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Machinery investment on farms in England: 2009/10 to 2017/18 Results from the Farm Business Survey

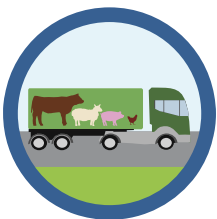
This release provides estimates of machinery investment and sales made by farmers in England between 2009/10 and 2017/18. The results are sourced from the Farm Business Survey and relate to March / February years with the most recent year ending in February 2018.

This release was updated in March 2019 to reflect amended machinery definitions. There are no changes to the previously published figures.

Key results



£1.98bn Total spent on new and used machinery in 2017/18 (£1.52bn net of sales^(a)). After adjusting for inflation, there has been little change in the overall trend since 2009/10.



£36,200 Average gross expenditure per farm in 2017/18 (£27,900 per farm net of sales^(a)).



£57,700 Average expenditure per farm on wheeled tractors in 2017/18 (for those farms buying).

^(a) Total expenditure less sales

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Introduction

This release provides the results of an analysis of machinery expenditure and sales from the Farm Business Survey. This covers a broad range of machinery from office and irrigation equipment to tractors and combine harvesters. For items such as cars, expenditure includes only the farm share; any share for private use is excluded. Note that whilst depreciation of these assets is included within the Defra's Farm Business Income measure, the annual expenditure is not included.

Detailed results

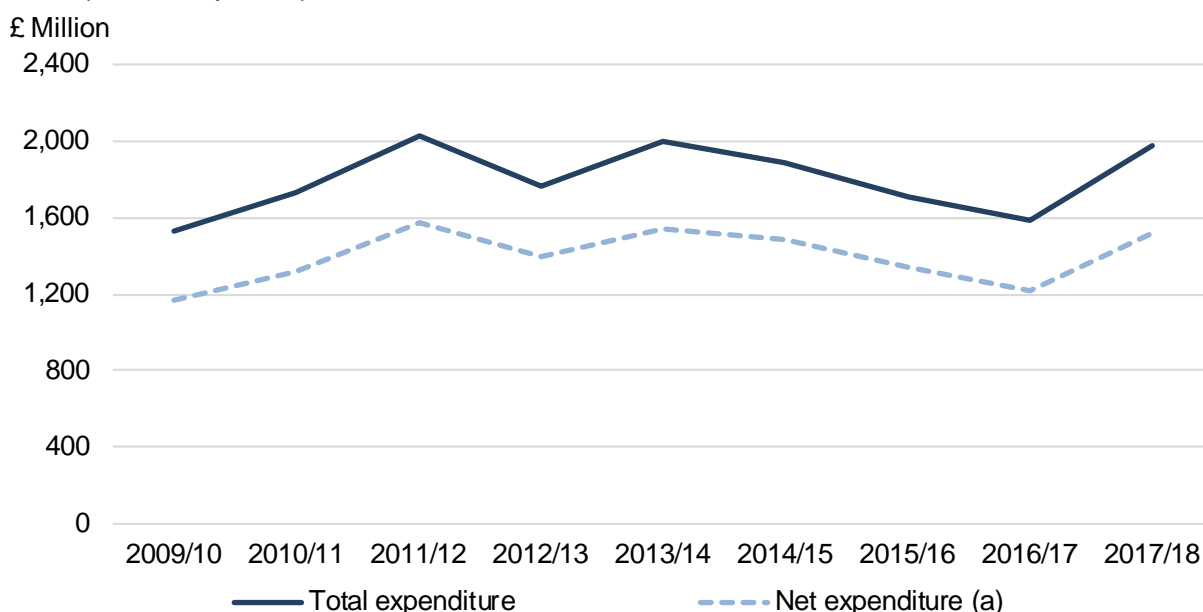
1. Investment in machinery

Key findings:

- In total, farms spent £1.98 billion on machinery in 2017/18, or £1.52 billion net of sales. Over three quarters (79 percent) of this was spent on new machinery.
- When averaged across all farms, the average expenditure on machinery was £36,200 per farm (£27,900 per farm net of sales) in 2017/18.
- There has been a gradual reduction in the proportion of farms purchasing machinery since 2009/10 due to a decline in the proportion buying new. Overall, just under three quarters of farms businesses (74 percent) bought at least one item of machinery in 2017/18.

In 2017/18, farms spent £1.98 billion on machinery, or £1.52 billion net of sales (Figure 1). In real terms (after adjusting for inflation), there has been a little change in the overall trend since 2009/10.

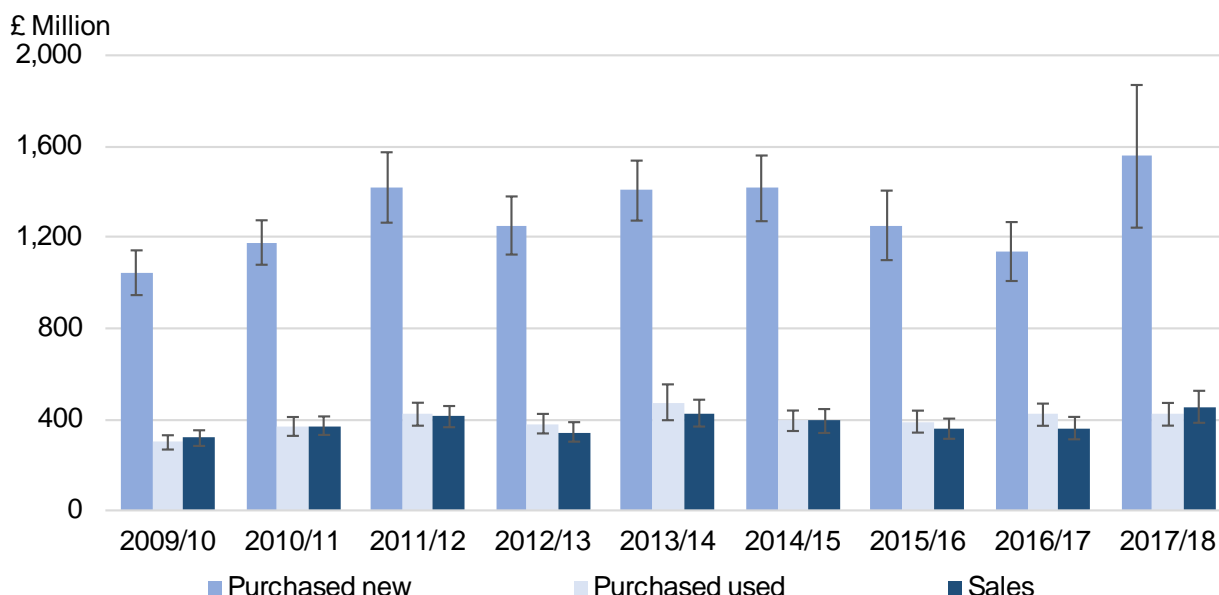
Figure 1: Total and net expenditure on machinery, England - 2009/10 to 2017/18 in real terms (2017/18 prices)



(a) Total expenditure less sales

Around three quarters (79 percent in 2017/18) of expenditure each year is on new machinery.

