



Farm Business Survey

2018/2019

Crop Production in England



Ben Lang

RBR

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Rural Business Research



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Crop Production in England 2018/2019

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Rural Business Unit
Environmental Economy and Policy Research Group
Department of Land Economy
16-21 Silver Street
Cambridge
CB3 9EP

Tel: 01223 337166
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Crop Production in England 2018/2019

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

- Overview of Profitability, Assets and Liabilities
- Agri-environment, Diversification, Basic Payment: excludes agriculture
- Arable Farm Performance: agriculture excluding diversification
- Crop Enterprise Performance
- Net Margin and Cost of Production Estimation
- Organic Arable Performance
- Weather, Economic Context and Policy

Appendix 1 Agricultural Output and Costs Comparison by
Farm Type, District, Size and Performance (36 tables)

Appendix 2 Gross Margin Results for Comparison by Farm Type, District,
Size and Performance - Non Organic (122 tables)

Price £25 including postage and packing

This publication can be obtained from Vasiliki Tzortzi, email vt291@cam.ac.uk

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

Tel: 01223 337153

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Foreword to the Fourteenth Series

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

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

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

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

Professor Paul Wilson

Chief Executive Officer, Rural Business Research

January 2020

www.ruralbusinessresearch.co.uk

Acknowledgements

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

Rural Business Research staff across England collected farm data. At the Rural Business Unit, Mark Reader and Richard Dexter designed the reporting system and Hayley Sherlock and Stephen Horsley contributed to the production of the report. Credit for the cover photograph to Stephen Horsley. Colleagues at the University of Reading carried out a quality assurance review of the report.

Data sources and basis of farm type and farm size in the FBS

In this report, figures 1.1, 2.1, 2.2 and 4.1 were derived from data published at www.farmbusinesssurvey.co.uk. Figures 3.1, 3.2, 3.3, 3.4, 3.5 and 6.1 were derived from Defra publications. Figures 1.2, 1.3 and 4.2 were derived from our own analysis of FBS data. From 2018/19, the classification of farms is based on 2013 standard output coefficients. 2017/18 results have been recalculated and presented in this release to allow comparability between 2017/18 and 2018/19. The results published here are therefore not directly comparable with those published in earlier years which are based on previous standard output coefficients. For more information please see https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/365564/fbs-uk-farmclassification-2014-21oct14.pdf

1 Overview of Profitability, Assets and Liabilities

1.0 Overview

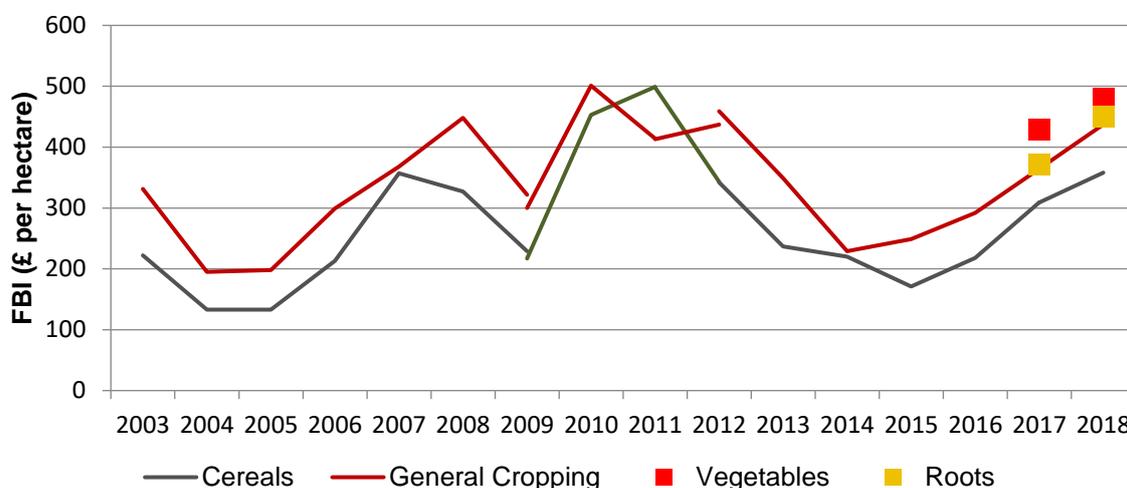
- Summary of Profitability, Assets and Liabilities
- High crop prices due to weakened value of sterling and poor yields across Europe
- Summer drought followed the spring 'beast from the East'
- Reduced crop yields resulting in increased cost of production (per hectare)
- Highest winter wheat, winter barley and spring barley gross margin in recent times
- Highest organic cereal gross margins since start of our detailed analysis in 2009
- Exceptional potato gross margin and price
- Occupancy and fuel costs increased
- Teesside Vivergo ethanol plant closed in September
- Good conditions in autumn for development of sugar beet and potatoes
- Net worth of farms increased but land prices reduced

The results presented in this chapter relate to the whole farm business and include agriculture, agri environment, diversification and the Basic Payment Scheme (BPS). Later chapters focus on the contribution of these four cost centres.

1.1 Time Series Farm Business Income on Cereals and General Cropping Farms

Farm Business Income (FBI) on Cereals farms increased by 16 per cent to £369 per hectare as a result of higher crop prices and despite reduced crop yields. The FBI of Roots farms increased by 21 per cent to £346 per hectare, driven by favourable potato prices. FBI on Vegetables farms was 12 per cent higher than in 2017, at £480 per hectare. The longer term trend in farm incomes is shown in figure 1.1.

Figure 1.1 Time Series Farm Business Income (FBI) of Arable Farms, 2003 to 2019



1 Overview of Profitability, Assets and Liabilities

1.2 Farm Business Income 2018/2019

Profit and loss accounts for arable farms are set out in Table 1.1.

Table 1.1 Farm Business Income of Cereals, Roots and Vegetable farms, 2018

| | Cereals | | Roots | | Vegetables | |
|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 2017 | 2018 | 2017 | 2018 | 2017 | 2018 |
| Number of farms | 335 | 352 | 133 | 144 | 47 | 45 |
| Area of farm (ha) | 201 | 188 | 228 | 223 | 163 | 191 |
| Crop output (£/ha) | 875 | 945 | 1405 | 1505 | 3332 | 3635 |
| Livestock output (£/ha) | 37 | 35 | 72 | 42 | 24 | 17 |
| Agri-environment (£/ha) | 22 | 18 | 39 | 21 | 27 | 17 |
| Other output (£/ha) | 262 | 299 | 222 | 225 | 493 | 315 |
| BPS (£/ha) | 211 | 211 | 204 | 204 | 179 | 183 |
| Total Output (£/ha) | 1406 | 1508 | 1942 | 1997 | 4055 | 4167 |
| Variable costs (£/ha) | 463 | 481 | 727 | 700 | 1620 | 1713 |
| Fixed costs (£/ha) | 638 | 674 | 846 | 851 | 2011 | 1977 |
| Total costs (£/ha) | 1101 | 1155 | 1573 | 1551 | 3631 | 3690 |
| Profit on sale of assets (£/ha) | 5 | 6 | 2 | 4 | 5 | 4 |
| Farm Business Income (£/ha) | 309 | 358 | 372 | 451 | 429 | 480 |
| Net Farm Income (£/ha) | 201 | 250 | 265 | 346 | 333 | 448 |

The weather conditions in autumn 2017 were favourable for winter crop establishment. In early 2018, the 'beast from the East' comprised cold wet weather with strong winds and delayed the establishment of spring crops. Drought conditions followed and reduced the yields of winter and spring crops alike. High crop prices adequately compensated for both reduced yields and inflationary cost increases. The performance of agri environment activity declined, whilst diversification output increased and the Basic Payment return was unchanged on 2017. The result was an improvement in FBI on arable farms.

Variable and Fixed Costs

Farm level expenditure on seed, fertilisers and crop protection was virtually unchanged on 2017. Crop level expenditure was typically higher than the previous year because higher unit costs for crop inputs were mitigated by the reduction in cropped land. Input prices increased as a consequence of the weaker value of sterling. Farmers regularly voiced concerns about reduced availability of crop protection active ingredients, exacerbated by difficulties with controlling blackgrass, and the lack of alternative crop protection materials to replace neonicotinoid insecticides.

1 Overview of Profitability, Assets and Liabilities

Machinery, occupancy and overhead costs increased due to inflationary pressures and the weaker value of sterling.

Defra introduced experimental statistics on Labour in Horticulture Survey. This revealed that of the average of 882 horticulture farms surveyed in the year to March 2019, 249 required seasonal labour and 74 experienced a shortfall. That is 30 per cent of farms needing seasonal labour. On average, these farms experienced a shortfall of 0.77 people per working day.

1.3 Assets and Liabilities

The assets and liabilities of arable farms are shown in table 1.2 and balance sheet ratios in table 1.3.

Table 1.2 Opening and Closing Assets and Liabilities of Cereals, Roots and Vegetable farms, 2018

| | Cereals | | Roots | | Vegetables | |
|--------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | Opening 2018 | Closing 2018 | Opening 2018 | Closing 2018 | Opening 2018 | Closing 2018 |
| Number of farms | 352 | 352 | 144 | 144 | 45 | 45 |
| Farm area (ha) | 188 | 188 | 223 | 223 | 191 | 191 |
| Assets | £/ha | £/ha | £/ha | £/ha | £/ha | £/ha |
| Land & buildings | 12,658 | 12,632 | 11,083 | 11,138 | 9,378 | 9,308 |
| Machinery | 863 | 895 | 791 | 844 | 1,387 | 1,435 |
| BPS Entitlement | 199 | 207 | 195 | 203 | 172 | 179 |
| Other fixed assets | 44 | 41 | 68 | 64 | 34 | 27 |
| Current assets | 1,153 | 1,381 | 1,185 | 1,229 | 1,538 | 1,854 |
| Liabilities | 1,203 | 1,246 | 1,124 | 1,231 | 2,566 | 2,740 |
| Net Worth | 13,713 | 13,910 | 12,198 | 12,247 | 9,937 | 10,070 |

Table 1.3 Balance Sheet Ratios, Cereal, Root and Vegetable Farms, 2018

| | Cereals Closing 2018 | Roots Closing 2018 | Vegetable Closing 2018 | Performance guideline |
|-------------------|----------------------|--------------------|------------------------|-----------------------|
| Gearing ratio | 8% | 9% | 21% | |
| Liquidity | 228% | 312% | 176% | >100% |
| Interest / FBI | 8% | 7% | 10% | |
| Return on capital | 1.6% | 3.3% | 3.7% | |

Following the improvement in FBI performance, the net worth of the average Cereals farms and Vegetable farms increased by about one per cent, mainly reflecting higher current assets, which include debtors and bank deposits. On Roots farms, net worth was virtually unchanged in the year.

1 Overview of Profitability, Assets and Liabilities

Land

Overall prices reduced by around two per cent to around £20,100 per hectare¹. More than 40,000 hectares were publicly marketed in 2018, for the second time in ten years. This represented a 33 per cent increase over 2017. Whilst arable farm land values varied widely, demand for arable land was generally strong.

