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Rural Business Research

## Farm Business Survey

2008/2009

### Crop Production in England (Summary Version)



Ben Lang

**RBR**

*independent research, data and analysis*

Rural Business Research



## Crop Production in England 2008/2009

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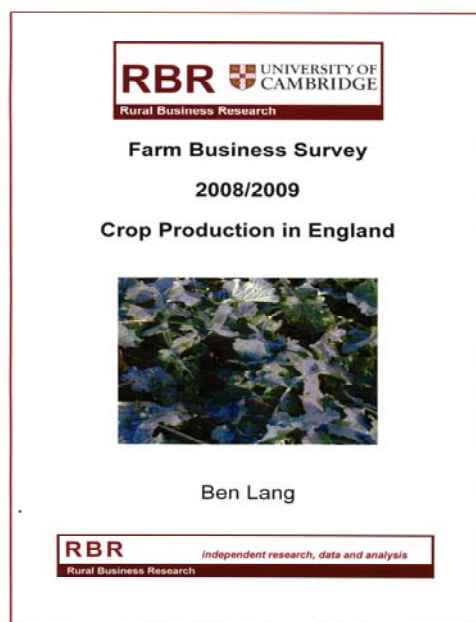
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## **Crop Production in England 2008/2009**

**The full printed version of the report is now available and comprises:**

- Overview of profitability, assets and liabilities
- Analysis of arable farm performance
- Cropping and crop area
- Crop enterprise performance  
(Gross margin analysis of 12 crops)
- Organic arable performance  
(Gross Margin analysis of 6 crops)
- The arable scene
- Minimum tillage on arable farms in England



Appendix 1 Agricultural output and costs comparison for by farm type, district, size and performance (24 tables)

Appendix 2 Gross margin results for comparison by farm type, district, size and performance (92 tables)

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### **Price £20 including postage and packing**

This publication can be obtained from Mrs Joy Meyrick

Rural Business Unit  
Department of Land Economy  
19 Silver Street  
Cambridge  
CB3 9EP

Tel: 01223 337166  
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## Summary

### **Chapter 1 Overview of Profitability, Assets and Liabilities**

Farm business Income  
Assets and Liabilities

### **Chapter 2 Analysis of Arable Farm Performance**

Agriculture, Agri-environment, Diversification and Single Payment  
Agriculture  
Agri-environment  
Diversification  
Single Payment Scheme

### **Chapter 3 Cropping and Crop Area**

Cropping and Crop Area  
Areas of Other Crops

### **Chapter 4 Crop Enterprise Performance**

Crop Gross Margins  
Cereals  
Oilseeds  
Peas and Beans  
Sugar Beet  
Ware Potatoes

### **Chapter 5 Organic Arable Performance**

Performance of Organic Arable Businesses  
Organic Business Performance  
Organic Gross Margins

### **Chapter 6 The Arable Scene**

Weather  
Economic Environment  
Business  
Energy Crops  
Policy

### **Chapter 7 Minimum Tillage on Arable Farms in England**

Characteristics of Minimum Tillage Cultivation Techniques  
Minimum Tillage Uptake in England  
Minimum Tillage Fuel Use  
Minimum Tillage Farm Costs  
Conclusions

## Summary

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The fourth edition of Crop Production in England uses Farm Business Survey results to explore the profitability of arable production in England in the 2008 harvest year. In a year that saw a 20 per cent weakening of the value of sterling against the euro, prices of agricultural commodities increased, as did costs of energy, and correspondingly of fertiliser and other crop inputs. The early consequences of the 'credit crunch' to agriculture were generally limited, although more pronounced to producers exposed to premium markets. In the context of higher input prices, we look specifically at costs within organic arable businesses and consider the benefits of Minimum Tillage techniques.

The removal of set-aside obligations made an additional 275,000 hectares available for arable production and, in the autumn of 2007, strong prevailing cereal prices were an incentive for an extended program of drilling. As a result, the areas of winter wheat, winter barley and spring barley increased respectively by 14, 8 and 24 per cent.

Farmers established crops in the autumn of 2007 in wet conditions, but the dry weather that followed in February presented ideal spring drilling conditions. Following a dry June, the 2008 harvest was the second in a series of wet harvests. Lower gross margins for all cereal crops, and for winter cereal crops in particular were a result of lower prices, partially mitigated by higher yields, but higher variable costs. Oilseed crops enjoyed sharply increased prices, and correspondingly achieved greater gross margins, despite higher input prices. Their yields were slightly lower than in 2007. Protein crops enjoyed improved gross margins due to higher crop yield and despite increased input costs. The improved price for peas grown for human consumption ensured a greatly improved gross margin for this crop. The sharp increase in yield was the driver of the greatly improved sugar beet gross margin. Higher yields, and therefore supply of ware potatoes onto the market, led to a reduction in price accounting for the small reduction in the average ware potato gross margin.

Cereals farms experienced a reduction in Farm Business Income (FBI) to £327 per hectare. Agriculture's contribution to FBI was barely changed at £77 per hectare (£78 in 2007/2008). Yields were higher, but lower crop prices and increased variable costs conspired to reduce cereal gross margins, whilst oilseed and protein gross margins improved in the year. The better performing Cereals farms in 2009 tended to crop a high proportion of their land with wheat (averaging 40 per cent of farm area for top quartile).

General Cropping farms enjoyed a further improvement in FBI to £448 per hectare. Higher prices for sugar beet and oilseed rape, boosted crop output and correspondingly the whole-farm gross margin. On these intensive arable businesses, fixed costs increased by 17 per cent.

Due mainly to the increase in the value of land, most arable farms in England enjoyed a strengthened balance sheet during 2008 /2009. Investment in machinery resulted in a higher value of machinery at the year-end, but for many, liabilities increased, partly due to finance liabilities on recently purchased machinery.

Agricultural activities on organic arable farms showed a small loss in 2008/2009; their FBI averaged -£33 per hectare (-£19 per hectare in 2007/2008). In 2008/2009, arable gross margins declined slightly due to lower crop price, but despite higher yields. These farms usually have additional sources of income, including agri-environment scheme participation alongside the agricultural activities providing some insulation from reduced crop values.

Uptake of Minimum Tillage is widespread across England, and carried out on 37 per cent of Cereals farms (and about 27 per cent of the combinable crop area) in 2007. Although there is considerable variation in practice between farms, those adopting Minimum Tillage used around 15 per cent less fuel than farms using full conventional cultivations. Their depreciation charge, at £73 per hectare, was 27 per cent lower than on the non Minimum Tillage farms.

**Ben Lang**  
Editor

## Foreword to the Fourth Series

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As agriculture enters the second decade of the 21<sup>st</sup> Century, the financial prospects for many sectors are arguably brighter than five years ago. The importance of agriculture as a provider of food, environmental and ecosystem services and biofuels, is becoming increasingly recognised. Issues of food security in a world with changing climatic conditions and a growing population have led to agriculture and food production being viewed in a more positive light than has appeared to be the case throughout much of the previous 20 to 30 years. However, countering this growing interest in agriculture, food, the environment and fuel is the prospect of a reduced single payment beyond 2012 and continuing and widening volatility in both input and output prices. In the early months of 2010, the prospects for agriculture and horticulture thus appear somewhat mixed with the outputs being arguably more valued by society, yet with businesses needing to adapt to a potentially more volatile market environment.

Now in its fourth series, these enterprise and farm type reports from *Rural Business Research (RBR)* once again provide independent data and results from expert analysis of the Defra-funded Farm Business Survey (FBS) for England drawing upon 2008/09 data. Users of FBS data increasingly also rely on RBR's other independent outputs that are freely available on-line at [www.farmbusinesssurvey.co.uk](http://www.farmbusinesssurvey.co.uk) where Government Office Regional reports and farm business benchmarking services sit along-side the more specialised FBS data builder tool. As with all businesses, farmers and growers are increasingly reliant upon obtaining information from the internet. In order to enhance farmers, growers, advisors and other stakeholders use of our on-line services, RBR plans to host a series of regional workshops in the Spring of 2011 and 2012, and we will be announcing details of these in late 2010 so please visit both [www.farmbusinesssurvey.co.uk](http://www.farmbusinesssurvey.co.uk) and [www.ruralbusinessresearch.co.uk](http://www.ruralbusinessresearch.co.uk) to keep up to date with new results, publications and our plans for our regional workshops.

We hope that you will find this fourth series of reports to be informative and interesting to your work and businesses. As with all our outputs, *Rural Business Research* provides analysis on agricultural and horticultural business performance to provide users with independent results. We always welcome comment on our outputs, so please let us know your thoughts by emailing [paul.wilson@nottingham.ac.uk](mailto:paul.wilson@nottingham.ac.uk) to let us know your views on our publications.

**Dr Paul Wilson**

Executive Elect, Rural Business Research

Spring 2010

### **ACKNOWLEDGEMENTS**

Rural Business Research is very grateful to the farmers who have voluntarily provided records and information on which the FBS and this report are based.

At the Rural Business Unit, Richard Dexter and Mark Reader designed the reporting system and Joy Meyrick and Stephen Horsley contributed to the production of the report. We are grateful to Selina Matthews at Defra for guidance on the analysis of Minimum Tillage results from the Energy Use module of the Farm Business Survey.

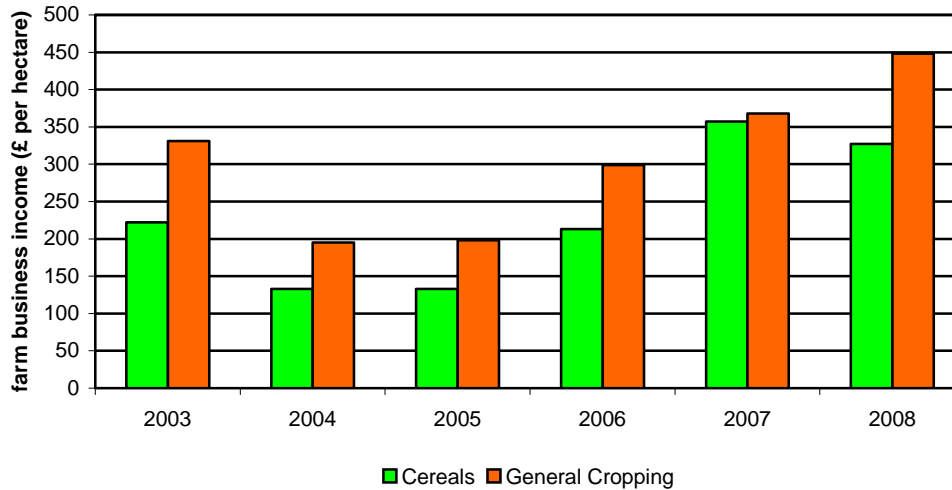
The data on which this report is based were originally collected in the Farm Business Survey and are Crown Copyright. The Farm Business survey is conducted on behalf of and financed by the Department for Environment, Food and Rural Affairs.

# 1 Overview of Profitability, Assets and Liabilities

## 1.1 Farm Business Income

Figure 1.1 shows the Farm Business Income (FBI) of Cereals and General Cropping farms for the 2003/2004 to 2008/2009 financial years, relating to the 2003 to 2008 harvest years. Whilst General Cropping farms enjoyed a further improvement in FBI to £448 per hectare, Cereals farms experienced a reduction in FBI to £327 per hectare.

Figure 1.1 Farm Business Income of Cereals and General Cropping farms in England, 2003 to 2008



Tables 1.1 and 1.2 show the summarised Farm Business Income calculation for the whole business on Cereals and General Cropping farms.

Table 1.1 Cereals Farms - Farm Business Income

	2007	2008
Number of farms	336	357
Area of farm	205.3 ha	213.2 ha
	£/ha	£/ha
Crop output	691	796
Livestock output	57	73
Agri-environment	43	44
Other output	154	85
Single Payment	181	199
<b>Total Output</b>	<b>1126</b>	<b>1197</b>
Variable costs	248	302
Fixed costs	526	576
<b>Total costs</b>	<b>774</b>	<b>878</b>
Profit on sale of assets	5	8
<b>Farm Business Income</b>	<b>357</b>	<b>327</b>

Table 1.2 General Cropping Farms - Farm Business Income

	2007	2008
Number of farms	195	191
Area of farm	207.8 ha	214.4 ha
	£/ha	£/ha
Crop output	1092	1409
Livestock output	123	137
Agri-environment	38	41
Other output	127	66
Single Payment	171	192
<b>Total Output</b>	<b>1551</b>	<b>1845</b>
Variable costs	416	503
Fixed costs	768	898
<b>Total costs</b>	<b>1184</b>	<b>1401</b>
Profit on sale of assets	1	4
<b>Farm Business Income</b>	<b>368</b>	<b>448</b>

# 1 Overview of Profitability, Assets and Liabilities

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The UK arable industry was exposed to a series of changes to weather, economic environment and EU policy. Among these, the weakening of sterling by 20 per cent, during the year, improved the prices of agricultural commodities but contributed to higher input prices.

The removal of set-aside had been widely anticipated and was agreed in time to permit planned changes in cropping for the 2008 harvest. Many farmers also chose to leave land uncropped, and later in 2009, the Campaign for the Farmed Environment was launched with the aim of retaining the environmental benefits of set-aside.

The 2008 harvest was extremely wet and tested farm staff and their machinery alike. The wet conditions also reduced the quality of harvested crops and especially cereals grown for human consumption.

Increased costs of energy, and correspondingly of fertiliser and other crop inputs, were unavoidable to all types of crop production and were a driver towards lower farm business income. These commodity price increases occurred at the time of the sale of the 2007 harvest crops, but accounting practice correctly relates the cost increases to the 2008 harvest.

Yields of most crops improved in 2008, but increased supply of grain triggered lower prices for these commodities. However, oilseed and sugar prices improved.

A consequence of improved commodity prices in 2007, and for General Cropping farms in 2008, was that farmers made increased capital investment. In turn, this raised the depreciation and interest charges that they incurred.

On Cereals farms, the whole-farm gross margin was unchanged but reflected reduced grain prices, increased crop yields and higher variable costs. Over the whole business, fixed costs increased by ten per cent.

On General Cropping farms, higher prices for sugar beet and oilseed rape, boosted crop output and correspondingly the whole-farm gross margin. On these intensive arable businesses, fixed costs increased by 17 per cent.

Agriculture did not entirely escape the early consequences of the 'credit crunch', but for most businesses, these were limited to changes in overdraft availability and charges. Among arable producers, organic farmers exposed to premium markets were most vulnerable to reduced consumer expenditure.

## 1.2 Assets and Liabilities

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The capital position of Cereals and General Cropping farms at the start and finish of the 2008/2009 year is set out in Tables 1.3 and 1.4 below.

The average arable farm in England enjoyed a strengthened balance sheet during 2008/2009, due mainly to the increase in the value of land, to give a net worth of £3,889 per hectare on Cereals farms and £6,476 on General Cropping farms. Investment in machinery resulted in a higher value of machinery at the year-end. The only asset with a reducing value at the end of the year was the depreciating Single Payment Entitlement. Liabilities increased, partly due to finance liabilities on recently purchased machinery.