Figure 2: Total expenditure^(a) on new and used machinery, England - 2009/10 to 2017/18



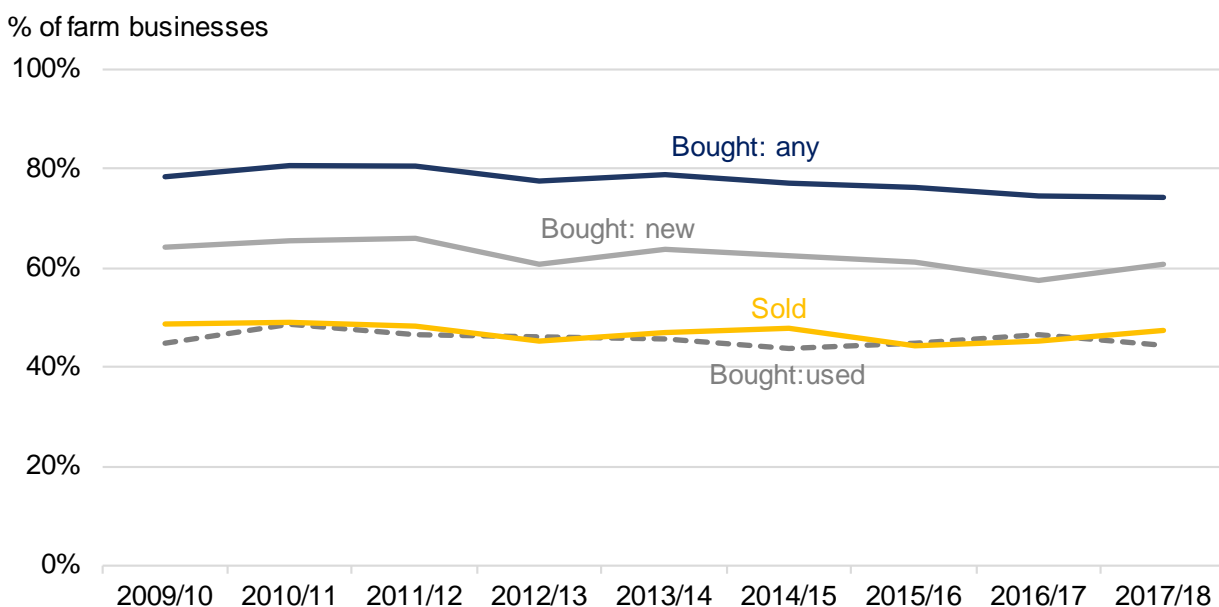
(a) In current prices; not adjusted for inflation

(b) The size of the increase in 2017/18 should be treated with caution as the confidence interval for the total spent on new purchases was +/- 20 percent compared to +/- 10 percent in previous years.

Source: Farm Business Survey, England.

In 2017/18, just under three quarters of farm businesses (74 percent) bought at least one item of machinery; 61 percent bought new machinery and 44 percent bought used machinery (Figure 3). Whilst farms do not purchase machinery every year, over the 3 year period 2015/16 to 2017/18, nearly all farms (94 percent) had invested in machinery, with 85 percent having bought at least one item of new machinery and 75 percent having bought at least 1 item of used machinery.

Figure 3: Proportion of farm businesses buying and selling machinery, England - 2009/10 to 2017/18



In any one year, farms may buy new, buy used and/or sell machinery

Source: Farm Business Survey, England.

There has been a gradual reduction in the proportion of farms purchasing machinery since 2009/10 due to a decline in the proportion buying new (Figure 3). There has been little change in the proportions of farms purchasing used machinery or selling machinery; 49 percent of farm businesses reported sales in 2009/10 compared to 47 percent in 2017/18.

When averaged across all farms, the average expenditure on machinery was £36,200 per farm (£27,900 per farm net of sales) in 2017/18 (Table 1). The average spent on used machinery broadly equals the average recouped from sales.

Table 1: Average expenditure^(a) on new and used machinery across all farm types, England - 2009/10 to 2017/18

	£ per farm				
	Purchased new	Purchased used	Gross average expenditure	Sold	Net average expenditure
2009/10	18,000	5,200	23,200	5,500	17,700
2010/11	20,900	6,600	27,500	6,600	20,900
2011/12	25,300	7,500	32,900	7,400	25,500
2012/13	21,300	6,500	27,800	5,900	21,900
2013/14	24,100	8,100	32,200	7,300	24,900
2014/15	24,600	6,800	31,400	6,800	24,600
2015/16	22,200	6,900	29,100	6,400	22,700
2016/17	20,000	7,400	27,500	6,400	21,100
2017/18	28,500	7,700	36,200	8,300	27,900

Averages are across all farms, including those that did not buy or sell machinery.

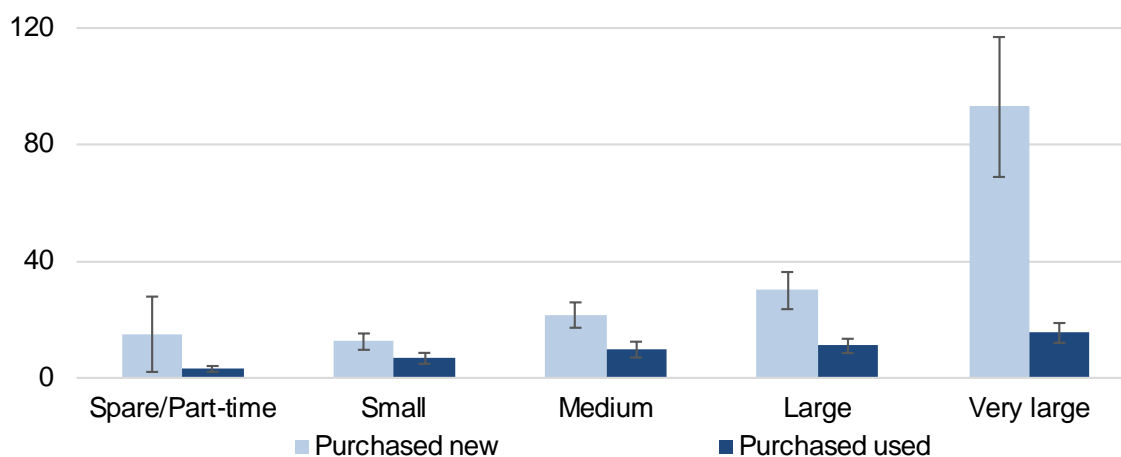
(a) In current prices; not adjusted for inflation.

Source: Farm Business Survey, England

As might be expected, larger farms¹ tended to spend more on machinery (Figure 4). The net average expenditure for very large farms in 2017/18 was £87,000, more than three times the overall average net expenditure across all sizes of farm businesses.