In early 2018, farmers were the most common type of buyer, and were responsible for 60 per cent of land purchases². Fewer farms were marketed in the first half of 2018, compared to the previous two years³. However this all changed as summer approached, and more land was publicly marketed in the first three quarters of 2018 than at any time in the previous ten years. Much of the land sales were from a small number of very large farms. Brexit was named as a prompt for land owners to review their long term commitment to land ownership. As the year progressed, the number of farmer buyers declined as lifestyle and private investor buyer numbers increased⁴. In early 2019, supply of land reduced and prices remained stable⁵.

Basic Payment Entitlement

From a value of around £130 per hectare at the start of April 2018, entitlement trading entered a period of volatility up to the close of the trading season in mid-May when the price was around £110 per hectare⁶. Trading in 2019 entitlement commenced in September 2018 at a value of around £155 per hectare. At the start of April 2019, values had slipped to around £125 to £140 per hectare.

These values were lower than the FBS theoretical estimate of the value of Basic Payment Entitlement on Cereals farms was £199 per hectare at the start of the year and £207 at the end of the year. The estimate assumed that farmers would derive value from at least one BPS claim.

The fact that farmers purchased entitlement at a lower value than its potential return suggests that they factored in the risks and costs of achieving less than a full return.

Machinery

Cereal, Roots and Vegetable farms increased their expenditure on machinery in 2018, with the result that the closing value of machinery was higher than the closing value in 2017.

UK tractor registrations in the year to March 2019 numbered 12,224 (11,941) and the average power of tractors sold in 2018 again increased to a record high of 166.6 horsepower⁷. UK farmers, across all farm types, also purchased 3,675 telehandlers in 2018, 730 ploughs, 1,150 power harrows and 780 sprayers.

¹ The Farmland Market, Savills, January 2019

² Strutt and Parker, English Estates & Farmland Market Review, Spring 2018

³ Strutt and Parker, English Estates & Farmland Market Review, Summer 2018

⁴ Strutt and Parker, English Estates & Farmland Market Review, Winter 2018 /2019

⁵ Savills News, 17 April 2019

⁶ Townsend Chartered Surveyors, 19 September 2018, 14 March 2019 and 9 April 2019

⁷ Agricultural Engineers Association, aea.com

1 Overview of Profitability, Assets and Liabilities

Figure 1.2 Expenditure of Machinery, Cereal, Roots and Vegetable farms, 2017 and 2018

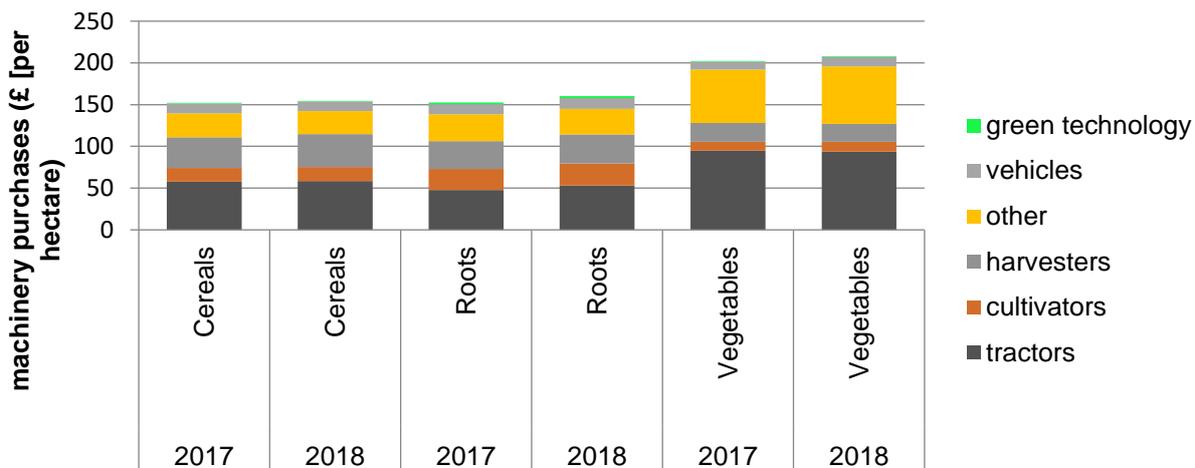
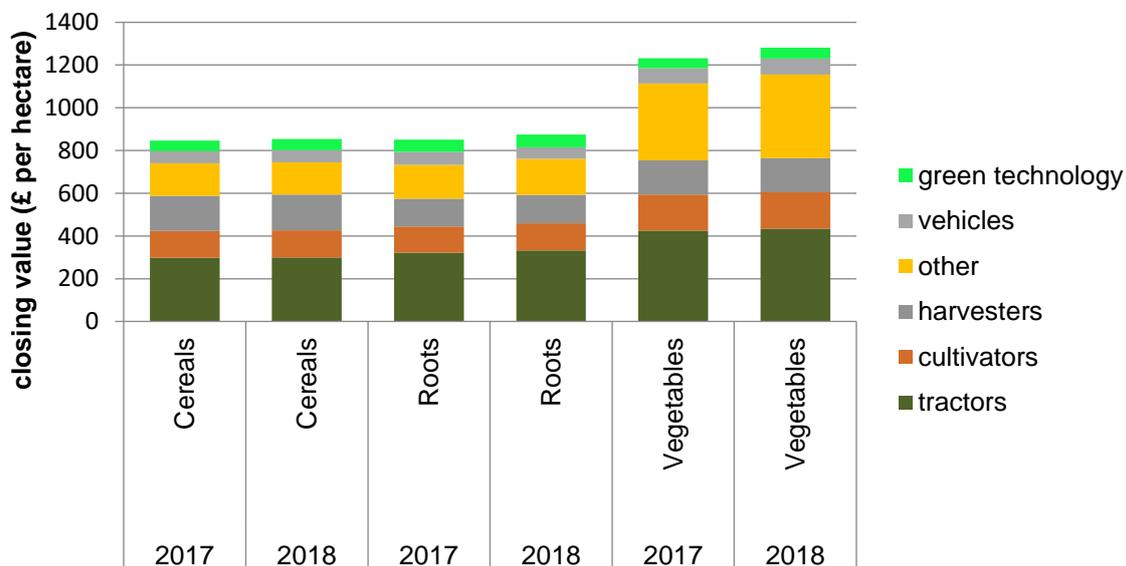


Figure 1.3 Closing Value of Machinery, Cereal, Roots and Vegetable farms 2017 and 2018



Liabilities and Capital Grants

Borrowing increased on all three farm types. On Cereals farms, liabilities increased by about four per cent to £1,246 per hectare. On Roots farms, liabilities increased by around ten per cent to £1,231 per hectare. On Vegetable farms, borrowing increased by about seven per cent to £2,740 per hectare.

The Countryside Productivity Scheme offered grants towards the purchase of machinery in order to increase farm productivity⁸. Some farmers made carefully planned early purchases of key farm inputs, such as fertiliser, to ensure their availability in the event of no deal Brexit on 29 March 2019⁹. In addition, manufacturers and farm input suppliers secured additional storage in the UK to ensure the availability of input.

⁸ News Story, www.gov.uk , 7 February 2018

⁹ Farmers Weekly, 7 December 2018

2 Agri-environment, Diversification, Basic Payment: excludes agriculture

2.0 Agri-environment, Diversification and Basic Payment

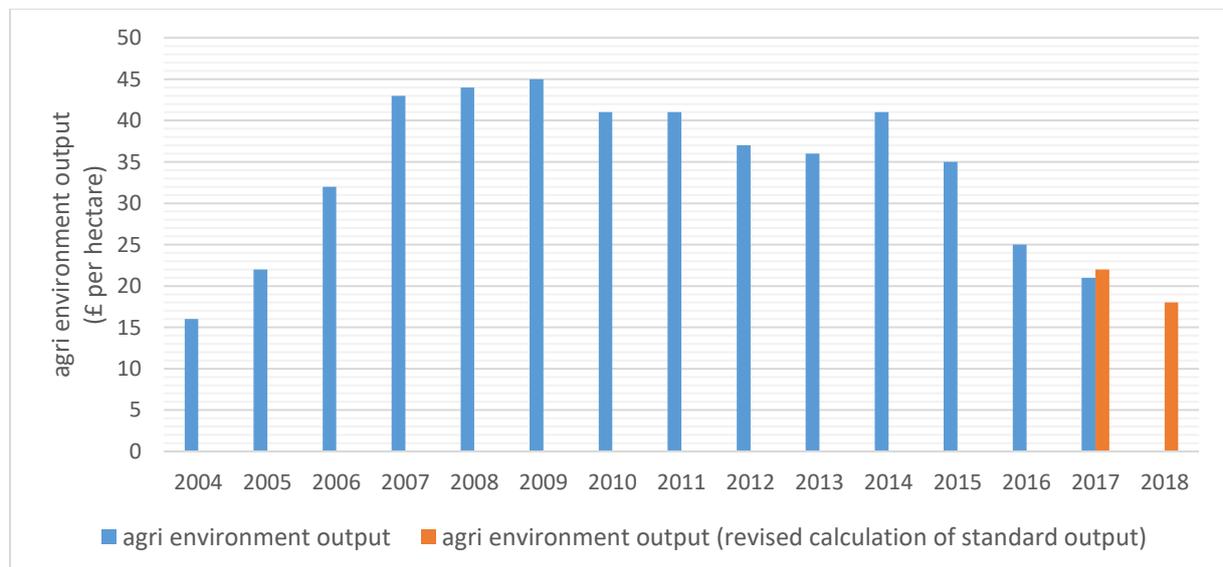
- Agri environment schemes contributed four per cent of FBI on Cereals farms
- Agri environment output on arable farms again reduced in 2018
- Led by rental activity, diversification output on arable farms again increased in 2018
- Basic Payment Scheme (BPS) receipt was virtually unchanged on 2017
- Arable farmers accommodated new Environmental Focus Area (EFA) rules

The results presented in this Chapter relate to **agri-environment scheme participation, diversification outside agriculture and the Basic Payment scheme**. The outputs, costs and net income attributable to these activities can be summed with that from agriculture to give FBI for the whole farm business. Whilst output and variable costs can be readily split between cost centres, some element of estimation is needed in order to share labour, machinery, property and overhead costs. Within the FBS, this is carried out on a consistent basis using an agreed approach¹⁰.

2.1 Agri-environment

Figure 2.1 shows the diminishing importance of agri environment scheme output on Cereals farms. In 2018, agri environment output averaged £18 per hectare as fewer farms participated in schemes and as Entry Level Stewardship (ELS) schemes expired. After the deduction of the costs of scheme participation, agri environment schemes contributed four per cent of FBI on Cereals farms.

Figure 2.1 Agri environment output, cereals farms, 2004 to 2018.



On Roots farms, agri environment output averaged £21 per hectare and on Vegetable farms, agri environment output averaged £17 per hectare.