# 1 Overview of Profitability, Assets and Liabilities

Table 1.3 Cereals Farms Balance Sheet

	Opening 2008	Closing 2008
Number of farms	357	357
Area of farm	213.2ha £/ha	213.2ha £/ha
<b>Assets</b>		
Land and buildings	5050	5755
Machinery	465	500
SPS Entitlement	266	224
Other fixed assets	40	46
Current assets	915	1005
<b>Liabilities</b>		
	614	641
<b>Net Worth</b>	<b>6122</b>	<b>6889</b>

Table 1.4 General Cropping Farms Balance Sheet

	Opening 2008	Closing 2008
Number of farms	191	191
Area of farm	214.4 ha £/ha	214.4ha £/ha
<b>Assets</b>		
Land and buildings	4578	5296
Machinery	596	660
SPS Entitlement	261	222
Other fixed assets	68	79
Current assets	994	1071
<b>Liabilities</b>		
	727	852
<b>Net Worth</b>	<b>5769</b>	<b>6476</b>

## Land

The commodity-led improvement in farm incomes had an inevitable influence on the market for land in the year. For existing landowners, improved balance sheets reduced the necessity to sell and this restricted the availability of land in the first half of 2008. However, the possibilities of favourable long-term returns from agriculture were a driver of demand for land. In the summer of 2008, the Royal Institution of Chartered Surveyors (RICS) reported average prices for arable land at around £14,453 per hectare<sup>1</sup>. At the same time, the 'credit crunch' had reduced the confidence of lifestyle buyers and demand for farms with a significant residential element slowed with a similar effect on the market for pasture farms. The introduction of a flat rate of Capital Gains Tax of 18 per cent from April 2008 was responsible for a slowing of the market for agricultural land. For qualifying business disposals, a ten per cent rate applies to the first £1 million of lifetime gains<sup>2</sup>.

High commodity and land prices had attracted city investors into agriculture in 2007<sup>3</sup>. And in 2008, property funds were reported as being active in the land market. Willing to invest in either Eastern or Western Europe, these funds made a number of purchases in the UK. Continental, and especially Danish investors, were less active in the UK property market during 2008 than in previous years. However, with favourable exchange rates in early 2009, there was renewed continental interest.

Prime arable land values fell in the third quarter of 2008; this was the first reduction in land prices since 2003<sup>4</sup>.

<sup>1</sup> Eastern Daily Press

<sup>2</sup> Farmers Weekly, 30 May 2008

<sup>3</sup> Farmers Weekly, 24 April 2009

<sup>4</sup> Savills Rural Research Bulletin 07-08 (farmland Market), October 2008

# 1 Overview of Profitability, Assets and Liabilities

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## Single Payment Entitlement

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Four years ahead of the 2012 end of the existing Single Payment Scheme, the capital value of Single Payment Entitlement declined further. The closing values on both Cereals and General Cropping farms have converged and averaged about £222 per hectare at the year-end.

In the first years of the Single Payment Scheme, there was little trade in entitlements; probably due to uncertainty caused by the haphazard introduction of the scheme and additional complexity of FVP and set-aside entitlements. By early 2009, trade sources reported increased trade in entitlements

In March 2008, entitlements were typically traded with a multiplier of around 1.2 (so the price paid for the entitlement was only a little higher than the current year Single Payment)<sup>1</sup>. At these multiplier rates, entitlement was typically traded at between £160 and £260 per hectare. This suggests that the FBS estimates of entitlement value are in line with market values.

## Machinery

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Across all farm types, tractor registrations in the UK in the year to April 2009 were 17,473 (16,111 in 2008).

Figure 1.2 shows the net expenditure on machinery on Cereals and General Cropping farms split by machinery type.

The net expenditure on machinery tracked changes in FBI within the same survey year. Correspondingly, Cereals farms made a reduced investment in machinery in 2008/2009 whilst General Cropping farms spent more.

The considerable investment in harvesting machinery on Cereals farms in 2007/2008 was not repeated in 2008/2009, but these farms increased expenditure on all other categories of machinery. The Cereals farms increased their average spend on cultivation machinery by 40 per cent to £19 per hectare suggesting strategic changes to cultivation strategies. Cultivation machinery expenditure was often accompanied by a change in tractor.

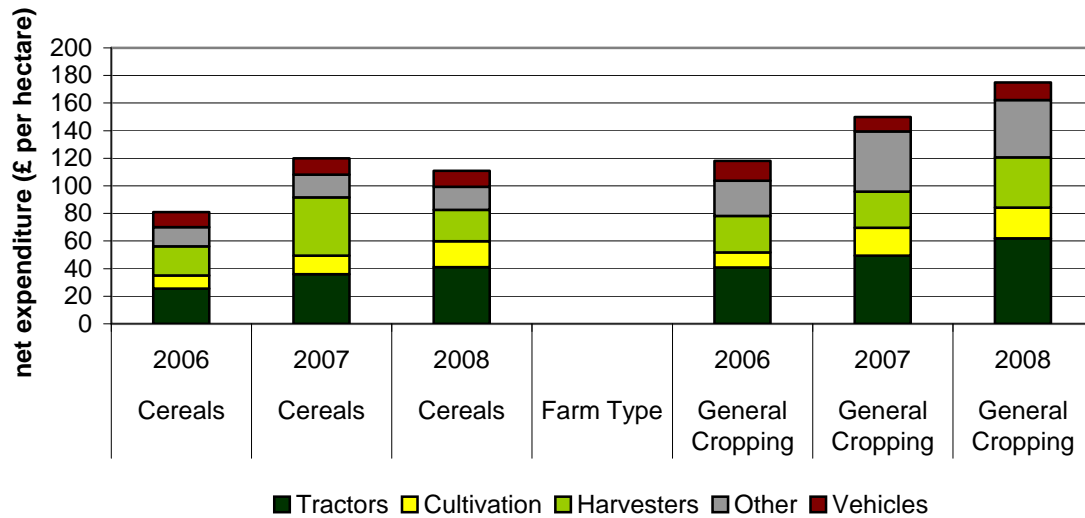


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<sup>1</sup> Duncan Clark Farm Management, [www.dcfm.com](http://www.dcfm.com) March 2009

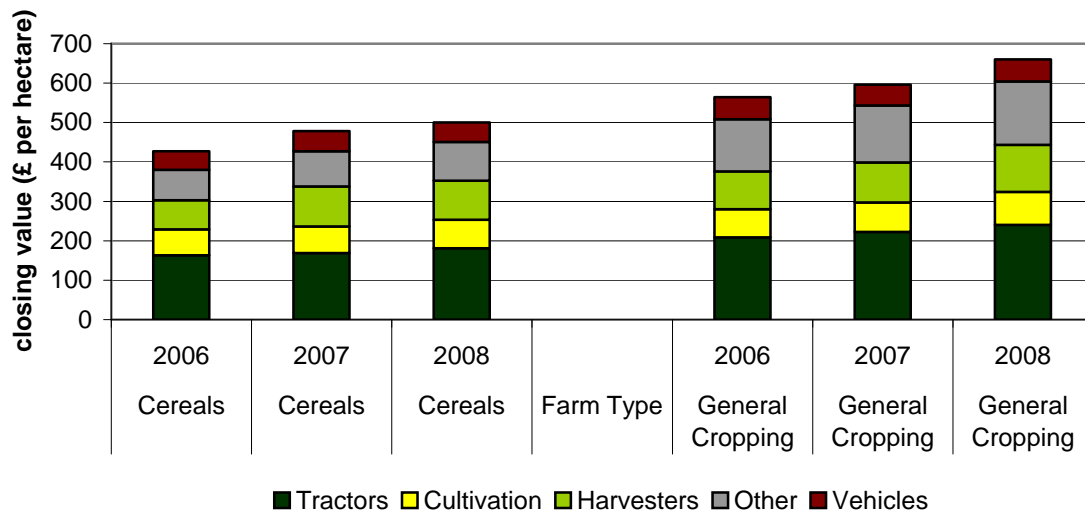
# 1 Overview of Profitability, Assets and Liabilities

Figure 1.2 Net expenditure on Machinery on Cereals and General Cropping Farms, 2006/2007 to 2008/2009



The capital value of machinery on Cereals and General Cropping farms is shown in Figure 1.3. Using Farm Business Survey methodology, investment in machinery has exceeded the depreciation charge over the last three years, indicating an accumulation of machinery assets during a period of improved profitability.

Figure 1.3 Closing Valuation of Machinery on Cereals and General Cropping Farms, 2006/2007 and 2007/2008



## Current Assets

The value of current assets, which include produce, purchased materials and debtors, increased by ten per cent on Cereals farms to £1,005 per hectare and by eight per cent on General Cropping farms to £1,071 per hectare.

# 1 Overview of Profitability, Assets and Liabilities

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## Liabilities

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Borrowing increased on arable farms during the year. At the close of 2008/2009, total external liabilities on Cereals farms averaged £641 per hectare, representing an increase of four per cent. On General Cropping farms, the increase amounted to 17 per cent with liabilities at the end of the year averaging £832 per hectare. The drivers of increased borrowing in 2008 included the legacy of recent machinery investment on hire purchase arrangements and earlier capital investment promoted by changes in taxation. At the same time, borrowing for working capital increased due to higher fuel and other input prices. Borrowing by the agricultural industry peaked a record £11 billion in 2008<sup>1</sup>. By the end of 2008, it had fallen to £10.7 billion, partly due to prompt distribution of Single Payment.

## The 'Credit Crunch'

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The 2009 'credit crunch' did not perhaps the sudden and significant direct impact on farming businesses that some predicted. However, the impact on individual businesses varied according to their balance sheet situation.

With higher land prices, farm businesses with a significant proportion of owner occupied land were able to absorb higher borrowing whilst reducing gearing. However, tenant farmers with minimal investment in assets experienced reduced availability of credit and higher costs of accessing this credit.

A response of the Bank of England to the 'credit crunch' was to reduce interest rates, notably the 1.5 per cent reduction in November 2008. However, as banks reviewed borrowing arrangements with farmers, it became usual practice to increase their margin over the base rate.

The indirect impacts of the credit crunch included the global reduction in commodity prices. Alongside this, reduced consumer spending reduced demand for premium foods including organic produce.

In 2009, Defra commissioned ADAS to carry out a survey of nearly 100 businesses that either supplied agriculture or were customers of farmers<sup>2</sup>. Although about half of the businesses surveyed reported that the impacts were no more than negligible, 40 per cent described a negative impact including ten per cent that reported a significant negative impact.

The greatest difficulties were reported by businesses that required credit. Most of the suppliers to agriculture had arrangements for checking the creditworthiness of farmer customers, but several had strengthened these arrangements.

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<sup>1</sup> Bank of England

<sup>2</sup> Defra, [www.defra.gov.uk](http://www.defra.gov.uk)

## 2 Analysis of Arable Farm Performance

### 2.1 Agriculture, Agri-environment, Diversification and Single Payment

In Chapter 2, we explore the contributions of agriculture, agri-environment scheme participation, diversification and the single payment to the performance of the farm business. As Box 2.1 explains, comparisons between the 2008 /2009 survey and previous years should be made with caution, due to a revision in survey methodology.

#### Box 2.1 Note on change to the methodology for allocating fixed costs

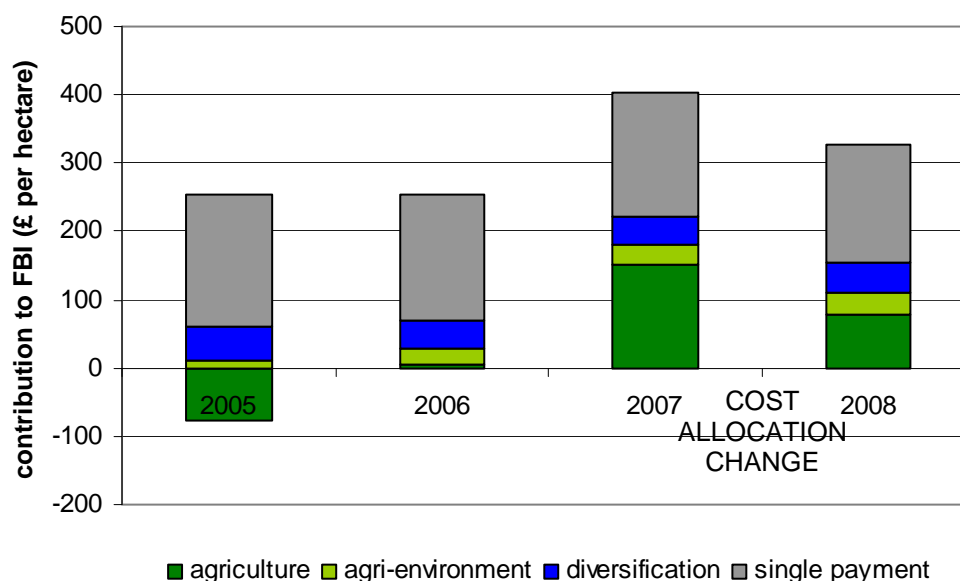
The Farm Business Survey in 2008/09 uses a new methodology for allocating fixed costs across the four sections or 'cost centres' of the business (agriculture, the single-payment scheme, agri-environment schemes and diversified activities).

In previous years the survey has shown the vast majority of fixed costs as being associated with agriculture, with the allocation based mainly on the judgement of the research officers conducting the survey. It was recognised that this did not accurately reflect farm business structures in the present time and the increasing contribution of non-agricultural enterprises to farm incomes. It might be expected that outputs for these activities would have associated costs relative to their respective size.

To take account of this, land and property costs, general farming costs and overhead machinery costs have been apportioned across the four cost centres, by applying coefficients either based on gross margins or outputs, reflecting the degree to which each activity draws upon these costs. FBS researchers in the field can, however, override this process and enter other data if they feel it provides a more accurate cost allocation.