Figure 4: Average expenditure per farm on new and used machinery by farm size, England - 2017/18

£ thousand per farm



Averages are across all farms, including those that did not buy or sell machinery.

Source: Farm Business Survey, England

¹ Farm size based on Standard Labour Requirement (SLR). For a definition of SLR please see the UK classification document here: <https://www.gov.uk/farm-business-survey-technical-notes-and-guidance>

Considering machinery investment by farm type, grazing livestock, poultry and horticulture farms had the lowest levels of average expenditure (Table 2). On average, dairy farms spent the most on machinery in 2017/18.

Table 2: Average expenditure on new and used machinery by farm type, England 2017/18

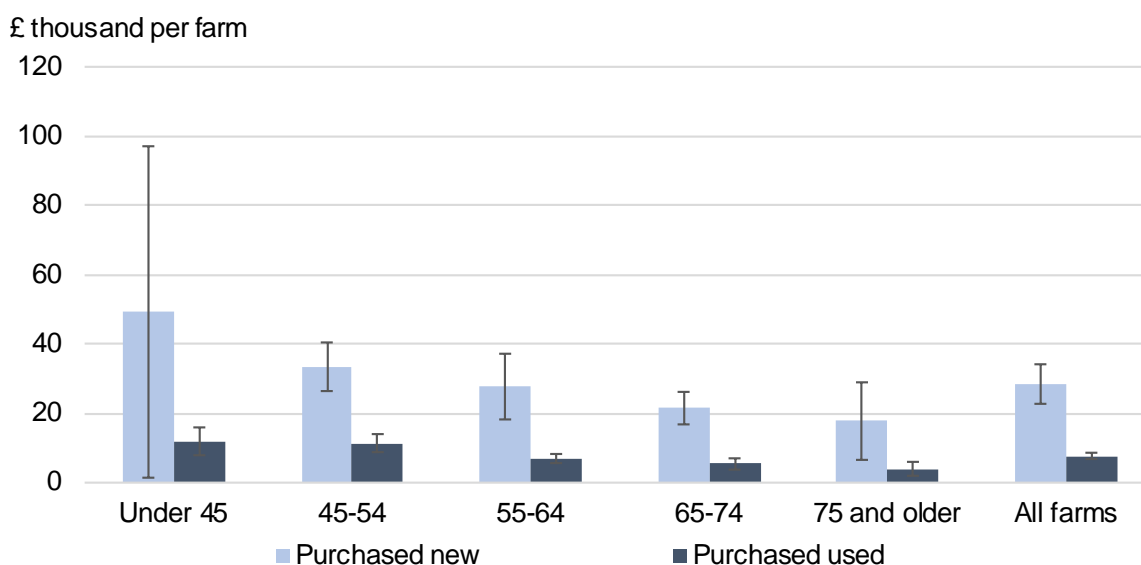
	£ per farm			
	Purchased new	Purchased used	Sold	Net average expenditure
Cereals	34,700	7,800	11,000	31,500
General cropping	40,400	13,000	14,500	38,800
Dairy	49,300	13,000	10,800	51,500
LFA Grazing Livestock	9,300	4,800	3,200	11,000
Lowland Grazing Livestock	10,300	4,300	3,800	10,800
Pigs	58,100	5,000	18,600	44,500
Poultry	16,800	2,200	3,200	15,900
Mixed	40,300	11,800	9,800	42,400
Horticulture	13,400	2,500	2,500	13,500
All farms	28,500	7,700	8,300	27,900

In current prices; not adjusted for inflation. Averages are across all farms, including those that did not buy or sell machinery.

Source: Farm Business Survey, England

Average expenditure decreases with farmer age. Gross average expenditure for farmers aged under 45 was £61,200 in 2017/18 (£46,600 net of sales), compared to £21,800 (£15,300 net of sales) for those aged 75 and over (Figure 5).

Figure 5: Average expenditure per farm on new and used machinery by farmer age, 2017/18



Averages are across all farms, including those that did not buy or sell machinery.

Source: Farm Business Survey, England

2. Expenditure by type of machinery²

Key findings:

- Tractors accounted for around a third of gross (40 percent in 2017/18) and net (36 percent) expenditure on machinery. Around a quarter of farms buy a tractor in any given year. For those that purchased a new tractor, the average amount spent per farm was £83,300 in 2017/18 and the average amount spent per vehicle was £64,300.
- There has been little overall change in the proportion of farms buying new or used cars, all-terrain vehicles and motorcycles since 2009/10. The average expenditure for those buying a vehicle in this category was £14,300 per farm in 2017/18.
- In 2017/18, 15 percent of farms bought harvesting equipment spending an average of £33,700 per farm. Since 2012/13, there has been little change in the proportion of farms buying this type of equipment.
- For farms buying cultivating equipment, the average amount spent in 2017/18 was £14,500 per farm. There has been a slight decline in the proportion of farms buying this type of equipment since 2009/10.
- Almost all expenditure on green technology is on new equipment. In 2017/18, the average spend per farm for those buying this type of machinery was £27,000.

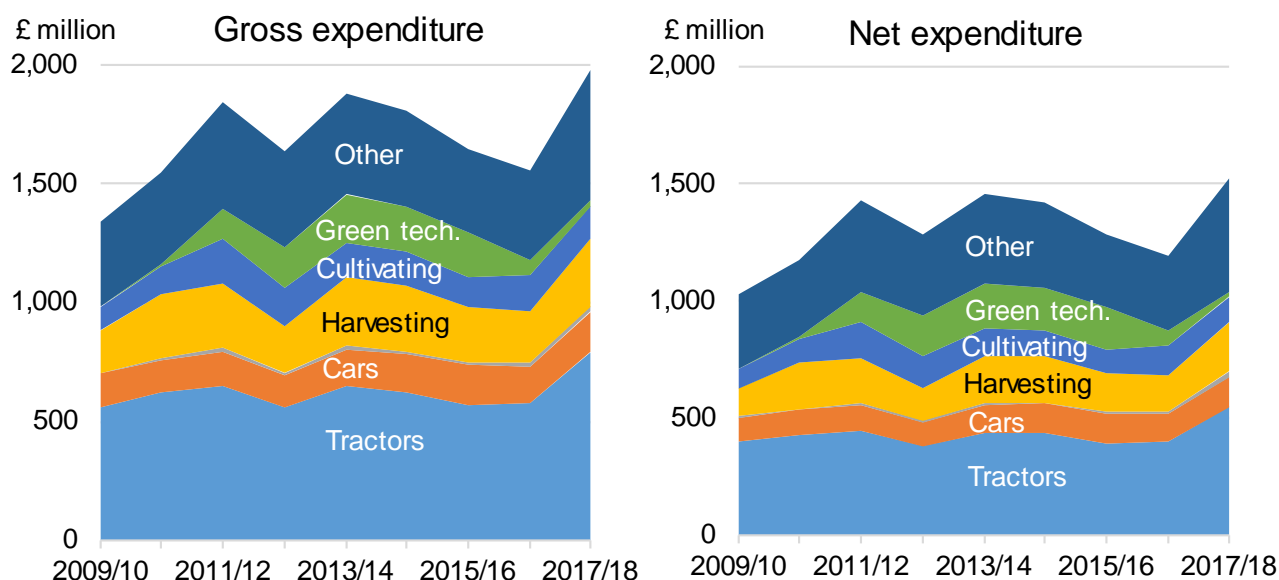
Farms purchase a wide range of machinery (Figure 6 and Table 3). Tractors account for around a third of gross (40 percent in 2017/18) and net (36 percent) expenditure on machinery. 'Other machinery'² accounted for 28 percent of gross expenditure in 2017/18 whilst harvesting equipment accounted for 14 per cent. Expenditure on machinery associated with renewable energy (green technology) declined in 2016/17 and 2017/18.