¹⁰ Appendix 2 (Item VI) Farm Accounts in England 2008/2009 Defra statistics
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/423700/fbs-fixedcostmethod-23apr15.pdf

2 Agri-environment, Diversification, Basic Payment: excludes agriculture

The area of land in agri environment schemes in England has halved from 7,910,000 hectares in 2013 to 3,780,000 hectares in 2018¹¹. Over the same time, the area of land in higher level schemes, including Countryside Stewardship (CSS) Mid-Tier and Higher Tier, has increased from 1,400,000 hectares to 1,608,000 hectares. However, the area of land in entry level schemes, including the ELS, has reduced from 6,510,000 hectares to 2,170,000 hectares. As ELS is a legacy scheme which closed to new applicants in 2014, this area will reduce to zero as agreements run their course.

Farmers have expressed concern about the complex application process and low payment rates for CSS. The application process for Higher Tier CSS applications requires a visit from a Natural England project officer, but farmers reported difficulties in securing the required visit.

An RPA remapping exercise resulted in delayed payment of 8,116 out of 24,759 2017 ELS and HLS claims. Farmers had not received full payment by October 2018¹². The overdue payments, summing to £115 million, were finally made in July 2019¹³.

Alongside the government funded agri environment schemes, water companies offered funding for initiatives designed to manage water catchments responsibly. United Utilities reported that a record number of farmers placed bids in their reverse auction, held for farmers in Cheshire seeking to fund cover crops on their farms. Under the initiative, 246 hectares of cover crops were supported at payment rates that averaged about £120 per hectare¹⁴.

2.2 Diversification

The diversification account for arable farms is summarised in table 2.1.

Table 2.1 Diversification, Output and Costs, Cereals, Roots and Vegetables Farms 2017 and 2018

| | Cereals | | Roots | | Vegetables | |
|--------------------------------------|---------|------|-------|------|------------|------|
| | 2017 | 2018 | 2017 | 2018 | 2017 | 2018 |
| Diversification output | 151 | 167 | 131 | 135 | 330 | 201 |
| Of which: | | | | | | |
| Rental (£/ha) | 93 | 103 | 73 | 75 | 169 | 77 |
| Recreation (£/ha) | 9 | 14 | 4 | 12 | 30 | 0 |
| Food processing and retailing (£/ha) | 6 | 7 | 11 | 8 | 96 | 86 |
| Tourism (£/ha) | 5 | 6 | 13 | 13 | 7 | 8 |
| Solar (£/ha) | 10 | 9 | 11 | 10 | 17 | 17 |
| Other energy (£/ha) | 8 | 9 | 11 | 6 | 2 | 0 |
| Other (£/ha) | 20 | 20 | 8 | 11 | 9 | 13 |
| Costs | 61 | 70 | 56 | 55 | 201 | 113 |
| Diversification FBI (£/ha) | 90 | 97 | 76 | 79 | 129 | 87 |
| Whole business FBI (£/ha) | 309 | 358 | 372 | 451 | 429 | 480 |

¹¹ JNCC UK Biodiversity Indicators 2019

¹² Farmers Weekly, 2 November 2018

¹³ FarmBusiness, www.farmbusiness.co.uk , 19 June 2019

¹⁴ Farmers Weekly Interactive, www.fwi.co.uk , 14 August 2018

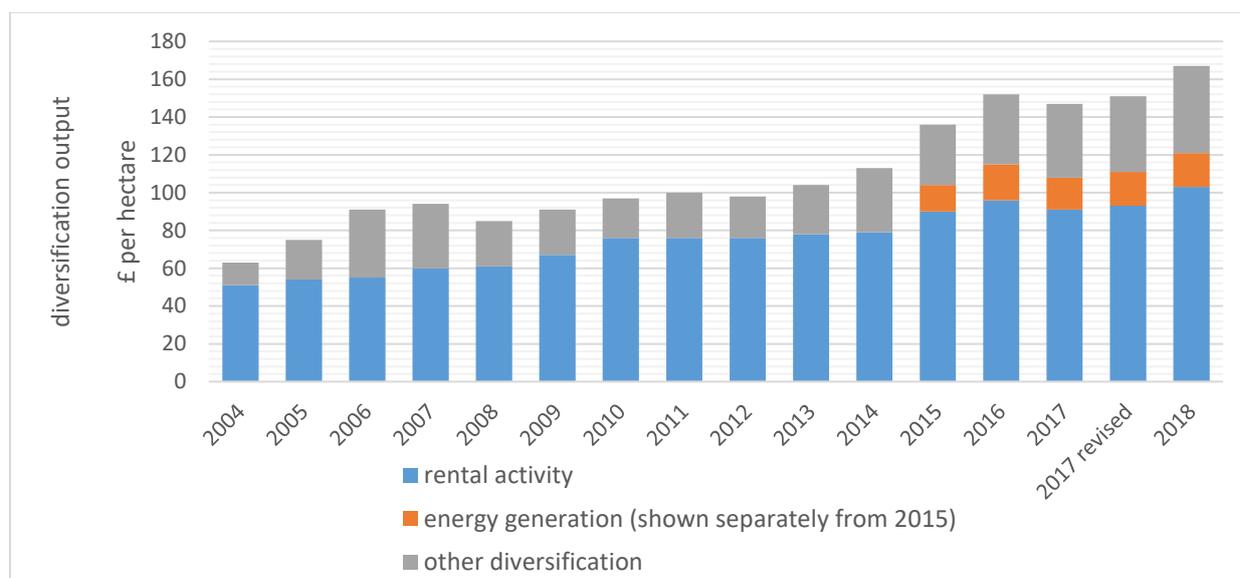
2 Agri-environment, Diversification, Basic Payment: excludes agriculture

Diversification contributed 27 per cent of FBI on Cereals farms in 2018. Rental activity was the main diversification output, at £103 per hectare, this represented 62 per cent of diversification output. All types of energy generation accounted for 11 per cent of diversification output. In 2018, diversification contributed 18 per cent of FBI on both Root and Vegetable farms.

Some 2.9 per cent of agricultural holdings are reported to have processed crops by anaerobic digestion in 2018 (3.9 per cent in 2018)¹⁵.

The longer term trend in increasing diversification output can be seen in figure 2.2. It is apparent that the driver of increased output is the greater exploitation of rental activity.

Figure 2.2 Diversification output, cereals farms, 2004 to 2018



2.3 Basic Payment Scheme (BPS)

On Cereals farms, the Basic Payment Scheme contributed 54 per cent of FBI. The average effective receipt was £211 per hectare and after deduction of costs, the contribution to FBI was £194 per hectare. On Root farms, the average effective BPS receipt was £204 per hectare and after deduction of costs contributed £188 to FBI. On Vegetable farms, the average effective BPS receipt was £183 per hectare and after deduction of costs contributed £169 to FBI.

The rate of BPS payment for land in England outside the SDA (Severely Disadvantaged Area), was set at £231.70 per hectare including the Greening payment. This was based on an exchange rate of £0.89281 per euro. Financial Discipline was levied at 1.411917 per cent.

Farmers were no longer permitted to apply crop protection materials to Environmental Focus Area (EFA) land from the 2018 scheme year. Under BPS rules, most arable producers were required to put five per cent of their land within EFAs. In recent years, farmers had chosen to grow peas and beans, which are eligible EFA crops as they fix nitrogen. However, most non organic farmers would consider that it is not feasible to grow peas or beans without crop protection materials. Many farmers opted to replace EFA pea and bean crops with linear features in their EFA claims. These include hedges, buffer strips and field strips, or catch or cover crops.

¹⁵ Farm, Practices Survey 2019, Defra, 6 June 2019

2 Agri-environment, Diversification, Basic Payment: excludes agriculture

In 2018, heavy rain and snow resulted in difficulties with crop establishment and the possibility that farmers would be unable to meet their obligations under the three crop rule. This is a requirement for farmers with more than 30 hectares of arable crops. The EU Commission granted the UK concessions, which included an easing of the rules for farmers in England¹⁶.

¹⁶ Farmers Weekly Interactive, www.fwi.co.uk, 4 May 2018

3 Arable Farm Performance: agriculture excluding diversification

3.0 Agriculture Performance

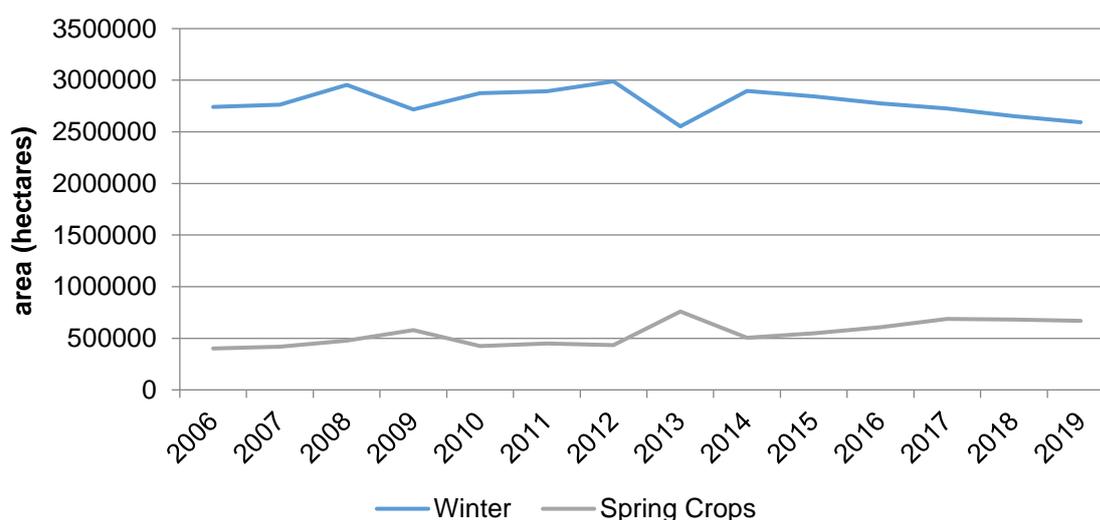
- Winter crops occupied their lowest area since 2013
- The area of oilseed rape was nine per cent below the five year average
- The area of beans reduced by 20 per cent
- Average contribution of agriculture to FBI on Cereals farms was £55 per hectare.
- Average contribution to agriculture to FBI on Roots farms was £168 per hectare
- Average contribution of agriculture to FBI on Vegetables averaged £209 per hectare
- Performance varied widely between farms of all groups

The results presented in this Chapter relate solely to the activity of agriculture. The outputs, costs and agricultural FBI can be summed with that from agri environment scheme participation, diversification outside agriculture and the Basic Payment Scheme (BPS) to give results for the whole farm business. Whilst output and variable costs can be readily split between cost centres, some element of estimation is needed in order to share labour, machinery, property and overhead costs. Within the FBS, this is carried out on a consistent basis using an agreed approach¹⁷.

3.1 Cropping and Crop Areas

As figure 3.1 demonstrates, winter crops occupied their lowest area since 2013 and fallow occupied its highest since 2013, at 225,000 hectares. The area of spring crops plateaued at 681,000 hectares.