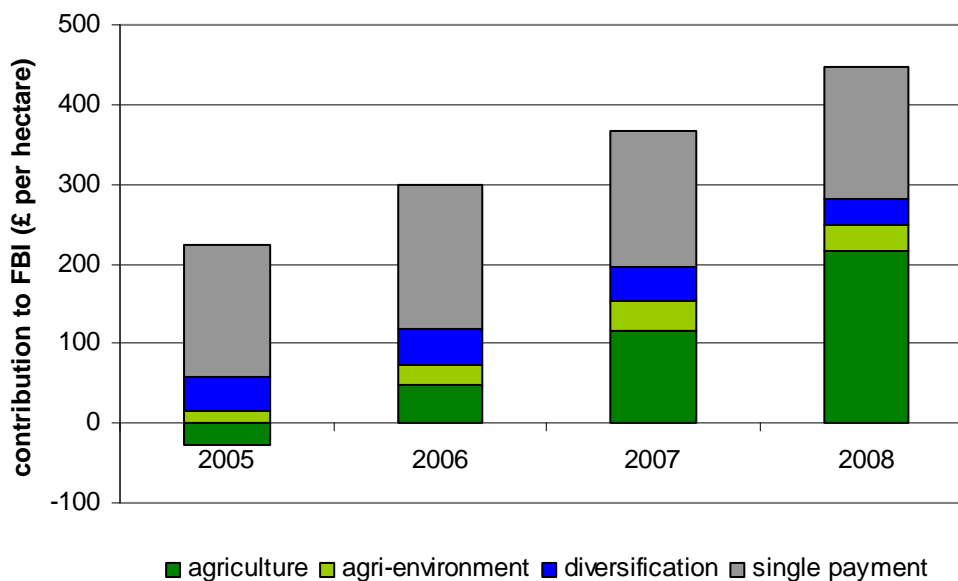
The contributions to Farm Business Income (FBI) by the agriculture, agri-environment, diversification and single payment cost centres on Cereals Farms are shown in Figure 2.1, and on General Cropping farms in Figure 2.2. In 2008 /2009, the single payment receipt made the greatest contribution to Cereals farm FBI, followed by the contribution from agriculture, which was positive for a third consecutive year.

Figure 2.1 Contribution to Farm Business Income by Cost Centre on Cereals Farms



## 2 Analysis of Arable Farm Performance

Figure 2.2 Contribution to Farm Business Income by Cost Centre on General Cropping Farms



On General Cropping farms, consistently improving agricultural performance, since 2005, was the main reason for the improvement in FBI.

### 2.2 Agriculture

#### Cereals Farms

The average farm size of both Cereals and General Cropping farms in the survey was 214 hectares. The reported farm size includes land hired in for less than one year. The similar average farm size facilitates comparison of these groups.

On Cereals farms, the allocation of land to crops changed to reflect the demise of set-aside. Farmers chose to grow an increased area of winter and spring cereals, whilst maintaining similar areas of combinable break crops and sugar beet.

Agriculture's contribution to Farm Business Income (FBI) was barely changed on Cereals farms in 2008/2009 at £77 per hectare (£78 in 2007/2008). Higher yields, but lower crop prices, and increased variable costs, conspired to curtail cereal gross margins, whilst oilseed and protein gross margins improved in the year. However, the removal of set-aside provided the opportunity to increase crop areas. The response of most arable farmers was to establish greater areas of winter and spring cereals. A small improvement in livestock profitability ensured that the agriculture gross margin was unchanged at £564 per hectare. Higher labour costs (of £65 per hectare) and machinery costs including contract (of £239 per hectare) were mitigated by lower occupancy and overhead costs. Fixed costs summed to an average of £495 per hectare. The machinery costs increased by 13 per cent, but fuel and oil costs, of £52 per cent, were 44 per cent higher than in 2007 /2008. The increased energy costs were due to both unit cost increases, and additional energy used to crop former set-aside land.

## 2 Analysis of Arable Farm Performance

### Agriculture Output & Costs - Cereals - England

	2007/8		2008/9	
Farms in Sample	336		357	
Area of farm (hectares)	205.3		213.2	
Owner occupied area (%)	61.8		62.7	
<b>AGRICULTURAL OUTPUT (£)</b>				
	<b>Per farm</b>	<b>Per hectare</b>	<b>Per farm</b>	<b>Per hectare</b>
Crop output (excluding subsidies)	141,946	691	155,287	728
Livestock output (excluding subsidies)	11,632	57	15,519	73
Coupled subsidies	354	2	345	2
Other agricultural output	12,177	59	14,152	66
<b>TOTAL AGRICULTURAL OUTPUT</b>	<b>166,109</b>	<b>809</b>	<b>185,303</b>	<b>869</b>
<b>AGRICULTURAL COSTS</b>				
<b>VARIABLE COSTS (£)</b>				
Crop specific costs	43,025	210	56,831	267
Livestock specific costs	7,051	34	7,825	37
Miscellaneous variable costs	75	0	443	2
<b>TOTAL VARIABLE COSTS</b>	<b>50,150</b>	<b>244</b>	<b>65,099</b>	<b>305</b>
<b>GROSS MARGIN (£)</b>	<b>115,959</b>	<b>565</b>	<b>120,204</b>	<b>564</b>
<b>FIXED COSTS (£)</b>				
Regular labour	9,278	45	11,921	56
Casual labour	2,275	11	1,877	9
Machinery fuel and oil	7,439	36	11,151	52
Other machinery costs (excl. fuel, oil, depreciator)	8,388	41	9,656	45
Machinery, glasshouse and other depreciation	17,178	84	19,015	89
Contract costs	10,302	50	11,224	53
Bank charges and professional fees	4,285	21	4,057	19
Water, electricity, & general	10,137	49	9,656	45
Net interest	4,380	21	4,052	19
Write-off of bad debts			0	0
Rent paid	15,442	75	11,455	54
Property maintenance	823	4	467	2
Depreciation of buildings and works	4,993	24	2,214	10
Miscellaneous fixed costs	6,064	30	8,798	41
<b>TOTAL FIXED COSTS (£)</b>	<b>100,985</b>	<b>492</b>	<b>105,544</b>	<b>495</b>
Profit/ (Loss) on sale of assets	1,106	5	1,742	8
<b>FARM BUSINESS INCOME (Agriculture - £)</b>	<b>16,080</b>	<b>78</b>	<b>16,403</b>	<b>77</b>
<b>CROPPING (mean area (hectares))</b>				
	<b>ha</b>		<b>ha</b>	
Winter wheat	67.6		72.8	
Winter barley	9.7		12.6	
Spring barley	5.8		7.9	
Beans for stockfeed	6.2		6.2	
Winter oilseed rape	27.9		24.6	
Maincrop potatoes	0.1		0.1	
Sugar beet	2.3		2.9	

## 2 Analysis of Arable Farm Performance

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### Cereals Farms - Tenure

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The majority Mixed Tenure category of Cereals farms achieved an FBI of £89 per hectare from agricultural activity, and operated a relatively high-output, but high-cost system. These farms were characterised by high labour and machinery costs, partly mitigated by below average expenditure on contract. Despite similar cropping, the Tenanted farms generated a marginally higher farm gross margin and lower fixed costs before rent. The FBI for both farm groups was £60 per hectare.

In 2008, landlords were active in negotiating higher rents on arable farms as they considered that rents did not adequately reflect the increase in commodity values since previous reviews. A survey conducted for Farmers Weekly, the NFU and TFA revealed that landlords were seeking rent increases of around £11 per hectare<sup>1</sup>. In early 2009, the RICS reported a ten-year peak in the number of applications lodged for an arbitrator to decide the outcome of rent reviews.

### Cereals Farms – County and Joint Character Area (JCA)

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There were sufficient farms in the survey to provide county level data for Essex, Leicestershire, Lincolnshire and North Yorkshire. These varied in size and occupancy from South to North with the larger Essex farms (averaging 219 hectares and 77 per cent owner occupied) to the smaller Yorkshire farms (averaging 164 hectares and 37 per cent owner occupied). The most profitable Cereals farms were found in Lincolnshire, with a Farm Business Income of £181 per hectare, and Essex, with a Farm Business Income of £177 per hectare); these benefited from the favourable performance of the sugar beet crop. The Essex farms cropped an average of 59 per cent of farm area with winter wheat suggesting that second wheats were often grown on these farms. Lacking the opportunity to grow sugar beet and with only 26 per cent of farm area in winter wheat production, the North Yorkshire farms gave an average agricultural Farm Business Income of only £15 per hectare. These farms often engaged with livestock production and carried above average fixed costs of £571 per hectare.

We are able to report Cereals farm performance for The Fens Joint Character Area (JCA) and the South Suffolk and North Essex Clayland JCA. These, traditionally productive agricultural areas, gave a respectable agricultural Farm Business Income of £220 and £154, mainly due to their involvement in sugar beet production and above-average cropping with winter wheat.

### Cereals Farms – Performance Group

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In 2009, most Cereals farms generated a positive contribution to FBI from their agricultural activities. There was again a wide range of performance of Cereals farms with the least profitable earning a FBI of -£170 per hectare and the most profitable earning £316 per hectare. However, this range was not as wide as in 2007, possibly due to the reduced variation in average wheat selling price between farms. Figure 2.3 shows the range in performance, measured as farm business income per hectare.

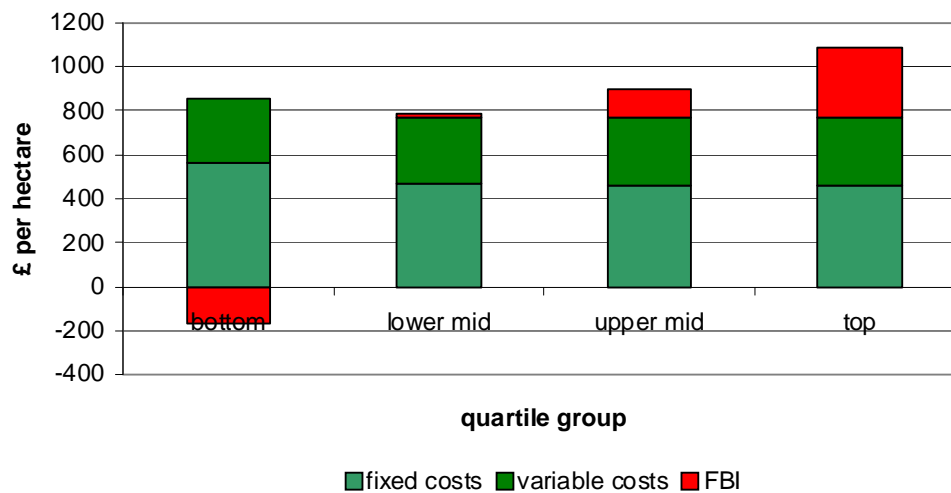
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<sup>1</sup> Farmers Weekly, 23 May 2008

## 2 Analysis of Arable Farm Performance

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Figure 2.3 FBI Performance, Cereals Farms, 2007



Indicators of high agricultural performance of Cereals farms in 2009 included:

- High proportion of wheat grown (averaging 40 per cent of farm area for top quartile)
- High proportion of all cereals grown (exceeding 50 per cent of farm area)
- Some sugar beet grown (however this is a component of farm type classification)
- Reduced exposure to livestock production
- High value of crops sold but correspondingly higher expenditure on variable costs
- Above average expenditure on machinery
- Average expenditure on labour
- Average farm size

In addition, the better performing businesses tended to have an increased proportion of owner-occupied land, and consequently paid less for land rental. This is partly a function of the inclusion of rent in the calculation of the FBI measure of income. Similarly, the better performing businesses tended to not have borrowed money.

### General Cropping Farms

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The 2008 /2009 sample of General Cropping farms grew an increased area of winter and spring cereals. The area committed to potato production increased by an average of 16 per cent to 9.9 hectares or 4.6 per cent of farm area. The farms grew a slightly reduced area of sugar beet; this was five per cent lower than in 2007 at 13.8 hectares, or 6.4 per cent of farm area.

Agriculture's share of the Farm Business income of General Cropping farms increased to £216 per hectare, mainly to the higher value of the sugar beet crop.

Agricultural output of General Cropping farms increased by 20 per cent to £1,546 per hectare. Alongside the improved crop output, there were further gains in output from contracting work and from improved livestock prices.

Overall, fixed costs increased by ten per cent. Labour costs increased by an inflationary three per cent to £165 per hectare. General Cropping farms experienced a 21 per cent increase in machinery and contract costs to £342 per hectare (£282 in 2007/2008). Of these, fuel and oil charges increased by 46 per cent, to £76 per hectare.

## 2 Analysis of Arable Farm Performance

Occupancy charges (£201 per hectare) and overhead charges (£121 per hectare), were little changed on the previous year.

### Agriculture Output & Costs - General cropping - England

	2007/8		2008/9	
Farms in Sample	195		191	
Area of farm (hectares)	220.3		214.4	
Owner occupied area (%)	53.9		50.9	
<b>AGRICULTURAL OUTPUT (£)</b>				
	<b>Per farm</b>	<b>Per hectare</b>	<b>Per farm</b>	<b>Per hectare</b>
Crop output (excluding subsidies)	240,633	1,092	278,034	1,297
Livestock output (excluding subsidies)	27,176	123	29,438	137
Coupled subsidies	288	1	187	1
Other agricultural output	14,788	67	23,859	111
<b>TOTAL AGRICULTURAL OUTPUT</b>	<b>282,884</b>	<b>1,284</b>	<b>331,519</b>	<b>1,546</b>
<b>AGRICULTURAL COSTS</b>				
<b>VARIABLE COSTS (£)</b>				
Crop specific costs	75,821	344	90,463	422
Livestock specific costs	16,333	74	17,456	81
Miscellaneous variable costs	61	0	853	4
<b>TOTAL VARIABLE COSTS</b>	<b>92,215</b>	<b>419</b>	<b>108,771</b>	<b>507</b>
<b>GROSS MARGIN (£)</b>	<b>190,669</b>	<b>866</b>	<b>222,748</b>	<b>1,039</b>
<b>FIXED COSTS (£)</b>				
Regular labour	25,303	115	25,037	117
Casual labour	9,817	45	10,255	48
Machinery fuel and oil	11,514	52	16,201	76
Other machinery costs (excl. fuel, oil, depreciation)	14,897	68	15,820	74
Machinery, glasshouse and other depreciation	23,773	108	24,537	114
Contract costs	11,964	54	16,661	78
Bank charges and professional fees	5,309	24	5,055	24
Water, electricity, & general	14,970	68	14,752	69
Net interest	6,244	28	6,075	28
Rent paid	25,344	115	24,374	114
Property maintenance	876	4	557	3
Depreciation of buildings and works	5,961	27	4,074	19
Miscellaneous fixed costs	9,187	42	13,953	65
<b>TOTAL FIXED COSTS (£)</b>	<b>165,159</b>	<b>750</b>	<b>177,352</b>	<b>827</b>
Profit/ (Loss) on sale of assets	268	1	866	4
<b>FARM BUSINESS INCOME (Agriculture - £)</b>	<b>25,778</b>	<b>117</b>	<b>46,261</b>	<b>216</b>
<b>CROPPING (mean area (hectares))</b>				
	ha		ha	
Winter wheat	56.1		64.7	
Winter barley	8.8		11.0	
Spring barley	7.6		7.8	
Beans for stockfeed	1.7		1.4	
Winter oilseed rape	17.9		15.1	
Maincrop potatoes	8.5		9.9	
Sugar beet	14.6		13.8	

## 2 Analysis of Arable Farm Performance

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### General Cropping Farms - Tenure

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In common with Mixed Tenure Cereals farms, Mixed Tenure General Cropping farms tend to be of above average size, averaging 247 hectares. At 152 hectares, owner-occupied farms tend to be smaller than wholly rented farms which averaged 173 hectares in 2008.

