low95%	Upp95%	Cereals	LFA.GL	Low.GL	Mixed	Other	P value
Cattle	89.7	73.6	105.7	41.0	59.9	119.9	85.9	57.7	<0.001	80.7	70.0	91.3	47.4	65.9	86.0	103.9	68.8	0.002
	£/animal																	
Output	387	355	419	434	397	345	408	484	0.100	555	524	587	523	574	539	557	615	0.671
TVC	250	228	271	261	272	205	293	335	<0.001	293	265	322	380	273	239	306	420	0.003
GM	137	113	162	173	126	141	115	149	0.855	262	232	292	143	302	300	251	195	0.020
LAB	71	58	83	92	31	52	93	179	<0.001	89	73	106	107	27	69	116	182	<0.001
Contract	24	20	29	19	16	29	23	28	0.100	30	25	35	28	14	31	32	47	<0.001
Tmach	118	88	149	106	116	118	87	209	0.258	126	112	140	79	126	134	121	145	0.072
TOFC	53	44	62	62	49	48	43	95	0.456	56	49	63	51	54	53	45	88	0.371
LAND	83	71	95	114	68	68	83	156	0.034	99	88	110	130	93	81	88	163	0.030
TFC	349	306	391	394	280	314	329	667	0.009	400	369	431	395	313	369	402	624	<0.001
NFI.ent	-211	-258	-165	-221	-154	-174	-215	-518	0.017	-138	-178	-98	-252	-12	-68	-151	-429	<0.001
FSLab	151	128	173	229	166	124	138	191	0.174	172	146	197	121	188	163	167	232	0.070
TC	749	693	805	884	717	643	760	1193	0.006	865	809	920	897	774	770	875	1275	0.003
NM	-362	-414	-310	-449	-320	-298	-353	-709	0.049	-309	-353	-266	-374	-200	-232	-318	-660	<0.001
n	299			30	60	103	70	36		288			28	57	97	65	41	

	2012/13								
	ALL	Low95%	Upp95%	Cereals	LFA.GL	Low.GL	Mixed	Other	P value
Cattle	82.8	71.5	94.2	39.3	61.7	105.2	96.1	55.9	<0.001
	£/animal								
Output	523	494	551	555	539	498	511	573	0.472
TVC	323	293	354	410	332	266	329	403	0.014
GM	200	173	170	146	207	232	182	170	0.310
LAB	103	86	119	207	34	73	95	179	<0.001
Contract	30	26	35	32	23	30	27	43	0.444
Tmach	137	121	152	138	142	147	117	126	0.514
TOFC	56	49	63	70	62	53	41	69	0.034
LAND	98	88	108	141	91	90	78	125	0.013
TFC	423	388	459	588	352	393	358	541	<0.001
NFI.ent	-224	-262	-186	-442	-146	-161	-176	-371	<0.001
FSLab	177	150	204	150	199	170	169	222	0.709
TC	924	867	982	1147	883	829	856	1165	0.001
NM	-401	-447	-356	-591	-344	-331	-346	-593	0.003
n	273			32	50	92	59	40	