Figure 3.1 Area of Spring Cropping Land in England, 2006 to 2019

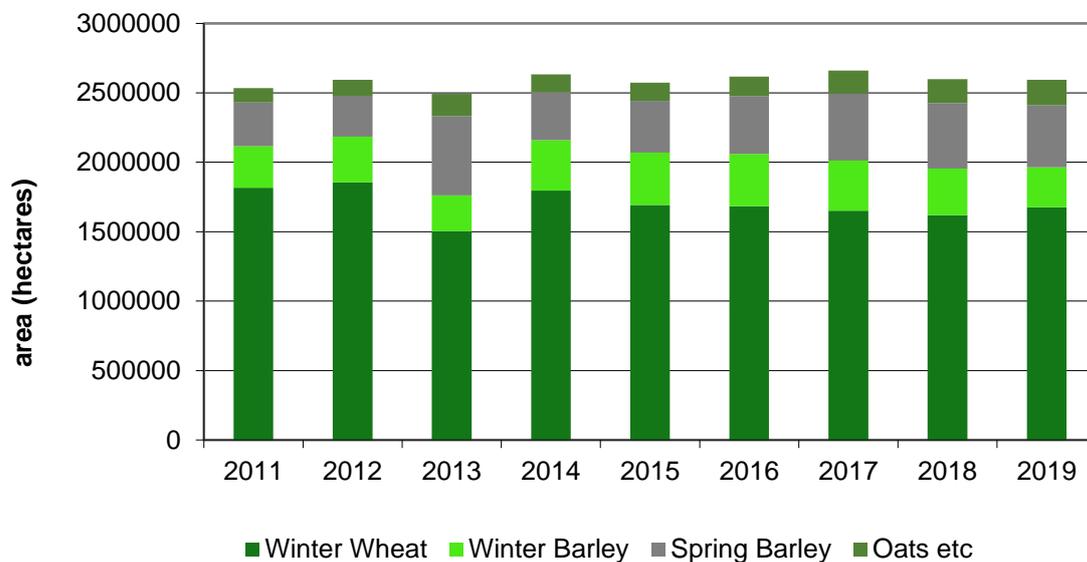


In figures 3.2 to 3. 4, we show the areas of cereal crops, break crops and root crops with vegetables.

¹⁷ Appendix 2 (Item VI) Farm Accounts in England 2008/2009 Defra statistics
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/423700/fbs-fixedcostmethod-23apr15.pdf

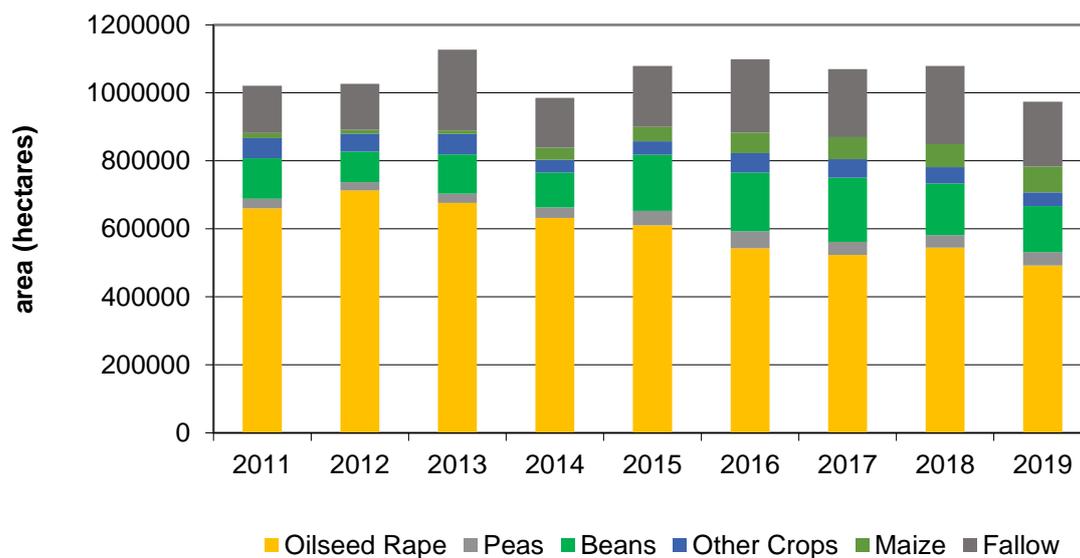
3 Arable Farm Performance: agriculture excluding diversification

Figure 3.2 Cereal Crop Area, 2011 to 2019, England



At 2,599,000 hectares, the area of cereals was close to five year average levels. The areas of winter wheat (1,619,000 hectares) and winter barley (336,000 hectares) were three per cent lower than the five year average. The area of spring barley, at 471,000 hectares was eight per cent above the five year average. Malting barleys (with full approval of the Malting Barley Committee) occupied 57 per cent of the GB barley area (50 per cent in 2017)¹⁸. The area of oats and other cereals, occupying 173,000 hectares, exceeded the five year average by 19 per cent.

Figure 3.3 Break Crop Area, 2011 to 2019, England



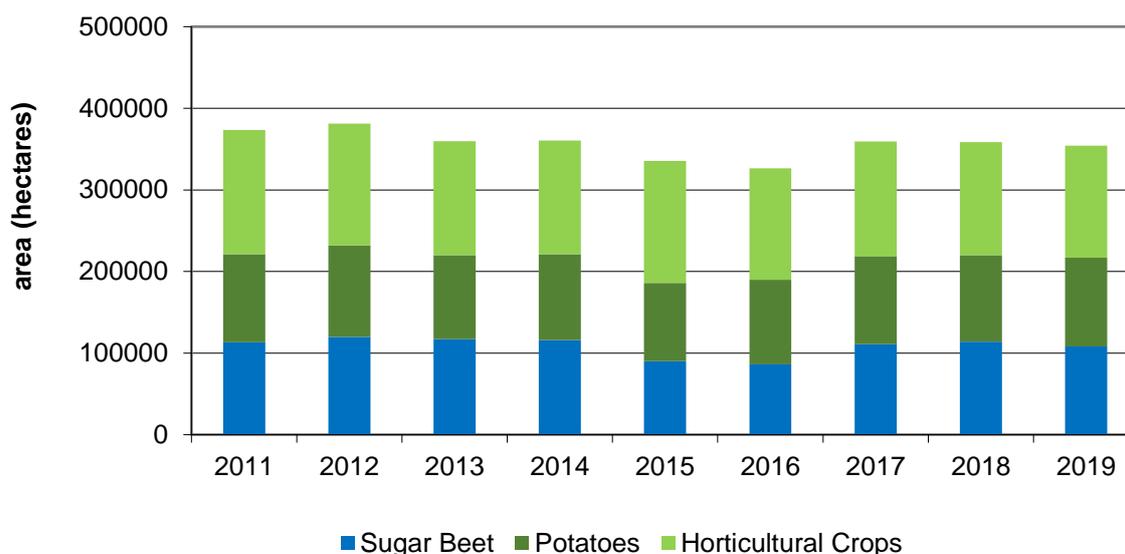
¹⁸ AHDB 6 July 2018

3 Arable Farm Performance: agriculture excluding diversification

Although the area of oilseed rape increased relative to the previous year, their area, of 545,000 hectares, was nine per cent below the five year average. The area of oilseed rape lost after drilling, due to Cabbage Stem Flea Beetle (CSFB) was estimated at 1.6 per cent¹⁹.

Although the overall area of legumes was close to the five year average, the five per cent year on year reduction of the pea crop, and 20 per cent reduction in the bean crop, is likely to reflect the change to the Environmental Focus Area (EFA) rules of the Basic Payment Scheme (BPS) which no longer permitted the use of legumes receiving crop protection materials. The area of maize increased by three per cent to 67,000 hectares, and was 57 per cent higher than the five year average.

Figure 3.4 Potato, Sugar Beet and Vegetable Crop Area, 2011 to 2019, England



Sugar beet occupied 114,000 hectares, three per cent more land than in the previous year. Potatoes were grown on 106,000 hectares, two per cent less than in 2017, but three per cent above the five year average. The reduced area in 2018 was driven by the lower potato price in 2017.

Of the 137,098 hectares of horticultural crops, vining peas were grown on 36,274 hectares (34,614 in 2017) and brassicas accounted for 25,594 hectares (27,304 in 2017), carrots for 11,413 hectares and onions for 8,779 hectares²⁰.

Energy Crops

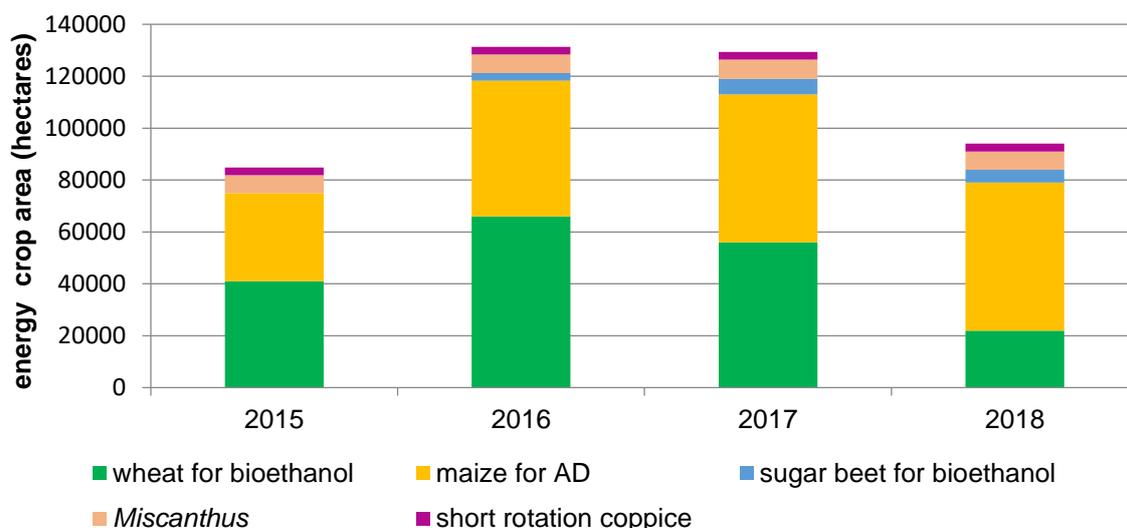
The area of energy crops, which are included in the totals shown in figure 3.2 to 3.4, are set out in figure 3.5.

¹⁹ Agronomist and Arable Farmer, www.aafarmer.co.uk, 7 February 2019

²⁰ Horticulture Statistics 2018, Defra, 1 August 2018

3 Arable Farm Performance: agriculture excluding diversification

Figure 3.5 Areas of Energy Crops Grown in the UK, 2015 to 2018



It is now apparent that the area of energy crops grown in the UK peaked at 131,000 hectares in 2016. In 2018, the total area was 94,000 hectares and 27 per cent lower than in 2017. This represented 1.6 of the arable area of the UK (2.2 per cent in 2017). The main reduction was in the area of wheat which reduced from 56,000 hectares in 2017 to 22,000 hectares in 2018.