The FBI calculation is made after deduction of cash rent payments. But even after deduction of rent of £121 per hectare (this is the cost of rent on the rented land divided by the area of the whole farm); the Mixed Tenure farms achieved an average FBI from agriculture of £239 per hectare. These farms grew average areas of cereal and sugar beet but committed 5.5 per cent of farm area to potato production. Their exposure to intensive crops resulted in high crop output and high fixed costs.

The owner-occupied farms grew relatively large areas of cereals and sugar beet at relatively high cost. With only minimal rental charges, their FBI was £176 per hectare. However, if they had paid rent, these farms would have been the least profitable tenure group. They carried the highest interest charges of £59 per hectare.

The rented farms in the General Cropping classification grew a limited area of potatoes and sugar beet. Their less intensive approach resulted in below-average output and costs; in particular, their labour costs of £84 per hectare were low.

Rent for potato production was higher in 2008 and typically around £350 to £400 per hectare in South Lincolnshire and Cambridgeshire.

### General Cropping Farms – County

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FBI costings are available for General Cropping farms in Cambridgeshire, Lincolnshire and Norfolk. These counties generated above-average agriculture FBI of £384, £238 and £305 respectively. All three counties grew a high proportion of cereals, and the Cambridgeshire farms grew this crop on half of their farm area. The Cambridgeshire and Norfolk farms cropped over 14 per cent of their land with the profitable sugar beet crop. The crop output and fixed costs tracked intensity of cropping. Livestock was important on the Norfolk farms.

### General Cropping Farms – Performance Group

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Figure 2.4 summarises the output and costs of General Cropping farms by FBI performance group. The range of performance between the highest and lowest quartile groups was not as wide in 2008, probably due to the narrow range of wheat prices achieved and reduced variation in potato enterprise performance between businesses.

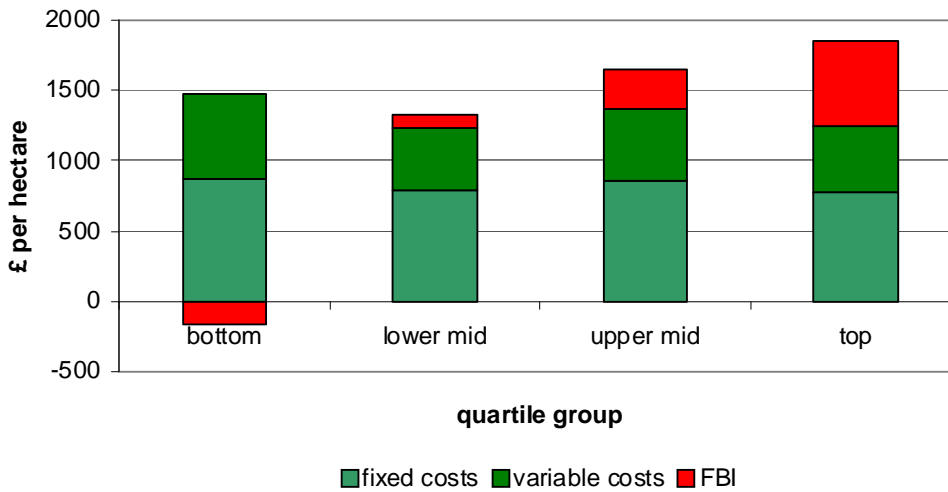
Indicators of favourable performance of General Cropping farms in 2009 were:

- High proportion of land in sugar beet production (10 per cent of high performer's land)
- Good crop performance
- Well mechanised farms with correspondingly low labour costs

The more profitable farms tended to be relatively small (averaging 69 hectares) and were 69 per cent owner occupied. Whilst this contributed to a below-average rental charge, it was the poorest performing farms that paid the lowest rent.

## 2 Analysis of Arable Farm Performance

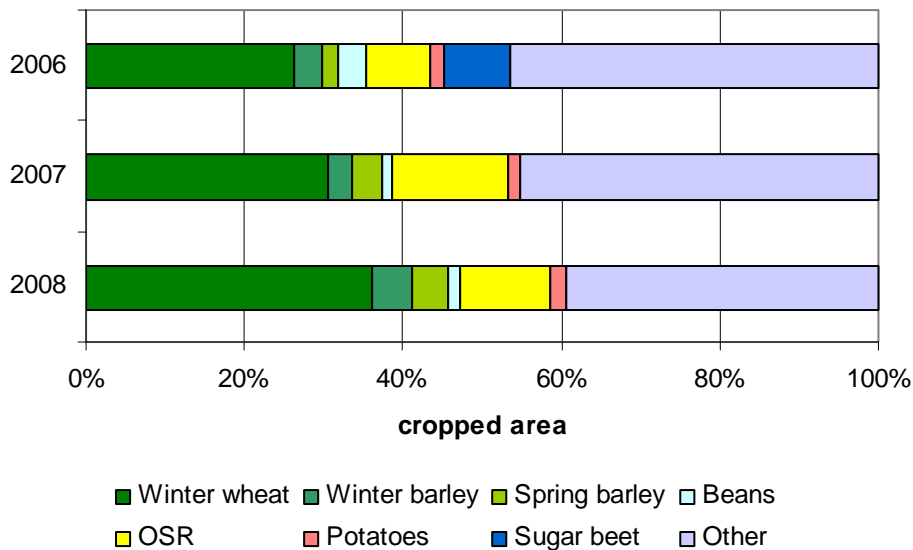
Figure 2.4 FBI Performance, General Cropping Farms, 2007



### Beet Discontinuers

The ongoing involvement in the Farm Business Survey of a group of farms that grew sugar beet in 2006 but discontinued sugar beet production in 2007 provides the opportunity to report on the response of farmers to their new circumstances. The cropping activity on these farms in 2006, 2007 and 2008 is shown in Figure 2.5.

Figure 2.5 Cropping on Farms Ceasing Sugar Beet Production After the 2006 Harvest



In common with many arable farmers, the beet discontinuers expanded their cropped area following the removal of set-aside restrictions. They increased cereal production to 46 per cent of farm area from 32 per cent in 2006. They reduced the area of oilseed rape to an average of 19.3 hectares, having sharply increased production in 2007. The farms that formerly grew sugar beet often had soil that was suitable for potato production and they increased potato production to two per cent of farm area. These farms continued to engage in livestock production. Despite their lost opportunity to produce sugar beet, these farms saw a 25 per cent improvement in FBI to £110 per hectare. This position was similar to that of the combination of Cereals and General Cropping farms of which this group comprises.

## 2 Analysis of Arable Farm Performance

### Agriculture Output & Costs - Beet Discontinuers - England

	2007/8		2008/9	
Farms in Sample	35		28	
Area of farm (hectares)	172.5		169.9	
Owner occupied area (%)	50.1		45.5	
<b>AGRICULTURAL OUTPUT (£)</b>				
	<b>Per farm</b>	<b>Per hectare</b>	<b>Per farm</b>	<b>Per hectare</b>
Crop output (excluding subsidies)	172,429	1,000	194,772	1,147
Livestock output (excluding subsidies)	33,814	196	36,276	214
Coupled subsidies	296	2	263	2
Other agricultural output	13,731	80	16,220	95
<b>TOTAL AGRICULTURAL OUTPUT</b>	<b>220,271</b>	<b>1,277</b>	<b>247,531</b>	<b>1,457</b>
<b>AGRICULTURAL COSTS</b>				
<b>VARIABLE COSTS (£)</b>				
Crop specific costs	49,820	289	63,706	375
Livestock specific costs	22,746	132	22,945	135
Miscellaneous variable costs	106	1	390	2
<b>TOTAL VARIABLE COSTS</b>	<b>72,672</b>	<b>421</b>	<b>87,042</b>	<b>512</b>
<b>GROSS MARGIN (£)</b>	<b>147,599</b>	<b>856</b>	<b>160,489</b>	<b>945</b>
<b>FIXED COSTS (£)</b>				
Regular labour	11,540	67	12,057	71
Casual labour	10,738	62	14,326	84
Machinery fuel and oil	8,771	51	12,224	72
Other machinery costs (excl. fuel, oil, depreciator)	11,112	64	11,838	70
Machinery, glasshouse and other depreciation	20,387	118	24,128	142
Contract costs	10,978	64	10,908	64
Bank charges and professional fees	4,638	27	3,954	23
Water, electricity, & general	12,426	72	12,409	73
Net interest	10,127	59	9,404	55
Rent paid	19,972	116	17,583	104
Property maintenance	937	5	441	3
Depreciation of buildings and works	5,335	31	3,302	19
Miscellaneous fixed costs	6,544	38	12,330	73
<b>TOTAL FIXED COSTS (£)</b>	<b>133,506</b>	<b>774</b>	<b>144,905</b>	<b>853</b>
Profit/ (Loss) on sale of assets	1,042	6	3,080	18
<b>FARM BUSINESS INCOME (Agriculture - £)</b>	<b>15,135</b>	<b>88</b>	<b>18,664</b>	<b>110</b>
<b>CROPPING (mean area (hectares))</b>				
	ha		ha	
Winter wheat	52.9		61.3	
Winter barley	4.9		8.8	
Spring barley	6.6		7.6	
Beans for stockfeed	2.3		2.6	
Winter oilseed rape	25.2		19.3	
Maincrop potatoes	2.6		3.3	
Sugar beet	-		-	

## 2 Analysis of Arable Farm Performance

### 2.3 Agri-environment

Agri-environment scheme participation accounted for increased output from arable farms in 2008/2009. Table 2.1 shows that agri-environment receipts on Cereals and General Cropping farms had converged in 2007/2008 and Cereals farms continued to receive about £3 per hectare more than General Cropping farms.

Table 2.1 Agri-environment Output, Cereals and General Cropping Farms, 2004/2005 to 2007/2008

	2005/2006	2006/2007	2007/2008	2008/2009
£ per hectare				
Cereals	22	31	41	44
General Cropping	17	27	38	41

At March 2009, 4.68 million hectares (or 50 per cent of England's farmed area) had been entered into Entry Level Stewardship(ELS)<sup>1</sup>. Higher Level Stewardship(HLS) occupied a total of 324 thousand hectares, of which 267 thousand hectares was on farms with ELS as well. Including the historic Countryside Stewardship and Environmentally Sensitive Area schemes, a total of 65 per cent of the country's farmed area was within agri-environment schemes.

In November 2008, Defra announced a review of ELS and HLS points and payment rates<sup>2</sup>. The review took place in the context of higher grain prices and reduced farmer enthusiasm for agri-environment scheme participation. Only 60 per cent of farmers in the Market Deeping pilot ELS area chose to renew their arrangement, and the renewal rate across all of the pilot areas including some predominantly livestock producing areas, was 73 per cent<sup>3</sup>.

### 2.4 Diversification

Table 2.2 shows output and costs for diversification activity on Cereals and General Cropping farms. In the Farm Business Survey, agricultural contracting is deemed to be an agricultural activity and such receipts were recorded within 'agriculture' earlier in this chapter.

Table 2.2 Diversification Output and Costs, Cereals and General Cropping Farms, 2004/2005 to 2007/2008

Cereals	2005/2006	2006/2007	2007/2008	2008/2009
£ per hectare				
Output	75	91	94	85
Costs	19	30	35	41*
FBI (Diversification)	56	61	58	44
FBI	133	213	357	327

<sup>1</sup> Natural England

<sup>2</sup> Defra News Release 363/08 [www.defra.gov.uk](http://www.defra.gov.uk) 14 November 2008

<sup>3</sup> Farmers Weekly, 23 January 2009

## 2 Analysis of Arable Farm Performance

General Cropping	2005/2006	2006/2007	2007/2008	2008/2009
£ per hectare				
Output	53	61	57	66
Costs	12	17	15	33*
FBI (Diversification)	41	44	43	33
FBI	198	299	368	448

\* Revised apportionment of overhead costs from 2008 /2009

### 2.5 Single Payment Scheme

Table 2.3 shows Single Payment, calculated as described in the box below.

Table 2.3, Arable Area Payment and Single Payment Scheme Output, Cereals and General Cropping Farms, 2003/2004 to 2006/2007

Cereals	2005/2006	2006/2007	2007/2008	2008/2009
£ per hectare				
Single Payment	194	187	181	199
Costs	0	1	0	25*
FBI (Single Payment)	194	187	181	174
FBI	133	213	357	327

General Cropping	2005/2006	2006/2007	2007/2008	2008/2009
£ per hectare				
Single Payment	168	181	171	192
Costs	0	0	0	25*
FBI (Single Payment)	168	181	171	166
FBI	198	299	368	448

\* Revised apportionment of overhead costs from 2008 /2009

#### Box 2.1 Calculation of Single Payment in 2008

For the 2008 Single Payment Scheme, 55 per cent of the payment was based on historic entitlements and the remaining 45 per cent on an area basis. The exchange rate for conversion of the single payment, protein supplement and energy crops payment was £0.7903 per euro. This represented a 13 per cent improvement in the exchange rate compared to 2007. Combined EU and UK modulation increased to 18 per cent.

The net payment to growers after all deductions for the flat rate element of the payment and for set-aside entitlements was £91.98 per hectare.

In 2008, plantings of energy crops in the EU fell short of the 2 million hectare maximum guaranteed area allowing full payment of £35.56 per hectare.

## 2 Analysis of Arable Farm Performance

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The EU Commission agreed a zero rate for set-aside in 2008, and later abolished set-aside altogether. Many farmers decided to leave areas of land uncropped and were obliged to maintain these under cross compliance conditions (GAEC 12).

From 2008, the Fruit, Vegetable and Potato (FVP) authorisation system was discontinued. This enabled production of these crops using Normal entitlements without a restriction on the area produced. The existing FVP entitlements effectively became Normal entitlements.

In comparison with previous years, the Rural Payments Agency made more timely progress with processing of Single Payment Scheme claims and this had a favourable impact on farm cash flow.