Note that in any one year, farms may buy new, buy used and/or sell machinery. They may also have transactions for more than one of the machinery categories shown within this notice.

² Machinery categories cover:

- Cars, all-terrain vehicles, motor cycles, trucks and vans - the farm share (i.e. excluding private share) of cars, agri-buggies, utility vehicles and other off road vehicles, three and four wheeled motorcycles designed as all-terrain vehicles, motorcycles, trucks and vans (with an unladen weight not exceeding 3.5 tonnes).
- Lorries - covers larger goods vehicles (over 3.5 tonnes unladen weight).
- Tractors – all wheeled tractors, crawlers, self-propelled sprayers, tele-handlers, bobcats, diggers/excavators and forklift trucks.
- Green technology - all plant and machinery associated with the generation of renewable energy such as solar panels, wind turbines, anaerobic digestion units and boilers.
- Other machinery - trailers, other movable and fixed agricultural and non-agricultural specific machinery, office machinery and food processing machinery.

Figure 6: Total expenditure^(a) by machinery type (new and used), England - 2009/10 to 2017/18, current prices



Green technology was not separately collected in the FBS in 2009/10.

(a) In current prices; not adjusted for inflation

Source: Farm Business Survey, England

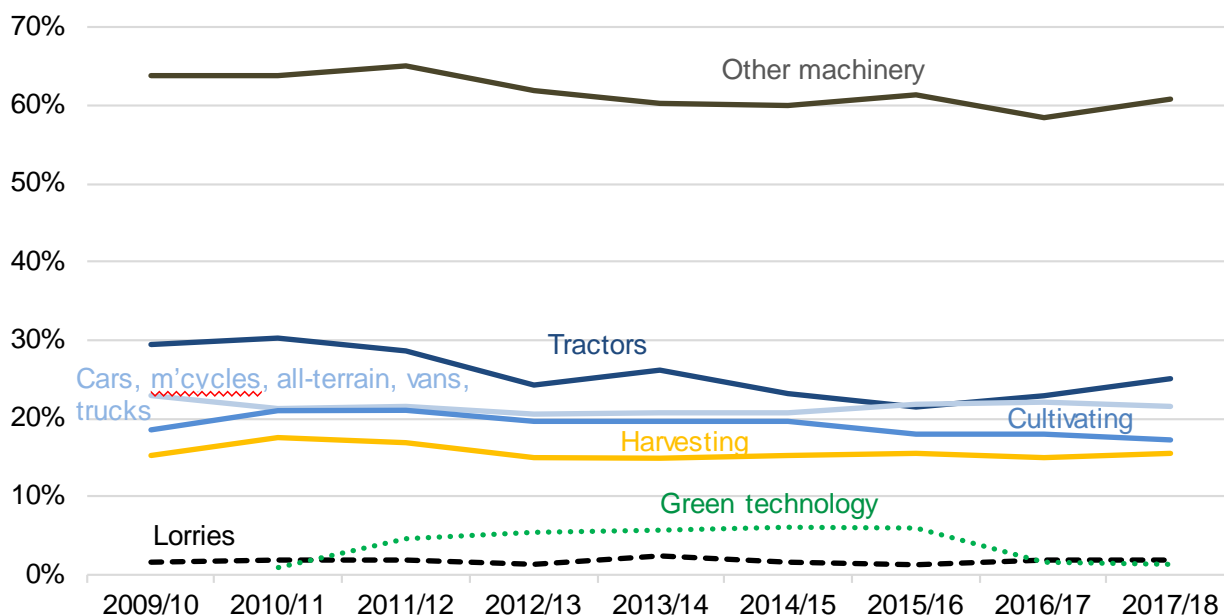
Table 3: Average expenditure and sales per farm by type of machinery for those undertaking transactions, England - 2009/10 and 2017/18 in real terms (2017/18 prices) £ per farm

	2009/10				2017/18			
	Bought (all)	New	Used	Sold	Bought (all)	New	Used	Sold
Tractors	37,700	50,400	18,900	15,600	57,700	83,300	25,900	24,300
Cars, motorcycles, all-terrain vehicles, vans, trucks	11,700	14,900	8,000	4,000	14,300	18,100	10,100	5,400
Lorries	10,100	15,400	7,300	3,100	24,300	35,500	13,200	5,000
Harvesting	22,800	33,700	7,400	13,700	33,700	45,400	14,000	15,100
Cultivating	10,500	13,900	3,400	3,100	14,500	19,800	6,900	5,100
Green technology	n/a	n/a	n/a	n/a	27,000	n/a	n/a	n/a
Other	11,000	11,000	5,100	3,800	17,300	5,300	5,400	5,100
Total	33,700	32,000	13,100	12,800	46,800	17,400	17,600	14,100

Source: Farm Business Survey, England

There has been a gradual decline in the proportion of farms purchasing tractors (Figure 7) and 'other machinery' between 2009/10 and 2017/18. There has been little change in the proportion of farms buying harvesting equipment, cultivating equipment, lorries or cars, motorcycles, all terrain vehicles, vans and trucks over this period. The proportion of farms investing in green technology (such as solar panels, wind turbines, anaerobic digestion units and boilers) peaked at 6 percent between 2013/14 and 2015/16 but reduced to less than 2 percent in 2016/17 and 2017/18.