The areas of maize, *Miscanthus* and Short Rotation Coppice were similar to the previous year, but the area of sugar beet reduced by 16 per cent to 5,000 hectares. The use of straw in power stations reduced to 549,000 hectares, a similar level to 2016 but 24 per cent lower than the peak use in 2017.

3.2 Cereals Farms Performance (excluding organic farms)

The average contribution of agriculture to FBI on Cereals farms was positive and averaged £55 per hectare. Crop and livestock output increased by seven per cent from 201, driven mainly by higher crop prices while variable costs, of £377 per hectare, were virtually unchanged on the previous year. Fixed costs were six per cent higher than in 2017; energy costs and rents increased.

Performance ranged from a top quartile agriculture contribution of £374 per hectare to a bottom quartile agriculture contribution of -£258 per hectare.

Cereals Farms – County and Character Area (CA)

The area in our analysis with the highest contribution of agriculture to FBI, of £331 per hectare, was the Fens, achieved with high crop output of £1,295 per hectare. Farms in Oxfordshire had the lowest agricultural output, but this was partially mitigated by low costs.

3.3 Roots Farms Performance (excluding organic farms)

The contribution to FBI from agriculture on Roots farms averaged £168 per hectare. Average crop areas included 8 hectares of potatoes and 19 hectares of sugar beet. The crop output was 56 per cent higher than on Cereals farms, as would be expected from the production of higher value crops.

3 Arable Farm Performance: agriculture excluding diversification

Relative to the previous year, agricultural output was five per cent higher, driven by higher crop prices. Average expenditure on variable costs reduced by seven per cent. Fixed costs increased by two per cent, and as on Cereals farms, energy and rent costs increased.

Performance on Roots farms ranged from an agriculture contribution of £607 per hectare for the top quartile to -£290 for the bottom quartile group.

Roots Farms – County and Character Area (CA)

Any explanation of farm performance is likely to reflect the relative areas of combinable crops, sugar beet and potatoes. The area in our analysis with the highest contribution of agriculture to FBI, of £307 per hectare, was the Fens where a crop output averaged £1,686 per hectare.

The county in our analysis with the lowest contribution of agriculture to FBI, of £113 per hectare, was Norfolk where the area of potatoes was relatively low as this county had low agricultural output, but also low fixed cost expenditure; with low depreciation and contract charges.

3.4 Vegetables Farms Performance (excluding organic farms)

On vegetables farms, the contribution of agriculture to FBI averaged £209 per hectare, 91 per cent higher than in 2017. Relative to the previous year, agriculture output increased by nine per cent.

Fixed costs increased by four per cent and variable costs by five per cent. Labour, machinery and rent charges were higher than in 2017, but all of the difference may be partially explained by the change in sample of farms, which were predominately rented in 2018 but mainly owned in 2017.

Performance on Roots farms ranged from an agriculture contribution to FBI of £1,296 per hectare for the top quartile to -£307 for the bottom quartile group.

4 Crop Enterprise Performance

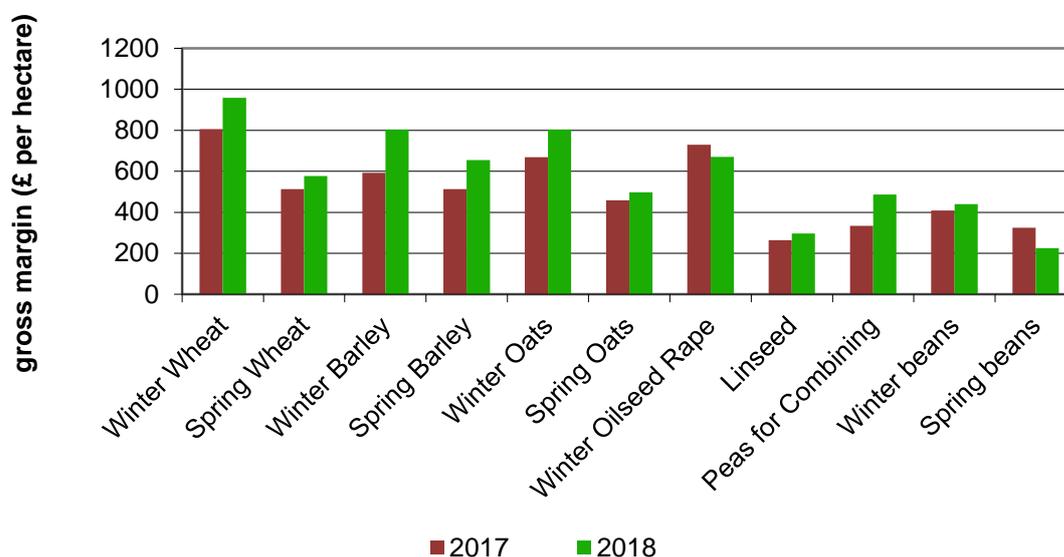
4.0 Crop Gross Margins

- Highest winter wheat, winter barley and spring barley gross margin in recent times
- Gross margins for all winter cereals and spring barley 2x the 2009 values
- High quality milling wheat in 2018
- High prices for cereal, protein and potato crops
- Indifferent prices for oilseed and sugar beet crops
- Slightly reduced yields of all crops
- Exceptional potato gross margin of £5,355 per hectare and price of £205 per tonne

4.1 Crop Gross Margins (excluding organic crops)

Non organic gross margin results for all farms in England are shown in figure 4.1. Further detail for individual crops in England is detailed in this chapter with further geographical breakdown in Appendix 2. Some observations are based on sample sizes of less than 15 farms.

Figure 4.1 Combinable crop gross margins, 2017 and 2018



The gross margins for winter wheat, winter oats and spring barley were more than double the 2009 gross margins. Crop performance was characterised by high prices for cereal, protein and potato crops and relatively low yields of all crops. Global output was constrained in the EU, the Black Sea region and in Australia, so cereal output fell for the first time in six years²¹.

²¹ Market Outlook, Gleadell, Autumn 2019

4 Crop Enterprise Performance

4.2 Winter Wheat

At £959 per hectare, the winter wheat gross margin was the highest recorded in recent times. The main driver for the favourable performance was the high crop price which was a result of reduced wheat supply in Northern Europe as well as favourable quality. At £165 per hectare the price was 22 per cent higher than the five year average. The crop yielded an average of 8.4 tonnes per hectare, which was three per cent below the five year average, although higher than many expected at the approach to harvest.

Expenditure on seed, fertiliser and crop protection increased on 2017, but was in line with the five year average.

Agronomy and Crop Development

Weather conditions in September 2017 were mixed and generally not ideal for crop establishment, but conditions in October were more settled, enabling growers to delay drilling to create stale seedbed conditions to control blackgrass²².

Nearly 60 per cent of crops are estimated to have been established using minimum tillage techniques. Some 59 per cent of the winter wheat crop was drilled between 1 and 20 October. 22 per cent of the crop was drilled before October and 19 was drilled after 20 October²³. Farmers increased the area of group 1 and group 2 milling wheat as shown in table 4.1.

Table 4.1 Percentage allocation of area to nabim Group 1, 2014 to 2019, Great Britain

| | 2014/2015 | 2015/2016 | 2016/2017 | 2017/2018 | 2018/2019 |
|---------|-----------|-----------|-----------|-----------|-----------|
| Group 1 | 17 | 18 | 24 | 27 | 25 |
| Group 2 | 8 | 5 | 7 | 13 | 13 |
| Group 3 | 12 | 9 | 5 | 5 | 8 |
| Group 4 | 63 | 68 | 58 | 55 | 53 |

Source: AHDB /National Association of British and Irish Flour Millers

Snow and heavy rain in March contributed to very wet field conditions and waterlogging across England. Many farmers opted to apply crop protection materials in conditions that were not ideal and this left deep tramlines in fields, although in some cases spring fertiliser applications were delayed.

Disease levels were generally low and crops received an average of 3.4 fungicide applications, the lowest average number of treatments since 2013. Lemon wheat blossom midge is believed to have reduced wheat yields in the South East and East Midlands²⁴.

Harvest, Yield, Quality and Marketing

The wheat harvest started in mid-July in Southern and Eastern England, and was about 25 per cent complete by the end of July. Harvest paused at the end of July due to thunder storms. A period of

²² Farmers Weekly, 20 October 2017

²³ Crop Monitor, Defra Winter Wheat Commercial Crops Disease Survey 2018, www.cropmonitor.co.uk

²⁴ Crop Monitor, Defra Winter Wheat Commercial Crops Disease Survey 2018, www.cropmonitor.co.uk

4 Crop Enterprise Performance

settled weather followed. By the end of the first week of August, the winter wheat harvest was about 80 per cent complete in the South East and East of England, but only about 12 per cent in Yorkshire. The wheat harvest was complete in the South by mid-August and around 72 per cent in North East England²⁵.

The favourable price was driven by weak sterling, reduced supply of grain in northern Europe and increased demand for feed grain, due to reduced availability of forage in the UK. At the same time, the Vivergo plant closed in late September reducing demand for feed grain²⁶.

Group 1 Milling Wheat Performance

Conditions in June and July were favourable for milling wheat grain quality so supply of high quality milling grain was strong. In turn, the apparent over supply diminished premiums for grain of milling quality. Milling premiums at harvest were around £15 to £17 over feed, but later eroded to £8 to £10 over feed. As the season developed, it became apparent that levels of screenings in milling wheat were particularly high and millers increasingly turned to imported grain to cover the months prior to harvest²⁷. Details of the high quality of wheat grown in 2018 are shown in table 4.2.

Table 4.2 Cereal Quality Survey 2017 and 2018, Great Britain

| | Specific Weight kg/hl 2017 | Specific Weight kg/hl 2018 | Hagberg S 2017 | Hagberg S 2018 | Protein % 2017 | Protein % 2018 |
|----------------|---|---|--------------------------|--------------------------|--------------------------|--------------------------|
| Group 1 | 76.3 | 78.5 | 254 | 335 | 13.4 | 13.0 |
| Group 2 | 76.1 | 77.1 | 271 | 321 | 12.5 | 12.1 |
| Group 3 | 75.2 | 76.9 | 212 | 285 | 12.0 | 11.6 |
| Group 4 | 75.3 | 76.8 | 231 | 298 | 11.9 | 11.7 |
| Bread standard | | >76.0 | | >180 | | >12.5 |

Source: AHDB

The sub sample of FBS farms that grew group 1 milling wheat achieved an average price of £169 per tonne. This represented a premium of only £5 per tonne when compared with the sub sample of farms that grew no milling wheat. After accounting for the higher expenditure on fertiliser and crop protection by the farms with no milling wheat, the farm that grew only group 1 milling wheat achieved a lower gross margin, of £931 per hectare.

Straw

Prior to harvest, merchants reported high prices for straw, of around £70 to £80 per tonne in primarily livestock regions²⁸. Straw prices peaked at around £100 per tonne at harvest, but reduced to about £85 per tonne when it became apparent that there was sufficient supply to meet all uses. The average value of straw was £87 per hectare, averaged across all farms, including those that incorporated their straw.