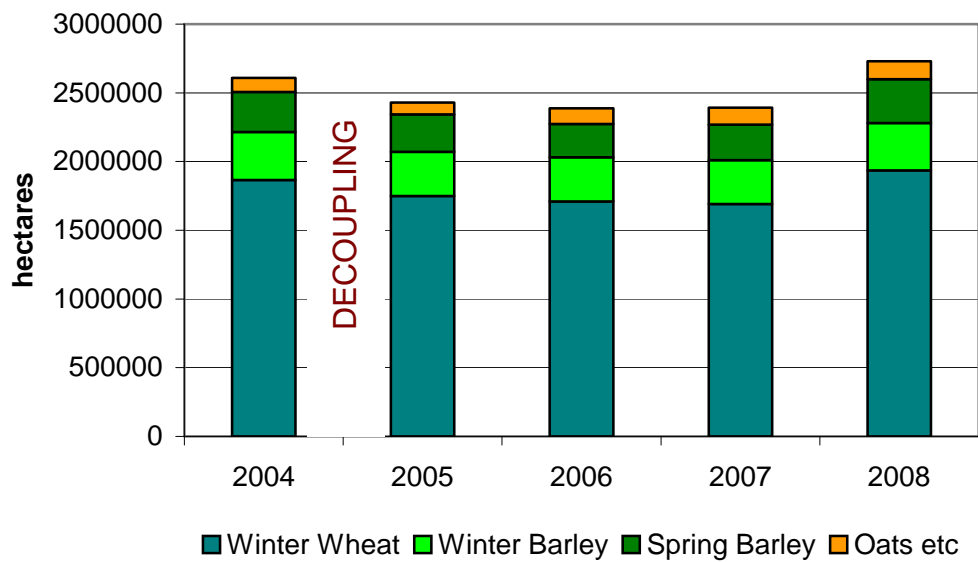


### 3 Cropping And Crop Area

#### 3.1 Cropping and Crop Areas

The areas of cereal crops, break crops and intensive crops, as recorded in Defra's June Survey, are shown in Figures 3.1, 3.2 and 3.3 below. In 2008, cropping decisions were determined by the effective removal of set-aside and the lifting of FVP authorisations as a condition of the Single Payment Scheme, as well as the anticipated financial returns from individual crops.

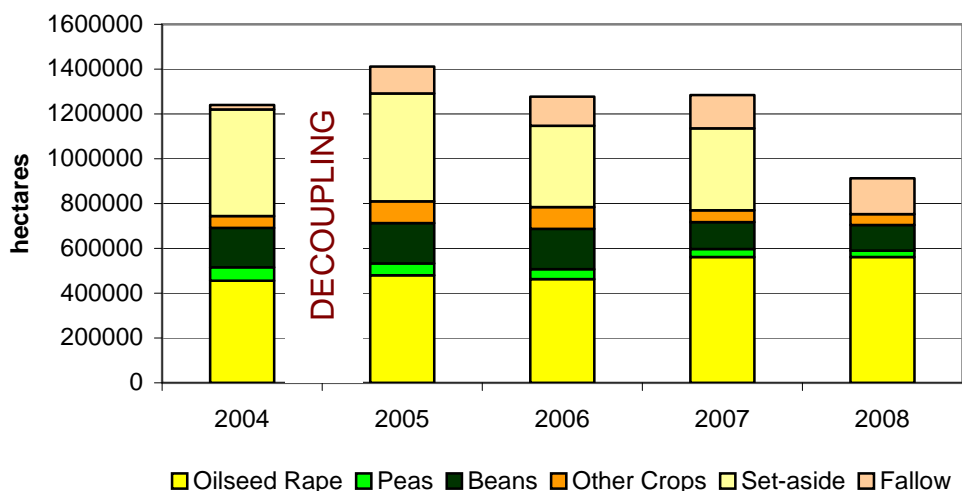
Figure 3.1 Cereal Crop Area, 2004 to 2008



Source: Defra June Survey

The removal of set-aside obligations made an additional 275,000 hectares available for arable production. Strong prevailing cereal prices were an incentive for an extended program of autumn drilling. As a result, the areas of winter wheat, winter barley and spring barley increased respectively by 14, 8 and 24 per cent.

Figure 3.2 Break Crop Area, 2004 to 2008



Source: Defra June Survey

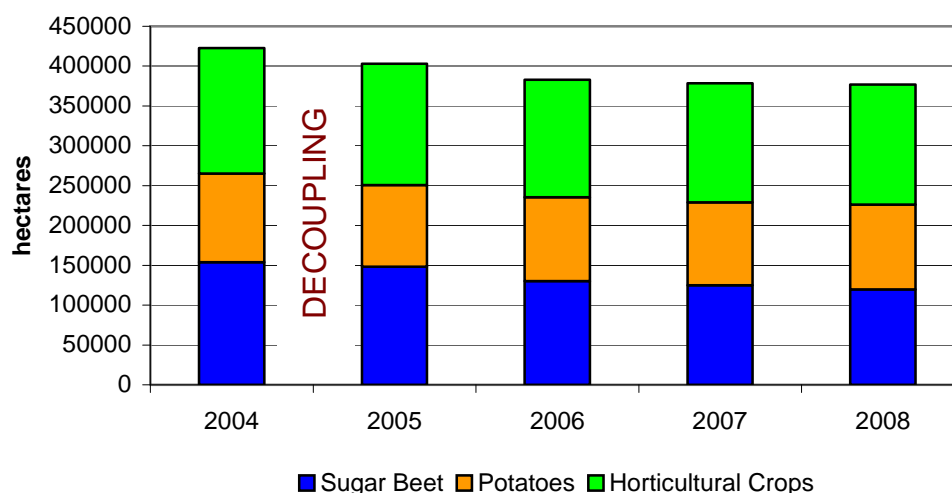
### 3 Cropping And Crop Area

Despite press speculation of a reduction in the area of oilseed rape, the area was almost unchanged on 2007 at just under 561,000 hectares. The opportunity to grow industrial crops on set-aside land was lost with the removal of set-aside. In 2007, about 73,000 hectares of oilseed rape had been grown on set-aside land.

The area of peas and beans reduced respectively by 19 and 14 per cent. Press speculation had previously predicted reductions in crop area of 40 per cent and processors had expressed concern about availability of supply<sup>1</sup>.

The removal of set-aside provided farmers with the choice of whether to crop former set-aside land or to leave it uncropped. In the event, the majority was converted to arable production but the area of bare fallow and uncropped land managed to GAEC standards increased by seven per cent to 159,400 hectares. This recorded area was subsequently found to be an underestimate as it excludes land used for bird cover and game strips.

Figure 3.3 Sugar Beet, Potato and Horticultural Crop Area, 2004 to 2008



Source: Defra June Survey

Potato and horticultural crop areas increased by two and one per cent respectively. Part of the reason for the small increase may have been the removal of FVP authorisations allowing some producers to expand their area of these crops.

#### UK Sugar Quota and the Sugar Restructuring Scheme

The area of sugar beet production reduced by a further four per cent to a little under 120,000 hectares as growers, concerned about the price of the crop, minimised production.

The EU Sugar Restructuring Scheme was negotiated in 2007 to provide compensation for reduction in sugar beet quota of which ten per cent was payable to contractors and machinery contractors<sup>2</sup>. However, the arrangement in Europe for making payment was dependent on either a national approach to forfeit quota or for sufficient individual farmers to relinquish contract tonnage entitlement to trigger the payment.

In February 2008, Defra confirmed that the UK would relinquish 13.5 per cent (165,000 tonnes) from the national sugar beet quota from October 2008 permitting EU compensation

<sup>1</sup> Farmers Weekly Interactive, [www.fwi.co.uk](http://www.fwi.co.uk), 14 February 2008

<sup>2</sup> Europa, europa.eu 26 September 2007

### 3 Cropping And Crop Area

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for the reduction<sup>1</sup>. British Sugar had already reduced the contracted tonnage by ten per cent leaving a further 3.5 per cent cut for 2009. The pre-emptive confirmation from Defra alleviated the requirement for individual growers to forfeit contract tonnage entitlement.

Arrangements were made to make Sugar Restructuring Aid payments to farmers based on ownership of contract tonnage entitlement in 2006, 2007 and 2008. The payments have not been included in the results published in this edition of Crop Production in England but will be included in the 2009/2010 results

#### 3.2 Areas of Other Crops

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Among the 'other crops' are a number of crops with mainly non-food markets. The areas of these crops grown in England between 2004 and 2008 are set out in Table 3.1 below.

Table 3.1 Area of Non-food Crops in the UK, 2004 to 2008 (hectares)

	2004	2005	2006	2007	2008
Linseed	32003	52285	36152	12301	16100
Borage	n/c	n/c	n/c	n/c	6100
Hemp and Flax	1598	1208	1801	n/c	n/c
Medicinal Crops	3065	1823	806	858	n/c
<i>Miscanthus</i>	302	658	2345	4032	7500
Short Rotation Coppice	175	884	1719	2085	6200

n/c = not collected

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Sources: National Non Food Crops Centre, [nnfcc.co.uk](http://nnfcc.co.uk)  
Defra June Survey

The most widely grown of these crops is linseed. The linseed area has varied annually, partly due to cyclical marketing patterns. Higher prices at times of reduced supply have encouraged expansion of production, which has in turn reduced prices and therefore production.

#### *Miscanthus* and Short Rotation Coppice

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With established market outlets, resulting from renewable energy policy, the area of *Miscanthus* and short rotation coppice (SRC) has increased steadily in recent years. The rationale for production of these crops is that<sup>2</sup>:

- Analysis of the whole chain from crop to fuel shows high carbon savings and greenhouse gas reductions are achievable
- SRC willow and *Miscanthus* are fast-growing perennials and are not food crops
- Energy costs for cultivation are low
- They have a low requirement for nitrogen and plant protection inputs

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<sup>1</sup> British Sugar, 8 February 2008

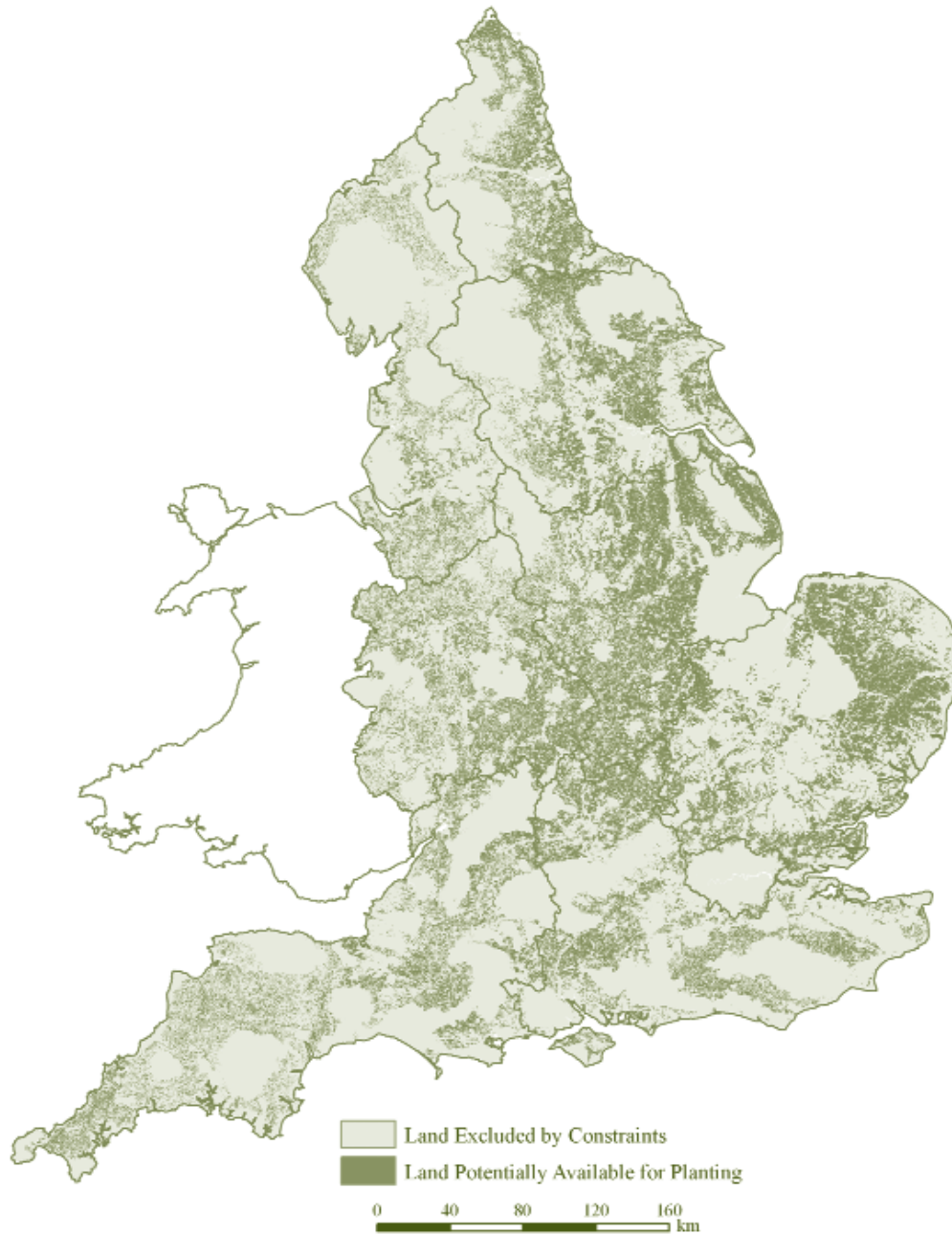
<sup>2</sup> RELU, Assessing the social, environmental and economic impacts of increasing rural land use under energy crops, September 2009

### 3 Cropping And Crop Area

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Map 3.1 shows the result of a suitability mapping exercise for *Miscanthus* production. Firstly, Geographical Information System (GIS) data was used to map variations in predicted *Miscanthus* yield and to mask areas where the crop would not be used due to constraints on land use. High quality land that would be expected to remain in food production was excluded. The results of the exercise are that *Miscanthus* production might be feasible for growers in the Midlands, North east England, Norfolk and Suffolk.

Map 3.1 Results of a Suitability Mapping Exercise for *Miscanthus* Production in England



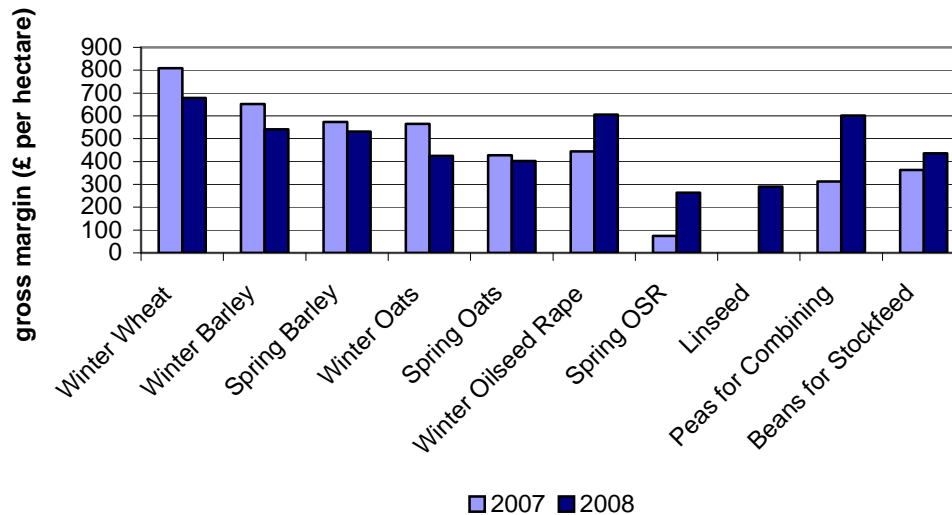
Source: RELU, Assessing the social, environmental and economic impacts of increasing rural land use under energy crops, September 2009

## 4 Crop Enterprise Performance

### 4.1 Crop Gross Margins

Figure 4.1 compares the average gross margins of crops grown in 2007 and 2008

Figure 4.1 Gross Margins of Arable Crops 2007 and 2008



The 2008 harvest saw lower gross margins for all cereal crops, and for winter cereal crops in particular. Lower prices, partially mitigated by higher yields, reduced the output of cereal crops, but higher variable costs confirmed the reduction in their gross margins.