Figure 7: Proportion of farms buying each type of machinery (new and used), England - 2009/10 to 2017/18



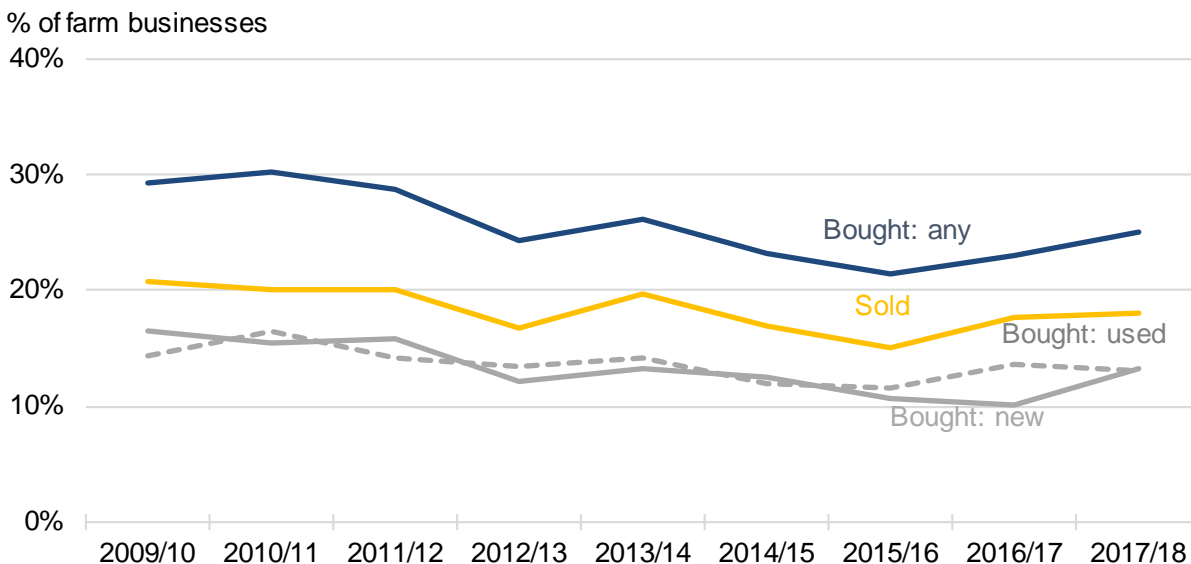
Source: Farm Business Survey, England

Tractors

This category includes wheeled tractors, crawlers and self-propelled sprayers, tele-handlers, bobcats, diggers/excavators and forklift trucks.

The proportion of farms buying tractors in any given year declined from 30 percent in 2009/10 to 21 percent in 2015/16, but has increased to 25 percent in 2017/18 (Figure 8). Further analysis shows that almost half of farms have bought at least one tractor within the last 3 years. The proportion of farms buying new and used tractors tends to be similar. In 2017/18, 13 percent of farm businesses bought a new tractor and 13 percent bought a used tractor.

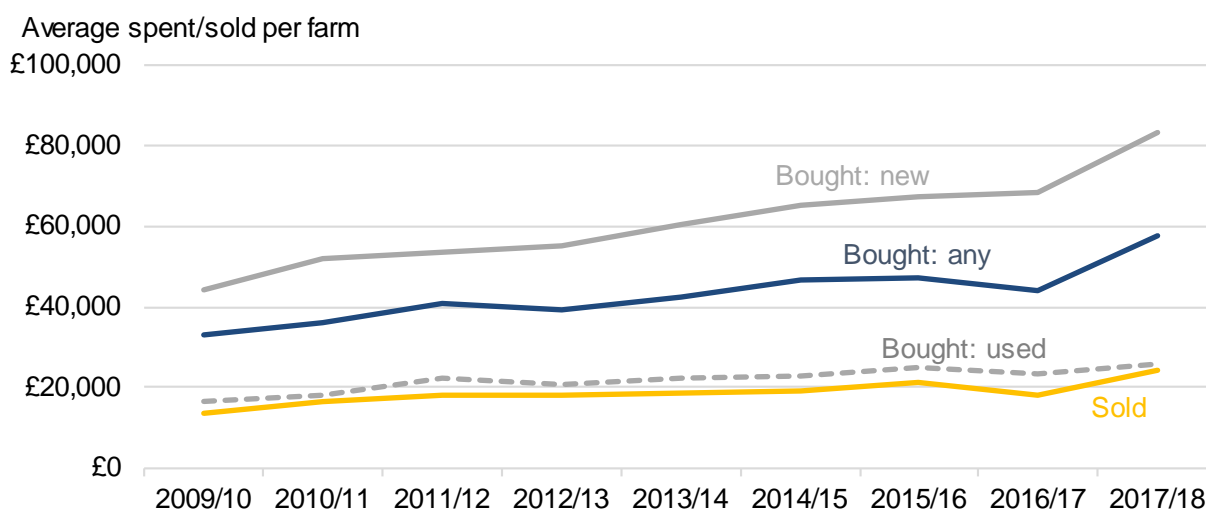
Figure 8: Proportion of farms buying/selling tractors, England - 2009/10 to 2017/18



Source: Farm Business Survey, England

For those buying tractors, the average amount spent was £57,700 per farm in 2017/18. For those buying new, the average expenditure per farm has increased by 88 percent since 2009/10 from £44,300 to £83,300 in 2017/18 (Figure 9). In real terms (after adjusting for inflation), the average amount spent per farm on new tractors has increased by 65 percent since 2009/10 (Table 3). Note that farms may buy more than 1 tractor per year. The average spent per new vehicle was £64,300 in 2017/18 compared to £39,500 in 2009/10. The average spent per used vehicle was £22,500 in 2017/18 compared to £14,900 in 2009/10.

Figure 9: Average spent/sold per farm on tractors, England - 2009/10 to 2017/18

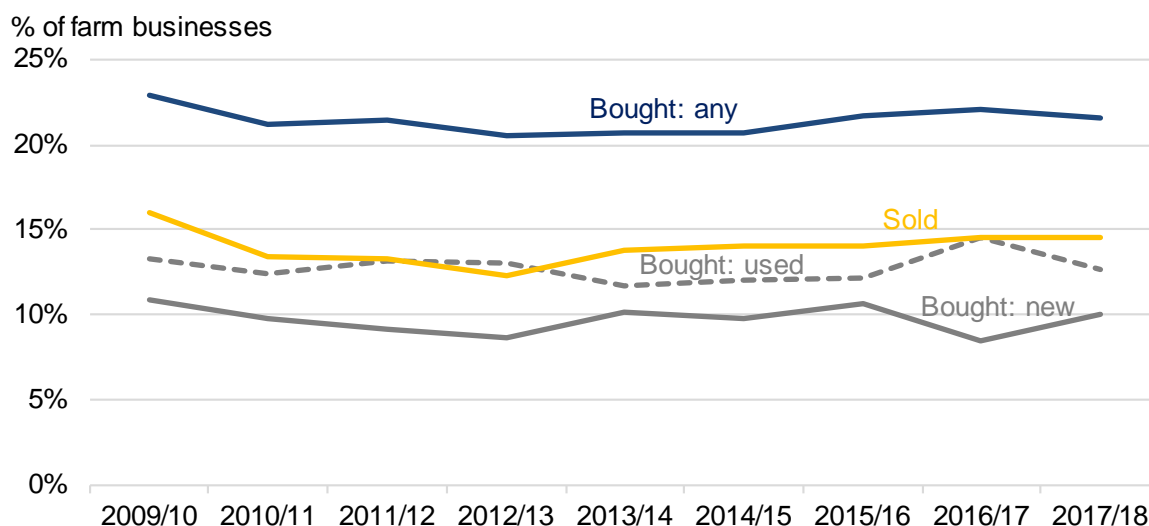


In current prices; not adjusted for inflation
Source: Farm Business Survey, England

Cars, all-terrain vehicles, motor cycles, trucks and vans

This category covers the farm share (i.e. excluding private share) of cars, agri-buggies, utility vehicles and other off road vehicles, three and four wheeled motorcycles designed as all-terrain vehicles, motorcycles, trucks and vans (with an unladen weight not exceeding 3.5 tonnes).