²⁵ GB Harvest Report, ADAS, w/e 24 July 2018, w/e 31 July 2018, w/e 7 August 2018 & w/e 14 August

²⁶ Agronomist and Arable Farmer, 24 September 2018

²⁷ Market Outlook, Gleadell, Autumn 2018 and Spring 2019

²⁸ Farmers Weekly Interactive, www.fwi.co.uk, 30 May 2018

4 Crop Enterprise Performance

Farm Performance

The top quartile group of farms, by gross margin performance, averaged £1,273 per hectare with crops yielding 9.8 tonnes per hectare and with an average sale price of £168 per tonne.

Farms in the Fens achieved the highest gross margin, of £1,142 per hectare, with crops yielding an average of 9.7 tonnes per hectare. Crops in Kent also achieved yields of 9.7 tonnes per hectare.

Winter wheat growers in Devon were committed to livestock production with 29 per cent of crop output used on the farm for feed and straw.

4.3 Spring Wheat

The spring wheat gross margin was £577 per hectare and 20 per cent above the five year average. Although the average price, of £164 per tonne, exceeded the five year average by 15 per cent there was no premium above the winter wheat price. In the dry season, the crop yielded 5.5 tonnes per hectare. This was 7 per cent below the five year average.

4.4 Winter Barley

The pattern of exceptional gross margin, in this case £787 per hectare, and high price, of £155 per tonne, and spend on variable costs, was the same for winter barley as for winter wheat. Winter barley was the only crop to hold its yield (at 7.1 tonnes per hectare) at the same level as the previous year and consistent with the long term average,

Prolonged hot and dry conditions ensured an early start to the cereal harvest. By 24 July, about 80 per cent of the winter barley crop had been harvested. By the end of July, this had risen to about 96 per cent complete²⁹.

The pattern of exceptional gross margin, in this case £787 per hectare, and high price, of £155 per tonne, and spend on variable costs, was the same for winter barley as for winter wheat. Winter barley was the only crop to hold its yield (at 7.1 tonnes per hectare) at the same level as the previous year and consistent with the long term average.

Prolonged hot and dry conditions ensured an early start to the cereal harvest. By 24 July, about 80 per cent of the winter barley crop had been harvested. By the end of July, this had risen to about 96 per cent complete³⁰.

Performance by Natural England Joint Character Area and County

The lowest yielding crops, at 6.4 tonnes per hectare, were grown in Devon, where 35 per cent of the crop value was used on farm for feed and bedding.

Although the South Suffolk and North Essex Clayland farms grew crops averaging 8.0 tonnes per hectare, their price was only £139 per tonne suggesting that they achieved only feed quality. Farms in the Culm used 35 per cent of their crop output for feed and straw on the farm. Their crops were grown with low expenditure on seed and crop protection.

²⁹ GB Harvest Report, ADAS, w/e 24 July 2018 & w/e 31 August

³⁰ GB Harvest Report, ADAS, w/e 24 July 2018 & w/e 31 August

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4.5 Spring Barley

Despite a crop yield (of 5.4 tonnes per hectare), that was 11 per cent below the five year average, the gross margin, of £654 per hectare, was 30 per cent above the five year average and the highest spring cereal gross margin in 2018. It was also the highest spring barley gross margin of recent times. The main driver of the favourable performance was the price of £167 per tonne, 31 per cent above the five year average.

Variable cost expenditure was very similar to the previous year. Because the unit costs of inputs increased, it is likely that growers scaled back their expenditure in anticipation of reduced crop output.

Spring barley establishment was delayed on many farms, due to the 'Beast from the East' weather conditions. Farmers in East Yorkshire drilled spring crops as late as May.

The spring barley harvest started in early August and was about 40 per cent complete by the end of the first week of August. The break in planting due to difficult spring drilling conditions resulted in a split harvest; late crops were typically harvested in late August and early September³¹. Sales of malting barley came to a virtual stop in January 2019 because traders had no knowledge about the likelihood or level of EU import tax or customs duties. German traders opted to source barley from other EU countries, including France, in preference to the UK³².

Prices for baled straw of £90 to £100 per tonne were quoted in May³³. Across all spring barley crops the average value of straw was £83 per hectare.

4.6 Winter and Spring Oats

For the fifth successive year, the winter oat gross margin (£805 per hectare) was second only to the winter wheat gross margin. The price, of £165 per tonne was 33 per cent higher than the five year average and also the same as the wheat price. The spring oat gross margin, of £497 per hectare, was 14 per cent higher than the five year average. The crop price averaged £158 per tonne, which was 29 per cent higher than the five year average but the yield, of 4.5 tonnes per hectare, was 19 per cent lower than the average and the lowest spring oat yield for at least ten years. Spring oats incur low variable costs; of only £272 per hectare in 2018. The oat price reached a five year record high of £181.50 per tonne in November 2018. Demand for the crop, between July and September 2018, was nine per cent higher than for the equivalent period in 2017³⁴. UK producers benefited from a global reduction in oat supply, which included reduced production in Finland and Sweden as well as Canada³⁵.

4.7 Winter Oilseed Rape

The average oilseed rape gross margin was £670 per hectare, 17 per cent above the five year average. The crop yielded an average of 3.4 tonnes per hectare, three per cent below the five year average, while the price, at £334 per tonne, exceeded the five year average by nine per cent.

³¹ GB Harvest Report, ADAS, w/e 7 August 2018 & w/e 25 September 2018

³² Reuters, uk.reuters.com , 11 January 2019

³³ Farmers Weekly Interactive, www.fwi.co.uk , 30 May 2018

³⁴ Farmers Weekly 9 November 2018

³⁵ Market Outlook, Gleadell, Autumn 2019

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Weather conditions were generally good for crop establishment, but Cabbage Stem Flea Beetle damage in areas of high pest infestation was very severe.

Oilseed rape crops received an average of 3.2 fungicide applications in 2018; this is consistent with previous years³⁶. Light leaf spot and *Phoma* canker levels were relatively high, but other diseases were less severe.

Many farmers started harvesting oilseed rape in mid July and about 63 per cent of the harvest was completed by 24 July 2018. This rose to 80 per cent by 31 August. Pod shatter was a regular problem and often required harvesting in night conditions when the low levels of moisture in the air reduced pod shatter.³⁷

Some double low oilseed rape crops had unexpectedly high levels of erucic acid, resulting in penalties and rejections of sold crop. An investigation by NIAB concluded that the problem originated due to non double low volunteer plants³⁸. The summer drought in northern Europe reduced the supply of rapeseed and this initially benefited UK producers. However, crushers converted to soybean and rapeseed demand reduced³⁹.

4.8 Linseed

The linseed crop gave an average gross margin of £65 per hectare and was the poorest performing combinable crop. The yield of 1.0 tonnes per hectare was 44 per cent lower than the five year average, although the price and variable cost expenditure was in line with previous years.

4.9 Peas for Combining

The pea gross margin was £487 per hectare and 11 per cent below the five year average. The price, of £263 per tonne, was close to average, but the yield of 2.9 tonnes per hectare was 12 per cent below the five year average.

Before the 2018 crops were planted, it was apparent that fewer farmers in the UK and across the EU, would grow peas and beans following the change to EFA rules. However, the difficult growing season and resulting low yields and poor crop quality could not have been predicted.

Demand for non GM protein remained strong, as some markets could not easily accept alternative sources of vegetable protein, such as imported soya. So the market for peas and beans was strong throughout the year.

Feed peas traded for around £220 per tonne in December 2018. At September 2018, good quality marrowfat peas sold for £265 per tonne⁴⁰. Marrowfat pea reached £275 to £300 per tonne in October⁴¹. Most marrowfat peas had been sold by January, but prices of up to £400 per tonne were available for

³⁶ Crop Monitor, Defra Oilseed Rape Survey 2018, www.cropmonitor.co.uk

³⁷ GB Harvest Report, ADAS, w/e 24 July 2018 & w/e 31 August 2018

³⁸ Agronomist and Arable Farmer, 12 March 2019

³⁹ Market Outlook, Gleadell, Autumn 2019

⁴⁰ Pulse Market Update, PGRO, September 2018

⁴¹ Pulse Market Update, PGRO, October 2018

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sample that showed no signs of bleaching⁴². Any remaining marrowfat peas at April 2019 traded at around £300 to £315 per tonne.

4.10 Winter and Spring Beans

The winter bean gross margin was £439 per hectare and the average crop price was £209 per tonne. However the yield was below average at 3.3 tonnes per hectare.

For spring beans, the high price, of £210 per tonne, did not compensate for the exceptionally low yield of 2.4 tonnes per hectare. The resulting gross margin was only £225 per tonne.

Bruchid beetle was less active in spring 2018 than in previous years⁴³. Growers also benefitted the approval of systemic neonocotinoid insecticide, Biscaya, with an active ingredient of thiacloprid, for control of the pest⁴⁴. However, as the crop developed, bruchid beetle became prevalent and the crop fared poorly in the dry conditions. The harvest quality was generally poor with high levels of Bruchid damage. Grain size was limited and variable within pods.

Driven by the change to Environment Focus Area (EFA) rules, reduced plantings of beans strengthened the price. The low crop yield was a further driver of higher prices as production of peas and beans reduced by 35 per cent in comparison with 2017⁴⁵.

In February 2018, the bean price at November 2018 was £155 per tonne, with a £15 to £20 premium for human consumption quality beans⁴⁶. By April, the price had risen to £165 per tonne for October movement⁴⁷. In September 2018, feed beans were selling for between £185 and £200 per tonne⁴⁸. By October 2018, the feed bean price had risen to £212 per tonne. Samples of human consumption crop sold for up to £265 per tonne⁴⁹. Feed beans traded for around £220 per tonne in December 2018⁵⁰. Ongoing demand for non GM sources of protein strengthened prices for beans, which reached £230 per tonne for January movement⁵¹. With very limited crop still to sell at April 2019, feed beans traded at around £275 to £350 per tonne, depending on quality⁵².

Very high quality human consumption beans sold for up to £300 per tonne, conditional of less than 5 per cent damage from bruchid beetle⁵³. The price for human consumption beans reached £315 per tonne in January for crops with less than five per cent bruchid damage. Even crops with up to 25 per cent bruchid damage could be sold for £250 per tonne⁵⁴.