Oilseed crops enjoyed sharply increased prices, and correspondingly achieved greater gross margins despite higher input prices. Yields were slightly lower than in 2007.

Protein crops enjoyed improved gross margins due to higher crop yield and despite increased input costs. The improved price for peas grown for human consumption ensured greatly improved gross margin for this crop.

The sharp increase in yield was the driver of the greatly improved sugar beet gross margin. Higher yields and therefore supply of ware potatoes onto the market led to a reduction in price accounting for the small reduction in the average ware potato gross margin.

### 4.2 Cereals

The average winter wheat gross margin of £679 per hectare was 16 per cent lower than in 2007. The crop yielded well, especially on good wheat-producing land as indicated by the average yield of 9.9 tonnes per hectare across Suffolk. However, crop prices, averaging £115 per tonne, were lower. The consequence of differing marketing strategies between farms determined that there would be important variations in prices and therefore in gross margins between farms. In a break from our observations in previous years, crop prices attained by larger farms exceeded those of smaller farms.

## 4 Crop Enterprise Performance

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The average winter barley gross margin was £541 per hectare, reduced from £652 per hectare in 2007. The average crop yield increased to 7.0 tonnes per hectare from 6.3 tonnes per hectare in 2007.

The spring barley crop was grown on a greater proportion of farms and the average area grown edged up to give an overall increase in the area grown of 24 per cent. At an average yield of 5.8 tonnes per hectare, and price of £126 per tonne, the 2008 spring barley crop gave an average gross margin of £532 per hectare.

The 2008 winter oat crop yielded an average of 6.5 tonnes per hectare and gave an average gross margin of £425 per hectare. Compared to 2007, the spring oat crop showed a similar level of performance and a gross margin of £402 per hectare.

### 4.3 Oilseeds

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The 2008 oilseed rape crop gave a gross margin of £606 per hectare compared to £445 in 2007. The average yield was 3.2 tonnes per hectare, compared with 3.3 tonnes per hectare in 2007, and the average price increased to £290 per tonne compared to £219 per tonne in 2007.

Growers in all parts of England reported difficult dry conditions for oilseed rape establishment. But with several years' experience of this problem, many had devised suitable approaches for their land. In recent years, producers have explored low-cost methods of oilseed rape establishment that conserve moisture as well as fuel, machinery and labour costs. These include broadcasting the seed into stubble or applying seed in conjunction with subsoiling.

## 4 Crop Enterprise Performance

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For spring oilseed rape, the improved price of £293 per tonne mitigated the small reduction in the yield, to 1.6 tonnes per hectare, giving an improved gross margin of £264 per hectare. This level of performance would not be expected to cover the full fixed costs associated with production of the crop. But spring oilseed rape is usually grown in specific circumstances, including after failed winter oilseed rape crops and accounts for about three per cent of the oilseed rape area.

Renewed interest in linseed production provides sufficient data for us to resume reporting of the linseed gross margin. At £290 per hectare, the crop performed a little better than spring oilseed rape but would not be expected to cover the fixed costs incurred in its production. Buoyed by global increases in oilseed prices, the average 2008 linseed price was £300, this compares favourably with the average price of £161 per tonne achieved by growers in 2004 to 2006.

### 4.4 Peas and Beans

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Peas are subject to annual volatility in yields and prices, but both improved on 2008 to secure an average gross margin of £602 per hectare. Peas do not offer consistency in performance but nearly matched the performance of winter oilseed rape in 2008. Performance inevitably varied between farms due to the differing quality and value of crop sold. Spring rain generally benefits the growth of spring crops and was the driver of increased yield of 3.6 tonnes per hectare of the 2008 pea crop (2.6 tonnes per hectare in 2007).

Facing reduced market prices, beans grown for stockfeed sold at an average price of £130 per tonne but yielded 4.7 tonnes per hectare. The resulting gross margin improved to £436 per hectare from £363 per hectare in 2007.

### 4.5 Sugar Beet

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The average gross margin was £1,116 per hectare. This varied across counties from £1,052 in Suffolk to £1,166 in Lincolnshire. The average yield of 63.8 tonnes per hectare was 17 per cent higher than in 2007. The average price received by growers was £28 per tonne of clean beet.

Growers wishing to retain their contract tonnage entitlement were required to either produce sugar beet or lease out their entitlement so that another grower takes responsibility for the production.

From 2008, all sugar beet growers were required to be members of the Assured Combinable Crop Scheme in order to sell to British Sugar to provide evidence that sugar processing is carried out in a way to ensure good management of food safety.

The 2008 /2009 sugar beet yield increased to 63.8 tonnes per hectare of clean beet. The yield in Norfolk was 61.1 tonnes per hectare, rising to 67.1 tonnes per hectare in Lincolnshire.

In their review of the 2008 sugar beet growing season, researchers from Brooms Barn and British Sugar cited the warm conditions in May and the availability of moisture through the summer as the main contributing factors to the record sugar beet yield<sup>1</sup>.

For British Sugar, there was concern that although high yields had allowed growers to exceed their production quotas, they had reduced the area of sugar beet to the point that at the

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<sup>1</sup> British Sugar Beet Review, Spring 2009

## 4 Crop Enterprise Performance

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average yield of the previous three years, they would have failed to meet quota<sup>1</sup>. Almost 16 per cent of growers in the Newark factory area did not achieve their contracted tonnage.

### 4.13 Ware Potatoes

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The 2008 potato gross margin of £3,292 per hectare was slightly lower than the previous year's £3,502 per hectare. Overall, the improved yield of 38.8 tonnes per hectare increased supply which, in turn, reduced the price to £133 per tonne, leaving output almost unchanged at £5,158 per hectare. Variable costs increased by eight per cent to £1,866 per hectare.

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<sup>1</sup> British Sugar Beet Review, Spring 2009

## 5 Organic Arable Performance

### 5.1 Performance of Organic Arable Businesses

#### Market Overview and Organic Crop Areas

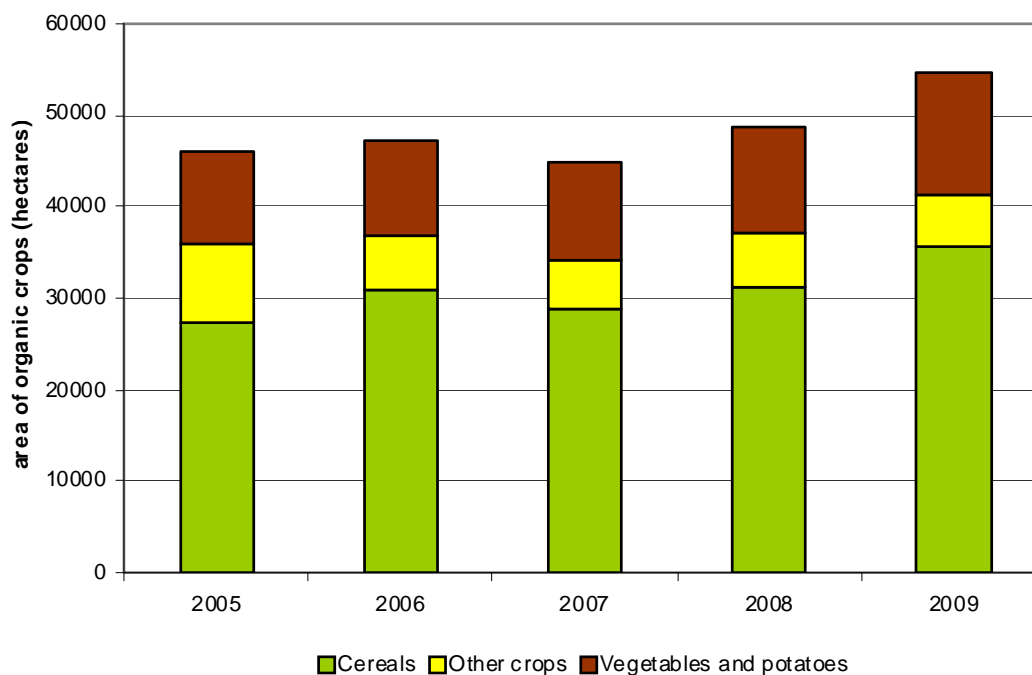
In November 2008, the Defra Secretary of State, Hilary Benn, endorsed organic production in a presentation to the 2008 Soil Association conference. He linked organic production with sustainability and, in turn described the importance of sustainability to food security<sup>1</sup>.

The market place for organic food was challenging in 2008. Although the value of organic food sold rose by 1.7 per cent, the volume sold reduced and fewer customers expressed an intention to purchase organic food<sup>2</sup>. Organic produce sales increased in the first nine months of 2008, but by late 2008, sales declined as the economic downturn took hold. Some retailers reported a switch from sales of premium fresh organic foods to organic frozen vegetables.

In early 2009, organic arable producers were faced with the possibility that Defra would permit organic livestock farmers to feed animals with conventionally produced feed, without the requirement to enter a two-year conversion period when returning their land to organic status<sup>3</sup>. The Soil Association and other organic organisations proposed this arrangement, under which conventionally-fed animals would be sold as conventional and not organic. The possible development caused concern among organic arable producers who already faced reduced demand for feed crops. In the event, Soil Association members rejected the proposals and they were not carried forward<sup>4</sup>.

Figure 5.1 shows changes in the national production of organic crops in England since 2005.

Figure 5.1 Area of Organic Crops in England, 2005 to 2008



Source: Defra

<sup>1</sup> Farmers Weekly, 21 November 2008

<sup>2</sup> Soil Association Organic Market Report 2009

<sup>3</sup> Farmers Weekly, 6 February 2009

<sup>4</sup> Farmers Weekly, 13 March 2009

## 5 Organic Arable Performance

### 5.2 Organic Business Performance

#### Agriculture Output & Costs - Organic (Cereals and General cropping) - England

	2007/8	2008/9
Farms in Sample	25	25
Area of farm (hectares)	123.2	162.6
Owner occupied area (%)	55.0	57.6

AGRICULTURAL OUTPUT (£)	Per farm	Per hectare	Per farm	Per hectare
Crop output (excluding subsidies)	93,545	760	90,744	558
Livestock output (excluding subsidies)	50,393	409	31,914	196
Coupled subsidies	376	3	429	3
Other agricultural output	4,998	41	11,308	70
<b>TOTAL AGRICULTURAL OUTPUT</b>	<b>149,312</b>	<b>1,212</b>	<b>134,395</b>	<b>827</b>

#### AGRICULTURAL COSTS

##### VARIABLE COSTS (£)

Crop specific costs	20,144	164	23,081	142
Livestock specific costs	32,902	267	13,785	85
Miscellaneous variable costs	78	1	113	1
<b>TOTAL VARIABLE COSTS</b>	<b>53,123</b>	<b>431</b>	<b>36,979</b>	<b>227</b>
<b>GROSS MARGIN (£)</b>	<b>96,189</b>	<b>781</b>	<b>97,416</b>	<b>599</b>

##### FIXED COSTS (£)

Regular labour	16,596	135	14,798	91
Casual labour	6,074	49	6,586	41
Machinery fuel and oil	6,651	54	8,108	50
Other machinery costs (excl. fuel, oil, depreciation)	7,503	61	8,478	52
Machinery, glasshouse and other depreciation	12,561	102	15,629	96
Contract costs	11,666	95	15,603	96
Bank charges and professional fees	3,073	25	2,631	16
Water, electricity, & general	10,834	88	9,653	59
Net interest	2,938	24	2,510	15
Rent paid	14,190	115	11,400	70
Property maintenance	532	4	276	2
Depreciation of buildings and works	4,296	35	1,608	10
Miscellaneous fixed costs	1,610	13	5,786	36
<b>TOTAL FIXED COSTS (£)</b>	<b>98,523</b>	<b>800</b>	<b>103,066</b>	<b>634</b>
Profit/ (Loss) on sale of assets	53	0	355	2
<b>FARM BUSINESS INCOME (Agriculture - £)</b>	<b>-2,281</b>	<b>-19</b>	<b>-5,294</b>	<b>-33</b>

CROPPING (mean area (hectares))	ha	ha
Winter wheat	9.7	18.7
Winter barley	2.6	1.5
Spring barley	4.1	4.2
Beans for stockfeed	3.8	6.3
Winter oilseed rape	-	-
Maincrop potatoes	1.0	1.1
Sugar beet	0.2	-

## 5 Organic Arable Performance

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The agricultural activities of organic arable farms showed a small loss in 2008/2009; their Farm Business Income averaged -£33 per hectare (-£19 per hectare in 2007/2008). The combined activities of both agriculture and agri-environment scheme participation will have been profitable and it is usual for organic farms to actively participate in Organic Entry Level Stewardship (OELS) and other schemes.

The sample of farms in 2008/2009 included less livestock and the average farm size, at 163 hectares, was 33 per cent higher. The organic farms were, on average, 58 per cent owner-occupied, and this is consistent with the expected ownership of their conventional counterparts. However, the average organic farm was 24 per cent smaller than the average conventional arable farm.

On both a whole farm and area basis, organic arable farms made reduced expenditure on labour, property and overhead costs. But this could be largely explained by the reduced participation in livestock production of farms in the sample.

It is noticeable that the organic arable farms experienced only a small increase in fuel and machinery costs, and on an area basis, they reduced expenditure. In 2008, a year of high oil prices, the Soil Association commissioned research into the impact on profitability of organic and conventional farming at higher oil prices<sup>1</sup>. Organic production is less dependent on the oil-derived price of nitrogen fertiliser reducing the impact of higher oil price. However, higher cultivation costs per unit of production increase the direct use of tractor diesel.

### 5.3 Organic Gross Margins

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In 2008/2009, arable gross margins declined slightly due to lower crop price, but despite higher yields. The average whole-farm gross margin was £599. This takes account of the livestock and fallow crops that potentially fit into the rotation.

The decline in the organic winter wheat gross margin to £964 per hectare resulted from a reduction in crop price to £215 per hectare, and occurred despite the recovery in yield to 4.1 tonnes per hectare. For feed and milling wheat, this represented an average premium of £100 per tonne over the conventionally grown crop.

The organic triticale gross margin averaged £655 per hectare. This was the second most profitable organic cereal and the third most profitable organic crop (after beans). Approaching half of the crop was fed to animals on the farm, as is common for organic production systems. In common with wheat, the 2008 triticale crop showed an improved yield but sold at a lower price than the 2007 crop.