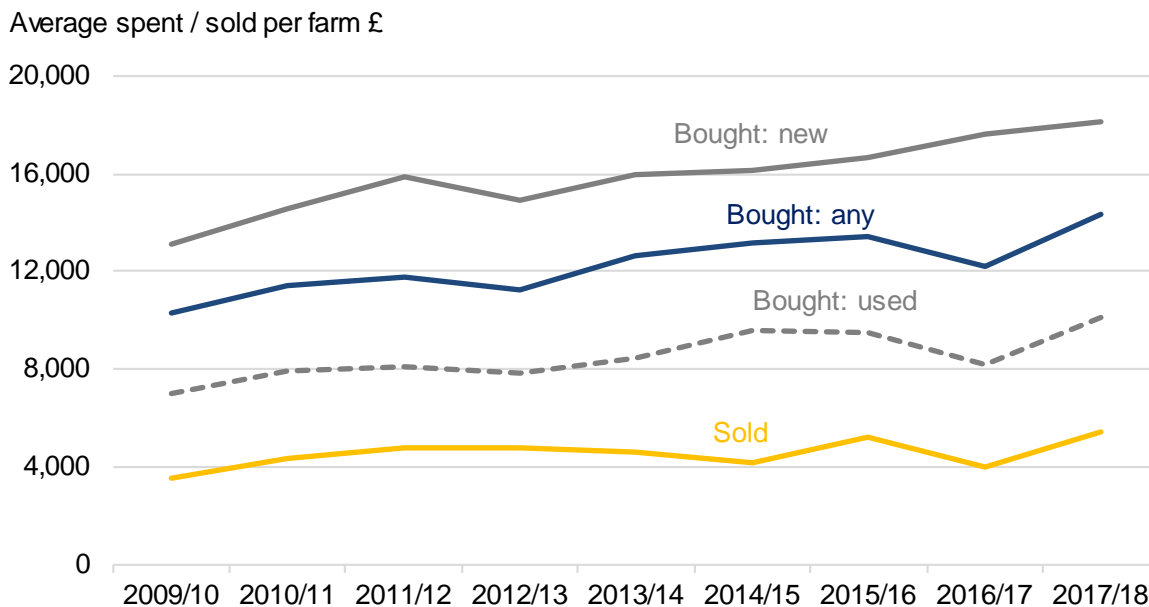
Figure 10: Proportion of farms buying and selling cars, all-terrain vehicles, motor cycles, trucks and vans, England - 2009/10 to 2017/18



Source: Farm Business Survey, England

There has been little overall change in the proportion of farms buying new or used cars, all-terrain vehicles, motorcycles, trucks and vans since 2009/10. In 2017/18, 22 percent of farms bought a vehicle in this category (Figure 10). Further analysis shows that half of farms have bought at least one of vehicle in this category within the last 3 years; for 25 percent of farms this was a new purchase, for 33 percent this was used. The average expenditure for those buying in this category was £14,300 in 2017/18 (Figure 11).

Figure 11: Average spent/sold per farm for cars, all-terrain vehicles, motor cycles, trucks and vans England 2009/10 to 2017/18



In current prices; not adjusted for inflation
Source: Farm Business Survey, England

Lorries

This category includes larger goods vehicles and lorries over 3.5 tonnes unladen weight.

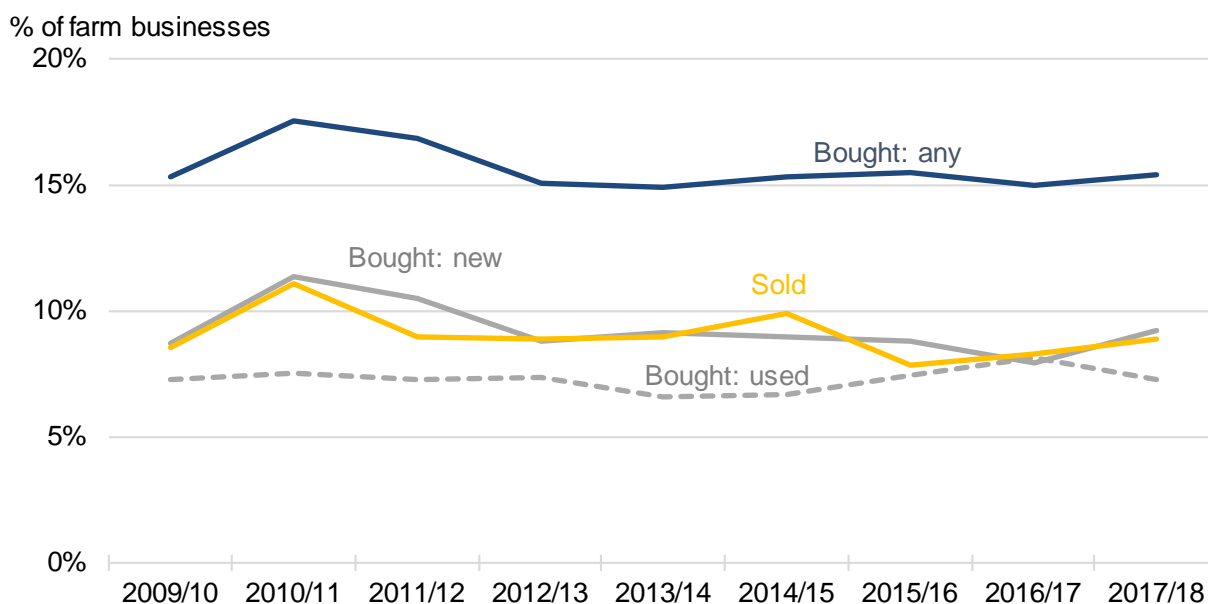
Very few farms (less than 3%) buy lorries each year. Those that did, spent an average of £24,300 per farm in 2017/18. More farms buy used than new. Whilst there was a sharp increase in the average spent per farm in 2017/18, this data is based on a small number of farms and should be treated with caution.

Harvesting equipment

This category includes all harvesting machinery including balers, wrappers, hay and silage making machinery.