4.11 Soya Bean

⁴² Pulse Market Update, PGRO, January 2019

⁴³ Farmers Weekly Interactive, www.fwi.co.uk, 4 April 2018

⁴⁴ Farmers Weekly Interactive, www.fwi.co.uk, 8 May 2018

⁴⁵ Market Outlook, Gleadell, Autumn 2019

⁴⁶ Farmers Weekly, 2 February 2018

⁴⁷ Farmers Weekly, 20 April 2018

⁴⁸ Pulse Market Update, PGRO, September 2018

⁴⁹ Pulse Market Update, PGRO, October 2018

⁵⁰ Farmers Weekly, 7 December 2018

⁵¹ Pulse Market Update, PGRO, January 2019

⁵² Pulse Market Update, PGRO, April 2019

⁵³ Pulse Market Update, PGRO, November 2018

⁵⁴ Pulse Market Update, PGRO, January 2019

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Based on a small sample of only ten farms, the gross margin for soya averaged £149 per hectare for crops yielding 1.3 tonnes per hectare and selling for an average price of £350 per tonne. In the spring of 2018, contracts for soya production were offered at £375 per tonne, a price which incorporated a non GM premium of £25 per tonne over imported soya from North America and South America⁵⁵. Due to the small sample size, we have reduced confidence in these results

4.12 Sugar Beet

The sugar beet gross margin averaged £978 per hectare, 20 per cent below the five year average. The average crop yield was 68 tonnes of clean beet per hectare, seven per cent below the five year average. The price, of £27 per tonne including the haulage allowance and adjustments for early or late delivery increased on the previous year but was still five per cent below the five year average.

Contract and Price

The 2018 /2019 year was the second year of a revised scheme of sugar beet contracts following the conclusion of the EU Sugar Regime. British Sugar again offered one year and three year contracts, both with a guaranteed minimum price of £22.50 per tonne with the potential of a market bonus. The three year contract offered a greater share of any price uplift at the single year contract⁵⁶.

Agronomy and Crop Development

Wet weather delayed sugar beet drilling for many growers⁵⁷. British Sugar advised that this could result in yield reductions⁵⁸. Much of the crop was drilled during April, following the effects of the 'Beast from the East' and the average drilling dates were 20 - 23 April. Conditions at drilling were generally favourable, with adequate moisture for the emerging plants. Seed expenditure, of £205 per hectare, was unchanged on 2017. Possibly responding to anticipated lower yields, as well as the lower crop price, growers reduced their expenditure on fertiliser and crop protection.

Aphid carry over from 2017 into 2018 was especially low due to low over winter conditions. Foliage disease levels were low through the greater part of the growing season, but increased from October. Autumn conditions were favourable for crop development, and crops responded well to autumn fungicides⁵⁹.

However, drought conditions in June and July continued until farmers received rainfall on the 28 and 29 July. British Sugar opted to delay the opening of sugar beet factories, to allow additional crop growth. Bury St Edmunds and Wisington both opened on 26 September 2018⁶⁰.

Yield and Gross Margin Performance

⁵⁵ Farmers Weekly Interactive, www.fwi.co.uk , 22 May 2018

⁵⁶ NFU Sugar News, www.nfuonline.com , 14 July 2017

⁵⁷ BBRO Advisory Bulletin 2018 No 3, 11 April 2018

⁵⁸ Farmers Weekly Interactive, www.fwi.co.uk , 17 April 2018

⁵⁹ Sugar Beet Review, May 2019

⁶⁰ Sugar Beet Review, Autumn 2018

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As the harvest progressed, British Sugar raised their harvest prediction from 1.05 million tonnes at November 2018 to 1.15 million tonnes at January 2019⁶¹. Difficult conditions at harvest resulted in slow deliveries to factories. Crop yields were reported as variable, with higher yielding crops on silt and fen soils, but low yields on lighter and heavier soils⁶².

The final sugar content was 17.9 per cent, against a five year average of 17.5 per cent. The Cantley factory area reported its lowest yield in 2018, since 2007⁶³.

The top quartile group of farms, by gross margin performance, averaged £1,441 per hectare with crops yielding 77.7 clean tonnes per hectare, and with an average sale price of £28 per tonne.

The highest gross margins were found in Lincolnshire, where the crop gave an average yield of 72.8 tonnes per hectare. The Lincolnshire crops benefitted from a higher price but this included haulage allowance mitigated by higher other crop costs, which include haulage.

At £903 per hectare, the lowest gross margin crops were grown in Suffolk, where the average yield was 61.2 clean tonnes per hectare.

4.13 Ware Potatoes

The potato gross margin was exceptional at £5,355 per hectare, slightly lower than the 2016 gross margin of £5,399 per hectare and 43 per cent higher than the five year average. The price was exceptional at £205 per tonne and 45 per cent above the five year average. Late planting and drought conditions conspired to give an unusually low yield of 37.1 tonnes per hectare, but this ultimately benefited growers because it was the reduced supply that ensured the favourable price to growers.

Like sugar beet growers, many potato growers delayed harvest to facilitate late autumn growth. This caused quality problems in frying and processing varieties as secondary growth occurred .

The packing sector took the opportunity to use carried over 2017 harvest potatoes to meet customer demand whilst the processing sector used packing varieties to make up shortfalls in 2018 production.

The top quartile group of farms, by gross margin performance, averaged £8,100 per hectare with crops yielding 40.5 tonnes per hectare, and with an average sale price of £260 per tonne.

4.14 Vining Peas

The vining pea gross margin averaged £653 per hectare (£788 in 2017). In Yorkshire, vining pea drilling was delayed by poor conditions. Yields of vining peas were generally low and the harvest tonnage fell short of planned production to meet market demand.

⁶¹ Farmers Weekly Interactive, www.fwi.co.uk , 17 January 2019

⁶² Sugar Beet Review, January 2019

⁶³ Sugar Beet Review, May 2019

5 Net Margin and Cost of Production Estimation

5.0 Summary of Net Margin and Cost of Production Estimate

- Cereals, oilseed, potatoes more expensive to grow than in previous years
- Winter wheat cost of production exceeded the crop price by about £21 per tonne
- Sugar beet cost of production exceeded the sugar beet price by about £0.50 per tonne
- Cereal, oilseed and potato crops attained improved net margins
- Potato crop was profitable for many producers with £2,223 average net margin

5.1 Introduction

The allocation and apportionment of costs to individual crops allows us to prepare net margin and cost of production estimates for the main crops grown in England. The methodology for calculation of FBS net margins includes imputed costs for labour and owner occupied land. Organic crops are excluded from the analysis.

5.2 Comparison with Previous Years

As a result of relatively low yields, the cost of production for most crops (measured per tonne) was higher than in recent years. Using this measure, all crops except peas and sugar beet were more expensive to grow than in any year since we started to estimate production costs in 2013 and 2014.

In 2018, the winter wheat cost of production exceeded the crop price by about £21 per tonne, and the sugar beet cost of production exceeded the sugar beet price by about £0.50 per tonne.

The average net margins for all crops, except potatoes, were negative in 2018. Cereal, oilseed and potato crops attained their most favourable net margins since we started to estimate production costs in 2013 and 2014. The higher net margins resulted from the relatively high 2019 harvest prices. With an average net margin of £2,223, the potato crop was profitable for many producers. However, poorly yielding and low quality pea and bean production was less profitable than in previous years.

6 Organic Arable Performance

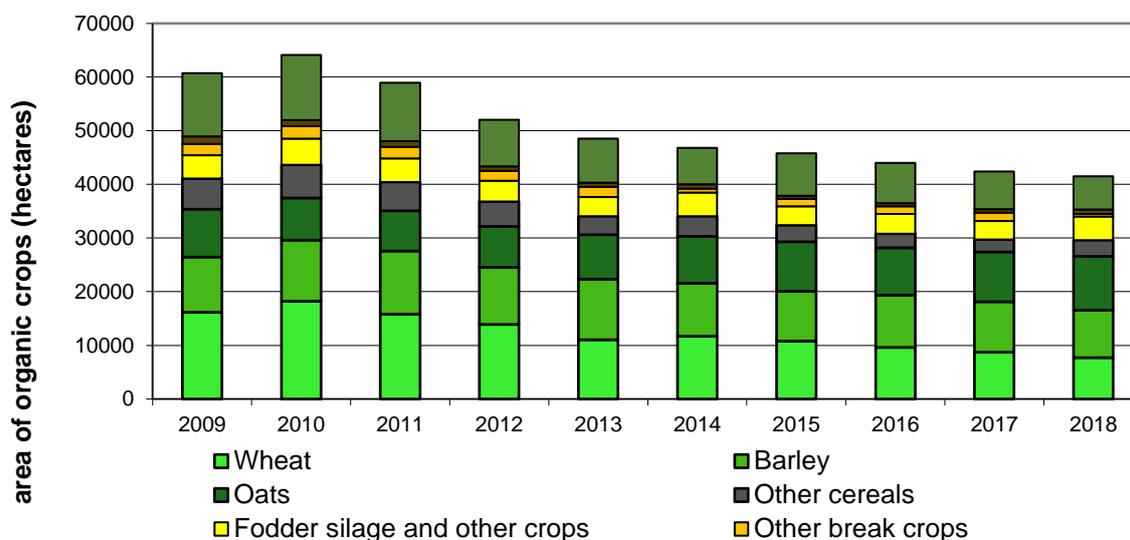
6.0 Organic Arable Performance

- Crop performance improved as a result of high organic crop prices
- Highest organic cereal gross margins since start of our detailed analysis in 2009
- Organic oat area 13 per cent higher than the five year average
- Winter oat gross margin was about twice the five year average.
- The contribution of agriculture to FBI averaged £307 per hectare (£305 in 2017)

6.1 Market Overview and Organic Crop Areas

The trend in changing arable crop area is shown in figure 6.1.

Figure 6.1 Organic Arable Crop Area, 2009 to 2018



At 41,500 the area of organic crops in England was little changed on the previous year but eight per cent below the five year average. The area of land in conversion to organic arable cropping increased to 2,600 hectares, its highest level since 2009. The area of arable land lost from organic production reduced to 900 hectares, this was the smallest reduction since the decline in arable cropping started in 2011.

The area of organic oats increased to 10,000 hectares, 13 per cent above the five year average and the highest area of recent times. The areas of other organic cereals, which include crops such as rye and spelt, increased, as did the area of organic potatoes. Demand for organic food in the UK rose for the seventh consecutive year, with retail sales to the value of £45 million⁶⁴.

⁶⁴ Farm Business, www.farmbusiness.co.uk 6 February 2019

6 Organic Arable Performance

6.2 The Sample of Organic Farms and Organic Agriculture Performance

The contribution of agriculture to FBI on organic Cereals and General Cropping farms in our sample averaged £307 per hectare, exceeding the contribution on non organic farms of the same farm types.

Whilst some of the changes in agriculture performance may have been due to the change in the sample of farms, the general picture was that crop output were higher. Labour, machinery running costs and rent were also higher. The result was that the contribution of agriculture to FBI was virtually unchanged on 2017.

There was one less organic arable farm in the sample of farms which averaged 106 hectares (92 hectares in 2017). The main crops grown, by area, were spring barley, spring wheat, spring oats and winter wheat.

6.3 Organic Crop Performance

Driven by the highest organic crop prices in at least ten years, all organic cereal crops achieved their highest gross margins since our detailed analysis of organic crops commenced in 2009. In contrast, organic spring beans yielded poorly to give a low gross margin.

Winter and Spring Wheat

The organic winter wheat crop gave an average gross margin of £1,055 per hectare, 29 per cent above the five year average, driven by the price of £303 per tonne, which was 25 per cent higher than the five year average. The crop yield of 2.7 tonnes per hectare was close to average.