Organic spring barley was grown at an average yield of 3.2 tonnes per hectare, which is similar to the previous year, but the crop was sold for a lower price of £192 per tonne. This gave a gross margin of £569 per hectare.

With similar yields to the previous year of 3.3 tonnes per hectare, organic winter oats were sold at a slightly improved average price of £205 per tonne and produced an average gross margin of £651 per hectare. Organic spring oats out-yielded their winter alternative at 3.4 tonnes per hectare. However they achieved an average sale price of only £167 per tonne. The average gross margin for organic spring oats was £471 per hectare, making them the least profitable combinable organic crop.

Beans for stockfeed were the second most profitable combinable organic crop in 2008, with a gross margin of £684 per hectare. The yield, at 3.2 tonnes per hectare exceeded previous two year's disappointing yields of 1.8 and 2.1 tonnes per hectare in 2007 and 2006 respectively.

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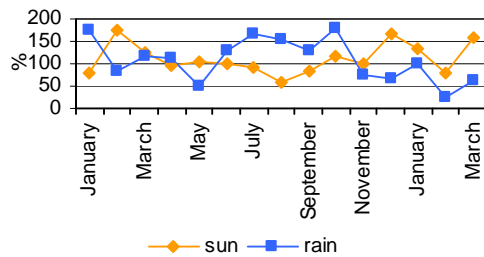
<sup>1</sup> Farmers Weekly, 5 September 2008

## 6 The Arable Scene

### 6.1 Weather:

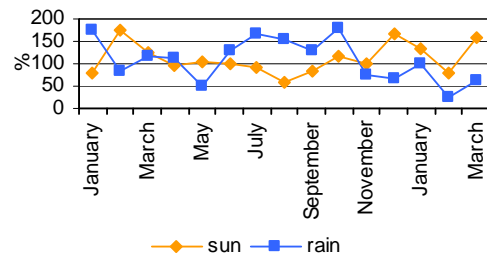
#### Weather 6.1 North West

England NW and Wales N



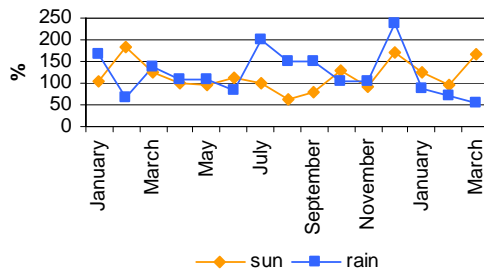
#### Weather 6.4 North East

England NW and Wales N



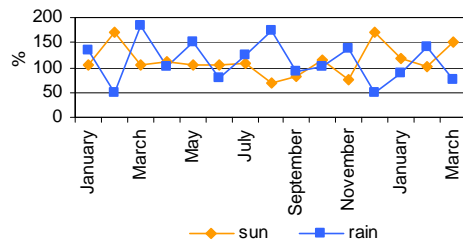
#### Weather 6.2 Midlands

Midlands



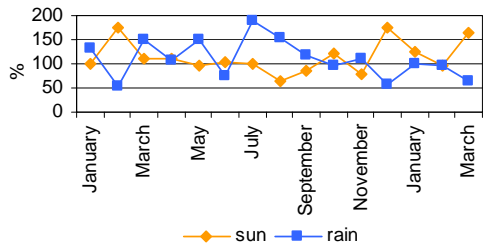
#### Weather 6.5 East of England

East Anglia



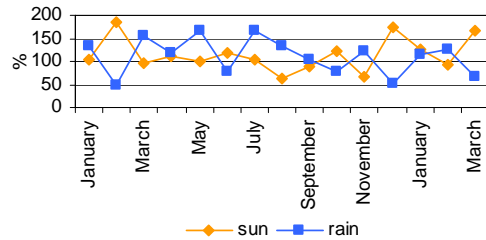
#### Weather 6.3 South West

England S



#### Weather 6.6 South East

England SE and Central S



Winter crop establishment in the autumn of 2007 followed the very wet harvest and conditions were often difficult but the dry February weather presented ideal spring drilling conditions for some. March and April were generally wet months. Following a dry June, the 2008 harvest was the second in a series of wet harvests.

### 6.2 Economic Environment

#### Exchange Rates

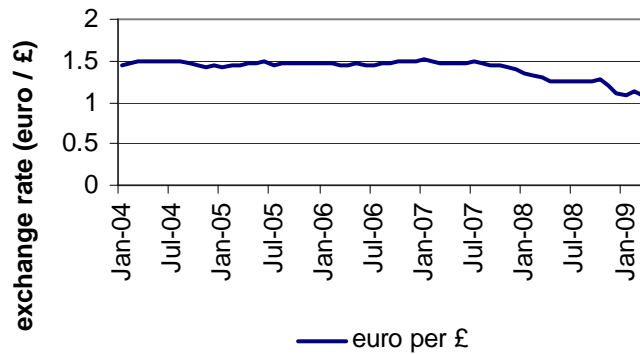
Figure 6.1 shows the exchange rate between sterling and the euro. From late 2007, weakening of sterling against the euro raised crop prices and ensured that UK produced

## 6 The Arable Scene

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agricultural commodities were competitive but also contributed to higher input prices. The timing of conversion of single payment to farmers also proved to be favourable for UK producers.

Figure 6.1 Euro /Sterling Exchange Rate, 2004 to 2009



### Input Prices

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Energy, purchased as gas, accounts for 58 per cent of the cost of ammonia manufacturing and is the driver of nitrogen fertiliser prices. Increased worldwide demand caused phosphate and potash prices to rise through 2008.

The prices of crop protection products increased as manufacturers and distributors negotiated price increases in parallel with disadvantageous exchange rates as the year progressed.



Source: Cleveland Potash

### 6.3 Business

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The year saw significant developments in the organisation of farmer-owned grain businesses with the merger of Grainfarmers and Centaur to form Openfield and with the formation of Network Grain.

The two farmer owned businesses, Grainfarmers and Centaur Grain merged to form Openfield with an expected market share of 20 per cent of UK grain production<sup>1</sup>. This places Openfield as second in size to market leader Frontier. With an anticipated 120,000 grain movements per year, Openfield works with logistics specialists DHL Exel Supply Chain to coordinate transport in the most efficient way.

To achieve improved market focus and to provide better value across the supply chain, Network Grain UK is the grouping of ten grain marketing cooperatives<sup>2</sup>. These comprise Cannington Grain, Devon Grain, Kernow Grain, Hampshire Grain, Weald Granary, Wiltshire Grain, Aberdeen Grain, Camgrain, Union Grain and Honey Pot store<sup>3</sup>. The organisation would seek closed-loop dedicated supply contracts such as those between Camgrain and Sainsbury's and between Hampshire Grain and Coors brewers<sup>4</sup>.

The year proved to provide testing trading conditions among non-food and fresh food businesses most exposed to changes to marketplace,

The innovative hemp processing business Hemcore went into administration in April 2009 following significant investment in new factory premises<sup>5</sup>.

MBMG had formed part of the Premier Foods empire until it was sold to a management buy-out group in March 2007. The first hint of financial difficulties for the Cambridgeshire based potato packer MBM became apparent in October 2008 when the company extended its payment terms to growers to 45 days. MBM Produce sold its fresh potato division and processing sites at March in Cambridgeshire and smaller sites to QV Foods<sup>6</sup>. MBM retained its peeling operations at March. In July 2009, MBMG Produce Limited went into administration with the loss of 84 jobs<sup>7</sup>. Trading sites in Holbeach and Bicker in Lincolnshire were closed.

In vegetable processing, Parripak Foods of Bedfordshire expanded to the North by acquiring Solway Foods Ltd<sup>8</sup>.

In January 2009, staff at Exotic Farm Produce, a subsidiary of the Icelandic business Bakkavor, faced the loss of 400 out of the 2000 staff employed<sup>9</sup>. The reasons were due to reduced consumer expenditure in worsening economic conditions.

Following a year of improved margins for input suppliers, the pressure for consolidation within the supply trade was greatly reduced when compared with previous years so the observed changes were strategic developments.

Koch Fertilizer Trading Sarl, an affiliate of US based Koch Nitrogen Company, acquired Osborne fertiliser the urea importer and distributor<sup>1</sup>. Following previous consolidation of

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<sup>1</sup> FoodEast, [www.foodeast.com](http://www.foodeast.com), September 2008

<sup>2</sup> Eastern Daily Press, [new.edp24.co.uk](http://new.edp24.co.uk), 8 November 2008

<sup>3</sup> Crops, 13 December 2008

<sup>4</sup> Farmers Weekly, 14 November 2008

<sup>5</sup> Eastern Daily Press, [edp24.co.uk](http://edp24.co.uk), 16 April 2009

<sup>6</sup> Eastern Daily Press, [business.edp24.co.uk](http://business.edp24.co.uk), 27 February 2009

<sup>7</sup> FoodEast, [www.foodeast.com](http://www.foodeast.com), July 2009

<sup>8</sup> FoodEast, [www.foodeast.com](http://www.foodeast.com), June 2008

<sup>9</sup> Farmers Weekly, 9 January 2009

## 6 The Arable Scene

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ammonium nitrate supply in the UK, this is likely to have provided Koch with greater access to the UK market.

Atlas Agriculture and Framlingham Farmers merged to form the UK's largest farmer-owned purchasing and marketing group<sup>2</sup>. Although based in the East of England, the expanded group operates across East Anglia, the South West, East Midlands, South West and North West of England. Its members farm some 243,000 hectares.

Developments in research and development reflected current UK policy priorities.

The Biotechnology and Biological Sciences Research Council (BBSRC) announced the formation of the BBSRC Sustainable Bioenergy Centre to look at improving efficiencies of fuel crops<sup>3</sup>. Rothamsted Research will be one of the six research hubs and will work with perennial bioenergy crops.

The University of Warwick announced the closure of its research site at Kirton, near Boston<sup>4</sup>. The site was finally closed in February 2009<sup>5</sup>.

### 6.4 Energy Crops

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The main driver of the UK biofuel market is the Renewable Fuels Transport Obligation (RTFO) which sets a minimum level of inclusion of biofuel within road fuels. This aims to provide a secure policy background and has proved to provide sufficient certainty to encourage the significant level of investment needed to provide a commercial scale ethanol production. Under the RTFO, there is no requirement for the fuel to be produced in the UK. The Renewable Fuels Agency estimated that biofuels accounted for 2.6% of total fuel supplied in the first obligation year, April 2008-April 2009, against an obligation of 2.5% for that period<sup>6</sup>.

In response to the Gallagher Review, the UK Government set revised obligation levels of 3.25% by volume of total fuel supplied for 2009/2010, 3.5% for 2010/2011, 4% for 2011/2012, 4.5% for 2012/2013 and 5% for 2013/2014 onwards. Biodiesel and bioethanol continued to receive the 20 pence per litre fuel duty incentive.

The first UK bioethanol plant in the UK was the British Sugar plant at Wisington in Norfolk that uses about 700,000 tonnes of sugar beet per year.

In 2008, construction work started on the Vivergo bioethanol plant at Saltend near Hull that will use about 1.1 million tonnes of mainly UK grown wheat per year<sup>7</sup>. The plant, which is scheduled to open in 2010, is owned by Associated British Foods (45 per cent), BP (45 per cent) and DuPont (10 per cent). In February 2009, Vivergo signed an exclusive contract with Frontier to procure wheat for the plant<sup>8</sup>.

Construction of the Ensus facility on Teeside continued, with commissioning scheduled for mid 2009<sup>9</sup>. The plant will use 1.2 million tonnes of wheat and Glencore grain has

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<sup>1</sup> Koch Fertilizer Press Release, 30 September 2008

<sup>2</sup> Farmers Weekly Interactive, [www.fwi.co.uk](http://www.fwi.co.uk), 2 July 2008

<sup>3</sup> Farmers Weekly, 30 January 2009

<sup>4</sup> The Vegetable Farmer, September 2008

<sup>5</sup> The University of Warwick, [www2.warwick.ac.uk](http://www2.warwick.ac.uk), 22 July 2009

<sup>6</sup> UK Report to the European Commission under Article 4 of the Biofuels Directive (2003/30/EC)

<sup>7</sup> Farmers Weekly, 11 July 2008

<sup>8</sup> Farmers Weekly Interactive, [www.fwi.co.uk](http://www.fwi.co.uk), 12 February 2009

<sup>9</sup> Crops, 16 August 2009

responsibility for grain procurement. The intention was to secure up to 250,000 from within 120 kilometres and then transport the rest in by road and sea.

In addition to ethanol production, there are currently two large scale biodiesel plants in the UK. These include the Greenergy Plant at Immingham in Humberside that uses about 250,000 tonnes of oilseed rape per year together with vegetable oils from other sources. The Biofuels Corporation plant at Wilton on Teeside uses palm soya and rapeseed.

Much of the current generation of electricity from biomass uses waste wood and by-products from agricultural production including chicken litter. However, there has been a recent expansion in co-firing of coal power stations with willow coppice, straw and *Miscanthus*. The Drax plant will use up to 300,000 tonnes of *Miscanthus* per year. The 2008 contract price for *Miscanthus* was £60 per oven-dried tonne.

### 6.5 Policy

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#### CAP Health Check

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The outcome of the EU 'Health Check', announced in November 2008, included the following changes that will apply in the UK<sup>1</sup>:

- Phasing out of milk quotas between 2009 and April 2015
- Decoupling of remaining coupled support
- Article 68 assistance to sectors with special problems
- Modulation of direct aid to fund rural development of up to 22 per cent
- Abolition of set-aside
- Simplification of cross compliance
- Changes to intervention including abolition of barley intervention
- Abolition of the energy crop premium

With the exception of modulation, these measures had been widely predicted and are not predicted to have a significant impact on the UK arable sector.

#### Food Policy and UK Self Sufficiency

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In 2009, a number of Defra initiatives emerged with the aim of achieving a 'secure and sustainable food system'<sup>2</sup>. Hilary Benn, Secretary of State for environment, Food and Rural Affairs explained that 'Last year the world had a wake-up call with the sudden oil and food price rises'. 'We need a radical rethink of how we produce our food'. He indicated that future policy would meet the economic and environmental challenges of increased productivity in the food chain, give rise to safe and healthy food and ensure that food production did not compromise natural resources.

In October 2009, Defra announced the creation of a Fruit and Vegetable Task Force<sup>3</sup>. The Task Force would address current horticulture concerns including supply chain relationships, collaboration and cooperation, skills and labour and healthy eating.