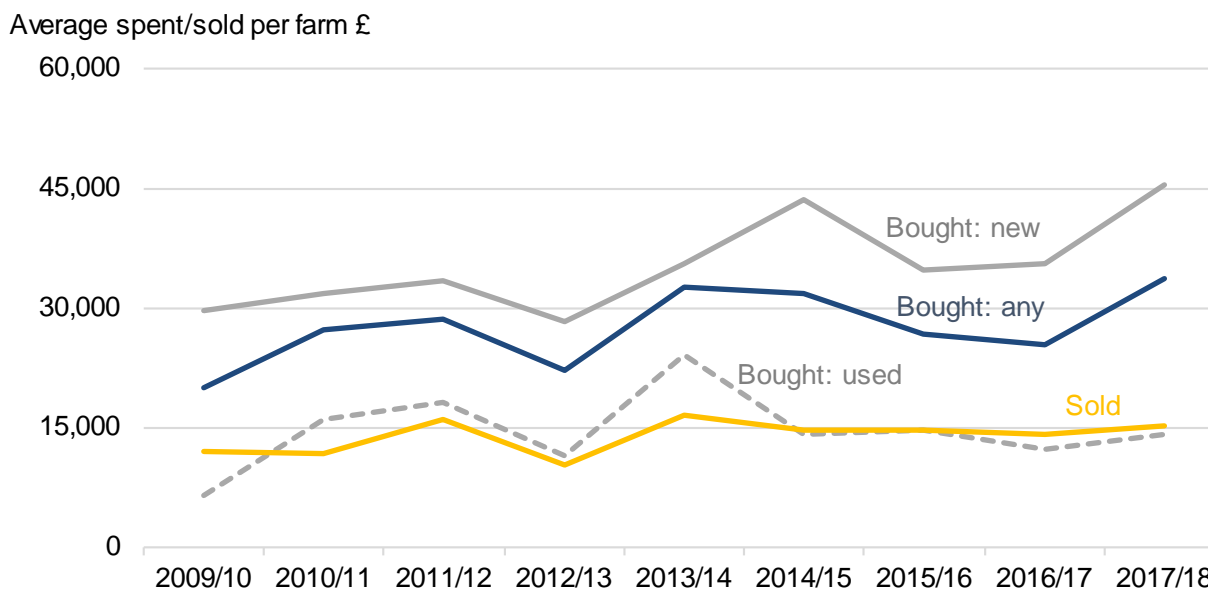
There has been little overall change in the proportion of farms buying harvesting equipment since 2012/13. In 2017/18, 15 percent of farms bought this type of equipment (Figure 12) spending an average of £33,700 per farm (Figure 13). Further analysis shows that 35 percent of farms bought harvesting machinery within the last 3 years; for 21 percent of farms this was a new purchase, for 19 percent this was used.

Figure 12: Proportion of farms buying or selling harvesting equipment, England - 2009/10 to 2017/18



Source: Farm Business Survey, England

Figure 13: Average spent/sold per farm on harvesting equipment, England - 2009/10 to 2017/18



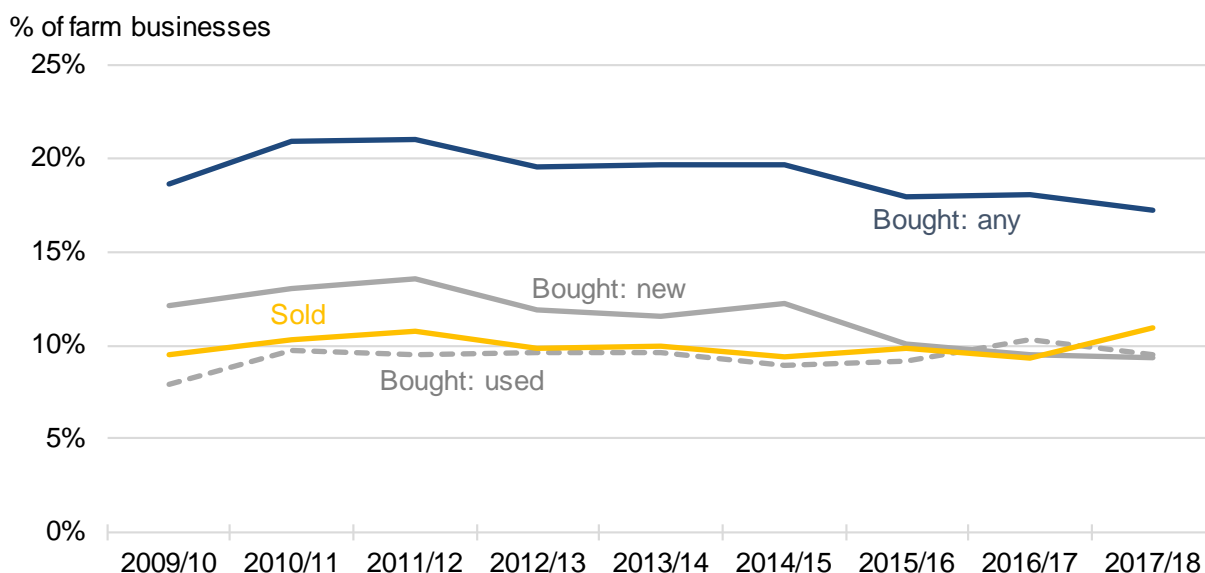
In current prices; not adjusted for inflation
Source: Farm Business Survey, England

Cultivating equipment

This equipment includes ploughs, subsoilers, harrows, seed drills, planters, fertiliser distributors and spinners, slurry tankers and injectors, manure spreaders.

There has been a slight decline in the proportion of farms buying cultivating equipment since 2009/10 (Figure 14). Over the last 3 years, 37% of farms bought cultivating machinery with 22 percent of farms making a new purchase and around the same proportion buying used.

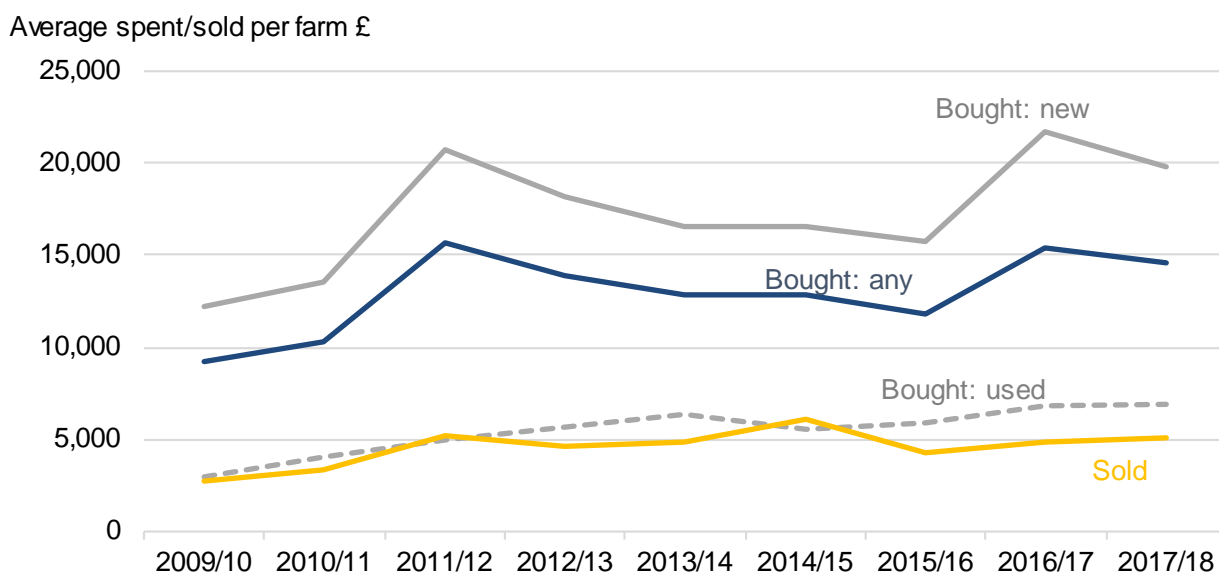
Figure 14: Proportion of farms buying and selling cultivating equipment, England 2009/10 to 2017/18



Source: Farm Business Survey, England

For those farms buying cultivating equipment, the average amount spent in 2017/18 was £14,500 per farm (Figure 15).