The organic spring wheat gross margin was £1,322 per hectare, representing a substantial increase on the average and on the previous year's gross margin of £568 per hectare. Again, the driver was the favourable price, at £323 per tonne this exceeded the five year average between by 28 per cent. The crop yielded exceptionally well at 4.0 tonnes per hectare, higher than the organic winter wheat crop and 37 per cent above the five year average. Due to the small sample size, we have reduced confidence in these results.

Prior to harvest, organic feed wheat could be sold for £265 for September for October movement. As supply problems became apparent, prices increased to £280 per tonne. Milling wheat typically had favourable specific weight and hagberg, but low protein. By August, the milling wheat price was around £315 per tonne for crops with 11 per cent protein. This increased to £325 per tonne by November.

Spring Barley

At £808, spring barley had the lowest gross margin of all organic cereal crops for the first time since 2014, but it was still the highest organic spring barley gross margin since our records began. The crop price, of £295 per tonne, was 44 per cent above the five year average.

Prior to harvest organic feed barley traded at £260 per tonne for autumn movement. Organic malting barley could be sold for £310 to £315 from November 2018⁶⁵

⁶⁵ Saxon Organic Briefing, November 2018

6 Organic Arable Performance

Winter and Spring Oats

Winter oats achieved the highest organic gross margin for a second consecutive year, at £1,481 this was about twice the five year average. Again, it was the price, of £323 per tonne, 42 per cent above the five year average that ensured the high margin.

The spring oat gross margin, of £926 per hectare, was 43 per cent higher than the five year average. The crop sold for an average price of £307 per tonne, 34 per cent above the five year average and the highest since we started our records in 2009.

Trade in organic feed oats started at £240 per tonne, as it became apparent that demand exceeded supply, the price increased to £255 per tonne for oats by July⁶⁶.

Spring Beans

Despite a crop price of £359 per tonne, which was 13 per cent higher than the five year average, the spring bean crop achieved an exceptionally low gross margin of only £341 per hectare. The crop yielded only 1.5 tonnes per hectare. Due to the small sample size, we have reduced confidence in these results.

At June, organic feed beans could be sold for £370 per tonne for October to December movement. Prices climbed to £385 per tonne by November before dropping back to £375 per tonne by February 2019⁶⁷.

⁶⁶ Saxon Organic Briefing, June 2018 & July 2018

⁶⁷ Saxon Organic Briefing, June 2018, November 2018 & February 2019

7 Weather, Economic Context and Policy

7.0 Weather, Economic Context and Policy

- 2,700 members of staff at Defra were engaged on Brexit work at March 2019
- The Bank of England raised the base lending rate by 0.25 per cent to 0.75
- The 'Beast from the East' brought severe cold and windy weather in early 2018
- Summer 2018 was dominated by drought conditions and dry harvest weather
- Vivergo closed its fuel plant in September 2018

7.1 Government

George Eustice resigned from his post of Agriculture Minister at Defra in February 2019 and was replaced by Robert Goodwill MP, a farmer from Yorkshire⁶⁸. Preparations for the UK's planned exit from the European Union comprised a significant part of the work of Defra in the year. At 26 March 2019, 2,700 members of staff at Defra were engaged on Brexit work⁶⁹.

In September 2018, the Home Secretary and Environment Secretary announced a two year pilot scheme to enable 2,500 seasonal workers to work on fruit and vegetable farms for a stay not exceeding six months⁷⁰.

In August 2018, Defra granted two additional years of funding to its 'Payment by Results' agri environment pilot scheme. The arable options are being trialled in Norfolk and Suffolk⁷¹.

In an initiative to improve flood defences in Lincolnshire, 14 Lincolnshire landowners and tenants worked with Witham Forth Drainage Board, the Environment Agency, Lincolnshire County Council and solicitors Roythornes on a £1.8 million project. The purpose was to reprofile and raise sea banks to substantially improve a 5 kilometre length of flood defence. The works protect 3,400 hectares of Grade 1. Funding was provided by the Environment Agency and the European Union⁷².

From April 2019, Farmers in England were faced with a change to HMRC rules in an initiative named Making Tax Digital. For many this involved changes to record keeping and some farmers changed their accounting software following advice from their accountants.

7.2 Economic Environment

The Bank of England raised the base lending rate by 0.25 per cent to 0.75 per cent on 2 August 2018. This was the second rise from a low of 0.25 per cent since July 2007.

The prevailing strength of sterling was relatively low, but stable since the EU referendum in summer 2016. At the end of March 2019, one pound could purchase 1.16 euro or 1.30 US dollars⁷³.

⁶⁸ Farm Business, www.farmbusiness.co.uk, 6 March 2019.

⁶⁹ Land, www.agriland.co.uk, 26 March 2019

⁷⁰ Agronomist and Arable Farmer, www.aafarmer.co.uk, 6 September 2018

⁷¹ Defra, www.gov.uk, 2 August 2018

⁷² Farm Business, www.farmbusiness.co.uk, 21 November 2018

⁷³ Bank of England, www.bankofengland.co.uk

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The British Retail Consortium recorded the highest rate of food price inflation, at 2.5 per cent, in March 2019, up from 1.6 per cent in February 2019. Some of the commodities facing the highest price inflation were onions, potatoes and cabbages, but cereal prices also increased⁷⁴.

7.3 Weather

The autumn of 2017 was unsettled and September was cooler and wetter than average, whilst October was generally dry. Both months were dull. Temperatures in arable areas were close to average levels. Over the whole autumn, South East England was dryer than usual and Essex and Kent were particularly dry.

The so called 'Beast from the East' comprised severe cold and windy weather in late February and early March. As high pressure weather systems dominated, summer 2018 was the warmest since 2016 and May, June and July were much warmer than average. 2018 was the second sunniest since 1929 but the year was also particularly dry.

The NFU and Defra held a drought summit on 1 August that resulted in initiatives that included emergency short term flexibility about the terms of abstraction licences, and speeding up payment of Basic Payment Scheme (BPS) and Countryside Stewardship Scheme (CSS) claims⁷⁵. However, the NFU reported that the expected measures were not implemented in England as expected and made new calls to Defra in early September⁷⁶.

7.4 Business

The summer of 2018 saw considerable change in the crop processing sector:

- With stores in Membury, Berkshire, Micheldever, Hampshire and Shrewton, Wiltshire, the Trinity Grain storage and grain marketing cooperative was formed by former members of Hampshire Grain, Ridgeway and Wiltshire Grain. The group handles 200,000 tonnes of grain on behalf of 300 members in August 2018⁷⁷.
- Saxon Agriculture acquired, Yorkshire based, Campbell and Penty in August 2018. Saxon Agriculture is owned by Bairds Malt, which is in turn owned by GrainCorp Ltd of Australia⁷⁸.
- Hovis sold its Manchester and Selby mills to Whitworth Bros, and closed its Southampton mill in October 2018. Hovis retained its only remaining mill at Wellingborough, Northamptonshire⁷⁹.
- 18 mustard growers and four mint growers created a crop processing business, Condimentum, based at the Greater Norwich Food Enterprise Park at Easton, Norwich. The development followed Unilever's decision to close the Colmans Mustard plant in Norwich⁸⁰.
- In early 2019, Fengrain entered a subcontract with Frontier Agriculture Ltd to provide grain marketing service to the group. Frontier is owned by Cargill and Associated British Foods⁸¹.

⁷⁴ BBC, www.bbc.co.uk, 3 April 2019

⁷⁵ Farm Business www.farmbusiness.co.uk, 2 August 2018

⁷⁶ Farm Business www.farmbusiness.co.uk, 3 September 2018

⁷⁷ Agronomist and Arable Farmer, www.aafarmer.co.uk, 13 August 2018

⁷⁸ Yorkshire Post, www.yorkshirepost.co.uk, 16 August 2018

⁷⁹ Farmers Weekly, 5 October 2018

⁸⁰ Farmers Weekly, 16 November 2018

⁸¹ Farm Business, www.farmbusiness.co.uk, 11 January 2019

7 Weather, Economic Context and Policy

- New York based Archer Daniels Midland Company (ADM), co-owner of Gleadell Agriculture Ltd, acquired the remaining 50 per cent stake in the company from InVivo in February 2019⁸². The purchase included the Gleadell subsidiary, Dunns (Long Sutton) Ltd⁸³.

There were also changes in the agricultural supply chain:

- As DowDuPont progressed to become a standalone company, it changed its name to Corteva Agriscience in February 2018⁸⁴
- Platform Speciality Products Corporation agreed to sell Arysta Lifescience to UPL Corporation Ltd in July 2018⁸⁵.
- Vervaet bought 50 per cent of the shares of its UK importer, J Riley Beet Harvesters, based at Attleborough, Norfolk, in May 2018⁸⁶.
- Dealers of John Deere tractors, Ripon Agricultural Services acquired RBM Agricultural Ltd, and so expanded its base from Yorkshire and the Humber and Teeside to Nottinghamshire and Lincolnshire in March 2019⁸⁷.
- The British Crop Protection Council (BCPC) became part of the NIAB group in November 2018⁸⁸.
- The Land Drainage Contractors Association (LDCA) reunited with the National Association of Agricultural Contractors (NAAC) in January 2019, following a previous split in 1984⁸⁹.

7.5 Renewable Energy

In November 2018, Ensus paused production of biofuel at its Wilton plant for the fourth time since it opened in 2011⁹⁰. The company later announced plans to reopen in March 2019⁹¹.

Vivergo reopened its ethanol plant in April 2018, following a shutdown in November 2017. The company welcomed the increase in the Road Transport Fuel Obligation from 4.75 per cent to a target of 9.75 per cent by 2020, but also expressed concern that the UK Government had not introduced E10 fuel⁹². Difficult trading conditions, and the absence of any indication that the Government would legislate for the introduction of E10 fuel in the UK, led to Vivergo's decision, in September 2018, to close the Vivergo Fuels plant⁹³. Aether Energy is an institutional investor that was actively seeking partnership arrangements in AD sites of over 0.5MW in 2018⁹⁴.

⁸² Archer Daniels Midland, www.adm.com , 17 January 2019

⁸³ Farm Business, www.farmbusiness.co.uk , 22 February 2019

⁸⁴ DowDuPont, www.dow-dupont.com , 26 February 2019

⁸⁵ Farm Business, www.farmbusiness.co.uk , 22 July 2018

⁸⁶ Farmers Weekly, 11 May 2018

⁸⁷ Farm Business, www.farmbusiness.co.uk , 12 March 2019

⁸⁸ NIAB, 9 November 2018

⁸⁹ Farm Business, www.farmbusiness.co.uk , 30 January 2019

⁹⁰ BBC, www.bbc.co.uk , 25 October 2018

⁹¹ Farmers Weekly Interactive, www.fwi.co.uk , 28 February 2019

⁹² Vivergo Fuels, vivergofuels.com , 4 December 2017 & 10 April 2018

⁹³ Vivergo Fuels, vivergofuels.com , 6 September 2018

⁹⁴ FarmBusiness, www.farmbusiness.co.uk , 25 April 2018

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Details available at www.ruralbusinessresearch.co.uk

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

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