Prior to the Defra announcements, discussion on food security within the UK was advanced in 2008 with publication of the EFRA report 'Securing food supplies up to 2050: the challenges

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<sup>1</sup> Europa Press Release IP/08/1749, [www.europa.eu](http://www.europa.eu)

<sup>2</sup> Defra News Release 188/09, [www.defra.gov.uk](http://www.defra.gov.uk), 10 August 2009

<sup>3</sup> Defra News Release 243/09, [www.defra.gov.uk](http://www.defra.gov.uk), 21 October 2009

## 6 The Arable Scene

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faced by the UK<sup>1</sup>. The report's conclusion sets out the current opportunity for the UK and looks at the possibility of food security:

*Defra stands on the brink of an unparalleled opportunity to shape the UK's food and farming industries in a way that will contribute to the long-term security of domestic and global food supplies. It must not shy away from the task ahead of it. What is needed above all is clear leadership to enable people to invest and plan for the future. Following the loss of most of its climate change responsibilities to the Department for Energy and Climate Change, Defra now has a chance to refocus its attention and energies on food at a time when the importance of a new approach to food production is becoming increasingly apparent. This does not mean that Defra should neglect its environmental responsibilities: we want the UK to produce more food, but it must do so sustainably and in response to consumer demand. The advantage of a Department that oversees both the environment and food is that it is well placed to champion sustainable, increased production.*

*The UK should not aim to be self-sufficient, even in indigenous food stuffs. Total self-sufficiency would make the UK's food supplies less secure rather than more secure.*

Their reasoning for this stance is described in the report:

*The countries of the UK have not been self-sufficient—in the strict sense of the term—for more than 200 years. Over the centuries, people in the UK have become accustomed to food stuffs, such as citrus fruit and bananas, that are not grown here. However, the UK is also far from being self-sufficient in indigenous products: in fact, rates of self-sufficiency have been falling fairly consistently since the mid 1990s.*

*The term “self-sufficient” was used frequently in the submissions we received, but no one argued for total self-sufficiency. Friends of the Earth described self-sufficiency as “a desirable policy goal for food security and environmental sustainability”, but it supported “high self-sufficiency” rather than total self-sufficiency—although it did not explicitly rule out this approach.*

*Setting aside the considerable practical difficulties that would be involved in aiming for total, or near total, self-sufficiency, the principal argument against such a policy is that, while most of the country's food supply would be under its own control, the consequences if something were to happen to that food supply would be immense. Hillary Benn gave the hypothetical example of what would happen if a disease affected the UK wheat crop. He stated that, in such circumstances, without trading relationships with other countries, the UK would in be trouble. Andrew Kuyk, Director of Sustainability and Competitiveness at the Food and Drink Federation, argued that “diversity of supply” was the “key to resilience in those circumstances”. This point of view was shared by Defra, which stated that the diversity of the UK's food supply “helps to spread risks from potential disruptions such as terrorism or floods”. Currently, 34 countries each supply the UK with at least 0.5% of its food imports. The Netherlands accounts for the highest share with 13%. Defra commented that “the vast majority of our food (69% in value)” comes from “our stable trading partners in the European Union.” It should be noted that risk is spread not simply by having trading relationships with a number of different countries, but by ensuring that each commodity comes from a number of different countries.*

*Trading relationships themselves are, as we have already commented, a source of risk. There is no guarantee that even our EU trading relationships will always remain stable.*

*There is another disadvantage to pursuing a policy of total self-sufficiency: its effect on the global food market. It could be argued that a UK totally self-sufficient in indigenous food stuffs would free up commodities elsewhere in the world, to the benefit of other countries. However, such a policy might be seen to exemplify an “every country for itself” approach—an attitude*

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<sup>1</sup> Securing food supplies up to 2050: the challenges faced by the UK, House of Commons Environment, Food and Rural Affairs Committee, Volume 1, 13 July 2009

*that is already leading to so-called land-grabbing and would be likely to destabilise the global market in food.*

The Cabinet Office Publication 'Food Matters Towards a strategy for the 21st Century' shaped domestic food policy developments in the year<sup>1</sup>. Initiatives in the year included the Change4Life campaign to encourage a healthy lifestyle, promotion of sustainable farming and food production and industry dialogue<sup>2</sup>.

### AHDB

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The Agriculture and Horticulture Development Board (AHDB) and its six sector companies, including HGCA Ltd for the arable sector, were launched in April 2008<sup>3</sup>.

### After Set-aside

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Negotiations between Defra, the NFU, CLA, other farming organisations, Natural England and the Environment Agency resulted in a voluntary arrangement to secure environmental benefits following the discontinuation of set-aside<sup>4</sup>. Whilst Defra conceded that it would not require farmers to leave land uncropped, farming organisations agreed to bring an additional 30,000 to 50,000 hectares of arable production into voluntary environmental management by 2012. Some background information on uncropped land on arable farms can be seen in Crop Production in England 2007/2008.

### Nitrate Vulnerable Zones

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On 1 January 2009, the area of Nitrate Vulnerable Zone (NVZ) within designations was extended from 55 per cent to around 70 per cent<sup>5</sup>. Much of the inland area of the East of England is currently designated but some coastal areas remain outside the restricted area.

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<sup>1</sup> Food Matters: Towards a Strategy for the 21<sup>st</sup> century, The Strategy Unit, Cabinet Office, July 2008

<sup>2</sup> Food Matters: One Year On, Defra, August 2009

<sup>3</sup> Defra News Release, [www.defra.gov.uk](http://www.defra.gov.uk) 1 April 2008

<sup>4</sup> Farmers Weekly, 10 July 2009

<sup>5</sup> Defra News Release 293/08, [www.defra.co.uk](http://www.defra.co.uk) 4 September 2008

## 7 Minimum Tillage on Arable Farms in England

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### 7.1 Characteristics of Minimum Tillage Cultivation Techniques

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#### Introduction

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The joint objectives of wishing to reduce expenditure on fuel during a time of high oil prices, and of reducing carbon use, have created the incentive to use Minimum Tillage techniques. Experience of such methods elsewhere in the world, and the development of new technology has increased uptake of these methods on farms in England.

A module survey, forming part of the 2007/2008 Farm Business Survey, collected data on Energy Use on a sub-sample of farms. On arable farms, questions about adoption of Minimum Tillage enable us to review the uptake, fuel use and cost changes. Preliminary results have been published in a Defra Statistics Release<sup>1</sup>.

Minimum Tillage describes a range of cultivation techniques that create seedbeds at a shallow depth and without ploughing. Direct drilling, broadcasting into stubbles and various combinations of tined or disc cultivation are all variations of the technique.



Source: Simba International Ltd.

#### Agronomic and Environmental Advantages and Disadvantages of Minimum Tillage Systems

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Some of the advantages and disadvantages to the use of Minimum Tillage are summarised in publications from Scottish Natural Heritage and Natural England.<sup>2,3</sup> The direct advantages of Minimum Tillage systems are the expected savings in labour and fuel costs. In addition, higher workrates reduce the peak autumn workload and ensure timely crop establishment.

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<sup>1</sup> Energy Use on Farms; Results from the Farm Business Survey, 2007/2008, Defra, 22 October 2009

<sup>2</sup> SNH TIBRE – Minimum Tillage, [www.snh.org.uk](http://www.snh.org.uk)

<sup>3</sup> Environment Agency, Profit from a good environment

## 7 Minimum Tillage on Arable Farms in England

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Against this, Minimum Tillage cultivation techniques can be less flexible if soil types vary within a field and can result in poor establishment in wet conditions. Much of the arable land in England is prone to infestation by grassweeds including blackgrass, brome and meadow grasses. Research has created techniques to control grassweeds and minimize the risk of creating conditions that give rise to herbicide resistance<sup>1</sup>.

Environmental benefits include reduced use of fossil fuels, reduced soil erosion, and an improved habitat for carabid beetles and earthworms. In wet conditions, however, Minimum Tillage can result in increased release of the greenhouse gas, nitrous oxide.

### 7.2 Minimum Tillage Uptake in England

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Minimum Tillage cultivation techniques were carried out on 37 per cent of Cereals farms in 2008. However, these farms did not commit their entire area to the technique and about 27 per cent of the combinable crop area on these farms was established using Minimum Tillage.

Farm Business Survey participants using Minimum Tillage were found in all regions of England, except for North West England, and across 21 Joint Character Areas. The farms adopting Minimum Tillage averaged 280 hectares, against the average size of non-participants of 175 hectares.

The limited sample size restricts detailed analysis, but it is likely that the technique is used more widely on free draining soils such as limestone and sandy soils. It is possible that farms on clay soils facing a risk of blackgrass infestation would be less willing to commit a large area of their production to Minimum Tillage.

Anecdotal evidence from dialogue with farmers in the East of England is that many are receptive to minimum tillage but very few show enthusiasm for moving to a wholly min-till system, preferring to own machinery suitable for a wide range of ground conditions. The recent successive wet autumns have required a flexible approach to cultivation.

### 7.3 Minimum Tillage Fuel Use

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Table 7.1 shows fuel use, on a whole farm area basis and on the basis of combinable crop area on Cereals farms using Minimum Tillage on over 50 per cent of cropped area and using no Minimum Tillage. In this case, fuel refers to red diesel, Derv and petrol.

Table 7.1 Fuel Use

	Cereals ≥ 50% Minimum Tillage	Cereals No Minimum Tillage
Number of farms	20	51
Fuel Use per farm hectare (l/ha)	84.9	98.7
Fuel Use per combinable crop hectare (l/ha)	125.0	149.0

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<sup>1</sup> Improving crop profitability by using minimum cultivation and exploiting grass-weed ecology, S K Cook, J H Clarke, Z S Hughes, S R Moss, HGCA Conference 2004

## 7 Minimum Tillage on Arable Farms in England

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Measured over the whole farm, or per hectare of combinable crops, the farms adopting Minimum Tillage used less fuel. Any comparison should be made with care as each group included farms with livestock and other enterprises including contracting.

The findings are similar to those of a commercial example; a study of fuel use within farm businesses managed by Sentry Limited showed a range of fuel use of between 63.1 litres per hectare and 143 litres per hectare<sup>1</sup>. Half of the farms used between 78.6 and 115.7 litres per hectare. The variation in fuel use relates to differing cultivation methods used within the farms.

### 7.4 Minimum Tillage Farm Costs

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A financial analysis of Cereals farms in the Farm Business Survey according to their adoption of Minimum Tillage is presented below. The sample sizes are small, so any comparison should be made with care. The farms adopting Minimum Tillage varied widely in size and location, but were on average 60 per cent larger than the farms that did not adopt Minimum Tillage, and their larger size partially determines their cost structure. In particular, the higher cost of paid labour on Minimum Tillage farms is likely to result from the greater incidence of paid labour on larger farms. The farms adopting Minimum Tillage were likely to be found on lighter soil types and this may further account for differences between the groups. Livestock production and farm contracting operations were carried out by both groups and will account for a share of labour, fuel and machinery use that was not quantified in the study.

The Minimum Tillage farms used contractors, but tended to carry out more farm operations on their own account. At £36 per hectare, their spend on fuel was 12 per cent lower than on the non Minimum Tillage farms and depreciation and at £73 per hectare, their depreciation was 27 per cent lower than on the non Minimum Tillage farms.

The decision to adopt Minimum Cultivation is inevitably dependent on circumstances as revealed by the experience of the Co-operative Farms. Within this business, which farms a wide range of soil types and locations, a comparison of cultivation methods showed that plough-based systems do not necessarily incur excessive additional cost when compared to the Minimum Tillage alternative<sup>2</sup>. Their estimates imply that a plough, Simba Cultipress and drill combination would use about seven per cent more fuel than a Simba Solo, glyphosate spray and drill combination costing 13 per cent more to operate.

### 7.5 Conclusions

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The sample of farms used in the study did not permit a direct comparison of the financial implications of alternative cultivation techniques. Any study attempting to do this would need to consider soil type and grass weed burden in order to understand the full implications of the technique.

Minimum Tillage would seem to reduce fuel use, and contributes to a lower-cost machinery requirement on arable farms.

Uptake is widespread across England, but there was little evidence of concentration of use of Minimum Tillage in dedicated areas of arable production.

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<sup>1</sup> Farmers Weekly, 6 June 2008

<sup>2</sup> Farmers Weekly, 5 September 2008

## 7 Minimum Tillage on Arable Farms in England

### Agriculture Output & Costs - Cereals - England 2007/2008

	> 50 per cent Min Till		No Min Till	
Farms in Sample	20		51	
Area of farm (hectares)	279.5		174.7	
Owner occupied area (%)	55.2		60.8	
<b>AGRICULTURAL OUTPUT (£)</b>				
	<b>Per farm</b>	<b>Per hectare</b>	<b>Per farm</b>	<b>Per hectare</b>
Crop output (excluding subsidies)	194,388	695	123,200	705
Livestock output (excluding subsidies)	18,001	64	12,813	73
Coupled subsidies	379	1	362	2
Other agricultural output	14,660	52	15,134	87
<b>TOTAL AGRICULTURAL OUTPUT</b>	<b>227,428</b>	<b>814</b>	<b>151,508</b>	<b>867</b>
<b>AGRICULTURAL COSTS</b>				
<b>VARIABLE COSTS (£)</b>				
Crop specific costs	56,096	201	38,208	219
Livestock specific costs	9,711	35	7,773	44
Miscellaneous variable costs			37	0
<b>TOTAL VARIABLE COSTS</b>	<b>65,808</b>	<b>235</b>	<b>46,018</b>	<b>263</b>
<b>GROSS MARGIN (£)</b>	<b>161,621</b>	<b>578</b>	<b>105,490</b>	<b>604</b>
<b>FIXED COSTS (£)</b>				
Regular labour	12,988	46	4,434	25
Casual labour	3,268	12	1,527	9
Machinery fuel and oil	9,948	36	7,121	41
Other machinery costs (excl. fuel, oil, depreciation)	11,362	41	7,233	41
Machinery, glasshouse and other depreciation	20,536	73	17,463	100
Contract costs	6,823	24	8,029	46
Bank charges and professional fees	4,755	17	3,697	21
Water, electricity, & general	11,614	42	9,335	53
Net interest	7,311	26	2,249	13
Rent paid	22,590	81	10,448	60
Property maintenance	1,146	4	663	4
Depreciation of buildings and works	3,840	14	3,602	21
Miscellaneous fixed costs	7,937	28	5,640	32
<b>TOTAL FIXED COSTS (£)</b>	<b>124,119</b>	<b>444</b>	<b>81,439</b>	<b>466</b>
Profit/ (Loss) on sale of assets	1,110	4	1,412	8
<b>FARM BUSINESS INCOME (Agriculture - £)</b>	<b>38,611</b>	<b>138</b>	<b>25,462</b>	<b>146</b>
<b>CROPPING (mean area (hectares))</b>				
	ha		ha	
Winter wheat	100.4		53.0	
Winter barley	13.1		10.4	
Spring barley	1.7		6.1	
Beans for stockfeed	6.3		6.7	
Winter oilseed rape	36.5		20.7	
Maincrop potatoes	0.2		0.2	
Sugar beet	1.7		3.3	

RBR at Cambridge  
Rural Business Unit  
University of Cambridge  
19 Silver Street  
Cambridge  
CB3 9EP  
Phone 01223 337166  
Fax 01223 765857

[www.ruralbusinessresearch.co.uk](http://www.ruralbusinessresearch.co.uk)