Figure 15: Average spent/sold per farm on cultivating equipment, England 2009/10 to 2017/18



In current prices; not adjusted for inflation
Source: Farm Business Survey, England

Green technology

This category was separated from other machinery in 2010/11 and covers all plant and machinery associated with the generation of renewable energy such as solar panels, wind turbines, anaerobic digestion units and boilers.

The proportion of farms buying plant and machinery associated with green technology increased from 1 percent in 2010/11 to 6 percent in 2014/15 and 2015/16, however this

has reduced to less than 2% in 2016/17 and 2017/18. Over the last 3 years, 8 percent of farms purchased this type of equipment. Almost all expenditure is on new equipment. For those buying, the average spent per farm in 2017/18 was £27,000.

Other machinery

Other machinery includes a wide range of equipment including trailers, milking machines, livestock cubicles, irrigation equipment, other movable and fixed agricultural and non-agricultural specific machinery, office machinery and food processing machinery.

The proportion of farms buying other machinery has declined slightly since 2009/10. The majority of this type of equipment is bought new. Whilst there was a sharp increase in 2017/18, this category covers a wide range of machinery and may just reflect the type of items being bought. In 2017/18, 61 percent of farms made a purchase with an average spend per farm of £16,600.

Survey details

Survey content and methodology

The Farm Business Survey (FBS) is an annual survey providing information on the financial position and physical and economic performance of farm businesses in England. The sample of around 1,750 farm businesses covers all regions of England and all types of farming with the data being collected by face to face interview with the farmer. Results are weighted to represent the whole population of farm businesses that have at least 25,000 Euros of standard output³ as recorded in the annual June Survey of Agriculture and Horticulture. In 2017, this accounted for approximately 54,700 farm businesses⁴. Initial weights are applied to the FBS records based on the inverse sampling fraction for each design stratum (farm type by farm size). These weights are then adjusted (calibration weighting⁵) so that they can produce unbiased estimators of a number of different target variables.

For further information about the Farm Business Survey please see:

<https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/series/farm-business-survey>

Accuracy and reliability of the results

We show 95% confidence intervals against the results. These show the range of values that may apply to the figures. They mean that we are 95% confident that this range contains the true value. They are calculated as the standard errors (se) multiplied by 1.96 to give the 95% confidence interval (95% CI). The standard errors only give an indication of the sampling error. They do not reflect any other sources of survey errors, such as non-response bias. For the Farm Business Survey, the confidence limits shown are appropriate for comparing groups within the same year only; they should not be used for comparing

³ For a definition of standard output please see the UK classification document here <https://www.gov.uk/farm-business-survey-technical-notes-and-guidance>

⁴ Prior to the 2010/11 campaign, the coverage of the FBS was restricted to those farms of size ½ Standard Labour Requirement (SLR) or more. For a definition of SLR please see the UK classification document here: <https://www.gov.uk/farm-business-survey-technical-notes-and-guidance>

⁵ Further information on calibration weighting can be found here: <https://www.gov.uk/farm-business-survey-technical-notes-and-guidance>

with previous years since they do not allow for the fact that many of the same farms will have contributed to the Farm Business Survey in both years.

We have also shown error bars on the figures in this notice. These error bars represent the 95% confidence intervals (as defined above).

Availability of results

This release contains headline results for each section. The full breakdown of results can be found at: <https://www.gov.uk/government/collections/farm-business-survey#documents>

Defra statistical notices can be viewed on the Food and Farming Statistics pages on the Defra website at <https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/about/statistics>. This site also shows details of future publications, with pre-announced dates.

Data Uses

Data from the Farm Business Survey (FBS) are provided to the EU as part of the Farm Accountancy Data Network (FADN). The data have been used to help inform policy decisions (e.g. Reform of Pillar 1 and Pillar 2 of the Common Agricultural Policy) and to help monitor and evaluate current policies relating to agriculture in England (and the EU). It is also widely used by the industry for benchmarking and informs wider research into the economic performance of the agricultural industry.

User engagement

As part of our ongoing commitment to compliance with the Code of Practice for Official Statistics <http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html>, we wish to strengthen our engagement with users of these statistics and better understand the use made of them and the types of decisions that they inform. Consequently, we invite users to make themselves known, to advise us of the use they do, or might, make of these statistics, and what their wishes are in terms of engagement. Feedback on this notice and enquiries about these statistics are also welcome.

Definitions

- Machinery type
 - Cars, all-terrain vehicles and motor cycles, trucks and vans - the farm share (i.e. excluding private share) of cars, agri-buggies, utility vehicles and other off road vehicles, three and four wheeled motorcycles designed as all-terrain vehicles, motorcycles, trucks and vans (with an unladen weight not exceeding 3.5 tonnes).
 - Lorries - larger goods vehicles and lorries over 3.5 tonnes unladen weight.
 - Tractors - wheeled tractors, crawlers, self-propelled sprayers, tele-handlers, bobcats, diggers/excavators, forklift trucks.
 - Green technology - all plant and machinery associated with the generation of renewable energy such as solar panels, wind turbines, AD units and boilers.
 - Other machinery - trailers, other movable and fixed agricultural and non-agricultural specific machinery, office machinery and food processing machinery.
- Gross expenditure - all purchases, new and used.
- Net expenditure - all purchases (new and used) minus sales.

- Farm Type

Where reference is made to the *type of farm* in this document, this refers to the ‘robust type’, which is a standardised farm classification system.

- Farm Sizes

Farm sizes are based on the estimated labour requirements for the business, rather than its land area. The farm size bands used within the detailed results tables which accompany this publication are shown in the table below. Standard Labour Requirement (SLR) is defined as the theoretical number of workers required each year to run a business, based on its cropping and livestock activities.

Farm size	Definition
Spare & Part time	Less than 1 SLR
Small	1 to less than 2 SLR
Medium	2 to less than 3 SLR
Large	3 to less than 5 SLR
Very Large	5 or more SLR

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